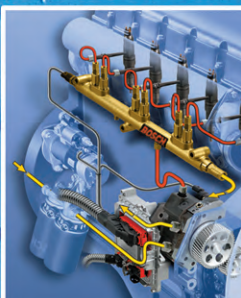
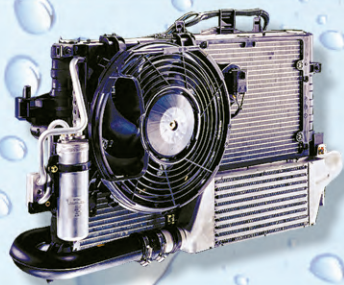


MAXIMATOR®

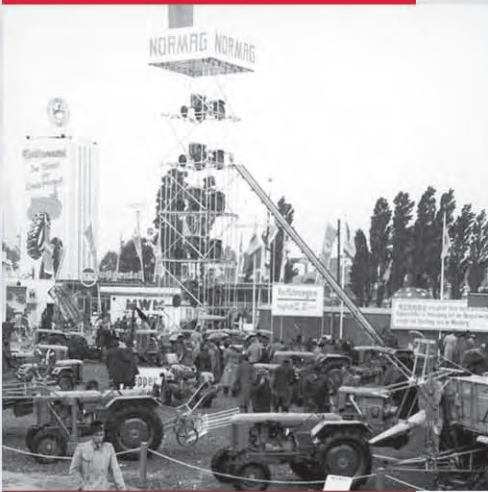
HOCHDRUCK-
TECHNIK
HYDRAULIK
PNEUMATIK
PRÜFTECHNIK

HIGH PRESSURE
TECHNOLOGY
HYDRAULICS
PNEUMATICS
TESTING
EQUIPMENT



MAXIMATOR®

HOCHDRUCKTECHNIK • HYDRAULIK • PNEUMATIK • PRÜFTECHNIK



1. Industriemesse Hannover 1949
1. Exhibition Hannover 1949



Vertriebsteam der MAXIMATOR GmbH • Salesteam MAXIMATOR GmbH



Gründer Dr. Hans-Karl Glinz
Founder Dr. Hans-Karl Glinz



Geschäftsführer Henning Willig
CEO Henning Willig

Dr. Hans-Karl Glinz, Sohn von Professor Karl Glinz, begann mit dem Bau von Traktoren. Später – Anfang der 60er Jahre – entwickelte er die Hochdruckhydraulik. Heute leitet Henning Willig als Geschäftsführer die MAXIMATOR GmbH mit den Werken Zorge und Nordhausen. Henning Willig, 1959 geboren, sorgt für die internationale Ausrichtung der Firma.

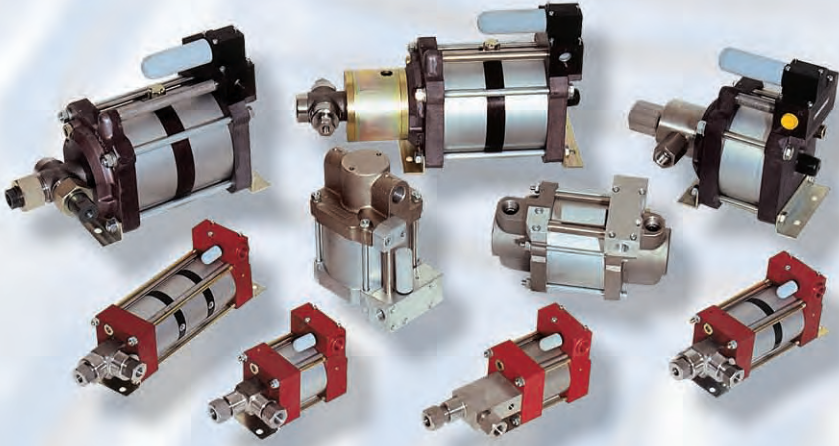
Dr. Hans-Karl Glinz, son of Professor Karl Glinz, started with Tractors and moved to High Pressure Hydraulics in the early sixties of the 20th Century. Today Henning Willig runs as CEO of MAXIMATOR GmbH with the factories in Zorge and Nordhausen. Henning Willig, born 1959, supports the global development of the company.



Zertifiziert nach
DIN EN ISO 9001:2000
DIN EN ISO 9001:2000
certified quality

Komponenten • Components

- Druckerhöhung von Flüssigkeiten und Gasen
- Pressure intensification of liquids and gases



Druckluftbetriebene Flüssigkeitspumpen

Betriebsdrücke bis 5500 bar

Air driven liquid pumps

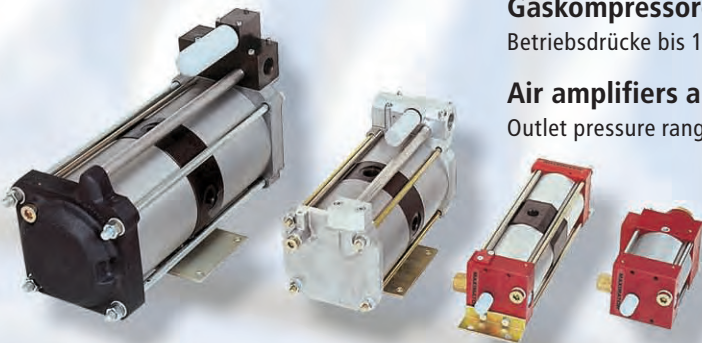
Outlet pressure ranges up to 5500 bar

Druckluftherhöher und Gaskompressoren

Betriebsdrücke bis 1500 bar

Air amplifiers and gas boosters

Outlet pressure ranges up to 1500 bar



Druckerhöhungs- und Kompressorstationen

- Punktuelle Druckerhöhung von Werksdruckluft
- Umfüllen von Flaschen
- Aufladen von Speichern

Amplifier- and gas booster-station

- Direct pressure increase for a single application
- Filling of gas cylinders
- Charging of accumulators



Systeme • Systems

Hydraulikaggregate für Öl, Wasser und andere Medien

- Werkzeughydraulik
- Spannhydraulik
- Wasserhydraulik

Hydraulic units for oil, water and other liquids

- Tool hydraulics
- Clamping hydraulics
- Water hydraulics



MAXIMATOR Ventile – Fittings – Rohre

- Absperrventile bis 10.500 bar
- Adapter
- H2S (Sauer gas)-Anwendungen
- Werkzeuge
- Druckerzeuger
- Hochdruckrohre bis 10.500 bar
- Kolbenabsperrventile
- Kugelventile
- Zubehör

MAXIMATOR Valves – Fittings – Tubing

- Shut-off-Valves up to 152.000 psi
- Tubing up to 152.000 psi
- Adapters
- Piston Type Air Actuators
- H2S (Sour gas)-Applications
- Ball Valves
- Tooling
- Accessories
- Pressure Generators



MAXIMATOR verfügt über ein komplettes Hochdruckprogramm – Made in Germany.
MAXIMATOR offers a complete program of high pressure components – Made in Germany.

MAXIMATOR®

Verdichter-, Prüf- und Regelanlagen

- Zentralversorgung für Gasinnendruckanlagen
- Test- und Regeleinheiten für Druckluft und Gase
- Komplettanlagen für das Befüllen von Airbag-Gasbehältern

Compressor-, test- and regulating-units

- Central gas supply for gas injection molding machines
- Test- and regulating-units for air and gases
- Complete lines for filling of airbag gas tanks



Gasinjektion im Formteil

Bei dieser Verfahrensvariante erfolgt die Gaseinleitung über einen Injektorbaustein im Werkzeug direkt ins Formteil. Hier kann die Gaseinleitungsstelle an einem beliebigen Platz am Formteil erfolgen.

- Die Formmasse wird zu 2/3 eingespritzt
- Stickstoff wird über den Injektorbaustein im Werkzeug eingeleitet
- Der Nachdruck wird über die Gashaltezeit gewährleistet
 - Nach Abschluß der Gashaltezeit wird die Rückentlastung des Stickstoffs aktiv

Gas Injection into form parts

During this process the gas injection is done by means of an injector direct into the part. The gas injection can be done at any place of the form part. The process works as follows:

- 2/3 of the plastic material has to be injected into the part
- Nitrogen is contributed to the form part by means of the injector
- Emphasized pressure is kept during the gas hold time
- After completion of the gas hold time the Nitrogen is released



Prüfstände und Druckerzeugungsanlagen

- Druck-, Berstdruck- und Impulsprüfungen
- Dichtheits- und Funktionsprüfungen
- Autofrettage

Test benches and pressure generating units

- Pressure-, burst pressure- and pulse pressure-tests
- Leakage- and functions-tests
- Autofrettage

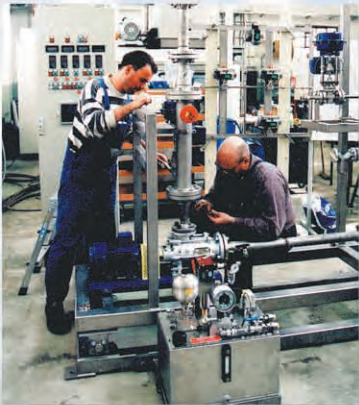


Komplettlösungen in der Hochdrucktechnik Complete solutions in high pressure technology



Planung & Entwicklung

**Construction &
Development**



Montage

Installation

Fertigung

Production



Inbetriebnahme

Function Test

Service • Service

MAXIMATOR-Mobilservice – Prüfung bei Ihnen vor Ort mit unseren Prüfgeräten

Der MAXIMATOR-Mobilservice steht vor Ort bei Ihnen zur Verfügung und bietet u.a. folgende Dienstleistungen an:

- Wartung der Verdichter und Regelmodule
- Druckerzeugung mit mobilen Aggregaten
- Meßmittelüberprüfung von Druckmeßgeräten
- Installation und Verlegen von Rohrleitungen und Ringleitungen

**MAXIMATOR Mobile Service –
Testing at customers site with our test equipment**

The MAXIMATOR Mobile Service is always at your site and offers following services:

- Maintenance of gas compressor units and regulating modules
- Pressure generating with mobile pump and booster equipment
- Testing and calibration of the measurement equipment
- Installation, fastening, testing and setting into operation of high pressure plumbing and circle pressure lines



HAZEMAG & EPR

Minerals Processing

GHH Fahrzeuge

Movers for minerals and planes

PERFORATOR

Drills • rotary – horizontal

mts PERFORATOR

Microtunnelling

MAXIMATOR

High Pressure • air and fluid

FEST • Dr. Ecklebe

Automation • machines and plants

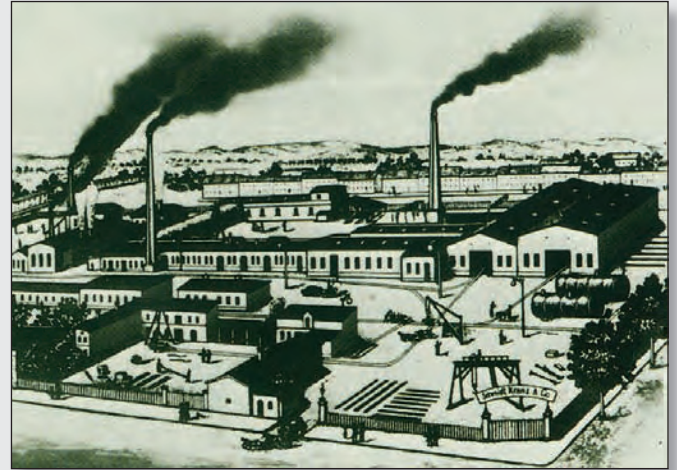


7-0051
7-1-0051





Dr. Hans-Caspar Glinz Dr. Mathias Glinz
owners of Schmidt, Kranz



Schmidt, Kranz & Co. 1890
Werk Nordhausen / Nordhausen Factory

Historie

1928 erwarb Prof. Dr. Karl Glinz die Firma Schmidt, Kranz & Co. GmbH von den Herren Schmidt und Kranz und behielt den Namen bei. Zu jener Zeit fertigte die SK Schachtförderanlagen für die Schächte der Kali + Salz Industrie, als auch Tunnelbohrmaschinen zum Auffahren von Strecken für Kunden in Deutschland und Russland.

Sein Sohn Dr. Hans-Karl Glinz führte die Firma viele Jahre und fügte neue Geschäftsfelder, sowie die Hochdruckhydraulik MAXIMATOR, hinzu.

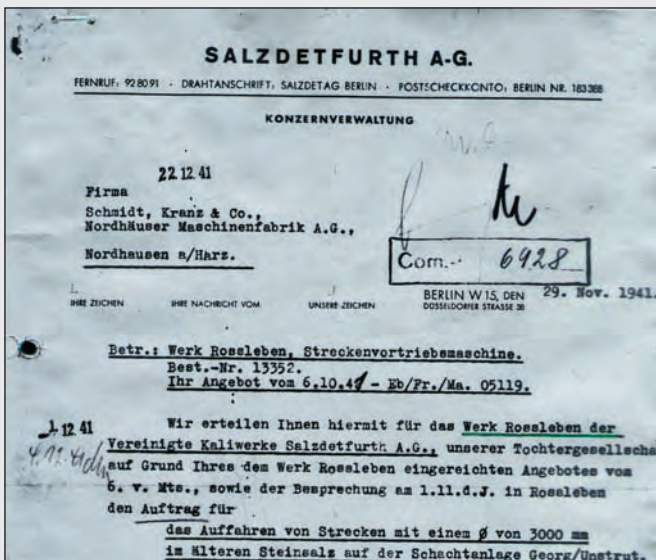
Heute leitet Dr. Hans-Caspar Glinz die SK-Holding. Die eigentlichen Abteilungen sind zu selbständigen Unternehmen gewachsen und weitere Firmen in angrenzenden Produktbereichen sind dazugekommen. Diese sind auf den folgenden Seiten dargestellt. Sprechen Sie die Firmen an.

History

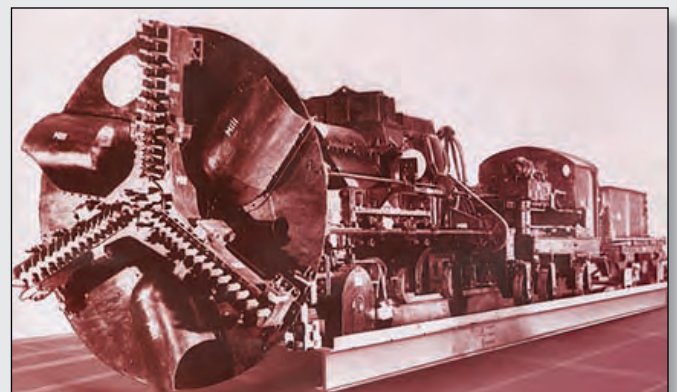
In 1928 Prof. Ing. Karl Glinz acquired Schmidt, Kranz & Co. GmbH from Mssrs. Schmidt and Kranz keeping the company's name. At that time SK produced shaft sinking equipment for the German and Russian salt industries, as well as tunnel boring machines working in underground mines and tunnels.

His son Dr. Hans-Karl developed the company adding new business lines like the MAXIMATOR high pressure hydraulic/pneumatics.

Today Dr. Hans-Caspar Glinz is heading the SK-Holding. The original SK departments have grown into independent companies and more fabrications have been added being related to the present product range. Those are shown on the following pages. Please contact them for more information.



Referenz / Reference 1941



Der eiserne Bergmann – automatische Abbaumaschine.
1903 eine technische Revolution.
The iron miner – automatic tunneling machine. A technical revolution in 1903.



HAZEMAG & EPR

Aufbereitungstechnik / Bergbau- & Bohrtechnik
Crushers / Loaders

Seiten 4 – 8

Pages 4 – 8



GHH FAHRZEUGE

LHDs, Muldenkipper,
Flugzeugschlepper
LHDs, Dumpers,
Aircraft Movers

Seiten 9 – 13

Pages 9 – 13



PERFORATOR®

Bohrtechnik & Bohrwerkzeuge
Drilling Systems & Tools

Seiten 14 – 17

Pages 14 – 17



Micro Tunnelling Systems

Seiten 18 – 19

Pages 18 – 19



MAXIMATOR®

Hochdrucktechnik
High Pressure Hydraulics

Seiten 20 – 23

Pages 20 – 23



Automation, Antriebe,
Schaltanlagen,
Industriemontage
Automation, Drives,
Switchgears, Industry
Assembly

Seiten 24 – 27

Pages 24 – 27



HOLDING

Übersicht
Seiten 28 – 29

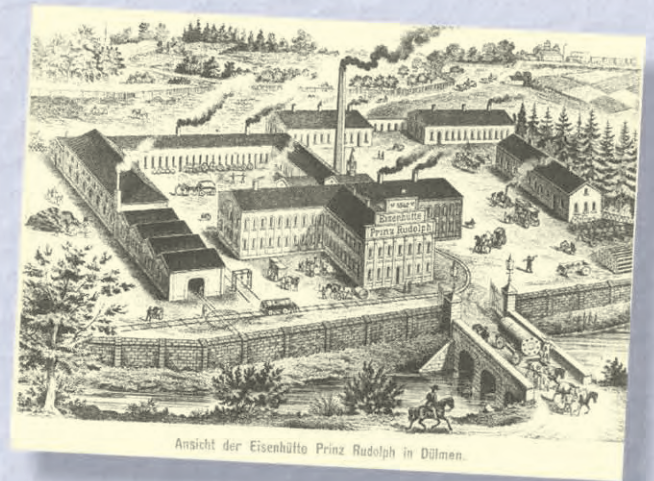
Overview
Pages 28 – 29

Standorte
Seiten 30 – 31

Locations
Pages 30 – 31



Werksansicht Dülmen • Factory View Dülmen



Ansicht der Eisenhütte Prinz Rudolph in Dülmen.

Historische Ansicht EPR 1842
Historical View EPR 1842

1946 gründete Dr. Andreas in Münster die Firma HAZEMAG als „**H**artzerkleinerungs- und **Z**ement**m**aschinenbaugesellschaft“. Auf der Basis seiner beiden Patente, dem Prallbrecher und dem Schnellrockner, entwickelte sich ein weltweit agierendes Unternehmen auf dem Gebiet der Rohstoffaufbereitung und des Recyclings.

Heute wird das Unternehmen unter dem Namen HAZEMAG & EPR GmbH in Dülmen geführt. Geschäftsführer Klaus Beer steht an der Spitze eines Teams hochqualifizierter Experten für Aufbereitungstechnik, Konstruktion und Projektmanagement.

In Münster in 1946, Dr. Andreas founded the company HAZEMAG – an acronym of „**H**artzerkleinerungs- und **Z**ement**m**aschinenbaugesellschaft“ (roughly „hard rock crushing and cement machine construction company“). On the strength of his impact crusher and rapid dryer patents, he developed an internationally operating company involved in all aspects of raw materials processing and recycling.

Today, the company bears the name HAZEMAG & EPR GmbH and is based in Dülmen. CEO Mr. Klaus Beer heads a team of highly-qualified and competent experts in the fields of process engineering, design and project management.



Vertriebsmannschaft der HAZEMAG
Sales Team of HAZEMAG



Klaus Beer – Geschäftsführer
Klaus Beer – Managing Director

**Kompetenz in der Aufbereitungstechnik
Competence in Processing Technology**

**Verfahrenstechnik
Zerkleinerung
Trocknung
Recycling
Technikum
Service**

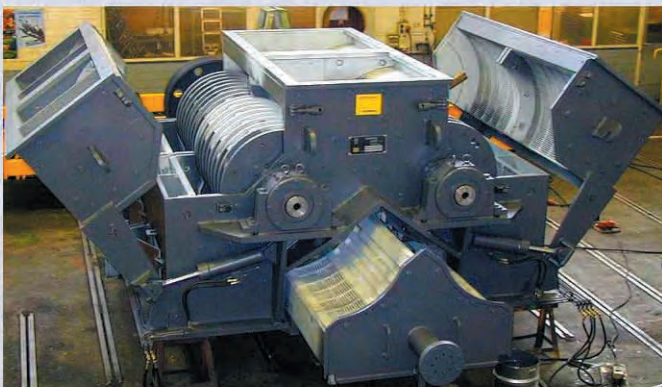
**Processing
Comminution
Drying
Recycling
Test Plant
Service**



**Brechanlagen
Crushing Plants**



**Recyclinganlagen
Recycling Plants**



**Hammermühlen
Hammer Mills**



**Trocknungsanlagen
Drying Plants**



Seitenkipplader TL 1500 • Side Tipping Loader TL 1500



Bohrwagen EBW 48 • Drill Jumbo EBW 48

Die **EPR** wurde im Jahre 1842 in Dülmen unter dem Namen **Eisenhütte Prinz Rudolph** gegründet. Später wurde die **EPR** Zweigniederlassung der Salzgitter-Maschinenbau GmbH (SMAG). Sie übernahm die **HAZEMAG** Aufbereitungstechnik, die Salzgitter-Teilschnittmaschinen sowie die **TURMAG**-Bohrtechnik. Danach erfolgte die Übernahme der **HAUS HERR** Lade- und Senktechnik.

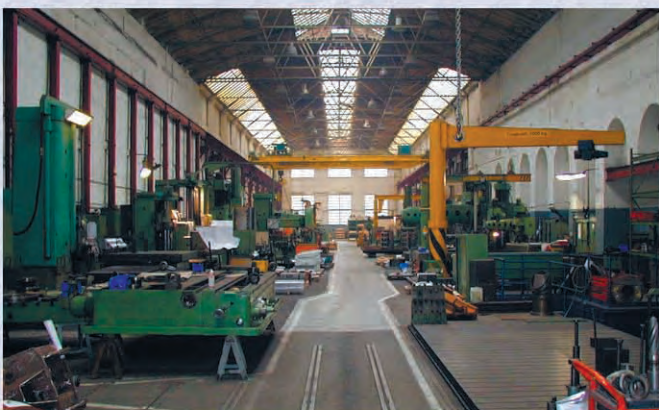
The **EPR** was founded in 1842 in Dülmen under the name of **Eisenhütte Prinz Rudolph**. Later on the **EPR** became a subsidiary of Salzgitter-Maschinenbau GmbH (SMAG). This company took over the **HAZEMAG** process engineering, the Salzgitter road heading machines, the **TURMAG**-drilling technology as well as the **HAUS HERR** loading and dinting technology.

Neugründung der **HAZEMAG & EPR** GmbH im Jahre 1999.

New foundation of **HAZEMAG & EPR** GmbH in 1999.

Die **HAZEMAG & EPR** steht weltweit für leistungsfähige und zuverlässige Maschinen für den Berg- und Tunnelbau.

The company **HAZEMAG & EPR** stands for efficient and reliable mining and tunnelling machines all over the world.

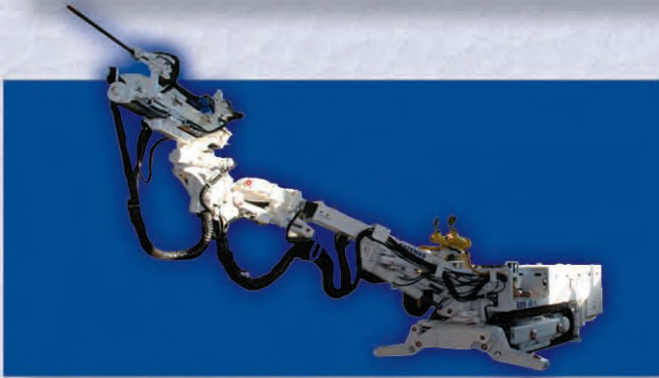


Fertigungsstraße Dülmen
Production Line Dülmen



Vertriebsmannschaft der EPR
Sales Team of EPR

**Unsere Kompetenz ist Ihr Profit
Our Competence For Your Profit**



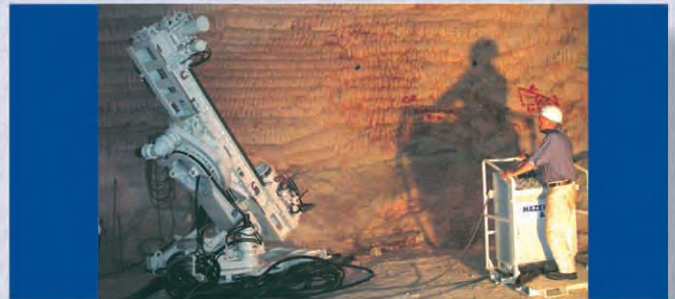
**Bohrwagen EBW 48-1
Drilling Jumbo EBW 48-1**



**EPR Schlagräder
EPR Beater Wheels**



**TURMAG Handdreh-Bohrmaschine
TURMAG Handheld Drilling Machine**



**Bohranlage EH 300-60 K im Einsatz auf dem Bergwerk Asse
Drilling machine EH 300-60 K be used at mine Asse**



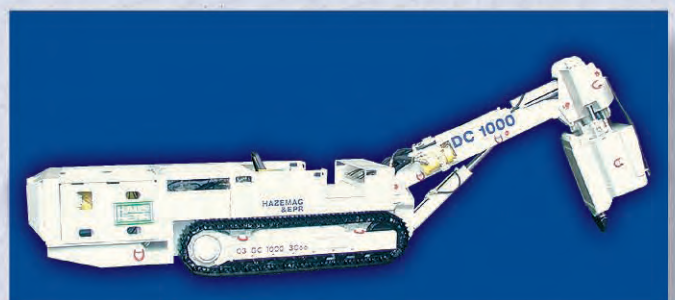
Teilschnitt Maschine • Road Heading Machine



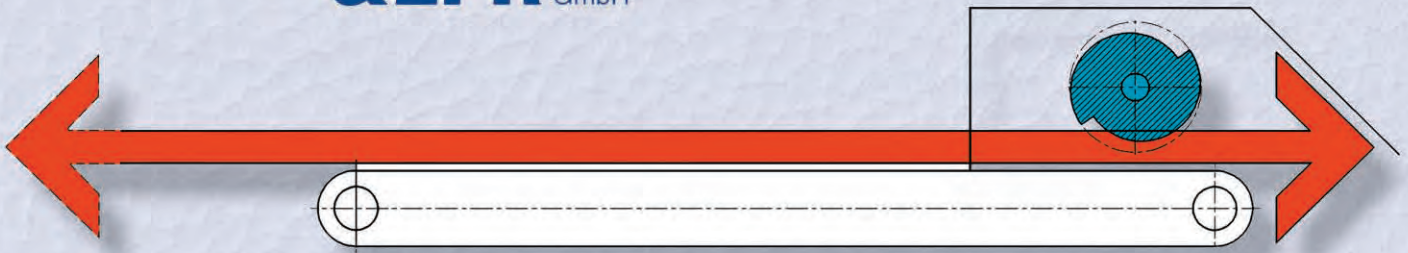
**SALZGITTER Seitenkipplader
SALZGITTER Side-Tipping Loader**



**SALZGITTER Senkmaschine
SALZGITTER Dinting Machine**



**HAUSHERR Senkmaschine
HAUSHERR Dinting Machine**



Seit dem 1. Oktober 2006 ist MinPro GmbH 100 %ige Tochter der HAZEMAG & EPR GmbH und Nachfolger der DBT Mineral Processing GmbH. Sie vereint heute das komplette Technologie-Know-how des seit mehr als 50 Jahren entwickelten Prinzips des Zerkleinerns im horizontalen Materialfluss.

Als Marktführer in diesem Technologiebereich liefert MinPro weltweit primäre Zerkleinerungstechnik wie SB-Schlagwalzen-, WB-Walzen- und BB-Backenbrecher sowie KF-Kettenförderer für Anwendungen in den Bereichen Kalkstein, Kohle, Salz, Recycling sowie Spezialanwendungen (Tunnel, Anoden, Schlacken, Petrolkoks u.a.).

On October 1st, 2006, MinPro GmbH became a wholly-owned subsidiary of HAZEMAG & EPR GmbH and successor to DBT Mineral Processing GmbH. Today, MinPro GmbH has at its disposal the full range of technical know-how gathered during 50 years' experience in the field of horizontal flow crushing.

As a market leader in this field, MinPro is a world-wide supplier of primary crushing equipment, such as SB Impact Roll Crushers, WB Roll crushers, BB Jaw Crushers and KF Chain conveyors for a wide range of applications which include Limestone, Pit Coal and Salt processing as well as Recycling and Tunnelling Projects, plus other special applications, such as Anode, Slag, and Petrol Coke processing, etc.



Horizontaler Backenbrecher • Horizontal Jaw Crusher



Walzenbrecher • Roll Crusher (Feeder Breaker)



Team Minpro



Tunnelbau • Tunnelling



GHH Fahrzeuge sind weltweit im Bergbau, im Tunnelbau und auf Flughäfen im Einsatz.

Der Name GHH stammt von der „Gutehoffnungshütte AG“, die die Spezialfahrzeuge für den Bergbau 1964 in ihr Produktprogramm aufnahm und 1987 um stangenlosen Flugzeugschlepper erweiterte. Der hohe Bekanntheitsgrad der durch ihre Qualität und Zuverlässigkeit überzeugenden Geräte ist der Grund für die Beibehaltung des Produktnamens nach der Übernahme des Fahrzeugprogramms durch die Schmidt, Kranz & Co GmbH Unternehmensgruppe 1999. Heute sorgt ein engagiertes Team von qualifizierten Fachleuten unter der Leitung von Günther Saelhoff für zukunftsweisende Entwicklung, moderne Fahrzeuge und reibungslosen Service der GHH Fahrzeuge.

In mining and tunneling as well as on airports, GHH Fahrzeuge are being utilized around the world. The trade name GHH originates from the former company „Gutehoffnungshütte“ (Good Hope Plant), who started to manufacture mining vehicle in 1964. Towbarless Aircraft Movers extended the program 1987.

The name recognition of GHH Fahrzeuge, due to their excellent quality and their proverbial reliability was the reason to keep the name, when the product line was taken over by Schmidt, Kranz & Co Group in 1999.

Today, a highly motivated team, led by Günther Saelhoff, copes with the challenge of state of the art development, manufacturing and after sales service of GHH Fahrzeuge.



Muldenkipper MK-A 30 • Dump Truck MK-A 30



Günther Saelhoff – Geschäftsführer • Managing director

Fahrlader und Muldenkipper

Für praktisch alle Anwendungen im Bergbau und im Tunnelbau bietet GHH Fahrzeuge seit 1964 maßgeschneiderte gleislose Transportlösungen an:

- Kompakte Fahrlader und Muldenkipper für den Metallerzbergbau und den Tunnelbau
- Flache Fahrlader für Kali- und Steinsalzbergbau für Platin-, Chrom-, und Kupferbergbau
- Sonderfahrzeuge und Elektrofahrzeuge für spezielle Anwendungen

Nutzlasten unserer Fahrzeuge:

- Fahrlader von 3 – 20 Tonnen
- Muldenkipper von 15 – 50 Tonnen

LHDs and Dump Trucks

Since 1964 GHH Fahrzeuge offers tailor made trackless transport solutions for all applications in tunnelling and mining:

- Compact LHDs and Dump Trucks with articulated steering for metal Mining and conventional drill & blast tunnelling
- Low profile LHDs for potash and salt mining as well as for platinum, chrome and copper mining
- Special vehicles and electric LHDs for special applications

Payload of our vehicles:

- Load Haul Dumper from 3 – 20 Ton
- Dump Trucks from 15 – 50 Ton



Flugzeugschlepper AM210 – Aircraft Tractor AM210



Flugzeugschlepper AM350 • Aircraft Tractor AM350

Stangenlose Flugzeugschlepper

Bereits 1987 begann GHH Fahrzeuge die Entwicklung des ersten stangenlosen Flugzeugschleppers, der kurz darauf bei der Deutschen Lufthansa erfolgreich in Betrieb ging. Seitdem wurden weitere stangenlose Flugzeugschleppermodelle entwickelt und weltweit an überzeugte Kunden geliefert. Alle Flugzeugmuster von Fokker F70 bis Airbus A380 können mit den stangenlosen Flugzeugschleppern der GHH Fahrzeuge sicher, schnell und wirtschaftlich bewegt werden. Durch den Wegfall der Schleppstange zwischen Flugzeugschlepper und Flugzeug werden hohe Schleppgeschwindigkeiten über weite Distanzen gefahren. Die hohe Wirtschaftlichkeit der stangenlosen Flugzeugschlepper wird auch durch die Flexibilität sowohl beim Push-Out als auch beim Schleppen erreicht.

Ihr Kontakt / your contact:

GHH Fahrzeuge GmbH
Tel.: +49 (0) 209 / 38 907-420
Fax: +49 (0) 209 / 38 907-429
E-Mail: info@ghh-fahrzeuge.de

Towbarless Aircraft Tractors

GHH Fahrzeuge developed the first towbarless tractors which were delivered to Deutsche Lufthansa 1987. Since this time further towbarless tractor models were launched and taken in operation at worldwide customers who are convinced about the quality and technical design. Aircraft ranging from Fokker F70 up to and including Airbus A380 can be handled safe, economic and flexible. The aircraft is connected to the tractor by means of a pick-up platform. Because of that no tow bar is needed and high speed as well as long distance towing is one of the advantages. By using the towbarless tractors for push-out and towing an enormous efficiency is reached which results in cost cuttings.

Modell – Model Flugzeuge / Aircraft

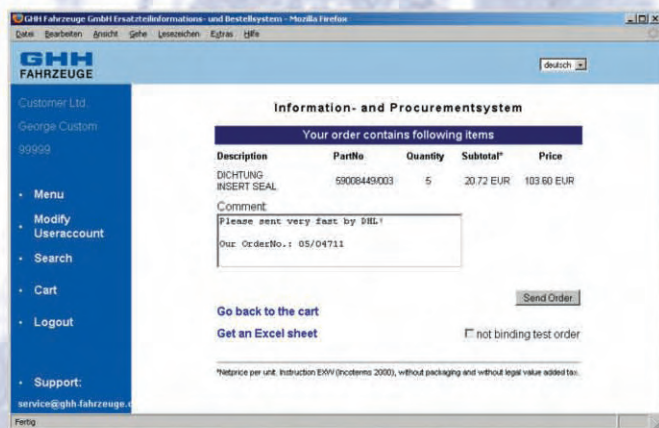
AM110	Fokker F70 – Boeing B757
AM210	Fokker F70 – Boeing B777
AM350	Boeing B737 – Airbus A340
AM500	Boeing B767 – Boeing B747
AM500XL	Boeing A300 – Airbus A380



Flugzeugschlepper AM110 • Aircraft Tractor AM110

GHH Fahrzeuge Service

Zur Betreuung unserer Kunden in allen Servicebelangen steht ein kompetentes und motiviertes Team im Innen- und Außendienst zur Verfügung. Weltweit verfügt die GHH Fahrzeuge über ein dicht gespanntes Vertreter-, Kooperationspartner- und Servicenetz.



ePartS – Onlinesystem

Die Serviceleistungen von GHH Fahrzeuge umfassen eine komplette Kundenbetreuung rund um Fahrzeuge und Ersatzteile, wie zum Beispiel:

- Wirtschaftlichkeits-/Leistungsberechnungen
- Ersatzteil – Bevorratungsvorschläge
- Technischer Support
- Montage von Neufahrzeugen und Inbetriebnahme beim Kunden
- Wartung und Instandhaltung bis hin zu Totalüberholungen
- Ersatzteilversorgung mit elektronischer Dokumentation (eDokS) und Online Bestellsystem (ePartS)
- Full Service Verträge mit 24 Stunden Erreichbarkeit an 7 Tagen die Woche

GHH Fahrzeuge Service:

- **kompetent, schnell, kundenorientiert!**
- **competent, quick, customer focussed!**

GHH Fahrzeuge Service

For the assistance of our customers in terms of all service related matters, GHH Fahrzeuge stays with a competent and motivated team with back office and field service available. Worldwide GHH Fahrzeuge disposes about a dense network of agency-, partner- and service – network.



The GHH Fahrzeuge service range includes a full support around vehicles and spare parts, for example:

- Economical and performance evaluations of vehicles
- Spare Parts Recommendations
- Technical Support
- Assembly and Start up at the customer's site
- Maintenance and repairs up to complete overhauls
- Spare parts Supply with electronic documentation (eDokS) and online ordering system (ePartS)
- Full Service Contracts with 24 hours availability on 7 days a week

Ihr Kontakt / your contact:

GHH Fahrzeuge GmbH, Service
Tel.: +49 (0)2 09 / 38 907-320
Fax: +49 (0)2 09 / 38 907-349
E-Mail: service@ghh-fahrzeuge.de



Ihr Kontakt / your contact:

GHH Mining Machines (Pty.) Ltd.
Mr. Raymond Tink, 2 Kirschner Road,
Anderbolt, Boksburg, South Africa
Tel.: +27 (0) 11 8 94-82 23/4
Fax: +27 (0) 11 8 94-82 26

GHH Mining Machines, Südafrika

GHH Mining Machines (Pty) Ltd. ist ein Joint Venture zwischen GHH Fahrzeuge GmbH und Mine Machines SA (Pty) Ltd. und hat ihren Sitz in Boksburg, Johannesburg.

Das Joint Venture vertreibt und betreut GHH Fahrzeuge Fahrlader und Muldenkipper im südlichen Afrika. Daneben vertritt GHH Mining Machines auch die Firmen Normet, Mine Master und Mine Machines Utility im südlichem Afrika.

Das Joint Venture bietet einen umfangreichen Service in der Region an. Dazu gehören auch Technische-, Fahrer- und Sicherheitsschulungen, die im Einklang mit den örtlich, gesetzlichen Bergwerksregeln durchgeführt werden.

Auch kundenspezifische Anpassungen und Modifikationen sowie Stahlbaureparaturen gehören zum Leistungsumfang der GHH Mining Machines.

GHH Mining Machine, South Africa

GHH Mining Machines (Pty) Ltd. is a joint venture company between GHH Fahrzeuge GmbH and Mine Machines SA (Pty) Ltd. The company is based in Boksburg, Johannesburg.

There are two branch offices, Lydenburg Branch situated in the north-eastern part of the country and Rustenburg Branch in the western region.

GHH Mining Machines distributes the GHH Fahrzeuge loader and dump truck products into the Southern African region. Besides this the company distributes the Normet, Mine Master, and Mine Machines Utility Vehicle products.

GHH Mining Machines offers a full product support service in the sub-region including technical and operator training, safety risk analysis in compliance with the Mines Health and Safety regulations, customer specific fitments and modifications, bucket maintenance and manufacture.



Einarmiger Bohrwagen • Single Boom Jumbo



Mine Master

Mine Master ist ein am Markt bekannter Bohrgerätehersteller (ex Boart Longyear Ltd.) mit einem umfassenden Programm für den Hartgesteinbergbau. Die neuen Eigentümer sind ein Polnisches Investment Konsortium und das aktuelle Management Team, sowie eine 30% Beteiligung der GHH Fahrzeuge GmbH.

Mine Master (die frühere Polnische Abteilung von Boart Longyear) hat in den letzten 13 Jahren den Bau, Vertrieb und Service für Unter Tage Bohrgeräte in Erz Minen und der Bauindustrie angeboten. Ihre Hauptprodukte sind ein komplettes Sortiment Jumbos (Face Master), Anker- Bohr und Setzgeräte (Roof Master) und Bohrgeräte zum Anbau an Bagger (Flexi Master).

Mine Master

Mine Master a well known Polish Mining Capital Equipment company, (ex Boart Longyear Sp.z o.o.) produces a extensive program for hardrock mining. The new owners consist of a Polish investment consortium, which includes the current management team plus a 30% acquisition from the German GHH Fahrzeuge GmbH.

Mine Master (formerly Boart Longyear Polish operating division) has for the last 13 years manufacture, distributed and serviced mining capital equipment for the underground metal mining and construction industries. Its principal products are a full range of drilling jumbos (Face Masters) roof bolting machines (Roof Masters) and excavator drilling attachments (Flexi Masters). The product applications are applied to a variety of mining environments, as well as to the construction and tunneling industries.



Ankerwagen • Roof Bolter

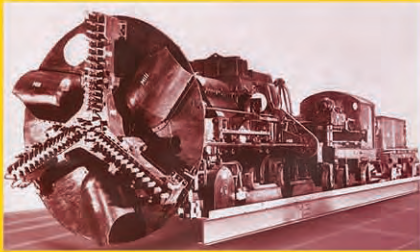
Ihr Kontakt / your contact:

Mine Master Sp.z.o.o.
 Tel.: +48 (0)76 / 8783 – 511
 Fax: +48 (0)76 / 8784 – 101
 E-Mail: info@minemaster.eu



Montierbarer Bohrwarm für Hydraulikbagger
 Single Boom for excavators excavators

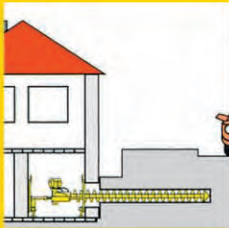
PERFORATOR®



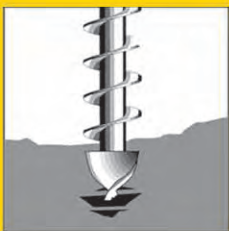
Der eiserne Bergmann – automatische Abbaumaschine. 1903 eine technische Revolution.
The iron miner – automatic tunneling machine.
A technical revolution in 1903.



PERFORATOR®
DRILL PIPE



PERFORATOR®
NO-DIG



BERGBAUTECHNIK
MINING EQUIPMENT



TRÄNKEN, KUNSTHARZ-
UND ZEMENTVERPRESSEN
WATER & RESIN INJECTION,
GROUTING



PERFORATOR Konstruktion und Verkauf • PERFORATOR sales and engineering team



Prof. Karl Glinz



Wolfgang Schmidt

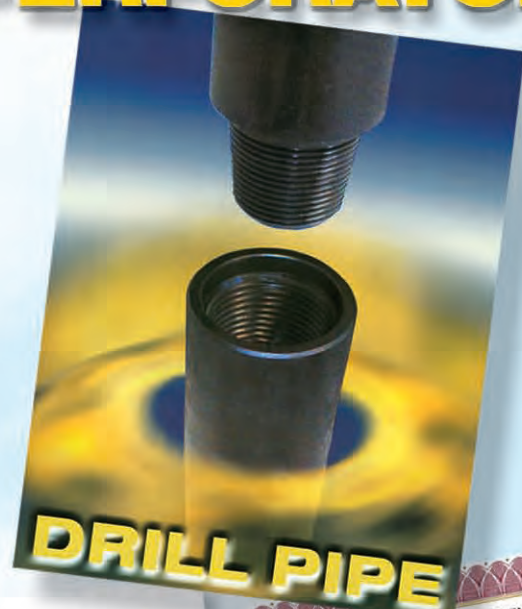
Seit 2002 führt die PERFORATOR GmbH in Walkenried als eigenständiges Unternehmen das traditionelle Kerngeschäft der Schmidt, Kranz weiter und wird von Wolfgang Schmidt als Geschäftsführer geleitet.

In 2002 the PERFORATOR GmbH in Walkenried was transformed into an independent company and since then we have been continuing the traditional core business of the former Schmidt, Kranz under the management of Mr. Wolfgang Schmidt as CEO.



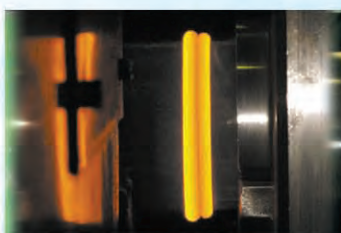
Ölfeldbohrrohre

- Zulassung nach API
- Zertifiziert nach DIN EN ISO 9001
- Rohrmaterial E, X, G + S
- Verbindermaterial SAE 4145
- Abmessungen bis Rohr-Durchmesser 5" und Verbinder API 5 1/2 IF
- Auftragen von Verschleißschichten gem. ARNCO
- Zerstörungsfreie Prüfung
 - Röntgentest gem. DIN EN 1435/a
 - Ultraschalltest nach DIN EN 1712/1713
 - MPI-Prüfung nach DIN EN 1290
- Zerstörungsprüfung
 - Zugprobe gem. DIN 50125
 - Biegeprobe gem. API spec 7
 - Kerbschlagprobe gem. DIN 50115



Pipes for oil field drilling

- API spec 7 approved
- DIN EN ISO 9001 approved
- Mother pipe in grade E, X, G + S
- Tool joint material SAE 4145
- Dimensions up to 5" pipe and API 5 1/2 IF tool joint
- Hard facing acc. ARNCO
- Non-destructive testing
 - Irradiation test acc. DIN EN 1435/a
 - Ultrasonic test acc. DIN EN 1712/1713
 - Magnetic powder test acc. DIN EN 1290
- Destructive testing
 - Tensile test acc. DIN 50125
 - Bending test acc. API spec 7
 - notched bar impact test acc. DIN 50115



1. Reibschweissung
Friction Welding



2. Wärmebehandlung
Heat Treatment



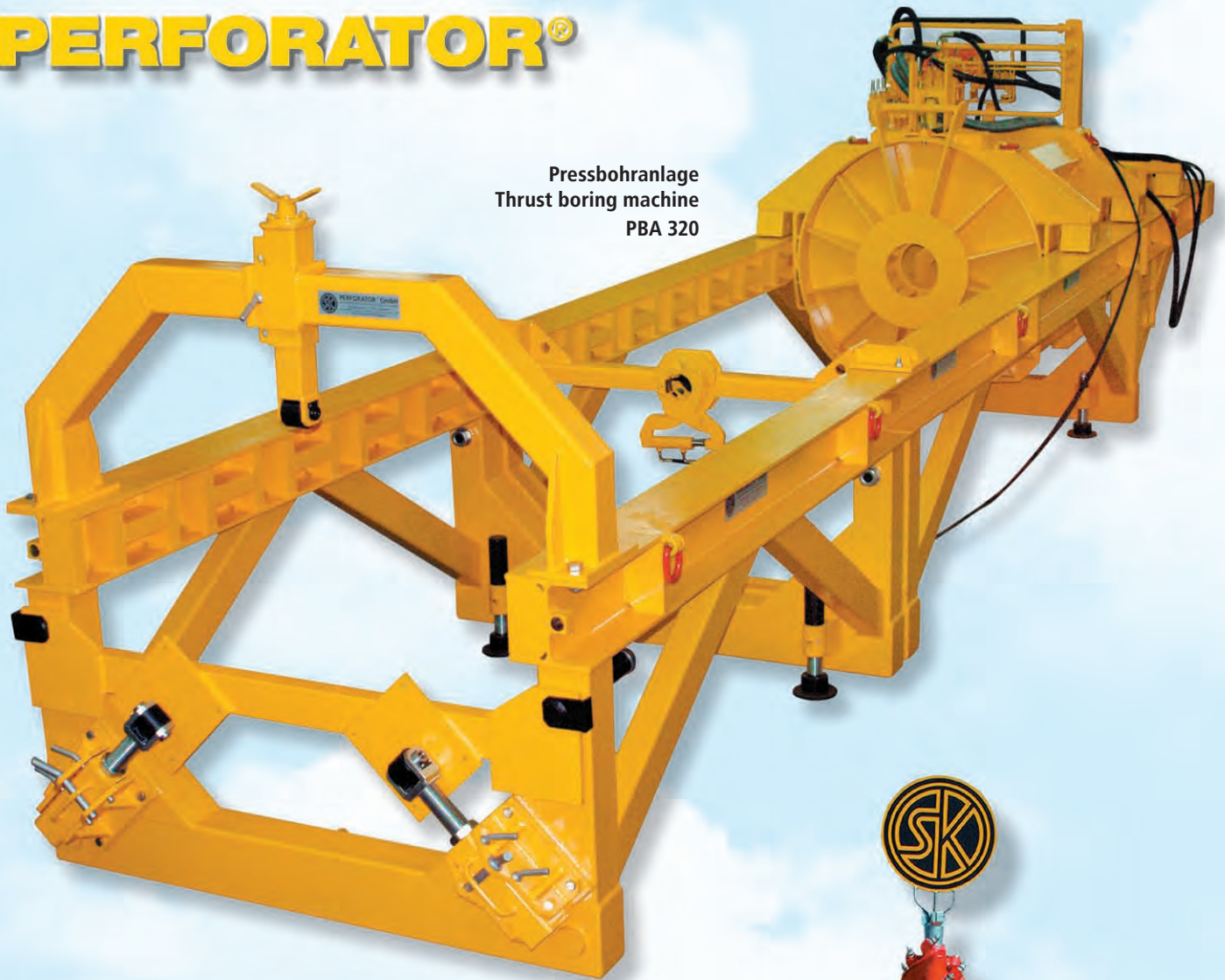
3. Auftragsschweissung
Hard Banding



4. Verpackung
Packing

PERFORATOR®

Pressbohranlage
Thrust boring machine
PBA 320

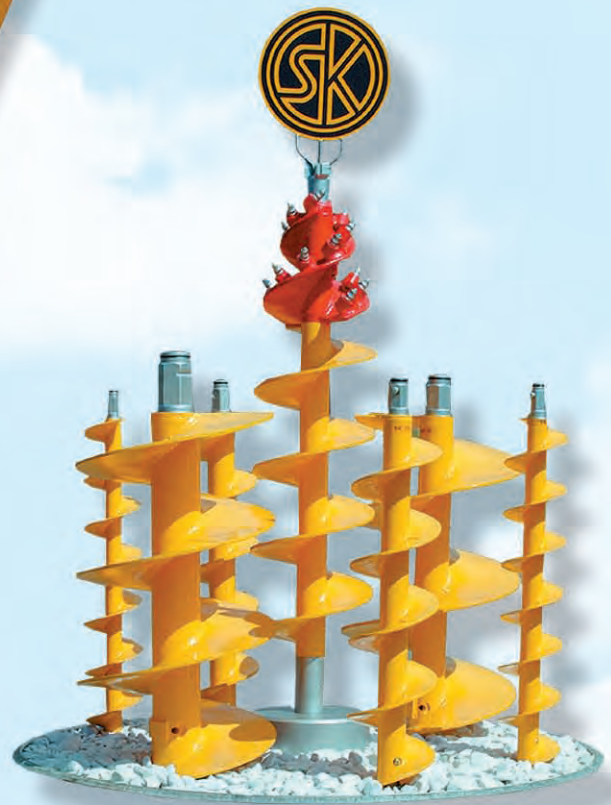


Pressbohrgeräte...

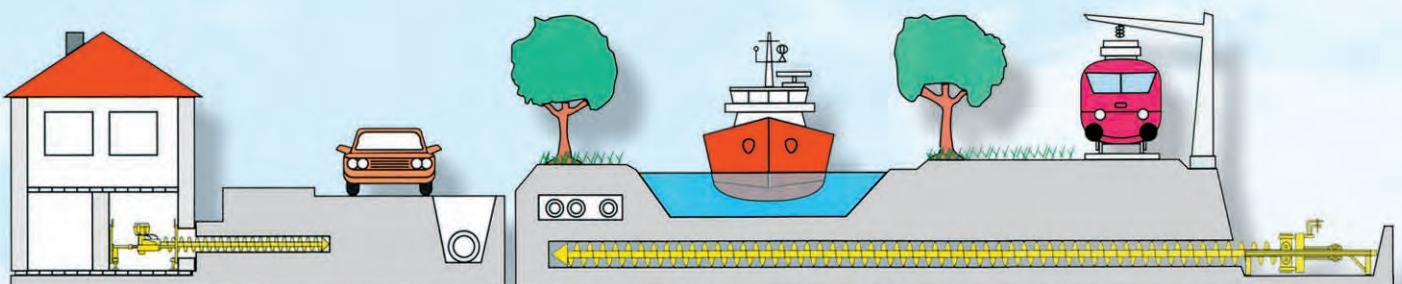
... für das Bohren von unterirdischen Ver- und Entsorgungsleitungen (Hausanschlüsse) und dort, wo das Ziehen von Gräben Verkehr und Versorgung unterbricht und Umweltschäden auf ein Minimum reduziert werden müssen.

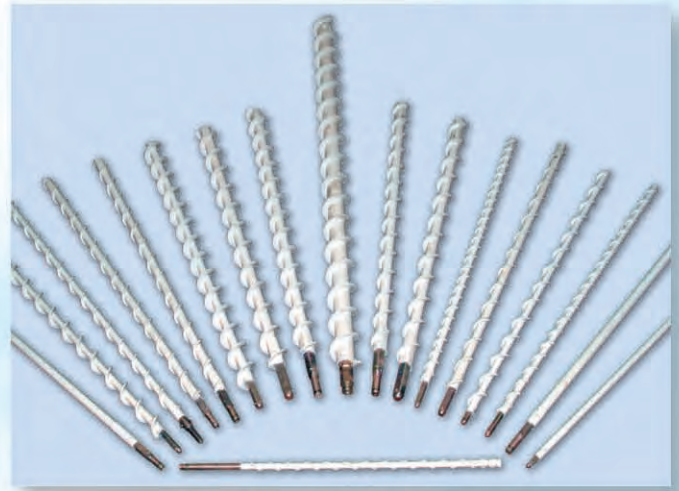
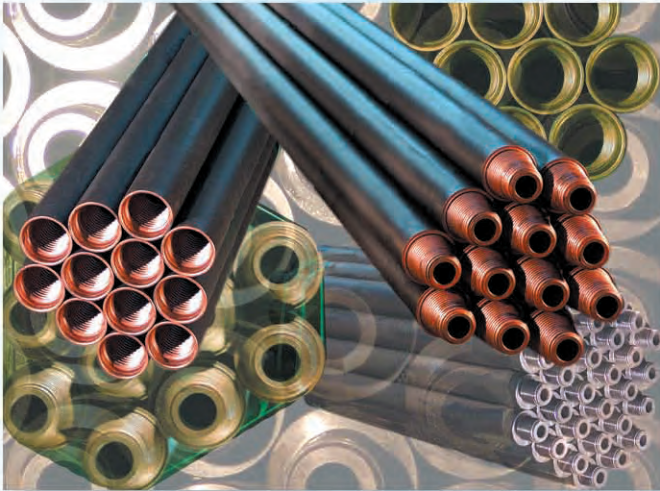
Thrust Boring Machines...

... are designed for auger drilling with simultaneous pipe jacking to facilitate construction of underground pipeline projects where open cutting would result in a disruption of traffic and services, and also in cases where damage to the local environment must be minimized.



Förderschnecken / Augers





Bohrzubehör

- Gesteins-Drehbohr-gestänge
- Schnecken-Bohrstangen
- Großloch-Bohrgestänge
- Schwerstangen
- Stabilisatoren
- mit und ohne Spülmöglichkeit
- geschützte Verbindungen der Schnecken

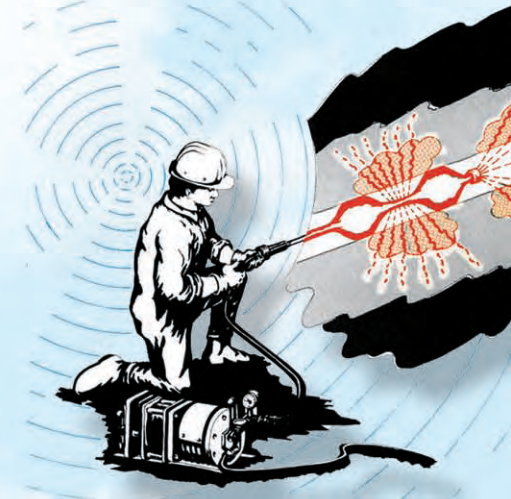
Tools

- Rotary drill rods
- Augers
- Large diameter drill rods
- Exploration drill rods
- Drill collars
- Stabilizers
- With and without flushing
- Patent protected connectors of augers

Injektionstechnik für Berg- und Tunnelbau

Injections Technique for mining and tunnel construction

- Abdichten von Wasser und Feuchtigkeit
- Stabilisieren von Gestein
- Verfüllen von Hohlräumen mit Harz oder Zement
- sealing against water / leakage
- stabilising of stone
- fill hollow areas with resin or cement



Wir liefern die ganze Kette von: / We supply the whole chain of:

Injektionspumpen, Schläuche, Verschraubungen, Behälter sowie Bohrlochverschlüsse und Packer.

Injection pumps, hoses, fitting, reservoirs as well as bore hole seals and packers.



entspannter Bohrlochverschluss
deflated borehole seal



aufgeblähter Bohrlochverschluss
inflated borehole seal





Werksansicht / factory view Valluhn



Gilbert Kimpel – Geschäftsführer / managing direktor

Historie

Gilbert Kimpel

- Geschäftsführer und Anteilseigner
- seit 22 Jahren als Bauingenieur tätig
- studierter Bauingenieur
- leitet die mts Perforator GmbH seit 2004

mts Perforator entwickelt, baut und betreut Microtunnelling-Systeme von einfachen Schneckenförderanlagen für Rohrleitungen ab DN 250 mm bis zu Spülförderanlagen mit 4000 mm Durchmesser.

mts Perforator kann dabei auf ein erfahrenes Team von Konstrukteuren, Elektro- und Systemtechnikern zurückgreifen, unter dessen Verantwortung bereits zahlreiche Systeme gebaut und unzählige Kilometer Microtunnelling betreut wurden.

History

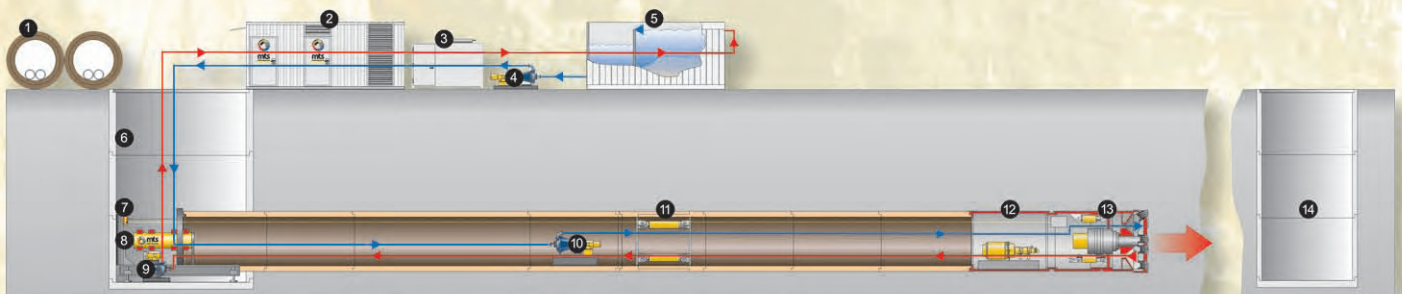
Mr. Gilbert Kimpel

- President and Share Holder
- since 22 years in construction and micro tunnelling
- educated in construction engineering
- runs mts Perforator GmbH since 2004

mts Perforator designs, manufactures and services microtunnelling systems extending from simple auger systems ranging from ID 250 mm to slurry systems with diameters of 4000 mm.

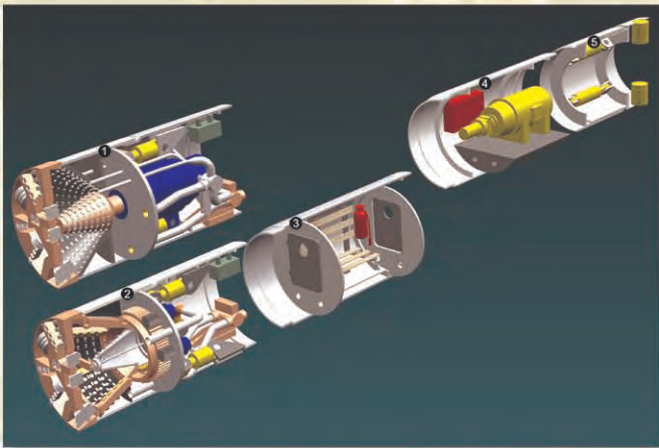
This is made possible by a team of highly skilled engineers, designers, electricians and technicians with experience in countless microtunnelling systems and projects worldwide.

Baustellenübersicht / Construction site overview



- 1 Vorbereitete Produktrohre / Prepared product pipes
- 2 Vortriebscontainer / Jacking Container
- 3 Generator / Generator
- 4 Speisepumpe / Charge pump
- 5 Absetzbecken / Separation tank
- 6 Startschacht / Jacking shaft
- 7 Laser / Laser

- 8 Pressstation / Jacking rig
- 9 Förderpumpe / Discharge pump
- 10 Zusatzpumpe / Booster pump
- 11 Zwischenpressstation / Intermediate jacking station
- 12 Nachläufer / Trailer
- 13 Bohrkopf / Cutter head
- 14 Zielschacht / Target shaft



Modularer Aufbau der mts Bohrköpfe Modular design of mts cutter heads

- 1 Bohrkopf mit zentralem Antrieb / Cutter head with central drive
- 2 Bohrkopf mit peripheren Antrieb / Cutter head with peripheral drive
- 3 Druckschleuse / Air lock
- 4 Nachläufer mit Aggregat / Trailer with power pack
- 5 Dehner mit Gripper / Intermediate jacking rig with gripper



Durchbruch in Kuala Lumpur, Malaysia / Breakthrough in Kuala Lumpur, Malaysia



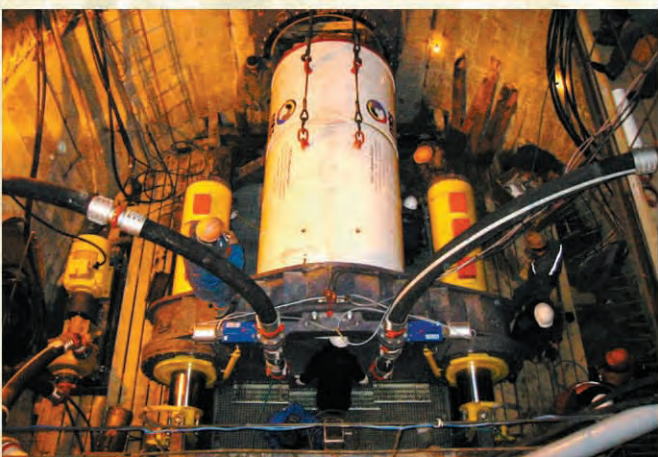
Baustelle in Hongkong, China / Jobsite in Hong Kong, China



Baustelle in Seattle, USA / Jobsite in Seattle, USA



Bohrkopf in Pressstation, Seattle, USA / Cutter head in jacking rig, Seattle, USA



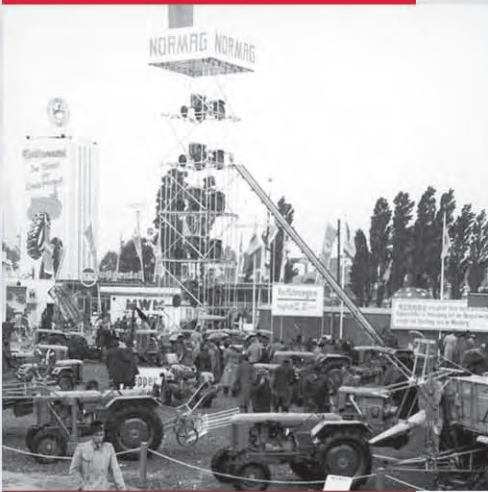
Baustelle in Moskau, Russland / Jobsite in Moscow, Russia



Bergung Bohrkopf aus Zielschacht, Abu Dhabi, VAE / Recovery of cutter head, Abu Dhabi, UAE

MAXIMATOR®

HOCHDRUCKTECHNIK • HYDRAULIK • PNEUMATIK • PRÜFTECHNIK



1. Industriemesse Hannover 1949
1. Exhibition Hannover 1949



Vertriebsteam der MAXIMATOR GmbH • Salesteam MAXIMATOR GmbH



Gründer Dr. Hans-Karl Glinz
Founder Dr. Hans-Karl Glinz



Geschäftsführer Henning Willig
CEO Henning Willig

Dr. Hans-Karl Glinz, Sohn von Professor Karl Glinz, begann mit dem Bau von Traktoren. Später – Anfang der 60er Jahre – entwickelte er die Hochdruckhydraulik. Heute leitet Henning Willig als Geschäftsführer die MAXIMATOR GmbH mit den Werken Zorge und Nordhausen. Henning Willig, 1959 geboren, sorgt für die internationale Ausrichtung der Firma.

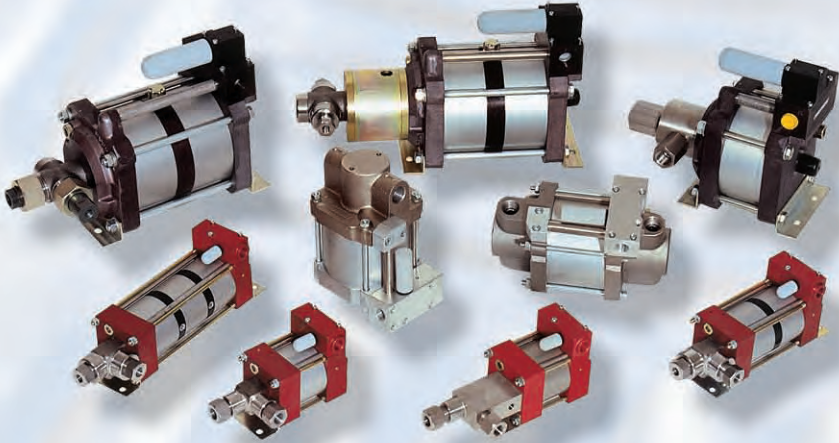
Dr. Hans-Karl Glinz, son of Professor Karl Glinz, started with Tractors and moved to High Pressure Hydraulics in the early sixties of the 20th Century. Today Henning Willig runs as CEO of MAXIMATOR GmbH with the factories in Zorge and Nordhausen. Henning Willig, born 1959, supports the global development of the company.



Zertifiziert nach
DIN EN ISO 9001:2000
DIN EN ISO 9001:2000
certified quality

Komponenten • Components

- Druckerhöhung von Flüssigkeiten und Gasen
- Pressure intensification of liquids and gases



Druckluftbetriebene Flüssigkeitspumpen

Betriebsdrücke bis 5500 bar

Air driven liquid pumps

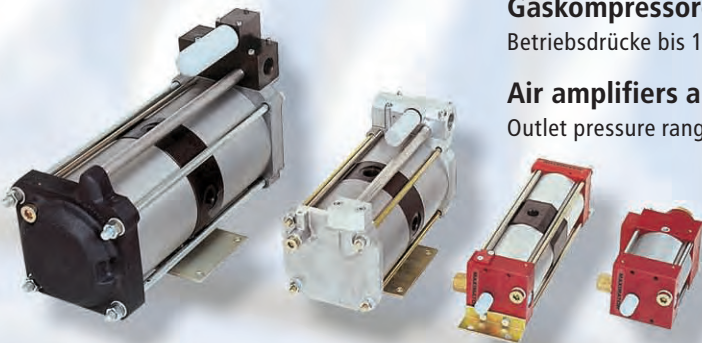
Outlet pressure ranges up to 5500 bar

Druckluftherhöher und Gaskompressoren

Betriebsdrücke bis 1500 bar

Air amplifiers and gas boosters

Outlet pressure ranges up to 1500 bar



Druckerhöhungs- und Kompressorstationen

- Punktuelle Druckerhöhung von Werksdruckluft
- Umfüllen von Flaschen
- Aufladen von Speichern

Amplifier- and gas booster-station

- Direct pressure increase for a single application
- Filling of gas cylinders
- Charging of accumulators



Systeme • Systems

Hydraulikaggregate für Öl, Wasser und andere Medien

- Werkzeughydraulik
- Spannhydraulik
- Wasserhydraulik

Hydraulic units for oil, water and other liquids

- Tool hydraulics
- Clamping hydraulics
- Water hydraulics



MAXIMATOR Ventile – Fittings – Rohre

- Absperrventile bis 10.500 bar
- Adapter
- H2S (Sauer gas)-Anwendungen
- Werkzeuge
- Druckerzeuger
- Hochdruckrohre bis 10.500 bar
- Kolbenabsperrventile
- Kugelventile
- Zubehör

MAXIMATOR Valves – Fittings – Tubing

- Shut-off-Valves up to 152.000 psi
- Tubing up to 152.000 psi
- Adapters
- Piston Type Air Actuators
- H2S (Sour gas)-Applications
- Ball Valves
- Tooling
- Accessories
- Pressure Generators



MAXIMATOR verfügt über ein komplettes Hochdruckprogramm – Made in Germany.
MAXIMATOR offers a complete program of high pressure components – Made in Germany.

MAXIMATOR®

Verdichter-, Prüf- und Regelanlagen

- Zentralversorgung für Gasinnendruckanlagen
- Test- und Regeleinheiten für Druckluft und Gase
- Komplettanlagen für das Befüllen von Airbag-Gasbehältern

Compressor-, test- and regulating-units

- Central gas supply for gas injection molding machines
- Test- and regulating-units for air and gases
- Complete lines for filling of airbag gas tanks



Gasinjektion im Formteil

Bei dieser Verfahrensvariante erfolgt die Gaseinleitung über einen Injektorbaustein im Werkzeug direkt ins Formteil. Hier kann die Gaseinleitungsstelle an einem beliebigen Platz am Formteil erfolgen.

- Die Formmasse wird zu 2/3 eingespritzt
- Stickstoff wird über den Injektorbaustein im Werkzeug eingeleitet
- Der Nachdruck wird über die Gashaltezeit gewährleistet
 - Nach Abschluß der Gashaltezeit wird die Rückentlastung des Stickstoffs aktiv

Gas Injection into form parts

During this process the gas injection is done by means of an injector direct into the part. The gas injection can be done at any place of the form part. The process works as follows:

- 2/3 of the plastic material has to be injected into the part
- Nitrogen is contributed to the form part by means of the injector
- Emphasized pressure is kept during the gas hold time
- After completion of the gas hold time the Nitrogen is released



Prüfstände und Druckerzeugungsanlagen

- Druck-, Berstdruck- und Impulsprüfungen
- Dichtheits- und Funktionsprüfungen
- Autofrettage

Test benches and pressure generating units

- Pressure-, burst pressure- and pulse pressure-tests
- Leakage- and functions-tests
- Autofrettage

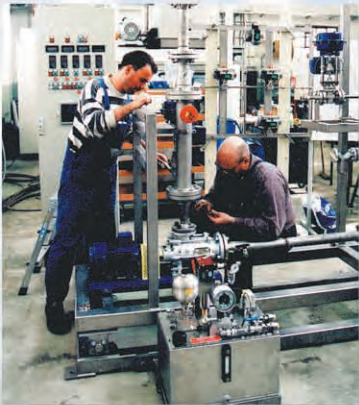


Komplettlösungen in der Hochdrucktechnik Complete solutions in high pressure technology



Planung & Entwicklung

**Construction &
Development**



Montage

Installation

Fertigung

Production



Inbetriebnahme

Function Test

Service • Service

MAXIMATOR-Mobilservice – Prüfung bei Ihnen vor Ort mit unseren Prüfgeräten

Der MAXIMATOR-Mobilservice steht vor Ort bei Ihnen zur Verfügung und bietet u.a. folgende Dienstleistungen an:

- Wartung der Verdichter und Regelmodule
- Druckerzeugung mit mobilen Aggregaten
- Meßmittelüberprüfung von Druckmeßgeräten
- Installation und Verlegen von Rohrleitungen und Ringleitungen

MAXIMATOR Mobile Service – Testing at customers site with our test equipment

The MAXIMATOR Mobile Service is always at your site and offers following services:

- Maintenance of gas compressor units and regulating modules
- Pressure generating with mobile pump and booster equipment
- Testing and calibration of the measurement equipment
- Installation, fastening, testing and setting into operation of high pressure plumbing and circle pressure lines





Werksansicht Goslar • Factory View Goslar



Werksansicht Dr. Ecklebe • Factory View Dr. Ecklebe

Historie

1972 gründete Diplomingenieur Peter Fest die „Fest Elektrotechnik“ als Fachbetrieb der Elektro- und Automatisierungstechnik.

Unter der Leitung von Dipl.-Ing. Helmut Kämmerer wurde speziell die Softwarekompetenz für die Steuerung und Regelung komplexer Produktionsabläufe ausgebaut. Darauf aufbauend gelingt der Schritt zu einem Partner der Großindustrie, wobei sich die Fest AG um die Software, Steuerung, Automatisierung von Großanlagen kümmert und somit in den Großanlagenbau vorstößt. Damit wurde eine Nähe zum Kunden notwendig und eine Zweigniederlassung in Wien, in Berlin und die Tochtergesellschaft Dr. Ecklebe GmbH wurde gegründet.

2001 übernahm die Schmidt, Kranz-Gruppe mehrheitlich die Aktiengesellschaft und beteiligte Mitarbeiter am Kapital der Firma.

Vorsitzender des Vorstandes ist Dr. Peter Ecklebe, promovierter Diplom-Ingenieur für Elektrotechnik.

Inzwischen hat die Fest-Gruppe über 125 Mitarbeiter und genießt als Errichter komplexer Anlagen der Antriebs- und Automatisierungstechnik bei Kunden in aller Welt hohes Ansehen.



Vertriebsteam / Marketingteam: Thomas Leopold, Hans-Klaus Schmidt, Jörg Pfeiffer, Michael Paetzel

History

In 1972 graduated engineer Peter Fest founded the „Fest Elektrotechnik“ as a specialised company of Electrical engineering and automation technology.

Under the direction of diplom engineer Helmut Kaemmerer especially the software competence was developed for the control and regulation of complicated production processes. Building on those capabilities, the relationship with large-scale industry partners were set into force. In this relationship, Fest AG is responsible for software, regulation and automation of large-scale plant and thereby forges ahead into the domain of large-scale industry. With this step a certain proximity to the client became necessary and a branch office in Vienna, in Berlin and the subsidiary Dr. Ecklebe GmbH were established.

In 2001 the Schmidt, Kranz group took over the stock corporation by the majority. The minority shares were past to the employees.

Managing director of the executive board is Dr. Peter Ecklebe, graduated PhD engineer for Electro technical engineering.

In the meantime, the Fest group has more than 125 employees and enjoys a high reputation as supplier of complex plants of drive and automation technology with customers all over the world.



**Vorstand / Managing Director Dr. Peter Ecklebe
Projektierungsleiter / Head of Project Department
Dipl.-Ing. Immo Spengler**

Fest AG – Der Komplettlieferant für Automation und Antriebstechnik

Elektrotechnischer Anlagenbau für Großmaschinen und verkettete Produktionsanlagen

Wir haben die Erfahrung zur:

- Errichtung von Neuanlagen
- Modernisierung von Altanlagen
 - Austausch von Antriebsystemen und Steuerungseinheiten.
- Optimierung kompletter Produktionsprozesse
 - Erhöhung der Produktionsmenge
 - Verbesserung der Betriebsicherheit
 - Lösung von regelungstechnischen Problemen

Die Fest AG ist Ihr Partner für Projekte jeder Größenordnung, auch als Generalunternehmer für die gesamte Aufgabenstellung.

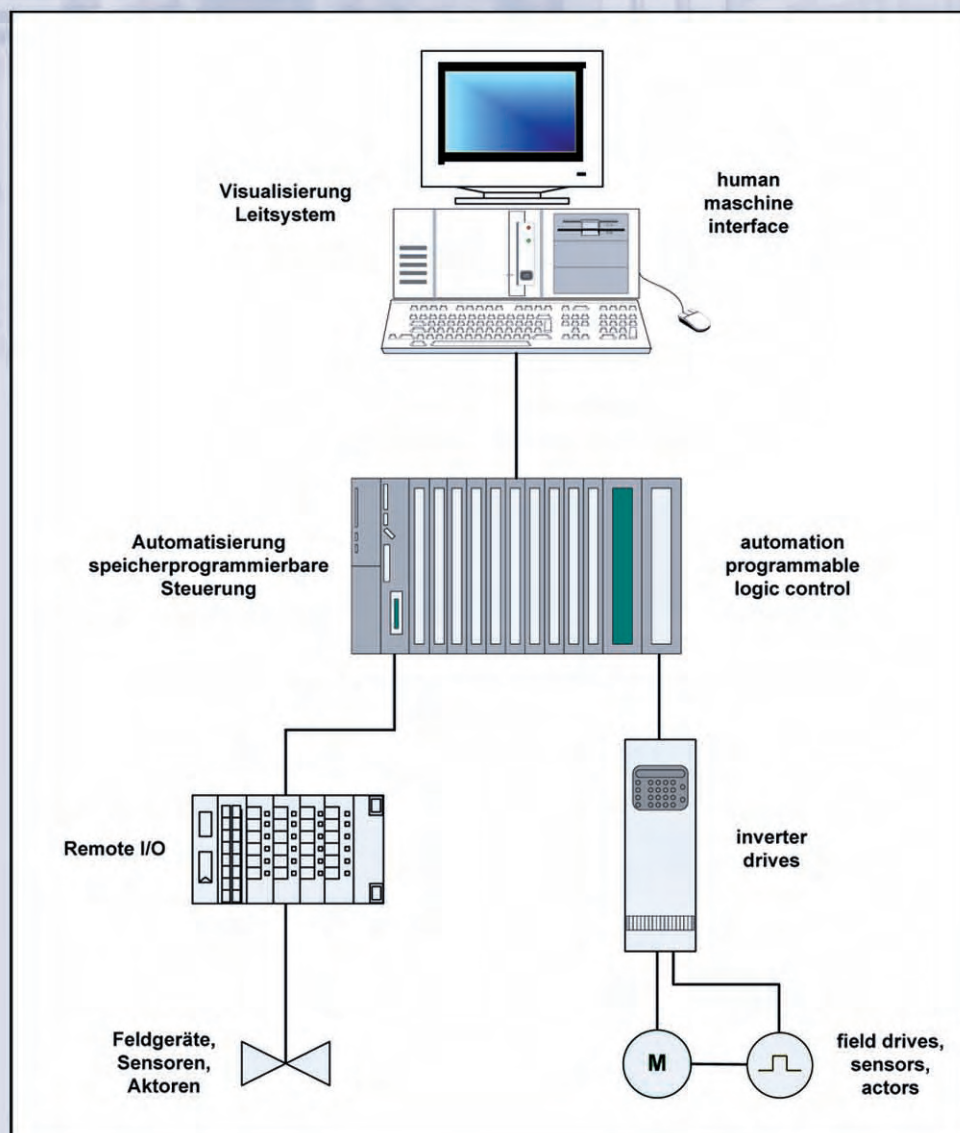
Fest AG – The complete supplier for automation and drive technology

Electronic plant engineering for large-scale machines and interlinked manufacturing plants

We have the know-how for:

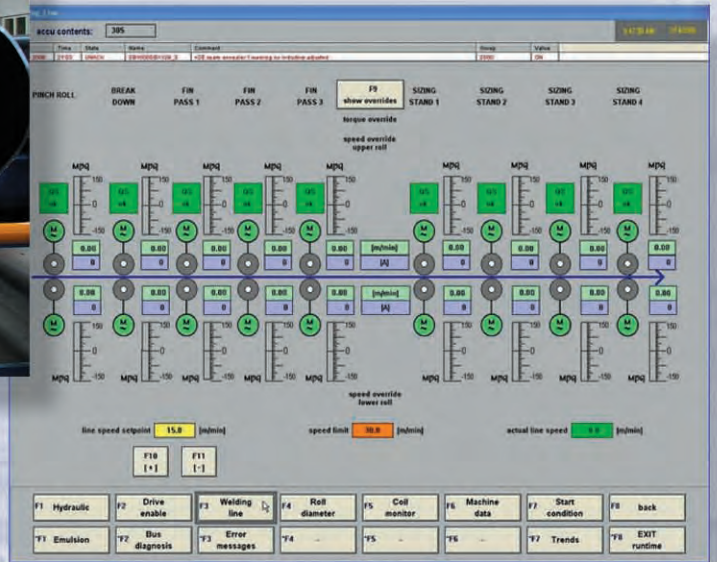
- Construction of new plants
- Modernisation of old plants
 - replacement of drive systems and control units
- Improvement of complete manufacturing processes
 - increase of production output
 - improvement of plant safety
 - solution of control technical problems

The Fest AG is your partner for projects in any size even as general contractor for the whole job.





Rohrschweißanlage 24"



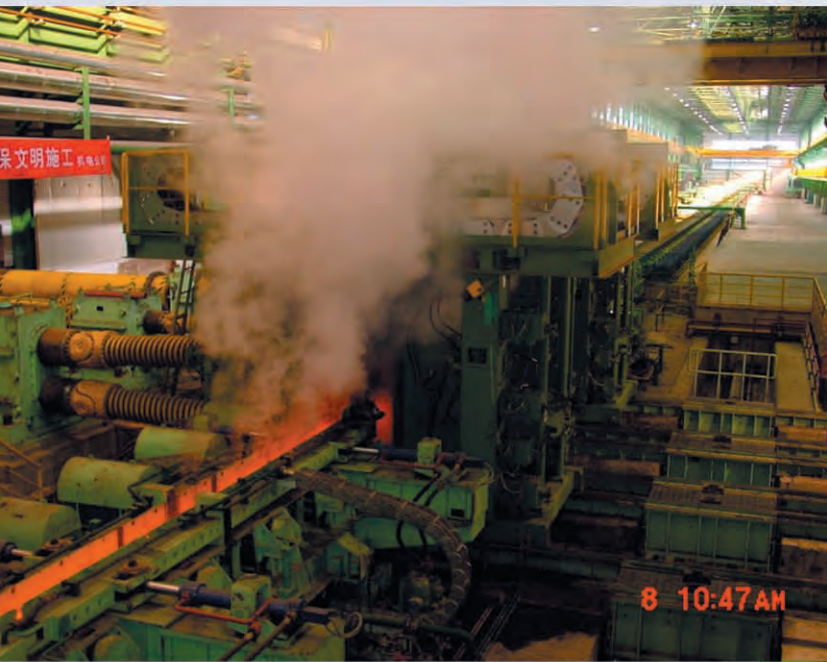
Leit- und Produktionsplanungssystem



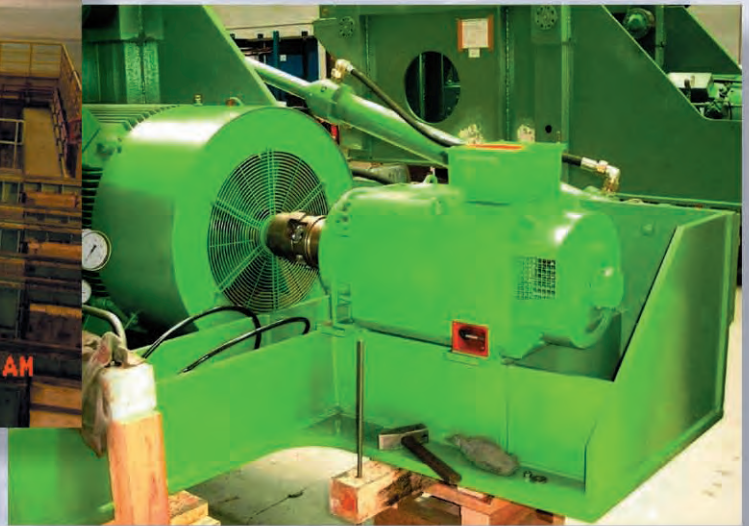
Vliesproduktion



Steuerungs- und Regelungssysteme



Profilwalzstraße





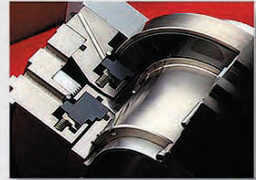









Antriebstechnik für AC- und DC-Antriebe



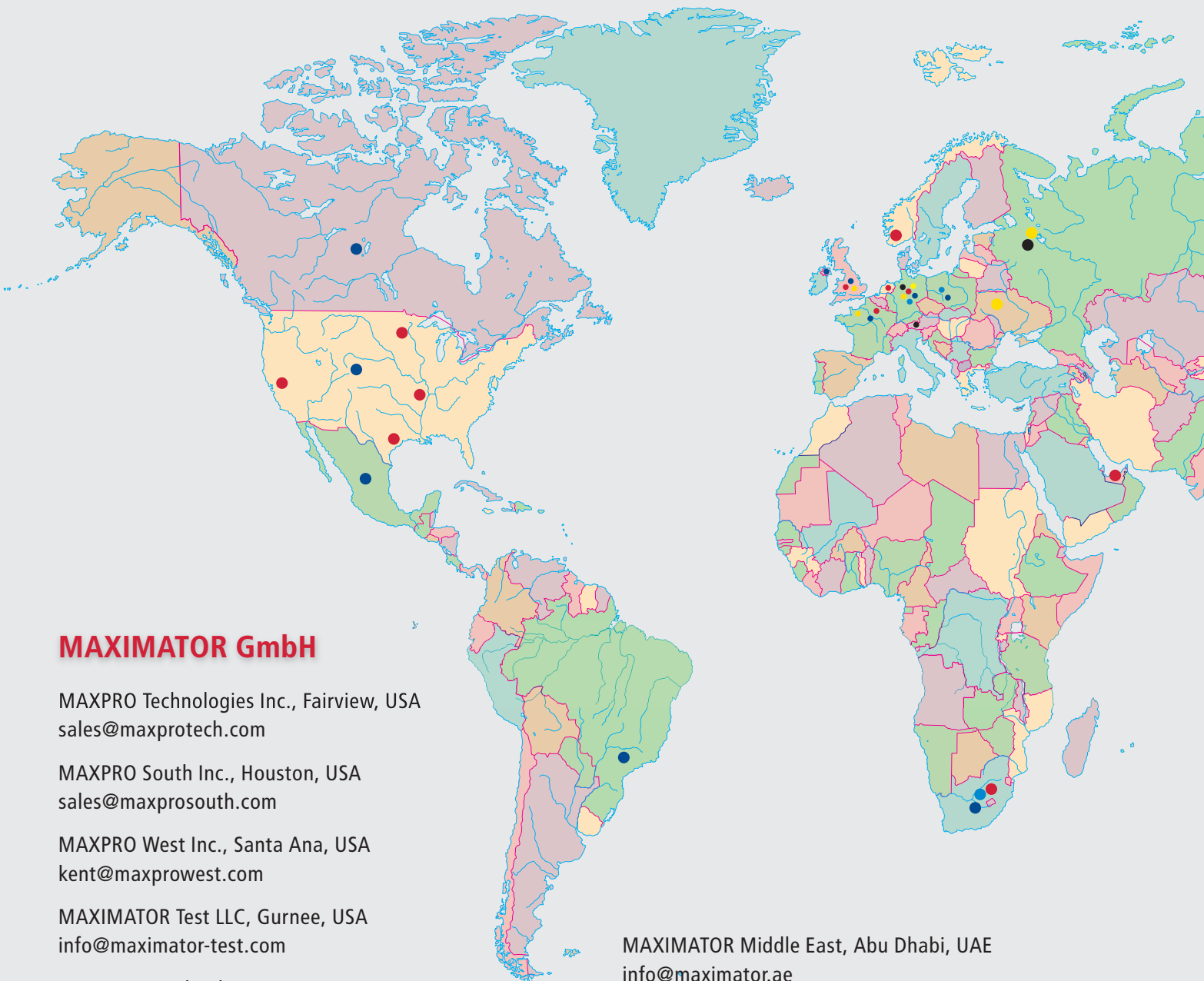
Kalkofen



Niederspannungsschaltanlagen

Automotive	Industry	Chemistry	Construction
<p>Lebensdauertest Lifetime Test</p> 	<p>Zylinder Cylinder</p> 	<p>Flüssigkeiten, Gase, Sperrdruck Liquids, gases, mechanical seals</p> 	<p>Gasleitungen, Hausanschlüsse, Wasserversorgung Gas pipe lines, house connections, water supply</p> 
<p>Schlauch / Düsen / Teile Hose / nozzles / parts</p>	<p>Heben / Betreiben / Steuern Lifting / operating / steering</p>	<p>Abdichten bei hohen Drücken Sealing with high pressure</p>	<p>NO-DIG grabenlose Rohrverlegung NO-DIG trenchless pipe laying</p>
<p>Produktion Production</p> 	<p>Wartung, Elektrik Maintenance, Electrical equipment</p> 	<p>Gase verdichten Gas compression</p> 	<p>Tunnelbau Tunnelling</p> 
<p>Nockenwelle Camshaft</p>	<p>Produkte prüfen Testing of products</p>	<p>Airbag / Tauchflaschen Airbag / Diving bottles</p>	<p>Micro tunnelling</p>
<p>Veredeln Improving</p> <p>Autofrettage</p> 	<p>Produkte prüfen Testing of products</p> 	<p>Chemieanlagen Chemical Applications</p> 	<p>Aufbereitung Minerals Processing</p> 
<p>Höhere Lebensdauer Better lifetime</p>	<p>Schläuche, Ventile, Manometer usw. Hoses, valves, pressure gauges etc.</p>	<p>Hohe Drücke regeln Control of high pressure</p>	<p>Prallbrecher Impact Crusher</p>
<p>Maximator GmbH Fest AG</p>	<p>Maximator GmbH Fest AG</p>	<p>Maximator GmbH Fest AG</p>	<p>Perforator GmbH Hazemag & EPR GmbH mts Perforator GmbH MinPro GmbH</p>

Mineral	Transportation	Power Plants	Plastics	Food / Medical
<p>Bohren Drilling</p>  <p>Sprenglochbohrung, Ankern Blasting, Bolting</p>	<p>Flugzeugschlepper Aircraft Movers</p>  <p>Flugzeuge schieben stangenlos Barless moving of aircraft</p>	<p>Schlagräder für Kohlekraftwerke Components for coal power plants</p>  <p>Kohlestaub Fine coal</p>	<p>GID-/WID-Systeme Produce parts using gas or water assist</p>  <p>Kunststoffteile Plastic parts</p>	<p>Medizin- und Nahrungstechnik Medical and food technology</p>  <p>GMP-konform, keine Verunreinigung GMP-conform, no contamination</p>
<p>Brechen, Sieben, Trocknen Crushing, screening, drying</p>  <p>Schotter Gravel</p>	<p>Muldenkipper Dumpers</p>  <p>In engen Räumen In confined space</p>	<p>Testgeräte für Nuklearanlagen Test components for nuclear power plants</p>  <p>Sichere Bauteile Safe components</p>	<p>Anlagensteuerung System control, overhaul electrics of plastic machine systems</p>  <p>Verdrahtung / Steuerung Cabling / Steering</p>	<p>Lebensmitteltechnik Food Technology</p>  <p>Milchtrocknung Powdered milk</p>
<p>Beladen, Transport Loading, transport</p>  <p>Materialtransport im Tunnel Material handling in tunnels</p>	<p>Fahrlader LHDs for move of minerals in under- ground mines</p>  <p>Gold, Kupfer, Nickel Gold, copper, nickel</p>	<p>Ausrüstungen zur Wasserversorgung Equipment for water supply</p>  <p>Grabenloser Einbau von Rohrleitungen Microtunnelling for mechanical, trenchless laying of pipelines</p>	<p>Schäumen Foaming</p>  <p>Schäumer Foamer</p>	<p>Automatisierungs- systeme Nahrungs- mittelindustrie Automation systems for food industry</p>  <p>Wiegen / Auswerten Weighing / Analysing</p>
<p>Perforator GmbH Hazemag & EPR GmbH GHH FAHRZEUGE GmbH Mine Master Sp. z.o.o. GHH Mining Machines (PTY) Ltd.</p>	<p>GHH FAHRZEUGE GmbH</p>	<p>Maximator GmbH Hazemag & EPR GmbH mts Perforator GmbH</p>	<p>Maximator GmbH Fest AG</p>	<p>Maximator GmbH Fest AG</p>



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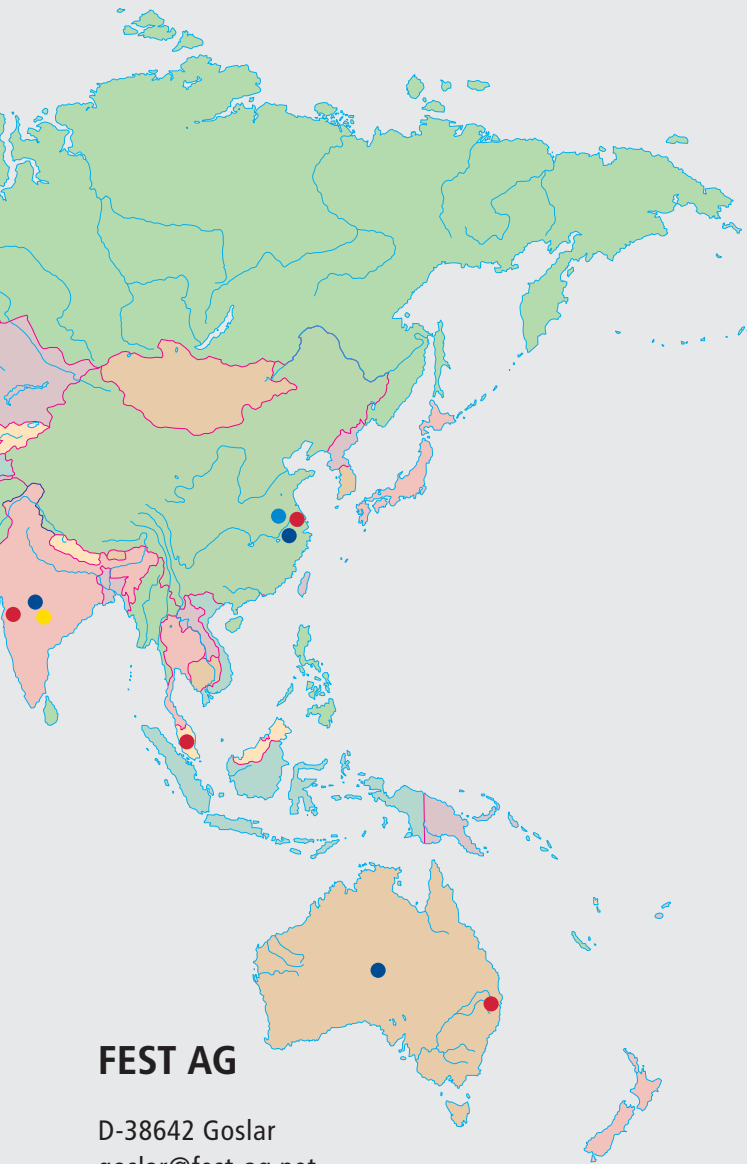
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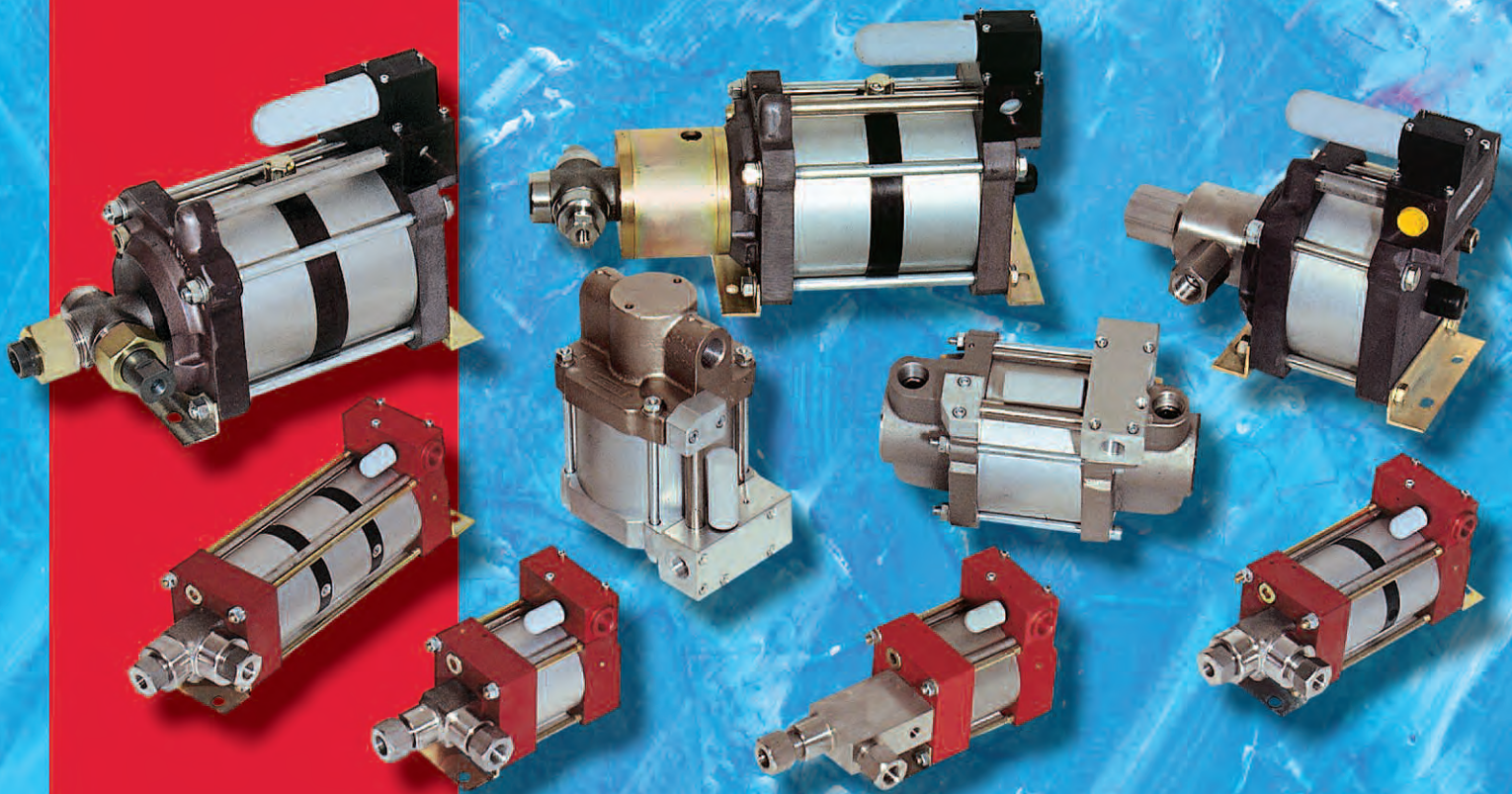
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MAXIMATOR®

HIGH PRESSURE
TECHNOLOGY
HYDRAULICS
PNEUMATICS
TESTING
EQUIPMENT



MAXIMATOR GmbH

Air Driven Liquid Pumps

The MAXIMATOR Air Driven Liquid Pump Line for outlet pressures from 4 to 5,500 bar (58 to 79,750 psi)

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S series	Page	9
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G series	Page	12
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GSF series	Page	14
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Special pumps		
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Advantages of the MAXIMATOR pumps

- High quality product
- Outstanding life time
- Few moving parts
- Portable design
- Easy to install and operate
- Explosion proof ... no electrical power required
- Economical source for hydraulic power
- Pressure held without energy consumption and without media heating
- Standard ratios available for pressures to 5,500 bar (79,805 psi)
- Requires no lubrication

...we offer:

- Technical advise
- Full after sales service
- Special construction and designs available

MAXIMATOR
Pump it.

Liquid pumps – The MAXIMATOR concept

MAXIMATOR high efficiency pumps are ideal for a broad variety of oil, water and chemical applications. MAXIMATOR pumps are air driven at a drive air pressure of 1 to 10 bar (14,5 to 145 psi). Basically the principle of operation is similar to a reciprocating amplifier where control of the piston at the end position is regulated by a pilot operated 4/2 way valve.

MAXIMATOR pumps feature a large air piston joint to a smaller diameter plunger. The pressure ratio is the difference of these two areas and is the method of determining maximum outlet pressure. Higher pressures are obtained by using higher pressure ratios. MAXIMATOR model numbers reflect the pumps' nominal pressure ratios, while the technical data indicates exact ratios. The outlet pressure is easily to set through a simple air regulator. By multiplying the pressure ratio by the available shop air pressure, the nominal liquid pressure can be calculated.

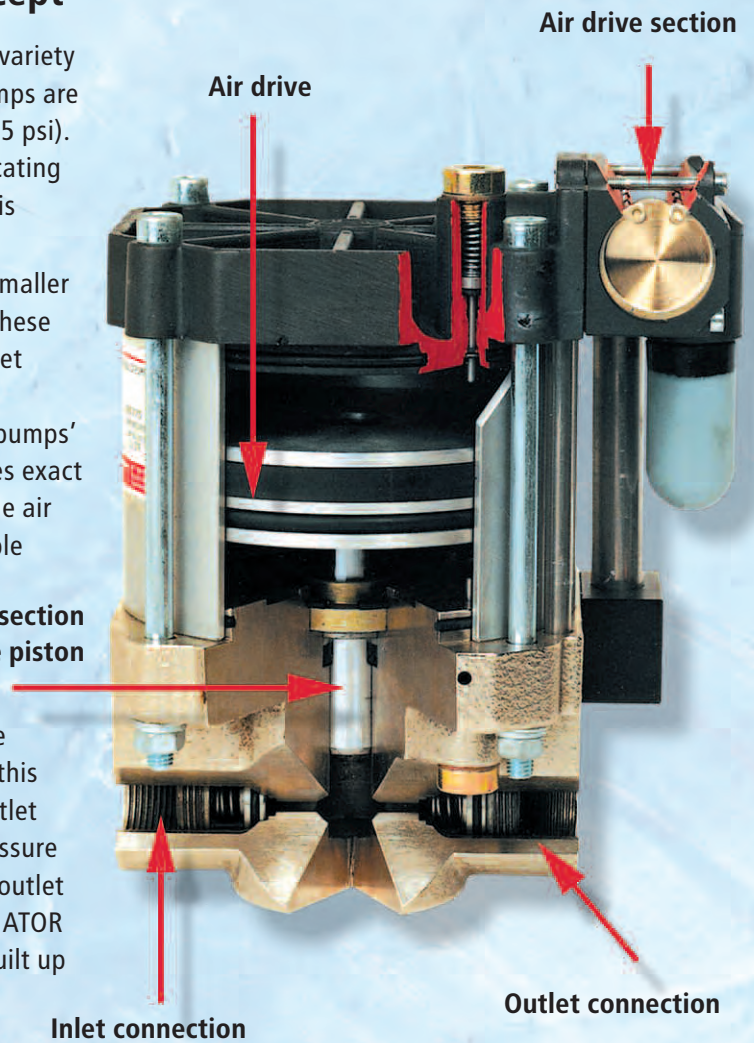
MAXIMATOR pumps are self priming.

In general it is not necessary to use an air line lubricator. The liquid to be pumped, flows into the suction chamber by the up-stroke of the drive piston. By this suction effect, the inlet check valve is opened and the outlet check valve is closed. The down-stroke generates the pressure at the liquid side. The inlet check valve is closed and the outlet check valve is opened by the generated pressure. MAXIMATOR liquid pumps cycle automatically. When the pressure is built up the numbers of cycles slow down. The pump stops automatically when the output pressure forces are equal. The pump restarts with a slight drop in the outlet pressure or an increase in the air drive pressure.

Pump performance can be effected by a number of conditions, such as freezing of muffler or pilot valves (which is caused by moisture in air lines), inadequate inlet air line sizes and dirty filters. Don't reduce the indicated port sizes and consult MAXIMATOR for exact flow conditions not shown in charts.

MAXIMATOR offers complete technical and service support for all MAXIMATOR pumps.

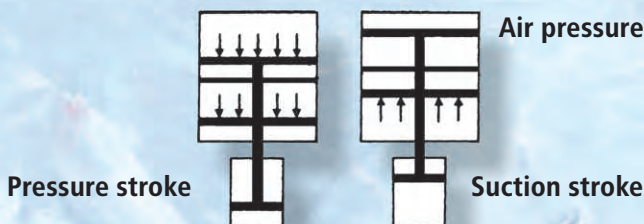
Hydraulic section
High pressure piston



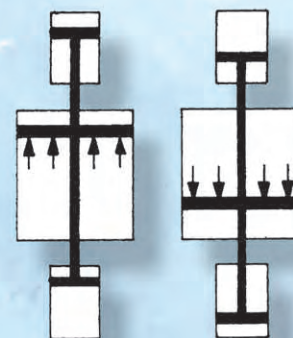
Function scheme of the Air Driven Liquid Pumps

Working principle of a single acting pump, multiple stage.

Working principle of a double acting pump with one air head



Single acting pumps with two or three air heads can achieve the same maximum outlet pressure with 1/2 or 1/3 air drive pressure compared with a single acting pump with one air head.



Double acting pumps improve the flow capacity by approx. 50% in comparison with single acting pumps.

Applications for Air Driven Liquid Pumps

Series MO and S up to 1,000 bar (14,500 psi)

The rugged construction, light weight and wide range of pressure ratios make these series of pumps ideal for powering a variety of oil/hydraulic operations.

They are available as single or double acting models.

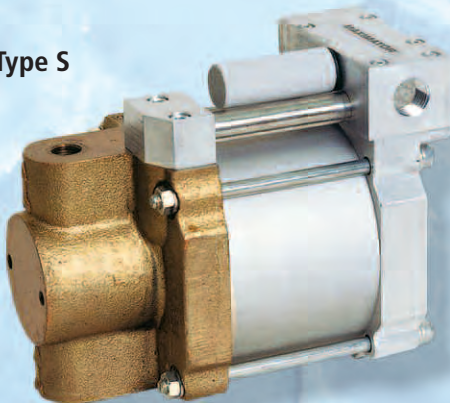


Type MO

Oil Service Pumps

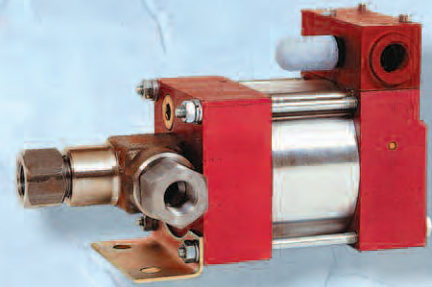
- **Lifting and Jacking** – lifting tables, scissor jack lifts, beam jacking and aircraft jacking
- **Hydraulic Operation** – clamping devices, punches and pin presses, chucks, valve actuation
- **Presses** – cold isostatic presses, filter presses, hydraulic presses, hydraulic press actuation and system overload
- **Tooling and Tightening** – actuating cropping, crimping, cable shears and pipe bending tools, roller tensioning and torque wrenches
- **Testing** – tensile test machines and pressure testing
- **Miscellaneous** – lubrication systems

Type S



Series M and G up to 5,500 bar (79,750 psi)

The M and G series pumps are available in single or double acting models with single, double (M and G series) or triple (only M series) air drive heads and wetted materials of stainless steel, making them an excellent choice for water application.

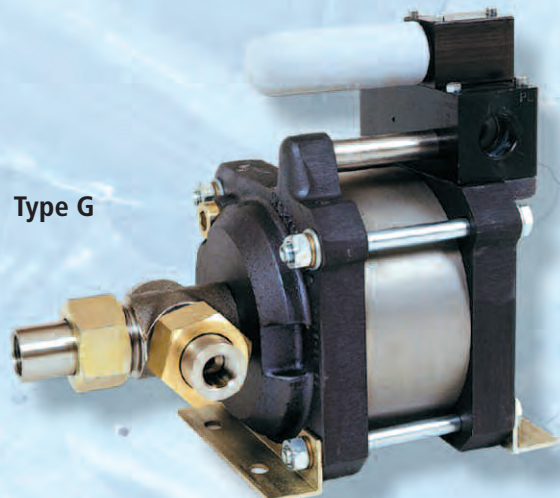


Type M

Water or Oil Service Pumps

- **Hydrostatic Testing** – valves, tanks, pressure vessels, pressure switches, hoses, pipes and tubing, pressure gauges, cylinders, transducers, well casings, BOPs, gas bottles and air craft components
- **Burst and Cycle fatigue testing** of above components
- **Calibration** of pressure gauges and transducers
- **Water Blasting**
- **Leak Testing**
- **Emergency** shutdown systems for oil and gas wells
- **Pressurization** of pressure vessels for testing various components
- **Operation and Control** of well service and well head equipment

Type G

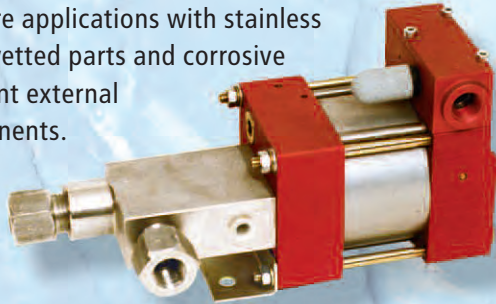


Applications for Air Driven Liquid Pumps

Series MSF, GSF and GX up to 1,450 bar (21,025 psi)

These two series of pumps are similar to the M and G series described before. MSF and GSF pumps feature a distance piece and PTFE seals to address the specific requirements of chemical service.

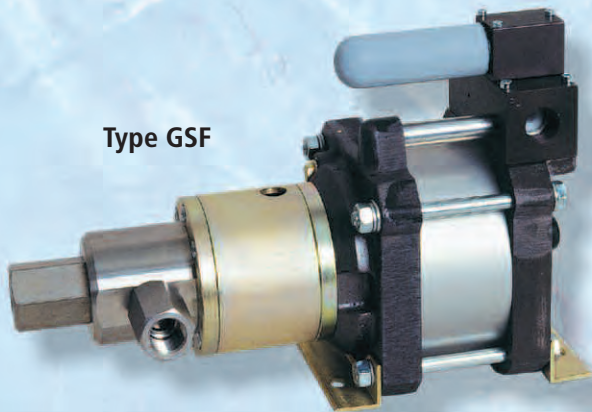
GX series are high flow pumps designed for rugged installations and built with environmental resistant external components. They are ideal for offshore applications with stainless steel wetted parts and corrosive resistant external components.



Type MSF

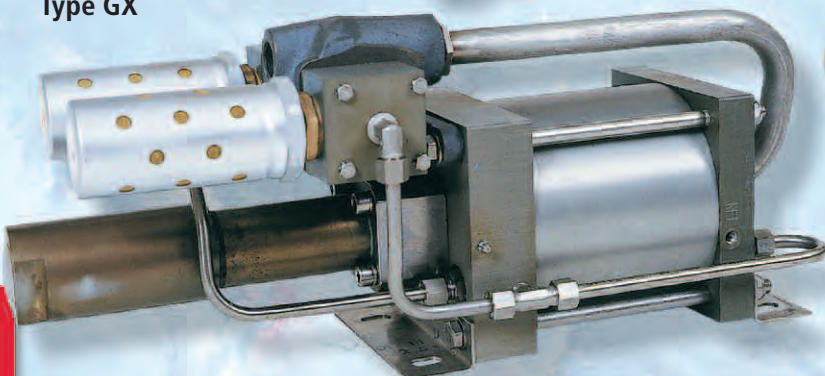
Pumps for Chemical and Offshore service

- Inhibitor Injection of methanol and glycol in wells
- Coolant Injection
- Aviation and Automotive Testing – brake fluid, skydrol, transmission fluid and power steering fluid
- Chemical Fluid Transfer and Pressurization



Type GSF

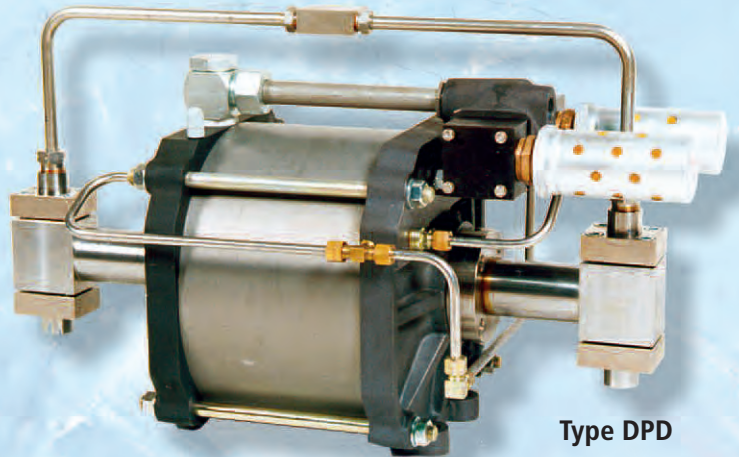
Type GX



MAXIMATOR pumps for special applications

DPD series are large double acting pumps that deliver a high flow rate at high pressure up to 2,100 bar (30,450 psi).

- Test pressure generation for Mandrel Extraction Machines
- Waterjet cutting in intermittent service

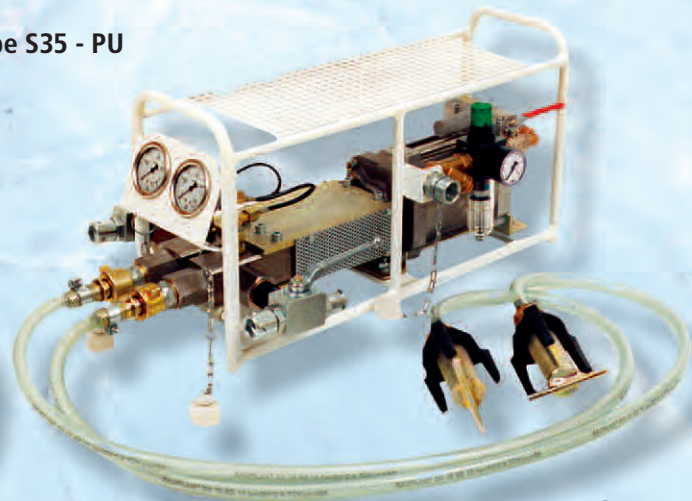


Type DPD

Single and Two Component Injection Pumps Grouting Pumps Infusion Pumps

- Underground Mining Industry
- Rock and Coal Consolidation
- Tunnel and Bridge Construction
- Concrete Restoration

Type S35 - PU



MAXIMATOR
Pump it.

How to select Air Driven Liquid Pumps

MAXIMATOR pumps are suitable for liquid applications. To select and order a hydraulic pump that is suitable the best for your applications, the following parameters have to be observed:

1. Liquid to be handled

The type of liquid is essential to select a MAXIMATOR pump hence the wetted material of construction and compound of the seals are determined by the specific fluid. MAXIMATOR pumps are available for several services. The two most important we are offering standard pumps are for oil or water use, see also ordering codes.

2. Available Air Drive pressure

MAXIMATOR pumps are designed for an air drive pressure of $p_L = 1$ to 10 bar (14,5 to 145 psi) maximum.

3. Required hydraulic outlet pressure and flow capacity

The outlet pressures given in the technical pump tables are based upon a maximum air drive pressure of $p_L = 10$ bar. The real outlet pressure in your specific case is determined by air drive pressure multiplied by pressure ratio, $p_L * i$. The indicated flow capacities Q_{max} is the maximum value which can be reached at an outlet pressure of 0 bar and an air drive of $p_L = 6$ bar. The real flow capacities at a specified outlet pressure are listed in the flow charts, page 20 to 23.

4. Size and weight

For some applications the size and weight are also important to select a pump.

The following questionnaire shall help you to select the right pump for your application. On request we would also submit a quotation. Please return the filled questionnaire to us (fax no. ++49 5586 803 40).

Customer reference: _____

Fax no.: _____

MAXIMATOR Air Driven Liquid Pump Questionnaire

Medium:	Type:	_____
	Chart No.:	_____
	Viscosity:	_____ mm ² /s
Available Shop Air Pressure (1 to 10 bar [14,5 to 145 psi]):		_____ bar
Outlet Pressure:		_____ bar
Maximum Outlet Pressure:		_____ bar
Flow Rate, required at Outlet Pressure		_____ l/min
Working Temperature (max. 80°C permitted):		_____ °C
Suction Altitude:		_____ mm

Application:

Further general suggestions to operate the Air Driven Liquid Pumps properly

Assembly positions

MAXIMATOR pumps can, in principle, be installed in any position, but a maximum service life of the seals is achieved in a vertical one.

Port sizes Important!

Please observe that **only screws and tubing** are fitted that are **suitable for the pressure range of the pump**.

To ensure an optimum operation (pressure and flow) of the pumps, the port sizes of the pumps shall not be reduced.

Drive air connection and initial operation

The air drive connection is located at the spool valve housing.

A second air drive connection as unregulated pilot port on S...D and G(SF) series that has to be connected too, not only provides better pressure control but is also the ideal place to install control instrumentation because of its small size.

In any event a compressed air filter and water separator has to be fitted to the pump. Filters with water separator, pressure regulator, control pressure gauge and shut-off valve are optionally available under "Air control unit C....", depending on the pump line.

No air lubricator is required since the pump received Barium grease treatment. Has a lubricator been used once, it is strongly recommended to continue. If there is only very dry air available, an air lubricator is needed.

Operating temperatures for MAXIMATOR pumps

are in general between -20°C to $+80^{\circ}\text{C}$ (standard). The pumps with $-VE$ seal version can be operated up to max. $+60^{\circ}\text{C}$, at short term up to $+80^{\circ}$ would be acceptable.

For outdoor service at temperatures of 0°C and below, special versions are available on request.

Recommended hydraulic oils

Proper operation and efficiency of the pumps is mainly depending on the quality of the used hydraulic liquid.

We recommend hydraulic oils with a viscosity between 46 – 68 cst, i. e.

Manufacturer Hydraulic oil to DIN 51524 T2; DIN 51519; ISO VG 46

ARAL VITAM GF 46

BP ENERGOL HLP 46

ESSO NUTO H 46

SHELL TELLUS Oil 46

HYDROL DO 46

HYDROL HV 46

DEA ASTRON HLP 46

Recommended quality of drive air

The drive air should have a quality class of 3 to 4 (solids/water/oil) according to the recommendation no. 611/1984 by PNEUROP (European Committee of Manufacturers of boosters, vacuum pumps and air driven tools).

Solids: maximum particle size $5\ \mu$
maximum particle concentration $5\ \text{mg}/\text{m}^3$

Dew point: $+10^{\circ} =$ water content of $9.4\ \text{g}/\text{m}^3$ to $+2^{\circ}\text{C} =$ water content of $5.6\ \text{g}/\text{m}^3$

Oil content: 1.0 to $5\ \text{mg}/\text{m}^3$

Please note that by using humid air of high humidity in continuous operation the problem of icing could occur. We suggest to install a water separator and a dryer in the drive air line.

If the drive air is too dry and has got a dew point lower than -40°C , we suggest to use an oiler.

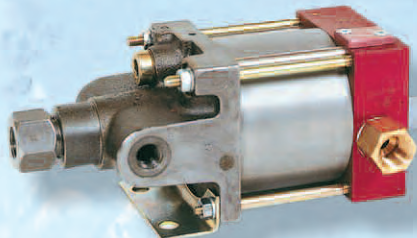
By observing this drive air quality, an optimum life time of the seals and packings will be achieved.

Oil Service – MO series: Pressures to 1,000 bar (14,500 psi)

MAXIMATOR pumps MO series are available as single or double acting with single air drive head.

MO pumps

single acting, single air drive head



Pressures to 1,000 bar (14,500 psi)

MO pumps are single acting types with single air drive head. They are light-weight, rugged and are available in several pressure ratios.

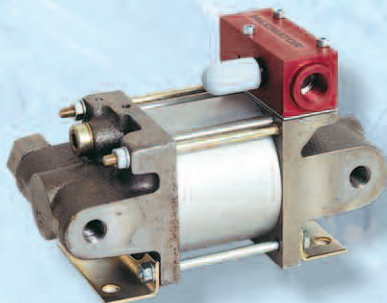
- Cast iron bodies, tool steel plungers and polyurethane seals.
- Pumps come standard with **bottom inlet**
- Ideal for portable power packs
- For air drive pressure from 1 bar (14.5 psi) to 10 bar (145 psi) maximum.

Technical Data

Type	Pressure ratio **	Displ. Volume *		Outlet ***		Flow ****	Connections		Weight kg
		cm3	cu.inch	bar	psi		Inlet A	Outlet B	
MO4	1:4	30.5	1.86	40	580	14.81	3/4 BSP	1/2 BSP	2.5
MO8	1:9	14.7	0.90	90	1305	7.07	3/4 BSP	1/2 BSP	2.5
MO12	1:14	9.4	0.57	140	2030	4.55	3/4 BSP	1/2 BSP	2.5
MO22	1:29	4.6	0.28	290	4205	2.22	3/8 BSP	1/4 BSP	3.0
MO37	1:47	2.8	0.17	470	6815	1.36	3/8 BSP	1/4 BSP	3.0
MO72	1:88	1.5	0.09	880	12760	0.72	3/8 BSP	1/4 BSP	3.0
MO111	1:133	1.0	0.06	1000	14500	0.48	3/8 BSP	1/4 BSP	3.0
MO189	1:225	0.6	0.04	1000	14500	0.28	3/8 BSP	1/4 BSP	3.0

MO...D pumps

double acting, single air drive head



Pressures to 1,000 bar (14,500 psi)

MO...D pumps are double acting, single air drive head type. They are characterized by the same features as the MO series, but

- Pumps come standard with **side inlet**
- They have less pulsations and deliver approx. 50% more flow than the single acting MO pumps.

Technical Data

Type	Pressure ratio **	Displ. Volume *		Outlet ***		Flow ****	Connections		Weight kg
		cm3	cu.inch	bar	psi		Inlet A	Outlet B	
MO22D	1:28	9,2	0,56	280	4060	3.91	3/8 BSP	1/4 BSP	4.5
MO37D	1:46	5.6	0.34	460	6670	2.35	3/8 BSP	1/4 BSP	4.5
MO72D	1:86	3.0	0.18	860	12470	1.24	3/8 BSP	1/4 BSP	4.5
MO111D	1:130	2.0	0.12	1000	14500	0.82	3/8 BSP	1/4 BSP	4.5
MO189D	1:220	1.2	0.07	1000	14500	0.49	3/8 BSP	1/4 BSP	4.5

See also flow charts at page 20

* Displacement volume per double stroke (calculated) • ** Ratio – driving surface / driven surface (calculated)

*** Static outlet pressure (calculated and maximum allowed) at an air drive pressure of 10 bar / 145 psi

**** Approximate flow at an air drive of 6 bar / 87 psi and an outlet pressure of 0 bar/psi.

The minimum air drive pressure to start the pump is 1 bar / 14.5 psi. • Depending on the pressure ratio a special outlet pressure can be reached.

Options for MO series:

- Side inlet (for single acting, single air drive head models):
- External Pilot Port Modification (for single acting MO22 – MO189): (Pump can be started and stopped by a small magnetic valve)
- Special inlet and outlet ports (i. e. NPT):
- Special seal material to handle special fluids:
- Air control unit for MO series with filter pressure regulator, control pressure gauge and shut-off valve:

Order code:

MO37 – **S**

MO37 – **DIR**

MO37(D) – **NPT**

See fluid compatibility guide, page 24

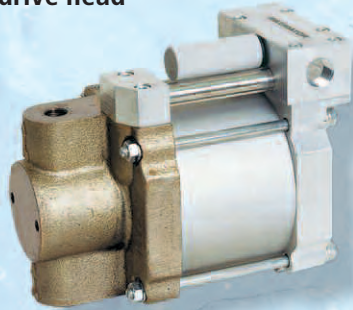
MO37(D) **with C1** _____ **Other options available on request.**

Oil Service – S series: Pressures to 1,000 bar (14,500 psi)

MAXIMATOR pumps S series are available as single or double acting with single air drive head.

S pumps

single acting, single air drive head



Pressures to 1,000 bar (14,500 psi)

S pumps are single acting types with single air drive head. They are compact and lightweight for simple installation in both static and portable applications. They will operate at an air pressure as low as 1 bar (14.5 psi) due to minimal internal friction.

S pumps are ideal for applications demanding fast response time

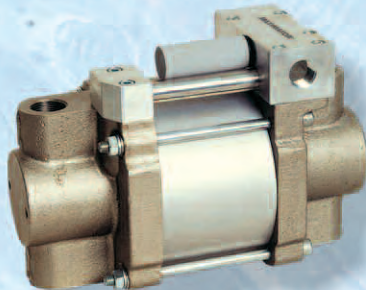
- Cast iron bodies, tool steel plungers and polyurethane seals.
- Pumps come standard with **side inlet only**
- Ideal for portable power packs
- For air drive pressure from 1 bar (14.5 psi) to 10 bar (145 psi) maximum.

Technical Data

Type	Pressure ratio **	Displ. Volume *		Discharge ***		Flow ****	Connections		Weight kg
		cm ³	cu.inch	bar	psi		Inlet A	Outlet B	
S15	1:17	28.3	1.73	170	2465	9.38	3/4 BSP	3/4 BSP	9.1
S25	1:25	19.6	1.20	250	3625	6.72	3/4 BSP	3/4 BSP	9.1
S35	1:39	12.6	0.77	390	5655	4.31	3/4 BSP	3/4 BSP	9.1
S60	1:61	8.0	0.49	610	8845	2.75	1/2 BSP	3/8 BSP	9.1
S100	1:108	4.5	0.27	1000	14500	1.55	1/2 BSP	3/8 BSP	9.1
S150	1:156	3.1	0.19	1000	14500	1.08	1/2 BSP	3/8 BSP	9.1

S...D pumps

double acting, single air drive head



Pressures to 1,000 bar (14,500 psi)

S...D pumps are double acting, single air drive head type. They are characterized by the same features as the S series, but

- Pumps come standard with **side inlet**, bottom inlet not available
- They have less pulsations and deliver approx. 50% more flow than the single acting S pumps.
- Maximum air drive pressure 10 bar (145 psi)
- The unregulated pilot port on all S...D pumps not only provides better pressure control but is also the ideal place to install control instrumentation because of its small size, BSP 1/8".

Technical Data

Type	Pressure ratio **	Displ. Volume *		Discharge ***		Flow ****	Connections		Weight kg
		cm ³	cu.inch	bar	psi		Inlet A	Outlet B	
S15D	1:16	56.6	3.45	160	2320	17.56	3/4 BSP	3/4 BSP	14.5
S25D	1:24	39.2	2.39	240	3480	12.00	3/4 BSP	3/4 BSP	14.5
S35D	1:38	25.2	1.54	380	5510	7.58	3/4 BSP	3/4 BSP	14.5
S60D	1:60	16.0	0.98	600	8700	4.80	1/2 BSP	3/8 BSP	14.5
S100D	1:107	9.0	0.55	1000	14500	2.68	1/2 BSP	3/8 BSP	14.5
S150D	1:155	6.2	0.38	1000	14500	1.85	1/2 BSP	3/8 BSP	14.5

See also flow charts at page 21

* Displacement volume per double stroke (calculated) • ** Ratio – driving surface / driven surface (calculated)

*** Static outlet pressure (calculated and maximum allowed) at an air drive pressure of 10 bar / 145 psi

**** Approximate flow at an air drive of 6 bar / 87 psi and an outlet pressure of 0 bar/psi.

The minimum air drive pressure to start the pump is 1 bar / 14.5 psi. • Depending on the pressure ratio a special outlet pressure can be reached.

Options for S series:

- Special inlet and outlet ports (i. e. NPT):
- Special seal material to handle special fluids:
- Air control unit for S series with filter pressure regulator, control pressure gauge and shut-off valve:

Order code:

S35(D) – **NPT**

See fluid compatibility guide, page 24

S35(D) **with C1.5**

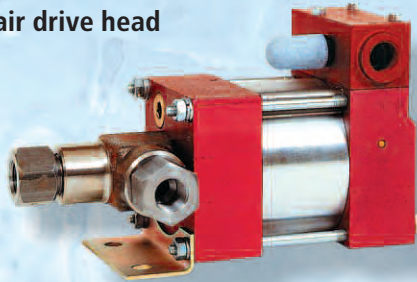
Other options available on request.

Water or Oil Service – M series: Pressures to 4,000 bar (58,000 psi)

MAXIMATOR pumps M series are available as single or double acting with either a single, double or triple air drive head. For air drive pressures from 1 bar (14.5 psi) minimum to 10 bar (145 psi) maximum.

M pumps

single acting, single air drive head



Pressures to 2,200 bar (31,900 psi)

M pumps are single acting types with single air drive head. They are compact lightweight and feature rugged construction.

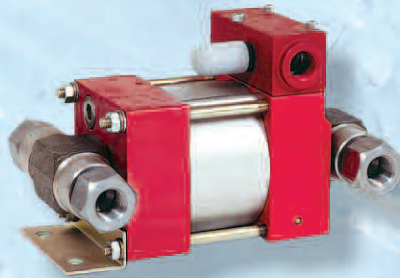
- M4 to M12 pumps have aluminium bodies and stainless steel plungers. M22 to M189 have stainless steel bodies and plungers. All M pumps have polyurethane seals with Buna "N" O-rings, UHMWPE package and Viton O-rings for water service is available as option.
- All M pumps are standard with **bottom inlet**, side inlet is available as option.

Technical Data

Type	Pressure ratio **	Displ. Volume *		Outlet***		Flow ****	Connections		Weight kg
		cm3	cu.inch	bar	psi		Inlet A	Outlet B	
M4	1:4	30.5	1.86	40	580	14.81	1 BSP	1/2 BSP	3.0
M8	1:9	14.7	0.90	90	1305	7.07	3/4 BSP	1/2 BSP	3.0
M12	1:14	9.4	0.57	140	2030	4.55	3/4 BSP	1/2 BSP	3.0
M22	1:28	4.6	0.28	280	4060	2.22	3/8 BSP	3/8 BSP	2.8
M37	1:46	2.8	0.17	460	6670	1.36	3/8 BSP	3/8 BSP	2.8
M72	1:86	1.5	0.09	860	12470	0.72	3/8 BSP	3/8 BSP	2.8
M111	1:130	1.0	0.06	1300	18850	0.48	3/8 BSP	3/8 BSP	2.8
M189	1:220	0.6	0.04	2200	31900	0.28	3/8 BSP	3/8 BSP	2.8

M...D pumps

double acting,
single air drive head



Pressures to 2,200 bar (31,900 psi)

M...D pumps are double acting, single air drive head type. They are characterized by the same features as the M series, but

- they have less pulsations and deliver approx. 50% more flow than the single acting M pumps
- All M...D pumps come standard with **side inlet**, bottom inlet not available

Technical Data

Type	Pressure ratio **	Displ. Volume *		Outlet***		Flow ****	Connections		Weight kg
		cm3	cu.inch	bar	psi		Inlet A	Outlet B	
M22D	1:28	9.2	0.56	280	4060	3.91	3/8 BSP	3/8 BSP	3.7
M37D	1:46	5.6	0.34	460	6670	2.35	3/8 BSP	3/8 BSP	3.7
M72D	1:86	3.0	0.18	860	12470	1.24	3/8 BSP	3/8 BSP	3.7
M111D	1:130	2.0	0.12	1300	18850	0.82	3/8 BSP	3/8 BSP	3.7
M189D	1:220	1.2	0.07	2200	31900	0.49	3/8 BSP	3/8 BSP	3.7

See also flow charts at page 20

* Displacement volume per double stroke (calculated) • ** Ratio – driving surface / driven surface (calculated)

*** Static outlet pressure (calculated and maximum allowed) at an air drive pressure of 10 bar / 145 psi

**** Approximate flow at an air drive of 6 bar / 87 psi and an outlet pressure of 0 bar/psi.

The minimum air drive pressure to start the pump is 1 bar / 14.5 psi. • Depending on the pressure ratio a special outlet pressure can be reached.

MAXIMATOR
Pump it.

Water or Oil Service – M series: Pressures to 4,000 bar (58,000 psi)

M...-2 pumps

single acting, double air drive head



Pressures to 4,000 bar (58,000 psi)

M...-2 pumps are single acting double air drive head pumps. Compared with the single acting single stage M series they reach double pressure at the same air drive pressure.

M...-2 pumps are available with polyurethane seals.

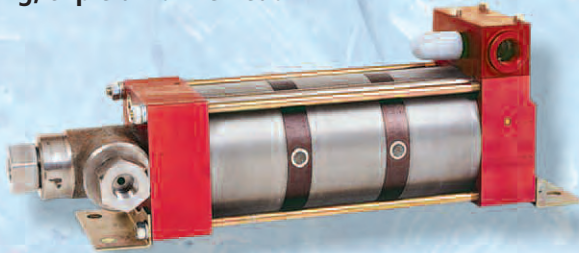
They come standard with **bottom inlet**, side inlet is available as option.

Technical Data

Type	Pressure ratio **	Displ. Volume *		Outlet ***		Flow ****	Connections		Weight kg
		cm3	cu.inch	bar	psi		Inlet A	Outlet B	
M111-2	1:261	1.0	0.06	2500	36250	0.35	1/4 BSP	9/16-18 UNF	3.9
M189-2	1:440	0.6	0.04	4000	58000	0.21	1/4 BSP	9/16-18 UNF	3.9

M...-3 pumps

single acting, triple air drive head



Pressures to 4,000 bar (58,000 psi)

M...-3 pumps are single acting triple air drive head pumps. Compared with the single acting single stage M pumps they reach triple pressure at the same air drive pressure.

M...-3 pumps are available with polyurethane seals.

They come standard with **bottom inlet**, side inlet is available as option.

Technical Data

Type	Pressure ratio **	Displ. Volume *		Outlet ***		Flow ****	Connections		Weight kg
		cm3	cu.inch	bar	psi		Inlet A	Outlet B	
M111-3	1:391	1.0	0.06	2500	36250	0.24	1/4 BSP	9/16-18 UNF	4.6
M189-3	1:660	0.6	0.04	4000	58000	0.14	1/4 BSP	9/16-18 UNF	4.6

See also flow charts at page 20

* Displacement volume per double stroke (calculated) • ** Ratio – driving surface / driven surface (calculated)

*** Static outlet pressure (calculated and maximum allowed) at an air drive pressure of 10 bar / 145 psi

**** Approximate flow at an air drive of 6 bar / 87 psi and an outlet pressure of 0 bar/psi.

The minimum air drive pressure to start the pump is 1 bar / 14.5 psi. • Depending on the pressure ratio a special outlet pressure can be reached.

Options for M0 series:

- Seal material for oil use (standard pump):
- Seal material for water use:
(not available for M ...-2/M...-3 and M ...-01H types)
- Special seal material to handle special fluids:
- Side inlet for single acting versions:
- External pilot port modification:
(only available for M22 to M189 single acting, single air drive head types)
- Spring return and hand lever attachment:
(modification only available for M22 to M189 single acting, single air drive head types)
- Special inlet and outlet ports (i. e. NPT):
- Air control unit for M series with filter pressure regulator, control pressure gauge and shut-off valve:
- To protect the pump against excessive outlet pressures, an air safety valve can be fitted to the air control unit

Order code:

M37 – **(L)**
M37 – **(L)VE** / M37D – **VE**

See fluid compatibility guide, page 24

M37(L) – **S** / M37(L)VE – **S**

M37 – **DIR**

M37 – **01H**

M37 – **NPT**

M37 **with C1**

M37 **with C1/SVair**

(The outlet pressure has to be indicated.)

Other options available on request.

Water or Oil Service – G series: Pressures to 5,500 bar (79,750 psi)

MAXIMATOR pumps G series are available as single or double acting with either a single or double air drive head. For air drive pressures of 1 bar (14.5 psi) minimum to 10 bar (145 psi) maximum. The unregulated pilot port on all G pumps not only provides better pressure control but is also the ideal place to install control instrumentation because of its small size, 1/8 BSP.

G pumps

single acting,
single air drive head



Pressures to 4,500 bar (65,295 psi)

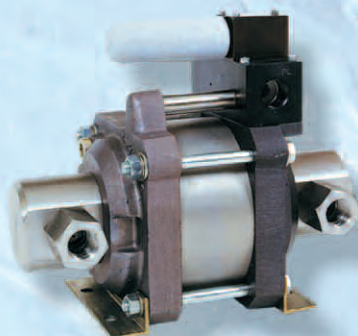
G pumps have stainless steel bodies and plungers. All G pumps have polyurethan seals. For strictly water service, UHMWPE seal option is recommended. This seal is an option because the standard polyurethane seal provides significantly better service life in non-straight water applications. G pumps come standard with **bottom inlet**. Side inlet is available as option. Model G500(S) is only available with side inlet.

Technical Data

Type	Pressure ratio **	Displ. Volume *		Outlet ***		Flow ****	Connections		Weight kg
		cm3	cu.inch	bar	psi		Inlet A	Outlet B	
G10	1:11	90.0	5.49	110	1595	18.53	1 BSP	3/4 BSP	16.0
G15	1:16	62.0	3.78	160	2320	12.86	1 BSP	3/4 BSP	16.0
G25	1:28	35.3	2.15	280	4060	7.24	3/4 BSP	3/4 BSP	14.5
G35	1:40	24.5	1.49	400	5800	5.02	3/4 BSP	3/4 BSP	14.5
G60	1:63	15.4	0.94	630	9135	3.21	3/4 BSP	1/2 BSP	13.5
G100	1:113	8.8	0.54	1050	15225	1.81	3/4 BSP	1/2 BSP	13.5
G150	1:151	6.6	0.40	1450	21025	1.36	3/4 BSP	1/2 BSP	13.5
G250	1:265	3.8	0.23	2650	38425	0.77	1/2 BSP	9/16-18 UNF	13.5
G300	1:314	3.2	0.20	3140	45530	0.65	1/2 BSP	9/16-18 UNF	13.5
G400	1:398	2.5	0.15	3980	57710	0.51	1/2 BSP	9/16-18 UNF	13.5
G500S	1:519	1.9	0.12	4500	65295	0.39	1/4 BSP	9/16-18 UNF	13.5

G...D pumps

double acting,
single air drive head



Pressures to 1,450 bar (21,025 psi)

G...D pumps are double acting, single air drive head. They are characterized by the same features as the G pumps single acting, single air drive head types, but they have less pulsations and deliver approx. 50 % more flow. G...D pumps are available with polyurethane seals, UHMWPE seals with Viton O-ring for water use are available as option. Models G10D – G35D come standard with bottom inlet, side inlet is available as option. Models G60D(S) – G150D(S) are only available with **side inlet**.

For air drive pressures of 1 bar (14.5 psi) minimum to 10 bar (145 psi) maximum.

Technical Data

Type	Pressure ratio **	Displ. Volume *		Outlet ***		Flow ****	Connections		Weight kg
		cm3	cu.inch	bar	psi		Inlet A	Outlet B	
G10D	1:10	180.0	10.98	110	1450	28.85	1 BSP	3/4 BSP	22.0
G15D	1:15	124.0	7.56	150	2175	19.84	1 BSP	3/4 BSP	22.0
G25D	1:27	70.6	4.31	270	3915	11.34	3/4 BSP	3/4 BSP	19.0
G35D	1:40	49.0	2.99	400	5800	7.74	3/4 BSP	3/4 BSP	19.0
G60DS	1:63	31.4	1.92	630	9135	5.04	3/4 BSP	1/2 BSP	17.0
G100DS	1:113	17.6	1.07	1050	15225	2.78	3/4 BSP	1/2 BSP	17.0
G150DS	1:151	7.6	0.46	1450	21025	2.10	3/4 BSP	1/2 BSP	17.0

See also flow charts at page 22

* Displacement volume per double stroke (calculated) • ** Ratio – driving surface / driven surface (calculated)

*** Static outlet pressure (calculated and maximum allowed) at an air drive pressure of 10 bar / 145 psi

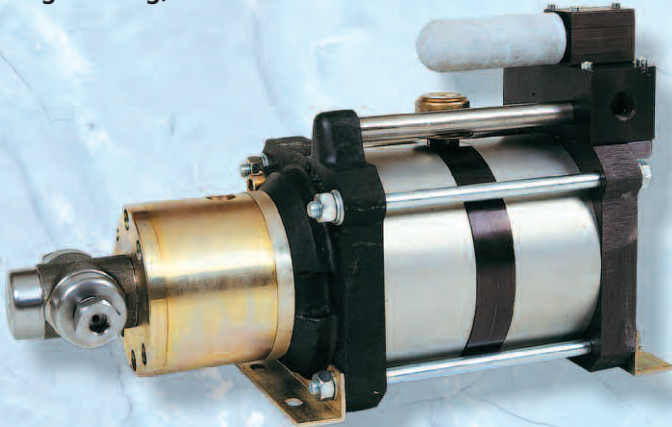
**** Approximate flow at an air drive of 6 bar / 87 psi and an outlet pressure of 0 bar/psi.

The minimum air drive pressure to start the pump is 1 bar / 14.5 psi. • Depending on the pressure ratio a special outlet pressure can be reached.

Water and Oil Service – G series: Pressures to 5,500 bar (79,750 psi)

G...-2 pumps

single acting, double air drive head



Pressures to 5,500 bar (79,750 psi)

G...-2 pumps are single acting double air drive head pumps.

Compared with the single acting single air drive head G pumps they reach double pressure at the same air drive pressure.

G...-2 pumps are available with polyurethane seals, UHMWPE seals with Viton O-ring for water use are available as option.

They come standard with **bottom inlet**, side inlet is available as option.

For air drive pressures from 1 bar (14.5 psi) minimum to 10 bar (145 psi) maximum.

Technical Data

Type	Pressure ratio **	Displ. Volume *		Outlet ***		Flow ****	Connections		Weight kg
		cm ³	cu.inch	bar	psi		Inlet A	Outlet B	
G10-2	1:22	90.0	5.49	220	3190	15.89	1 BSP	3/4 BSP	20.5
G15-2	1:32	62.0	3.78	320	4640	11.02	1 BSP	3/4 BSP	20.5
G25-2	1:56	35.3	2.15	690	8120	6.19	3/4 BSP	3/4 BSP	19.0
G35-2	1:80	24.5	1.49	800	11600	4.30	3/4 BSP	3/4 BSP	19.0
G60-2	1:126	15.4	0.94	1260	18270	2.70	3/4 BSP	1/2 BSP	18.0
G100-2	1:226	8.8	0.54	2100	30450	1.55	1/2 BSP	9/16-18 UNF	18.0
G150-2	1:300	6.6	0.40	2900	42050	1.16	1/2 BSP	9/16-18 UNF	18.0
G250-2	1:530	3.8	0.23	4500	65250	0.66	1/4 BSP	9/16-18 UNF	22.0
G300-2	1:628	3.2	0.20	4500	65250	0.56	1/4 BSP	9/16-18 UNF	22.0
G400-2	1:796	2.5	0.15	5500	79750	0.44	1/4 BSP	9/16-18 UNF	22.0
G500-2	1:1038	1.4	0.09	5500	79750	0.34	1/4 BSP	5/8-18 UNF	22.0

See also flow charts at page 23

* Displacement volume per double stroke (calculated) • ** Ratio – driving surface / driven surface (calculated)

*** Static outlet pressure (calculated and maximum allowed) at an air drive pressure of 10 bar / 145 psi

**** Approximate flow at an air drive of 6 bar / 87 psi and an outlet pressure of 0 bar/psi.

The minimum air drive pressure to start the pump is 1 bar / 14.5 psi. • Depending on the pressure ratio a special outlet pressure can be reached.

Options for G series:

- Seal material for oil use (standard pump):
- Seal material for water use:
(not available for G500 and G500-2)
- Special seal material to handle special fluids:
- Side inlet (G500, G500-2 and G60 – G150 come standard with side inlet)
- Special inlet and outlet ports (i. e. NPT):
- Air control unit for G series with filter pressure regulator, control pressure gauge and shut-off valve:
- To protect the pump against excessive outlet pressures, an air safety valve can be fitted to the air control unit

Other options available on request.

Order code:

G35 – **(L)**

G35 – **(L)VE** / G37D – **VE**

See fluid compatibility guide, page 24

G35(L) – **S** / G35(D)VE – **S**

G35 – **NPT**

G35(L) **with C2**

G35(L) **with C2/SVair**

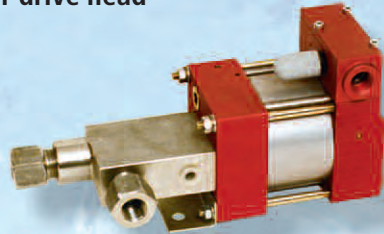
(The outlet pressure has to be indicated.)

MAXIMATOR
Pump it.

Chemical Service – MSF and GSF series: Pressures to 1,450 bar (21,025 psi)

MSF pumps

single acting, single air drive head
and distance piece



Pressures to 1,450 bar (21,025 psi)

MSF and GSF series pumps are rugged and designed for chemical service applications. These pumps are available as single acting types with single air drive head and distance piece.

- For air drive pressures from 1 bar (14.5 psi) minimum to 10 bar (145 psi) maximum MSF and GSF pumps have stainless steel bodies and plungers.
- MSF and GSF pumps have PTFE seals with Viton O-rings.
- Pumps come standard with **bottom inlet**.

Technical Data

Type	Pressure ratio **	Displ. Volume *		Outlet ***		Flow ****	Connections		Weight kg
		cm ³	cu.inch	bar	psi		Inlet A	Outlet B	
MSF4	1:4	30.5	1.86	40	580	14.81	1 BSP	1/2 BSP	6.7
MSF8	1:9	14.7	0.90	90	1305	7.07	3/4 BSP	1/2 BSP	6.7
MSF12	1:14	9.4	0.57	140	2030	4.55	3/4 BSP	1/2 BSP	6.7
MSF22	1:28	4.6	0.28	280	4060	2.22	3/8 BSP	3/8BSP	3.5
MSF37	1:46	2.8	0.17	460	6670	1.36	3/8 BSP	3/8 BSP	3.5
MSF72	1:86	1.5	0.09	860	12470	0.48	3/8 BSP	3/8 BSP	3.5
MSF111	1:130	1.0	0.06	1000	14500	0.28	3/8 BSP	3/8 BSP	3.5

GSF pumps

single acting, single air drive head
and distance piece



Pressures to 1,450 bar (21,025 psi)

MSF and GSF series pumps are rugged and designed for chemical service applications. These pumps are available as single acting types with single air drive head and distance piece.

- For air drive pressures from 1 bar (14.5 psi) minimum to 10 bar (145 psi) maximum MSF and GSF pumps have stainless steel bodies and plungers.
- MSF and GSF pumps have PTFE seals with viton O-rings.
- Pumps come standard with **bottom inlet**.

Technical Data

Type	Pressure ratio **	Displ. Volume *		Outlet ***		Flow ****	Connections		Weight kg
		cm ³	cu.inch	bar	psi		Inlet A	Outlet B	
GSF10	1:11	90.0	5.49	110	1595	18.53	1 BSP	3/3 BSP	20.0
GSF15	1:16	62.0	3.78	160	2320	12.86	1 BSP	3/4 BSP	20.0
GSF25	1:28	35.3	2.15	280	4060	7.24	3/4 BSP	3/4 BSP	19.0
GSF35	1:40	24.5	1.49	400	5800	5.02	3/4 BSP	3/4 BSP	19.0
GSF60	1:63	15.7	0.96	630	9135	3.21	3/4 BSP	1/2 BSP	18.0
GSF100	1:113	8.8	0.54	1050	15225	1.81	3/4 BSP	1/2 BSP	18.0
GSF150	1:151	6.6	0.40	1450	21025	1.36	3/4 BSP	1/2 BSP	18.0

See also flow charts at page 20 and 22

* Displacement volume per double stroke (calculated) - ** Ratio – driving surface / driven surface (calculated)

*** Static outlet pressure (calculated and maximum allowed) at an air drive pressure of 10 bar / 145 psi

**** Approximate flow at an air drive of 6 bar / 87 psi and an outlet pressure of 0 bar/psi.

The minimum air drive pressure to start the pump is 1 bar / 14.5 psi. • Depending on the pressure ratio a special outlet pressure can be reached.

Options for MSF and GSF series:

- Special seal material, i. e. PTFE compound, to handle special fluids:
- Side inlet:
- Special inlet and outlet ports (i. e. NPT):
- Air control unit for MSF / GSF series with filter pressure regulator, control pressure gauge and shut-off valve:
- To protect the pump against excessive outlet pressures, an air safety valve can be fitted to the air control unit

Other options available on request.

Order code:

See fluid compatibility guide, page 24

MSF37 / GSF35 – S

MSF37 / GSF35 – NPT

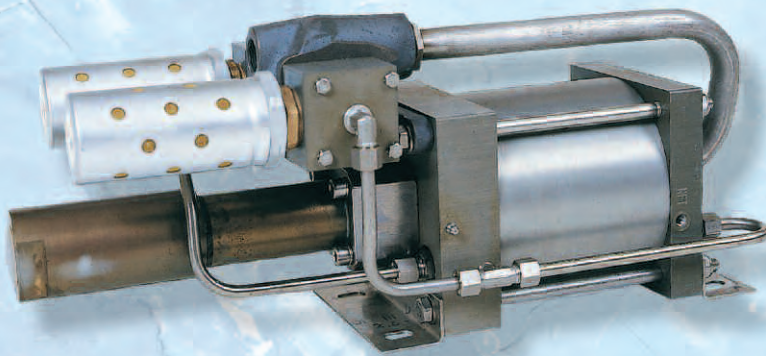
MSF37 **with C1** / GSF35 **with C2**

MSF37 **with C1/SVair** / GSF35 **with C2/SVair**

(The outlet pressure has to be indicated.)

Chemical Service – GX series: Pressures to 1,000 bar (14,500 psi)

GX pumps



Pressures to 1,000 bar (14,500 psi)

GX pumps are high flow capacity pumps designed for rugged installations and build with environmental resistant materials. They are ideal for offshore applications with stainless steel wetted parts and corrosive resistant external components.

All GX series pumps have stainless bodies and plungers, UHMWPE (ultra high molecular weight polyethylene) seals and Viton O-rings as standard.

Technical Data

Type	Pressure ratio **	Displ. Volume *		Outlet pressure***		Flow ****	Connections			Weight kg
		cm3	cu.inch	bar	psi		Inlet	Outlet	Air drive	
GX35	1:36	110	6.71	360	5220	24.50	1 FNPT	3/8 FNPT	3/4 BSP female	24.0
GX60	1:66	65	3.97	600	8700	23.00	1 FNPT	3/8 FNPT	3/4 BSP female	24.0
GX100	1:117	36	2.20	1000	14500	9.00	1 FNPT	3/8 FNPT	3/4 BSP female	24.0

See also flow charts at page 23

* Displacement volume per double stroke (calculated) • ** Ratio – driving surface / driven surface (calculated)

*** Static outlet pressure (calculated and maximum allowed) at an air drive pressure of 10 bar / 145 psi

**** Approximate flow at an air drive of 6 bar / 87 psi and an outlet pressure of 0 bar/psi.

The minimum air drive pressure to start the pump is 1 bar / 14.5 psi. • Depending on the pressure ratio a special outlet pressure can be reached.

Options for GX series:

- Seal package UHMWPE seals and depending on the fluid:
 - Viton O-rings as standard
 - NBR O-rings as option
 - EPDM O-rings as option

- Air control unit for GX series with filter pressure regulator, control pressure gauge and shut-off valve:
- To protect the pump against excessive outlet pressures, an air safety valve can be fitted to the air control unit

Other options available on request.

Order code:

GX35 – **V**

GX35 – **N**

GX35 – **E**

See fluid compatibility guide, page 24

GX35 **with C2**

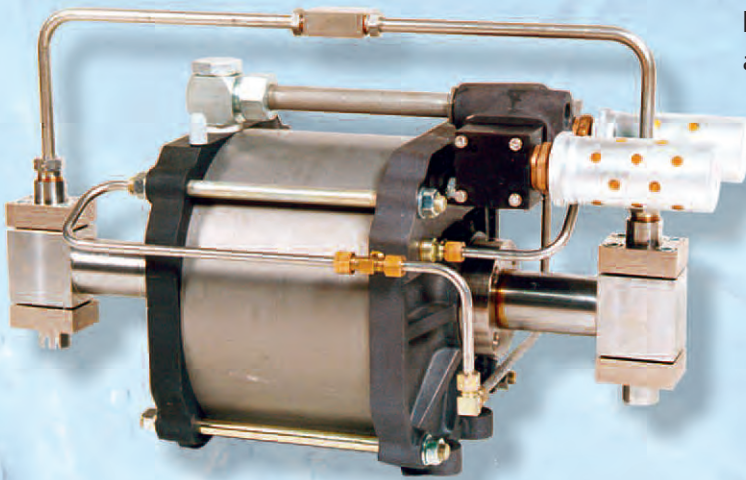
GX **with C2/SVair**

(The outlet pressure has to be indicated.)

MAXIMATOR
Pump it.

Pumps for special applications – DPD series: Pressures to 2,100 bar (30,450 psi)

DPD pumps



Pressures to 2,100 bar (30,450 psi)

Special advantage of DPD series is a high flow capacity at high pressure. They are double acting pumps and available in two pressure ratios.

Technical Data

Type	Pressure ratio **	Displ. Volume *		Outlet pressure***		Flow **** l/min	Connections		Weight kg
		cm3	cu.inch	bar	psi		Inlet	Outlet	
DPD150	1:185	72	4.4	1500	21.750	8.0	3/8 BSP female	1 1/18-12 UNF (F562C)	49.0
DPD200	1:268	72	4.4	2100	30.450	5.6	3/8 BSP female	1 1/18-12 UNF (F562C)	49.0

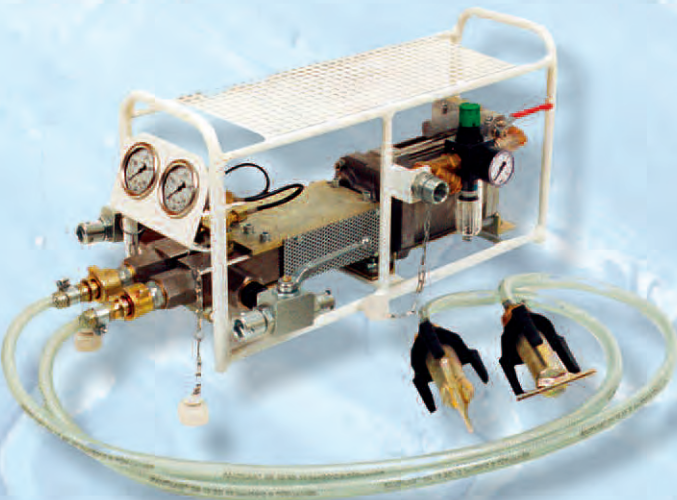
Please consult MAXIMATOR.

Options for DPD series:

- Air control unit for DPD series with filter pressure regulator, control pressure gauge and shut-off valve:

Order code:

DPD150 with C3



Single and Two Component Injection Pumps

MAXIMATOR does also supply a line of special pumps for mining applications:

- Underground Mining Industry
- Rock and Coal Consolidation
- Tunnel and Bridge Construction
- Concrete Restoration

Please ask for our catalogue "Single and Two Component Injection Pumps".

MAXIMATOR
Pump it.

Accessories for MAXIMATOR Liquid Pumps

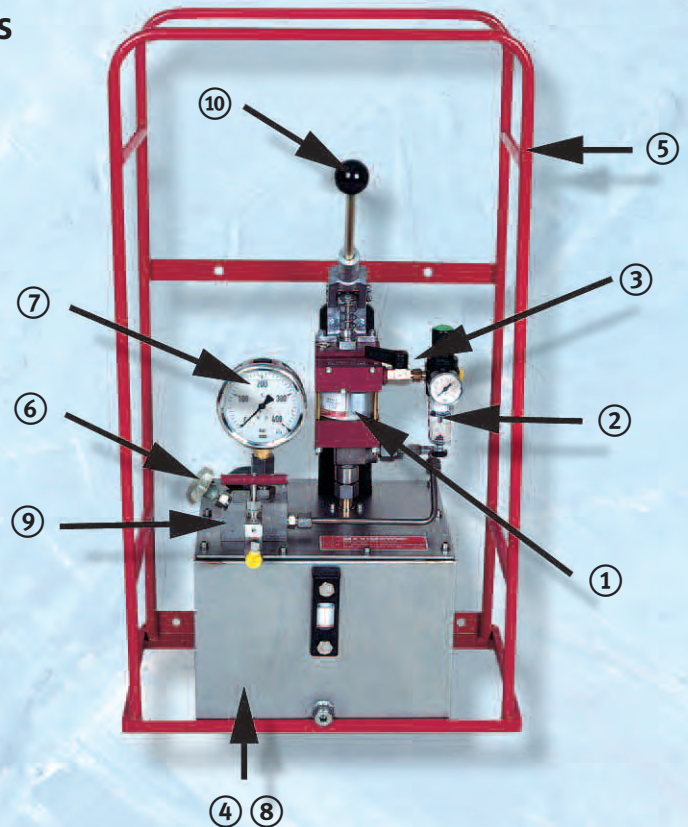
To help you complete the installation of your MAXIMATOR liquid pump, we offer a wide variety of accessories. These ancillary products are available as prepackaged modules or as individual components.

Please consult MAXIMATOR or ask for our catalogue "MAXIMATOR Packaged Pump Systems".

MAXIMATOR Packaged Pump System (Example)

Components in Modular Design

- 1 **Pump model** all M, S and G series
- 2 **Air control unit**, comprising combined filter pressure regulator, control pressure gauge and shut-off valve
C1 for M series
C1.5 for S series
C2 for G series
- 3 **Air safety valve**
SV mounted in the air line
- 4 **Tank sizes** 6.5 liter, 13 liter, 30 liter, 70 liter, standard of aluminium, stainless steel on request
- 5 **Mobility of the packaged pump system**
F mobile (with wheels)
T portable (with handles)
R frame
- 6 **Relief valve**
EV with return line to the tank
- 7 **Pressure gauge**
Pressure range / Diameter of the housing (cl. 1.6/1.0/0.6, glycerine damped)
- 8 **Operating liquid**
O Oil (tank of aluminium, components galvanized)
W Water (tank of aluminium, components of SS)
VA Stainless steel (tank of 1.4571 or 1.4305)
- 9 **Manifold block with pressure outlet(s)**
A1 1 pressure outlet to
A6 6 pressure outlets
V Option: Shut-off valve vor pressure outlet (AV1-AV6)
- 10 **Hand lever**
H only available for M22 to M189, single acting, single stage
- 11 **Other options:**
SCHW Float valve for automatic filling of the tank, i. e. from the water line
SCHL HP hose, model SK
ZR Additional return connection
- 12 **Specials on request**



Coding example:

M72-01H/C1/SV/13/R/EV/0-400(100)/W/AV1/VA (Special) comprising:

- M72-01H MAXIMATOR air driven liquid pump, model M72-01H (with hand lever)
- C1 Air control unit "C1", comprising
 - combined filter pressure regulator
 - control pressure gauge 0 – 10 bar, diameter 40 mm
 - shut-off valve
- 13 Tank volume 13 liter (9 liter useable)
- R Portable frame
- EV Manually operated relief valve
- 0 – 400 (100) Pressure gauge 0 to 400 bar, diameter 100 mm, oil damped, (only 2/3 of scale range useable)
- W for water service
- AV1 Manifold block with one pressure outlet and shut-off valve
- VA Tank of Stainless Steel
- Special: Colour: Frame in MAXIMATOR design (red)

Individual components



Example: "C2"

Air Control Units

with combined filter pressure regulator, control pressure gauge and shut-off valve, available in different versions depending on the pump series:

"C1" for MO and M series

"C1.5" for S series

"C2" for G and GX series

Regulating range: 0.5 to 10 bar

Filter accuracy: 50 µ

Available as option:

Safety relief valves to limit the outlet pressure

Pressure Gauges

available in different ranges

0 – 10 bar to 0 – 2,500 bar, dia. 100 mm

0 – 25 bar to 0 – 7,000 bar, dia. 160 mm



High Pressure Hoses

in size DN4 for outlet pressures

of 1,000; 1,800; 2,500 and 4,000 bar

in size DN8 for outlet pressures

of 900; 1,500 and 2,100 bar



Individual components

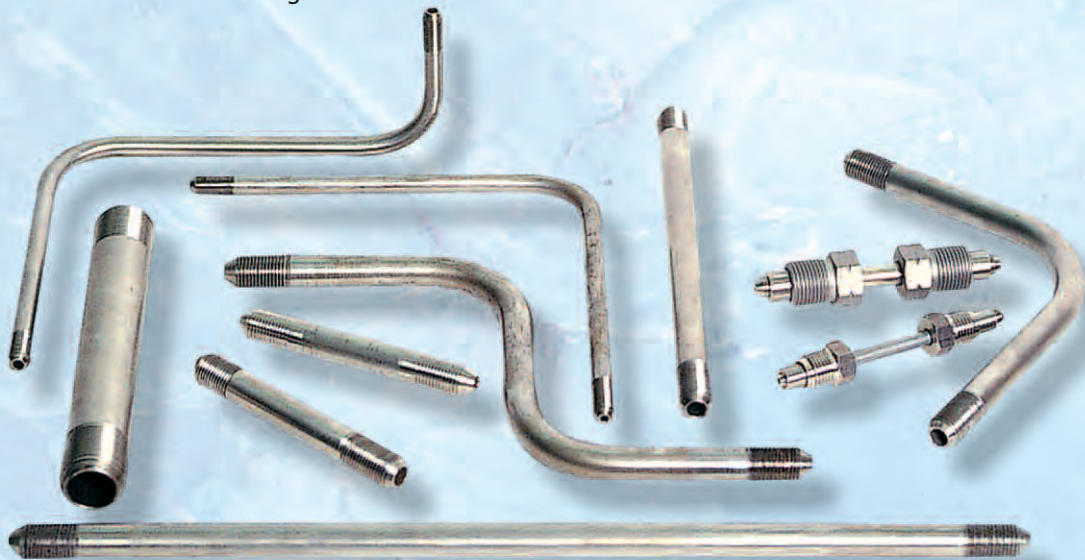
High Pressure Valves and Fittings

Taper Seal Valves, Glands, Sleeves, Plugs, Elbows, Tees, Crosses, Couplings, Filters, Rupture Discs, Safety Heads, Anti-Vibration Gland Assemblies for outlet pressures from 700 to 4,200 bar 10,150 – 60,900 psi). Ultra High Pressure Valves and Fittings to **10,000 bar** (145,000 psi).



High pressure tubing

Available for different outlet pressures in ranges from **700 bar to 10,500 bar** (from 10,150 to 152,500 psi) and in different tube dimensions and lengths



Please ask for our catalogue
"MAXIMATOR Valves • Fittings • Tubing"

Other accessories like safety relief valves, accumulators, adapters, stroke counters, etc. available on request.

Pump Type	Sample Air Drive Pressure in bar	Outlet Pressure in bar									
		0/Atm.	50	100	500	1000	1500	2000	3000	4000	
M[(O)(SF)]4	4	14.51									
	6	14.81									
	8	14.93									
M[(O)(SF)]8	4	6.93									
	6	7.07	0.89								
	8	7.13	3.39								
M[(O)(SF)]12	4	4.46	0.71								
	6	4.55	2.64								
	8	4.59	3.43	0.84							
M[(O)(SF)]22	4	2.17	1.58	0.44							
	6	2.22	1.92	1.33							
	8	2.24	2.05	1.70							
M[(O)(SF)]37	4	1.34	1.15	0.84							
	6	1.36	1.27	1.11							
	8	1.38	1.32	1.22							
M[(O)(SF)]72	4	0.71	0.67	0.60							
	6	0.72	0.70	0.67	0.06						
	8	0.73	0.72	0.70	0.33						
M[(O)(SF)]111	4	0.47	0.45	0.43	0.05						
	6	0.48	0.47	0.46	0.26						
	8	0.48	0.48	0.47	0.35	0.05					
M[(O)(SF)]189	4	0.28	0.27	0.26	0.17						
	6	0.28	0.28	0.28	0.23	0.11					
	8	0.28	0.28	0.28	0.25	0.18	0.08				
M111-2	4	0.35	0.34	0.33	0.24	0.03					
	6	0.35	0.35	0.35	0.30	0.19	0.04				
	8	0.36	0.35	0.35	0.32	0.26	0.16	0.04			
M189-2	4	0.20	0.20	0.20	0.18	0.12	0.05				
	6	0.21	0.21	0.21	0.19	0.17	0.13	0.08			
	8	0.21	0.21	0.21	0.20	0.19	0.16	0.14	0.06		
M111-3	4	0.23	0.23	0.23	0.19	0.12	0.02				
	6	0.24	0.23	0.23	0.22	0.18	0.13	0.06			
	8	0.24	0.24	0.24	0.23	0.20	0.17	0.13	0.03		
M189-3	4	0.14	0.14	0.14	0.13	0.12	0.10	0.06	0.00		
	6	0.14	0.14	0.14	0.13	0.12	0.12	0.10	0.07	0.02	
	8	0.14	0.14	0.14	0.14	0.13	0.12	0.11	0.09	0.06	
M(O)22D	4	3.83	2.75	0.66							
	6	3.91	3.36	2.29							
	8	3.94	3.61	2.96							
M(O)37D	4	2.31	1.99	1.45							
	6	2.35	2.20	1.92							
	8	2.37	2.28	2.11							
M(O)72D	4	1.22	1.15	1.04							
	6	1.24	1.21	1.15	0.11						
	8	1.26	1.23	1.20	0.57						
M(O)111D	4	0.81	0.78	0.74	0.08						
	6	0.82	0.81	0.79	0.45						
	8	0.83	0.82	0.81	0.60	0.09					
M(O)189D	4	0.48	0.47	0.45	0.29						
	6	0.49	0.48	0.48	0.39	0.20	0.06				
	8	0.49	0.49	0.48	0.43	0.32	0.14				

Flow in l/min

Flow Charts S Series

Pump Type	Sample Air Drive Pressure in bar	Outlet Pressure in bar										
		0/Atm.	50	100	200	300	400	500	600	700	008	
S15	4	9.11	3.82									
	6	9.38	6.60	0.91								
	8	9.50	7.78	4.28								
S25	4	6.59	4.39	0.00								
	6	6.72	5.60	3.36								
	8	6.78	6.10	4.74	0.00							
S35	4	4.22	3.48	2.16								
	6	4.31	3.93	3.26	1.03							
	8	4.34	4.12	3.71	2.36	0.30						
S60	4	2.70	2.44	2.03	0.75							
	6	2.75	2.62	2.41	1.76	0.80						
	8	2.78	2.70	2.57	2.18	1.60	0.83					
S100	4	1.52	1.45	1.35	1.07	0.68	0.19					
	6	1.55	1.51	1.46	1.32	1.12	0.87	0.57	0.20			
	8	1.56	1.54	1.51	1.42	1.30	1.15	0.97	0.75	0.50	0.21	
S150	4	1.05	1.02	0.98	0.80	0.64	0.44	0.20				
	6	1.08	1.06	1.04	0.98	0.91	0.81	0.70	0.57	0.42	0.26	
	8	1.08	1.07	1.06	1.03	0.98	0.93	0.86	0.78	0.69	0.59	
S15D	4	17.21	6.17									
	6	17.56	11.93									
	8	17.71	14.30	6.78								
S25D	4	11.76	7.59									
	6	12.00	9.87	5.58								
	8	12.10	10.81	8.21								
S35D	4	7.43	6.08	3.66								
	6	7.58	6.89	5.65	1.54							
	8	7.64	7.22	6.48	3.99	0.18						
S60D	4	4.70	4.24	3.51	1.22							
	6	4.80	4.56	4.20	3.02	1.30						
	8	4.84	4.70	4.47	3.28	2.07	0.53					
S100D	4	2.62	2.50	2.33	1.84	1.16	0.30					
	6	2.68	2.62	2.53	2.28	1.93	1.49	0.95	0.32			
	8	2.70	2.66	2.61	2.46	2.25	1.98	1.66	1.27	0.83	0.33	
S150D	4	1.82	1.76	1.69	1.50	1.24	0.92	0.54	0.10			
	6	1.85	1.83	1.79	1.69	1.56	1.40	1.20	0.98	0.72	0.43	
	8	1.87	1.85	1.83	1.77	1.69	1.59	1.48	1.34	1.18	0.91	

Flow in l/min

Important!

The flow rates as indicated in the charts have been measured with optimum cross sections of the pipes, depending on each individual pump model.

To ensure a proper operation (pressure and flow) the standard port sizes of the pump shall not be reduced.

MAXIMATOR
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Pump Type	Sample Air Drive Pressure in bar	Outlet Pressure in bar								
		0/Atm.	50	100	500	1000	1500	2000	3000	4000
G(SF)10	4	18.16								
	6	18.53	7.22							
	8	18.68	11.84							
G(SF)15	4	12.60	4.19							
	6	12.86	8.57							
	8	12.96	10.37	4.61						
G(SF)25	4	7.10	5.14	1.35						
	6	7.24	6.24	4.31						
	8	7.30	6.70	5.53						
G(SF)35	4	4.92	4.11	2.70						
	6	5.02	4.61	3.89						
	8	5.06	4.82	4.38						
G(SF)60	4	3.15	2.86	2.41						
	6	3.21	3.07	2.84						
	8	3.24	3.15	3.01	0.14					
G(SF)100	4	1.77	1.69	1.58						
	6	1.81	1.77	1.71	0.75					
	8	0.99	0.97	0.96	0.64					
G(SF)150	4	1.33	1.29	1.00						
	6	1.36	1.34	1.19	0.38					
	8	1.37	1.36	1.34	1.07	0.40				
G250	4	0.76	0.74	0.73	0.53	0.08				
	6	0.77	0.76	0.76	0.66	0.42	0.08			
	8	0.78	0.77	0.77	0.70	0.57	0.36	0.08		
G300	4	0.64	0.63	0.62	0.49	0.02				
	6	0.65	0.65	0.64	0.57	0.43	0.22			
	8	0.66	0.65	0.65	0.61	0.52	0.39	0.22		
G400	4	0.50	0.50	0.49	0.42	0.27	0.05			
	6	0.51	0.51	0.50	0.47	0.39	0.28	0.14		
	8	0.52	0.52	0.51	0.49	0.44	0.38	0.29	0.06	
G500	4	0.39	0.38	0.38	0.34	0.27	0.16	0.03		
	6	0.39	0.39	0.39	0.37	0.33	0.28	0.21	0.03	
	8	0.40	0.40	0.39	0.38	0.36	0.33	0.29	0.18	0.03

Flow in l/min

Pump Type	Sample Air Drive Pressure in bar	Outlet Pressure in bar							
		0/Atm.	25	50	100	250	500	750	1000
G10D	4	28.28	16.84						
	6	28.85	23.02	10.97					
	8	29.09	25.56	18.27					
G15D	4	19.44	14.93	6.47					
	6	19.84	17.54	13.22					
	8	20.00	18.61	16.00	7.11				
G25D	4	10.11	9.91	7.98	1.90				
	6	11.34	10.73	9.74	6.64				
	8	11.43	11.06	10.46	8.59				
G35D	4	7.59	7.08	6.35	4.16				
	6	7.74	7.48	7.11	6.00				
	8	7.80	7.65	7.42	6.75	2.99			
G60D	4	4.94	4.74	4.48	3.77	0.07			
	6	5.04	4.94	4.81	4.44	2.55			
	8	5.08	5.02	4.94	4.72	3.58	0.07		
G100D	4	2.73	2.67	2.61	2.44	1.68			
	6	2.78	2.76	2.72	2.64	2.25	1.16		
	8	2.79	2.77	2.72	2.48	1.82	0.83		
G150D	4	2.06	2.03	1.99	1.91	1.54	0.55		
	6	2.10	2.09	2.07	2.02	1.84	1.33	0.59	
	8	2.12	2.11	2.10	2.07	1.96	1.65	1.20	0.61

Flow in l/min

Flow Charts G(SF) Series

Pump Type	Sample Air Drive Pressure in bar	Outlet Pressure in bar								
		0/Atm.	50	100	500	1000	1500	2000	3000	4000
G10-2	4	15.57	9.36							
	6	15.89	12.72	6.19						
	8	16.02	14.10	10.15						
G15-2	4	10.08	8.30	3.59						
	6	11.02	9.74	7.34						
	8	11.11	10.34	8.89						
G25-2	4	6.06	5.43	4.40						
	6	6.19	5.86	5.34						
	8	6.24	6.04	5.72						
G35-2	4	4.21	3.94	3.53						
	6	4.30	4.16	3.95						
	8	4.34	4.25	4.12	1.66					
G60-2	4	2.70	2.59	2.46	0.10					
	6	2.76	2.70	2.63	1.43					
	8	2.78	2.75	2.70	1.98	0.12				
G100-2	4	1.52	1.49	1.45	0.94					
	6	1.55	1.53	1.51	1.25	0.64				
	8	1.56	1.55	1.54	0.38	1.01	0.46			
G150-2	4	1.14	1.12	1.10	0.85	0.31				
	6	1.16	1.16	1.15	1.02	0.74	0.33			
	8	1.17	1.17	1.16	1.09	0.92	0.67	0.34		
G250-2	4	0.65	0.64	0.64	0.57	0.45	0.28	0.07		
	6	0.66	0.66	0.66	0.62	0.56	0.47	0.36	0.07	
	8	0.67	0.67	0.66	0.64	0.61	0.55	0.49	0.31	0.07
G300-2	4	0.55	0.54	0.54	0.50	0.42	0.31	0.17		
	6	0.56	0.56	0.55	0.53	0.49	0.44	0.37	0.19	
	8	0.56	0.56	0.56	0.55	0.52	0.49	0.45	0.34	0.19
G400-2	4	0.43	0.43	0.42	0.38	0.33	0.27	0.19		
	6	0.44	0.44	0.44	0.42	0.39	0.36	0.32	0.21	0.08
	8	0.44	0.44	0.44	0.44	0.42	0.40	0.38	0.32	0.25
G500-2	4	0.33	0.33	0.33	0.31	0.29	0.26	0.23	0.16	0.05
	6	0.34	0.34	0.34	0.33	0.32	0.30	0.28	0.24	0.18
	8	0.34	0.34	0.34	0.34	0.33	0.32	0.31	0.28	0.25

Flow in l/min

Flow Charts GX

Pump Type	Sample Air Drive Pressure in bar	Outlet Pressure in bar									
		0/Atm.	50	100	200	300	400	500	600	700	008
GX35	4	25.00	16.67	8.44							
	6	24.50	20.00	14.58							
	8	23.00	21.72	17.67	9.45						
GX60	4	22.00	16.59	13.60	6.45						
	6	23.00	19.06	15.77	10.00	5.21					
	8	21.50	19.92	17.95	13.10	8.24	2.65				
GX100	4	8.50	7.71	7.11	6.13	4.71	1.88				
	6	9.00	8.47	7.97	7.15	6.49	5.81	4.90	2.96		
	8	9.00	8.47	7.97	7.15	6.49	5.84	5.09	3.99	2.35	

Flow in l/min

Important!

The flow rates as indicated in the charts have been measured with optimum cross sections of the pipes, depending on each individual pump model.

To ensure a proper operation (pressure and flow) the standard port sizes of the pump shall not be reduced.

MAXIMATOR
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Seal Versions for MAXIMATOR Air Driven Liquid Pumps

Seal version	Seal material	Remarks
without indication or "L"	Polyurethane (PU) Nitrile (NBR)	Standard
VE	Polyethylene (UHMWPE) Fluorcarbon (V)	Standard
VE / NBR	Polyethylene (UHMWPE) Nitrile (NBR)	Special
VE / EPR	Polyethylene (UHMWPE) Ethylene Propylen	Special
VE / CRL	Polyethylene (UHMWPE) Chloropren (CRL)	Special
VE / KAL	Polyethylene (UHMWPE) Kalrez (KAL)	Special
SF	Filled Teflon (PTFE) Fluorcarbon (V)	Standard

MAXIMATOR Fluid Compatibility Guide

Liquid	Recommended Seal versions						Pump Series MSF and GSF
	Standard L	Standard VE	Special VE / NBR	Special VE / EPR	Special VE / CRL	Special VE / KAL	
A Acetone				X		X	X
Ammonia				X	X		X
Ammonium Chloride	X	X	X	X	X		X
Ammonium Hydroxide			X	X	X	X	X
Ammonium Nitrate			X	X	X		X
Ammonium Sulfate			X	X	X		X
ASTM Oil No. 1	X	X	X		X		X
ASTM Oil No. 2		X	X				X
ASTM Oil No. 3		X					X
ASTM Oil No. 4		X					X
B Barium Chloride	X	X	X	X	X	X	X
Barium Hydroxide		X	X	X	X		X
Barium Sulfide	X	X	X	X	X		X
Benzol		X				X	X
Bleaching Lye		X		X			X
Borax	X	X		X			X
Boric Acid	X	X	X	X	X	X	X
Brake Fluid				X			X
Bromine Water		X					X
Bromobenzene		X					X
Bunker Fuel		X	X				X
Butadiene		X					X
Butanol		X	X		X	X	X
Butyl Acetate						X	X
C Calcium Carbonate		X	X	X	X		X
Calcium Chloride	X	X	X	X	X	X	X
Calcium Hydroxide		X	X	X	X		X
Calcium Hypochloride		X		X			X
Calcium Phosphate	X	X	X	X			X
Calcium Silicate		X	X	X			X
Calcium Sulfide		X	X	X	X		X
Carbon Dioxide			X				X
Cellugard		X	X	X	X		X
Cetane		X	X				X
Chloracetone				X			X
Chromic Alum.		X	X	X	X		X
Copper Chloride	X	X	X	X			X
Cotton Oil		X	X				X
D Diacetone Alcohol				X			X
Diethylene Glycol		X	X	X	X		X
Drilling Oil	X	X	X				X
E Etheric Oils							X
Ethyl Acetate						X	X
Ethyl Alcohol			X	X	X		X
Ethyl Benzol							X
Ethyl Chloride							X
Ethyl Glycol		X	X	X	X	X	X
F Fatty Acids	X	X					X
Ferric Chloride	X	X	X	X		X	X
Flousilic Acid		X		X			X
Freon					X		X

MAXIMATOR Fluid Compatibility Guide

Liquid	Recommended Seal versions						Pump Series MSF and GSF
	Standard L	Standard VE	Special VE / NBR	Special VE / EPR	Special VE / CRL	Special VE / KAL	
F Fuel	X	X	X				X
Fuel Oil		X	X				X
G Gelatin		X	X	X			X
Glucose		X	X	X			X
Glycerine		X	X	X		X	X
Glycol		X	X	X			X
H Halon	X		X				X
Hexyl Alcohol		X	X				X
Hydraulic Oils (Petroleum)	X	X	X				X
Hydrazine				X			X
Hydrogen Peroxide		X				X	X
Hydrolube		X	X	X			X
Hydrozyanic Acid		X		X			X
I Iso-Butyl Alcohol		X		X	X	X	X
Isopropanol		X		X		X	X
Isopropyl Alcohol		X		X			X
K Kerosene	X	X	X				X
L Lead Nitrate			X	X	X		X
Lead Sulphate		X		X	X		X
Light Crude Oil		X	X				X
Lindol (hydraulic fluids)				X			X
Linseed Oil		X	X				X
Liquid Gas (Propane/Butane)	X	X				X	
M Methane		X	X				X
Methyl Alcohol			X	X			X
Methyl Carbonate		X					X
Methyl Chloride		X					X
Mineral Oils	X	X	X				X
Mobil Oil SAE 20	X	X	X				X
N Natural Oil		X					X
P Paraffin Oil		X	X		X		X
Pentane		X	X		X		X
Petrol			X			X	X
Petrol "Super"		X	X				X
Phenol						X	X
Phosphate Esters		X		X			X
Potassium Acetate				X			X
Potassium Chloride	X	X	X	X	X		X
Potassium Nitrate	X	X	X	X	X		X
Potassium Sulfate	X	X	X	X	X		X
Propane		X	X				X
Propyl Alcohol		X	X	X	X		X
S Salt Water			X	X			X
Silicone Oils	X	X	X	X	X		X
Skydrol				X			X
Soap Water		X	X	X			X
Sodium Acetate				X			X
Sodium Bisulfate	X	X	X	X	X		X
Sodium Carbonate		X	X	X	X		X
Sodium Chloride	X	X	X	X	X		X
Sodium Peroxide		X		X			X
Sodium Sulfide	X	X	X	X	X		X
Sugar Liquids		X	X	X	X		X
T Tartaric Acid		X	X				X
Tetrachlorethylene		X				X	X
Tetralin		X				X	X
Toluol		X					X
Trichlorethylene		X				X	X
Turbine Oil	X	X	X				X
Turpentine		X	X				X
Turpentine Oil		X					X
V Vegetable Oils		X	X				X
Vinegar		X		X	X		X
W Water		X		X			X
Z Zinc Acetate				X			X
Zinc Chloride		X	X	X	X		X

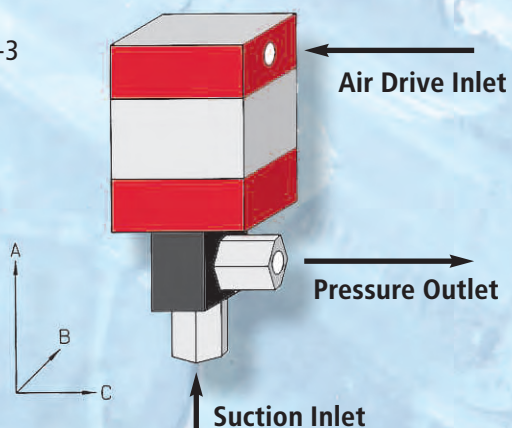
Outer Dimensions and Standard Connections

Pump Model	Air Drive	Inlet Inlet	Outlet	A Height	B Depth	C Width
MO4, MO8, MO12	3/8 BSP	3/4 BSP	1/2BSP	190	102	80
MO22, MO37, MO72, MO111, MO189	3/8 BSP	3/8 BSP	1/4 BSP	228	102	80
MO22D, MO37D, MO72D, MO111D, MO189D	3/8 BSP	3/8 BSP	1/4 BSP	186	108	86
S15, S25, S35	1/2 BSP	3/4 BSP	3/4 BSP	221	135	175.5
S60, S100, S150	1/2 BSP	1/2 BSP	3/8 BSP	221	135	175.5
S15D, S25D, S35D	1/2 BSP	3/4 BSP	3/4 BSP	260	135	175.5
S60D, S100D, S150D	1/2 BSP	1/2 BSP	3/8 BSP	260	135	175.5
M4	3/8 BSP	1 BSP	1/2 BSP	216	120	112
M8, M12	3/8 BSP	3/4 BSP	1/2 BSP	209	120	112
M22, M37, M72, M111, M189	3/8 BSP	3/8 BSP	3/8 BSP	195	104	112
M22D, M37D, M72D, M111D, M189D	3/8 BSP	3/8 BSP	3/8 BSP	184	124	112
M111-2, M189-2	3/8 BSP	1/4 BSP	9/16-18UNF	255	100	112
M111-3, M189-3	3/8 BSP	1/4 BSP	9/16-18UNF	316	100	112
G10, G15	3/4 BSP	1 BSP	3/4 BSP	311	190.5	272
G25, G35	3/4 BSP	3/4 BSP	3/4 BSP	296	181	272
G60, G100, G150	3/4 BSP	3/4 BSP	1/2 BSP	321	184.5	272
G250, G300, G400	3/4 BSP	1/2 BSP	9/16-18UNF	300	193.5	272
G500S	3/4 BSP	1/4 BSP	9/16-18UNF	362	181	272
G10D, G15D	3/4 BSP	1 BSP	3/4 BSP	442	190.5	272
G25D, G35D	3/4 BSP	3/4 BSP	3/4 BSP	412	181	272
G60D, G100D, G150D	3/4 BSP	3/4 BSP	3/4 BSP	344	184.5	272
G10-2, G15-2	3/4 BSP	1 BSP	3/4 BSP	411	211	272
G25-2, G35-2	3/4 BSP	3/4 BSP	3/4 BSP	396	211	272
G60-2	3/4 BSP	3/4 BSP	1/2 BSP	421	211	272
G100-2, G150-2	3/4 BSP	1/2 BSP	9/16-18UNF	400	211	272
G250-2, G300-2, G400-2	3/4 BSP	1/4 BSP	9/16-18UNF	483	211	272
G500-2S	3/4 BSP	1/4 BSP	5/8-18UNF	462	211	272
MSF4	3/8 BSP	1 BSP	1/2 BSP	248	112	120
MSF8, MSF12	3/8 BSP	3/4 BSP	1/2 BSP	241	112	120
MSF22, MSF37, MSF72, MSF111	3/8 BSP	3/8 BSP	3/8 BSP	247	112	108
GSF10, GSF15	3/4 BSP	1 BSP	3/4 BSP	411	190.5	272
GSF25, GSF35	3/4 BSP	3/4 BSP	3/4 BSP	400	181	272
GSF60, GSF100, GSF150	3/4 BSP	3/4 BSP	1/2 BSP	412	181	272
GX35, GX60, GX100	3/4 BSP	1 NPT	3/8 NPT	632	237	244
DPD100, DPD150, DPD200	3/4 BSP	3/8 BSP	9/16-18UNF	762	346	460

All connections listed are female unless otherwise noted. • Other connections available on request.

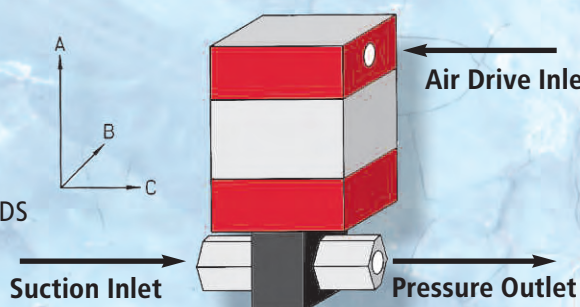
Standard pump versions with bottom inlet:

- MO
- M / M...-2 / M...-3
- G10 – 400
- G10D – G35D
- G10-2 – G400-2
- MSF
- GSF



Standard pump versions with side inlet:

- MO...D
- S / S...D
- M...D
- G500S
- G60DS
- G150DS
- G500-2S

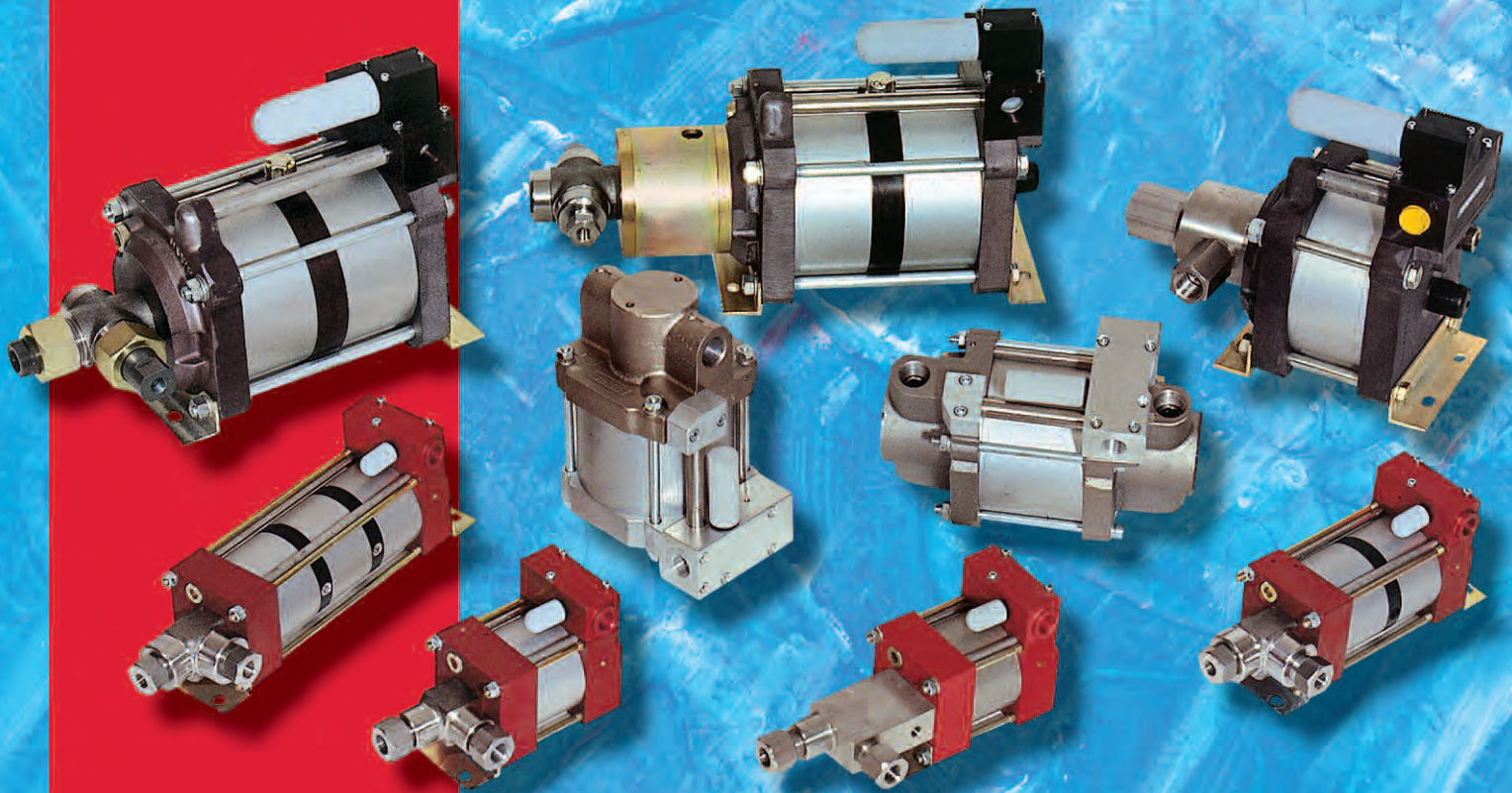


Wetted Materials of Construction for MAXIMATOR Air Driven Liquid Pumps in Standard Design and their relating double acting or double and triple air head versions

Pump Model	Seal Package	Pump Body	Piston	Fittings	Inlet and Outlet Check Valves			Sealing cones
					Balls	Discs	Springs	
MO4 – MO12	Polyurethane, Buna N	AlCuMgPbF34 "anodized"	1.4112 (hardened)	AlCuMgPbF34 "anodized"	n/a	1.4301	1.4310	n/a
MO22 – MO189	Polyurethane, Buna N	GGG50	1.4112 (hardened)	1.4104	1.3541	n/a	X 12 CrNi 17 7	n/a
S15 – S150	Polyurethane, Buna N	GGG50	1.4112 (hardened)	n/a	n/a	1.4301	1.4310	n/a
M4(L) – M12(L)	Polyurethane, Buna N	AlMgSiPb "anodized"	1.4112 (hardened)	Inlet: 1.4305 / Outlet: AlMgPbCu "anodized"	1.3541	n/a	1.4310	n/a
M4VE – M12VE	UHMWPE, Viton	AlMgSiPb "anodized"	1.4112 (hardened)	Inlet: 1.4305 / Outlet: AlMgPbCu "anodized"	1.3541	n/a	1.4310	n/a
M22(L) – M189(L)	Polyurethane, Buna N	1.4305	1.4112 (hardened)	1.4104	1.3541	n/a	X 12 CrNi 17 7	n/a
M22VE – M189VE	UHMWPE, Viton	1.4305	1.4112 (hardened)	1.4104	1.3541	n/a	X 12 CrNi 17 7	n/a
MSF4(L) – MSF12(L)	PTFE, Viton	1.4571	1.4571	1.4305	Al203	n/a	1.4571	n/a
MSF4VE – MSF12VE	Reinforced PTFE, Viton	1.4571	1.4571	Inlet: 1.4305 / Outlet: 1.4104	Al203	n/a	1.4571	n/a
MSF22(L) – MSF111(L)	Reinforced PTFE, Viton	1.4305	1.4112 (hardened)	1.4571	Al203	n/a	1.4571	n/a
G10(L) – G35(L)	Polyurethane, Buna N	1.4305 303 (X 10 CrNiS 18 9)	1.4112 (hardened)	1.4571	1.3541	1.4568	1.4310	n/a
G10VE – G35VE	UHMWPE, Viton	1.4305 303 (X 10 CrNiS 18 9)	1.4112 (hardened)	1.4571	Al203	1.4568	1.4571	n/a
G60(L) – G150(L)	Polyurethane, Buna N	1.4305 303 (X 10 CrNiS 18 9)	1.4112 (hardened)	1.4571	1.3541	n/a	1.4310	17-4-PH
G60VE – G150VE	UHMWPE, Viton	1.4305 303 (X 10 CrNiS 18 9)	1.4112 (hardened)	1.4571	Al203	n/a	1.4571	17-4-PH
G250(L) – G400(L)	Polyurethane, Buna N	1.4313 (X 5 CrMoV 18)	1.4112 (hardened)	1.4122	1.3541	n/a	1.4310	17-4-PH
G250VE – G400VE	UHMWPE, Viton	1.4313 (X 5 CrMoV 18)	1.4112 (hardened)	1.4122	Al203	n/a	1.4571	17-4-PH
G500(L)	Polyurethane, Buna N	1.4313 (X 5 CrMoV 18)	Piston: Hard metal / Bracket: 1.4112	17-4-PH	1.3541	n/a	1.4571	17-4-PH
GSF10(L) – GSF35(L)	PTFE, Viton	1.4305 303 (X 10 CrNiS 18 9)	1.4112 (hardened)	1.4571	Al203	1.4568	1.4571	n/a
GSF10VE – GSF35VE	UHMWPE, Viton	1.4305 303 (X 10 CrNiS 18 9)	1.4112 (hardened)	1.4571	Al203	1.4568	1.4571	n/a
GSF60(L) – GSF150(L)	PTFE, Viton	1.4305 303 (X 10 CrNiS 18 9)	1.4112 (hardened)	1.4571	Al203	1.4568	1.4571	n/a
GSF60VE – GSF150VE	UHMWPE, Viton	1.4305 303 (X 10 CrNiS 18 9)	1.4112 (hardened)	1.4571	Al203	1.4568	1.4571	n/a

MAXIMATOR®

HOCHDRUCK-
TECHNIK
HYDRAULIK
PNEUMATIK
PRÜFTECHNIK

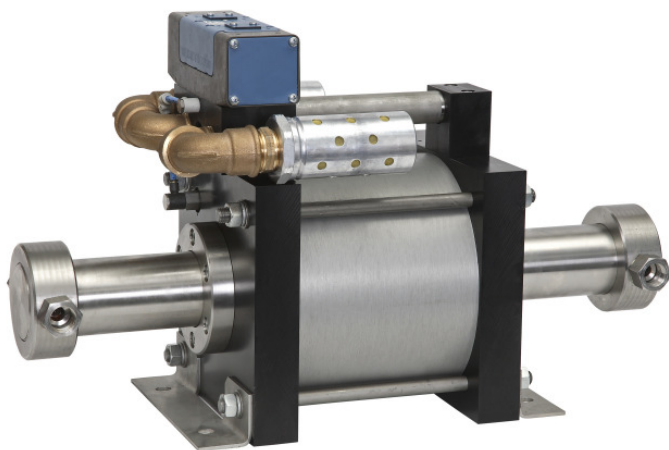


Pumpen Druckluftbetrieben



MAXIMATOR GmbH

Datenblatt	GPD 30	Öl- und Wasserbetrieb
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GPD 30
doppeltwirkend, einfacher Luftantrieb

Technische Daten:

Antriebsdruckluft:	1-10 bar / 14,5—145 psi
Berechneter Betriebsdruck bei 10 bar/145 psi Luftantriebsdruck	300 bar/ 4350 psi
Übersetzungsverhältnis:	1:30
Hubvolumen:	508 cm ³ / 31,0 cu.inch
Anschlüsse	
Einlass:	BSP 3/4"
Auslass:	BSP 3/4"
Luftanschluss:	BSP 1"
Max. Betriebstemperatur:	60 °C
Gewicht:	58 kg

Leistungsdiagramm für Druck und Volumenstrom
siehe beiliegendes Kurvenblatt

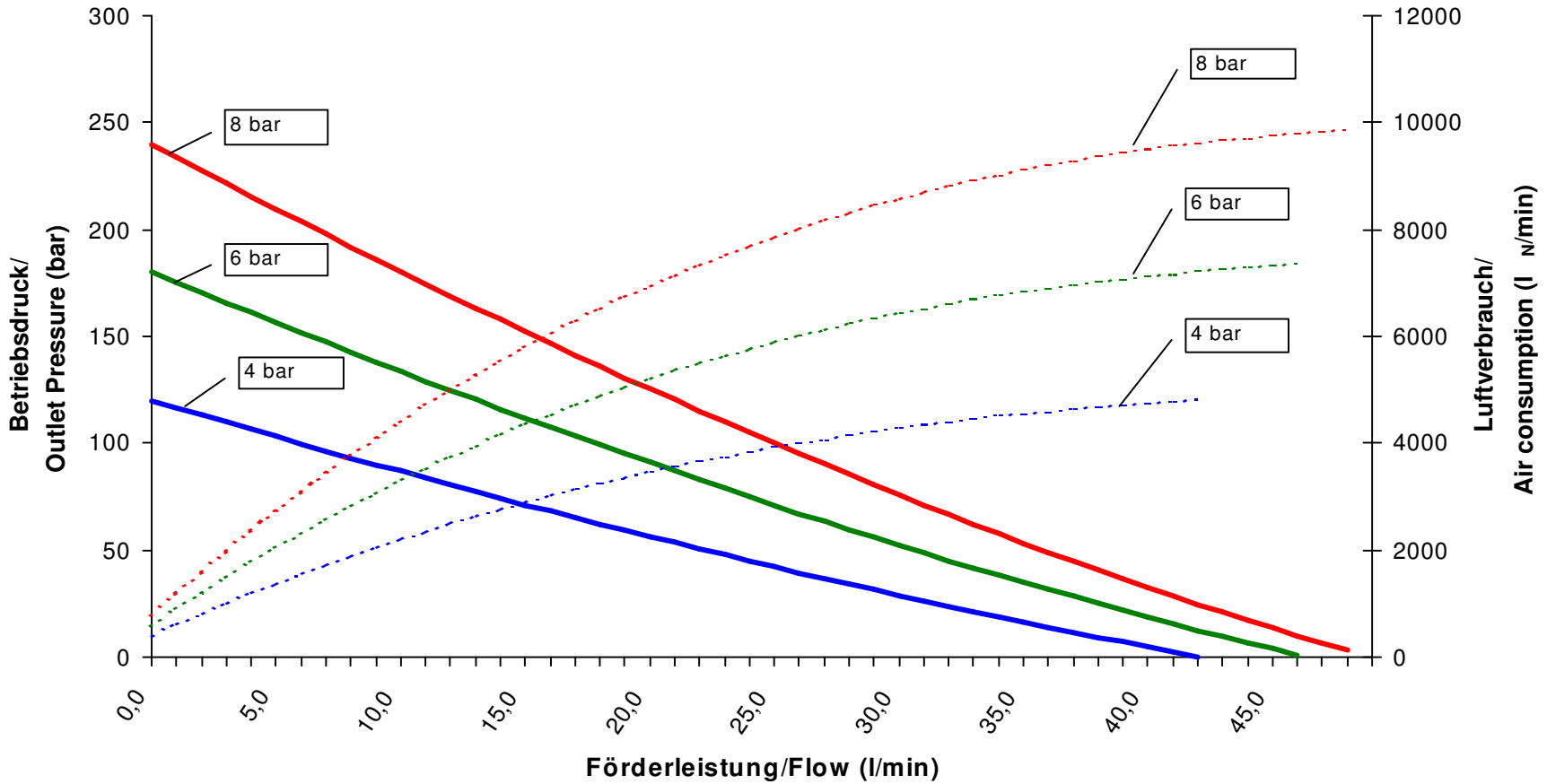
Materialien:	Dichtungen:	GPD 30: UHMWPE, Viton
	Pumpenkörper:	1.4571
	Kolben	1.4112 (gehärtet)
	Fittings	1.4305
Abmessungen:	Höhe:	470 mm
	Tiefe:	270 mm
	Breite:	700 mm
Verfügbare Optionen:	Ein- und Auslassverrohrung zu einem Einlassanschluss und einem Auslassanschluss	
Verfügbares Zubehör		
Luftkontrolleinheiten für GPD- Serie mit Druckfilter, Kontrollmanometer und Absperrventil:	GPD 30 mit C3	
Um die Pumpe vor zu hohen Drücken zu schützen oder um den Auslassdruck zu begrenzen besteht die Möglichkeit ein Luftsicherheitsventil in die Luftleitung zu installieren:	GPD 30 mit C3/SV-Air (Der maximal erforderliche Druck muss angegeben werden.)	

Für Rückfragen oder weitere Information stehen wir Ihnen gern zur Verfügung.

Im Rahmen der festgelegten technischen Eigenschaften und Leistungen behalten wir uns Änderungen in der Konstruktion und in der Ausführung unserer Produkte vor. Es gelten unsere Allgemeinen Geschäftsbedingungen, einschließlich Produkthaftung, für alle erbrachten Produkte und erbrachten Leistungen.

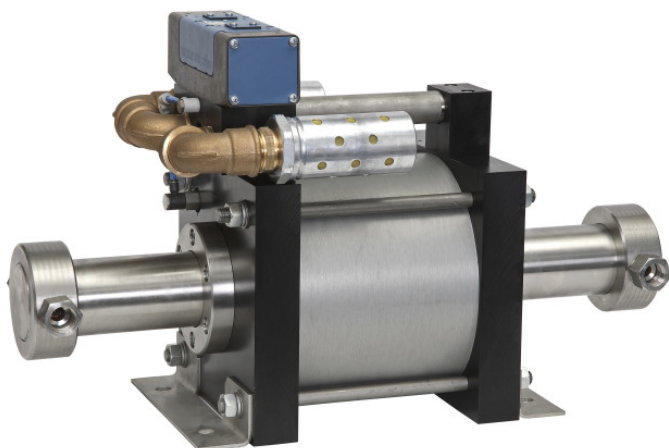
Leistungsdiagramm/Performance Graph GPD 30

Prüfflüssigkeit/Test Liquid: Wasser-Öl-Emulsion/Water Oil Emulsion ca. 1 - 10 cst



- Betriebsdruck bei/Outlet Pressure at 4 bar
- Betriebsdruck bei/Outlet Pressure at 6 bar
- Betriebsdruck bei/Outlet Pressure at 8 bar
- - - Luftverbrauch bei/Air consumption at 4 bar
- - - Luftverbrauch bei/Air consumption at 6 bar
- - - Luftverbrauch bei/Air consumption at 8 bar

Datenblatt	GPD 60	Öl- und Wasserbetrieb
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GPD 60
doppeltwirkend, einfacher Luftantrieb

Technische Daten:

Antriebsdruckluft:	1-10 bar / 14,5—145 psi
Berechneter Betriebsdruck bei 10 bar/145 psi Luftantriebsdruck	600 bar/ 8700 psi
Übersetzungsverhältnis:	1:60
Hubvolumen:	257 cm ³ / 15,7 cu.inch
Anschlüsse	
Einlass:	BSP 3/4"
Auslass:	BSP 3/4"
Luftanschluss:	BSP 1"
Max. Betriebstemperatur:	60 °C
Gewicht:	58 kg

Leistungsdiagramm für Druck und Volumenstrom
siehe beiliegendes Kurvenblatt

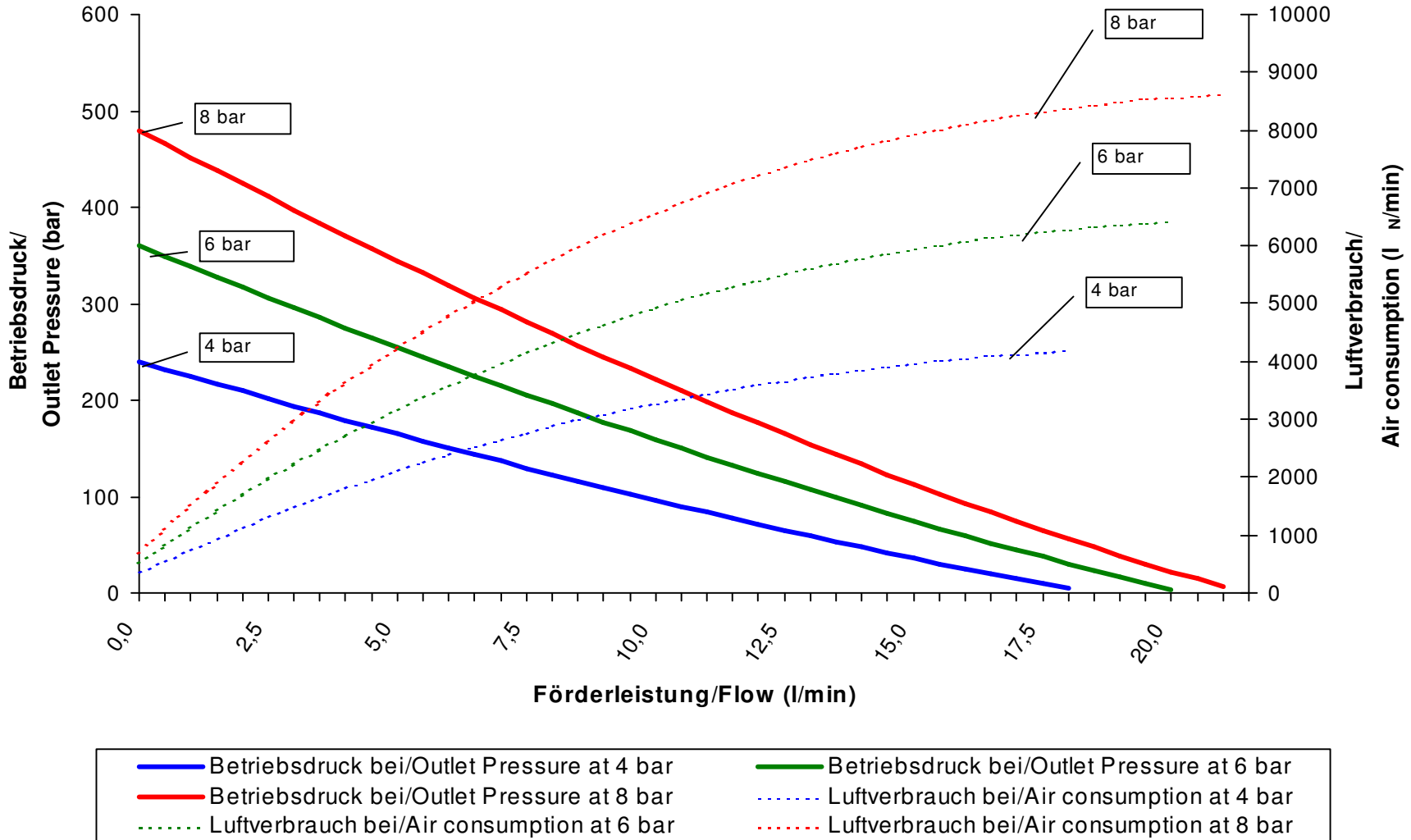
Materialien:	Dichtungen:	GPD 60: UHMWPE, Viton
	Pumpenkörper:	1.4571
	Kolben	1.4112 (gehärtet)
	Fittings	1.4305
Abmessungen:	Höhe:	470 mm
	Tiefe:	270 mm
	Breite:	700 mm
Verfügbare Optionen:	Ein- und Auslassverrohrung zu einem Einlassanschluss und einem Auslassanschluss	
Verfügbares Zubehör		
Luftkontrolleinheiten für GPD- Serie mit Druckfilter, Kontrollmanometer und Absperrventil:	GPD 60 mit C3	
Um die Pumpe vor zu hohen Drücken zu schützen oder um den Auslassdruck zu begrenzen besteht die Möglichkeit ein Luftsicherheitsventil in die Luftleitung zu installieren:	GPD 60 mit C3/SV-Air (Der maximal erforderliche Druck muss angegeben werden.)	

Für Rückfragen oder weitere Information stehen wir Ihnen gern zur Verfügung.

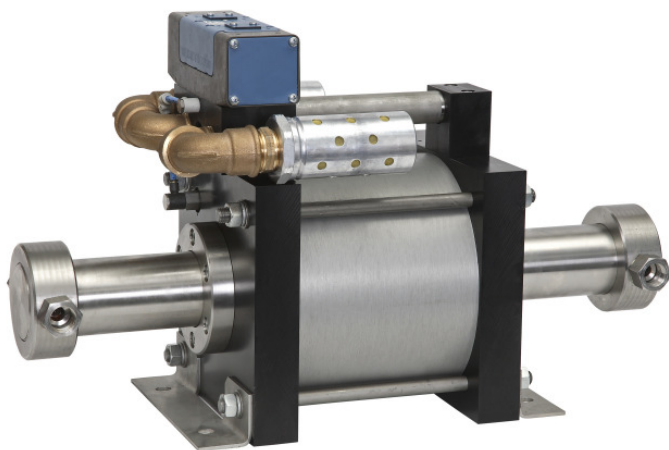
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Leistungsdiagramm/Performance Graph GPD 60

Prüfflüssigkeit/Test Liquid: Wasser-Öl-Emulsion/Water Oil Emulsion ca. 1 - 10 cst



Datenblatt	GPD 120	Öl- und Wasserbetrieb
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GPD 120
doppeltwirkend, einfacher Luftantrieb

Technische Daten:

Antriebsdruckluft:	1-10 bar / 14,5—145 psi
Berechneter Betriebsdruck bei 10 bar/145 psi Luftantriebsdruck	1290 bar/ 18700 psi
Übersetzungsverhältnis:	1:129
Hubvolumen:	121 cm ³ / 7,4 cu.inch
Anschlüsse	
Einlass:	BSP 3/4"
Auslass:	13/16"-16UNF (9MF)
Luftanschluss:	BSP 1"
Max. Betriebstemperatur:	60 °C
Gewicht:	58 kg

Leistungsdiagramm für Druck und Volumenstrom
siehe beiliegendes Kurvenblatt

Materialien:	Dichtungen:	GPD 120: UHMWPE, Viton
	Pumpenkörper:	1.4571
	Kolben	1.4112 (gehärtet)
	Fittings	1.4305
Abmessungen:	Höhe:	470 mm
	Tiefe:	270 mm
	Breite:	700 mm
Verfügbare Optionen:	Ein- und Auslassverrohrung zu einem Einlassanschluss und einem Auslassanschluss	
Verfügbares Zubehör		
Luftkontrolleinheiten für GPD- Serie mit Druckfilter, Kontrollmanometer und Absperrventil:	GPD 120 mit C3	
Um die Pumpe vor zu hohen Drücken zu schützen oder um den Auslassdruck zu begrenzen besteht die Möglichkeit ein Luftsicherheitsventil in die Luftleitung zu installieren:	GPD 120 mit C3/SV-Air (Der maximal erforderliche Druck muss angegeben werden.)	

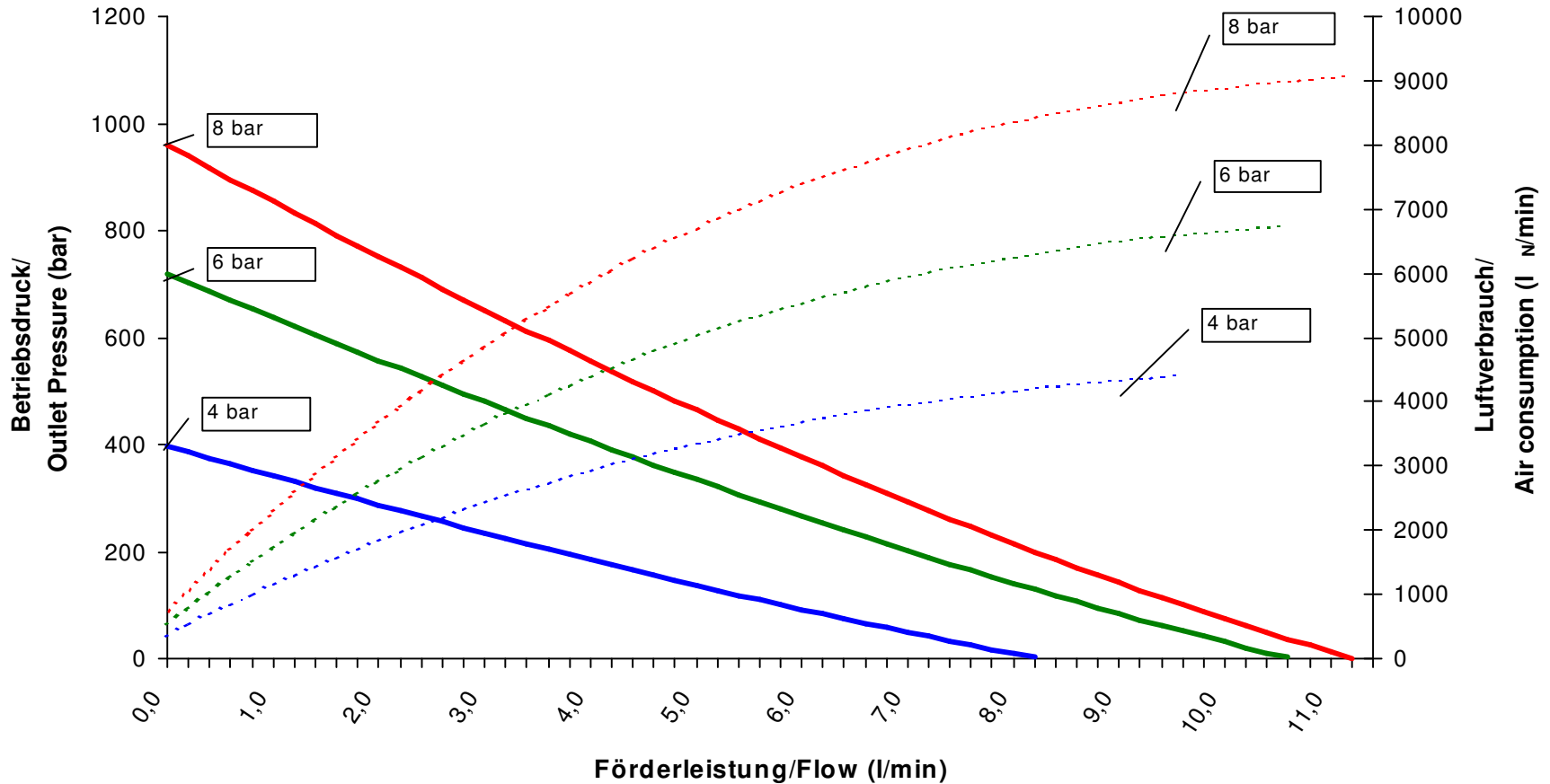
Für Rückfragen oder weitere Information stehen wir Ihnen gern zur Verfügung.

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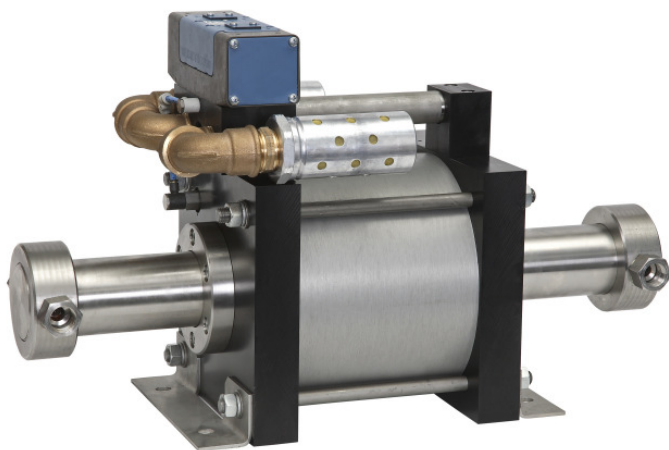
Leistungsdiagramm/Performance Graph GPD 120

Prüfflüssigkeit/Test Liquid: Wasser-Öl-Emulsion/Water Oil Emulsion ca. 1 - 10 cst



- Betriebsdruck bei/Outlet Pressure at 4 bar
- Betriebsdruck bei/Outlet Pressure at 8 bar
- Betriebsdruck bei/Outlet Pressure at 6 bar
- - - Luftverbrauch bei/Air consumption at 4 bar
- - - Luftverbrauch bei/Air consumption at 8 bar
- - - Luftverbrauch bei/Air consumption at 6 bar

Technical Data Sheet	GPD 180	Oil and Water Service
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GPD 180
double acting, single air drive head

Technical data:

Air drive pressure:	1-10 bar / 14,5—145 psi
Calculated outlet pressure at an air drive of 10 bar/145 psi	1920 bar/ 27850 psi
Pressure ratio:	1: 192
Displacement volume/double stroke	69 cm ³ / 4,2 cu.inch
Connections	
Inlet:	BSP 1/4"
Outlet:	3/4"-16UNF (6HF)
Air drive	BSP 1"
Maximum operating temperature	60 °C
Net weight	58 kg

Pressure and flow performances, please see enclosed graph.

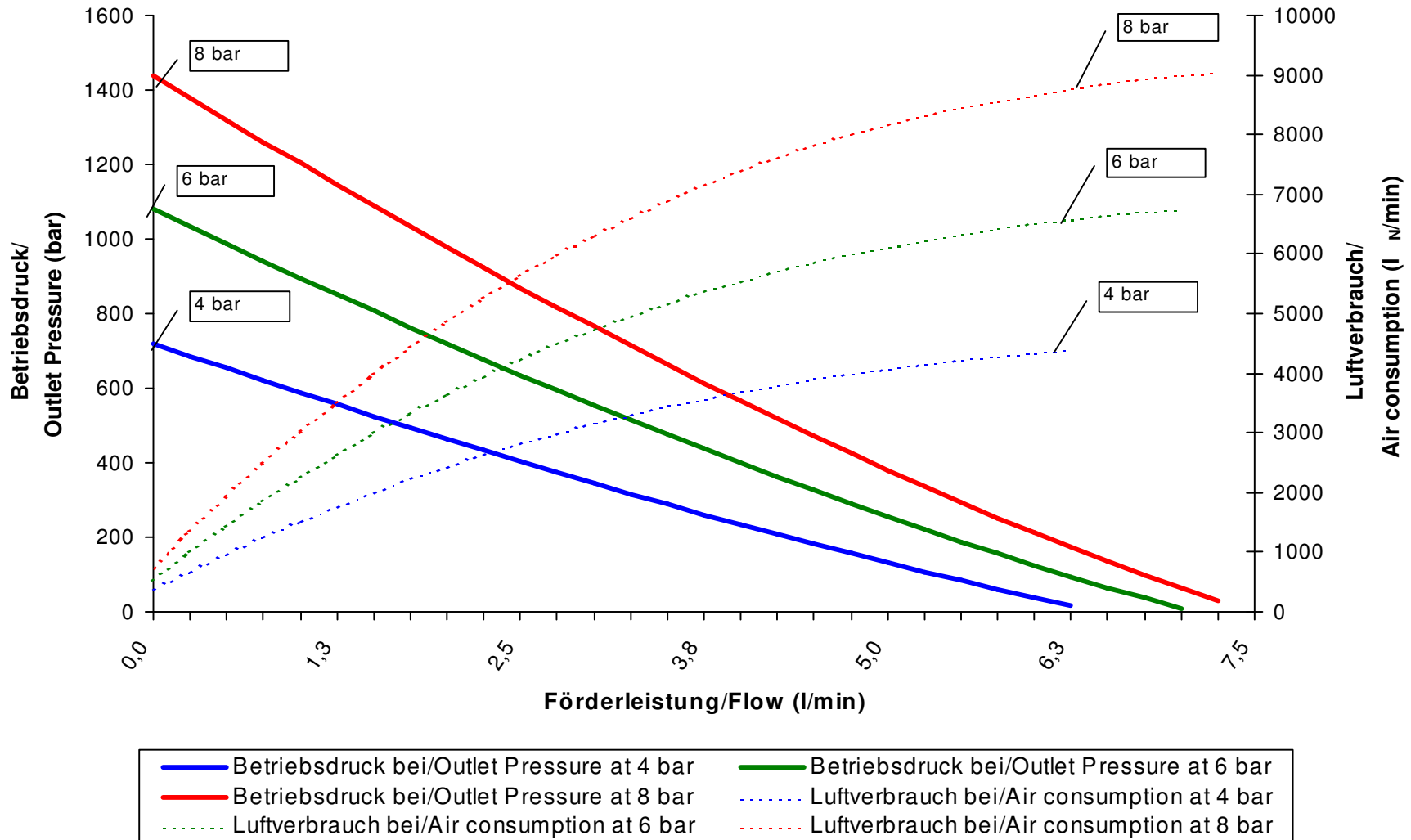
Wetted materials of construction:	Seal package:	GPD 180: UHMWPE, Viton
	Pump body:	1.4571
	Piston	1.4301
	Fittings	1.4305
Approximate dimensions:	Height:	470 mm
	Depth:	270 mm
	Width:	700 mm
Available options:	Inlet and Outlet piping to one common inlet and one common outlet port	
Available accessories		
Air control units for GP-series with filter pressure regulator, control pressure gauge and shut off valve:	GPD 180 with C3	
To protect the pump against excessive outlet pressures or to limit the outlet pressure, a safety valve can be fitted to the air control unit in the air drive line:	GPD 180 with C3/SV-air (The required outlet pressure has to be indi-	

Please consult factory for more information.

All technical and dimensional information subject to change. All General Terms and Conditions of sale, including limitations of our liability, apply to all products and services sold.

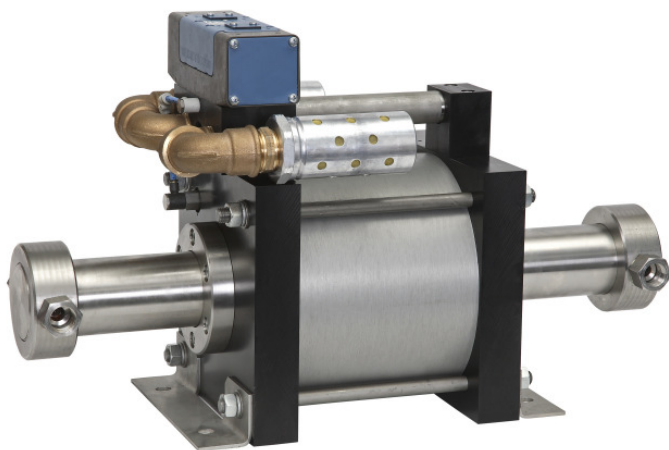
Leistungsdiagramm/Performance Graph GPD 180

Prüfflüssigkeit/Test Liquid: Wasser-Öl-Emulsion/Water Oil Emulsion ca. 1 - 10 cst



- Betriebsdruck bei/Outlet Pressure at 4 bar
- Betriebsdruck bei/Outlet Pressure at 6 bar
- Betriebsdruck bei/Outlet Pressure at 8 bar
- ... Luftverbrauch bei/Air consumption at 4 bar
- ... Luftverbrauch bei/Air consumption at 6 bar
- ... Luftverbrauch bei/Air consumption at 8 bar

Technical Data Sheet	GPD 260	Oil and Water Service
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GPD 260
double acting, single air drive head

Technical data:

Air drive pressure:	1-10 bar / 14,5—145 psi
Calculated outlet pressure at an air drive of 10 bar/145 psi	2770 bar/ 40175 psi
Pressure ratio:	1 : 277
Displacement volume/double stroke	48 cm ³ / 2,9 cu.inch
Connections	
Inlet:	BSP 1/4"
Outlet:	3/4"-16UNF (6HF)
Air drive	BSP 1"
Maximum operating temperature	60 °C
Net weight	58 kg

Pressure and flow performances, please see enclosed graph.

Wetted materials of construction:	Seal package:	GPD 260: UHMWPE, Viton
	Pump body:	1.4571
	Piston	1.4301
	Fittings	1.4305
Approximate dimensions:	Height:	470 mm
	Depth:	270 mm
	Width:	700 mm
Available options:	Inlet and Outlet piping to one common inlet and one common outlet port	
Available accessories		
Air control units for GP-series with filter pressure regulator, control pressure gauge and shut off valve:	GPD 260 with C3	
To protect the pump against excessive outlet pressures or to limit the outlet pressure, a safety valve can be fitted to the air control unit in the air drive line:	GPD 260 with C3/SV-air (The required outlet pressure has to be indi-	

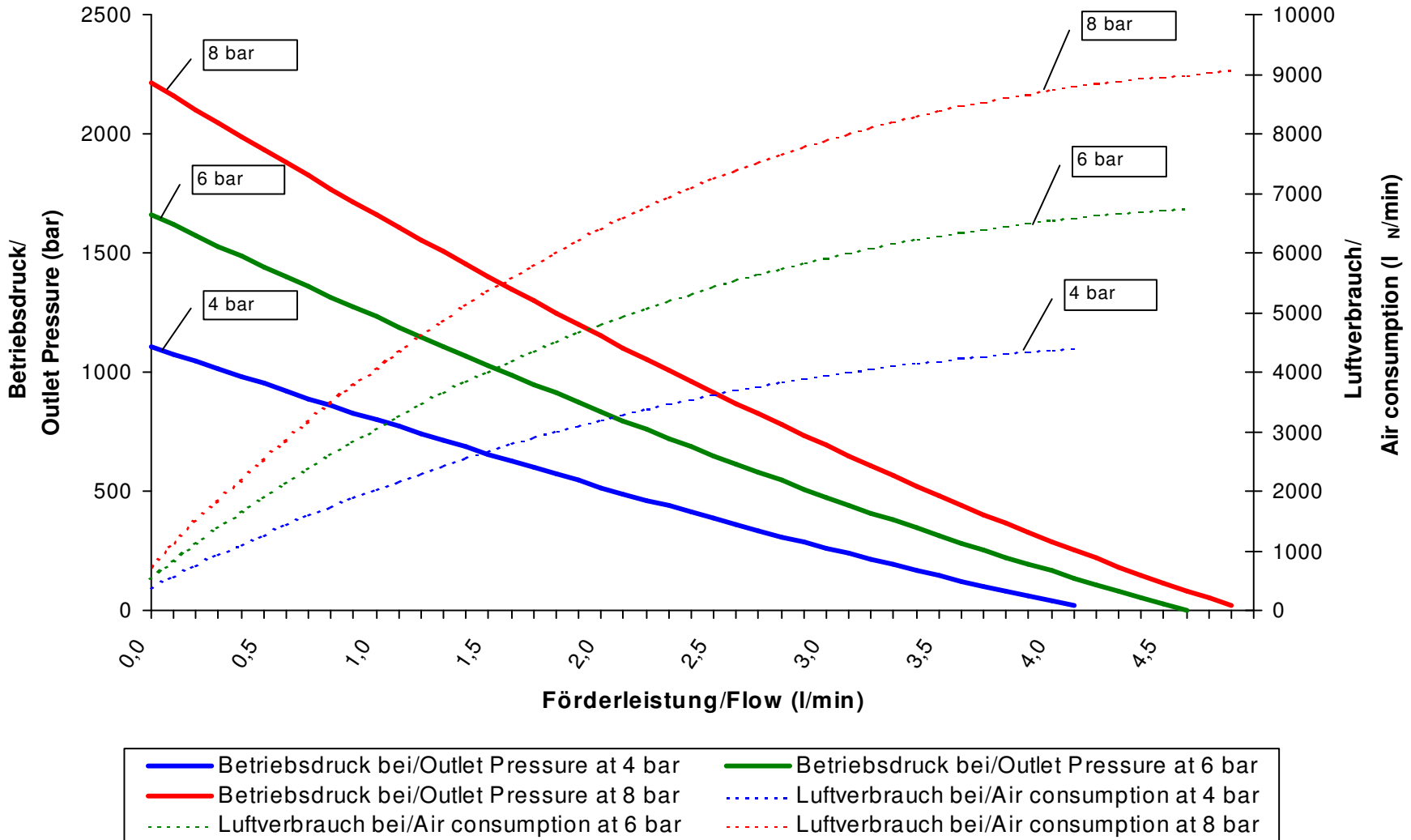
Please consult factory for more information.

All technical and dimensional information subject to change. All General Terms and Conditions of sale, including limitations of our liability, apply to all products and services sold.

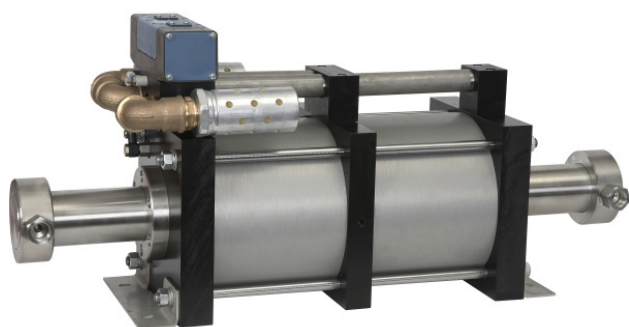


Leistungsdiagramm/Performance Graph GPD 260

Prüfflüssigkeit/Test Liquid: Wasser-Öl-Emulsion/Water Oil Emulsion ca. 1 - 10 cst



Datenblatt	GPD 30-2	Öl- und Wasserbetrieb
------------	-----------------	-----------------------



GPD 30 –2
doppeltwirkend, doppelter Luftantrieb

Technische Daten:

Antriebsdruckluft:	1-10 bar / 14,5—145 psi
Berechneter Betriebsdruck bei 10 bar/145 psi Luftantriebsdruck	600 bar/ 4350 psi
Übersetzungsverhältnis:	1:60
Hubvolumen:	508 cm ³ / 31,0 cu.inch
Anschlüsse	
Einlass:	BSP 3/4"
Auslass:	BSP 3/4"
Luftanschluss:	BSP 1"
Max. Betriebstemperatur:	60 °C
Gewicht:	78 kg

Leistungsdiagramm für Druck und Volumenstrom
siehe beiliegendes Kurvenblatt

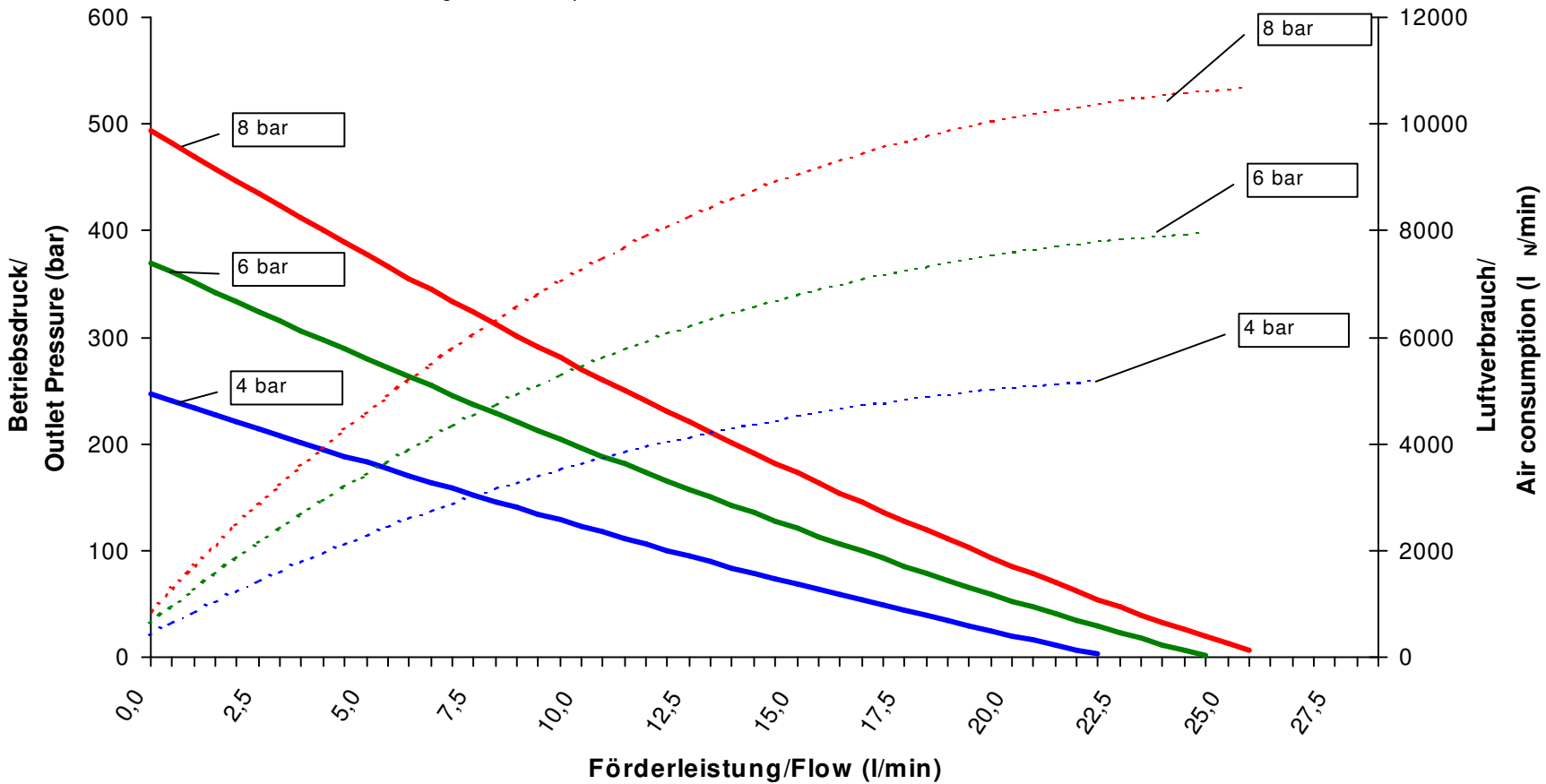
Materialien:	Dichtungen:	GPD 30-2: UHMWPE, Viton
	Pumpenkörper:	1.4571
	Kolben	1.4112 (gehärtet)
	Fittings	1.4305
Abmessungen:	Höhe:	470 mm
	Tiefe:	270 mm
	Breite:	700 mm
Verfügbare Optionen:	Ein- und Auslassverrohrung zu einem Einlassanschluss und einem Auslassanschluss	
Verfügbares Zubehör		
Luftkontrolleinheiten für GPD- Serie mit Druckfilter, Kontrollmanometer und Absperrventil:	GPD 30-2 mit C3	
Um die Pumpe vor zu hohen Drücken zu schützen oder um den Auslassdruck zu begrenzen besteht die Möglichkeit ein Luftsicherheitsventil in die Luftleitung zu installieren:	GPD 30-2 mit C3/SV-Air (Der maximal erforderliche Druck muss angegeben werden.)	

Für Rückfragen oder weitere Information stehen wir Ihnen gern zur Verfügung.

Im Rahmen der festgelegten technischen Eigenschaften und Leistungen behalten wir uns Änderungen in der Konstruktion und in der Ausführung unserer Produkte vor. Es gelten unsere Allgemeinen Geschäftsbedingungen, einschließlich Produkthaftung, für alle erbrachten Produkte und erbrachten Leistungen.

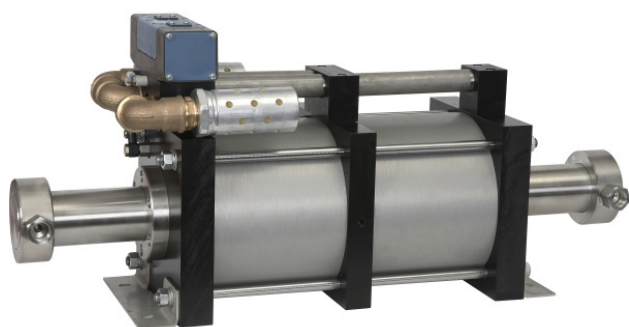
Leistungsdiagramm/Performance Graph GPD 30-02

Prüfflüssigkeit/Test Liquid: Wasser-Öl-Emulsion/Water Oil Emulsion ca. 1 - 10 cst



- Betriebsdruck bei/Outlet Pressure at 4 bar
- Betriebsdruck bei/Outlet Pressure at 8 bar
- Betriebsdruck bei/Outlet Pressure at 6 bar
- - - Luftverbrauch bei/Air consumption at 4 bar
- - - Luftverbrauch bei/Air consumption at 6 bar
- - - Luftverbrauch bei/Air consumption at 8 bar

Datenblatt	GPD 60-2	Öl- und Wasserbetrieb
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GPD 60 –2
doppeltwirkend, doppelter Luftantrieb

Technische Daten:

Antriebsdruckluft:	1-10 bar / 14,5—145 psi
Berechneter Betriebsdruck bei 10 bar/145 psi Luftantriebsdruck	1200 bar/ 17400 psi
Übersetzungsverhältnis:	1:120
Hubvolumen:	257 cm ³ / 15,7 cu.inch
Anschlüsse	
Einlass:	BSP 3/4"
Auslass:	BSP 3/4"
Luftanschluss:	BSP 1"
Max. Betriebstemperatur:	60 °C
Gewicht:	78 kg

Leistungsdiagramm für Druck und Volumenstrom
siehe beiliegendes Kurvenblatt

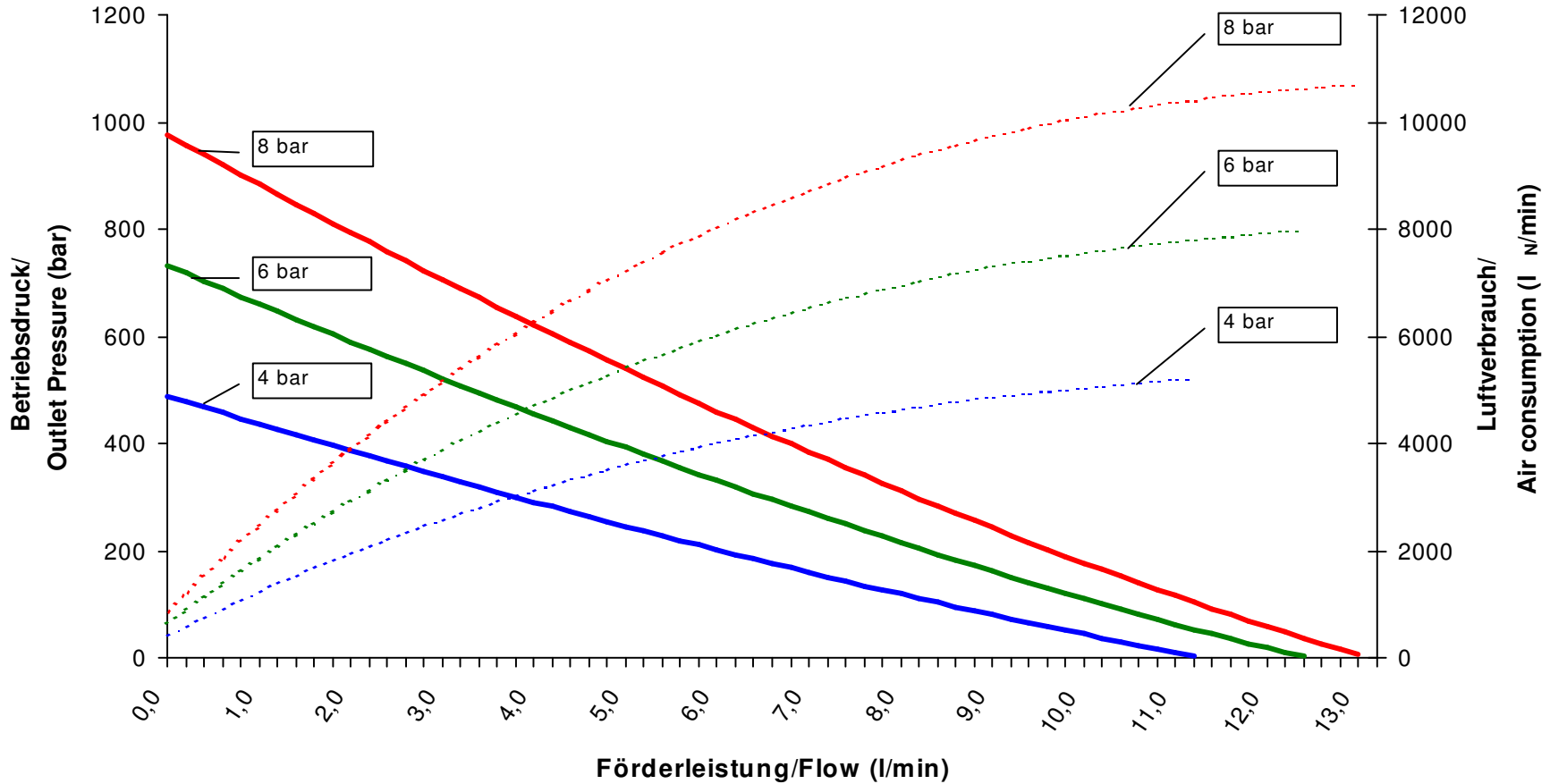
Materialien:	Dichtungen:	GPD 60-2: UHMWPE, Viton
	Pumpenkörper:	1.4571
	Kolben	1.4112 (gehärtet)
	Fittings	1.4305
Abmessungen:	Höhe:	470 mm
	Tiefe:	270 mm
	Breite:	700 mm
Verfügbare Optionen:	Ein- und Auslassverrohrung zu einem Einlassanschluss und einem Auslassanschluss	
Verfügbares Zubehör		
Luftkontrollenheiten für GPD- Serie mit Druckfilter, Kontrollmanometer und Absperrventil:	GPD 60-2 mit C3	
Um die Pumpe vor zu hohen Drücken zu schützen oder um den Auslassdruck zu begrenzen besteht die Möglichkeit ein Luftsicherheitsventil in die Luftleitung zu installieren:	GPD 60-2 mit C3/SV-Air (Der maximal erforderliche Druck muss angegeben werden.)	

Für Rückfragen oder weitere Information stehen wir Ihnen gern zur Verfügung.

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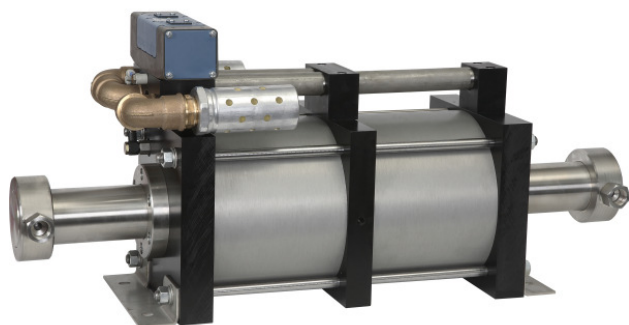
Leistungsdiagramm/Performance Graph GPD 60-02

Prüfflüssigkeit/Test Liquid: Wasser-Öl-Emulsion/Water Oil Emulsion ca. 1 - 10 cst



- Betriebsdruck bei/Outlet Pressure at 4 bar
- Betriebsdruck bei/Outlet Pressure at 6 bar
- Betriebsdruck bei/Outlet Pressure at 8 bar
- ⋯ Luftverbrauch bei/Air consumption at 4 bar
- ⋯ Luftverbrauch bei/Air consumption at 6 bar
- ⋯ Luftverbrauch bei/Air consumption at 8 bar

Datenblatt	GPD 120-2	Öl- und Wasserbetrieb
------------	------------------	-----------------------



GPD 120 –2
doppeltwirkend, doppelter Luftantrieb

Technische Daten:

Antriebsdruckluft:	1-10 bar / 14,5—145 psi
Berechneter Betriebsdruck bei 10 bar/145 psi Luftantriebsdruck	2580 bar/ 37400 psi
Übersetzungsverhältnis:	1:258
Hubvolumen:	121 cm ³ / 7,4 cu.inch
Anschlüsse	
Einlass:	BSP 3/4"
Auslass:	13/16"-16UNF (9MF)
Luftanschluss:	BSP 1"
Max. Betriebstemperatur:	60 °C
Gewicht:	78 kg

Leistungsdiagramm für Druck und Volumenstrom
siehe beiliegendes Kurvenblatt

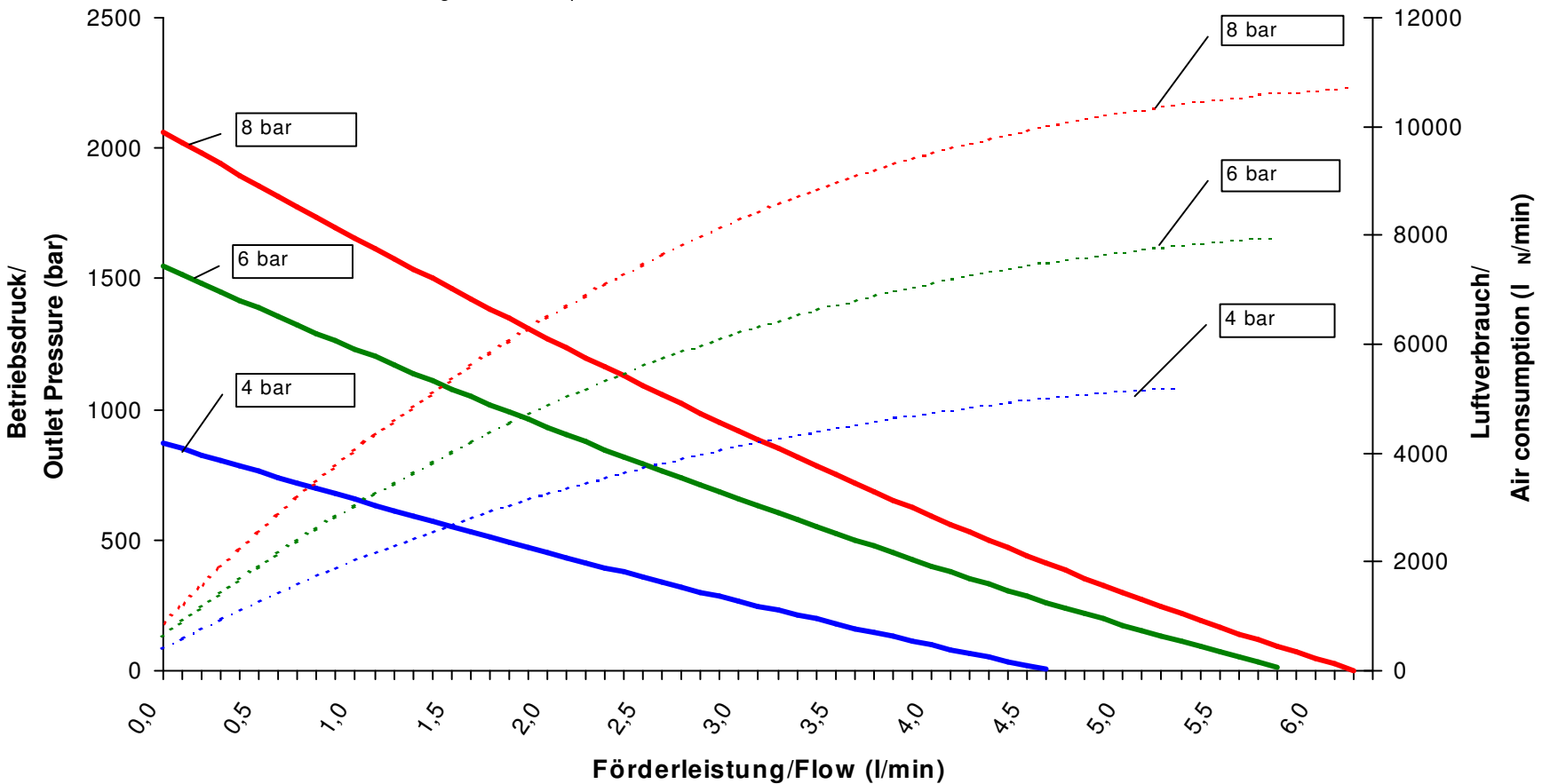
Materialien:	Dichtungen:	GPD 120-2: UHMWPE, Viton
	Pumpenkörper:	1.4571
	Kolben	1.4112 (gehärtet)
	Fittings	1.4305
Abmessungen:	Höhe:	470 mm
	Tiefe:	270 mm
	Breite:	700 mm
Verfügbare Optionen:	Ein- und Auslassverrohrung zu einem Einlassanschluss und einem Auslassanschluss	
Verfügbares Zubehör		
Luftkontrolleinheiten für GPD- Serie mit Druckfilter, Kontrollmanometer und Absperrventil:	GPD 120-2 mit C3	
Um die Pumpe vor zu hohen Drücken zu schützen oder um den Auslassdruck zu begrenzen besteht die Möglichkeit ein Luftsicherheitsventil in die Luftleitung zu installieren:	GPD 120-2 mit C3/SV-Air (Der maximal erforderliche Druck muss angegeben werden.)	

Für Rückfragen oder weitere Information stehen wir Ihnen gern zur Verfügung.

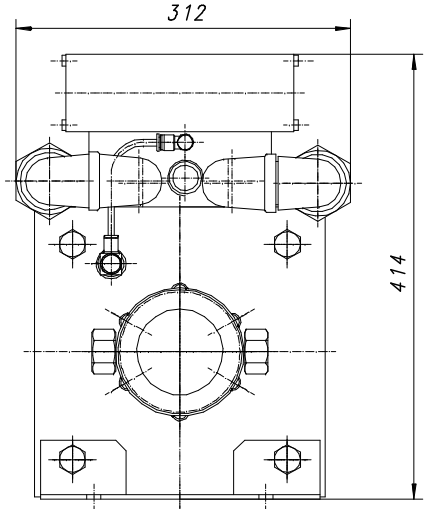
Im Rahmen der festgelegten technischen Eigenschaften und Leistungen behalten wir uns Änderungen in der Konstruktion und in der Ausführung unserer Produkte vor. Es gelten unsere Allgemeinen Geschäftsbedingungen, einschließlich Produkthaftung, für alle erbrachten Produkte und erbrachten Leistungen.

Leistungsdiagramm/Performance Graph GPD120-02

Prüfliquid/Test Liquid: Wasser-Öl-Emulsion/Water Oil Emulsion ca. 1 - 10 cst



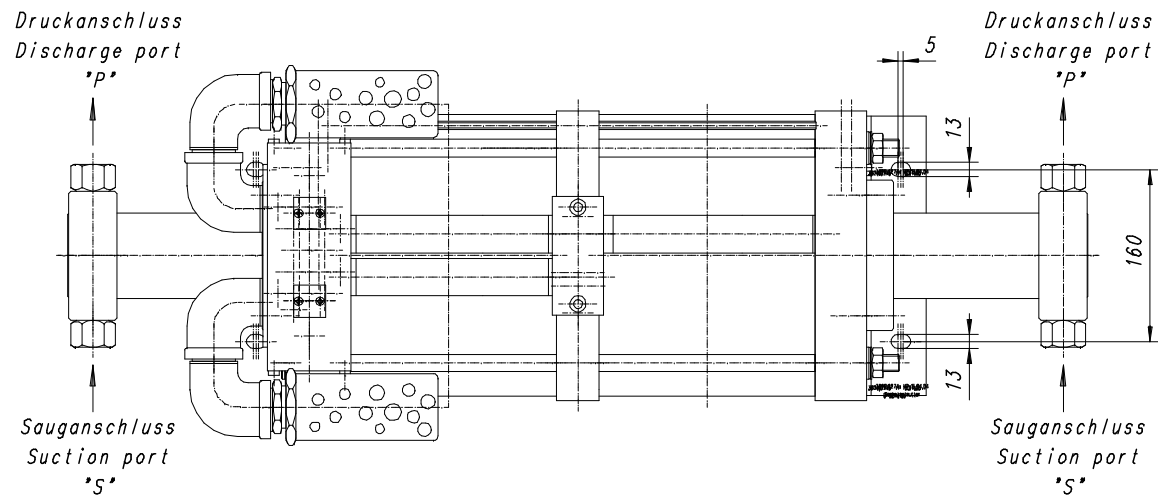
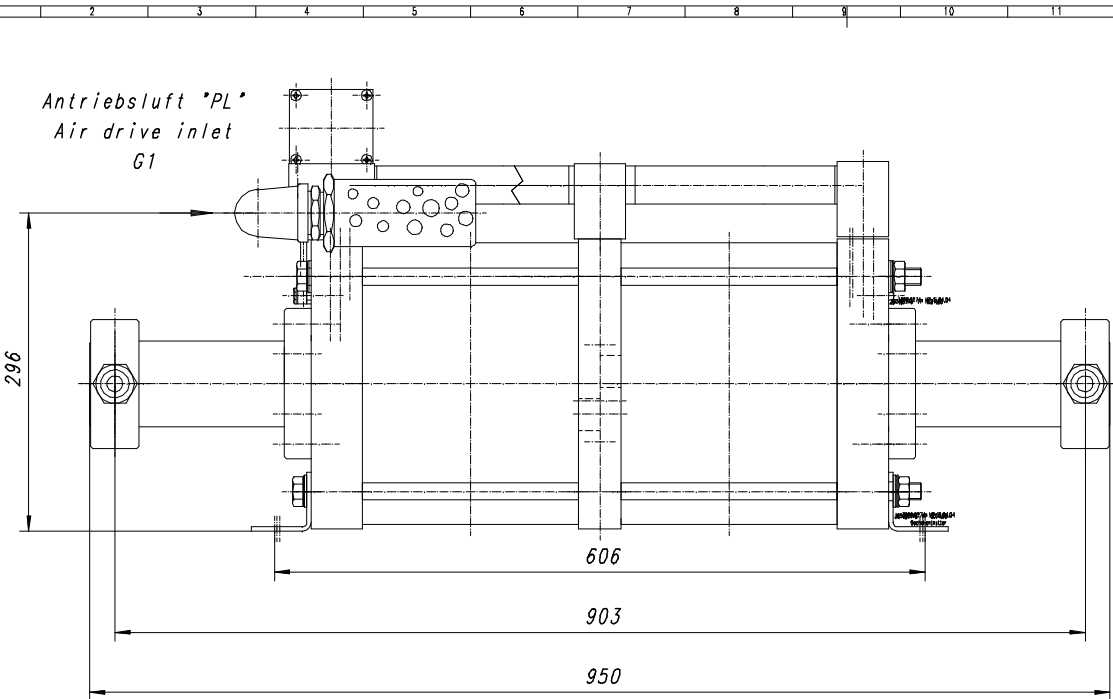
- Betriebsdruck bei/Outlet Pressure at 4 bar
- Betriebsdruck bei/Outlet Pressure at 6 bar
- Betriebsdruck bei/Outlet Pressure at 8 bar
- - - Luftverbrauch bei/Air consumption at 4 bar
- - - Luftverbrauch bei/Air consumption at 6 bar
- - - Luftverbrauch bei/Air consumption at 8 bar



Pumpe/ Pump	Sauganschluss/ Suction port	Druckanschluss/ Discharge port
GPD 30 - 2		
GPD 60 - 2	G 3/4	G 3/4
GPD 120 - 2		
GPD 180 - 2		3/8"HP
GPD 270 - 2	G 1/4	

MAXIMATOR
 Groß - Pumpe / Large - Pump
 Anschlußzeichnung / Dimension drawing
 Typ / type:
 GPD 30 - 2 , GPD 60 - 2 , GDP 120 - 2 ,
 GPD 180 - 2 , GPD 270 - 2

MAXIMATOR GmbH D-99734 Nordhausen / D-37449 Zorge	
GPD 30 (60) (120) (180) (270) - 2 (Nennweite) MAXIMATOR Groß - Pumpe (zweistufig)	(Zustimmungsname) VP 15.00.636 (Zustimm.-Nr.) 3770_0383
(Zustimmungsname) VP 15.00.636	(Zustimm.-Nr.) 3770_0383



MAXIMATOR®



Compressed Air Amplifiers

- For increasing air pressure
- Specific air pressure amplification to suit your requirements
- Connection to electrical supply not necessary
- Operating pressure max. 40 bar



High Pressure Compressors

- For pressurizing gases (nitrogen, oxygen, inert gases)
- Simple handling
- Intrinsically safe and explosion proof i.e. not electromotive, but pneumatically powered
- Operating pressure max. 1,500 bar



Gas Assist Injection Systems

- Compressor stations with pneumatic, electric or hydraulic drive
- Control modules with 2, 4 or 8 valves
- Control modules with integrated booster station
- External core pull control systems



Special Test Benches

- Static compression resistance test
- Bursting pressure test
- Impulse pressure test
- Hoses, pipes, valves, hydraulic components can be tested



High Pressure Valves, Fittings, Tubing

- Stainless steel design
- Temperatures from -250° C to +650° C for liquids and gases
- Maximum outlet pressures up to 10,500 bar

Your Representative:



MAXIMATOR GmbH

Factory

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eMail: info@maximator.de

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MAXIMATOR®

HIGH PRESSURE
TECHNOLOGY
HYDRAULICS
PNEUMATICS
TESTING
EQUIPMENT



MAXIMATOR GmbH

Packaged Pump Systems

Description and function of MAXIMATOR power packs

MAXIMATOR power packs for oil, water or aggressive media are complete hydraulic units ready for connection which are provided for generating operating pressures up to 5,500 bar. The hydraulic systems can be used for all kinds of testing and clamping or for other functions requiring a determined pressure.

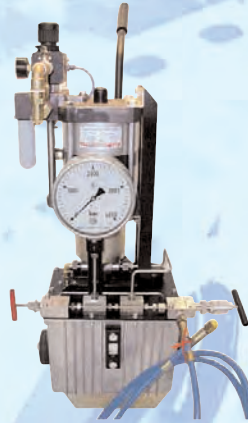
The pressure will be generated by means of a pneumatically operated MAXIMATOR pump. The pump will be connected to the existing industrial compressed-air ductwork system. For generating the pressure, an electric connection will not be necessary.

MAXIMATOR power packs can be equipped with all MAXIMATOR pumps. Restrictions result only from determined structural dimensions as well as from the flow rates of the pumps being necessary for the respective function.

For the simple commissioning and unproblematic application, MAXIMATOR power packs will be equipped with all required components. Part of them is an air control unit with combined filter and water separator, a pressure-regulating valve, a pressure control gauge as well as a manual shut-off valve for stopping off the drive air pressure.

For all applications within the range of the oil hydraulic, the pumps will be mounted in the oil tank in a compact and space saving manner. In case of operation with water or with aggressive media, the pump will be mounted on the tank. According to standard, there can be selected among tank capacities from 6.5 l to 70 l. Larger-sized tanks are available on demand.

On request, the tanks can be provided with carrying handles or on wheels (to be recommended for all G-type pumps as well as for tank capacities from 30 l).



On the high-pressure side, the power pack will be equipped with a pressure relief valve (expansion valve) as well as with a manifold block with one or several pressure outlets for connecting the test pieces (which can be shut off separately or completely on request).

For indicating and monitoring the operating pressure, liquid-damped pressure gauges of the accuracy class 1.0 or 1.6 (higher accuracies are possible on demand) can be delivered in different sizes for pressures up to 7,000 bar.

With the above specified scope of supply, the MAXIMATOR power pack is ready for connection. For operating the hydraulic unit, only the drive air piping has to be connected and the tank has to be filled with the provided operating liquid.

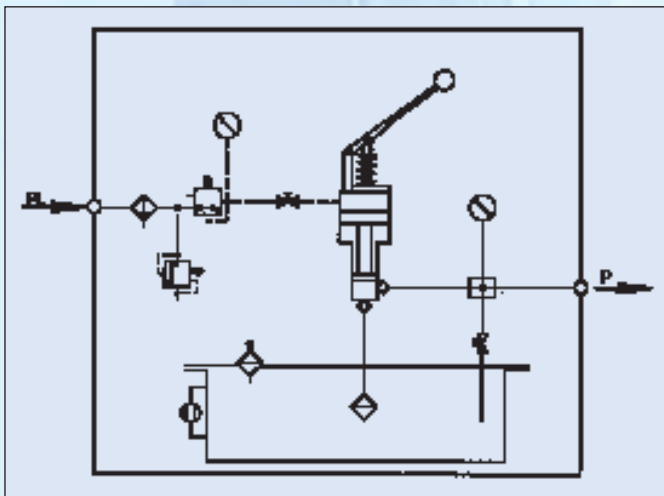
MAXIMATOR offers an extensive volume of accessories for all cases of application. Part of them are pressure switches, float valves and pneumatically or electrically operated directional valves for actuating cylinders. Connecting adaptors, quick couplings, pressure filters, high-pressure hoses as well as shut-off valves and control valves are available too.

We design the MAXIMATOR power packs according to your requirements. Our sales engineers in the engineering departments as well as our co-workers in the Works Zorge are pleased to give you expert advice and will recommend you the respective power pack being suitable for your special case of application.

Applications for MAXIMATOR power packs

The movable and portable MAXIMATOR hydraulic power packs can be used wherever hydraulic pressures are required. They are to be found for example in the steel construction, boiler construction, tank construction and reactor construction as well as in yards, smelting plants, machine factories and locksmith's shops. For years they have proved themselves in inspection and acceptance processes as well as in the hydraulic working and clamping systems.

The power packs are also provided for actuating hydraulic punches and punch systems. Among others they will be used in aircraft yards for lifting aircrafts, for clamping large-sized devices, for checking pressure vessels and pressure systems.



In the tool hydraulic, MAXIMATOR units will be used for pressure oil junctions as well for mounting and pulling-off large-sized toothed gears.

Furthermore, the systems will be used in hydraulic presses, among others also when high pressure must be maintained for a long time, such as in case of tire and vulcanizing presses as well as for presses overload protections. For such purposes, the hydraulic unit can be delivered with reversing devices permitting an one-sided or also two-sided admission to the press. Direct admission of compressed air to the return side enables a connection for

the quick return. The hydraulic units have also proved to be an outstanding solution for isostatic pressing procedures.

For realizing regular pressure tests (TÜV) at pressure vessels, MAXIMATOR offers the complete solution with regard to the pressure generation. These power packs will always be set up upon customer's request.

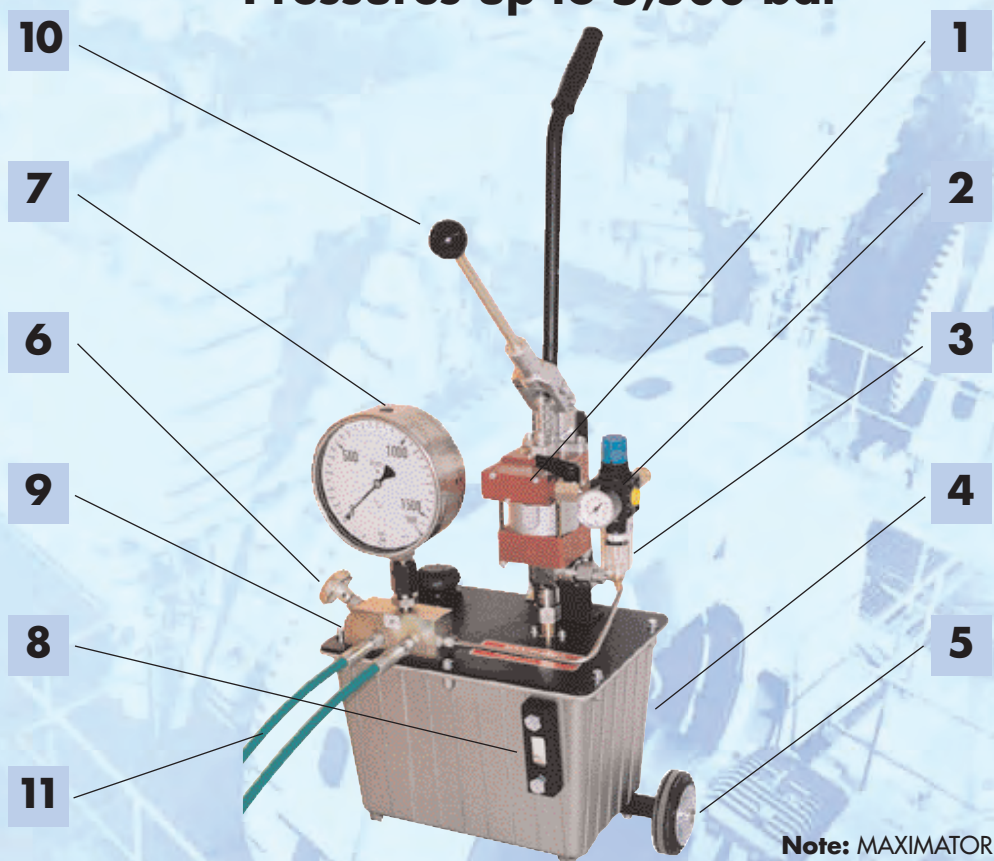
The required hydraulic pressure will be generated by means of air-lift pump. In this connection, the hydraulic pressure corresponds to the set air pressure multiplied by the transmission ratio of the pump. When the appliance reaches the pre-set pressure, it stops automatically and maintains the pressure until arising a pressure drop caused through leakage or the like. The appliance starts automatically and functions again until having reached the pre-set pressure.

All the controlling and regulating processes are of unsurpassed simplicity because of the compressed-air drive. So, the complete appliance is very robust, operationally reliable and insensitive to hardest operating stresses. The power pack will not be damaged through moist rooms, dust or higher temperatures. The MAXIMATOR hydraulic units are explosion-proof because no electric energy is required.

Advantages of the MAXIMATOR power packs

- Standstill of the pump when reaching the set final pressure
- No energy consumption in case of long pressure holding times
- No dissipated heat during the pressure holding phase
- Substitute of leakages by automatic re-delivery through the pump
- Control of the operating pressure through simple adjustment of the aire drive pressure
- Simple installation, operationally reliable, easy to maintain

MAXIMATOR® Packaged Pump Systems for Outlet Pressures up to 5,500 bar



Note: MAXIMATOR pumps MO and S series are integrated in the tank. All other pump series will be mounted on top of the tank.

Components in Modular Design:

- | | |
|--|---|
| <p>1 Pump model
MO, S for oil service up to maximum 1,000 bar; M, G for oil and water service up to maximum 5,500 bar; MSF, GSF for special liquids to maximum 1,450 bar</p> <p>2 Air control unit, comprising combined filter pressure regulator, control pressure gauge and shut-off valve
C1 for M series
C1.5 for S series
C2 for G series</p> <p>3 Air safety valve
SV mounted in the air line</p> <p>4 Tank sizes
6.5 liter
13 liter
30 liter
70 liter
Standard of aluminium, stainless steel on request</p> <p>5 Mobility of the packaged pump system
F moveable
T portable
K jack ring</p> <p>6 Relief valve
EV with return line to the tank</p> | <p>7 Pressure gauge
Pressure range / Diameter of the housing (cl. 1.6/1.0/0.6, glycerine damped)</p> <p>8 Operating liquid
O Oil (tank of aluminium, components galvanized)
W Water (tank of aluminium, components of SS)
VA Stainless steel (tank of 1.4571 or 1.4305)</p> <p>9 Manifold block with pressure outlet(s)
A1 1 pressure outlet to
A6 6 pressure outlets, depending on tank size
V Option: Shut-off valve for pressure outlet (AV1-AV6)</p> <p>10 Hand lever
H only available for M22 to M189, single acting, single stage</p> <p>11 Other options:
SCHW Float valve for automatic filling of the tank, i. e. from the water line
SCHL HP hose, model SK
ZR Additional return connection</p> <p>Specials on request</p> |
|--|---|

1 2 3 4 5 6 7 8 9 10 11

Coding example: M 189-01 / C1 / SV / 13 / F / EV / 0-1600 (160) / W / A2 / H / SCHL

Power pack with pump type M189-01 with hand lever, air control unit "C1", air safety valve, aluminium tank, volume 13 liter, on wheels, manually relief valve EV, pressure gauge 0-1,600 bar, Ø 160 mm, suitable for water service, manifold block with two pressure outlets, 2 pcs. hoses

MAXIMATOR large pump G series

Single acting, single air drive head					
Type	Pressure ratio **	Displacement volume cm ³ *	Outlet pressure max. ***	Flow l/min ****	
G 10L	1 : 11	90.0	110	18.53	
G 15L	1 : 16	62.0	160	12.86	
G 25L	1 : 28	35.3	280	7.24	
G 35L	1 : 40	24.5	400	5.02	
G 60L	1 : 63	15.4	630	3.21	
G 100L	1 : 113	8.8	1050	1.81	
G 150L	1 : 151	6.6	1450	1.36	
G 250L	1 : 265	3.8	2650	0.77	
G 300L	1 : 314	3.2	3140	0.65	
G 400L	1 : 398	2.5	3900	0.51	
G 500L	1 : 591	1.9	4500	0.39	
GX 35	1 : 36	180	360	24.50	
GX 60	1 : 66	65	600	23.00	
GX 100	1 : 117	36	1000	9.00	

Single acting, double or triple air drive head

Type	Pressure ratio **	Displacement volume cm ³ *	Outlet pressure max. ***	Flow l/min ****
G 10-2L	1 : 22	90.0	220	15.89
G 15-2L	1 : 32	62.0	320	11.02
G 25-2L	1 : 56	35.3	560	6.19
G 35-2L	1 : 80	24.5	800	4.30
G 60-2L	1 : 126	15.4	1260	2.70
G100-2L	1 : 226	8.8	2100	1.55
G150-2L	1 : 300	6.6	2900	1.16
G250-2L	1 : 530	3.8	4500	0.66
G300-2L	1 : 628	3.2	4500	0.56
G400-2L	1 : 796	2.5	5500	0.44
G500-2L	1 : 1038	1.4	5500	0.23

Double acting, single air drive head

Type	Pressure ratio **	Displacement volume cm ³ *	Outlet pressure max. ***	Flow l/min ****
G 10D	1 : 10	180.0	100	28.85
G 15D	1 : 15	124.0	150	19.84
G 25D	1 : 27	70.6	270	11.34
G 35D	1 : 40	29.0	400	7.74
G 60D	1 : 63	31.4	630	5.04
G 100D	1 : 113	17.6	1050	2.78
G 150D	1 : 151	7.6	1450	2.10

Single acting, single air drive head for special liquids

Type	Pressure ratio **	Displacement volume cm ³ *	Outlet pressure max. ***	Flow l/min ****
GSF 10 L	1 : 11	90.0	110	18.53
GSF 15 L	1 : 16	62.0	160	12.86
GSF 25 L	1 : 28	35.3	280	7.24
GSF 35 L	1 : 40	24.5	400	5.02
GSF 60 L	1 : 63	15.7	630	3.21
GSF 100 L	1 : 113	8.8	1050	1.81
GSF 150 L	1 : 151	6.6	1450	1.36

MAXIMATOR standard pump S series

Type	Pressure ratio **	Displacement volume cm ³ *	Outlet pressure max. ***	Flow l/min ****
S 15	1 : 17	28.3	170	9.38
S 25	1 : 25	19.6	250	6.72
S 35	1 : 39	12.6	390	4.31
S 60	1 : 61	8.0	610	2.75
S 100	1 : 108	4.5	1000	1.55
S 150	1 : 156	3.1	1000	1.08
S 350	1 : 370	1.3	3000	0.40

Type	Pressure ratio **	Displacement volume cm ³ *	Outlet pressure max. ***	Flow l/min ****
S 15D	1 : 16	57.0	160	17.56
S 25D	1 : 24	39.0	240	12.00
S 35D	1 : 30	25.0	300	7.58
S 60D	1 : 60	16.0	600	4.80
S 100D	1 : 107	9.0	1000	2.68
S 150D	1 : 155	6.2	1000	1.85

MAXIMATOR mini pump M series

Type	Pressure ratio **	Displacement volume cm ³ *	Outlet pressure max. ***	Flow l/min ****
M 4L	1 : 4	30.5	40	14.81
M 8L	1 : 9	14.7	90	7.07
M 12L	1 : 14	9.4	140	4.55
M 22L	1 : 28	4.6	280	2.22
M 37L	1 : 46	2.8	460	1.36
M 72L	1 : 86	1.5	860	0.72
M 111L	1 : 130	1.0	1300	0.48
M 189L	1 : 220	0.6	2200	0.28

Type	Pressure ratio **	Displacement volume cm ³ *	Outlet pressure max. ***	Flow l/min ****
M111-2L	1 : 266	1.0	2500	0.35
M189-2L	1 : 450	0.6	4000	0.21
M111-3L	1 : 399	1.0	2500	0.24
M189-3L	1 : 675	0.6	4000	0.14

Type	Pressure ratio **	Displacement volume cm ³ *	Outlet pressure max. ***	Flow l/min ****
M 22D	1 : 28	9.2	280	3.91
M 37D	1 : 46	5.6	460	2.35
M 72D	1 : 86	3.0	860	1.24
M 111D	1 : 130	2.0	1300	0.82
M 189D	1 : 220	1.2	2200	0.49

Type	Pressure ratio **	Displacement volume cm ³ *	Outlet pressure max. ***	Flow l/min ****
MSF 4L	1 : 4	30.5	40	14.81
MSF 8L	1 : 9	14.7	90	7.07
MSF 12L	1 : 14	9.4	140	4.55
MSF 22L	1 : 28	4.6	280	2.22
MSF 37L	1 : 46	2.8	460	1.36
MSF 72L	1 : 86	1.5	860	0.48
MSF111L	1 : 130	1.0	1000	0.28

MAXIMATOR mini pump MO series

Type	Pressure ratio **	Displacement volume cm ³ *	Outlet pressure max. ***	Flow l/min ****
MO 4	1 : 4	30.5	40	14.80
MO 8	1 : 9	14.7	90	7.07
MO 12	1 : 14	9.4	140	4.55
MO 22	1 : 29	4.6	290	2.22
MO 37	1 : 47	2.8	470	1.36
MO 72	1 : 88	1.5	880	0.72
MO 111	1 : 133	1.0	1000	0.48
MO 189	1 : 225	0.6	1000	0.28

Type	Pressure ratio **	Displacement volume cm ³ *	Outlet pressure max. ***	Flow l/min ****
MO 22D	1 : 28	9.2	280	3.91
MO 37D	1 : 46	5.6	460	2.35
MO 72D	1 : 86	3.0	860	1.24
MO111D	1 : 130	2.0	1000	0.82
MO189D	1 : 220	1.2	1000	0.49

* Displacement volume / Double stroke – calculated
 ** Pressure ratio – Area lp-piston/hp-piston - calculated
 *** Static Outlet pressure at an air drive of 10 bar – calculated resp. maximum permitted outlet pressure / Conversion bar : psi = 1 : 14.5
 **** Approx. Flow at an air drive of 6 bar and an outlet of 0 bar

MAXIMATOR® Hydraulic Unit**Type S 60****Configuration**

The power pack contains the following components:

- MAXIMATOR pump S60
- Aluminium tank of 6.5 liter
- Manifold block with pressure outlet
- Pressure gauge 0 – 600 bar, Ø 63 mm
- Air control unit
- Pneumatically operated relief valve

**Advantages**

- Small dimensions
- Low weight
- Easy to handle
- No energy consumption after having reached the set final pressure
- Compressed air drive, no explosion hazard

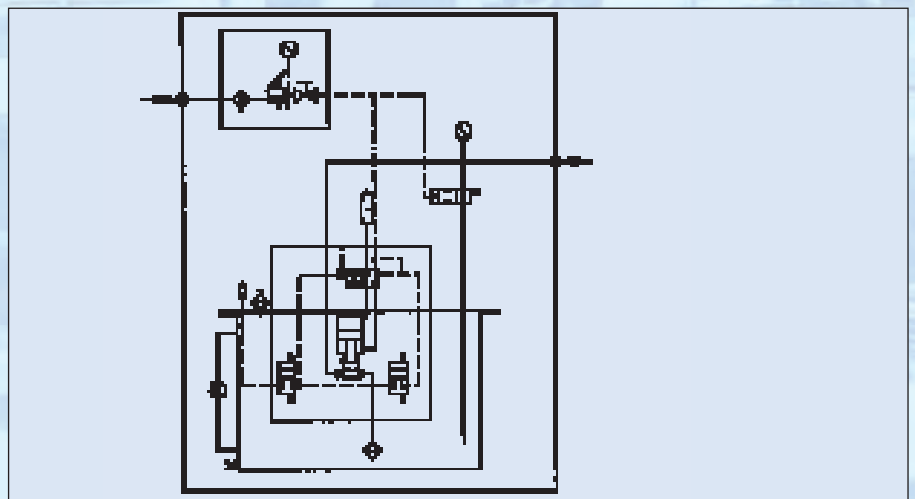
Application

This power pack will be used wherever it is to be built up a hydraulic pressure locally. It is provided for all functions within the tool and clamping hydraulic, e.g. for

- pressure tests
- pulling-off devices
- shop presses
- and many more

Technical features

Pump model:	S 60
Pressure ratio:	1 : 61
Maximum outlet pressure:	610 bar
Maximum air drive pressure:	10 bar
Maximum flow capacity:	approx. 2.7 l/min
Approx. dimensions of the power pack (LxWxH):	260 x 220 x 350 mm
Approx. weight of the power pack:	11 kg



MAXIMATOR® Hydraulic Unit**Type M0 72 D****Configuration**

The power pack contains the following components:

- MAXIMATOR pump MO72D
- Aluminium tank of 6.5 liter
- Manifold block with pressure outlet
- Pressure gauge 0-600 bar, Ø 63 mm
- Air control unit
- Safety valve in the air line
- Pneumatically operated relief valve

**Advantages**

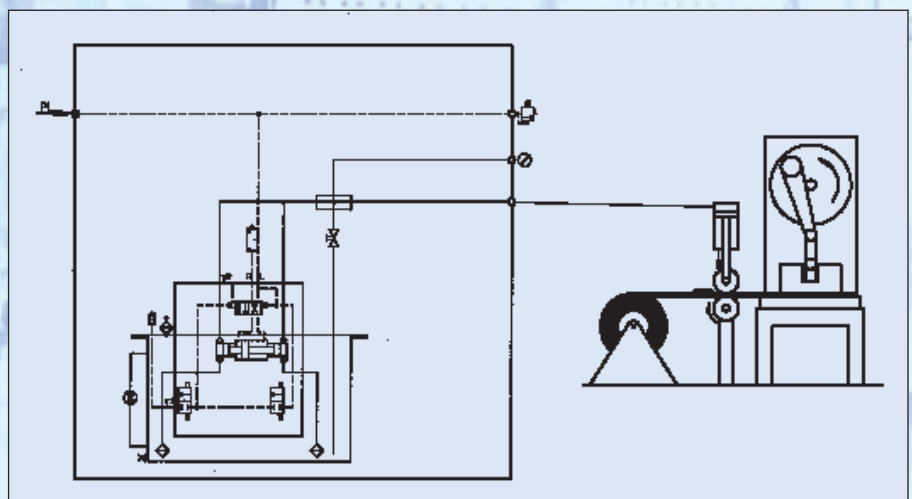
- No damage of the sheet surface
- Optimized feed - high cycle time
- No energy consumption after having reached the set final pressure
- No heating of the pressure medium

Application

The power pack presented here will be used in the feed units at eccentric presses. It keeps the hydraulic pressure in the cylinders for the pressure drum constant. So will be reached a continuous contact pressure which permits an optimized feed of the sheet to be stamped.

Technical features

Pump model:	MO 72 D
Pressure ratio:	1 : 86
Maximum outlet pressure:	860 bar
Maximum air drive pressure:	7 bar
Maximum flow capacity:	approx. 1.2 l/min
Approx. dimensions of the power pack (LxWxH):	260 x 240 x 250 mm
Approx. weight of the power pack:	9.5 kg



MAXIMATOR[®] Hydraulic Unit

Type MO 72

Configuration

The power pack contains the following components:

- MAXIMATOR pump MO72
- Aluminium tank of 6.5 liter
- Valve block
- 5 pcs. electrically operated directional valves
- Pressure release valve
- High pressure filter



Advantages

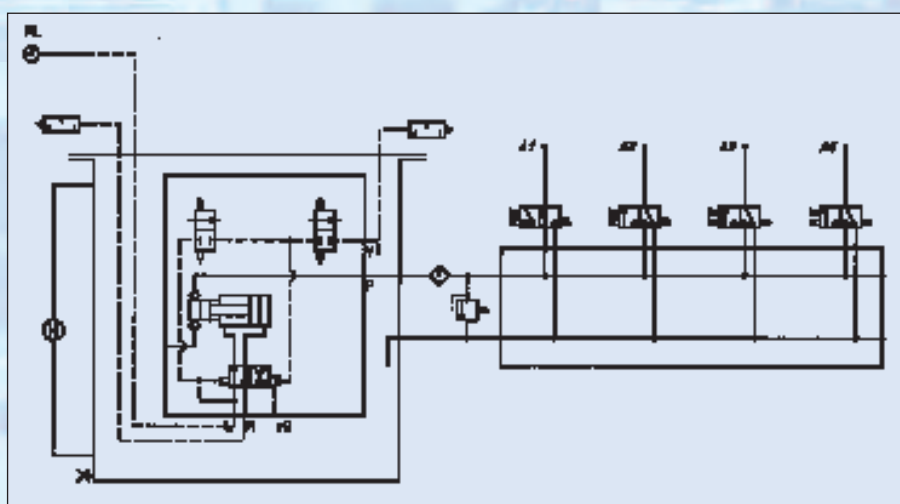
- Constant pressing of the feed rolls
- Exact dosage of the sealing material
- No energy consumption after having reached the set final pressure
- No heating of the pressure medium

Application

This MAXIMATOR hydraulic unit will be used in a line for manufacturing insulating glass. The mounted directional valves are actuating hydraulic cylinders which will be pressed on every side against the insulating glass pane by means of a feed roll. Furthermore, the power pack actuates a hydraulic cylinder applying the sealing material in exact dosages to the glass panes.

Technical features

Pump model:	MO 72
Pressure ratio:	1 : 86
Maximum outlet pressure:	860 bar
Maximum air drive pressure:	10 bar
Maximum flow capacity:	approx. 0.7 l/min
Approx. dimensions of the power pack (LxWxH):	315 x 220 x 270 mm
Approx. weight of the power pack:	12 kg



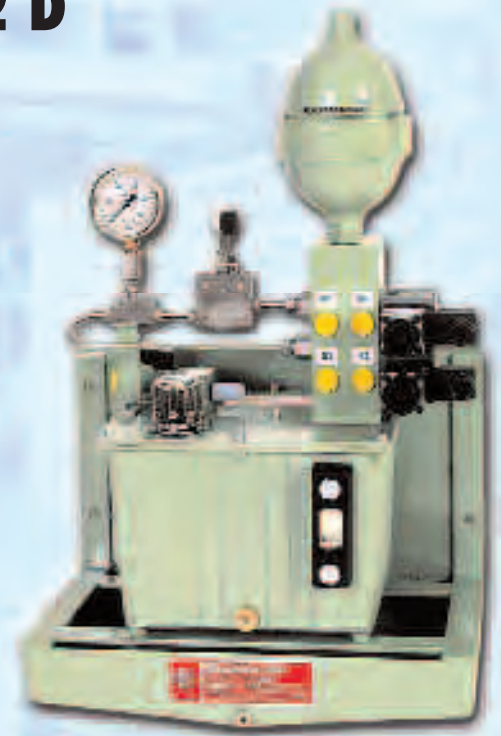
MAXIMATOR[®] Hydraulic Unit

Type MO 22 D

Configuration

The power pack contains the following components:

- MAXIMATOR pump MO22D
- Aluminium tank of 6.5 liter
- Pressure gauge 0-250 bar, Ø 63 mm
- Accumulator, volume 0.7 liter with safety devices
- Flange block with valves, nominal size 6
- Oil collecting recipient



Advantages

- Almost pulsation-free pressure build-up
- Continuous movement of the lid
- Compact design, minimum space requirement
- No energy consumption after having reached the set final pressure
- No heating of the pressure medium

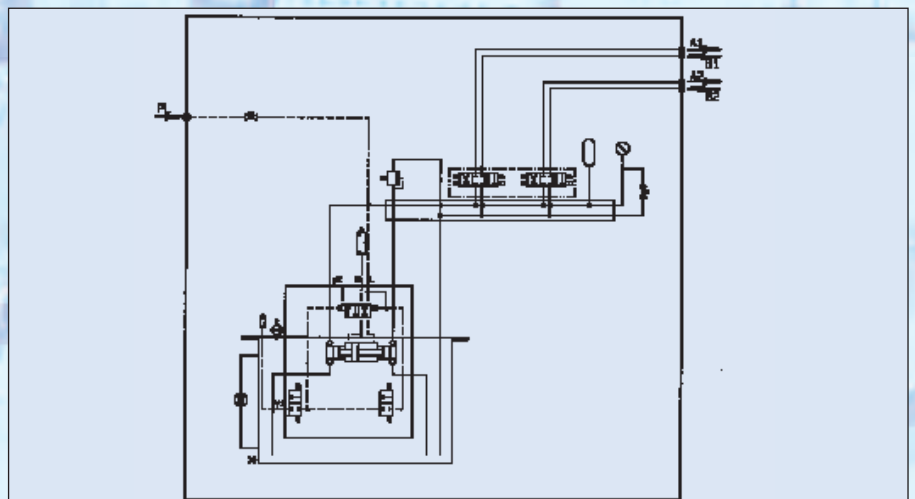
Application

This power pack will be used for moving and locking, by means of a hydraulic cylinder, cover lids of centrifuges. The lid moving has to be realized continuously with constant speed.

The power pack is designed for being fixed to walls. In case of damage, an air collecting trough receives the oil quantity of the tank.

Technical features

Pump model:	MO 22 D
Pressure ratio:	1 : 28
Maximum outlet pressure:	280 bar
Maximum air drive pressure:	9 bar
Maximum flow capacity:	approx. 3.9 l/min
Approx. dimensions of the power pack (LxWxH):	400 x 250 x 650 mm
Approx. weight of the power pack:	25 kg



MAXIMATOR® Clamping Unit**Type S 25 D****Configuration**

The power pack contains the following components:

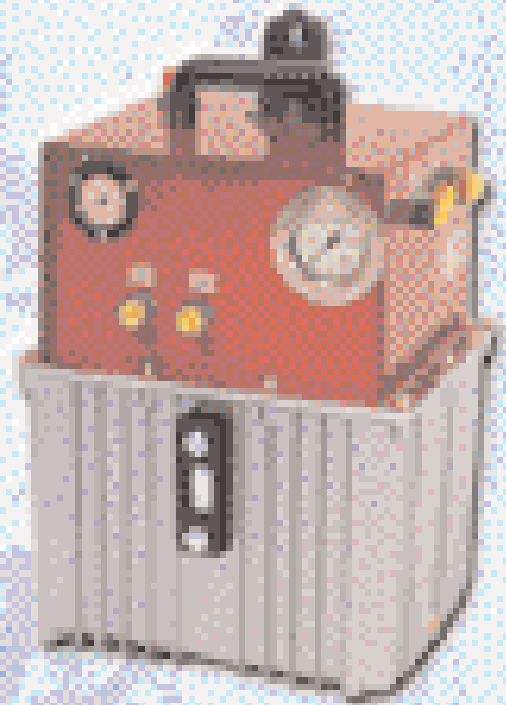
- MAXIMATOR pump S 25 D
- Aluminium tank of 6.5 liter with accessories
- Protection hood with integrated operating instruments
- Air control unit
- Pressure gauge 0-250 bar, Ø 63 mm
- Air operated directional valves
- Pressure relief valves
- Quick couplings

Advantages

- Almost pulsation-free pressure build-up
- Compact design, minimum space requirement
- No energy consumption after having reached the set final pressure
- No heating of the pressure medium

Technical features

Pump model:	S 25 D
Pressure ratio:	1 : 25
Maximum outlet pressure:	250 bar
Maximum air drive pressure:	10 bar
Maximum flow capacity:	approx. 12 l/min
Approx. dimensions of the power pack (LxWxH):	310 x 260 x 500 mm
Approx. weight of the power pack:	33 kg

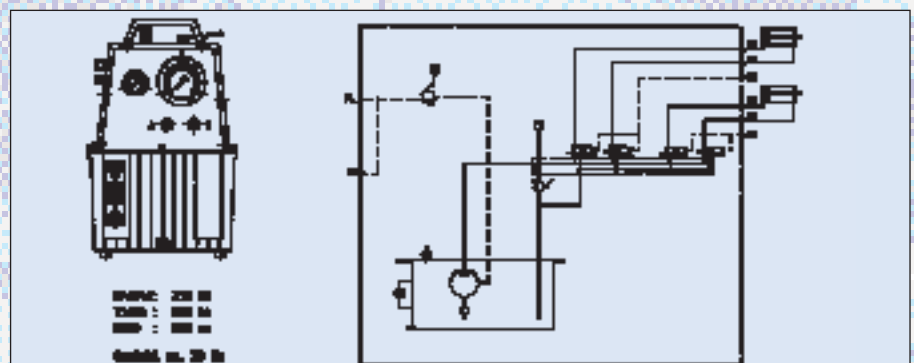
**Application**

This MAXIMATOR clamping unit as portable and compact hood version will be used in all ranges of the hydraulic clamping and tool system.

In dependence on the required pressure and delivery rate there are available pumps with different pressure ratios and flow rates.

Ranges of application are for example

- hydraulic clamping tools
- actuating of cylinders
- application in riveting tools
- hydraulic presses
- lifting tables, elevating platforms

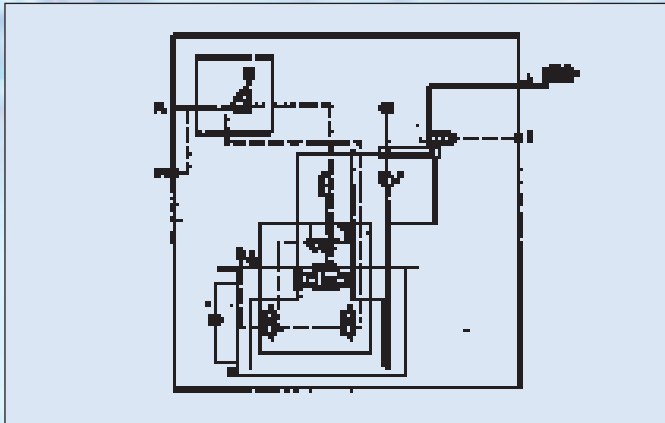


MAXIMATOR® Clamping Units

Pneumatic standard design

1 Clamping circuit – single acting

1* EZ (P)



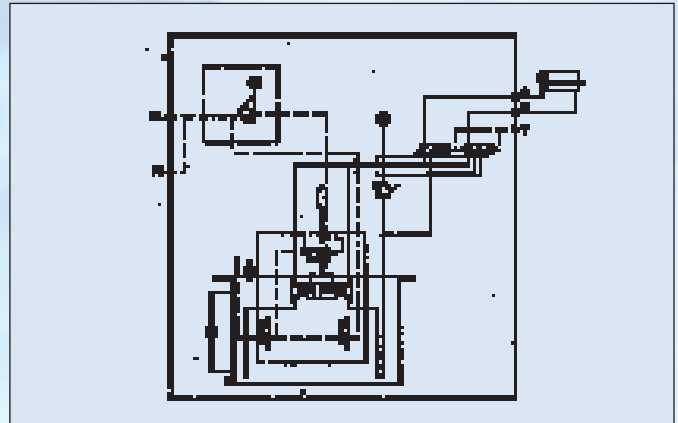
Model key

Order code

S 25 D/FR/13/T/H/0- 250 (63)/1*EZ ((P) /SV VP 54.00.34.05
 S 60 D/FR/13/T/H/0- 600 (63)/1*EZ ((P) /SV VP 54.00.34.07
 S 100 D/FR/13/T/H/0-1000 (63)/1*EZ ((P) /SV VP 54.00.34.08

1 Clamping circuit – double acting

1* DZ (P)



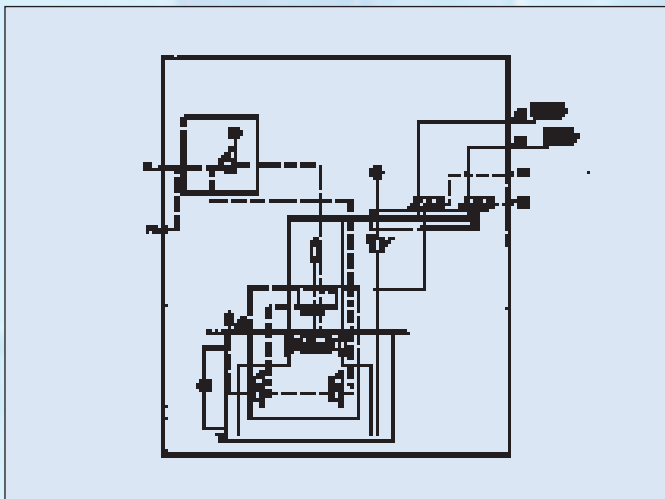
Model key

Order code

S 25 D/FR/13/T/H/0- 250 (63) /1*DZ ((P) /SV VP 54.00.34.01
 S 60 D/FR/13/T/H/0- 600 (63) /1*DZ ((P) /SV VP 54.00.34.03
 S 100 D/FR/13/T/H/0-1000 (63) /1*DZ ((P) /SV VP 54.00.34.04

2 Clamping circuits – single acting

2* EZ (P)



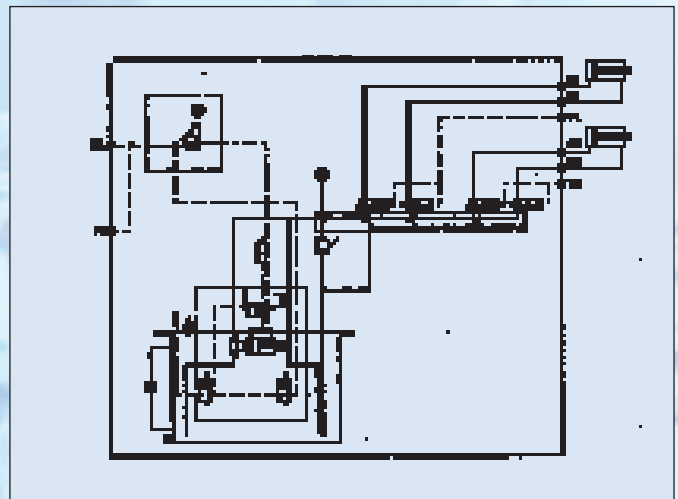
Model key

Order code

25 D/FR/13/T/H/0- 250 (63) /2*EZ ((P) /SV VP 54.00.34.13
 60 D/FR/13/T/H/0- 600 (63) /2*EZ ((P) /SV VP 54.00.34.15
 100 D/FR/13/T/H/0-1000 (63) /2*EZ ((P) /SV VP 54.00.34.16

2 Clamping circuits – double acting

2* DZ (P)



Model key

Order code

S 25 D/FR/13/T/H/0- 250 (63) /2*DZ ((P) /SV VP 54.00.34.09
 S 60 D/FR/13/T/H/0- 600 (63) /2*DZ ((P) /SV VP 54.00.34.11
 S 100 D/FR/13/T/H/0-1000 (63) /2*DZ ((P) /SV VP 54.00.34.12

For ordering an electric drive, please specify voltage, e. g.: VP 54.00.34.01-24 V ; VP 54.00.34.01-220 V

PZ 3-1 (R)
 P 3-1
 Pilot air



Marked with A; A1; A2 ...
 Marked with B; B1; B2 ...
 Marked with Y; Y1; Y2 ...

Width: 310 mm
 Depth: 260 mm
 Height: 500 mm
 Weight: approx. 33 kg

MAXIMATOR® Clamping Unit**Type S 35****Configuration**

The power pack contains the following components:

- MAXIMATOR pump S35
- Aluminium tank of 6.5 liter with accessories
- Protection hood
- Air control unit
- Pressure gauge 0-400 bar, Ø 63 mm
- Air operated directional valves

**Advantages**

- High pressure, high flow capacity
- Compressed-air drive, easy to maintain
- No energy consumption after having reached the set final pressure
- No heating of the pressure medium

Application

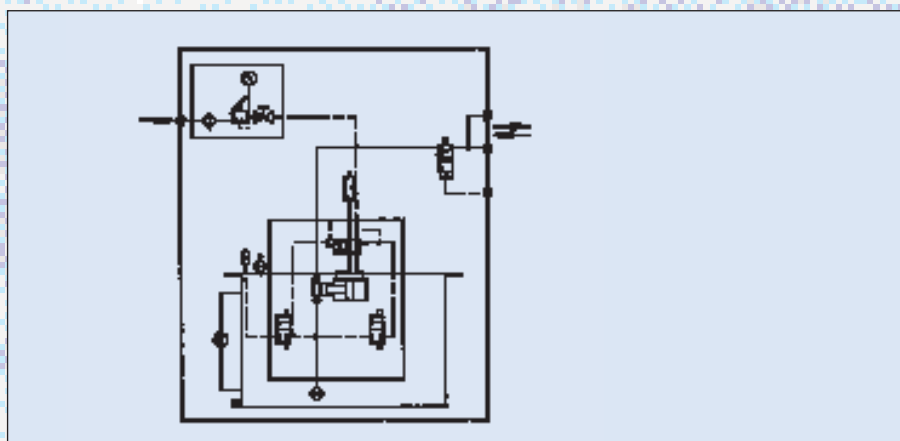
The clamping unit presented here will be used for driving very different tools. Its universal applicability is due to its robust and simple constructional design. In the above example, the mobile pressure generating unit is provided for operating a hydraulically actuated chain cutter for being used in the underground mining.

Further applications:

- hydraulic punch tools
- hydraulic clamping and cutting tools
- actuating of cylinders
- hydraulic presses

Technical features

Pump model:	S 35
Pressure ratio:	1 : 39
Maximum outlet pressure:	390 bar
Maximum air drive pressure:	10 bar
Maximum flow capacity:	approx. 4.3 l/min
Approx. dimensions of the power pack (LxWxH):	310 x 240 x 420 mm
Approx. weight of the power pack:	18 kg



MAXIMATOR® Clamping Unit**Type MO 22 SN****Configuration**

The power pack contains the following components:

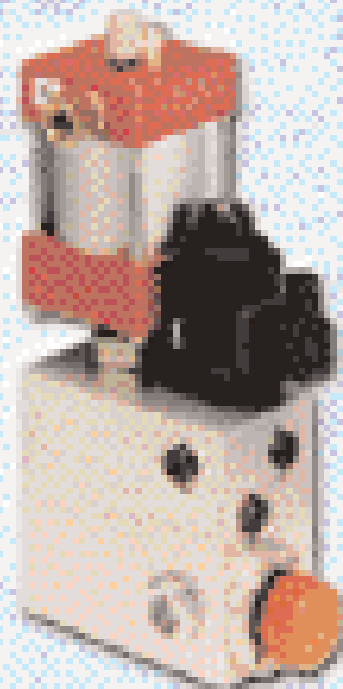
- MAXIMATOR pump MO22SN
- Valve block with integrated oil tank
- 3/2 directional valve, nominal size 6
- 1 pce. air pilot switch each to start and stop the unit at a pre-defined pressure
- Pressure gauge 0-250 bar, Ø 63 mm
- Oil sight glass
- Pressure relief valves
- Filling socket and ventilation

Advantages

- No energy consumption after having reached the set final pressure because the pump stops automatically
- Long pressure holding times without energy consumption
- Pump substitutes leakage losses through automatic re-delivery
- Simple mounting, handy construction

Technical features

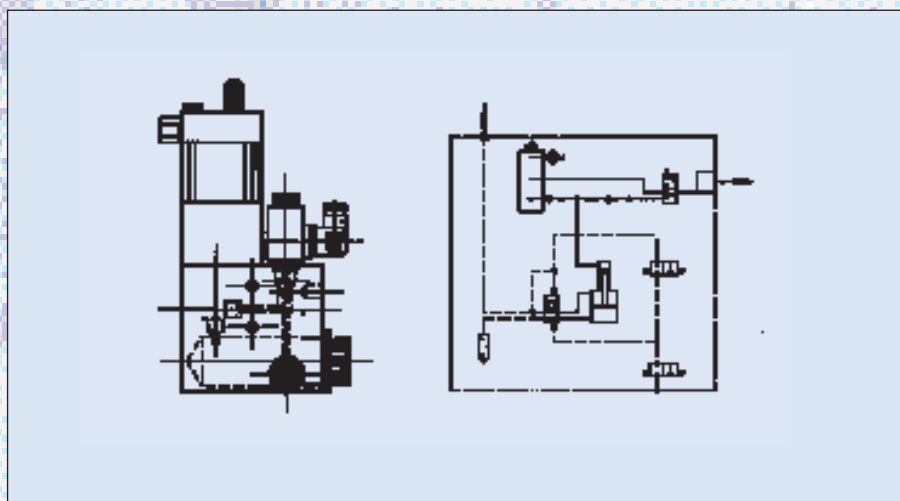
Pump model:	MO 22 SN
Pressure ratio:	1 : 28
Maximum outlet pressure:	280 bar
Maximum air drive pressure:	10 bar
Maximum flow capacity:	approx. 2.2 l/min
Approx. dimensions of the power pack (LxWxH):	180 x 320 x 80 mm
Approx. weight of the power pack:	6 kg

**Application**

This hydropneumatic clamping unit has been designed in particular for being used at NC circular-indexing tables.

In addition to that, this handy and compact hydraulic unit is of universal applicability wherever hydraulic pressures and low flow rates will be used with minimum space requirement.

The mounting position of the power pack is just as you like, the filler and ventilator can be mounted on three sides.



MAXIMATOR® Hydraulic Power Pack

Type M 72-01

Configuration

The power pack contains the following components:

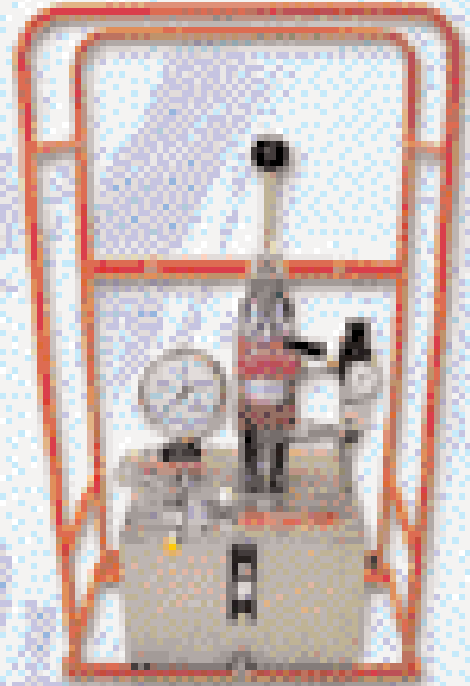
- MAXIMATOR pump M 72-01
- Hand lever
- Air control unit, type "C1"
- Air safety valve
- Tank of stainless steel, volume 13 liter
- Pressure gauge 0-400 bar ø 100
- Relief valve, type EV
- Pressure outlet with shut-off valve, type AV
- Protective frame
- Adapter for connecting hoses

Advantages

- Power pack in rough and damage protected design
- Compact system
- Corrosion resistant due to stainless steel design
- No energy consumption when the set operating pressure is reached once
- Pressure can be built up, even there is no shop air available
- Easy to operate

Technical features

Pump model:	M 72-01
Pressure ratio:	1 : 86
Maximum outlet pressure:	400 bar
Maximum air drive pressure:	4.5 bar
Maximum flow capacity:	approx. 0.7 l/min
Approx. dimensions of the power pack (LxWxH):	420 x 350 x 450 mm
Approx. weight of the power pack:	22 kg



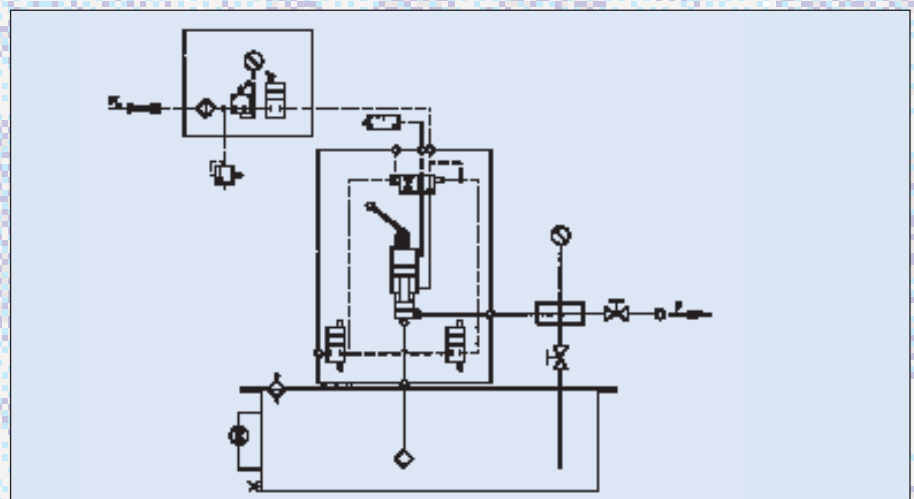
Application

This compact power pack in portable stainless steel frame design is suitable for mobile applications.

The pressure can be built up in short term by using the hand lever even there is no shop air available.

Examples:

- Burst pressure tests
- Internal high pressure forming
- Leakage tests
- Etc.



MAXIMATOR® Hydraulic Power Pack

Type G 25-2 LVE

Configuration

The power pack contains the following components:

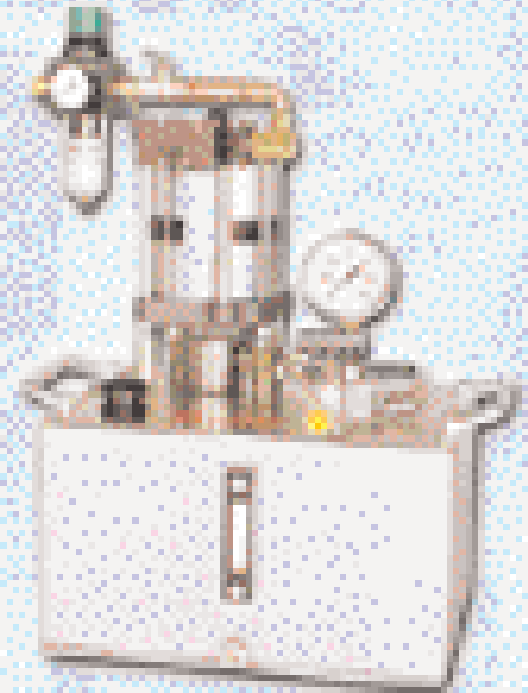
- MAXIMATOR pump G 25-2 LVE
- Air control unit, type "C2"
- Stainless steel tank, volume 30 liter
- Carrying handles
- Manifold block of stainless steel
- Pressure gauge 0-600 bar ø 100
- Relief valve, type EV
- Pressure outlet with shut-off valve
- Adapters in common sizes

Advantages

- Ready made and complete solution
- Corrosion resistant stainless steel design
- Suitable for series tests
- Can be connected i. e. to the water supply
- Filling and pressure build-up in short time through pump with double air drive head

Technical features

Pump model:	G 25-2 LVE
Pressure ratio:	1 : 56
Maximum outlet pressure:	560 bar
Maximum air drive pressure:	10 bar
Maximum flow capacity:	approx. 6.19 l/min
Approx. dimensions of the power pack (LxWxH):	490 x 340 x 700 mm
Approx. weight of the power pack:	34 kg

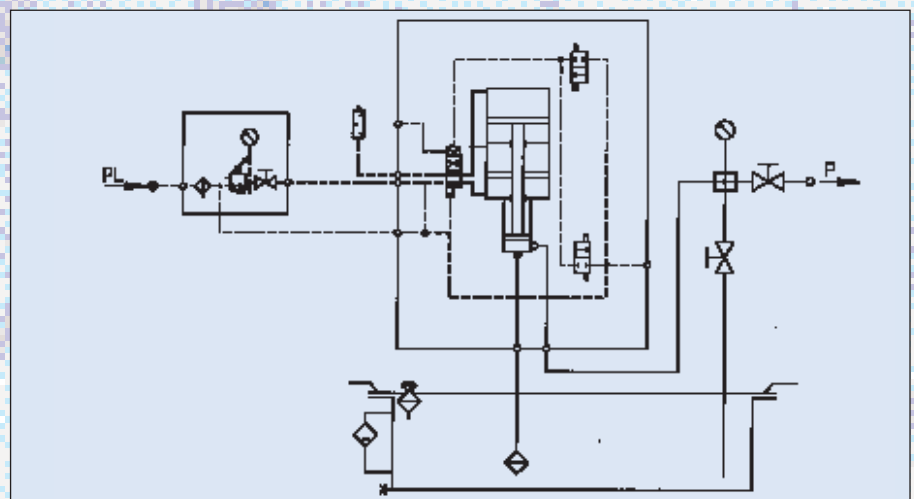


Application

This portable hydraulic power pack can be used in all applications where pressure test shall be realized, i. e. for TÜV approvals.

Examples:

- Receivers for fire extinguishers
- Breathing air cylinder
- Compressed gas accumulators
- Gas cylinders
- Etc.



MAXIMATOR® Hydraulic Power Pack**Type G 500-2 L****Configuration**

The power pack contains the following components:

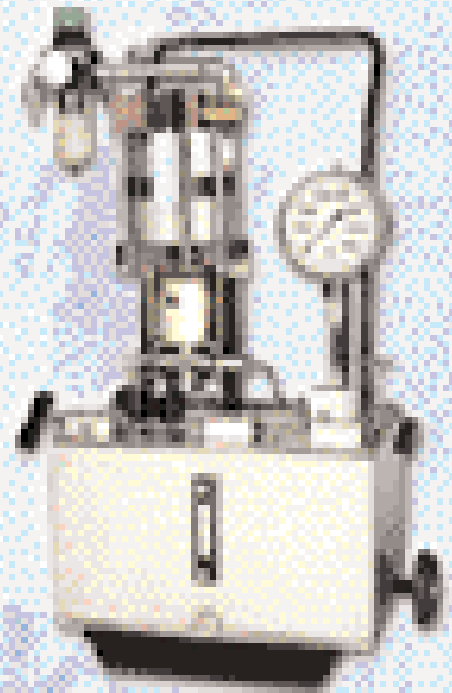
- MAXIMATOR pump G 500-2 L
- Air control unit, type "C2"
- Air safety valve
- Stainless steel tank, volume 70 liter
- Mobile design
- Pressure gauge 0-7,000 bar Ø 160
- Relief valve, type EV
- Pressure outlet with shut-off valve
- All wetter materials of stainless steel

Advantages

- Very high test pressures can be achieved
- Wide adjustable pressure range
- Mobile pack
- Safe design

Technical features

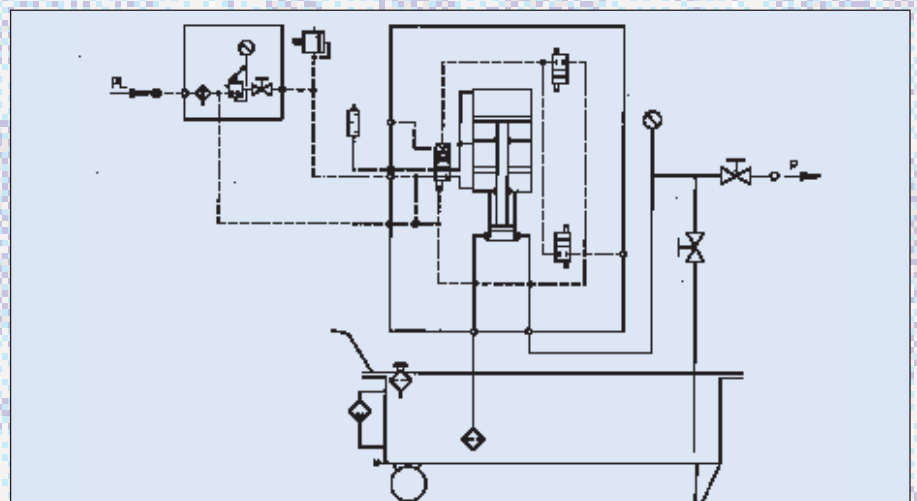
Pump model:	G 500-2 L
Pressure ratio:	1 : 1,038
Maximum outlet pressure:	5,500 bar
Maximum air drive pressure:	6.5 bar
Maximum flow capacity:	0.3 l/min
Approx. dimensions of the power pack (LxWxH):	620 x 480 x 820 mm
Approx. weight of the power pack:	48 kg

**Application**

This mobile MAXIMATOR system can be used in all applications where high pressure and low flow rates are required.

Examples:

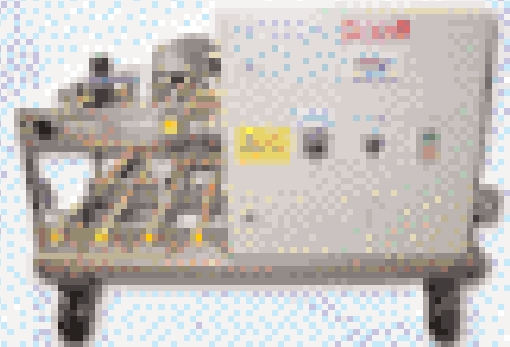
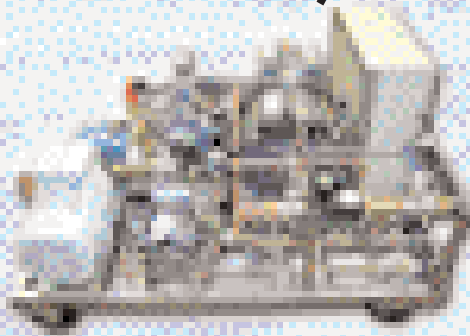
- Pressure and leak tests on receivers
- Burst pressure tests on hp hoses and systems
- etc.



MAXIMATOR® Test Station**Type DPD200 / G400L****Configuration**

The power pack contains the following components:

- MAXIMATOR pump DPD200
- MAXIMATOR pump G 400 L
- Electric pump 5.5 KW
- Air control units, type "C2"
- Shut-off valves and line filters
- Stainless steel frame on wheels
- Pressure transducer with digital display
- Pressure gauge 0-250 bar Ø 100
- Electric directional valves
- Pressure relief valves
- All wetted materials of stainless steel

**Advantages**

- High flow capacity
- High outlet pressures
- Rough stainless steel design
- Directly connected to the water supply
- Suitable for special liquids

Application

This mobile power pack can be used on construction sites for pressure and leak tests on pipelines.

Three pumps with different pressure ratios and pressure ranges are pneumatically or electrically driven.

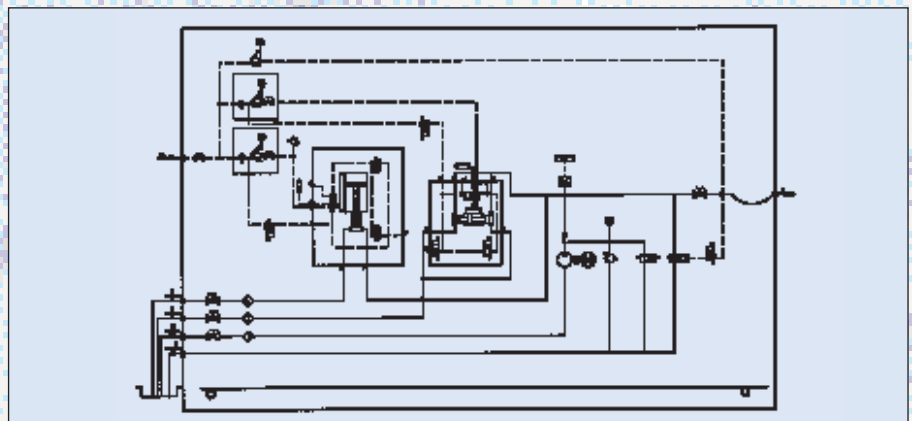
It is built in user friendly design with control cabinet for pressure observation and regulation.

Example:

- Power pack for injecting corrosion inhibitors into pipelines and systems
- For pressure and leak tests
- Etc.

Technical features

Pump models:	as above
Pressure ratio:	1 : 286 / 1:398
Maximum outlet pressure:	2,200 bar
Maximum air drive pressure:	5.5 bar
Maximum flow capacity:	approx. 20 l/min
Approx. dimensions of the power pack (LxWxH):	950 x 1250 x 880 mm
Approx. weight of the power pack:	180 kg



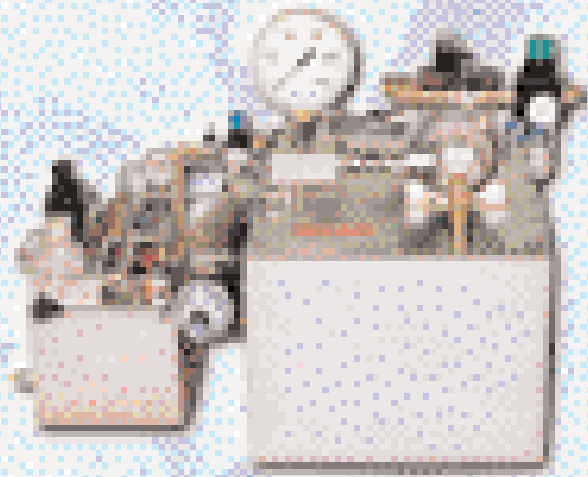
MAXIMATOR® Hydraulic Power Pack

Type G 25 DVE

Configuration

The power pack contains the following components:

- MAXIMATOR pump G 25 DVE
- Air control unit, type "C2"
- Stainless steel tank, volume 70 liter, with accessories
- Workshop chart design
- Pressure gauge 0-250 ø 160
- Accumulator 2.5 Liter / 330 bar
- Pressure relief valve
- Proportional valve
- Digital pressure transducer and display
- Electric box with power supply
- Complete drive hydraulics



Advantages

- Pulsation-free pressure tests
- Continuous control
- Reproducibility: ± 1 bar
- Modulair design with electronic measuring and regulating technique

Technical features

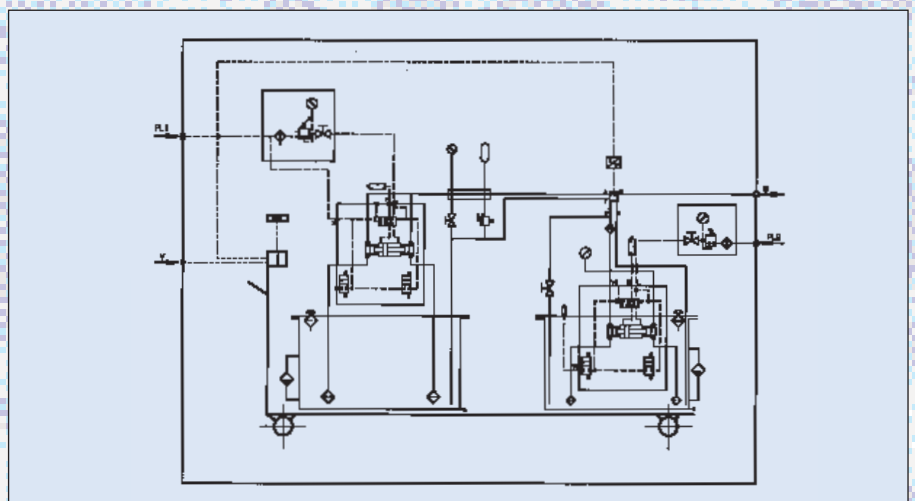
Pump model:	G 25 DVE
Pressure ratio:	1 : 27
Maximum outlet pressure:	250 bar
Maximum air drive pressure:	9 bar
Maximum flow capacity:	11 l/min
Approx. dimensions of the power pack (LxWxH):	1000 x 700 x 550 mm
Approx. weight of the power pack:	65 kg

Application

This complete solution for applications in water hydraulics permits pulsation-free pressure tests on test specimen with an excellent electronic pressure regulation.

Examples:

- Burst pressure tests
- Leak tests
- Internal high pressure forming
- Long term tests
- Etc.



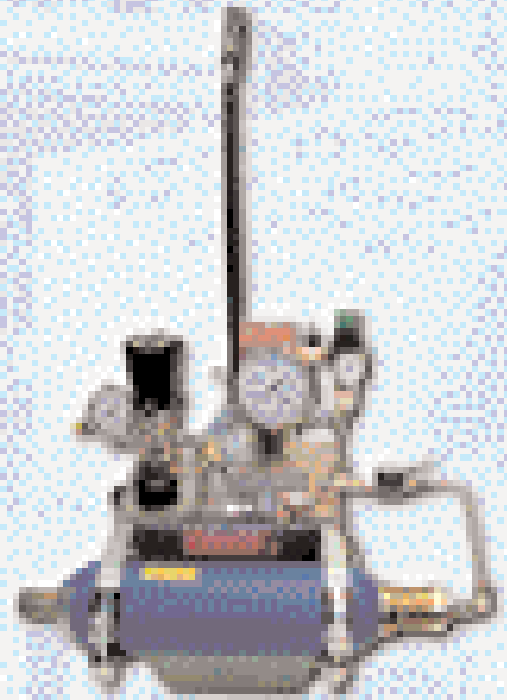
MAXIMATOR® Hydraulic Power Pack

Type M 37 LVE

Configuration

The power pack contains the following components:

- MAXIMATOR pump M 37 LVE
- Air control unit, type "C1"
- Stainless steel tank, volume 13 liter, with accessories
- On wheels
- Pressure gauge 0-400 Ø 100 for accumulator
- Accumulator 2.5 Liter / 330 bar
- Pressure relief valve
- Pressure release valve
- Pressure regulator at the outlet
- Outlet pressure gauge 0-40 bar Ø 63



Advantages

- Accurate regulation of the outlet pressure
- Easy to operate
- All wetted parts of corrosion resistant materials
- Energy saving
- No cooling required

Technical features

Pump model:	M 37 LVE
Pressure ratio:	1 : 46
Maximum outlet pressure:	400 bar
Maximum air drive pressure:	8.5 bar
Maximum flow capacity:	1.3 l/min
Approx. dimensions of the power pack (LxWxH):	420 x 350 x 550 mm
Approx. weight of the power pack:	23 kg

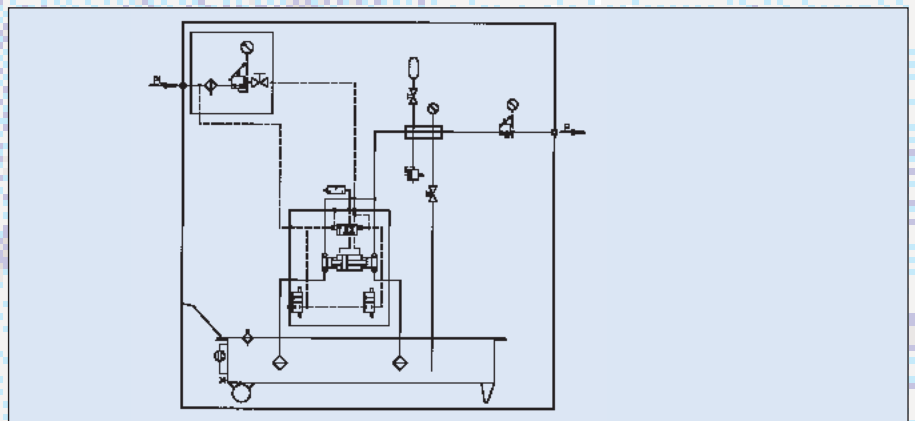
Application

This system can be used in all applications where small pressure tests have to be made.

By combining pressure generation, pressure storage and pressure regulation, it is possible to get stored energy, in this case a water pressure of 40 bar.

Examples:

- Burst pressure tests
- Control of pipelines
- Leak tests
- Internal high pressure forming
- Compression of materials
- Etc.



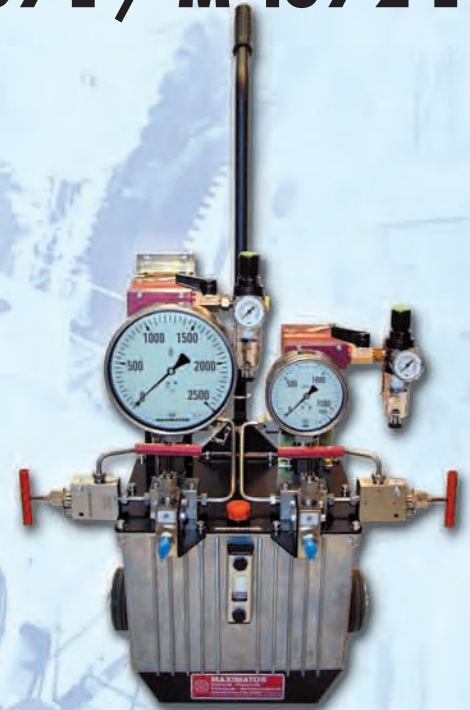
MAXIMATOR® Hydraulic Power Pack

Type M 189 L / M 189-2 L

Configuration

The power pack contains the following components:

- MAXIMATOR pumps, M189L and M189-2L
- Air control units, type "C1"
- Air safety valves
- Aluminium tank, volume 13 liter, with accessories
- On wheels
- Pressure gauges 0-1,600 Ø 100, 0-2,500 Ø 160
- Pressure relief valves, type EV
- Shut-off valves, type AV1
- High pressure hoses, type SK 6005
- Quick couplings



Advantages

- Pressure build-up in two different ranges at the same time
- Automatic pumping in case of leakages
- Easy to operate
- High mobility through compact design
- Suitable for various liquids

Technical features

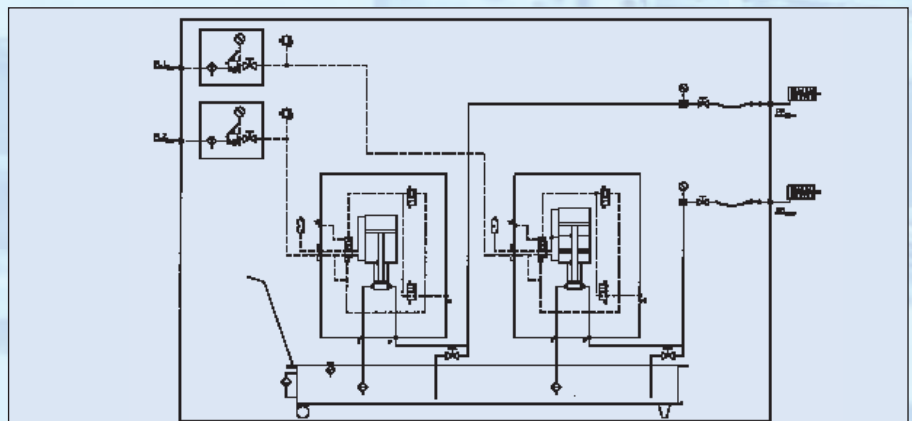
Pump models:	M189L / M189-2L
Pressure ratio:	1:220 / 1:450
Maximum outlet pressure:	2,500 bar
Maximum air drive pressure:	5.5 bar
Maximum flow capacity:	0.48 l/min
Approx. dimensions of the power pack (LxWxH):	310 x 240 x 450 mm
Approx. weight of the power pack:	17.5 kg

Application

Two MAXIMATOR pumps with different pressure ratios are used for generating the pressure for hydraulic interference fits. So cams and gear parts can be expanded and displaced at the same time. These power packs are especially designed on customers request depending on the application and their specific requirements.

Examples

- Hydraulic interference fits
- Expansion and displacement of hubs
- Actuation of hydraulic stamps
- Lifting equipment
- Torque tensioning of screws
- Etc.



MAXIMATOR® Hydraulic Power Pack

Type G 300 L

Configuration

The power pack contains the following components:

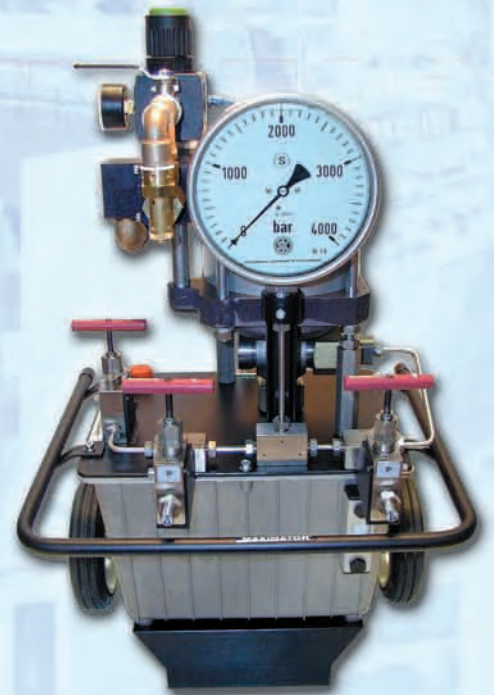
- MAXIMATOR pump G 300 L
- Air control unit, type "C2"
- Air safety valve
- Aluminium tank, volume 13 liter, with accessories
- On wheels
- Outlet pressure gauge 0-4,000 Ø 160
- Pressure relief valve, type EV
- 2 Pressure outlets with shut-off valve each, type AV2
- 2 High pressure hoses, type SK 6005
- Protective frame in special design

Advantages

- Easy to operate
- Rough design for difficult ambient conditions
- No cooling required
- System-integrated safety devices
- Suitable for different hydraulic liquids as well as for water
- All wetted parts of corrosion resistant materials

Technical features

Pump model:	G 300 L
Pressure ratio:	1 : 314
Maximum outlet pressure:	3,140 bar
Maximum air drive pressure:	10 bar
Maximum flow capacity:	0.7 l/min
Approx. dimensions of the power pack (LxWxH):	340 x 290 x 790 mm
Approx. weight of the power pack:	29 kg

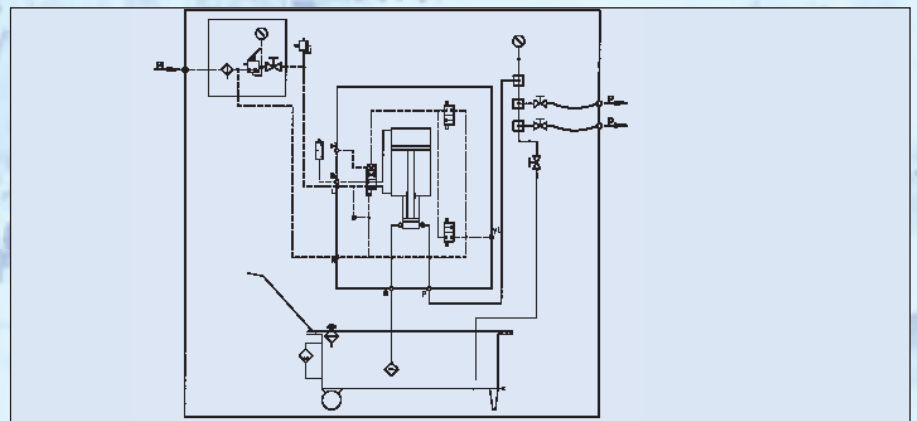


Application

This mobile power pack offers a wide range of applications. It can be used to loose and tighten interference fits as well as to generate the pressure for screw clamping devices.

Examples

- Density tests
- Burst pressure tests
- Leak tests
- Autofrettage
- Long term tests
- Etc.



Test Benches

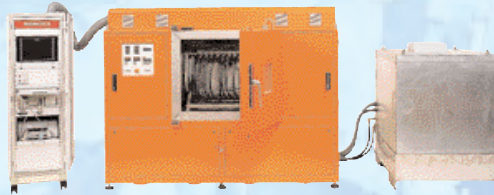
MAXIMATOR has a vast know-how with regard to concept, development, construction and manufacturing of test benches, pressure generating systems and autofrettage systems.

Hoses, pipes, tanks, accumulators, valves, fittings, plastic and ceramic components as well as in particular components of the diesel injection technique (rails, nozzles, nozzle holders, injectors) and other vehicle components (e.g. air bag cartridges, camshafts and intermediate shafts, gears) will be tested and manufactured successfully by means of MAXIMATOR systems.

As complete supplier having many years of experiences with regard to components, power packs and systems, we offer our customers individual solutions being tailored to your special requirements. From the preparation of the performance specification up to the commissioning and training of the personnel you will be accompanied by our experienced engineers and technicians so that your test task will be solved optimally.

A program of benchard systems, a designed modular system of standardized components as well as customized special solutions are available for you and cover the complete range of pressure generation and pressure test.

MAXIMATOR test benches, pressure generating and autofrettage systems reach pressures up to max. 15,000 bar and can be operated with a number of liquids, such as oil, water, HFA, HFC, pentosin, brake fluid or gases (e.g. nitrogen, oxygen, helium).



Our test bench line comprises:

- pressure test benches
- bursting pressure test benches
- pulse and durability test benches
- leak test benches
- functional test benches
- high-pressure generating systems
- autofrettage systems
- mandrel extraction machines for hoses
- air bag filling and controlling systems



Furthermore we offer you worldwide an extensive service from the assembly and commissioning over co-worker training up to rotational maintenance of your machine.

As development co-partner of the automobile and components supplying industry we are extremely familiar with the demands on testing, taking down and documenting of the test results and test data administration. On your request, we also take on and document the measuring equipment check test and the calibration of the installed measuring instruments.

In our service center we can realize for you pressure, bursting pressure and pulse pressure tests as well as autofrettage services. Feasibility studies, structural tests, test

and autofrettage of pilot productions or small batches are possible without any problem. This scope of offers will be extended continuously.

Please consult us.



Accessories

MAXIMATOR offers a complete line of high pressure equipment and supplies various accessories for all pneumatic and hydraulic applications. Most items can be shipped ex stock or in short term.

Adapter for pumps and boosters resp. manifold blocks to 1,000 bar with female BSP thread for high pressure hoses with 60° sealing cone and swivel nut

Adapter for pumps and boosters resp. manifold blocks to 1,000 bar with female BSP thread for high pressure tubing

Adapter for high pressure valves and fittings with coned-and-threaded-connectors with female BSP thread up to 4,200 bar

Adapter for high pressure valves and fittings for high pressure hoses with 60° sealing cone and swivel nut up to 4,200 bar

Manually or air operated shut-off valves

Manifold blocks for hydraulic units with relief valve

Manifold blocks for pumps and boosters from 400 bar to 2,500 bar

Manifold blocks for pumps and boosters from 250 bar to 2,500 bar

Manifold blocks with directional valve and pressure relief valve for hydraulic units to 700 bar

Manifold blocks for oil pumps to 700 bar

Fittings (elbows, tees, crosses, couplings, bulkhead couplings)

Gas receivers

Accumulators

Pressure transducers for gas and liquid service from 10 bar to 4,000 bar

Air receiver tanks from 0.75 liter to 350 liter

Pressure regulators for hydraulic units and booster stations for gases

High pressure hoses, nominal size (DN) 5

High pressure hoses, nominal size (DN) 8

Hydraulic tanks, aluminium nominal size 6.5 to 70 liter

Hydraulic tanks, stainless steel, nominal size from 6.5 to 70 liter



Piston shut-off valves for liquids and non-combustible gases from 150 to 1,000 bar

Air control units for pumps and boosters, available in 1/4" BSP to 1/2" BSP

Pressure gauges, Ø 63 mm

Pressure gauges, Ø 100 mm

Pressure gauges, Ø 160 mm

Gauge connections for HP fittings and valves with SF...CX to 1,400 bar and F...C to 4,200 bar

Gauge connections for HP tubing with SF...CX to 1,400 bar and F...C to 4,200 bar

Gauge connections for high pressure fittings and valves with BSP thread to 1,000 bar for higher pressures to 1,400 bar and to 4,200 bar

Pneumatic valves (electrically operated) for pumps, boosters and hydraulic units

Safety valves for compressed air and non-toxic, non-combustible gases from 0.5 to 42 bar, nominal width (DN) 10

Safety valves for vapors, gases and liquids from 0.5 to 250 bar, nominal width (DN) 15

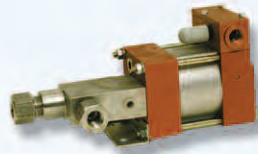
Safety valves for liquids and gases (non-combustible/combustible) from 3.4 to 414 bar

Safety valves for liquids and non-combustible gases from 120 to 1,000 bar

Safety valves for liquids and non-combustible gases from 1,000 to 4,400 bar

Directional seat valves for hydraulic units to 500 bar

MAXIMATOR®



High-pressure pumps for different liquids (oil, water, emulsion etc.)

- easy to maintain, ex-proof
- low energy consumption
- operating pressures up to max. 5,500 bar



Compressed Air Amplifiers

- For increasing air pressure
- Specific air pressure amplification to suit your requirements
- Connection to electrical supply not necessary
- Operating pressure max. 40 bar



High Pressure Compressors

- For pressurizing gases (nitrogen, oxygen, inert gases)
- Simple handling
- Intrinsically safe and explosion proof i. e. not electromotive, but pneumatically powered
- Operating pressure max. 1,000 bar



Gas Assist Injection Systems

- Compressor stations with pneumatic, electric or hydraulic drive
- Control modules with 2, 4 or 8 valves
- Control modules with integrated booster station
- External core pull control systems



High Pressure Valves, Fittings, Tubing

- Stainless steel design
- Temperatures from -250° C to +650° C for liquids and gases
- Maximum outlet pressures up to 10,500 bar

Your Representative:



MAXIMATOR GmbH

Factory

MAXIMATOR GmbH
Walkenrieder Str. 15
D-37449 Zorge / Germany

Telephone: ++49 55 86 / 80 30
Facsimile: ++49 55 86 / 8 03 30 40
eMail: info@maximator.de

Internet

www.maximator.de

All technical and dimensional information subject to change. All general Terms and Conditions of sale, including limitations of our liability, apply to all products and services sold.

MAXIMATOR®

HIGH PRESSURE
TECHNOLOGY
HYDRAULICS
PNEUMATICS
TESTING
EQUIPMENT



MAXIMATOR GmbH

Air Amplifiers

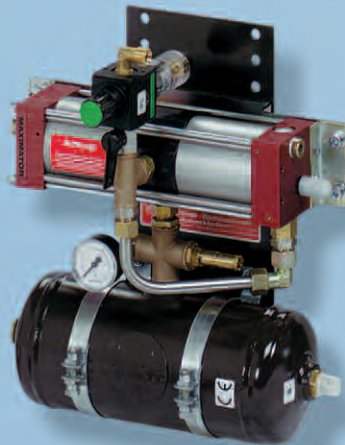
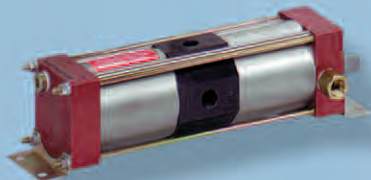
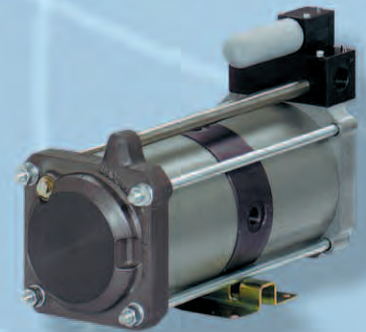
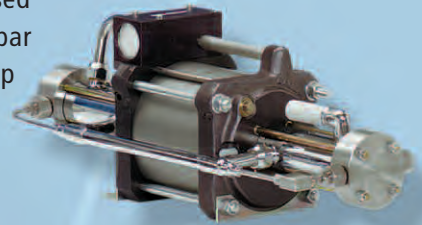


MAXIMATOR PLV series Air Amplifiers are suitable for the compression of pressurised air or nitrogen. The units are capable of increasing normal pressures of 4 bar or 6 bar to the desired final pressures. The PLV Air Amplifiers are operated with normal shop air and are provided with a variety of amplification ratios.

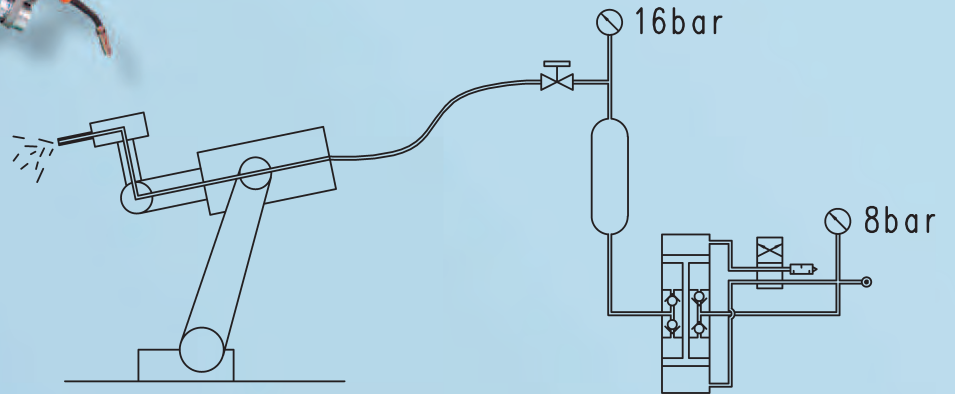
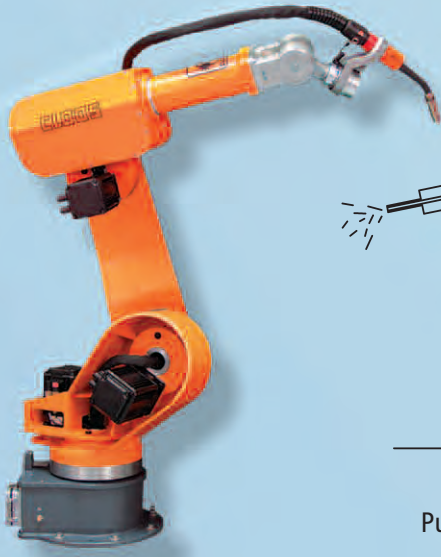
All PLV Air Amplifiers can be supplied with an air control unit comprising a filter, pressure regulator with pressure gauge and an air shut-off valve.

The desired operating pressure can be preset by means of the air control unit in correspondence with the different pressure ratios.

We can offer you a choice between a standard PLV Air Amplifier Station or a customised solution.

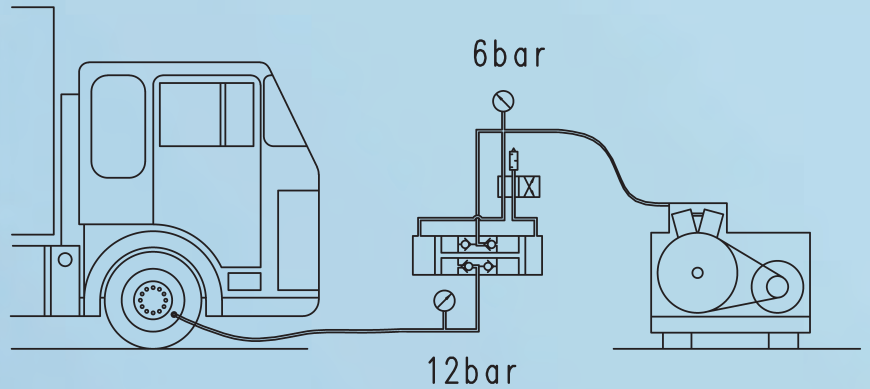


Burner cleaning



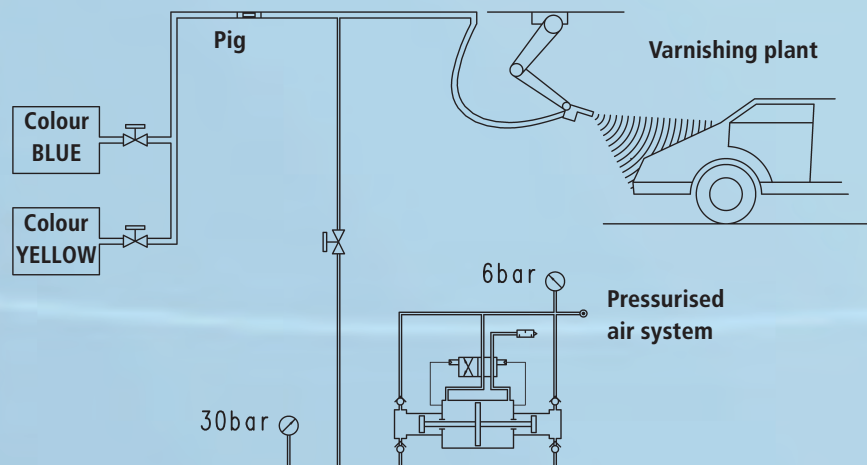
Purging of impurities by means of 16-bar pressure shocks.

Automotive sector

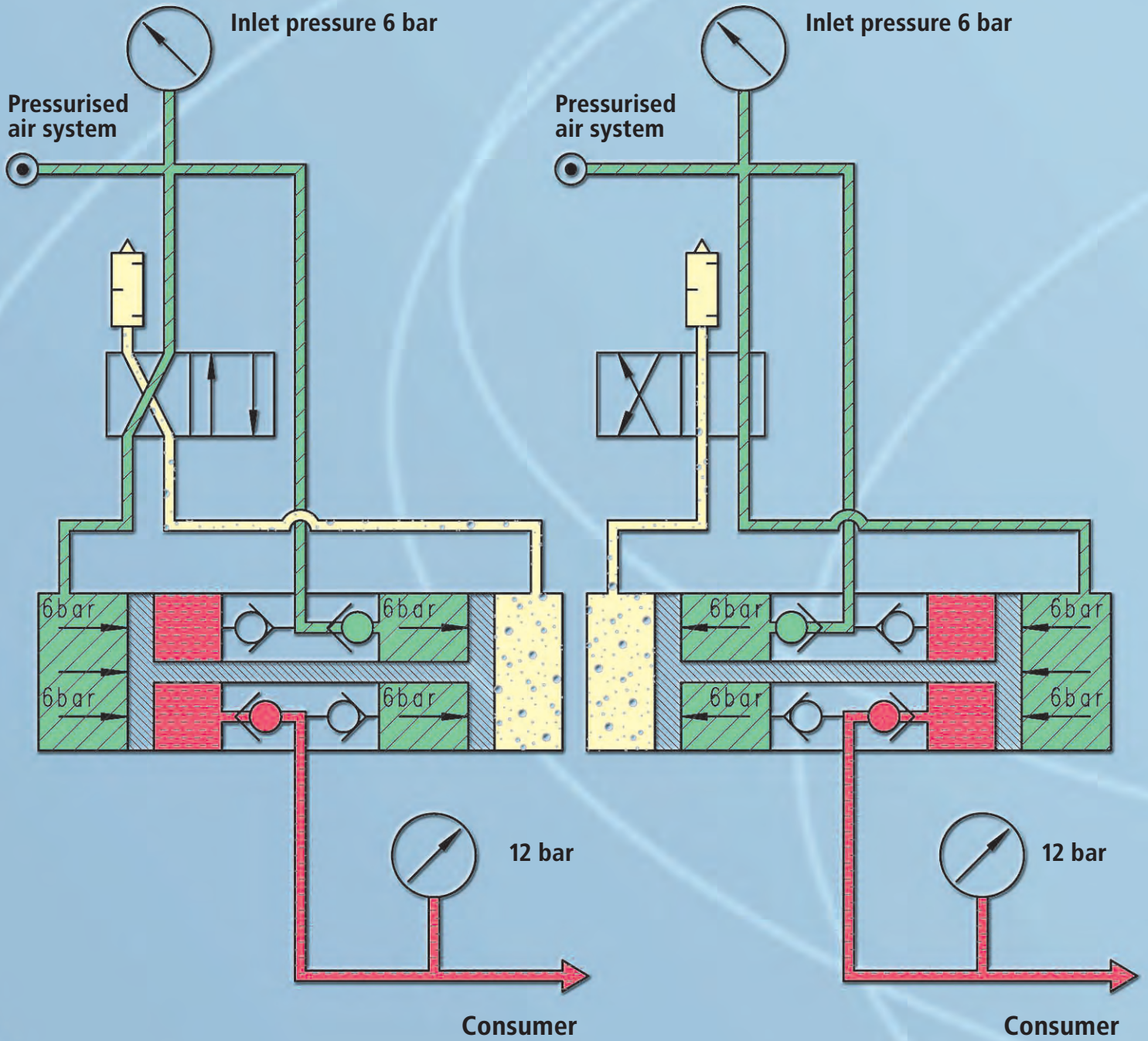


Filling of tyres with 16-bar pressure.

Cleaning of varnishing systems (pigging)



The dyes are forced back into the tanks by means of a pressurised air-driven pig.



The compressed air from the standard air system is compressed to the desired higher final pressure. This is a simple, safe and economic mode of operation. Thus, expenditures for an in-house high-pressure system or a separate decentralised compressor plant can be saved.

The benefits of this design are:

- Selected pressure boosting upstream of individual consumers.
- Zero energy consumption after final pressure is attained.
- No electrical installations are required.

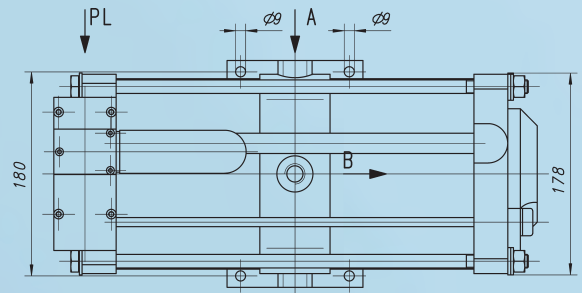
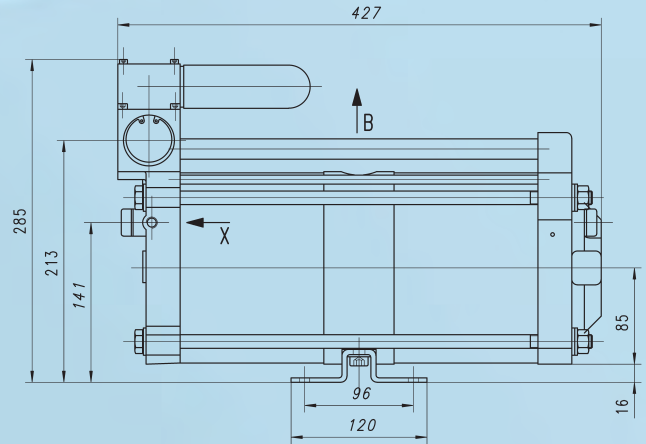
Air Amplifier GPLV 2 1200 l_N/min*

MAXIMATOR®



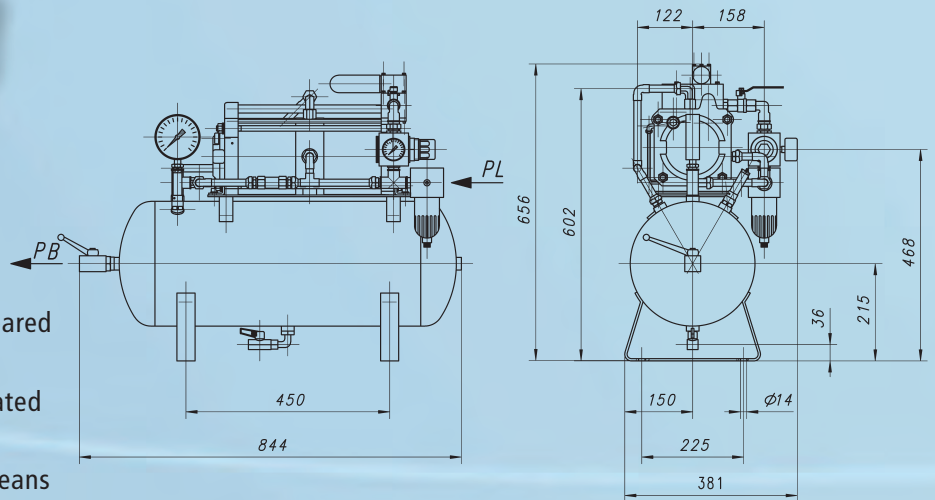
The benefits of the GPLV2 design are:

- Selected pressure boosting upstream of individual consumers.
- Zero energy consumption after final pressure is attained.
- No electrical installations are required, i.e. suitable for use in explosion-proof areas



The benefits of the GPLV 2-Station are:

- Pressure pulsation rates lower than compared to units without air receivers.
- Any air consumption peaks are compensated by the air receiver volume reserve.
- Operating pressure can be adjusted by means of a reducing regulator.

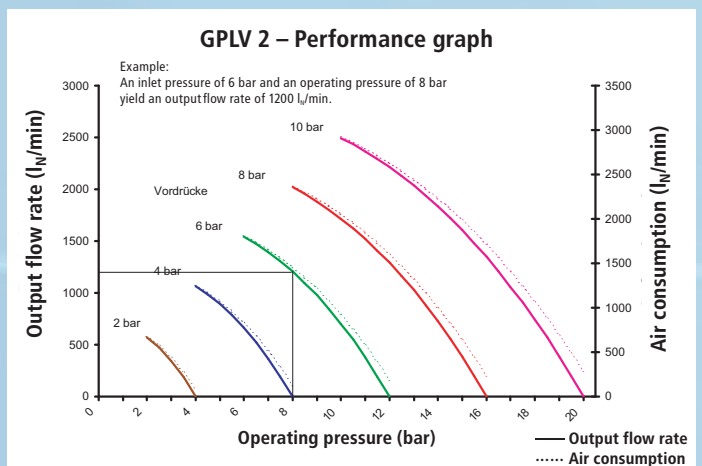


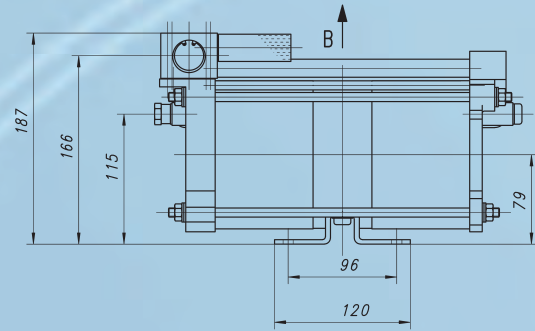
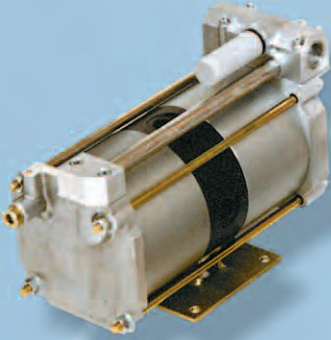
Technical data:

Type	GPLV 2
Pressure ratio (i)	1:2
Air drive pressure (p _i) in bar	1 – 10
Max. discharge pressure (p _e) in bar	20 (16) ¹⁾
Max. noise level	79 dB(A)
Max. operating temperature (T) in °C	60
Air drive connection	BSP 3/4"
Inlet connection	BSP 1/2"
Outlet connection	BSP 1/2"
Net weight in kg	20.5
(Station) net weight in kg	49.0

* at inlet pressure 6 bar and operating pressure 8 bar and 50 % operating time

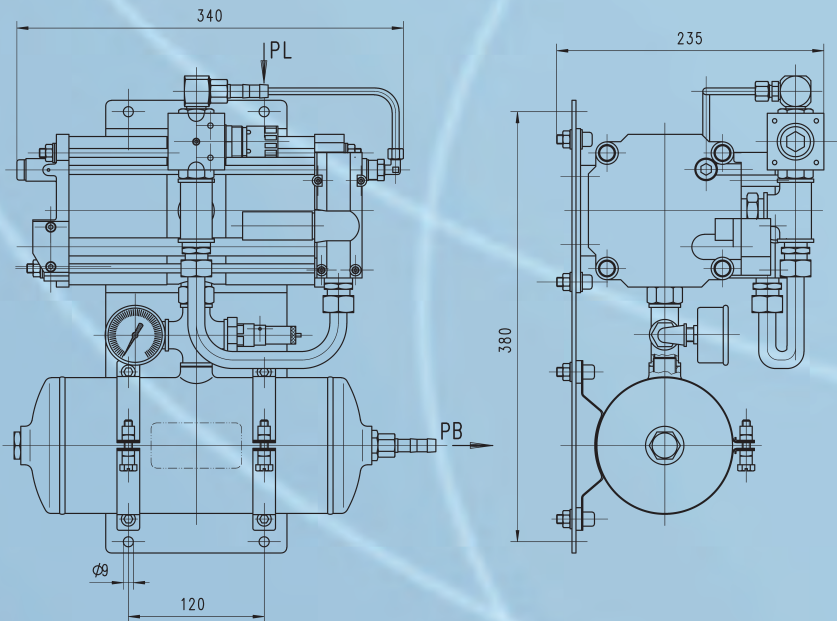
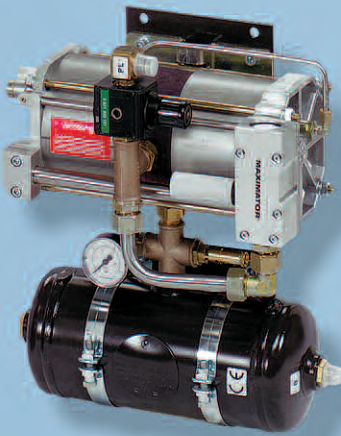
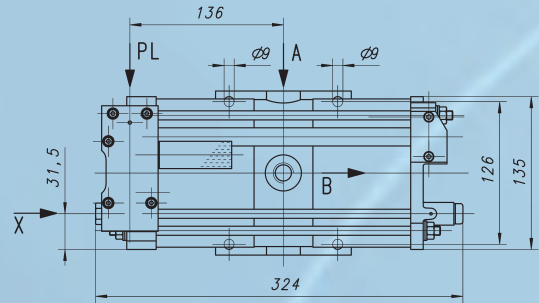
1) Limited by pressure vessel rating





The benefits of the SPLV2 design are:

- Selected pressure boosting upstream of individual consumers.
- Zero energy consumption after final pressure is attained.
- No electrical installations are required, i.e. suitable for use in explosion-proof areas.



The benefits of the SPLV 2-Station are:

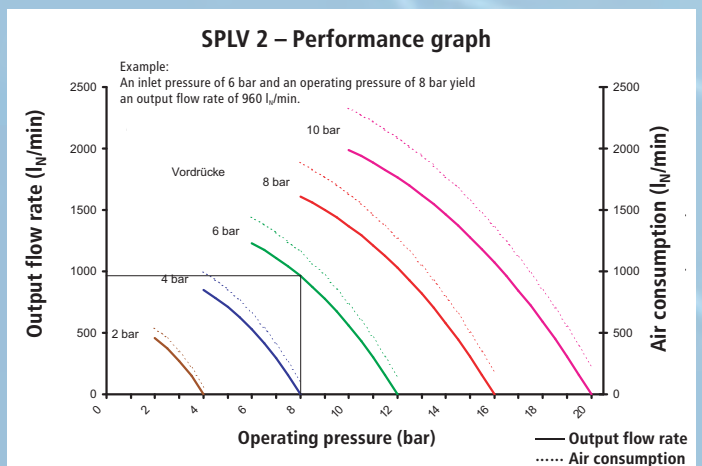
- Pressure pulsation rates lower than compared to units without air receiver.
- Any air consumption peaks are compensated by the air receiver volume reserve.
- Operating pressure can be adjusted by means of a reducing regulator.

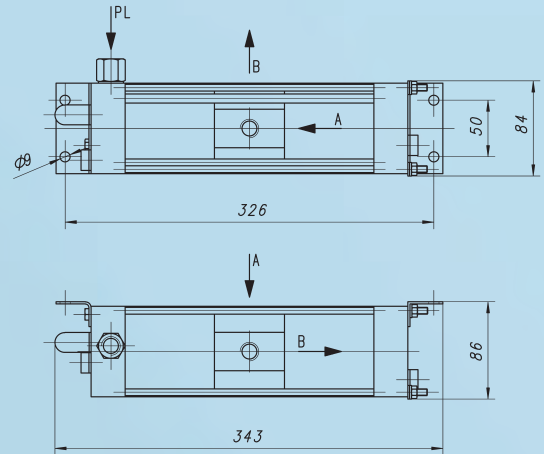
Technical data:

Type	SPLV 2
Pressure ratio (i)	1:2
Air drive pressure (p _i) in bar	1 – 10
Max. discharge pressure (p _e) in bar	20 (16) ¹⁾
Max. noise level	79 dB(A)
Max. operating temperature (T) in °C	60
Air drive connection	BSP 1/2"
Inlet connection	BSP 1/2"
Outlet connection	BSP 1/2"
Net weight in kg	8.5
(Station) net weight in kg	16.0

* at inlet pressure 6 bar and operating pressure 8 bar and 50 % operating time

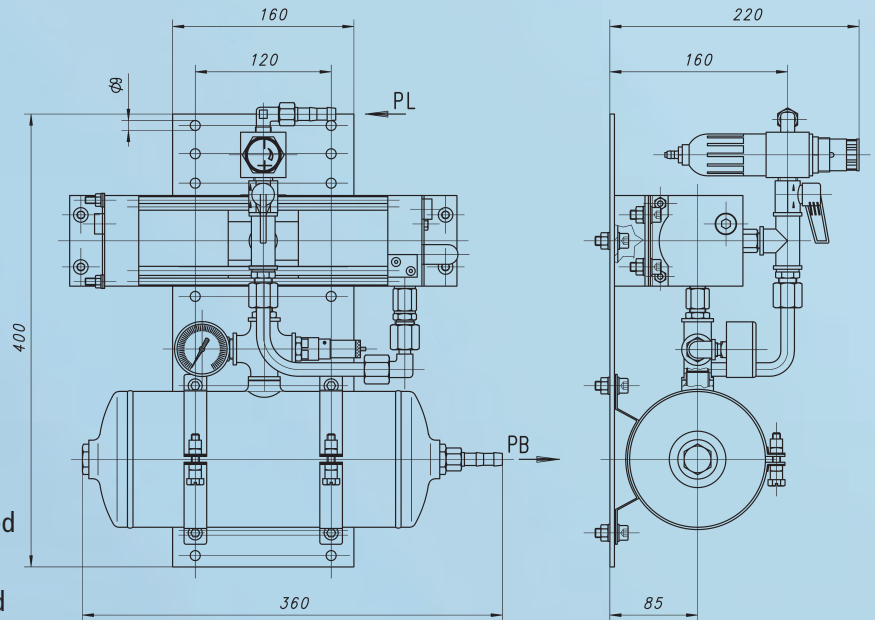
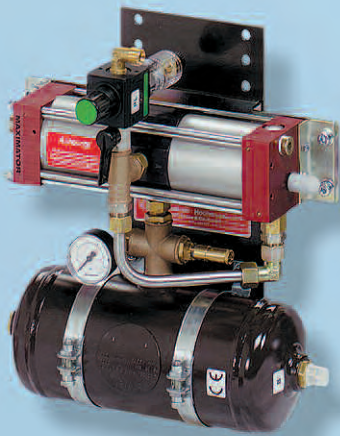
1) Limited by pressure vessel rating





The benefits of the MPLV 2 design are:

- Selected pressure boosting upstream of individual consumers.
- Zero energy consumption after final pressure is attained.
- No electrical installations are required, i.e. suitable for use in explosion-proof areas.



The benefits of the MPLV 2-Station are:

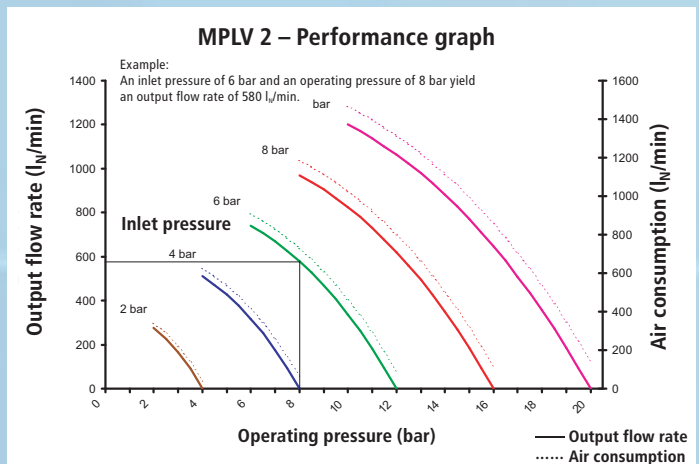
- Pressure pulsation rates lower than compared to units without air receiver
- Any air consumption peaks are compensated by the air receiver volume reserve.
- Operating pressure can be adjusted by means of a reducing regulator.

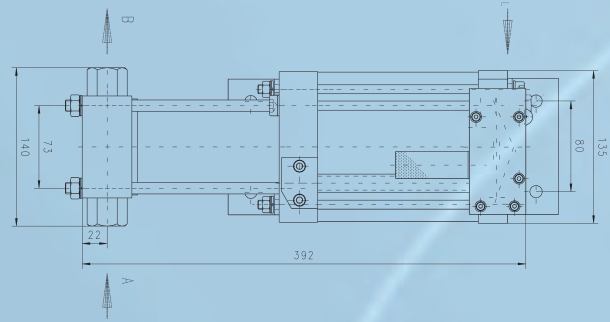
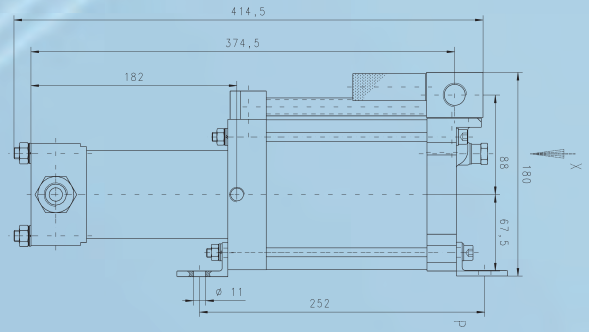
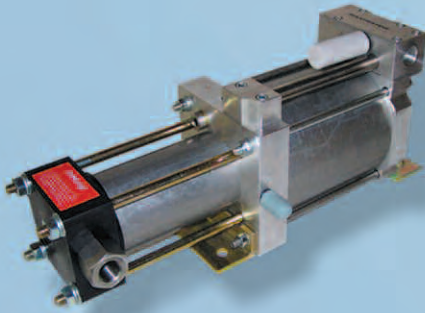
Technical data:

Type	MPLV 2
Pressure ratio (i)	1:2
Air drive pressure (p _i) in bar	1 – 10
Max. discharge pressure (p _e) in bar	20 (16) ¹
Max. noise level	79 dB(A)
Max. operating temperature (T) in °C	60
Air drive connection	BSP 3/8"
Inlet connection	BSP 3/8"
Outlet connection	BSP 3/8"
Net weight in kg	3.3
(Station) net weight in kg	13.0

* at inlet pressure 6 bar and operating pressure 8 bar and 50 % operating time

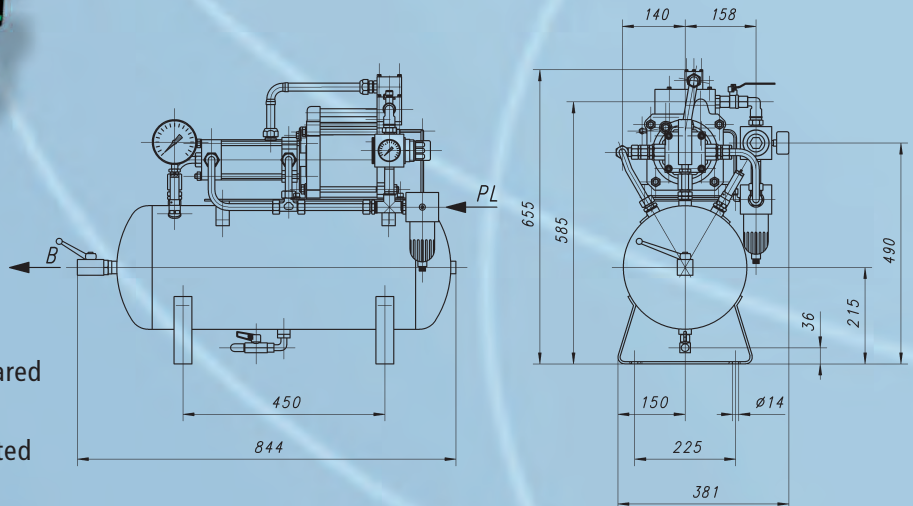
1) Limited by pressure vessel rating





The benefits of the SPLV 3 design are:

- Selected pressure boosting upstream of individual consumers.
- Zero energy consumption after final pressure is attained.
- No electrical installations are required, i.e. suitable for use in explosion-proof areas



The benefits of the SPLV 3-Station are:

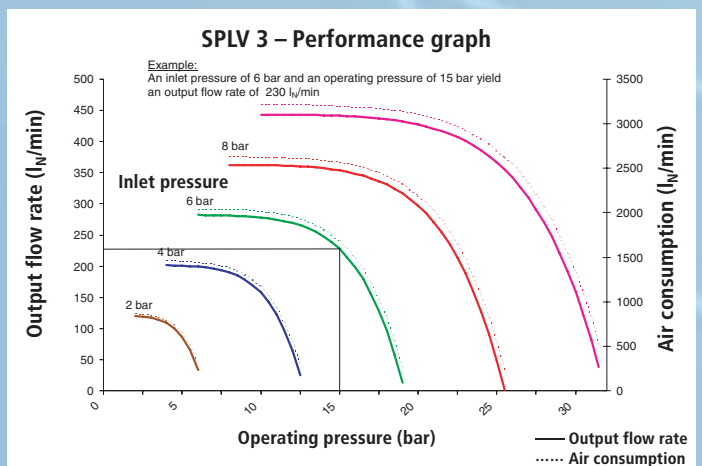
- Pressure pulsation rates lower than compared to units without air receivers.
- Any air consumption peaks are compensated by the air receiver volume reserve.
- Operating pressure can be adjusted by means of a reducing regulator.

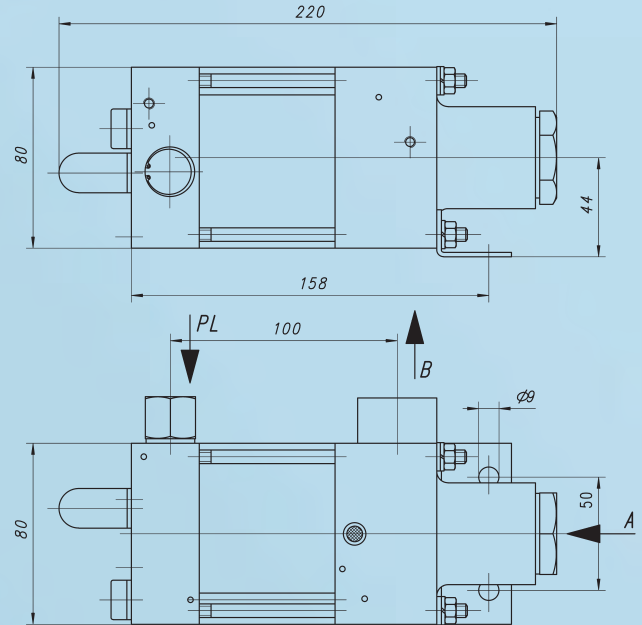
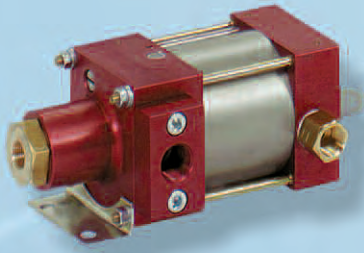
Technical data:

Type	SPLV 3
Pressure ratio (i)	1:3,2
Air drive pressure (p _i) in bar	1 – 10
Max. discharge pressure (p _b) in bar	32 (16) ¹
Max. noise level	79 dB(A)
Max. operating temperature (T) in °C	60
Air drive connection	BSP 1/2"
Inlet connection	BSP 1/2"
Outlet connection	BSP 1/2"
Net weight in kg	8.5
(Station) net weight in kg	16.0

* at inlet pressure 6 bar and operating pressure 8 bar and 50 % operating time

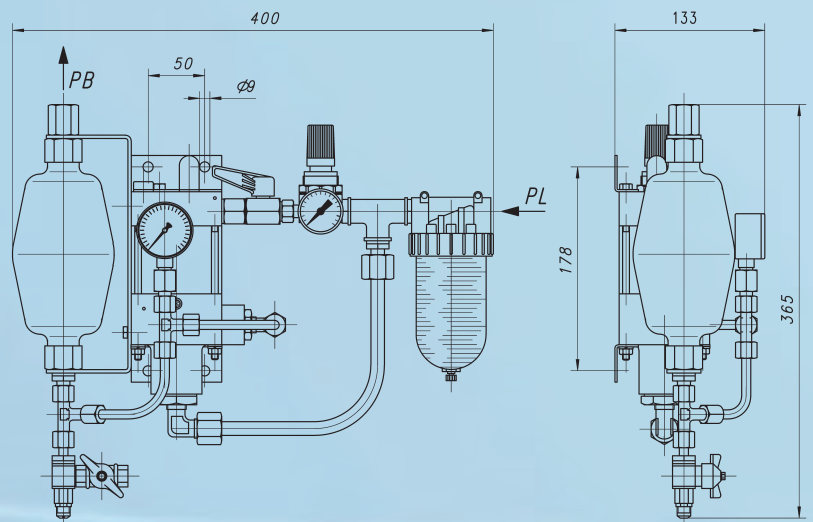
1) Limited by pressure vessel rating





The benefits of the MPLV 4 design are:

- Selected pressure boosting upstream of individual consumers.
- Zero energy consumption after final pressure is attained.
- No electrical installations are required, i.e. suitable for use in explosion-proof areas.



The benefits of the MPLV 4-Station are:

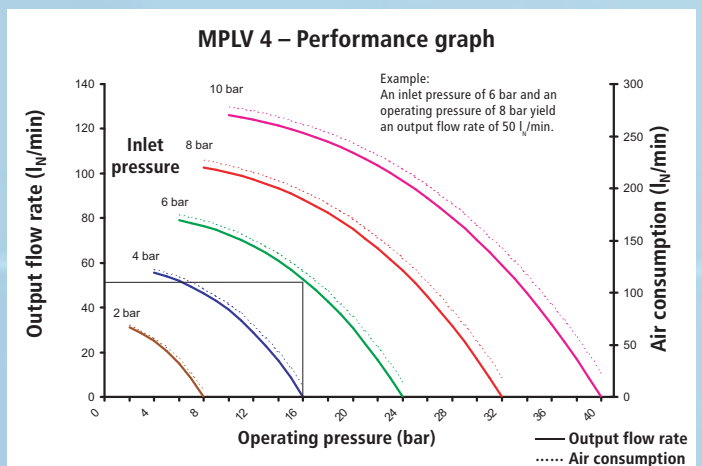
- Pressure pulsation rates lower than compared to units without air receiver.
- Any air consumption peaks are compensated by the air receiver volume reserve.
- Operating pressure can be adjusted by means of a reducing regulator.

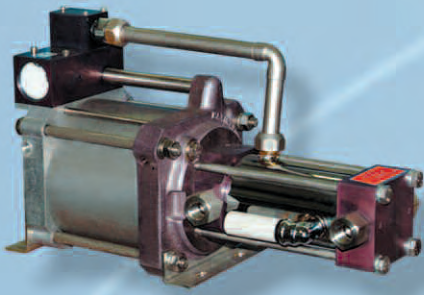
Technical data:

Type	MPLV 4
Pressure ratio (i)	1:4
Air drive pressure (p _i) in bar	2 – 10
Max. discharge pressure (p _e) in bar	32 (16) ¹
Max. noise level	79 dB(A)
Max. operating temperature (T) in °C	60
Air drive connection	BSP 3/8"
Inlet connection	BSP 3/8"
Outlet connection	BSP 1/2"
Net weight in kg	2.2
(Station) net weight in kg	5.3

* at inlet pressure 6 bar and operating pressure 16 bar and 50 % operating time

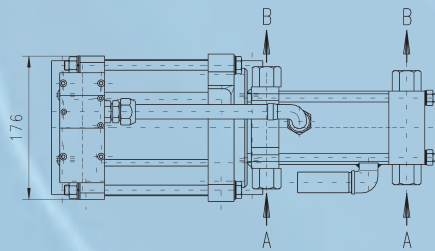
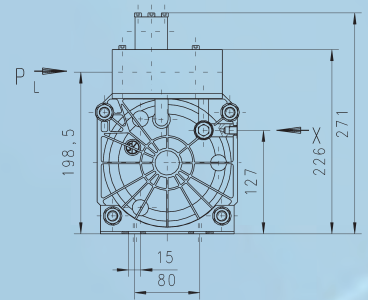
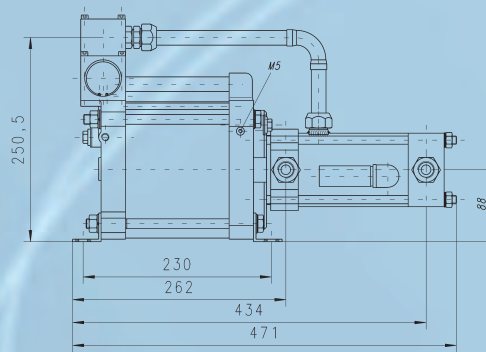
1) Limited by pressure vessel rating





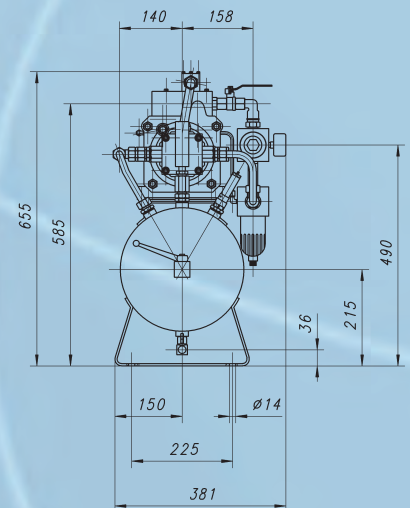
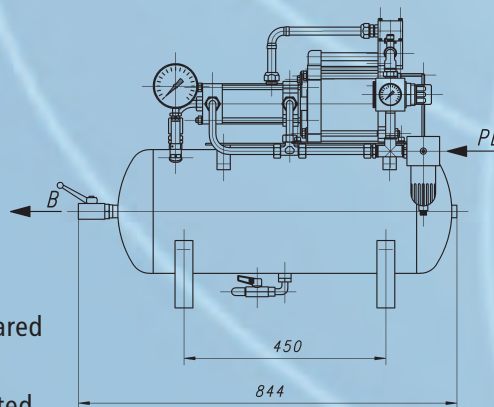
The benefits of the GPLV5 design are:

- Selected pressure boosting upstream of individual consumers.
- Zero energy consumption after final pressure is attained.
- No electrical installations are required, i.e. suitable for use in explosion-proof areas



The benefits of the GPLV 5-Station are:

- Pressure pulsation rates lower than compared to units without air receivers.
- Any air consumption peaks are compensated by the air receiver volume reserve.
- Operating pressure can be adjusted by means of a reducing regulator.

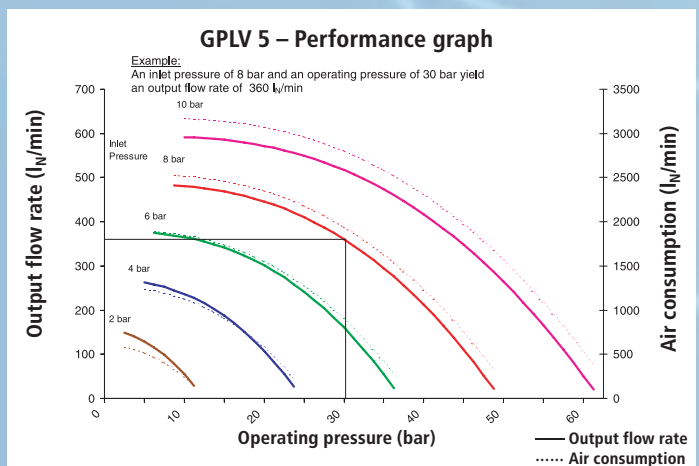


Technical data:

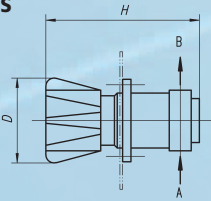
Type	GPLV 5
Pressure ratio (i)	1:5
Air drive pressure (p _i) in bar	1 – 10
Max. discharge pressure (p _b) ¹⁾ in bar	60 (40) ²⁾
Max. noise level	79 dB(A)
Max. operating temperature (T) in °C	60
Air drive connection	BSP 3/4"
Inlet connection	BSP 1/2"
Outlet connection	BSP 1/2"
Net weight in kg	20.5
(Station) net weight in kg	49.0

* at inlet pressure 6 bar and operating pressure 8 bar and 50 % operating time

- 1) Formula $5 \times p_L + p_A$ 2) Limited by pressure vessel rating

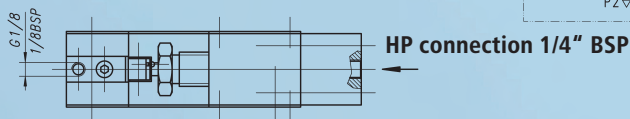
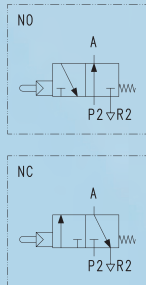
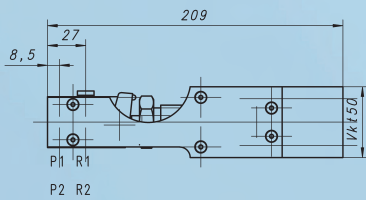


Pressure regulators



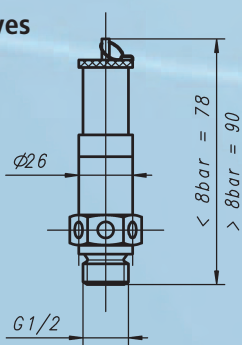
Control range bar	Inlet pressure bar	Medium	Connections	Material	Item N°
0.5-25	40	Air / N ₂	1/4" BSP	Brass	3300.3538
0.5-25	40	Air / N ₂	1/2" BSP	Brass	3300.3635
0.5-50	50	Air / N ₂	1/4" BSP	Brass	3300.5636
0.5-50	50	Air / N ₂	1/2" BSP	Brass	3300.5637

Air pilot switches



Adjustment range bar	NO Item N° (Normally open)	NC Item N° (Normally closed)
10-30	3630.1451	3630.1619
30-100	3630.1435	3630.1617

Safety relief valves

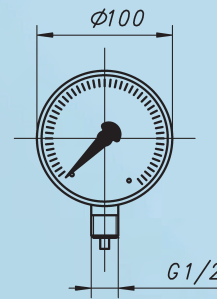


Relief pressure bar	Item N° 1/4" BSP	Item N° 1/2" BSP
5.0	3610.2587	3620.2515
6.0	3610.2589	3620.2690
8.0	3610.2592	3620.4214
16.0	3620.3033	3620.2695
40.0	3610.2594	3620.3688

Other relief pressures upon request.

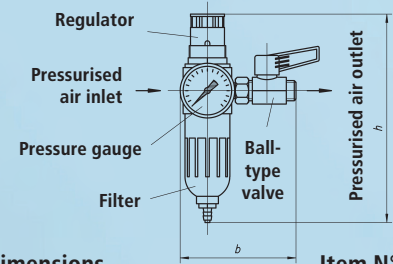
All safety valves are accompanied by a TÜV testing authority certificate.

Pressure gauges



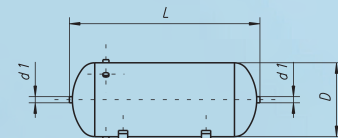
Measuring range bar	Item N°
0-10	3300.0142
0-16	3300.0143
0-25	3300.0144
0-40	3300.0145
0-60	3300.0146

Air control units



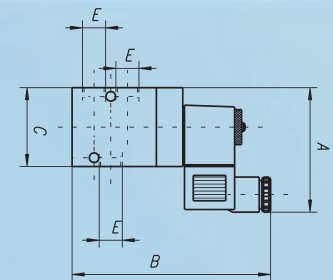
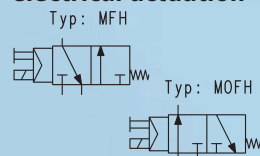
PLV type	Order	Dimensions H	Dimensions W	P _{L IN}	P _{L OUT}	Item N°
MPLV	C1	173	94	1/4" BSP	3/8" BSP	3300.0279
SPLV	C1.5	200	112	3/8" BSP	1/2" BSP	3300.0127
GPLV	C2	240	315	1/2" BSP	3/4" BSP	3300.0280

Pressurised-air receivers



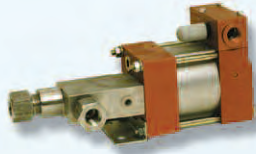
Allowed operating pressure bar	Volume capacity litres	L	Diam.	d1	Item N°
40	0.75	210	90	BSP 1/4"	3610.1636
16	3	315	125	BSP 1/2"	3630.0910
16	20	650	206	BSP 1/2"	3200.0129
16	40	750	276	BSP 1/2"	3300.0456
21	40	750	276	BSP 1/2"	3300.0457
40	40	750	276	BSP 1/2"	3300.3571
16	100	900	400	BSP 1 1/2"	3300.1963

Pneumatic valves, electrical actuation



Type	Dimensions in mm					Item N°
	A	B	C	D	E	
MFH-3-1/8	71.0	113.0	45.0	26.0	BSP 1/8"	3300.0416
MOFH-3-1/8	71.0	113.0	45.0	26.0	BSP 1/8"	3300.2080
MFH-3-1/4	73.5	128.0	50.0	30.4	BSP 1/4"	3610.2304
MOFH-3-1/4	73.5	128.0	50.0	30.4	BSP 1/4"	3610.2411
MFH-3-1/2	88.5	167.0	80.0	52.0	BSP 1/2"	3300.1296
MOFH-3-1/2	88.5	167.0	80.0	52.0	BSP 1/2"	3300.2074
Solenoid valve coil	24 V DC					3610.2402
Solenoid valve coil	230 V AC					3610.2305

MAXIMATOR®



High-pressure pumps for oil, water, emulsions

- Minimum maintenance, explosion-proof
- Low energy consumption
- Max. operating pressures 5,500 bar



Test benches for pressure, bursting pressure and pulse tests

- Expansion hoses, tubing
- Valves, fittings, bolted unions
- Pressure gauges, pressure-operated switches
- Pressure transducers, vessels
- Special test benches



Gas boosters up to 1,500 bar

- For pressurising nitrogen, oxygen, noble gases
- Simple handling
- Explosion-proof due to pressurised air drive
- Max. operating pressures 1,500 bar



Gas assist systems

- Compressor stations with pneumatic, electrical or hydraulic drive
- Control modules with 1, 2 or 4 valves
- Compressor-control module combinations
- Pressurised air / N₂ up to max. 500 bar



High pressure valves, fittings and tubing

- Stainless steel components in excellent workmanship
- Temperature range - 250 °C to + 650 °C
- Max. operating pressures 10,500 bar

Your Representative:



MAXIMATOR GmbH

Factory

MAXIMATOR GmbH
Walkenrieder Str. 15
D-37449 Zorge / Germany
www.maximator.de

Telephone: ++49 55 86 / 80 30
Facsimile: ++49 55 86 / 8 03 30 40
eMail: info@maximator.de

All technical and dimensional information subject to change. All general Terms and Conditions of sale, including limitations of our liability, apply to all products and services sold.

MAXIMATOR®

HIGH PRESSURE
TECHNOLOGY
HYDRAULICS
PNEUMATICS
TESTING
EQUIPMENT



He

supercritical

liquid

H₂

Co₂

critical point

O₂

triple point

vapour

Ar

N₂

50 bar (725 psi)

500 bar (7,250 psi)

1,500 bar (21,750 psi)



MAXIMATOR GmbH

Gas Boosters

Company portrait	3
Components and systems	4
Test benches and gas assist systems	5
After-sales-service and research systems	6
Scope of application	7
Application examples	8 and 9
Model overview and type coding	10
Operating principle	11

Model selection 12 to 27

Operating pressures to 40 bar (580 psi)

DLE 2-1	12
DLE 2	12
DLE 2-1-2	13
DLE 2-2	13

Operating pressures to 100 bar (1,450 psi)

DLE 5-1	14
DLE 5	14
DLE 2-5	15
DLE 5-1-2	15
DLE 5-2	16
DLE 2-5-2	16

Operating pressures to 300 bar (4,350 psi)

DLE 15-1	17
DLE 15	17
DLE 5-15	18
DLE 15-1-2	18
DLE 15-2	19
DLE 5-15-2	19

Booster station	VP/70/700/35	700 bar (10,150 psi)	28
Booster station	VP/120/500/300	500 bar (7,250 psi)	29
Compressor station	VH/400/500	500 bar (7,250 psi)	30

Technical features of the MAXIMATOR Gas booster line	31
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Operating pressures to 600 bar (8,700 psi)	
DLE 30-1	20
DLE 30	20
DLE 5-30	21
DLE 15/30	21
DLE 30-1-2	22
DLE 30-2	22
DLE 5-30-2	23
DLE 15-30-2	23
Operating pressures to 1,500 bar (21,750 psi)	
DLE 75-1	24
DLE 75	24
DLE 15-75	25
DLE 30-75	25
DLE 75-1-2	26
DLE 75-2	26
DLE 15-75-2	27
DLE 30-75-2	27



C.E.O. Henning Willig

MAXIMATOR is one of the worldwide leading manufacturers of air driven liquid pumps, air amplifiers, gas boosters, high pressure valves, fittings and tubing as well as associated products like pressure switches and further components for applications in high pressure technology.

All our systems and units comply with the applicable **UVV [accident prevention]** regulations, the **European Machine, Pressure Equipment** and **ATEX Directives** and, upon request, also conform to **NACE** specifications.

Our strict quality guidelines are certified to **ISO 9001**.

To ensure the continuation of future developments we are working in close cooperation with our customers, material and component suppliers, universities as well as with public and private organisations.



Nordhausen factory

We employ more than 220 qualified and highly-motivated staff members in our production centres in Zorge and Nordhausen.

We aim to offer the best customer service from our four technical offices in Germany, our qualified partner companies and representations located all over the world.



Zorge factory



Locations and technical sales offices in Germany

- Pressure intensification of liquids and gases



Packaged pump systems for oil, water and other liquids for the following applications:

- Tool hydraulics
- Clamping hydraulics
- Water hydraulics

Air driven liquid pumps

Operating pressures to 5,500 bar (79,750 psi)



Air amplifiers

- Operating pressures to 40 bar (580 psi)
- Selective amplification of shop air



Valves, fittings, tubing for high pressure technology

- Stainless steel design in high manufacturing quality
- Temperature range from -250°C (-418°F) to $+650^{\circ}\text{C}$ ($1,202^{\circ}\text{F}$) for liquids and gases
- Operating pressures to max. 10,500 bar (152,250 psi)



Test benches and pressure generating systems

- Static pressure, burst pressure and pulse testing
- Leak and functional testing
- Autofrettage



Test benches and gas assist systems

Compressors, testing and regulating systems

- Centralised supply for gas assist systems
- Testing and regulating systems for shop air and gases
- Complete systems to fill air bag gas cartridges



We are in a position to test your product for you in the following fields:

...Design

- Constructional design recommendations
- Scientific development

...Serial production

- Production supporting tests
- Capacity extension at short notice

Gas pressure method

This special method is used in plastics injections moulding and provides the following advantages

- Material savings of up to 50%
- Reduction of locking pressures
- Avoidance of sink marks

Diesel injection technology



Hose industry



Test benches for static pressure tests, burst tests and pulse tests:

- Hoses of all types
- Valves, fittings, gland assemblies
- Pressure gauges, pressure switches
- Pressure transducers, accumulators
- Coolers and air conditioning systems
- Diesel injection systems



On- and Offshore Solutions

Specifically for the Oil and Gas industry we have developed a range of standard units which are suitable for these applications.

Features

The units are protected against mechanical and environmental damage by using a stainless steel frame which also helps with transportation of the unit. The control and operation elements are ergonomically mounted into a control panel.



Available options

- Stroke counter
- Chart recorder
- Pressure switch
- Safety valve

Please ask for our brochure „On and Offshore Solutions“.

Complete solutions for high pressure technology



Design and development,
manufacturing, commissioning,
servicing, repair, training

Process consult for

- Testing procedure
- Gas assisted process
- Mould design

In-house testing service on most modern machines:

- Static pressure testing
- Burst tests
- Fatigue tests



Service

MAXIMATOR Mobile Service – Testing at your location with our test equipment

The MAXIMATOR Mobile Service is available to perform testing at your site and provides the following service:

- Maintenance of compressor stations and control modules
- Pressure generation with mobile systems
- Inspection and calibration of measuring instruments
- Installation of tube lines and ring circuits

Scope of applications

MAXIMATOR®

The **MAXIMATOR** high pressure boosters are suitable for the oil free compression of gases and air. Industrial gases like Argon, Helium, Hydrogen and Nitrogen can be compressed to operating pressures of 1,500 bar (21,750 psi), Oxygen to 350 bar (5,075 psi).

Air driven boosters are an efficient alternative instead of electrically driven products and can be used in explosion-proof areas .

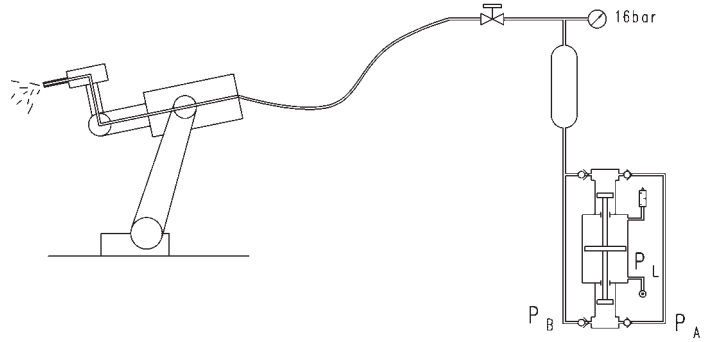
As a result of the wide range of models it is possible to select the optimum booster for each application. Single stage, double acting or two stage boosters or a combination of these models can be used to achieve different operating pressures and flow capacities.



- Pressure test with gas
- Gas transfer
- Gas recovery
- Charging of nitrogen accumulators
- Supply for isolating gas systems

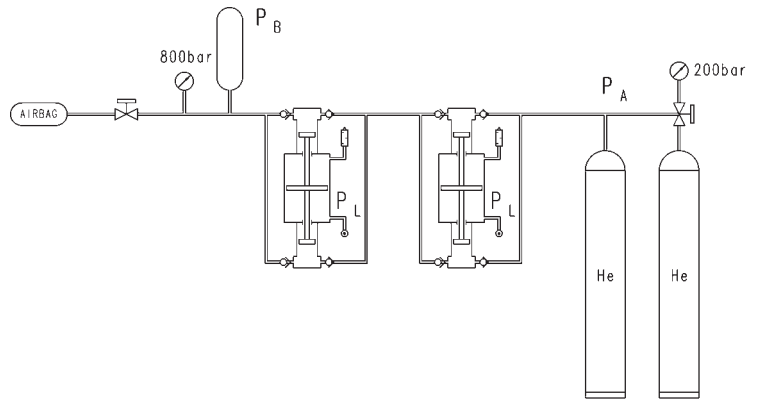
- Gas assisted injection moulding
- CO₂ foaming
- Transfer of oxygen cylinders
- Charging of breathing air bottles
- Leak test

Cleaning of burner systems



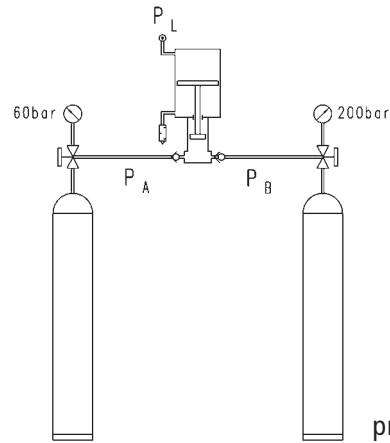
Blowing out contaminations through pressure blasting at 16 bar (232 psi)

Airbag systems



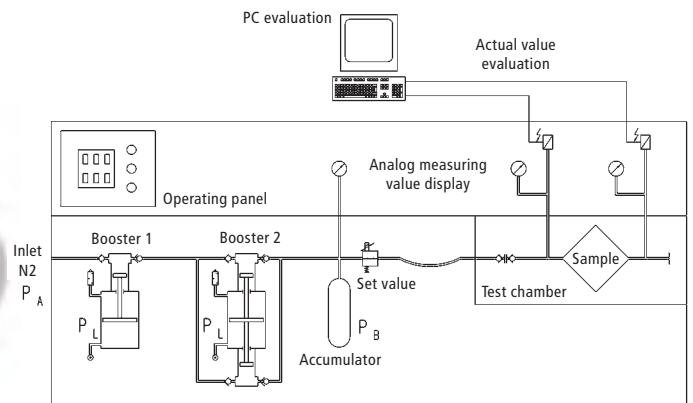
Charging of airbag systems with Helium to 800 bar (11,600 psi)

Cylinder charging



Use remaining pressure for recharging

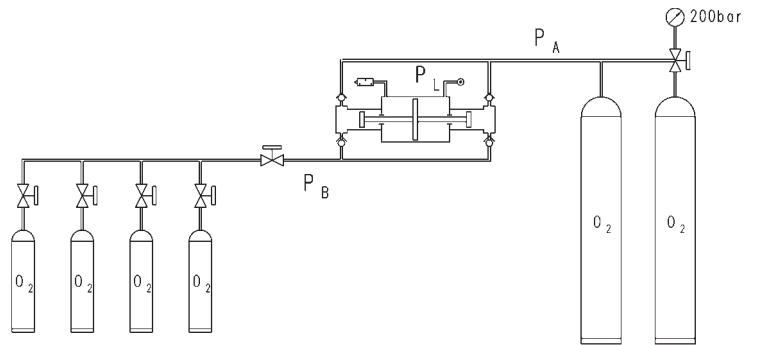
Pressure test



Leak test with high gas pressure

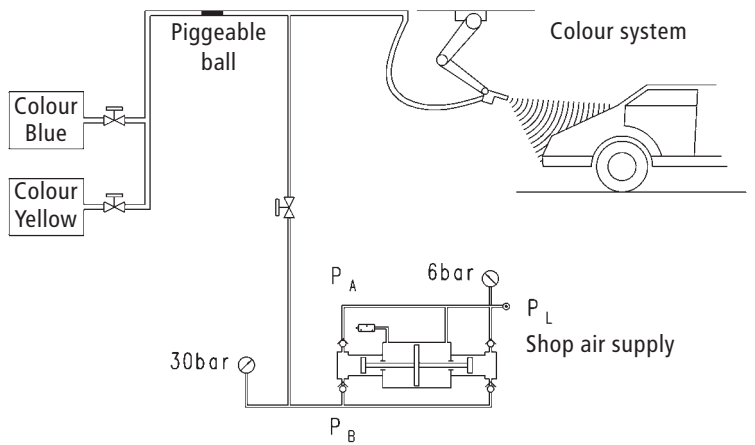
Application examples

Life-guard service



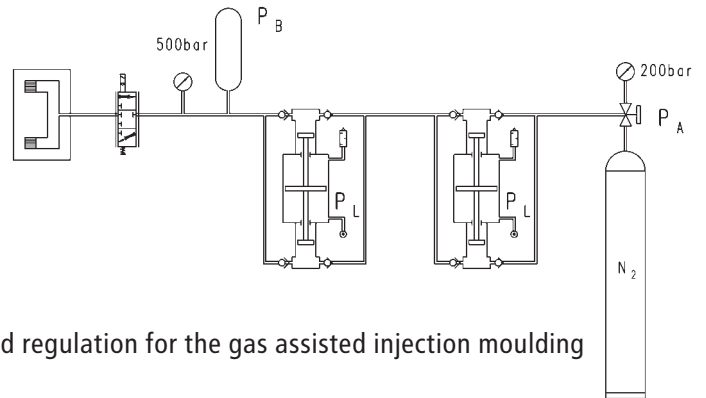
Transfer of oxygen in small cylinders

Colour changing systems



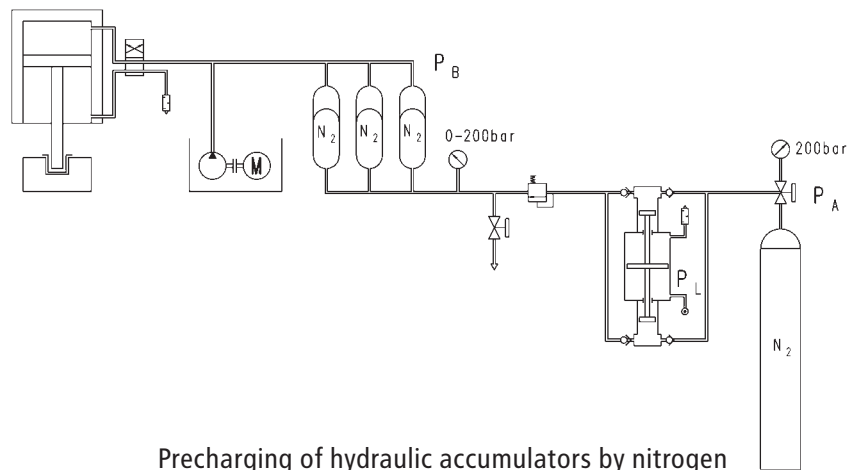
The colour will be returned into the tank through a piggeable ball which is charged with pressure

Plastic industry



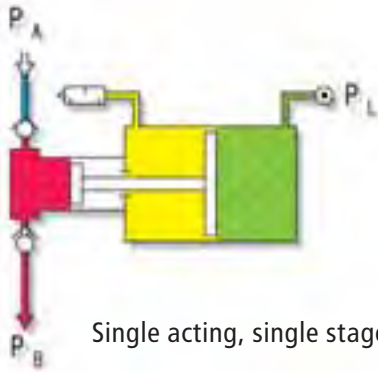
Compression of gas and regulation for the gas assisted injection moulding

Forming



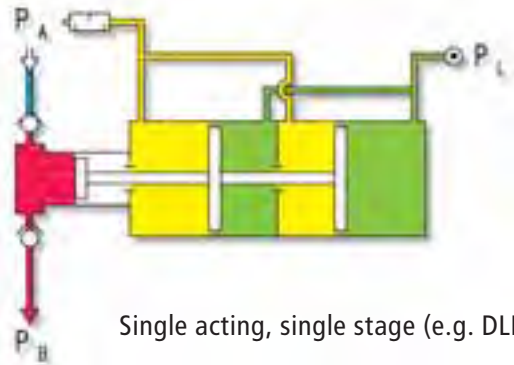
Precharging of hydraulic accumulators by nitrogen

Boosters with one air drive head

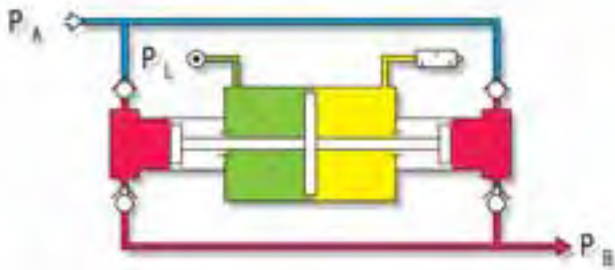


Single acting, single stage (e.g. DLE15-1)

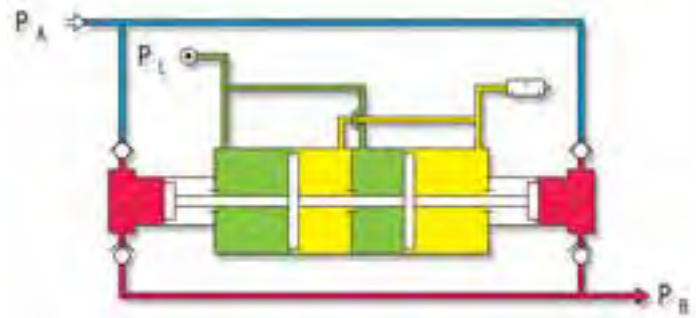
Boosters with two air drive heads



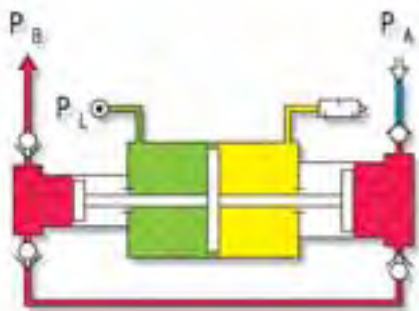
Single acting, single stage (e.g. DLE15-1-2)



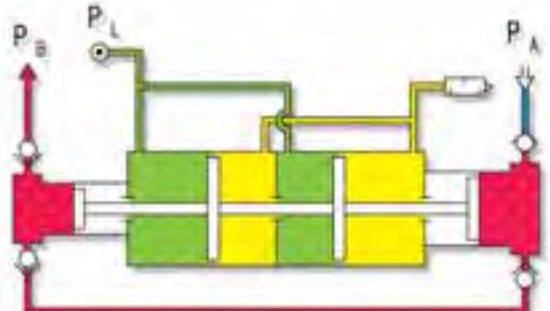
Double acting, single stage (e.g. DLE15)



Double acting, single stage (e.g. DLE15-2)



Double acting, two stages (e.g. DLE15-75)

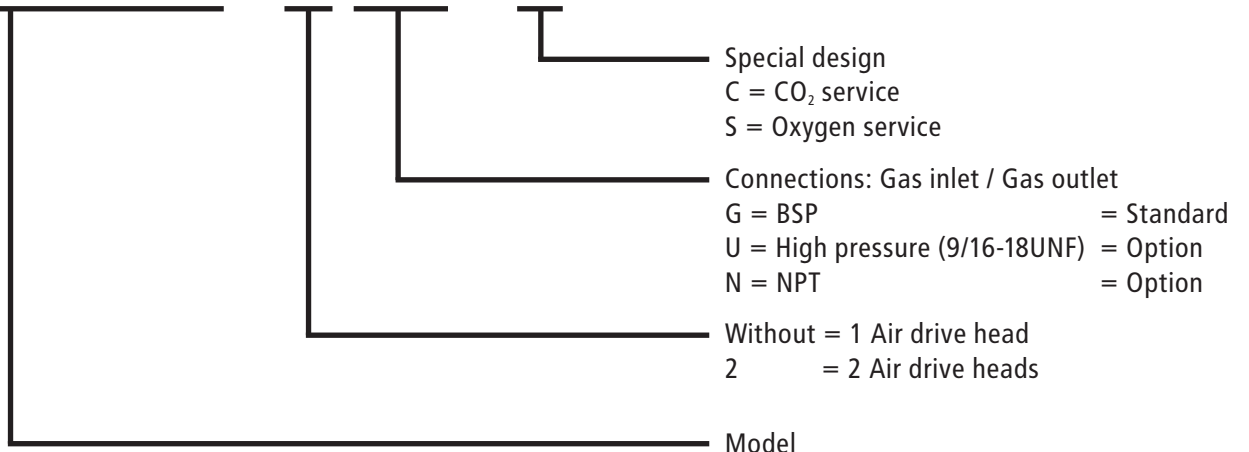


Double acting, two stages (e.g. DLE15-75-2)

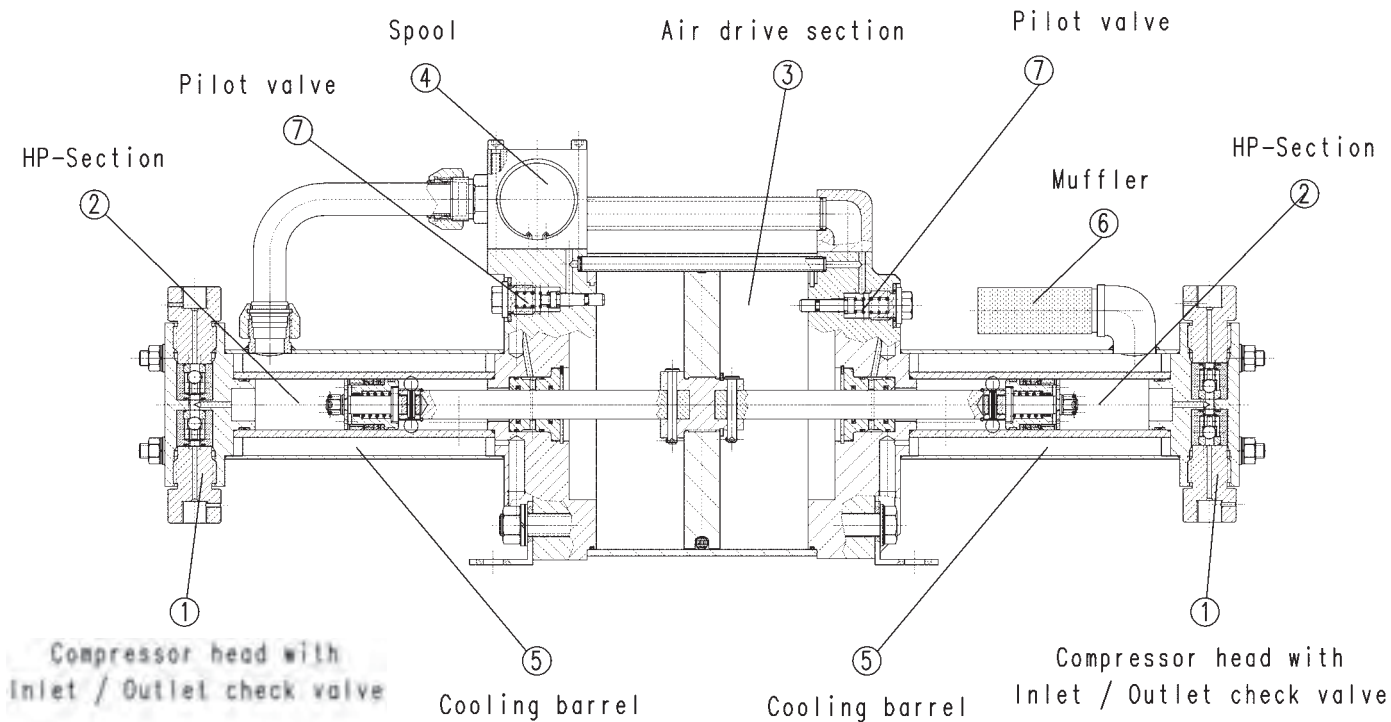
- P_L Air drive
- P_A inlet pressure
- P_B outlet pressure
- exhaust air

Type coding

DLE XX - XX - X XX - X



Operating principle



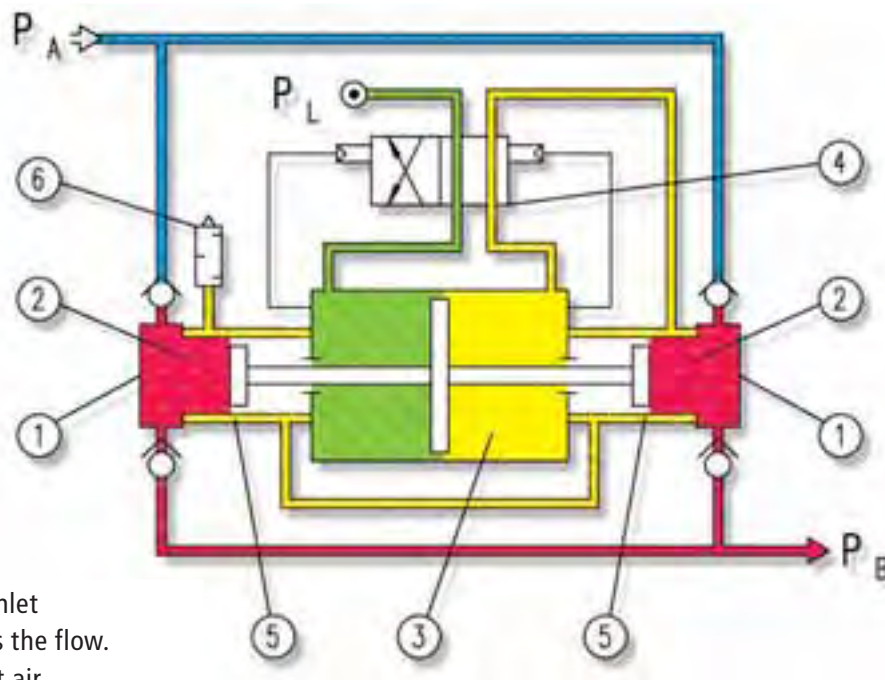
The **MAXIMATOR** boosters' operating principle is similar to a pressure intensifier. A large air piston is charged with low pressure (air piston (3)) and works on a small area with high pressure (hp piston (2)). The continuous operation is achieved by a pilot operated 4/2 way valve (spool (4)). The spool leads the drive air alternately on the upper and bottom surface of the air piston.

The spool is piloted through two 2/2 way valves (pilot valves (7)) which are mechanically actuated through the air piston in its end positions.

The pilot valves charge and discharge the spool chamber.

The hp piston supported by the check valves (inlet check valve and outlet check valve (1)) delivers the flow. The outlet pressure is directly related to the set air drive pressure.

According to the formulas indicated in the table with technical features of the boosters, the static end pressure can be calculated. At this pressure a force balance between drive section and gas section is achieved. The booster stalls when this end pressure is reached, and does not consume any further air.



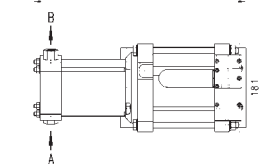
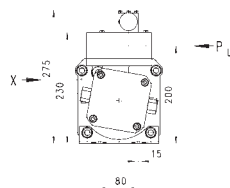
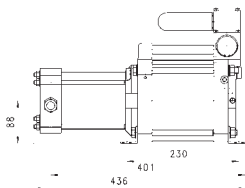
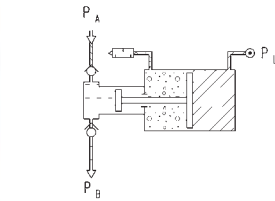
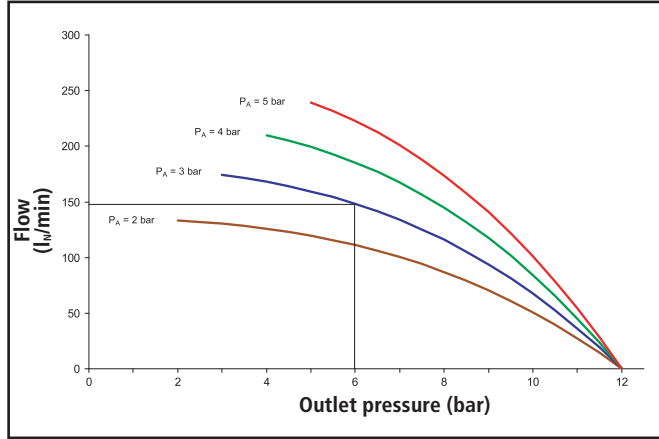
A pressure drop at the high pressure side or a pressure increase at the drive side starts the booster automatically until the force balance is achieved again.

Additionally the **MAXIMATOR** boosters can be switched on and off automatically through **MAXIMATOR** air pilot switches, contact gauges or external control devices.

Model: DLE2-1

Flow: 150 l_N/min (5.3 SCFM)

at inlet pressure of 3 bar (43 psi), outlet pressure of 6 bar (87 psi) and air drive pressure of 6 bar (87 psi)

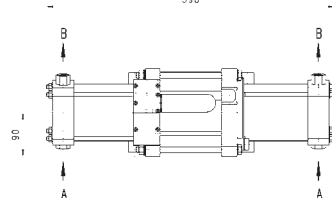
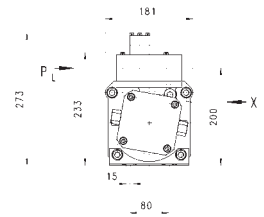
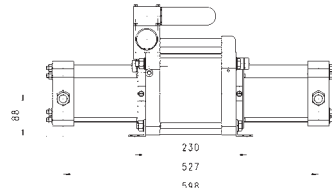
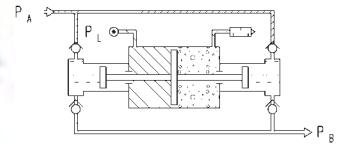
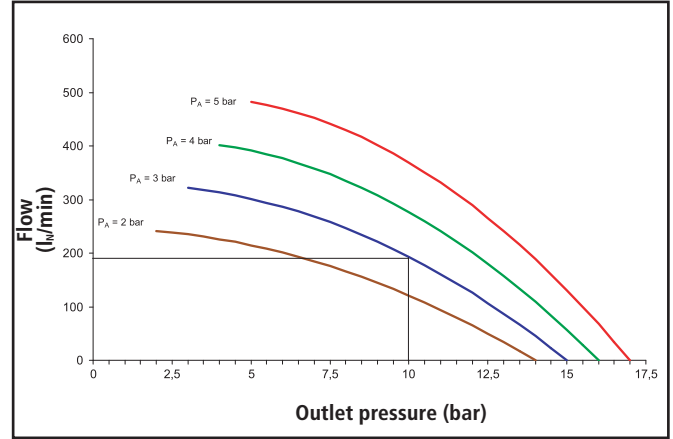


- small dimension
- price attractive solution

Model: DLE2

Flow: 190 l_N/min (6.7 SCFM)

at inlet pressure of 3 bar (43 psi), outlet pressure of 10 bar (145 psi) and air drive pressure of 6 bar (87 psi)



- large displacement volume
- less pulsation

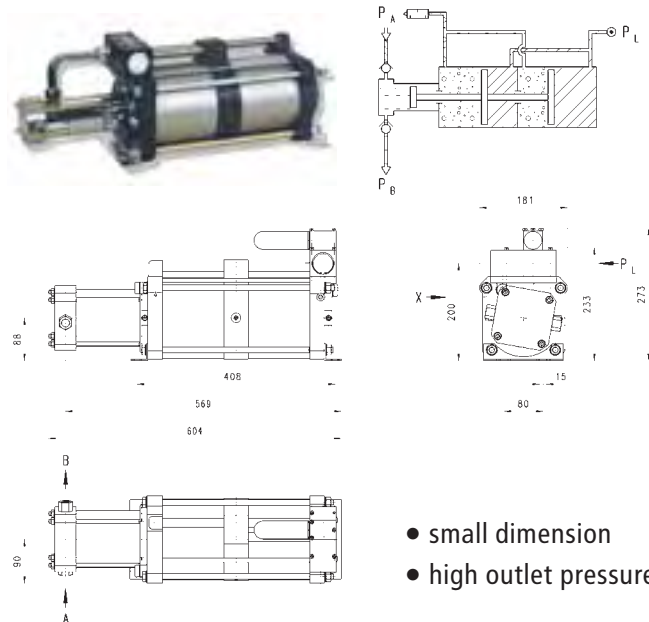
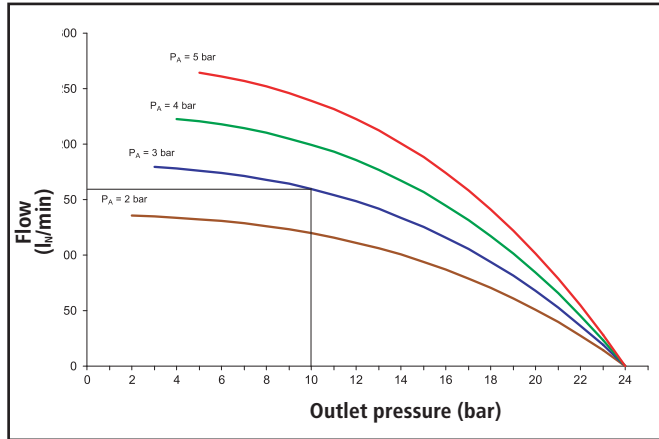
Technical features	DLE 2-1
Pressure ratio	1:2
Max. compression ratio	1:10
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	0
Max. gas inlet pressure p _A in bar (psi)	20 (290)
Max. permitted outlet pressure p _B in bar (psi)	20 (290)
Formula to calculate gas outlet pressure p _B	2 X p _L
Displacement volume in cm ³ (in ³)	922 (56.26)
Air drive p _A in bar (psi)	1-10
Air consumption in l _N /min (SCFM)	400-1,980 (14.1–69.9)
Connection: Gas inlet	1/2 BSP
Connection: Gas outlet	1/2 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	15
Material of gas section	Stainless steel/aluminium

Technical features	DLE 2
Pressure ratio	1:2
Max. compression ratio	1:10
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	0
Max. gas inlet pressure p _A in bar (psi)	40 (580)
Max. permitted outlet pressure p _B in bar (psi)	40 (580)
Formula to calculate gas outlet pressure p _B	2 X p _L + p _A
Displacement volume in cm ³ (in ³)	1,844 (112.52)
Air drive p _A in bar (psi)	1-10
Air consumption in l _N /min (SCFM)	400-1,980 (14.1–69.9)
Connection: Gas inlet	1/2 BSP
Connection: Gas outlet	1/2 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	20
Material of gas section	Stainless steel/aluminium

Model: DLE 2-1-2

Flow: 160 l_N/min (5.65 SCFM)

at inlet pressure of 3 bar (43psi) outlet pressure of 10 bar (145 psi) and air drive pressure of 6 bar (87 psi)

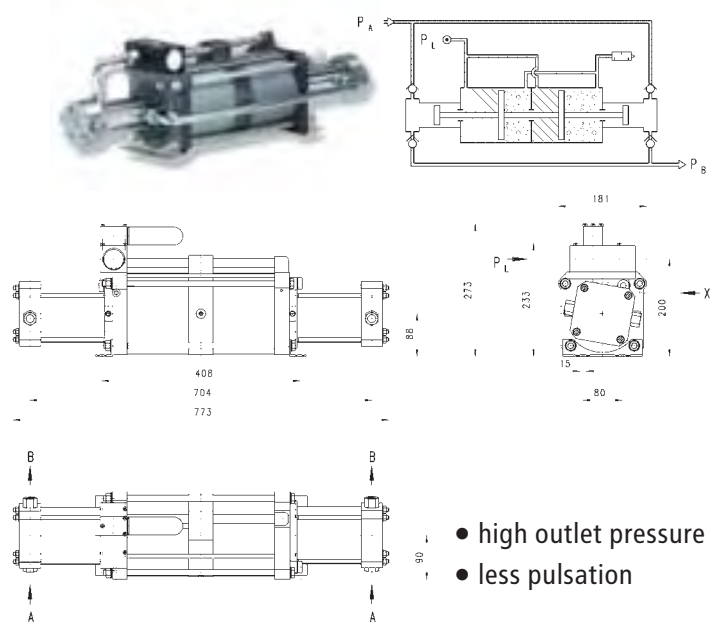
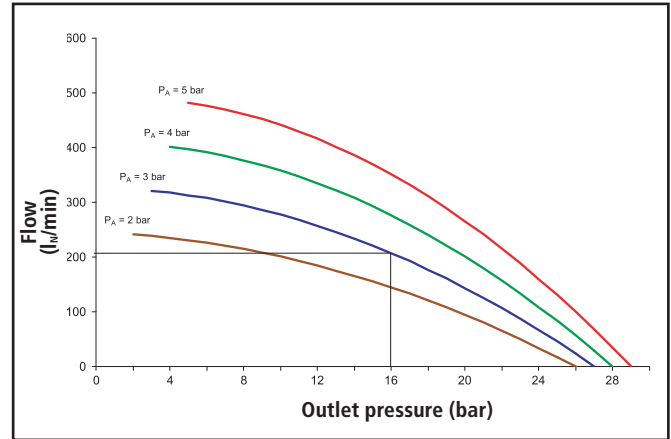


Technical features	DLE 2-1-2
Pressure ratio	1:4
Max. compression ratio	1:10
Stage ratio	—
Min. gas inlet pressure pA in bar (psi)	0
Max. gas inlet pressure pA in bar (psi)	40 (580)
Max. permitted outlet pressure pB in bar (psi)	40 (580)
Formula to calculate gas outlet pressure pB	4 X pL
Displacement volume in cm ³ (in ³)	922 (56.26)
Air drive pA in bar (psi)	1-10 (14.5-145)
Air consumption in l _N /min (SCFM)	600-2,400 (21.2-84.8)
Connection: Gas inlet	1/2 BSP
Connection: Gas outlet	1/2 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	22
Material of gas section	Stainless steel/aluminium

Model: DLE 2-2

Flow: 190 l_N/min (6.7 SCFM)

at an inlet pressure of 3 bar (43 psi), outlet pressure of 16 bar (232 psi) and air drive pressure of 6 bar (87 psi)

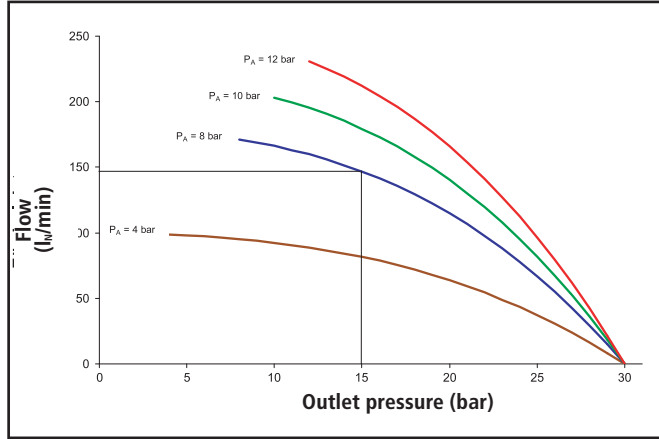


Technical features	DLE 2-2
Pressure ratio	1:4
Max. compression ratio	1:10
Stage ratio	—
Min. gas inlet pressure pA in bar (psi)	0
Max. gas inlet pressure pA in bar (psi)	40 (580)
Max. permitted outlet pressure pB in bar (psi)	40 (580)
Formula to calculate gas outlet pressure pB	4 X pL + pA
Displacement volume in cm ³ (in ³)	1,844 (112.53)
Air drive pA in bar (psi)	1-10 (14.5-145)
Air consumption in l _N /min (SCFM)	600-2,400 (21.2-84.8)
Connection: Gas inlet	1/2 BSP
Connection: Gas outlet	1/2 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	25
Material of gas section	Stainless steel/aluminium

Model: DLE 5-1

Flow: 145 l_n/min (5.12 SCFM)

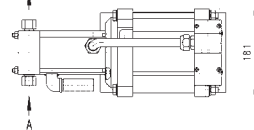
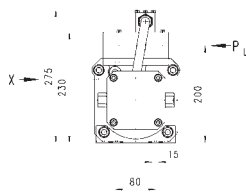
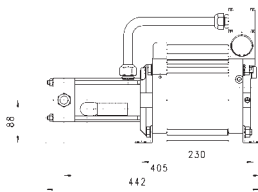
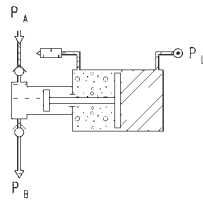
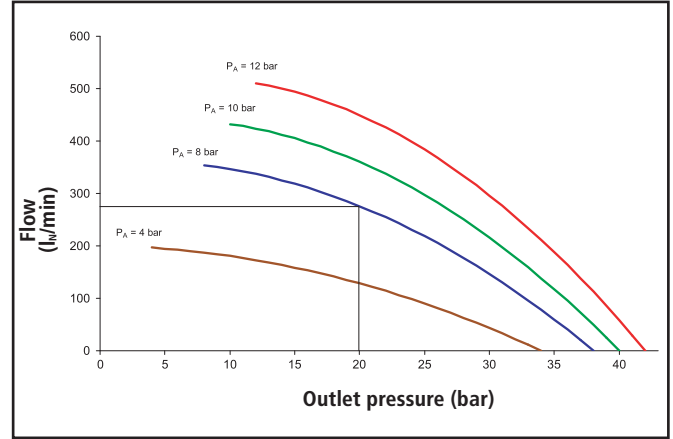
at inlet pressure of 8 bar (116 psi) outlet pressure of 15 bar (217 psi) and air drive pressure of 6 bar (87 psi)



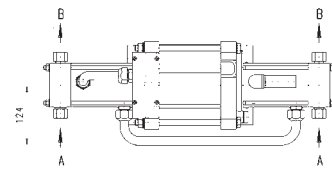
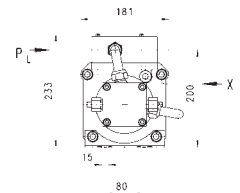
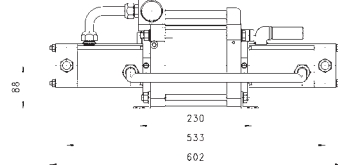
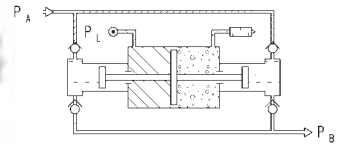
Model: DLE 5

Flow: 280 l_n/min (9.89 SCFM) at an inlet pressure

of 8 bar (116 psi), bar and an outlet pressure of 20 bar (290 psi) and air drive pressure of 6 bar (87 psi)



- compact design
- price attractive solution



- high flow rate
- less pulsation

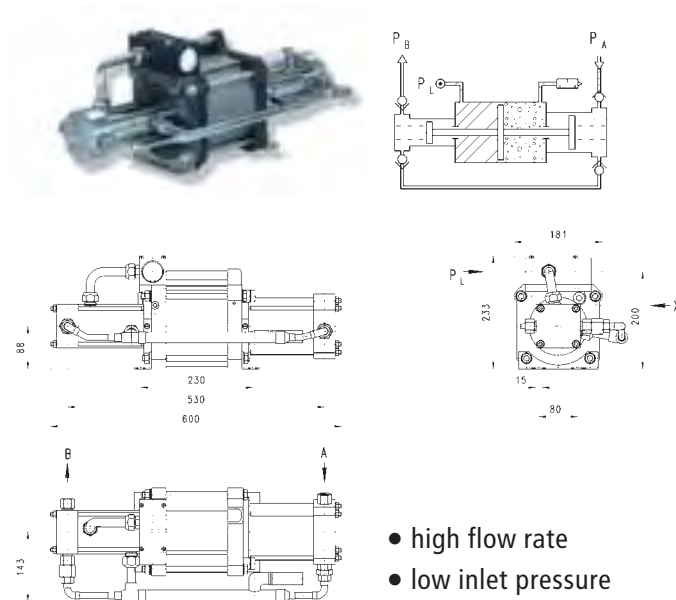
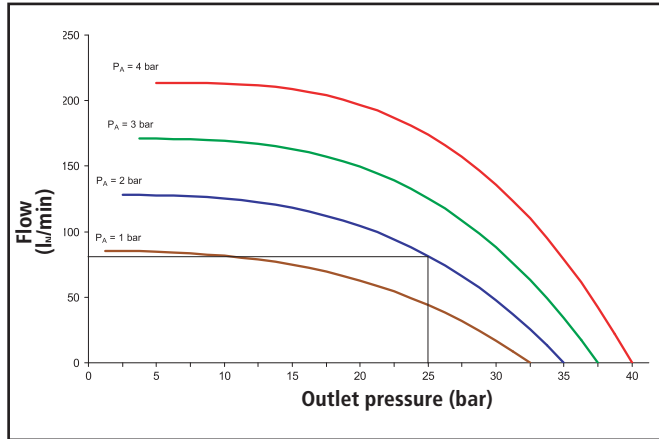
Technical features	DLE 5-1
Pressure ratio	1:5
Max. compression ratio	1:15
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	2 (29)
Max. gas inlet pressure p _A in bar (psi)	50 (725)
Max. permitted outlet pressure p _B in bar (psi)	50 (725)
Formula to calculate gas outlet pressure p _B	5 X p _L
Displacement volume in cm ³ (in ³)	373 (22.76)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	400-1,980 (14.13-69.92)
Connection: Gas inlet	1/2 BSP
Connection: Gas outlet	1/2 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	15
Material of gas section	Stainless steel/aluminium

Technical features	DLE 5
Pressure ratio	1:5
Max. compression ratio	1:15
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	2 (29)
Max. gas inlet pressure p _A in bar (psi)	100 (1,450)
Max. permitted outlet pressure p _B in bar (psi)	100 (1,450)
Formula to calculate gas outlet pressure p _B	5 X p _L + p _A
Displacement volume in cm ³ (in ³)	746 (45.52)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	400-1,980 (14.13-69.92)
Connection: Gas inlet	1/2 BSP
Connection: Gas outlet	1/2 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	20
Material of gas section	Stainless steel/aluminium

Model: DLE 2-5

Flow: 80 l_n/min (2.82 SCFM)

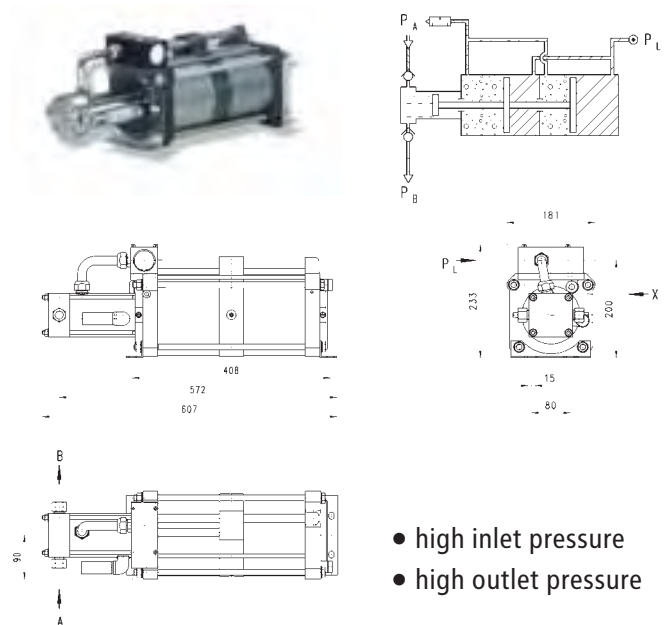
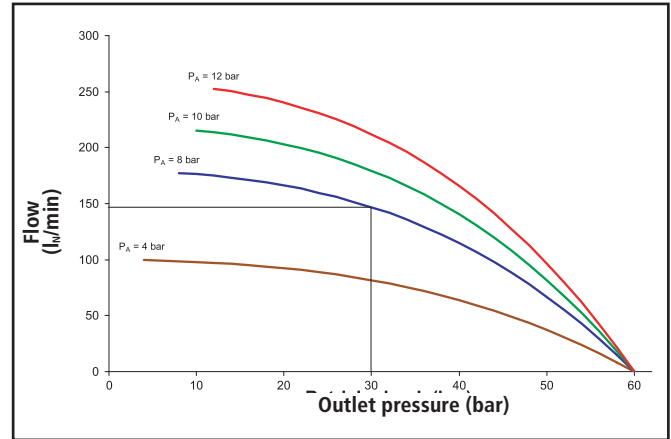
at inlet pressure of 2 bar (29 psi) outlet pressure of 25 bar (362 psi) and air drive pressure of 6 bar (87 psi)



Model: DLE 5-1-2

Flow: 145 l_n/min (5.12 SCFM)

at an inlet pressure of 8 bar (116 psi), outlet pressure of 30 bar (435 psi) and air drive pressure of 6 bar (87 psi)



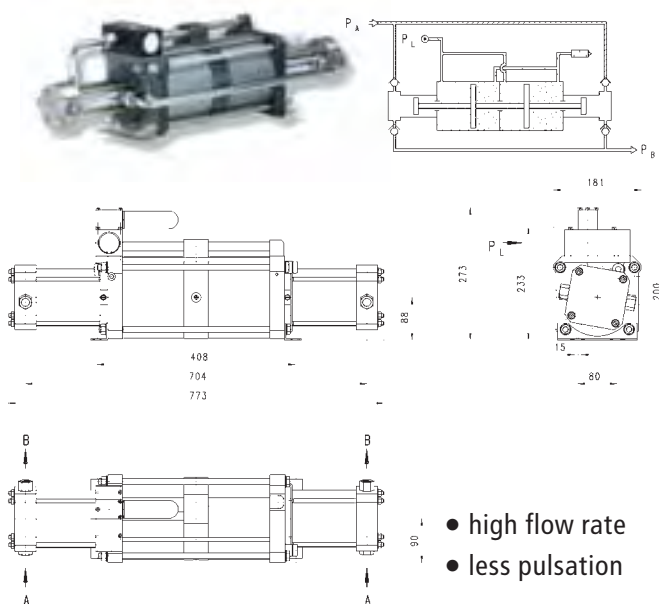
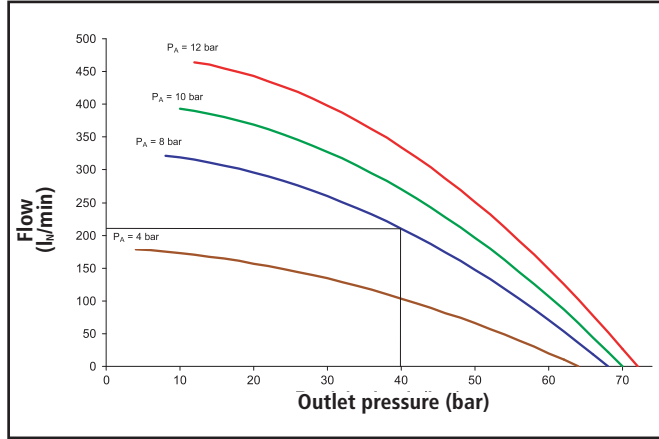
Technical features	DLE 2-5
Pressure ratio	1:5 / 1:5
Max. compression ratio	1:25
Stage ratio	1:2.5
Min. gas inlet pressure p _A in bar (psi)	0
Max. gas inlet pressure p _A in bar (psi)	0.8 X p _L
Max. permitted outlet pressure p _B in bar (psi)	100 (1,450)
Formula to calculate gas outlet pressure p _B	5 X p _L + 2.5 X p _A
Displacement volume in cm ³ (in ³)	922 (0.03)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	400-1,980 (14.13-69.92)
Connection: Gas inlet	1/2 BSP
Connection: Gas outlet	1/2 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	20
Material of gas section	Stainless steel/aluminium

Technical features	DLE 5-1-2
Pressure ratio	1:10
Max. compression ratio	1:15
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	4 (58)
Max. gas inlet pressure p _A in bar (psi)	100 (1,450)
Max. permitted outlet pressure p _B in bar (psi)	100 (1,450)
Formula to calculate gas outlet pressure p _B	10 X p _L
Displacement volume in cm ³ (in ³)	373 (0.01)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	400-1,980 (14.13-69.92)
Connection: Gas inlet	1/2 BSP
Connection: Gas outlet	1/2 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	22
Material of gas section	Stainless steel/aluminium

Model: DLE 5-2

Flow: 210 l_N/min (7.41 SCFM)

at inlet pressure of 8 bar (116 psi) outlet pressure of 40 bar (580 psi) and air drive pressure of 6 bar (87 psi)

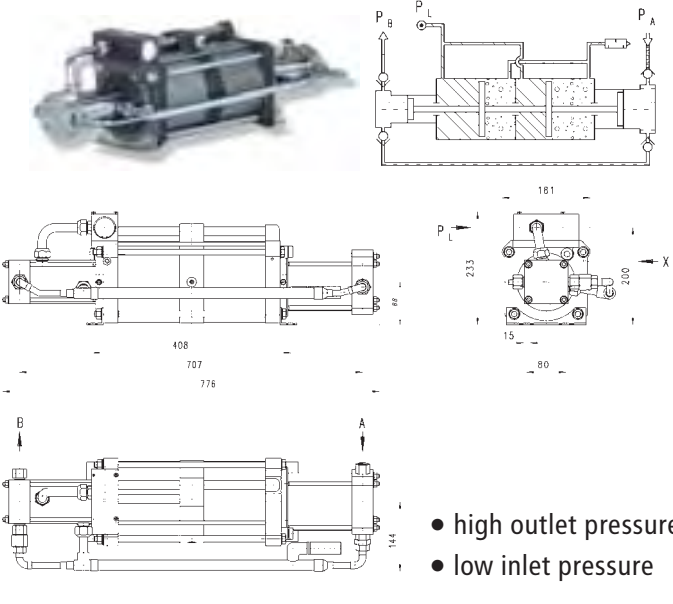
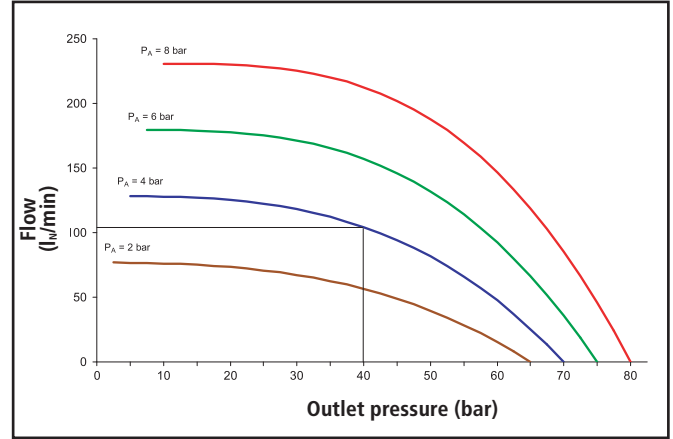


Technical features	DLE 5-2
Pressure ratio	1:10
Max. compression ratio	1:15
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	4 (58)
Max. gas inlet pressure p _A in bar (psi)	100 (1,450)
Max. permitted outlet pressure p _B in bar (psi)	100 (1,450)
Formula to calculate gas outlet pressure p _B	10 X p _L + p _A
Displacement volume in cm ³ (in ³)	746 (45.52)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _N /min (SCFM)	600-2,400 (21.2-84.8)
Connection: Gas inlet	1/2 BSP
Connection: Gas outlet	1/2 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	25
Material of gas section	Stainless steel/aluminium

Model: DLE 2-5-2

Flow: 104 l_N/min (3.67 SCFM)

at an inlet pressure of 4 bar (58 psi), outlet pressure of 40 bar (580 psi) and air drive pressure of 6 bar (87 psi)

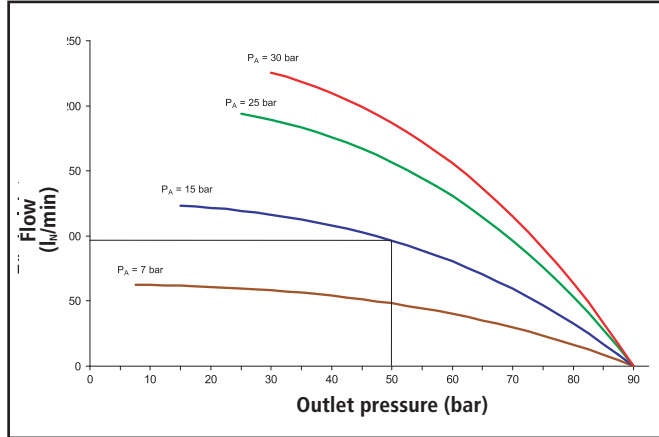


Technical features	DLE 2-5-2
Pressure ratio	1:4 / 1:10
Max. compression ratio	1:25
Stage ratio	1:2.5
Min. gas inlet pressure p _A in bar (psi)	0
Max. gas inlet pressure p _A in bar (psi)	1.6 X p _L
Max. permitted outlet pressure p _B in bar (psi)	100 (1,450)
Formula to calculate gas outlet pressure p _B	10 X p _L + 2.5 p _A
Displacement volume in cm ³ (in ³)	922 (56.26)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _N /min (SCFM)	600-2,400 (21.2-84.8)
Connection: Gas inlet	1/2 BSP
Connection: Gas outlet	1/2 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	25
Material of gas section	Stainless steel/aluminium

Model: DLE 15-1

Flow: 95 l_n/min (3.35 SCFM)

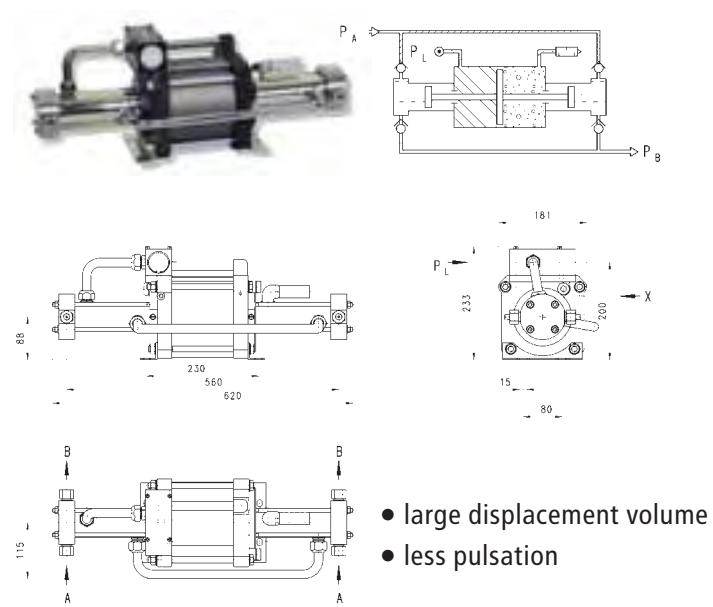
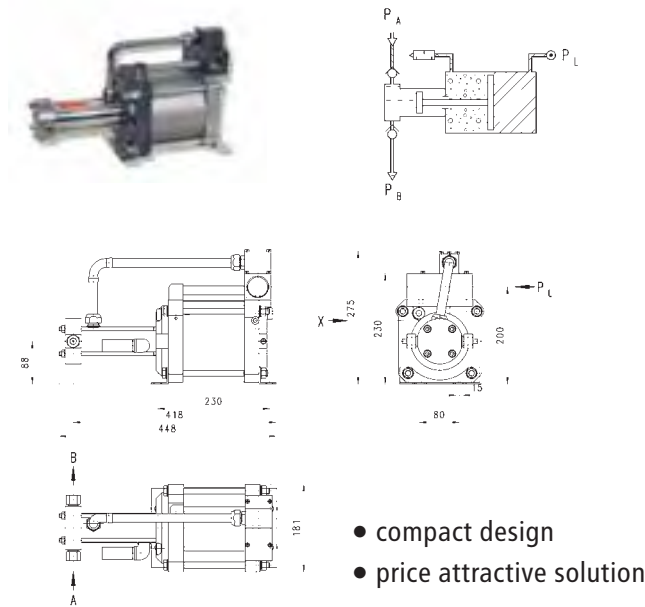
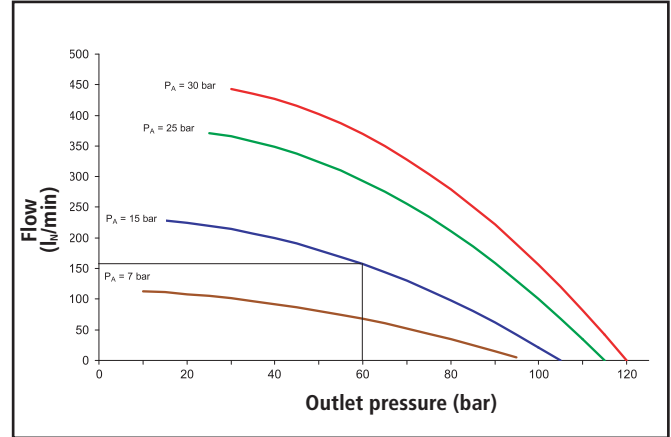
at inlet pressure of 15 bar (217 psi) and outlet pressure of 50 bar (725 psi), air drive pressure of 6 bar (87 psi)



Model: DLE 15

Flow: 160 l_n/min (5.65 SCFM)

at inlet pressure of 15 bar (217 psi) and outlet pressure of 60 bar (870 psi), air drive pressure of 6 bar (87 psi)



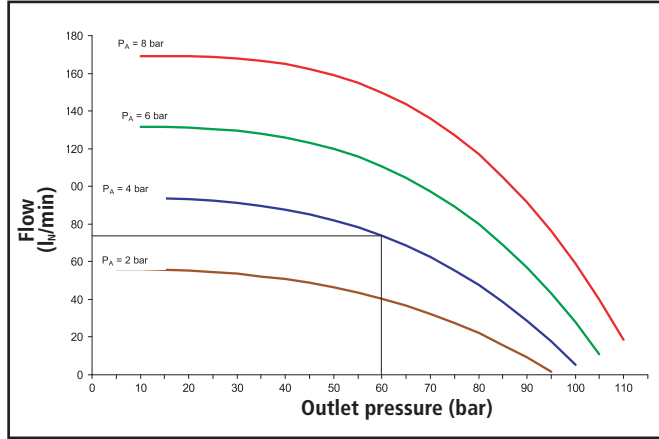
Technical features	DLE 15-1
Pressure ratio	1:15
Max. compression ratio	1:20
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	7 (101)
Max. gas inlet pressure p _A in bar (psi)	150 (2,175)
Max. permitted outlet pressure p _B in bar (psi)	150 (2,175)
Formula to calculate gas outlet pressure p _B	15 X p _L
Displacement volume in cm ³ (in ³)	122 (7.44)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	400-1,980 (14.13-69.92)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	13
Material of gas section	Stainless steel

Technical features	DLE 15
Pressure ratio	1:15
Max. compression ratio	1:20
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	7 (101)
Max. gas inlet pressure p _A in bar (psi)	300 (4,350)
Max. permitted outlet pressure p _B in bar (psi)	300 (4,350)
Formula to calculate gas outlet pressure p _B	15 X p _L + p _A
Displacement volume in cm ³ (in ³)	244 (14.88)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	400-1,980 (14.13-69.92)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	18
Material of gas section	Stainless steel

Model: DLE 5-15

Flow: 75 l_w/min (2.64 SCFM)

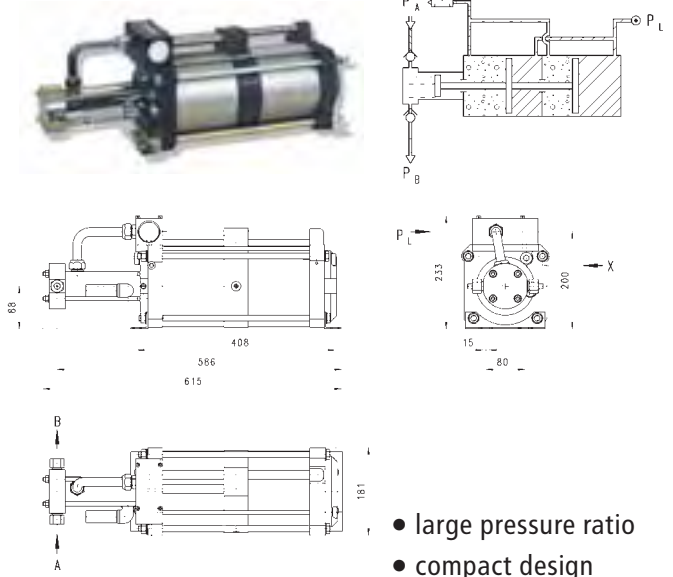
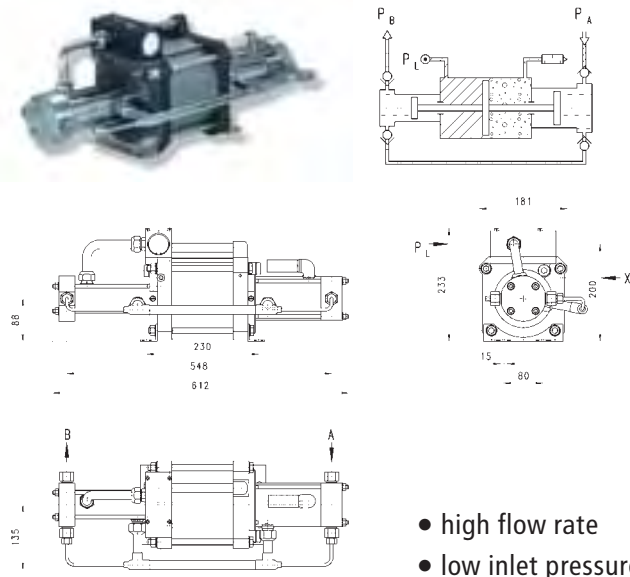
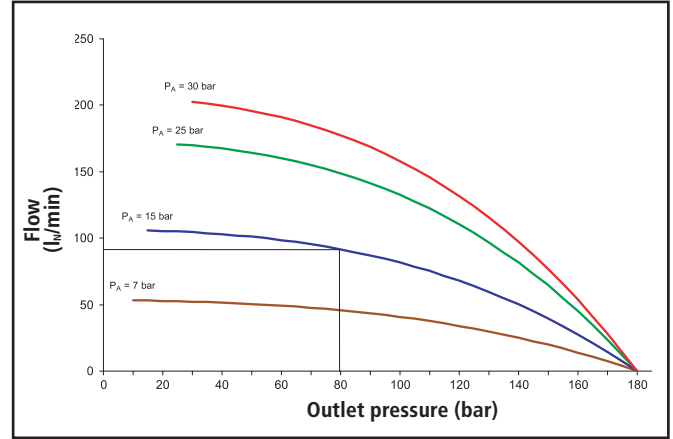
at inlet pressure of 4 bar (58 psi) and outlet pressure of 60 bar (870 psi), air drive pressure of 6 bar (87 psi)



Model: DLE 15-1-2

Flow: 90 l_w/min (3.17 SCFM)

at inlet pressure of 15 bar (217 psi) and outlet pressure of 80 bar (1,160 psi), air drive pressure of 6 bar (87 psi)



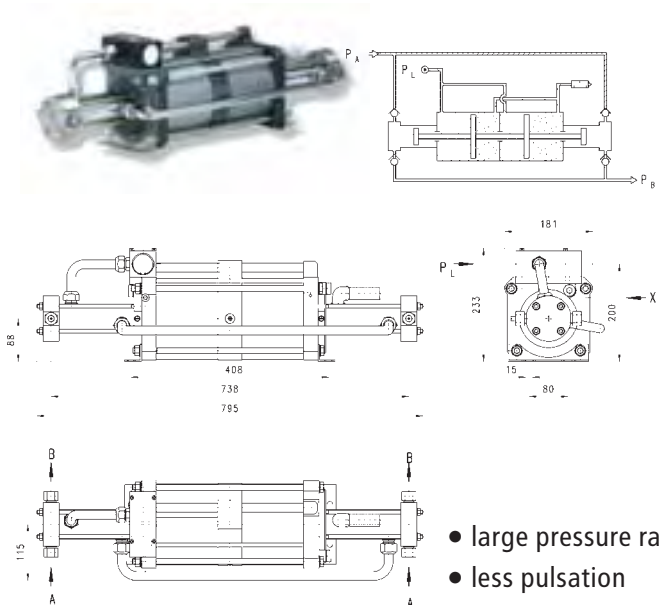
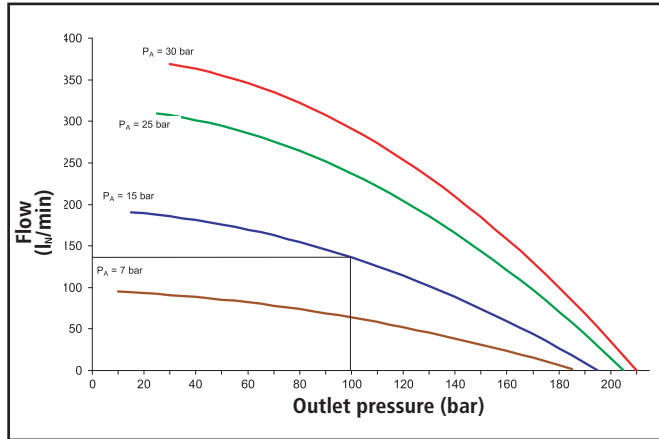
Technical features	DLE 5-15
Pressure ratio	1:5 / 1:15
Max. compression ratio	1:45
Stage ratio	1:3
Min. gas inlet pressure p _A in bar (psi)	2 (29)
Max. gas inlet pressure p _A in bar (psi)	1,6 X p _L
Max. permitted outlet pressure p _B in bar (psi)	300 (4,350)
Formula to calculate gas outlet pressure p _B	15 X p _L + 3 X p _A
Displacement volume in cm ³ (in ³)	373 (22.76)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _w /min (SCFM)	400-1,980 (14.13-69.92)
Connection: Gas inlet	1/2 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	19
Material of gas section	Stainless steel/aluminium

Technical features	DLE 15-1-2
Pressure ratio	1:30
Max. compression ratio	1:20
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	10 (145)
Max. gas inlet pressure p _A in bar (psi)	300 (4,350)
Max. permitted outlet pressure p _B in bar (psi)	300 (4,350)
Formula to calculate gas outlet pressure p _B	30 X p _L
Displacement volume in cm ³ (in ³)	122 (7.44)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _w /min (SCFM)	400-1,980 (14.13-69.92)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	20
Material of gas section	Stainless steel

Model: DLE 15-2

Flow: 130 l_w/min (4.59 SCFM)

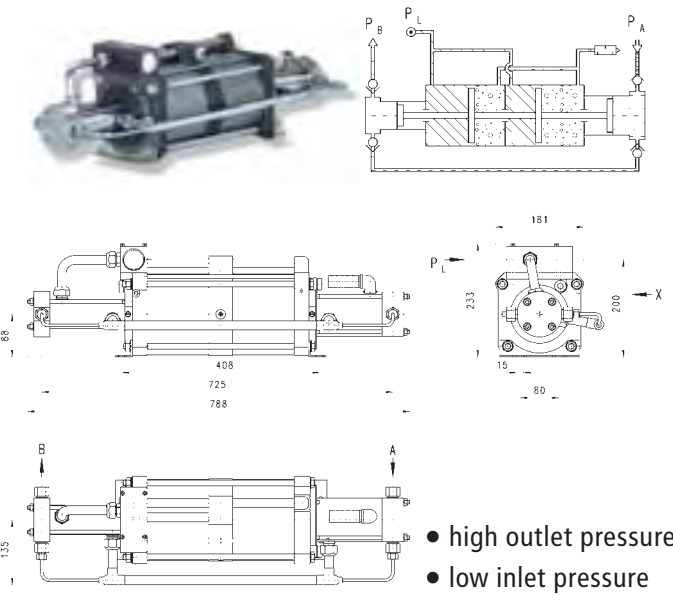
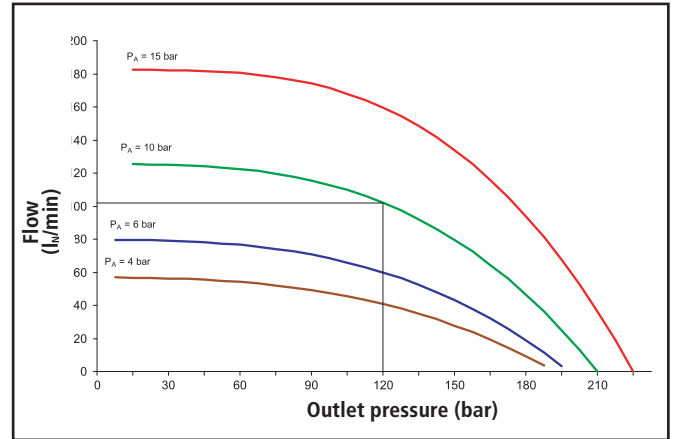
at inlet pressure of 15 bar (217 psi), outlet pressure of 100 bar (1,450 psi) and air drive pressure of 6 bar (87 psi)



Model: DLE 5-15-2

Flow: 102 l_w/min (3.6 SCFM)

at inlet pressure of 10 bar (145 psi), outlet pressure of 120 bar (1,740 psi) and air drive pressure of 6 bar (87 psi)



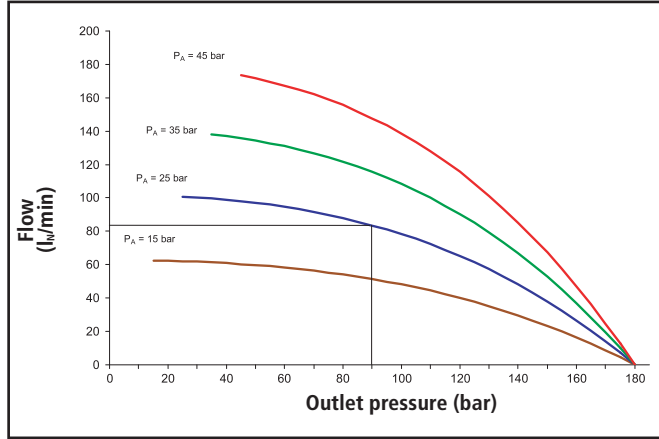
Technical features	DLE 15-2
Pressure ratio	1:30
Max. compression ratio	1:20
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	10 (145)
Max. gas inlet pressure p _A in bar (psi)	300 (4,350)
Max. permitted outlet pressure p _B in bar (psi)	300 (4,350)
Formula to calculate gas outlet pressure p _B	30 X p _L + p _A
Displacement volume in cm ³ (in ³)	244 (14.88)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _w /min (SCFM)	600-2,400 (21.2-84.8)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	23
Material of gas section	Stainless steel

Technische Daten	DLE 5-15-2
Pressure ratio	1:10 / 1:30
Max. compression ratio	1:45
Stage ratio	1:3
Min. gas inlet pressure p _A in bar (psi)	2 (29)
Max. gas inlet pressure p _A in bar (psi)	3,2 X p _L
Max. permitted outlet pressure p _B in bar (psi)	300 (4,350)
Formula to calculate gas outlet pressure p _B	30 X p _L + 3 X p _A
Displacement volume in cm ³ (in ³)	373 (22.76)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _w /min (SCFM)	600-2,400 (21.2-84.8)
Connection: Gas inlet	1/2 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	24
Material of gas section	Stainless steel/aluminium

Model: DLE 30-1

Flow: 82 l_n/min (2.89 SCFM)

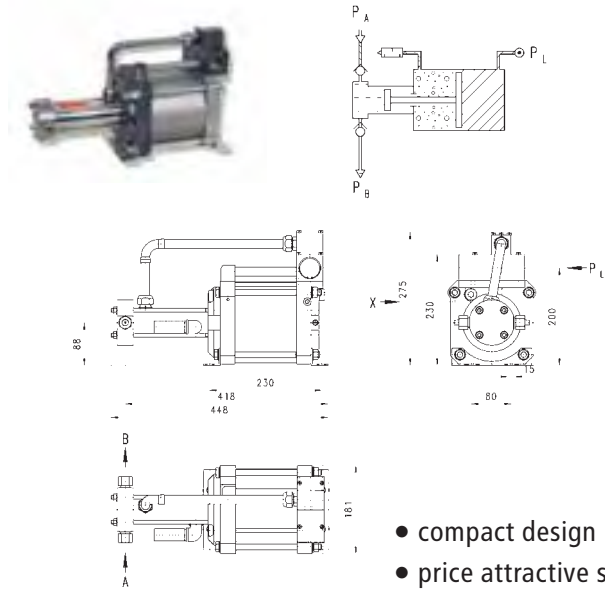
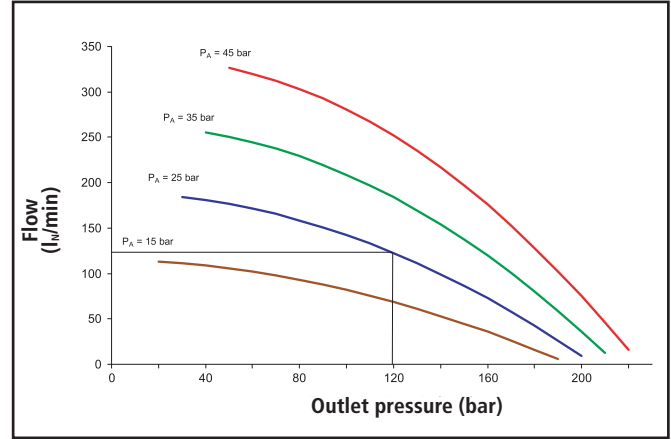
at inlet pressure of 25 bar (362 psi), outlet pressure of 82 bar (1,189 psi) and air drive pressure of 6 bar (87 psi)



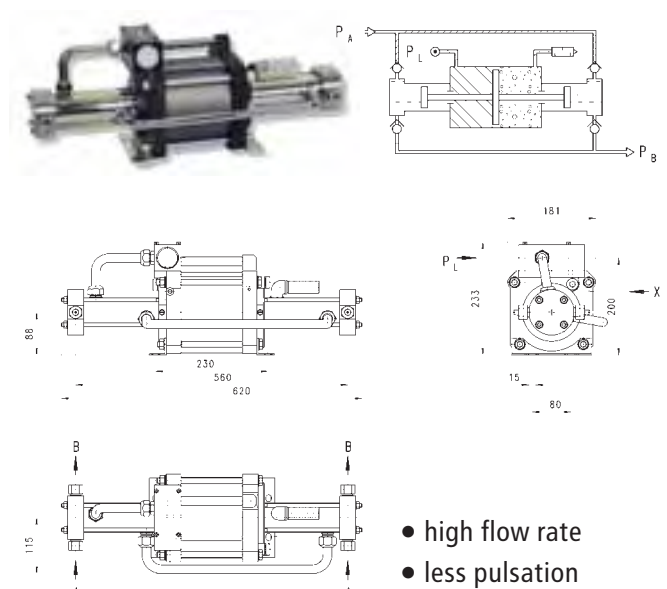
Model: DLE 30

Flow: 125 l_n/min (4.41 SCFM)

at inlet pressure of 25 bar (362 psi), outlet pressure of 120 bar (1,740 psi) and air drive pressure of 6 bar (87 psi)



- compact design
- price attractive solution



- high flow rate
- less pulsation

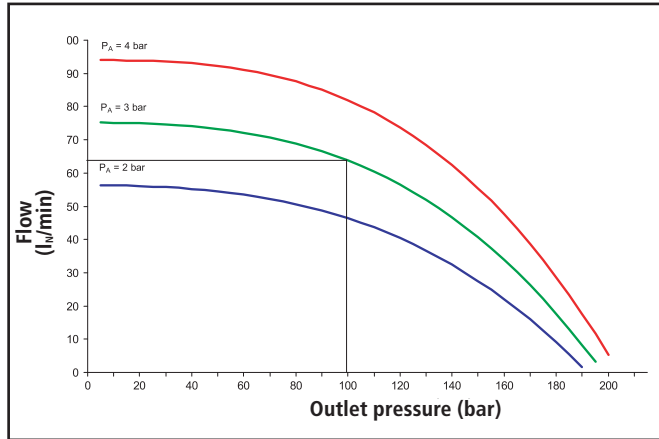
Technical features	DLE 30-1
Pressure ratio	1:30
Max. compression ratio	1:20
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	15 (217)
Max. gas inlet pressure p _A in bar (psi)	300 (4,350)
Max. permitted outlet pressure p _B in bar (psi)	300 (4,350)
Formula to calculate gas outlet pressure p _B	30 X p _L
Displacement volume in cm ³ (in ³)	60 (3.66)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	400-1,980 (14.13-69.92)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	13
Material of gas section	Stainless steel

Technical features	DLE 30
Pressure ratio	1:30
Max. compression ratio	1:20
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	15 (217)
Max. gas inlet pressure p _A in bar (psi)	600 (8,700)
Max. permitted outlet pressure p _B in bar (psi)	600 (8,700)
Formula to calculate gas outlet pressure p _B	30 X p _L + p _A
Displacement volume in cm ³ (in ³)	110
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	400-1,980 (14.13-69.92)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	18
Material of gas section	Stainless steel

Model: DLE 5-30

Flow: 63 l_n/min (2.22 SCFM)

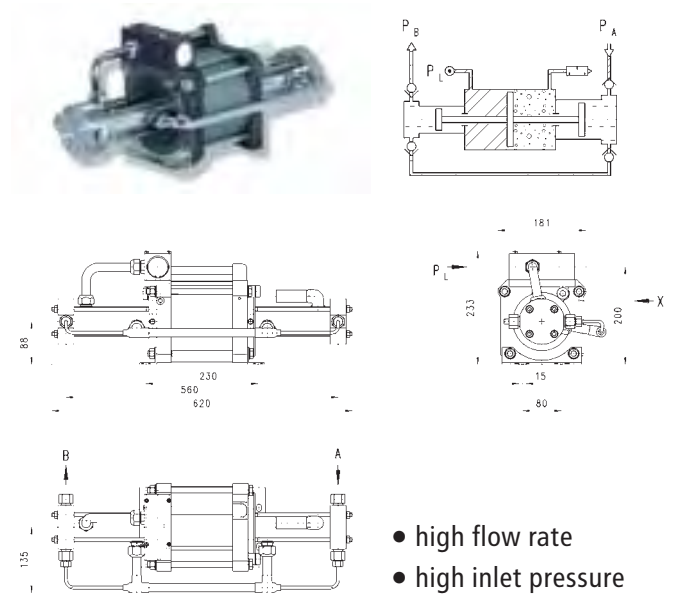
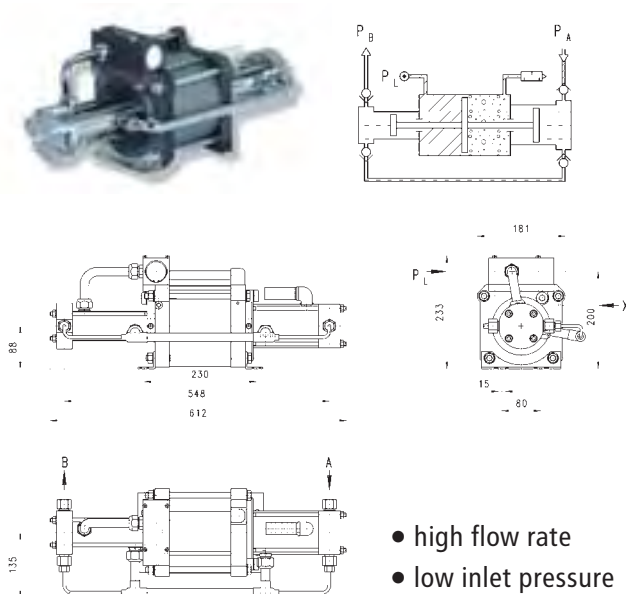
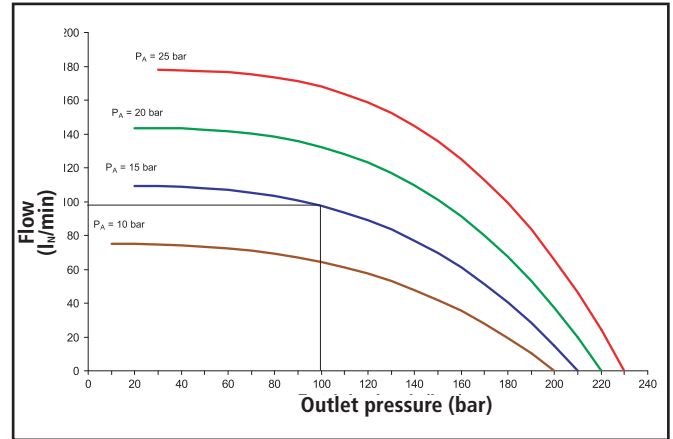
at inlet pressure of 3 bar (43 psi), outlet pressure of 100 bar (1,450 psi) and air drive pressure of 6 bar (87 psi)



Model: DLE 15-30

Flow: 98 l_n/min (3.46 SCFM)

at inlet pressure of 15 bar (217 psi), outlet pressure of 100 bar (1,450 psi) and air drive pressure of 6 bar (87 psi)



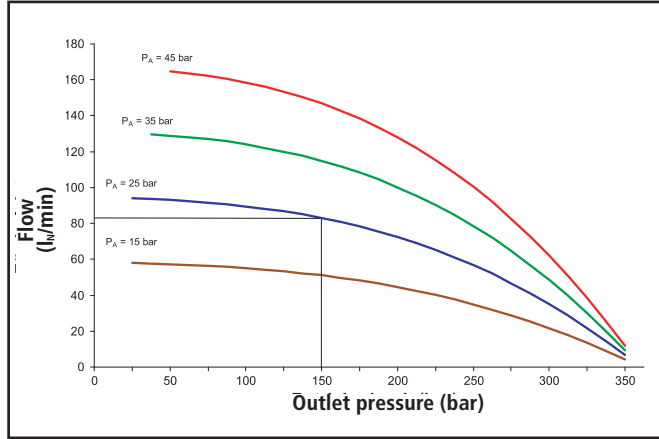
Technical features	DLE 5-30
Pressure ratio	1:5 / 1:30
Max. compression ratio	1:90
Stage ratio	1:6
Min. gas inlet pressure p _A in bar (psi)	2 (29)
Max. gas inlet pressure p _A in bar (psi)	0,5 X p _L
Max. permitted outlet pressure p _B in bar (psi)	600 (8,700)
Formula to calculate gas outlet pressure p _B	30 X p _L + 6 X p _A
Displacement volume in cm ³ (in ³)	373 (22.76)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	400-1,980 (14.13-69.92)
Connection: Gas inlet	1/2 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	19
Material of gas section	Stainless steel/aluminium

Technical features	DLE 15-30
Pressure ratio	1:5 / 1:30
Max. compression ratio	1:40
Stage ratio	1:2
Min. gas inlet pressure p _A in bar (psi)	7 (101)
Max. gas inlet pressure p _A in bar (psi)	7,5 X p _L
Max. permitted outlet pressure p _B in bar (psi)	600 (8,700)
Formula to calculate gas outlet pressure p _B	30 X p _L + 2 X p _A
Displacement volume in cm ³ (in ³)	122 (7.44)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	400-1,980 (14.13-69.92)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	19
Material of gas section	Stainless steel

Model: DLE 30-1-2

Flow: 82 l_n/min (2.89 SCFM)

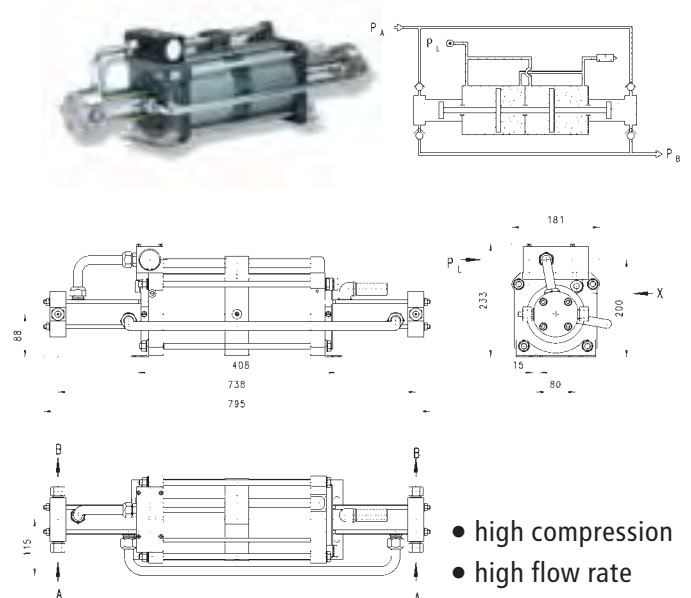
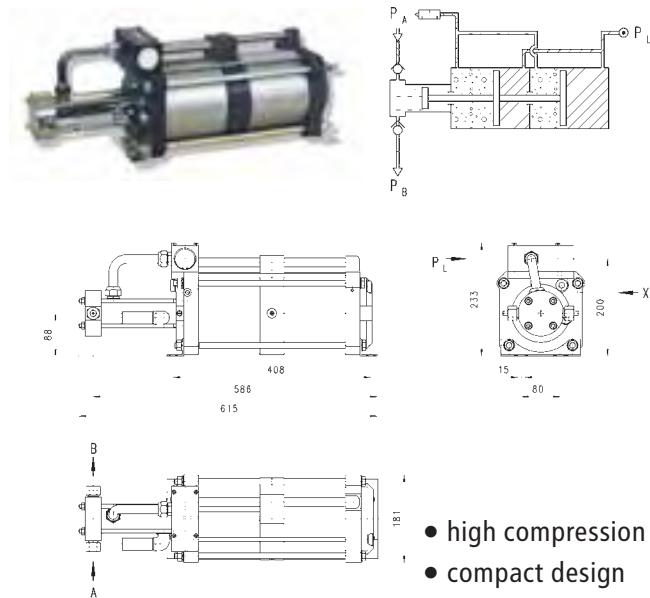
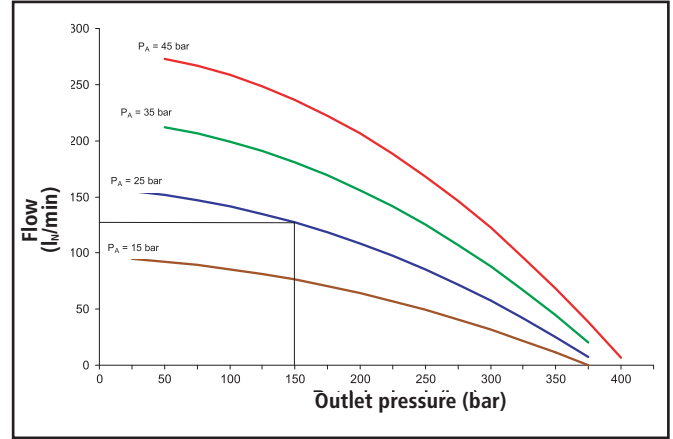
at inlet pressure of 25 bar (362 psi) and outlet pressure of 150 bar (2,175 psi), air drive pressure of 6 bar (87 psi)



Model: DLE 30-2

Flow: 125 l_n/min (4.41 SCFM)

at inlet pressure of 25 bar (362 psi) and outlet pressure of 150 bar (2,175 psi), air drive pressure of 6 bar (87 psi)



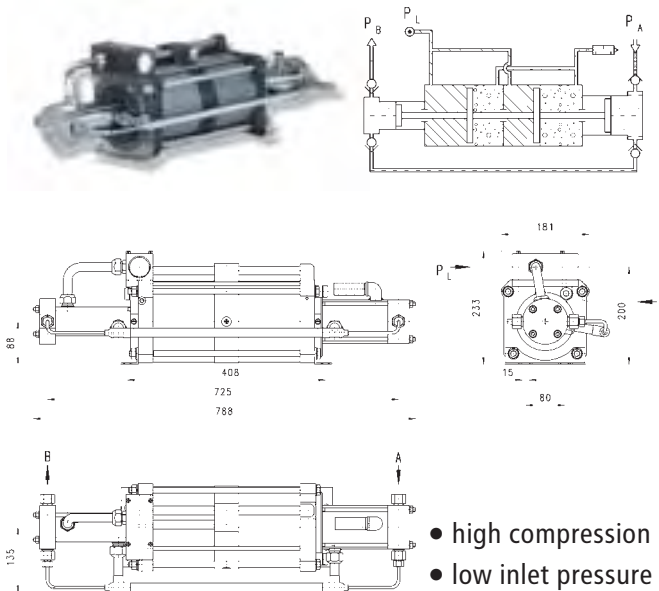
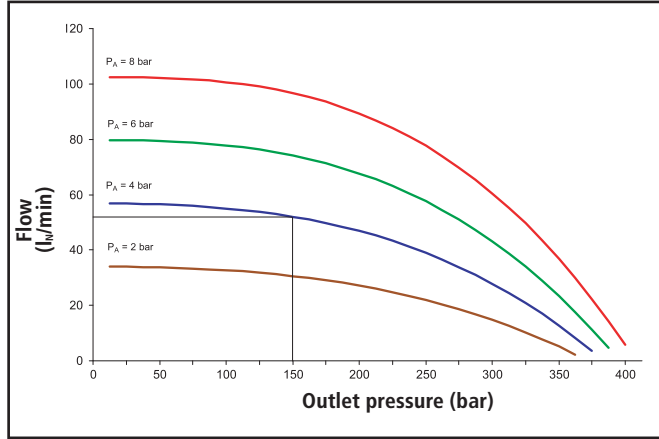
Technical features	DLE 30-1-2
Pressure ratio	1:60
Max. compression ratio	1:20
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	20 (290)
Max. gas inlet pressure p _A in bar (psi)	600 (8,700)
Max. permitted outlet pressure p _B in bar (psi)	600 (8,700)
Formula to calculate gas outlet pressure p _B	60 X p _L
Displacement volume in cm ³ (in ³)	60 (3.66)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	600-2,400 (21.2-84.8)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	20
Material of gas section	Stainless steel

Technical features	DLE 30-2
Pressure ratio	1:60
Max. compression ratio	1:20
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	20 (290)
Max. gas inlet pressure p _A in bar (psi)	600 (8,700)
Max. permitted outlet pressure p _B in bar (psi)	600 (8,700)
Formula to calculate gas outlet pressure p _B	60 X p _L + p _A
Displacement volume in cm ³ (in ³)	120 (7.32)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	600-2,400 (21.2-84.8)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	23
Material of gas section	Stainless steel

Model: DLE 5-30-2

Flow: 52 l_w/min (1.83 SCFM)

at inlet pressure of 4 bar (58 psi) and outlet pressure of 150 bar (2,175 psi), air drive pressure of 6 bar (87 psi)

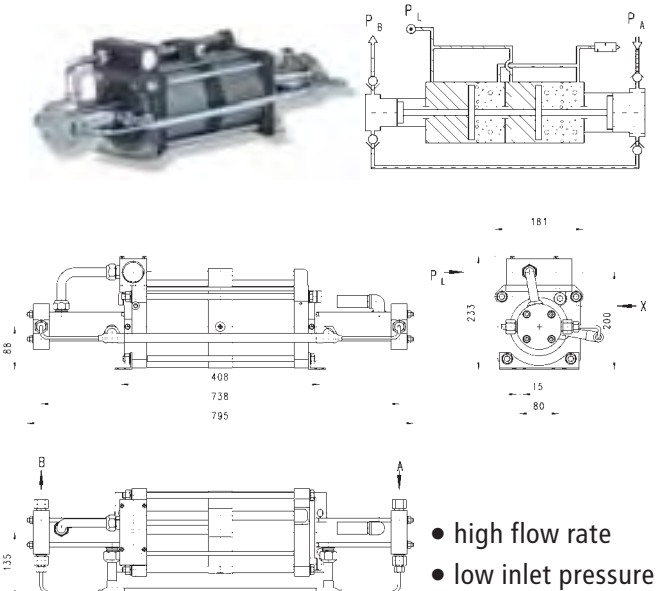
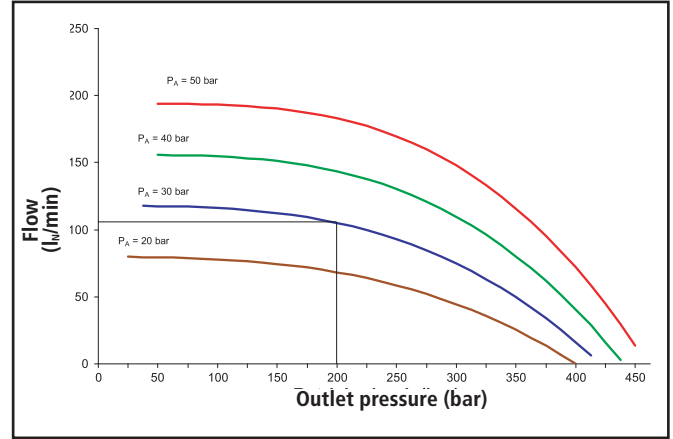


Technical features	DLE 5-30-2
Pressure ratio	1:10 / 1:60
Max. compression ratio	1:90
Stage ratio	1:6
Min. gas inlet pressure p _A in bar (psi)	2 (29)
Max. gas inlet pressure p _A in bar (psi)	1 X p _L
Max. permitted outlet pressure p _B in bar (psi)	600 (8,700)
Formula to calculate gas outlet pressure p _B	60 X p _L + 6 X p _A
Displacement volume in cm ³ (in ³)	373 (22.76)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _w /min (SCFM)	600-2,400 (21.2-84.8)
Connection: Gas inlet	1/2 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	24
Material of gas section	Stainless steel/aluminium

Model: DLE 15-30-2

Flow: 105 l_w/min (3.7 SCFM)

at inlet pressure of 30 bar (435 psi) and outlet pressure of 200 bar (2,900 psi), air drive pressure of 6 bar (87 psi)

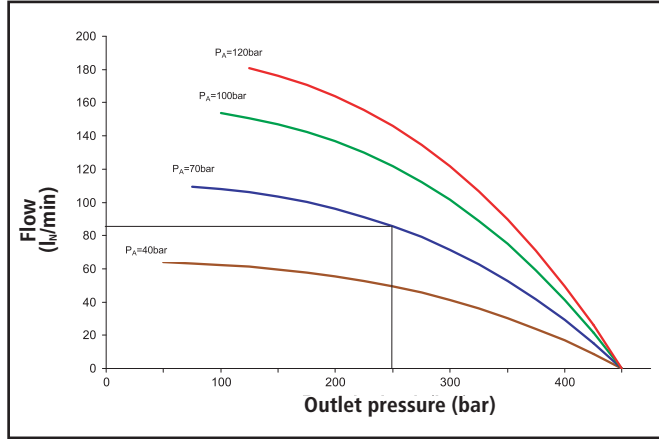


Technical features	DLE 15-30-2
Pressure ratio	1:30 / 1:60
Max. compression ratio	1:40
Stage ratio	1:2
Min. gas inlet pressure p _A in bar (psi)	7 (101)
Max. gas inlet pressure p _A in bar (psi)	15 X p _L
Max. permitted outlet pressure p _B in bar (psi)	600 (8,700)
Formula to calculate gas outlet pressure p _B	60 X p _L + 2 X p _A
Displacement volume in cm ³ (in ³)	122 (7.44)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _w /min (SCFM)	600-2,400 (21.2-84.8)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	24
Material of gas section	Stainless steel

Model: DLE 75-1

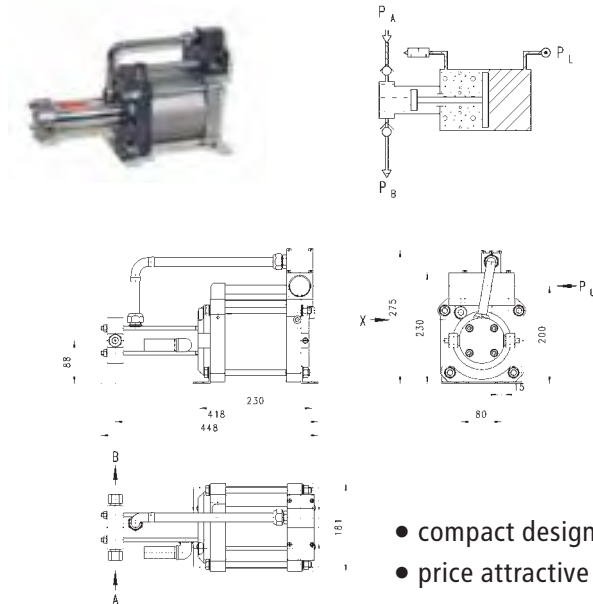
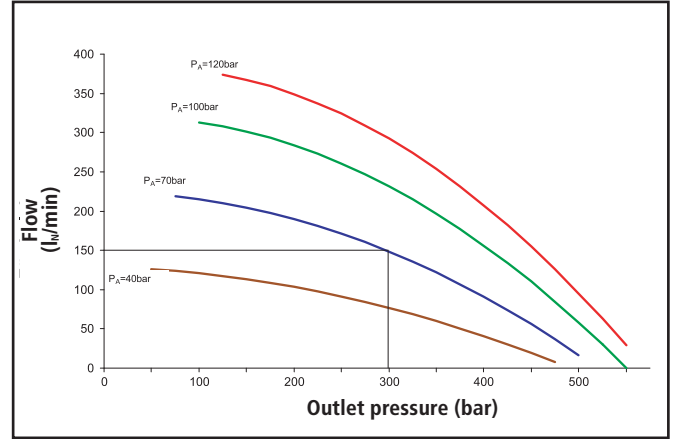
Flow: 85 l_n/min (2.29 SCFM)

at inlet pressure of 70 bar (1,015 psi) and outlet pressure of 240 bar (3,480 psi), air drive pressure of 6 bar (87 psi)

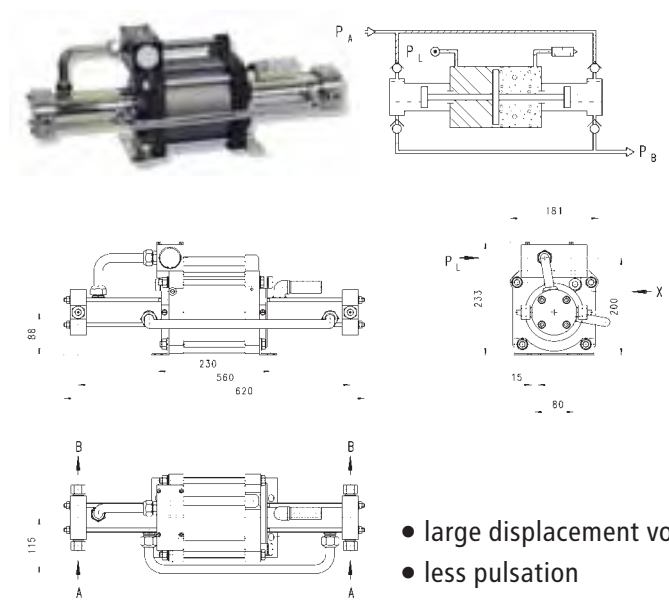


Model: DLE 75

Flow: 150 l_n/min (5.29) at an inlet pressure of 70 bar (1,015 psi) and outlet pressure of 300 bar (4,350 psi), air drive pressure of 6 bar (87 psi)



- compact design
- price attractive solution



- large displacement volume
- less pulsation

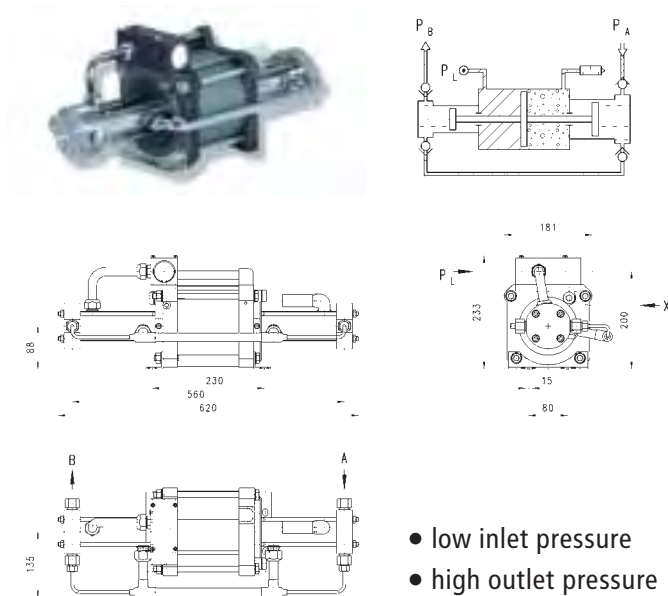
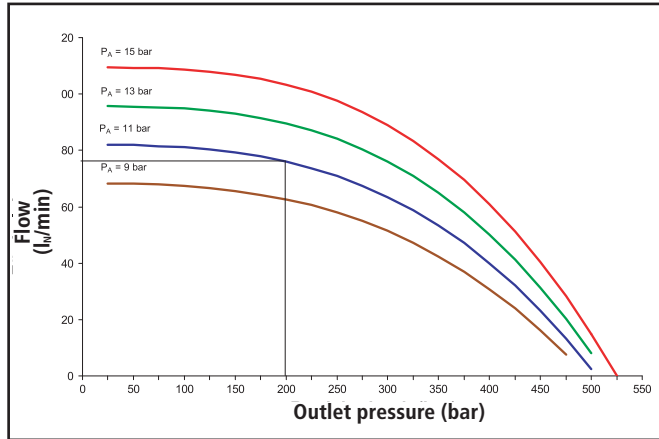
Technical features	DLE 75-1
Pressure ratio	1:75
Max. compression ratio	1:20
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	35 (507)
Max. gas inlet pressure p _A in bar (psi)	750 (10,875)
Max. permitted outlet pressure p _B in bar (psi)	750 (10,875)
Formula to calculate gas outlet pressure p _B	75 X p _L
Displacement volume in cm ³ (in ³)	25 (1.52)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	400-1,980 (14.13-69.92)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	13
Material of gas section	Stainless steel

Technical features	DLE 75
Pressure ratio	1:75
Max. compression ratio	1:20
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	35 (507)
Max. gas inlet pressure p _A in bar (psi)	1,500 (21,750)
Max. permitted outlet pressure p _B in bar (psi)	1,500 (21,750)
Formula to calculate gas outlet pressure p _B	75 X p _L + p _A
Displacement volume in cm ³ (in ³)	50 (3.05)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	400-1,980 (14.13-69.92)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	18
Material of gas section	Stainless steel

Model: DLE 15-75

Flow: 75 l_w/min (2.64 SCFM)

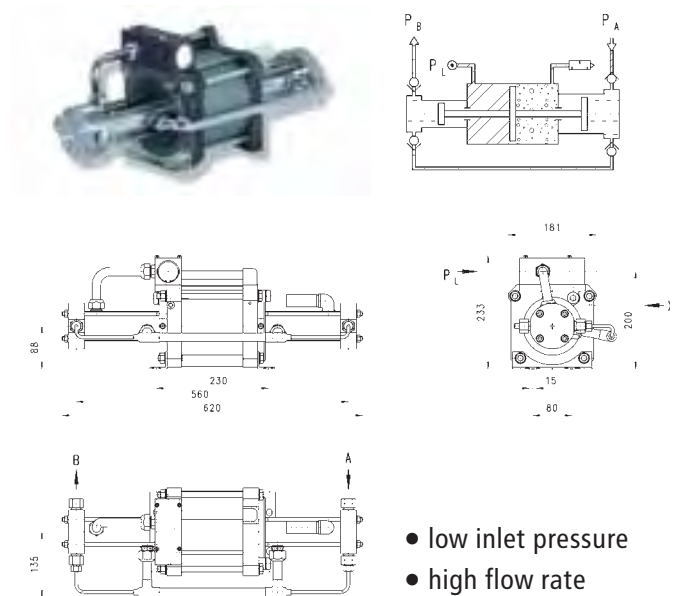
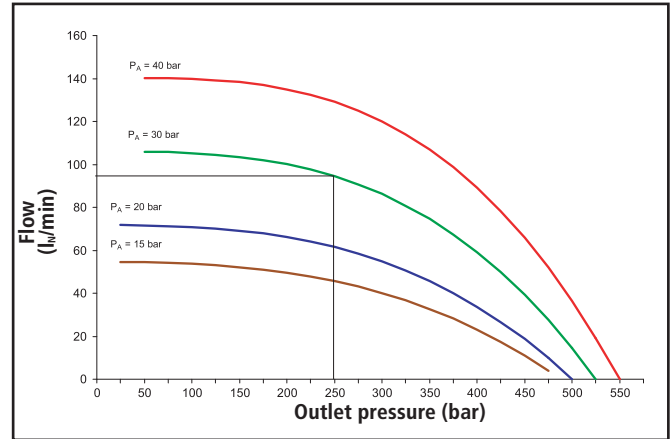
at inlet pressure of 11 bar (159 psi) and outlet pressure of 200 bar (2,900 psi), air drive pressure of 6 bar (87 psi)



Model: DLE 30-75

Flow: 95 l_w/min (3.35 SCFM)

at inlet pressure of 30 bar (435 psi) and outlet pressure of 250 bar (3,625 psi), air drive pressure of 6 bar (87 psi)



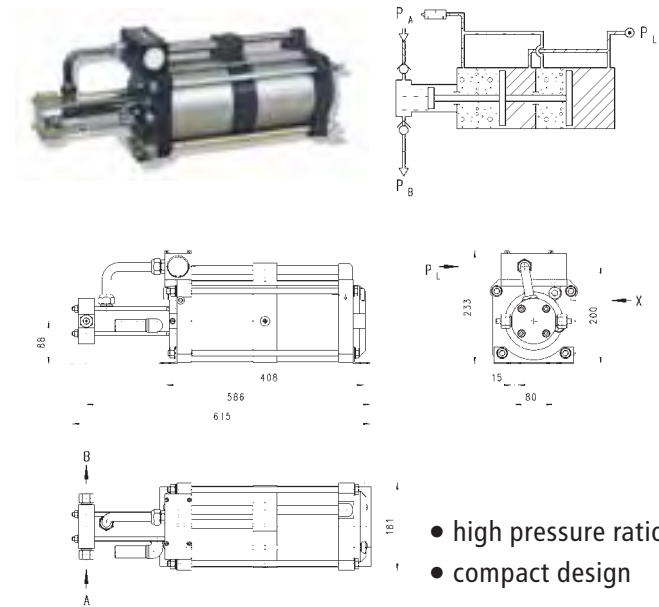
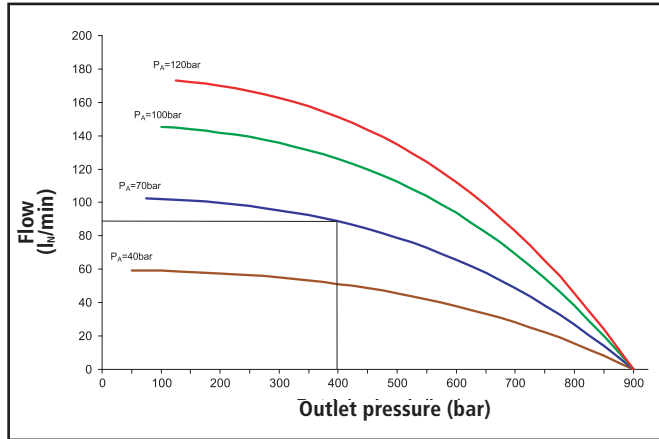
Technical features	DLE 15-75
Pressure ratio	1:15 / 1:75
Max. compression ratio	1:100
Stage ratio	1:5
Min. gas inlet pressure p _A in bar (psi)	7 (101)
Max. gas inlet pressure p _A in bar (psi)	2,5 X p _L
Max. permitted outlet pressure p _B in bar (psi)	1,500 (21,750)
Formula to calculate gas outlet pressure p _B	75 X p _L + 5 X p _A
Displacement volume in cm ³ (in ³)	122 (7.44)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _w /min (SCFM)	400-1,980 (14.13-69.92)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	19
Material of gas section	Stainless steel

Technical features	DLE 30-75
Pressure ratio	1:30 / 1:75
Max. compression ratio	1:50
Stage ratio	1:2.5
Min. gas inlet pressure p _A in bar (psi)	15 (217)
Max. gas inlet pressure p _A in bar (psi)	12 X p _L
Max. permitted outlet pressure p _B in bar (psi)	1,500 (21,750)
Formula to calculate gas outlet pressure p _B	75 X p _L + 2.5 X p _A
Displacement volume in cm ³ (in ³)	60 (3.66)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _w /min (SCFM)	400-1,980 (14.13-69.92)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	19
Material of gas section	Stainless steel

Model: DLE 75-1-2

Flow: 90 l_n/min (3.17 SCFM)

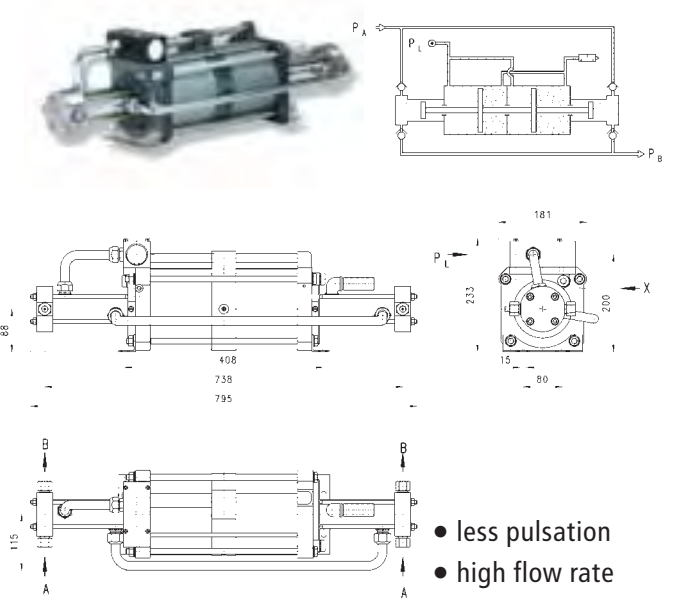
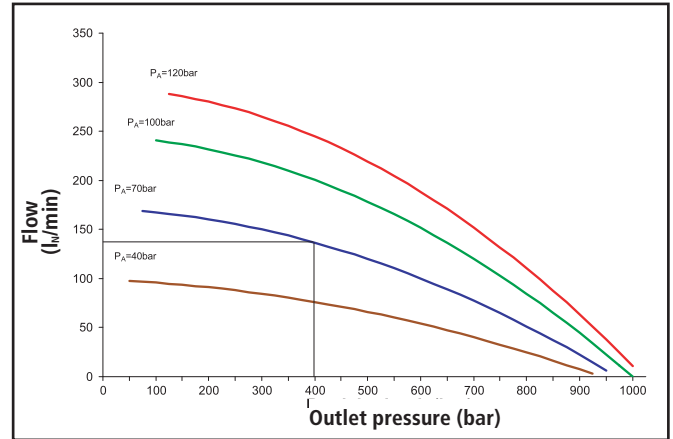
at inlet pressure of 70 bar (1,015 psi) and outlet pressure of 400 bar (5,800 psi), air drive pressure of 6 bar (87 psi)



Technical features	DLE 75-1-2
Pressure ratio	1:150
Max. compression ratio	1:20
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	45 (652)
Max. gas inlet pressure p _A in bar (psi)	1,500 (21,750)
Max. permitted outlet pressure p _B in bar (psi)	1,500 (21,750)
Formula to calculate gas outlet pressure p _B	150 X p _L
Displacement volume in cm ³ (in ³)	25 (1.52)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	600-2,400 (21.2-84.8)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	20
Material of gas section	Stainless steel

Model: DLE 75-2

Flow: 130 l_n/min (4.59 SCFM) at an inlet pressure of 70 bar (1,015 psi) and outlet pressure of 400 bar (5,800 psi), air drive pressure of 6 bar (87 psi)

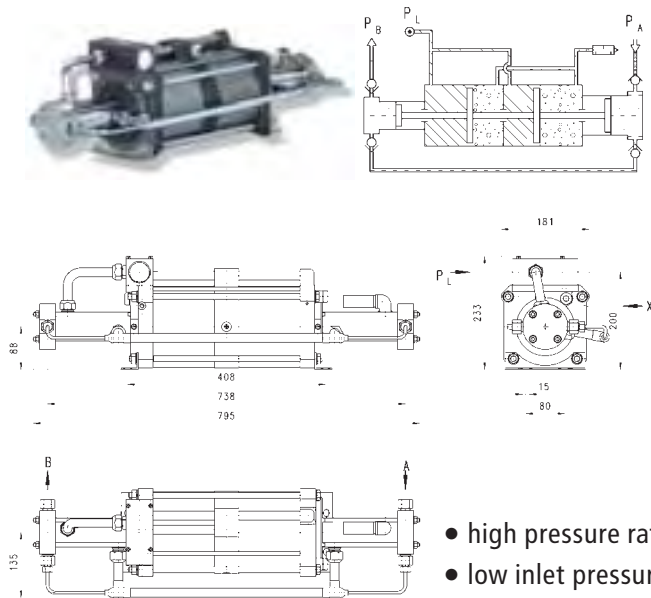
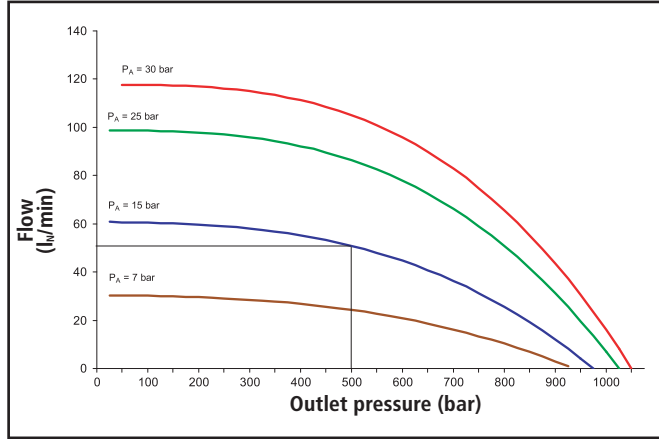


Technical features	DLE 75-2
Pressure ratio	1:150
Max. compression ratio	1:20
Stage ratio	—
Min. gas inlet pressure p _A in bar (psi)	45 (652)
Max. gas inlet pressure p _A in bar (psi)	1,500 (21,750)
Max. permitted outlet pressure p _B in bar (psi)	1,500 (21,750)
Formula to calculate gas outlet pressure p _B	150 X p _L + p _A
Displacement volume in cm ³ (in ³)	50 (3.05)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	600-2,400 (21.2-84.8)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	23
Material of gas section	Stainless steel

Model: DLE 15-75-2

Flow: 50 l_n/min (1.76 SCFM)

at inlet pressure of 15 bar (217 psi) and outlet pressure of 500 bar (7,250 psi), air drive pressure of 6 bar (87 psi)

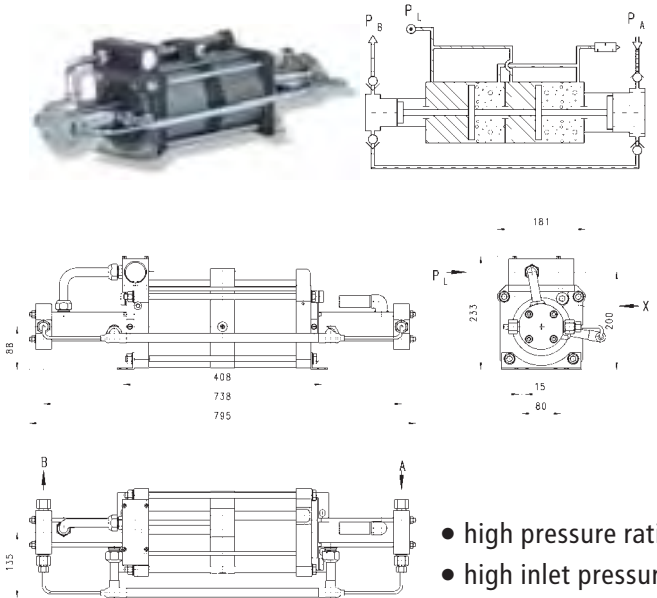
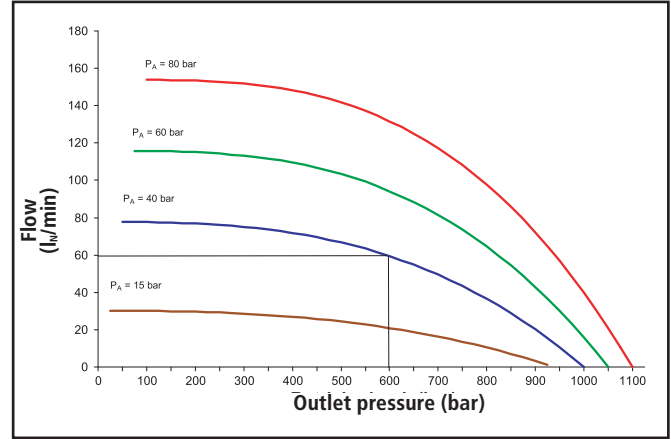


Technical features	DLE 15-75-2
Pressure ratio	1:30 / 1:150
Max. compression ratio	1:100
Stage ratio	1:5
Min. gas inlet pressure p _A in bar (psi)	7 (101)
Max. gas inlet pressure p _A in bar (psi)	5 X p _L
Max. permitted outlet pressure p _B in bar (psi)	1,500 (21,750)
Formula to calculate gas outlet pressure p _B	150 X p _L + 5 X p _A
Displacement volume in cm ³ (in ³)	122 (7.44)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	600-2,400 (21.2-84.8)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	24
Material of gas section	Stainless steel

Model: DLE 30-75-2

Flow: 60 l_n/min (2.11 SCFM)

at inlet pressure of 40 bar (580 psi) and outlet pressure of 600 bar (8,700 psi), air drive pressure of 6 bar (87 psi)



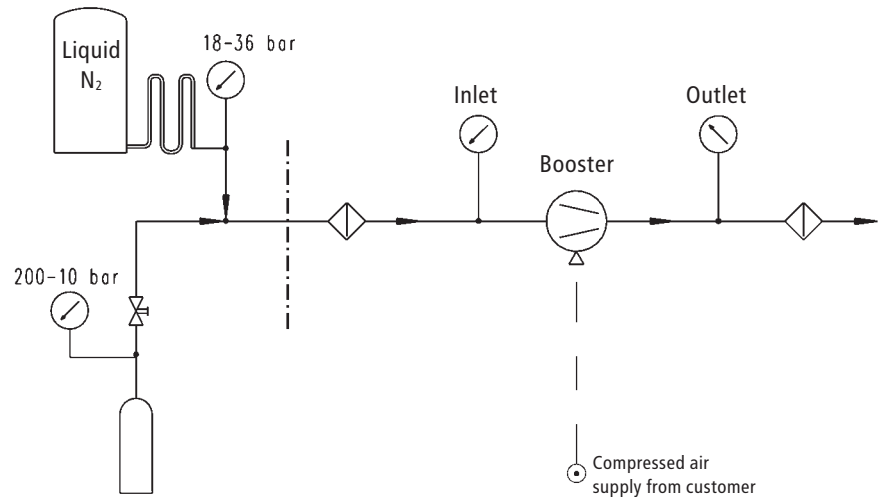
Technical features	DLE 30-75-2
Pressure ratio	1:60 / 1:150
Max. compression ratio	1:50
Stage ratio	1:2.5
Min. gas inlet pressure p _A in bar (psi)	15 (217)
Max. gas inlet pressure p _A in bar (psi)	24 X p _L
Max. permitted outlet pressure p _B in bar (psi)	1,500 (21,750)
Formula to calculate gas outlet pressure p _B	150 X p _L + 2.5 X p _A
Displacement volume in cm ³ (in ³)	60 (3.66)
Air drive p _A in bar (psi)	1-10 (14.5-145)
Air consumption in l _n /min (SCFM)	600-2,400 (21.2-84.8)
Connection: Gas inlet	1/4 BSP
Connection: Gas outlet	1/4 BSP
Connection: Drive air	3/4 BSP
Net weight (kg)	24
Material of gas section	Stainless steel

Model VP/70/700/35

- Wide range of application
- Compact design
- Portable unit
- Easy to operate
- Oil and lubrication free compression
- Dry running
- No electrical auxiliary energy is needed

This booster station is designed for a wide range of application. I. e. pressure tests can be realized, gas cylinders filled or accumulators recharged.

To operate this system, the gas inlet, the gas outlet and the drive air have to be connected. Other installations are not necessary. Since the components are reduced to a minimum, an easy and reliable operation can be guaranteed.



Technical features

Outlet pressure	75 – 700 bar (1,087 – 10,150 psi)
Flow capacity at an inlet pressure of 10 bar (145 psi)	70 l _N /min (2.47 SCFM) at 200 bar (2,900 psi) outlet pressure
Flow capacity at an inlet pressure of 15 bar (217 psi)	103 l _N /min (3.63 SCFM) at 200 bar (2,900 psi) outlet pressure
Time of operation	50 %
Gas inlet pressure	7 – 35 bar (101 – 507 psi), but max. 3.5*air drive pL
Air drive pressure	1 – 10 bar (14.5 – 145 psi)
Air consumption	400 – 1,980 l _N /min (14.13 – 69.92 SCFM)
Connection: Gas inlet	1/2 BSP
Connection: Gas outlet	1/4 BSP
Connection: Air drive	1/2 BSP
Panel	Stainless steel
Dimensions (W x D x H)	850 X 410 X 410 mm
Net weight	28 kg

Model VP/120/500/300

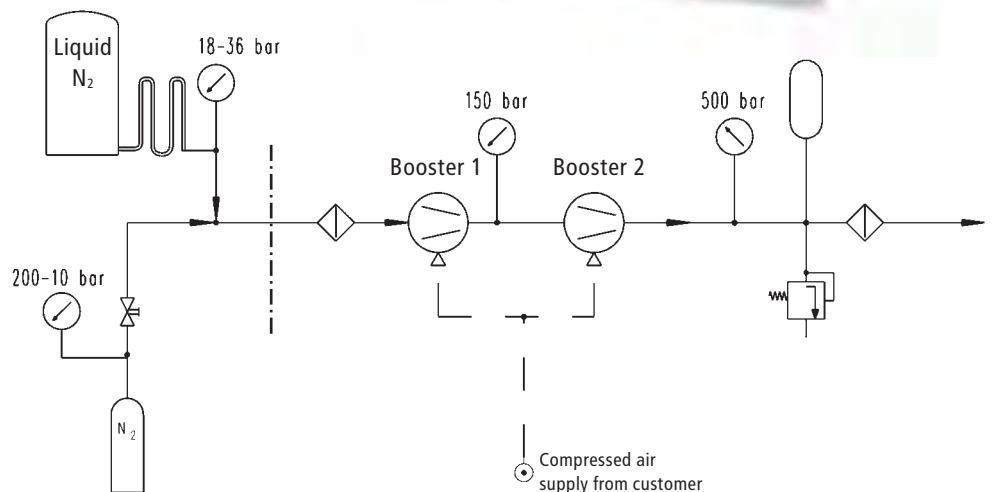
- Wide range of application
- Compact design
- Mobile system
- Automatic operation
- Oil and lubrication free compression
- Dry running



This booster station is an individually operating, air driven booster station in compact design.

The booster delivers continuously into a storage tank and guarantees that the pressure inside of the receiver is always between the set limit values.

Due to the design of this system the gas cylinder can be emptied down to 10 bar and the gas volume used in an optimum way. Through the integrated pilot switches, regulator and safety relief elements, an automatic operation without a continuous observation would be possible.



Technical features

Outlet pressure	20 – 500 bar (290 – 7,250 psi), adjustable through pressure reducer
Flow capacity at an inlet pressure of 18 bar (261 psi)	120 I _N /min (4.23 SCFM)
Flow capacity at an inlet pressure of 300 bar (4,350 psi)	400 I _N /min (14.12 SCFM)
Time of operation	50 %
Nitrogen inlet	M16 X 1.5 (Ermeto 8S)
Nitrogen outlet pressure	M16 X 1.5 (Ermeto 8S)
Nitrogen accumulator	5 liter / 550 bar (7,975 psi)
Nitrogen inlet pressure (from vaporiser)	20 – 36 bar (290 – 522 psi)
Nitrogen cylinder supply	10 – 300 bar (145 – 4,350 psi)
Connection: Nitrogen cylinder (2 pcs.)	W 24.32 X 1/14 200 bar (2,900 psi) / 300 bar (4,350 psi)
Air drive pressure	4 – 10 bar (58 – 145 psi)
Connection: Air drive	3/4 BSP
Air consumption	400 – 1980 I _N /min (14.13-69.92 SCFM)
Cabinet	Steel, coloured, on castors
Dimensions (W x D x H)	720 X 560 X 1,230 mm
Net weight (packed weight)	211kg (315 kg)

Model VH/400/500R

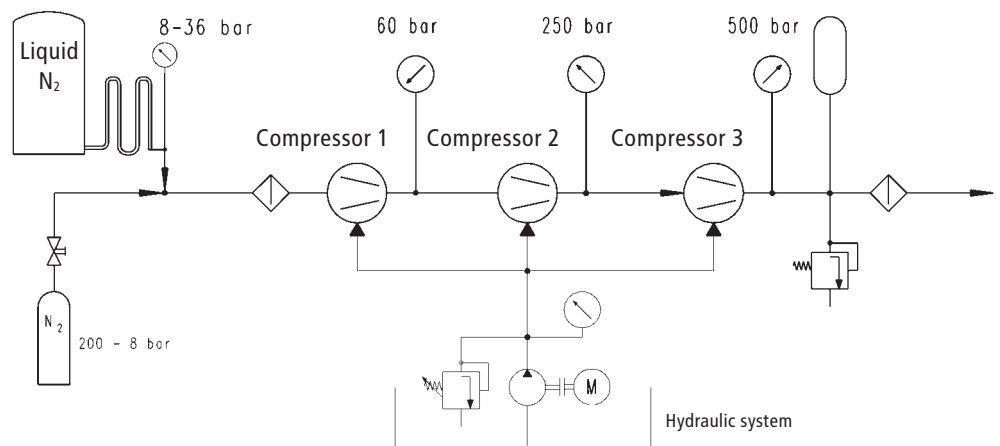
- High flow rate
- Automatic operation
- Oil and lubrication free compression
- Dry running

This compressor station is an independently working, hydraulic driven system which compresses the gases in three stages, and integrated hydraulic system.

The individual compressor stages are operated through proportional valves, in this way a silent operation at a low sound emission can be realized.

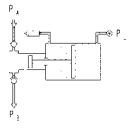
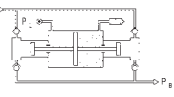
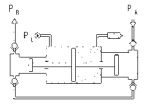
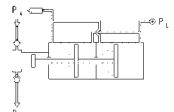
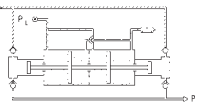
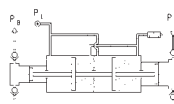
The compressor delivers a continuous flow into a storage tank and thus ensures that the pressure inside this tank is always within the adjustable limiting values.

The required pressures can be freely set in the operating panel.



Technical features

Outlet pressure	200 – 500 bar (2,900 – 7,250 psi), variable
Flow at 14 bar (203 psi) inlet pressure	400 l _n /min (14.12 SCFM)
Gas inlet	M16 X 1.5 (Ermeto 8S)
Gas outlet	M16 X 1.5 (Ermeto 8S)
High pressure accumulator	10 liter / 550 bar (7,975 psi)
Gas inlet (i. e. from the vaporiser)	8 – 36 bar (116 – 522 psi)
Cooling water connection	3/4 BSP 0.8 m ³ /h (28.25 SCFM/h) / T inlet = 14° C (57°C)
Power supply	max. 22 kW
Supply from gas cylinders	10 – 300 bar (145 – 4,350 psi)
Cabinet	Coloured steel
Dimensions (W x D x H)	2,180 X 1,000 X 1,900 mm
Net weight	1,600 kg

Type	Pressure ratio i (i_1 / i_2)	Compression ratio*	Suction pressure				Max. outlet pressure		Formula for max. end pressure in bar (psi)	Displacement volume per double stroke		Max cycle frequency 1/min	Connections Inlet* Outlet		Max. operating pressure °C	Weight kg
			Min pA bar	psi	Max bar	psi	pB bar	psi		cm ³	cu.in					
DLE 2-1	1 : 2	1 : 10	0	0	20	290	20	290	2*pL	922	56.26	100	1/2 BSP	1/2 BSP	60	15
DLE 5-1	1 : 5	1 : 15	2	29	50	725	50	725	5*pL	373	22.76	110	1/2 BSP	1/2 BSP	60	15
DLE 15-1	1 : 15	1 : 20	7	102	150	2,175	150	2,175	15*pL	122	7.44	130	1/4 BSP	1/4 BSP	100	13
DLE 30-1	1 : 30	1 : 20	15	218	300	4,350	300	4,350	30*pL	60	3.66	130	1/4 BSP	1/4 BSP	100	13
DLE 75-1	1 : 75	1 : 20	35	508	750	10,875	750	10,875	75*pL	25	1.53	130	1/4 BSP	1/4 BSP	100	13
																
DLE 2	1 : 2	1 : 10	0	0	40	580	40	580	2*pL + pA	1844	112.53	90	1/2 BSP	1/2 BSP	60	20
DLE 5	1 : 5	1 : 15	2	29	100	1,450	100	1,450	5*pL + pA	746	45.52	110	1/2 BSP	1/2 BSP	60	20
DLE 15	1 : 15	1 : 20	7	102	300	4,350	300	4,350	15*pL + pA	244	14.89	120	1/4 BSP	1/4 BSP	100	18
DLE 30	1 : 30	1 : 20	15	218	600	8,700	600	8,700	30*pL + pA	120	7.32	120	1/4 BSP	1/4 BSP	100	18
DLE 75	1 : 75	1 : 20	35	508	1,500	21,750	1,500	21,750	75*pL + pA	50	3.05	130	1/4 BSP	1/4 BSP	100	18
																
DLE 2-5	1:2 / 1:5	1 : 25	0	0	0.8*PL		100	1,450	5*pL + 2.5*pA	922	56.26	100	1/2 BSP	1/2 BSP	60	20
DLE 5-15	1:5 / 1:15	1 : 45	2	29	1.6*PL		300	4,350	15*pL + 3*pA	373	22.76	110	1/2 BSP	1/4 BSP	100	19
DLE 5-30	1:5 / 1:30	1 : 90	2	29	0.5*PL		600	8,700	30*pL + 6*pA	373	22.76	110	1/2 BSP	1/4 BSP	100	19
DLE 15-30	1:15 / 1:30	1 : 40	7	102	7.5*PL		600	8,700	30*pL + 2*pA	122	7.44	120	1/4 BSP	1/4 BSP	100	19
DLE 15-75	1:15 / 1:75	1 : 100	7	102	2.5*PL		1,500	21,750	75*pL + 5*pA	122	7.44	120	1/4 BSP	1/4 BSP	100	19
DLE 30-75	1:30 / 1:75	1 : 50	15	218	12*PL		1,500	21,750	75*pL + 2.5*pA	60	3.66	120	1/4 BSP	1/4 BSP	100	19
																
DLE 2-1-2	1 : 4	1 : 10	0	0	40	580	40	580	4*pL	922	56.26	100	1/2 BSP	1/2 BSP	60	22
DLE 5-1-2	1 : 10	1 : 15	4	58	100	1,450	100	1,450	10*pL	373	22.76	110	1/2 BSP	1/2 BSP	60	22
DLE 15-1-2	1 : 30	1 : 20	10	145	300	4,350	300	4,350	30*pL	122	7.44	110	1/4 BSP	1/4 BSP	100	20
DLE 30-1-2	1 : 60	1 : 20	20	290	600	7,250	600	8,700	60*pL	60	3.66	120	1/4 BSP	1/4 BSP	100	20
DLE 75-1-2	1 : 150	1 : 20	45	653	1,500	21,750	1,500	21,750	150*pL	25	1.53	120	1/4 BSP	1/4 BSP	100	20
																
DLE 2-2	1 : 4	1 : 1	0	0	40	580	40	580	4*pL + pA	1844	112.53	90	1/2 BSP	1/2 BSP	60	25
DLE 5-2	1 : 10	1 : 15	4	58	100	1,450	100	1,450	10*pL + pA	746	45.52	100	1/2 BSP	1/2 BSP	60	25
DLE 15-2	1 : 30	1 : 20	10	145	300	4,350	300	4,350	30*pL + pA	244	14.89	100	1/4 BSP	1/4 BSP	100	23
DLE 30-2	1 : 60	1 : 20	20	290	600	8,700	600	8,700	60*pL + pA	120	7.32	100	1/4 BSP	1/4 BSP	100	23
DLE 75-2	1 : 150	1 : 20	45	653	1,500	21,750	1,500	21,750	150*pL + pA	50	3.05	100	1/4 BSP	1/4 BSP	100	23
																
DLE 2-5-2	1:4 / 1:10	1 : 25	0	0	1.6*PL		100	1,450	10*pL + 2.5*pA	922	56.26	90	1/2 BSP	1/2 BSP	60	25
DLE 5-15-2	1:10 / 1:30	1 : 45	2	29	3.2*PL		300	4,350	30*pL + 3*pA	373	22.76	100	1/2 BSP	1/4 BSP	100	24
DLE 5-30-2	1:10 / 1:60	1 : 90	2	29	1*PL		600	8,700	60*pL + 6*pA	373	22.76	100	1/2 BSP	1/4 BSP	100	24
DLE 15-30-2	1:30 / 1:60	1 : 40	7	102	15*PL		600	8,700	60*pL + 2*pA	122	7.44	100	1/4 BSP	1/4 BSP	100	24
DLE 15-75-2	1:30 / 1:150	1 : 100	7	102	5*PL		1,500	21,750	150*pL + 5*pA	122	7.44	100	1/4 BSP	1/4 BSP	100	24
DLE 30-75-2	1:60 / 1:150	1 : 50	15	218	24*PL		1,500	21,750	150*pL + 2.5*pA	60	3.66	100	1/4 BSP	1/4 BSP	100	24
																

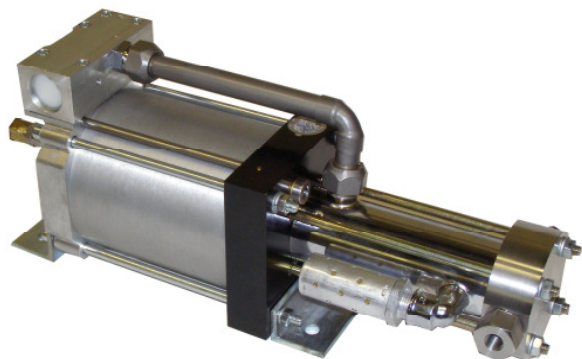
* Compression ratio = Outlet pressure / Suction pressure
Abbreviations: pL = Air drive; pA = Suction pressure; pB = Outlet pressure

The maximum permitted outlet pressure is 60 to 100°C. Cooling by water is available as an option. The maximum stroke frequency is at 90 to 100 cycles per minute for 50% duty cycle. Suction pressures lower than the indicated "pA min" are not permitted and can cause damages on the unit.

technical data sheet	gas booster	SDLE-20 single acting, single stage, without air returnment
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available SDLE series

- single action, single stage, without air returnment
Able for filling oxygen or air bottles



technical data

air drive pressure pL:	1-10 bar / 14.5—145 psi
pressure ratio i:	1:20
compression ratio:	1:20
minimum suction pressure pA:	10 bar
maximum suction pressure pA:	200 bar
maximum outlet pressure pB:	200 bar
displacement volume:	60 cm ³
maximum cycles	150 / min
stall pressure	PB = i * pL

standard connections

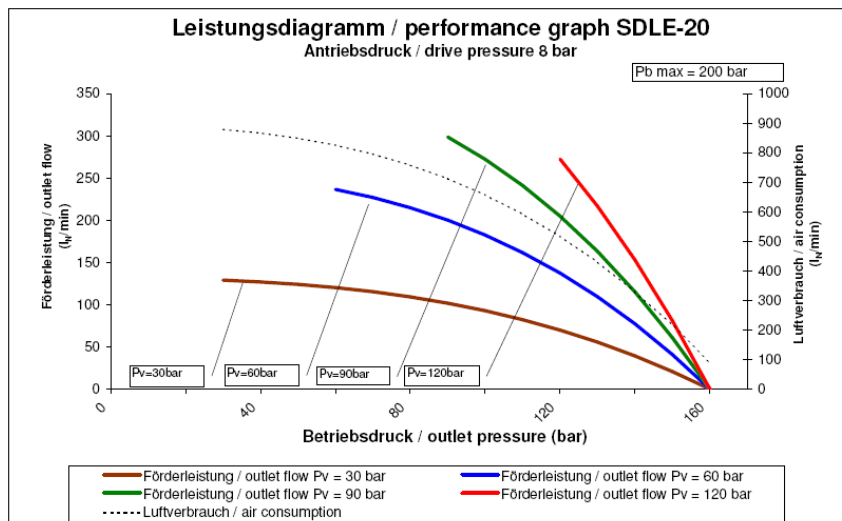
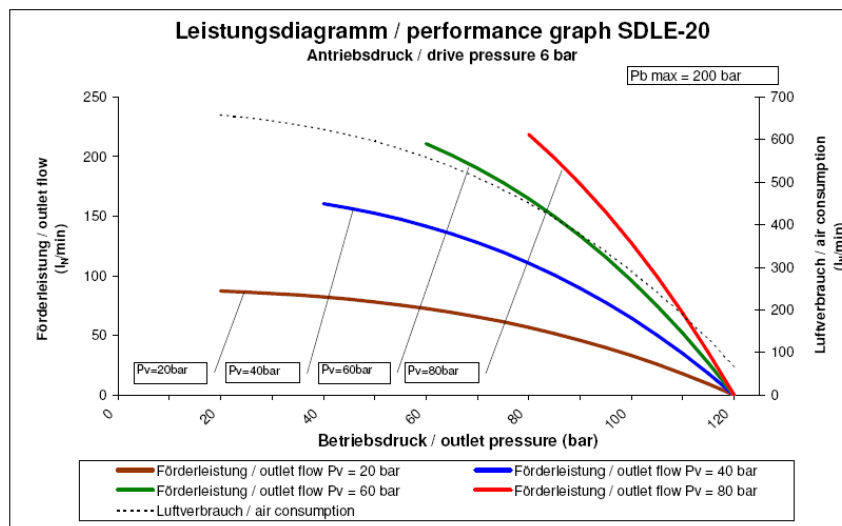
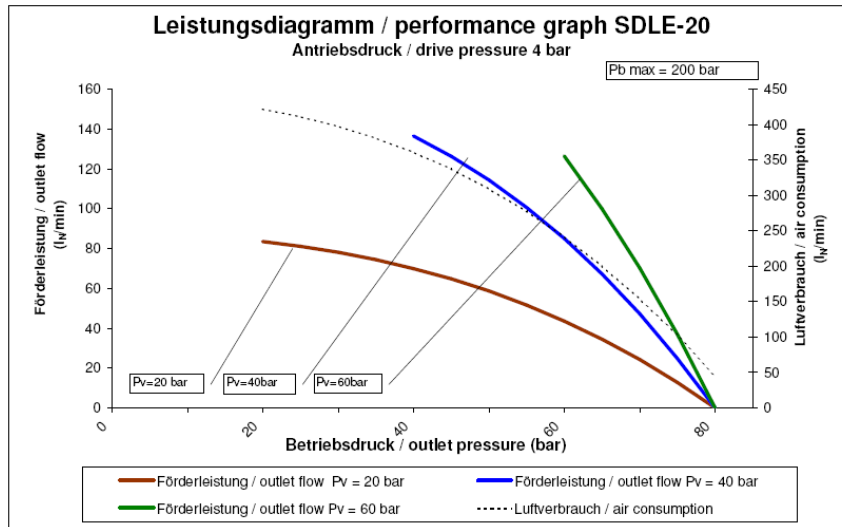
air drive	G 1/2
SDLE-20	inlet/outlet: G 1/4
maximum operating temperature	100 °C
net weight	20 kg

pressure and flow performances, please see enclosed graphics.

materials of construction hp section SDLE-20:	standard seal package	PTFE, NBR, Viton
	compressor head	1.4305
	hp cylinder	1.4542
	hp piston	1.4305
	fittings	1.4305
	balls	Al ₂ O ₃
	springs	1.4310
approximate dimensions:	length	446 mm
	width	132 mm
	height	165 mm
available options:	oxygen option	SDLE-20
Spezial seal material to handle spezial gases on request.	other inlet and outlet ports	order codes
	inlet: 1/4NPT outlet: 1/4NPT	SDLE-20
available accessorires		
air control units for SDLE series with filter pressure regulator, control pressure gauge and shut off valve:	SDLE-20 with C2	
To protect the booster against excessive outlet pressures or to limit the outlet pressure, a safety valve can be fitted to the air control unit in the air drive line:	SDLE 20 with C2/SV-air (the required outlet pressure has to be indicated)	

please consult factory for more information.

All technical and dimensional information subject to change. All general terms and conditions of sale, including limitations of our liability, apply to all products and services sold

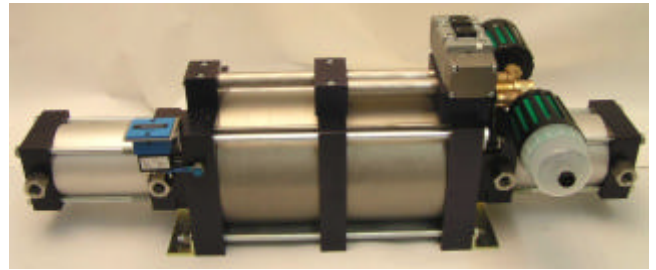


Booster 8 DLE 3 — 01

Flow capacity to 2000 l_N/min

Working pressure to 40 bar

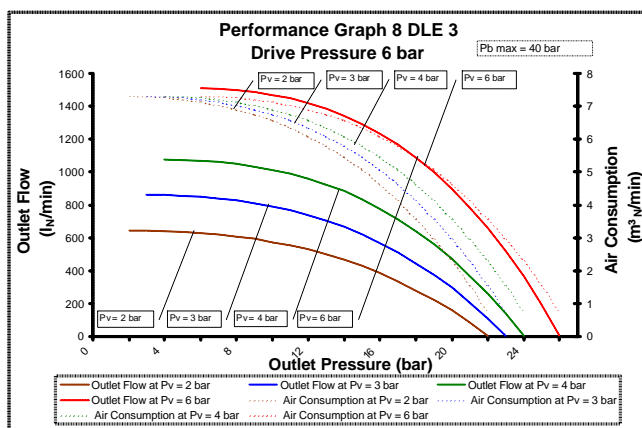
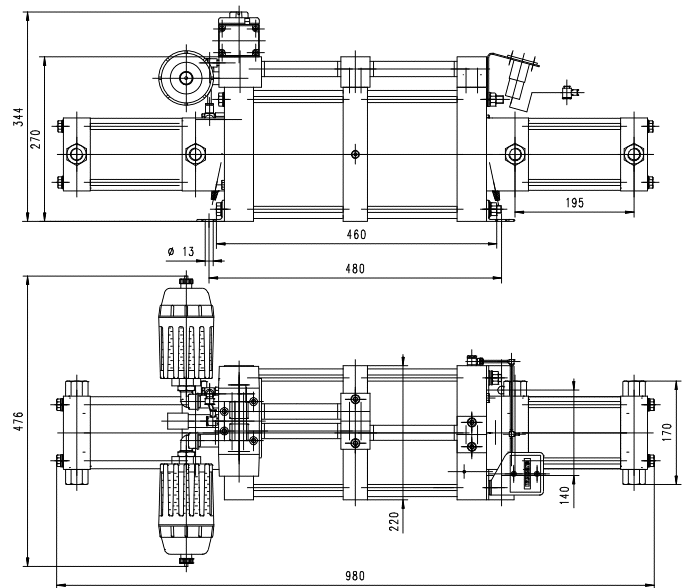
Oil-free



This air driven booster is suitable to compress shop air and gases.

Especially when higher quantities of the gas to be compressed is needed continuously this model can be used.

This booster is characterized by its special design because is compressed through double acting gas cylinders at both sides of the air driven section.



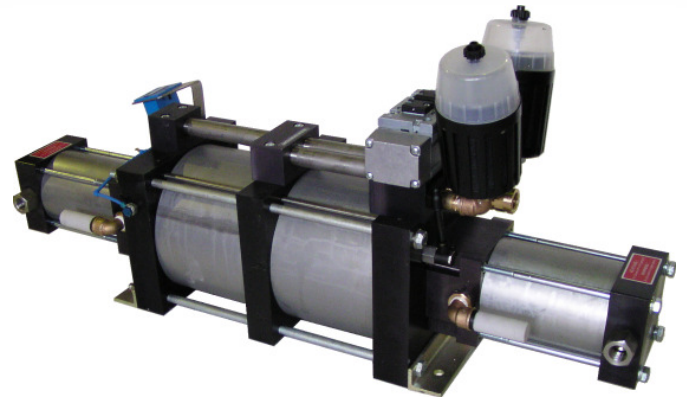
Pressure ratio:	1:3,3
Compression ratio max.:	1:15
Stage ratio:	1:1
Minimum suction pressure pA:	0
Maximum suction pressure pA:	40
Maximum outlet pressure pB:	40
Formula to calculate gas outlet pressure	3,3 X pL + pA
Displacement volume/double stroke	4.100
Air drive:	1 - 10
Air consumption (m ³ _N /min)	1 - 8
Connection: Gas inlet:	4 X G ½
Connection: Gas outlet	4 X G ½
Connection: Drive air	G ¾
Net weight (Kg)	55
Material of gas section:	Edelstahl / Alu

Booster 8 DLE 6

Flow capacity to 1000 l_N/min

Working pressure to 40 bar

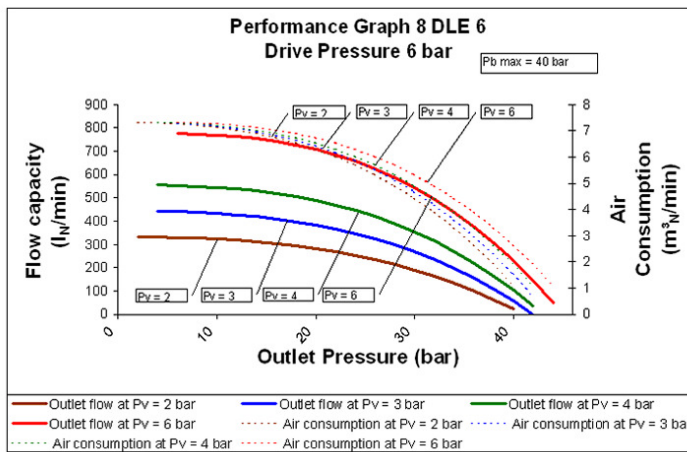
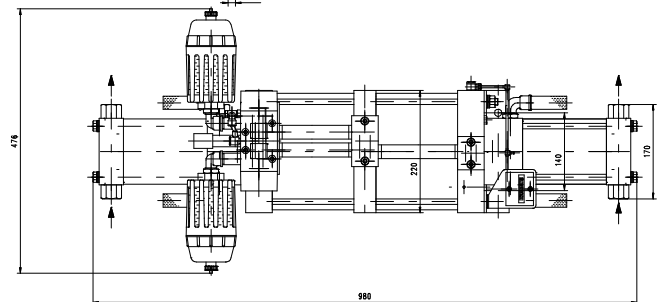
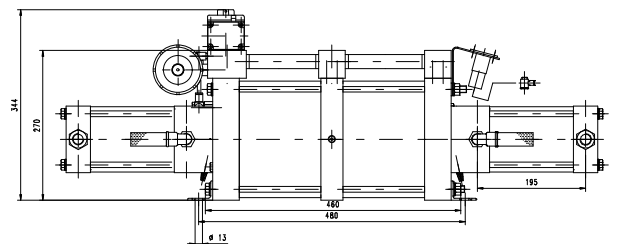
Oil-free



This air driven booster is suitable to compress shop air and gases.

Especially when higher quantities of the gas to be compressed is needed continuously this model can be used.

This booster is characterized by its special design because it is compressed through single acting gas cylinders at both sides of the air driven section.



Pressure ratio:	1:6
Minimum suction pressure pA:	0
Maximum suction pressure pA:	40
Maximum outlet pressure pB:	40
Formula to calculate gas outlet pressure	6 X pL + pA
Displacement volume/double stroke	2.050
Air drive:	1 - 10
Air consumption (m ³ _N /min)	1 - 8
Connection: Gas inlet:	2 X BSP ½
Connection: Gas outlet	2 X BSP ½
Connection: Drive air	BSP ¾
Net weight (Kg)	55
Material of gas section:	Stainless Steel /Aluminium

Nitrogen charging unit mp05

Will be used for nitrogen pressure increasing for hydraulic accumulator filling.

Advantages:

- Output flow up to 500 Standard litre/min
- Outlet pressure up to 400bar/5800 psi
- Oil free
- Compact



Description:

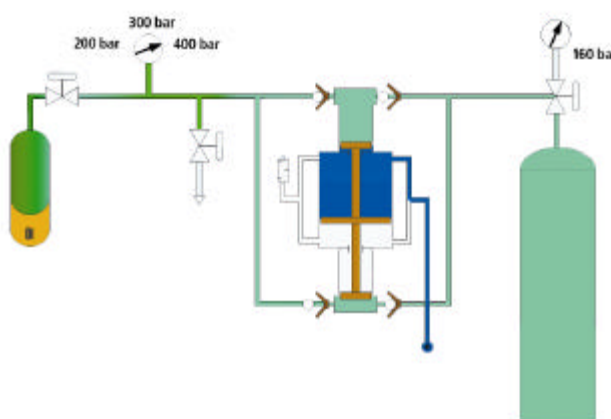
By using the nitrogen charging unit MP05 hydraulic accumulators can be filled safely, quickly and effectively. During the design stage a high level of attention was given to easy and safety operation. The unit is built according to the German Safety Law (UVV). To reduce the weight the housing is made from Aluminium. There are two wheels and two handles incorporated to facilitate safe and easy transportation.

There is space behind the two side doors to allow storage of filling hoses, adapters and tools.

Electric power is not required to operate the unit which is driven by 5 bar / 70 psi shop air.

Accessories included:
 Test and charging unit
 Adapters
 2 metre Suction- and filling hose

Scheme:



Technical Data:

max. permitted working pressure pB	400bar / 5800psi
Air drive pL	1-10bar / 14,5-145psi
Compression ratio Booster (DLE75)	1:75
Nitrogen supply pressure pA min.	10bar / 14,5psi
Nitrogen supply pressure pA max.	200 / 300bar / 2900 / 4350psi
Flow rate by 100bar (1450psi) to 200bar (2900psi)	280 l _v /min
Air consumption	0,4 bis 1,9 m ³ _v /min
Connection N2 suction port	W24,32 X1/14 Ermeto
Connection N2 pressure port	8S (M14X1,5) Ermeto
Connection Air drive	BSP 1/2"
Dimension W X D X H (mm)	850 X 410 X 400
Net weight	62 kg
Colour	MAXIMATOR Design
Circuit diagramm	AP 201.251.66
Order code	3230.1160

Nitrogen charging unit mp05



Besides the suction and filling hoses (each 2 m long), the following adapters belong to our scope of supply.

Cylinder connection 200 bar
W24.32 x 1/14
Order code:
3507.0684



Cylinder connection 300 bar
M30 x 1.5
Order code:
3920.1617



Filling and test connection
Order code:
3503.7146



Adapter
7/8-18UNF
Order code:
3503.7142



Adapter
BSP 1/4
Order code:
3503.7147



Other cylinder connections and adapters are available on request.

Technical Data Sheet	ROB 22(-HL)	<u>R</u> ebreather <u>O</u> xygen <u>B</u> ooster
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Technical Data:

Air drive pressure:	1-10 bar / 14,5—145 psi
Calculated Outlet Pressure at an air drive of 10 bar/145 psi	280 bar/ 4,060 psi
Pressure ratio:	1:28
Displacement volume/double stroke	4.6 cm ³ / 0.28 cu.inch
Connections	
Inlet:	Standard: Side inlet 1/4 BSP
Outlet:	1/4 BSP
Air drive	3/8-24UNF-2B (SAE)
Maximum operating temperature	60 °C
Net weight (with Handlever)	approx. 3.7 kg (4.7 kg)

ROB 22(-HL)

Single acting, single air drive head and distance piece

Pressure and flow performances, please see enclosed graph.

Wetted materials of construction:	
Seal package:	Filled Teflon (PTFE) Fluorcarbon (V)
Pump Body:	1.4404
Piston:	1.4112
Fittings:	1.4571
Approximate Dimensions:	
Height:	200 mm
Depth:	116 mm
Width:	116 mm
Side inlet	Standard
Special inlet and outlet ports, i.e. NPT	ROB 22(-HL)- NPT
Handlever	HL
Special seal material to handle special fluids on request.	
Available Accessories	
Air control units type C1 with filter pressure regulator, control pressure gauge and shut off valve:	ROB 22(-HL) with C1
To protect the pump against excessive outlet pressures or to limit the outlet pressure, a safety valve can be fitted to the air control unit in the air drive line:	ROB 22(-HL) with C1/SV air (The required outlet pressure has to be indicated.)

Please consult factory for more information.

All technical and dimensional information subject to change. All General Terms and Conditions of sale, including limitations of our liability, apply to all products and services sold.

ROB 8-37 Rebreather Oxygen Booster

Wetted materials of construction:

- Seal package: Filled Teflon (PTFE) Fluorcarbon (V)
- Pump Body: 1.4404
- Piston: 1.4112
- Fittings: 1.4571

Approximate Dimensions:

- Height: 200 mm
- Depth: 116 mm
- Width: 116 mm
- Side inlet: Standard
- Special inlet and outlet ports, i.e. NPT ROB 8-37-NPT
- Special seal material to handle special fluids on request.

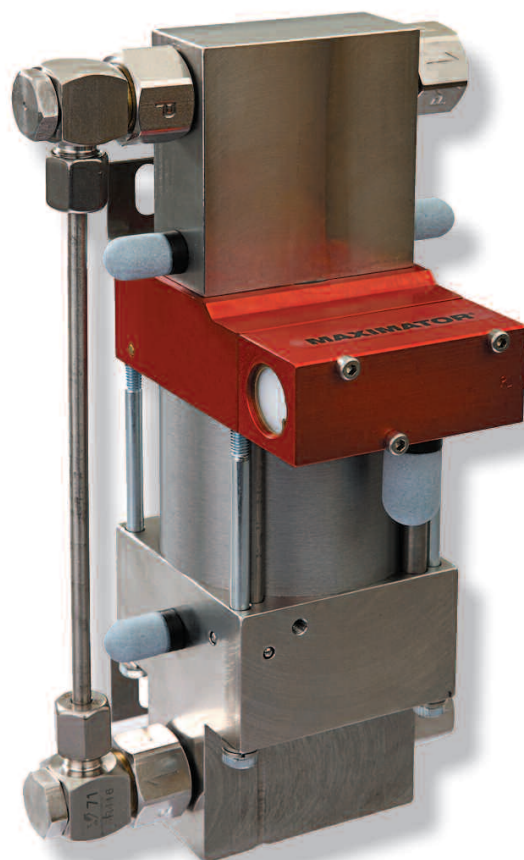
Available Accessories

- Air control units type C1 with filter pressure regulator, control pressure gauge and shut off valve: ROB 8-37 with C1
- To protect the pump against excessive outlet pressures or to limit the outlet pressure, a safety valve can be fitted to the air control unit in the air drive line: ROB 8-37 with C1/SV air (The required outlet pressure has to be indicated.)

Please consult factory for more information.

All technical and dimensional information subject to change. All General Terms and Conditions of sale, including limitations of our liability, apply to all products and services sold.

Double acting, single air drive head and distance piece



Technical Data:

Air drive pressure:	1-10 bar / 14,5—145 psi
Calculated Outlet Pressure at an air drive of 10 bar/145 psi	300 bar/ 4,350 psi
Pressure ratio:	1:8 / 1:37
Displacement volume/double stroke	21,6 cm ³ / 1,3 cu.inch

Connections

Inlet (Standard):	Side inlet 1/4 BSP
Outlet:	1/4 BSP
Air drive	3/8 BSP
Maximum operating temperature	60°C
Net weight:	approx. 7 kg

Pressure and flow performances, please see enclosed graph.

Oxygen-Booster Station ROB 5-30

Application:

The **MAXIMATOR**-Booster station will be used for the compression of breathing air and oxygen. Oxygen bottles for the diving industry will be filled up to 200 bar.

Main Benefits:

- Stainless steel frame
- Special cleaned oxygen booster
- Gas section complete made of stainless steel
- Operating devices are panel mounted for easiest operation
- All controls and indication devices are oxygen cleaned

Function:

MAXIMATOR compressor stations are driven by air pressure and increase the pressure in the legacy high pressure system according to the compressor ratio (see opposite table).

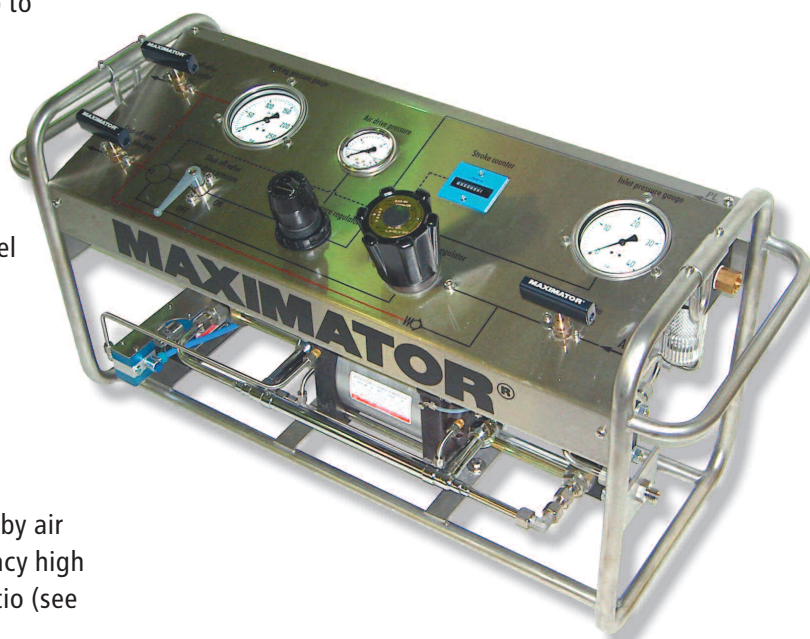
Characteristic feature:

- easy to operate
- compact construction style
- stationary
- pneumatic drive
- no heat, flame or spark risk

Order code:

3230.1311

Circuit diagramm no. : AP 201.189.15



similar to original product

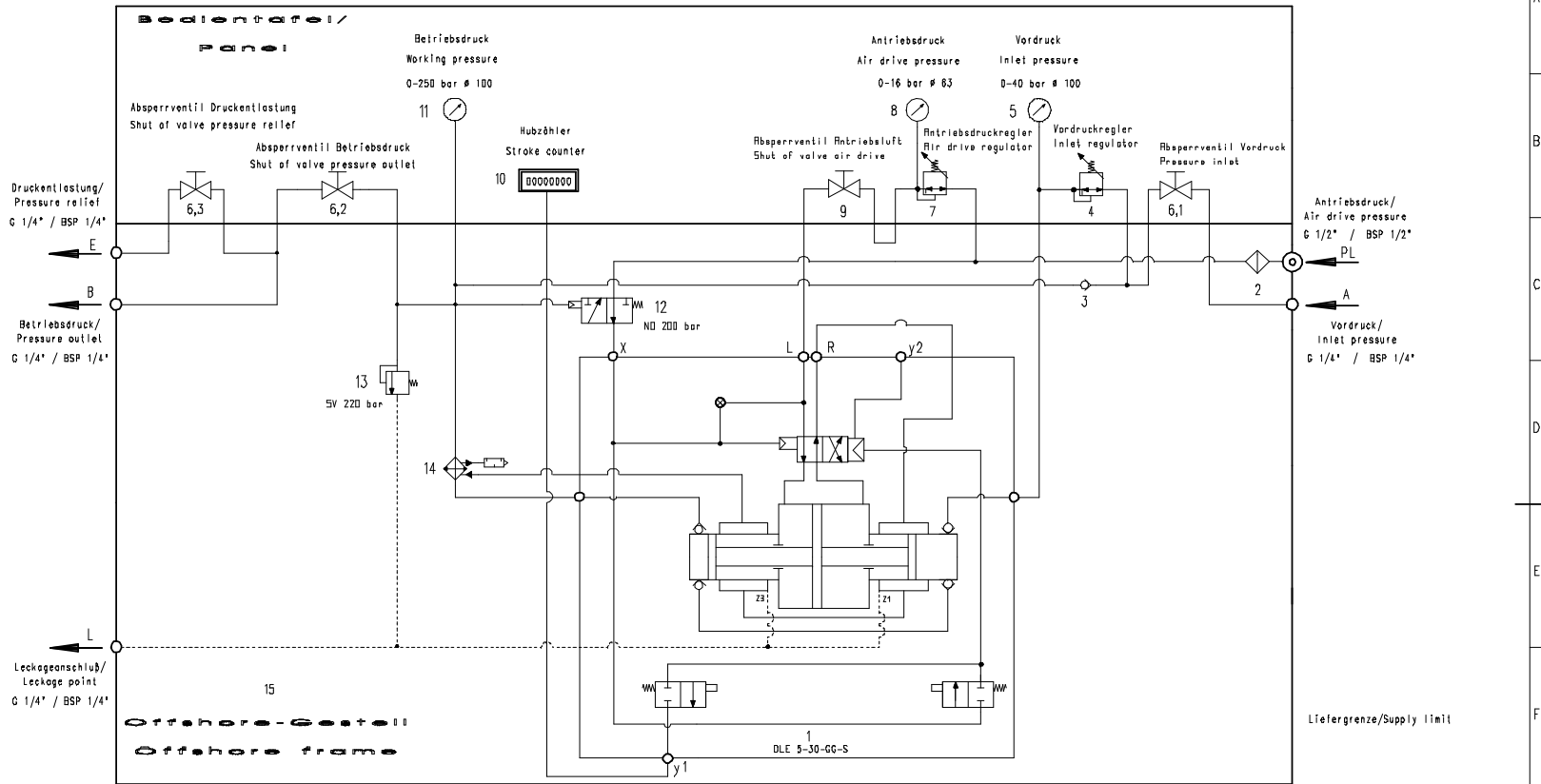
Technical Data

Type:	ROB 5-30
Pressure ratio:	1:5 / 1:30
Outlet Pressure max.:	approx. 200 bar
Inlet Pressure min.:	2 bar
Inlet Pressure max.:	0,5 X pL
Utilities:	Air
Flow max.:	Depending on application
Connection Inlet PL / A	BSP 1/2" / BSP 1/4"
Connection Outlet B:	BSP 1/4"
Dimension W x T x H:	930 x 350 x 500 mm
Weight basic components:	approx. 38 kg
Air drive pressure*:	min. 1 bar / max. 10 bar

*quality class of 3 to 4 (solids/water/oil) according to the recommendation no. 611/1984 by PNEUROP



MAXIMATOR-OXYGEN BOOSTER-STATION



1	2	3	4	5	6
Pos	Menge	Benennung	Description	Werte/Nr.	Zeichnungs-Nr.
1	1	DLE 5-30-GG-S	Booster	3210,0464	VP16_00_135/85/180
2	1	Aktivkohlefilter G 1/2"	Filter	3300,7206	FA12
3	1	Rückschlagventil	Non return valve	3300,2286	RHV08RED_71
4	1	Druckregler 1,5 - 58 bar	Pressure regulator	3300,3090	GLD16MK6/OX
5	1	Monometer 0-40 bar # 100	Pressure gauge	3300,2699	MAN040BAR/02
6.1	1	HD-Ventil 1000 bar G1/4"	2-way angle valve	3770,2112	HD 204_09_Z.01
6.2	1	HD-Ventil 1000 bar G1/4"	2-way angle valve	3770,2112	HD 204_09_Z.01
6.3	1	HD-Ventil 1000 bar G1/4"	2-way angle valve	3770,2112	HD 204_09_Z.01
7	1	Druckregler R26-C4-000	Pressure regulator	3640,0451	VP 54_01_22
8	1	Monometer 0-16 bar (63)	Pressure gauge	3300,0468	VP 999_0016_41
9	1	Kugelhahn G 1/2"	Ball valve	3507,1030	KH 6402_12
10	1	Hubzähler 8-stellig	Stroke counter	3630,1002	VP 16_15_73
11	1	Monometer 0-250 bar # 100	Pressure gauge	3300,2698	MAN0250BAR/02
12	1	Druckschalter (NO/NC) 100-300 bar	oxygen pilot switch	3630,1587	VP 16_17_50-ND
13	1	Sicherheitsventil 207-2749BAR 02 ger.	Safety valve	3630,0098	VP 16_08_61_06
14	1	Kühler spl. BS Sauerstoffgereinigt	Chiller	3430,1673	VP16_05_68_01
15	1	Offshoregestell	Offshore frame	3320,0635	AH 101_503_17

Bei Werten ohne Toleranzangaben:
 Längen- und Winkelmaße nach DIN ISO 3768-m
 Ringe- und Schweißmaße nach DIN ISO 2768-m
 Toleranzen für Form- und Lage nach DIN ISO 2768-x
 Werkstücktoleranz ohne Angaben nach DIN 6784

MAXIMATOR[®]
 MAXIMATOR GmbH
 D-99734 Nordhausen / D-37449 Zorge

Kunde: MAXIMATOR
 Maßstab: 1:1
 Gewicht:
 DLE 5-30-GG-S in SS-Frame
 (Benennung)
 Kompressor - Station
 Oxygen booster - station

Halbzeug: (Zeichnungsnummer) AP 201.189.15 (Artikel-Nr.) 3230.1311
 Werkstoff:
 Erzeugt durch: (Hersteller-Nr.)
 Erzeugt für: (Hersteller-Nr.)

MAXIMATOR®



High-pressure pumps for different liquids (oil, water, emulsion etc.)

- easy to maintain, ex-proof
- low energy consumption
- operating pressures up to max. 5,500 bar



Air Amplifiers

- For increasing air pressure
- Specific air pressure amplification to suit your requirements
- Connection to electrical supply not necessary
- Operating pressure max. 40 bar



Special Test Benches

- Static pressure test
- Bursting pressure test
- Impulse pressure test
- Hoses, pipes, valves, hydraulic components can be tested



Gas Assist Injection Systems

- Compressor stations with pneumatic, electric or hydraulic drive
- Control modules with 2, 4 or 8 valves
- Control modules with integrated booster station
- External core pull control systems



High Pressure Valves, Fittings, Tubing

- Stainless steel design
- Temperatures from -250° C to +650° C for liquids and gases
- Maximum outlet pressures up to 10,500 bar

Your Representative:



MAXIMATOR GmbH

Factory

MAXIMATOR GmbH
Walkenrieder Str. 15
D-37449 Zorge / Germany

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eMail: info@maximator.de

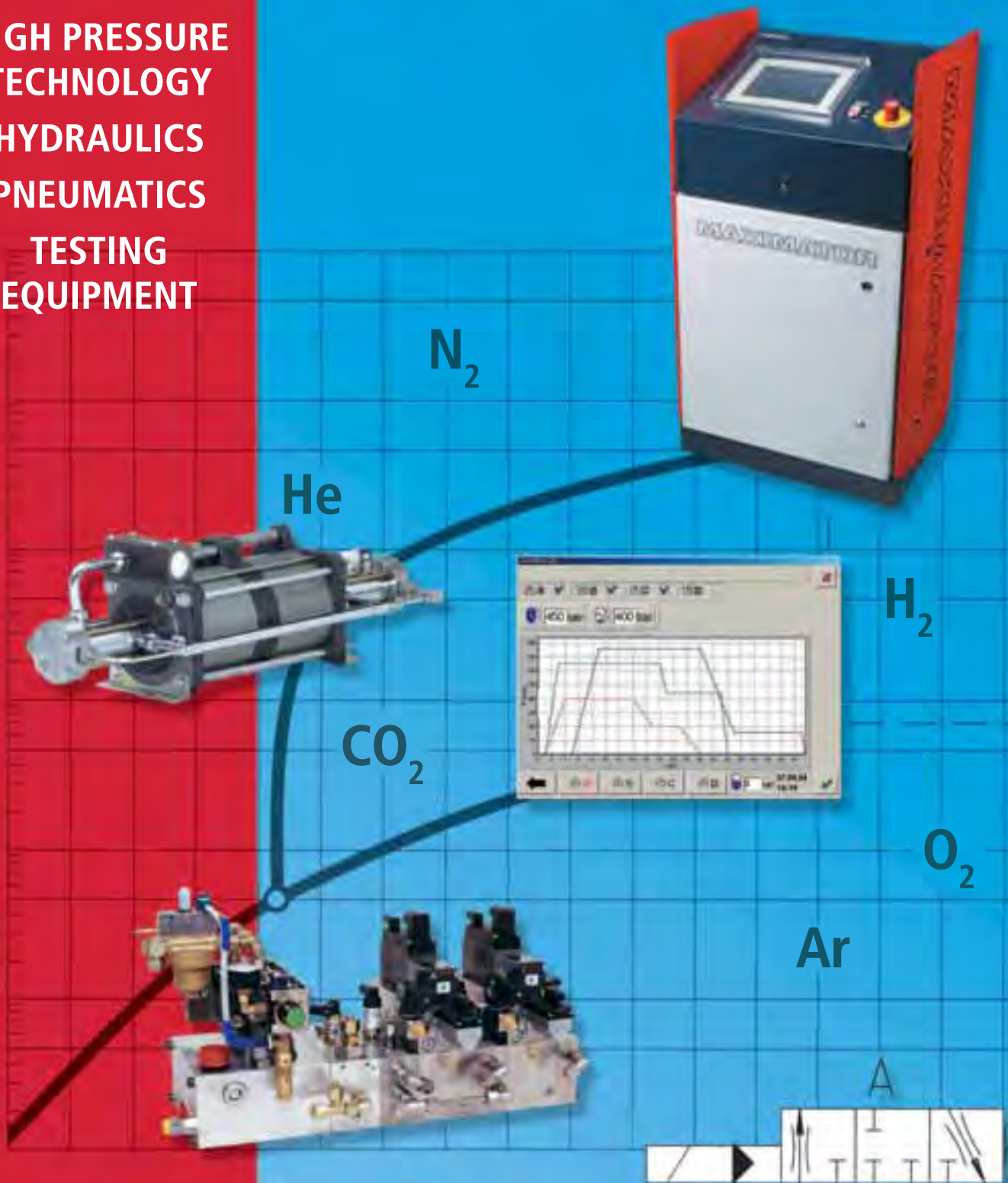
Internet

www.maximator.de

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MAXIMATOR®

HIGH PRESSURE
TECHNOLOGY
HYDRAULICS
PNEUMATICS
TESTING
EQUIPMENT



Gas
pressurising
and controlling



MAXIMATOR GmbH



CEO Henning Willig

MAXIMATOR is one of the worldwide leading manufacturers of air driven liquid pumps, air amplifiers, gas boosters, high pressure valves, fittings and tubing as well as associated products like pressure switches and further components for applications in high pressure technology.

All our systems and units comply with the applicable **UVV [accident prevention]** regulations, the **European Machine, Pressure Equipment** and **ATEX Directives** and, upon request, also conform to **NACE** specifications.

Our strict quality guidelines are certified to **ISO 9001**.

To ensure the continuation of future developments we are working in close cooperation with our customers, material and component suppliers, universities as well as with public and private organisations.



Factory Nordhausen

We employ more than 220 qualified and highly-motivated staff members in our production centres in Zorge and Nordhausen.

We aim to offer the best customer service from our four technical offices in Germany, our qualified partner companies and representations located all over the world.



Factory Zorge

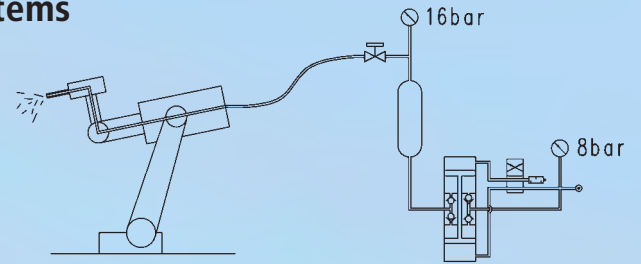


Locations and technical sales offices in Germany



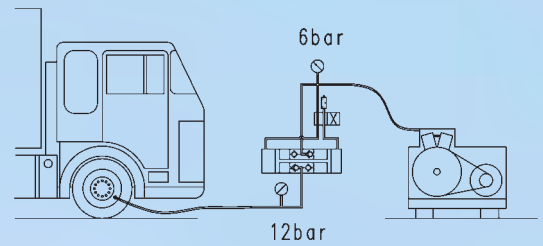
Cleaning of burner systems

Blowing out contaminations through pressure blasting at 16 bar (232 psi)



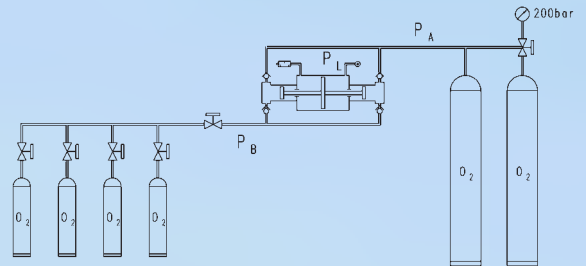
Automotive sector

Filling of tyres with 16-bar pressure.



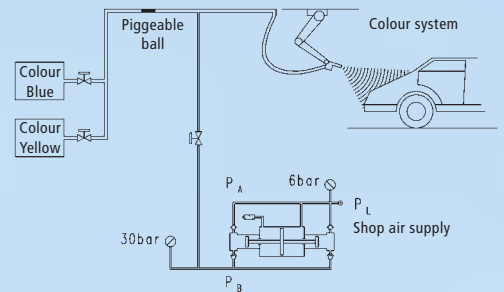
Life-guard service

Transfer of oxygen in small cylinders



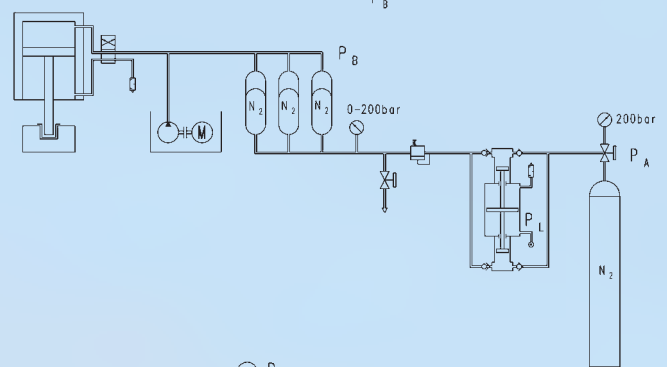
Colour changing systems

The colour will be returned into the tank through a piggeable ball which is charged with pressure



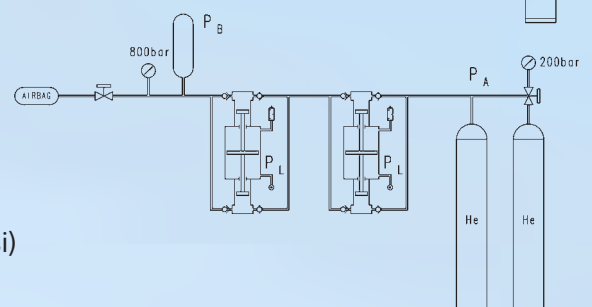
Forming

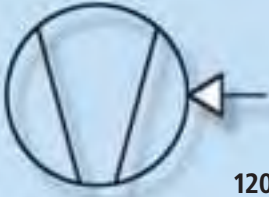
Precharging of hydraulic accumulators by nitrogen



Airbag systems

Charging of airbag systems with Helium to 800 bar (11,600 psi)

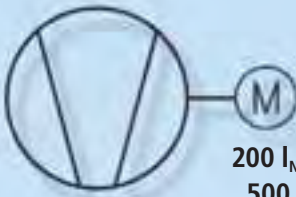




120 I_N/min
500 bar

Gas booster

- air driven
- oil free



200 I_N/min
500 bar

Gas booster

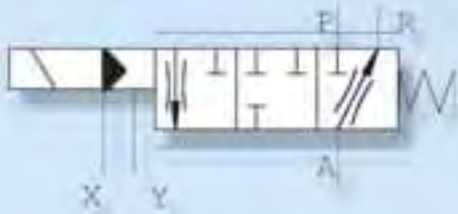
- electric driven
- oil free
- high flow
- low electric consumption



400 I_N/min
500 bar

Gas booster

- hydraulic driven
- oil free



Gas regulating

- high repeat accuracy
- stainless steel
- metallic sealing



Flow measurement

- Coriolis measuring system
- control of gas consumption
- control of gas flow



Field service

- swift logistic
- maintenance contracts
- skilled personnel



Portable Units

We have developed a number of units adapted to the specific working conditions in the oil and gas industries.

Design

Units are protected against mechanical damage by stainless steel frames and can be transported easily. The control and display are installed in an ergonomically designed stainless steel console.



Options:

- Stroke counter
- Chart recorder
- Pressure switches
- Safety valves

Ask for our brochure „On- and Offshore Solutions“.



- Pressure testing with gas
- Re-filling of gases
- Gas recovery
- Filling of nitrogen accumulators
- Supply of seal gas systems
- Gas-assisted systems
- CO₂ foaming
- Re-filling of oxygen cylinders
- Filling of air breathing cylinders
- Leakage testing

Compressor station Type VP/70/700/35

- Versatile use
- Compact design
- Portable
- Easy to operate
- Oil free
- Dry running
- No electrical power required

This compressor station has been designed for universal applications. The unit can be used, e.g. for pressure testing, re-filling of gas cylinders or charging of accumulators.

Operation of the unit is done by connecting gas inlet, gas outlet and compressed air supply without additional installations.

Simple and reliable operation is guaranteed by reduction of parts to only a few components.

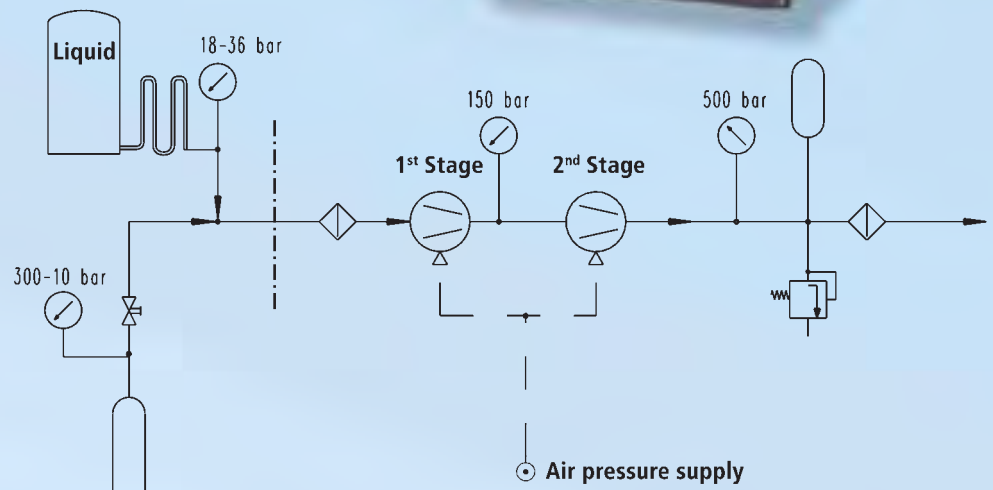


Type VP/120/500/300

- cart-type
- full use of cylinder pressure
- oil- and grease free compression
- without additional electrical energy
- without cooling water
- dry running

This mobile compressor station is a self contained working unit in compact design with pneumatic drive. The compressor conveys gas continuously into a storage tank guaranteeing that the pressure in this storage tank always corresponds to the adjustable limits. Due to the construction of the unit the gas bottles can both be emptied up to 10 bar and gas quantities can be used to their most economical level.

Installed pressure switches, pressure regulators and safety elements guarantee an automatic operation with continuous control.



Technical parameters

Operating pressure	20 – 500 bar, adjustable by pressure regulator
Compressor output at 18 bar inlet pressure	120 l _N /min*
Compressor output at 300 bar inlet pressure	400 l _N /min
Gas outlet	M16 x 1,5 (Ermeto 8S)
Gas inlet	M16 x 1,5 (Ermeto 8S)
Gas storage tank	5 l/ 550 bar
Gas inlet pressure (from evaporator)	18 bar – 36 bar
Gas cylinder supply	300 – 10 bar
Gas cylinder connector 2 Nos.	W24, 32 x 1/14 (200 bar) / 300 bar
Air drive	5 – 11 bar/ IG 1/2" hose nozzle
Air drive consumption	1480 l _N /min – 1980 l _N /min
Dimensions (W/D/H)	(720/560/1230) mm
Casing	cart type with guide rollers
Weight (incl. packaging)	211 kg (315 kg)

* Following VDMA 4362 Tolerance ±5%

Type VE/200/500/10

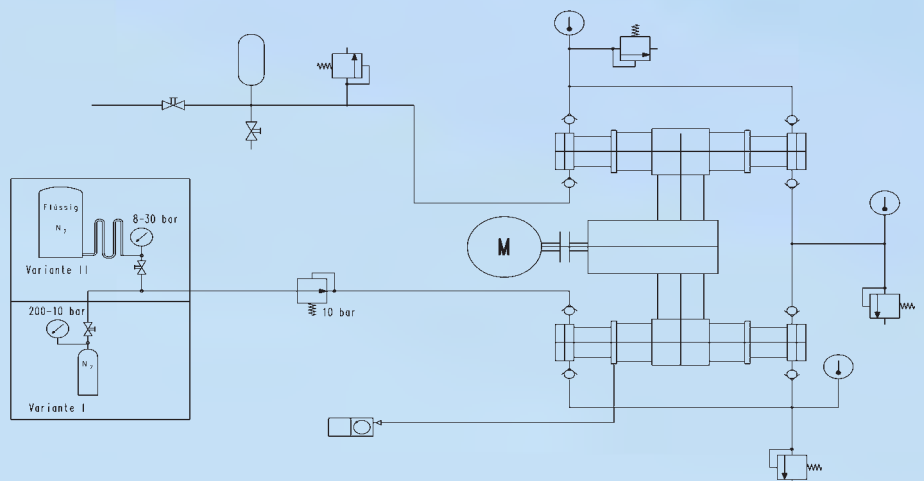
Compressor station with continuous pressure generation

- oil free
- dry running
- electric drive
- without external cooling water connection

This compressor station is a dry running, four-stage electric driven compressor. To prevent oil impurification compression is done without the use of any oil. Due to the choice of the compression stages a high compressor output rate is guaranteed.

Through the use of high pressure stages from our pneumatically driven compressors – which are proven over decades – we can warrant safe operation.

Our construction department has given special attention to the ease of maintenance and ease handling.



Technical parameters

Operating pressure	500 bar
Compressor output	200l _N /min
Gas outlet	M 16x1,5 (4 Nos.)
Gas inlet	M 22x1,5
Gas storage tank	5 l / 550 bar
Gas inlet pressure	10 bar
Electric power	400 V ~ – 15KW
Case	For forklift truck transport
Dimensions (W/D/H)	(1800/1230/965) mm
Weight	450 kg
Cooling (internal)	Water / air

Type VH/400/500

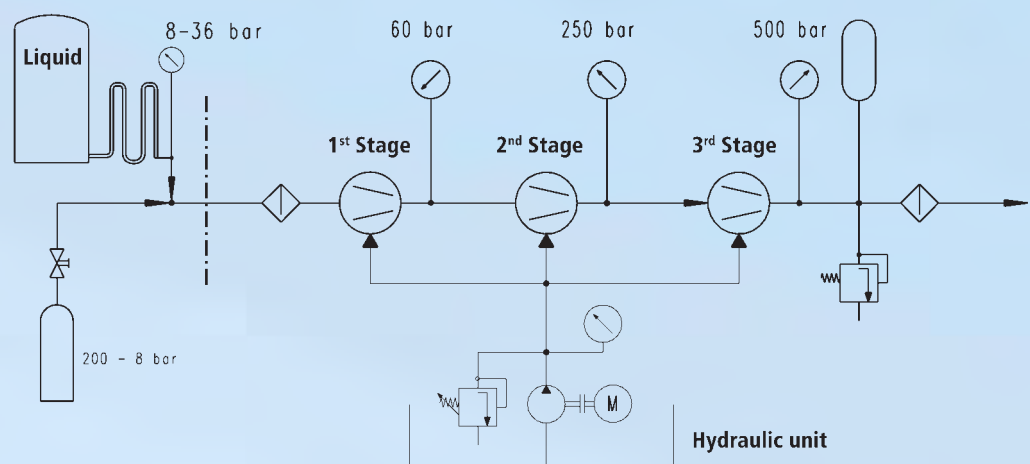
Compressor station with continuous generation of pressure

- Output 400 l_N/min**
- Oil free
- Dry running
- Low noise

This central supply station is a self contained working unit in compact design with hydraulic drive.

The compressor conveys gas continuously into a storage tank guaranteeing that the pressure in this storage tank is always between the adjustable limits.

The proportional technique performs individual drive of the compressors resulting in smooth running and a low noise emission.



Technical parameters

Operating pressure	200 – 500 bar, variable *
Compressor output	400 l _N /min**
Gas storage tank	10 l / 550 bar
Gas inlet pressure	8 – 36 bar
Gas inlet	M22x1,5 24° cone (Ermeto 15L)
Gas outlet	M20x1,5 24° cone (Ermeto 12S) 4 Nos.
Air inlet	1/2" BSP female
Electric power	400 V ~ – 22 kW max.
Cooling water connection	3/4" BSP female / 0,8 m ³ / h / T in = 14° C
Dimensions (W/D/H)	(2180/1000/1900) mm
Footprint (W/D/H)	(4080/1800/1900) mm
Weight	1600 kg

* Factory adjustment: ca. 480 – 430 bar

**Following VDMA 4362 Tolerance ± 5 % (at 14 bar admission pressure)

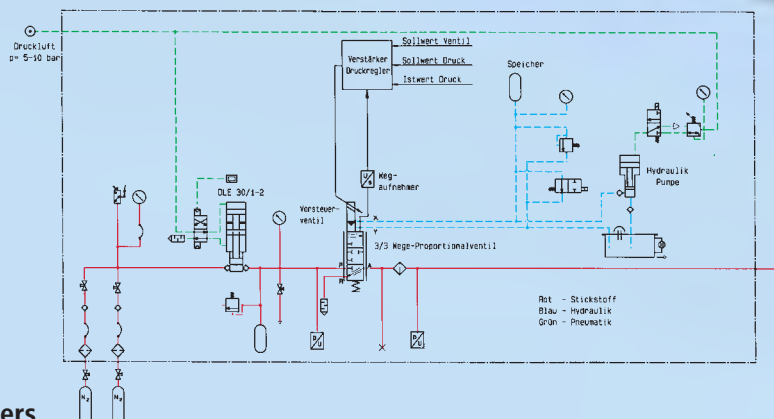
Type RM/500/2/VP/80/500

Control module with continuous pressure generation

- Gas pressure up to 500 bar
- Output volume 80 l_N/min
- Oil free
- Free choice of pressure profiles
- Defined interface

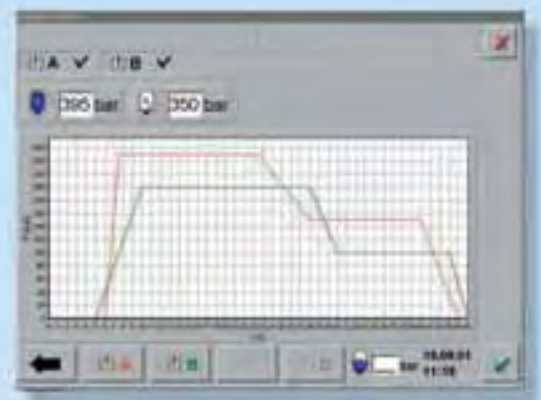
This control module is a self contained working unit. Pressure is generated by a piston compressor with pneumatic drive. The compressor conveys continuously into a storage tank guaranteeing that the pressure in this storage tank always corresponds to the adjustable limits.

The pressure control is carried by a high-dynamic 3/3-port-directional proportional control valve. The pressure flow can be adjusted as a ramp function and makes for targeted gas filling and controlled discharge.



Technical parameters

Valves	2 Nos. stainless steel
Control tolerance	± 500 mbar
Range of control	5 – 500 bar
Response time	28 ms
Pressure stages	10
Data storage	20 pressure profiles
HD filters	3 Nos., 60 µm
Curve representation	2 curves
Dimensions (W/D/H)	(720/560/1230) mm
Gas outlet	M16 x 1,5 (Ermeto 85) 2 Nos.
Gas storage tank	2,5 l / 550 bar
Gas inlet supply	300 – 10 bar
Gas cylinder connection	W24 x 1/14 (300 bar and 200 bar cylinders)
Compressor DLE30-1-2	80 l _N /min, 500 bar
Air drive	min. 8 bar, 1/2" hose nozzle
Air drive consumption	400 – 1480 l _N /min.
Weight (incl. packaging)	275 kg (328 kg)
Electric power	220V / 50Hz (110 V / 60Hz) / 2A



*Following VDMA 4362 Tolerance ± 5 %

Measuring Kit Type GIC/500/1

Description

The unit has to be installed between the compressor and the user.

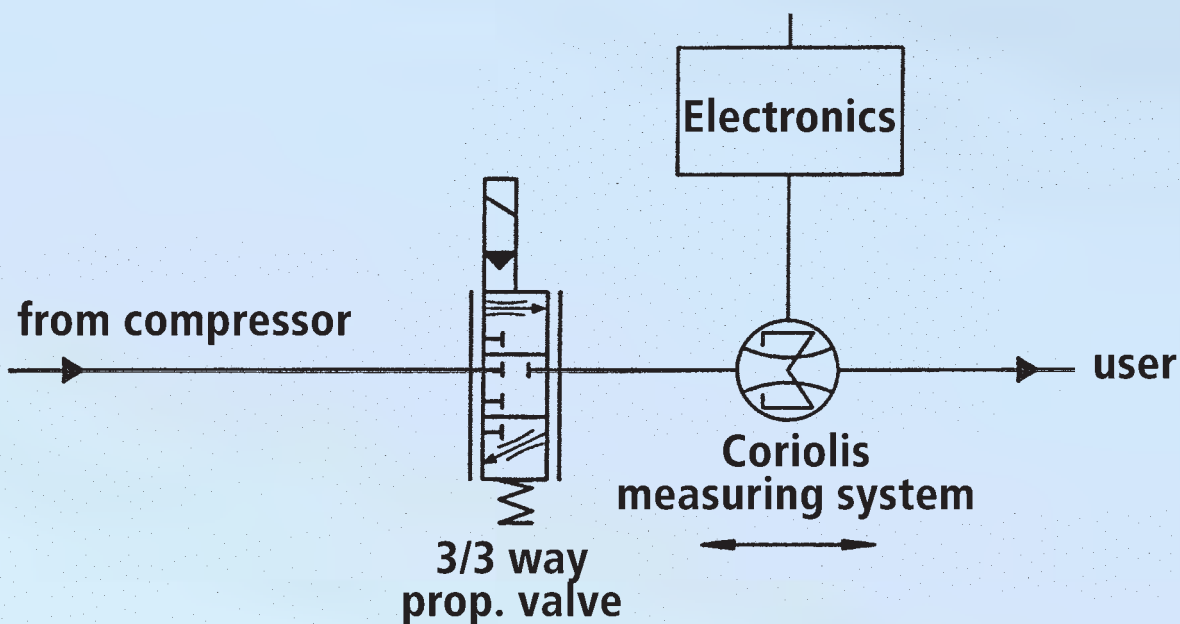
This enables the operator to determine and control the gas consumption very precisely.



Technical parameters

GIC/500/1

Mass sensors	1 Nos. stainless steel		
Messuring range	0 – 500 bar		
Response time	150 ms		
Dimensions (W/D/H)	(578/216/300) mm		
Gas inlet / outlet	M16 x 1,5 (Ermeto 8S)		
Control unit	S 7		
Voltage supply	220 V / 50 Hz		
Accuracy	± 1 % of measured value		
Temperature	Room temperature (RT)		
Flow rate	min. 0.05 l _N /s	max. 25 l _N /s	(108 kg/h)
Weight	16 kg		
l _N conversion	1 g = 0.85 l _N	1 l _N = 1.17 g	



3/3 way proportional valve

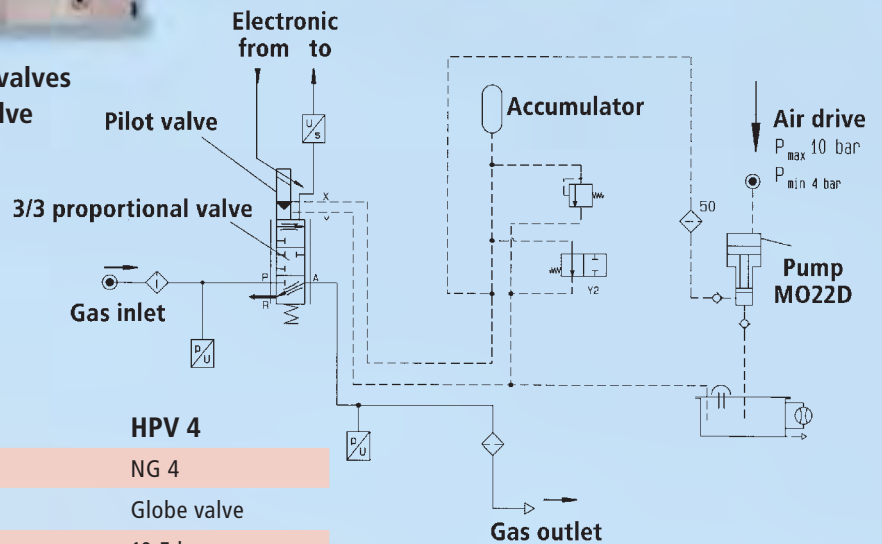
Easy, quick and continuous control of output and pressure for gases and liquids with high repeatable precision are guaranteed by MAXIMATOR's proportional valves. The Valve is produced in NG 4 (HPV 4) and NG 10 (HPV 10) Models and can be supplied with or without integrated pre-control hydraulic supply. Delivery includes control electronics with PID-controller, actual and nominal input as 19" card, adjusted to each individual valve.

- Metallic sealing
- Fail-safe system
- High-dynamically



Control unit with two proportional valves and hydraulic supply for pilot valve

Proportional valve without hydraulic supply



Technical parameters

	HPV 10	HPV 4
Diameter nominal	NG 10	NG 4
Design	Globe valve	Globe valve
Weight	20,5 kg	10,5 kg
Dimensions (W/D/H)	300 x 105 x 230 mm	290 x 80 x 180 mm
Orifice	10 mm	4 mm
Stroke	7 mm	4 mm
Max. working pressure	750 bar	750 bar
Temperature	-10 to +80° C	-10 to +80° C
Installation position	any	any
Sealing	metallic	metallic
Protection class	IP 65	IP 65
Filtration	60 microm	60 microm

MAXIMATOR®



High-pressure pumps for different liquids (oil, water, emulsions, etc.)

- easy to maintain, explosion-proof
- low energy consumption
- operating pressures up to max. 5,500 bar



Compressed-air boosters

- for compression of pressurised air
- isolated pressure boosting for individual consumers
- no electrical installation
- operating pressures up to max. 40 bar



Test stands for pressure testing, burst pressure testing and pulse testing

- extension hoses, piping
- valving, fittings, bolting
- pressure gauges, pressure switches
- pressure transducers, tanks
- special test stands



Packed pumps for oil and water

- pressures up to 5,500 bar
- easy to maintain
- no electrical power required
- holds pressure without power consumption
- easy to install



Valves, tubing, fittings for high-pressure applications

- stainless steel components in excellent workmanship
 - temperature range $-250\text{ }^{\circ}\text{C}$ to $+650\text{ }^{\circ}\text{C}$
 - max. operating pressures 10,500 bar

Your Representative:



MAXIMATOR GmbH

Factory

MAXIMATOR GmbH

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eMail: info@maximator.de

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HYDRAULICS
PNEUMATICS
TESTING
EQUIPMENT



MAXIMATOR GmbH

Liquid or gas supply for
mechanical fluid or gas seals

Support Systems for Mechanical Fluid Seals

Hydraulic seal supply unit

Main Benefits:

- Cost reduction because of supplying several mechanical fluid sealings with only one MAXIMATOR Unit
- 250 litre tank volume
- Complete process reliability as the unit incorporates a stand by pump
- Automatic changeover to stand by pump
- No electrical installation (only control elements)
- Visible and audible alarm device in case of system is changing over to stand by pump
- ATEX approved



Air heat exchanger

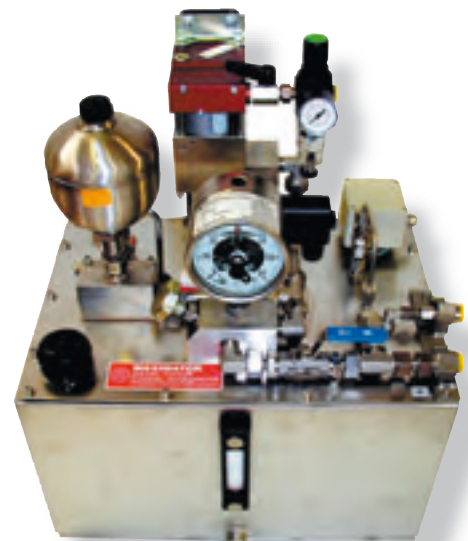
Main Benefits:

- Laser welded ribbed-coiled tube
- High cooling capacities
- Low flow resistance of the sealing medium
- Wetted parts from stainless steel (1.4571)
- Accumulator bladder made from Viton (FKM)
- ATEX approved
- Cost reduction due to air cooling, no further water supply required

External circulation system

Main Benefits:

- Cooling coil inside the Tank
- Cost reduction because of supplying several mechanical fluid sealings with only one MAXIMATOR Unit
- No electrical installation (only control elements)
- ATEX approved

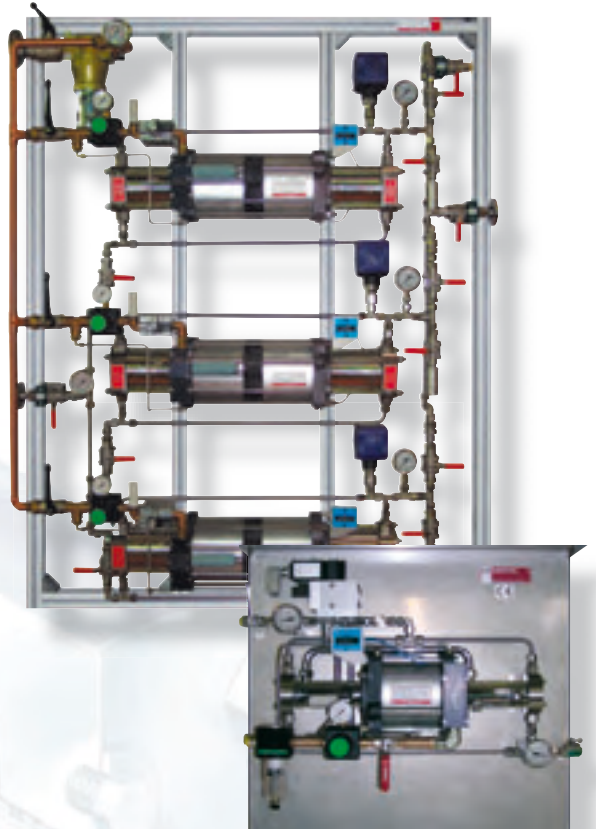


Support Systems for Mechanical Gas Seals

Gas seal supply unit

Main Benefits:

- Complete process reliability as the unit incorporates a stand by booster
- High flow capacities (Boosters connected in parallel)
- Maintenance or exchange of one booster possible without stopping the process
- Wetted parts made from stainless steel / EPDM
- Monitoring of each booster
- Zero energy consumption after final pressure is attained



Gas monitoring systems



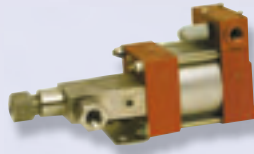
Main Benefits:

- Regulation of the nitrogen pressure in accordance with the Mechanical Gas Seals
- Pressure monitoring
- Display of the flow capacity in accordance with the Mechanical Gas Seals
- Early wear detection of the mechanical gas seal

Execution samples:

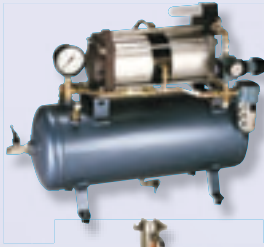


MAXIMATOR®



High-pressure pumps for oil, water, emulsions

- Minimum maintenance, explosion-proof
- Low energy consumption
- Operating pressures up to 79,750 psi (5,500 bar)



Compressed air amplifiers

- For increasing air pressure
- Specific air pressure amplification custom to your application
- Pneumatically powered – no electric required
- Operating pressures up to 580 psi (40 bar)



High Pressure Compressors

- For pressurizing gases (nitrogen, oxygen, inert gases)
- Simple operation
Intrinsically safe and explosion proof
pneumatically powered
- Operating pressures up to 21,750 psi (1,500 bar)



Testing and production rigs for autofrettage, pressure, burst pressure and pulse testing

- Expansion hoses, tubing
- Injector assemblies
- Common rails, fuellines
- Valves, fittings, bolted unions
- Pressure gauges, pressure-operated switches
- Pressure transducers, vessels
- Special test rigs



Valves, tubing, accoutrements for high-pressure technology

- Stainless steel components in excellent workmanship
- Temperature range -250 °C to +650 °C
- Operating pressures up to 152,000 psi (10,500 bar)

Your Representative:



MAXIMATOR GmbH

Factory

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Walkenrieder Straße 15
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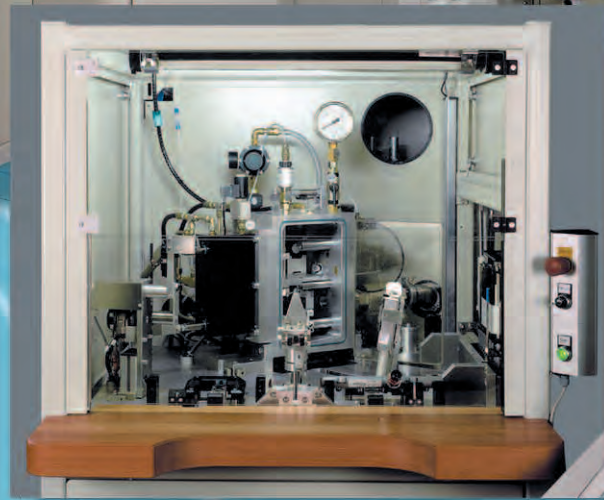
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MAXIMATOR GmbH

Test Benches

MAXIMATOR has an extensive know-how concerning concept, development, construction and manufacturing of test benches and pressure-generating systems.

Hoses, pipes, tanks, accumulators, valves, fittings, plastic and ceramic parts as well as special components of the diesel injection technique (rails, nozzles, nozzle brackets injectors) and other vehicle components (e.g. air bag accumulators, camshafts and intermediate shafts, gears) are tested or manufactured with MAXIMATOR stations successfully.

As complete supplier with many years of experiences concerning components, power packs and systems we offer our customers individual solutions tailored to their specific requirements. From the making out of the performance specification up to the setting into operation and the training of the personnel, you will be accompanied by well versed engineers and technicians for obtaining an optimum solution of your test task.



MAXIMATOR high-pressure station

MAXIMATOR test benches and pressure-generating systems obtain pressures up to maximally 15,000 bar and can be operated with a multitude of liquids, such as oil, water, water-to-oil mixture(1:9)), pentosin, brake fluid or gases (e.g. nitrogen, oxygen, helium).



MAXIMATOR pulse test bench



Our delivery programme comprises:

- Pressure and bursting pressure test benches
- Pulse and durability test benches
- Leak test benches
- Functional test benches
- High-pressure generating systems
- Pressure gauge adjusting systems
- Autofrettage systems
- Mandrel extraction machines for hoses
- Air bag filling and controlling systems

The worldwide service offers you, among others, erection and setting into operation of the system, training of the staff and rotational maintenances.

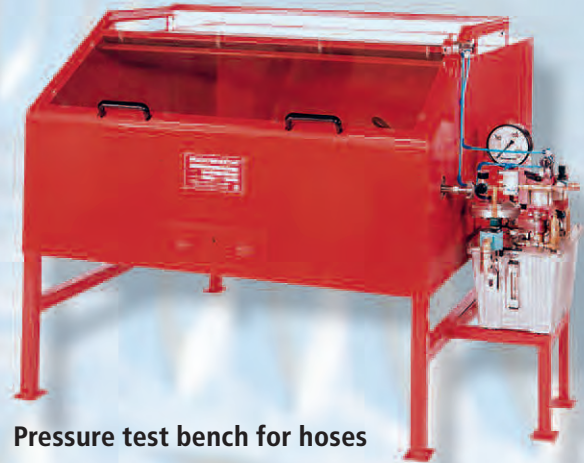
As development partner of the automobile and components supplying industry we are well acquainted with the demands on test, recording of measured data and documentation of the test results and test data management. On your request, we also take on the measuring equipment check and the calibration of the installed measuring devices.

In our service center we can realize for you pressure, bursting pressure and pulse pressure tests as well as autofrettage services. Feasibility studies, component inspections, test and autofrettage of pilot series or small batches can be realized without any problem. This offer range will be extended continuously. Please consult us.

Pressure test benches

Pressure test bench for hoses and tanks

Maximum test pressure:	2,000 bar
Number of the test pieces:	1 pressure port
Test medium:	Mineral oil or water-oil emulsion
Generation of pressure:	MAXIMATOR pumps
Energy demand:	compressed air min. 6 bar
Dimensions of the test chamber (width x depth x height):	approx. 1,500x1,600x480 mm



Pressure test bench for hoses

Pressure test bench for hose lines



Pressure and bursting pressure test bench for hose lines

Maximum test pressure:	2,500 bar
Number of the test pieces:	1 pressure port
Test medium:	Hydraulic oil
Generation of pressure:	Pressure intensifiers
Geometric displacement volume:	257.5 cm ³
Energy demand:	3.2 kW
Dimensions of the test chamber (width x depth x height):	approx. 1,500x800x700 mm

Pressure and leak test bench for expansion hoses

Maximum test pressure:	300 bar
Number of the test pieces:	maximum 8 pieces
Test medium:	Water, emulsion, apresol
Generation of pressure:	MAXIMATOR pumps
Energy demand:	5.5 kW
Dimensions of the test chamber (width x depth x height):	approx. 1,720x1,150x2,000 mm

Pressure test bench for expansion hoses



Other pressure ranges, test media, pressure generations or dimensions are available on demand.

Burst pressure test benches

Bursting pressure tests at undercarriage hoses and hydraulic components with media tempering

Maximum burst pressure: 630 bar

Number of the test pieces: 1 pressure port

Test medium: Pentosin-CHF 11s

Generation of pressure: MAXIMATOR pump and pressure intensifier

Energy demand: 3 kW

Dimensions of the test chamber (width x depth x height): approx. 1,500x800x750 mm



Bursting pressure test bench for undercarriage hoses



Bursting pressure test bench for air bag cold gas tank

Burst pressure and pulse pressure tests at air bag cold gas tanks

Maximum burst pressure: 1,400 bar

Maximum pulse pressure: 700 bar

Number of the test pieces: 1 pressure port

Test medium: Water, water-glycol

Pressure generation: MAXIMATOR pump and pressure intensifier

Dimensions of the test chamber (width x depth x height): approx. 1,250x750x1,000 mm

Pressure and burst pressure tests at plastic components with temperature and mass flow metering and evaluation

Maximum bursting pressure: 20 bar

Number of the test pieces: 1 pressure port

Test medium: Tap water

Generation of pressure: MAXIMATOR pumps

Energy demand: 3.5 kW

Dimensions of the test chamber (width x depth x height): approx. 1,450x600x750 mm



Burst pressure test bench for plastic components

Pulse test benches

Pulse and fatigue tests at components

Max. pulse pressure (dynamic):	20 bar (sine) 5 bar (trapezoid)
Max. test pressure (static):	150 bar
Test medium:	Shell Myrina TX
Generation of pressure:	Pressure intensifier
Geometric displacement volume:	125 cm ³
Energy demand:	15 kW
Dimensions of the test chamber (width x depth x height):	approx. 1,200x600x800 mm



Pulse test bench for filter housings

Pulse tests at high-pressure components of the diesel injection technique

Maximum pulse pressure:	4,000 bar
Test medium:	Hydraulic oil HLP 46
Generation of pressure:	Pressure intensifier
Geometric displacement volume:	18 cm ³
Energy demand:	48 kW
Dimensions of the test chamber (width x depth x height):	approx. 1,050x1,200x1,000 mm



Pulse test bench for high-pressure components

Pulse tests at hose lines

Maximum pulse pressure:	180 bar
Test medium:	Pentosin and ATF oils
Generation of pressure:	Pressure intensifier $i = 0,79$
Geometric displacement volume:	900 cm ³
Energy demand:	20 kW
Dimensions of the test chamber (width x depth x height):	approx. 900x700x800 mm



Pulse test bench for hose lines

Other pressure ranges, test media, pressure generations or dimensions are available on request.

Leak test benches

Leak tests at pressure valves for injection pumps

Maximum test pressure:	1,450 bar
Number of test pieces:	2
Test medium:	Test oil V 1404
Generation of pressure:	MAXIMATOR pumps
Energy demand:	1 kW
Dimensions of the test chamber (width x depth x height):	approx. 700x500x600 mm



Leak test bench for pressure valves



Leak test bench for expansion hoses

Leak test at expansion hoses

Maximum test pressure:	40 bar
Number of the test specimen:	2
Test medium:	Test oil Apresol
Generation of pressure:	MAXIMATOR pumps
Energy demand:	1 kW
Dimensions of the test chamber (width x depth x height):	approx. 1,000x600x250 mm



Leak test bench for Common Rails

Leak test bench for Common Rails

Maximum pressure:	2,500 bar
Test medium:	Test oil V 1407
Generation of pressure:	Pressure intensifier
Geometric displacement volume:	250 cm ³
Energy demand:	16 kW
Dimensions of the test chamber (width x depth x height):	approx. 1,360x78x950 mm

Functional test benches

Determination of the flow characteristic of cooling water valves and heating valves

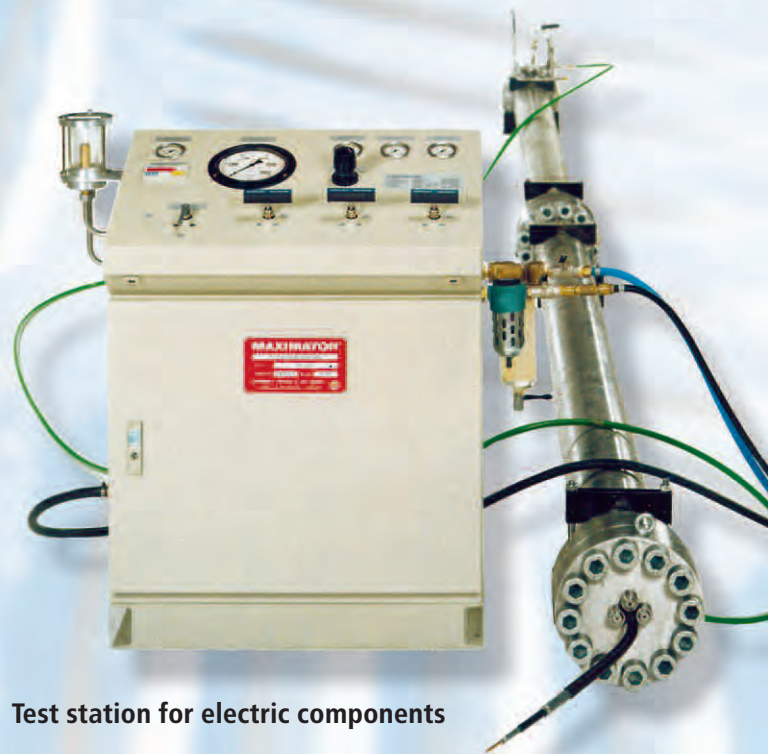
Maximum test pressure:	3.5 bar, 85° C
Test medium:	Water – glycol 50 : 50
Generation of pressure:	Gear pump
Energy demand:	75 kW
Dimensions (WxDxH):	approx. 1,780x1,150x1,674 mm



Test bench for determining the flow characteristic of valves

Functional and fatigue tests at electric components

Maximum test pressure:	800 bar
Test medium:	Water
Generation of pressure:	MAXIMATOR pump
Voltage supply:	220 V
Compressed air:	min. 6 bar
Dimension of the high-pressure generating system: (width x depth x height):	approx. 800x1,200x1,120 mm
Dimension of the high-pressure chamber (width x depth):	approx. 350x7,720 mm



Test station for electric components



Test bench for gears

Inspection of hydraulic gears

Maximum test pressure:	110 bar
Maximum volumetric rate:	60 l/min
Test medium:	ATF oil
Generation of pressure:	Screw pump
Energy demand:	38 kW
Dimensions (WxDxH):	approx. 4,000x2,200x1,650 mm
Dimensions of the test chamber (width x depth x height):	approx. 2,000x1,120x795 mm

Other pressure ranges, test media, pressure generations or dimensions are available on request.

High pressure generating systems

Pressure generation in compact design

Maximum operating pressure:	2,000 bar
Operating medium:	Water
Generation of pressure:	MAXIMATOR pump
Energy demand:	approx. 4.5 mN ³
Dimensions (WxDxH):	approx. 1,500x500x1,200 mm



High-pressure generation for the water-jet cutting

Pressure generation for the production of mounted camshafts

Maximum operating pressure:	4,000 bar
Operating medium:	Mineral oil VG 46 DIN 51519
Generation of pressure:	3x pressure circuits (for every single pressure intensifier 1 pressure circuit)
Geometric displacement volume each pressure intensifier:	23 cm ³
Energy demand:	28 kW
Dimensions (WxDxH):	approx. 1,600x1,120x1,670 mm



High-pressure generation for the production of camshafts

Pressure generation for the production of steering shafts and components

Maximum operation pressure:	550 bar
Operating medium:	Mineral oil / HFA
Generation of pressure:	Pressure intensifier
Geometric displacement volume:	2,800 cm ³
Energy demand:	34 kW
Dimensions (WxDxH):	approx. 2,340x1,620x2,350 mm



High-pressure generation for the production of steering shafts

Autofrettage systems

Autofrettage of components of the diesel injection technique (injectors, nozzles, nozzle brackets etc.)

Maximum autofrettage pressure:	10,000 bar
Operating medium:	Hydraulic fluid type Typ HFC (Ultra-Safe 360)
Generation of pressure:	Pressure intensifier
Geometric displacement volume:	70 cm ³
Energy demand:	8 kW
Dimensions of the test chamber (width x depth x height):	approx. 700x600x750 mm



Autofrettage system for high-pressure loaded vehicle components



Autofrettage system for high-pressure tubing

Autofrettage of diesel injection lines

Maximum autofrettage pressure:	6,000 bar
Operating medium:	Test oil ISO 4113
Generation of pressure:	Pressure transducer
Geometric displacement volume:	100 cm ³
Energy demand:	0.5 kW
Dimensions of the test chamber (width x depth x height):	approx. 1,250x500x1,400 mm

Autofrettage of components for pressure transducers, sensors and of components of the diesel injection technique

Maximum autofrettage pressure:	15,000 bar
Operating medium:	Sebacate
Generation of pressure:	Pressure intensifier
Geometric displacement volume:	16 cm ³
Energy demand:	13 kW
Dimensions of the test chamber (width x depth x height):	approx. 1,000x1,000x1,100 mm

Autofrettage system for pressure transducers



Other pressure ranges, test media, pressure generations or dimensions are available on request.



Mandrel extraction system



Mandrel extraction system for hose lines

Mandrel extraction and testing of high-pressure hose lines

Maximum mandrel extraction pressure: 1,400 bar
 Maximum test pressure: 1,400 bar
 Operating medium: Water emulsion
 (Water 15dt degrees of hardness)

Generation of pressure: MAXIMATOR pump DPD 200
 Energy demand: 78 kW
 Dimensions of the complete system:
 (widthxdepthxheight): approx. 20,000x20,000x4,000mm

Mandrel extraction and testing of high-pressure hose lines

Maximum mandrel extraction pressure: 1,400 bar
 Maximum test pressure: 1,400 bar
 Operating medium: Water emulsion
 (Water 15dt degrees of hardness)
 Generation of pressure:
 MAXIMATOR pump DPD 200
 Energy demand: 13 kW
 Dimensions of the complete system
 (width x depth x height):
 approx. 6,000x7,000x4,000 mm



Mandrel extraction system for hose lines

Air bag filling and control systems

Gas compression with air driven boosters

Maximum operating pressure:	200 – 500 bar
Maximum delivery rate:	400 standard litres per minute (dependent on inlet pressure)
Operating medium:	Nitrogen, helium, argon
Driving medium:	Compressed air
Generation of pressure:	MAXIMATOR compressors
Dimensions (WxDxH):	720x560x1,230 mm



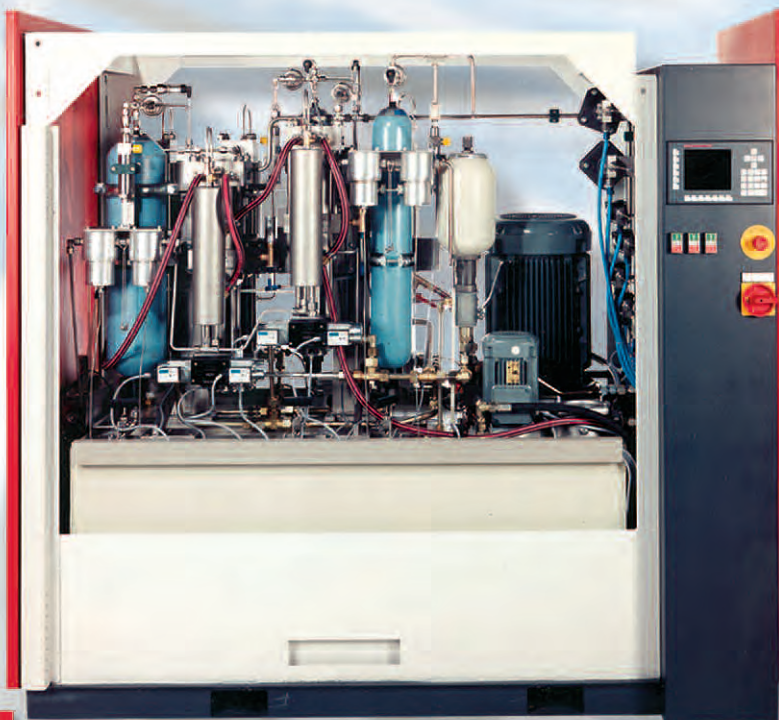
Air driven gas booster station

Gas pressure control with high reproducibility

Pressure control range:	5 – 500 bar
Number of valves:	2 pieces
Control tolerance:	± 500 mbar
Reaction time:	28 ms
Pressure steps:	10
Voltage supply:	220 V
Dimensions (WxDxH):	720x560x1,230 mm



Control module with 2 valves



Gas compression with hydraulically operated compressor

Maximum operating pressure:	200 – 500 bar
Maximum delivery rate:	250 standard litres per minute
Operating medium:	Nitrogen, helium, argon
Generation of pressure:	MAXIMATOR gas compressor (in 3 stages)
Energy demand:	11 kW max.
Dimensions (WxDxH):	2,180x1,000x1,900 mm

Other pressure ranges, test media, pressure generations or dimensions are available on request.

MAXIMATOR offers an extensive service – worldwide.

Our offer:

- Planning & development
- Manufacturing, setting into operation
- Maintenance, repair, training



Test service in your facility:

- Generation of pressure
- Pressure test
- Measuring equipment check



Upgrade through autofrettage:

- Autofrettage in our house on your request
- Components for the generation of pressure
- Complete systems

Test service in our works on our most modern systems:

- Pressure tests
- Bursting pressure tests
- Fatigue tests



Process consult:

- Test procedure
- Gas assist injection technique
- Mold design



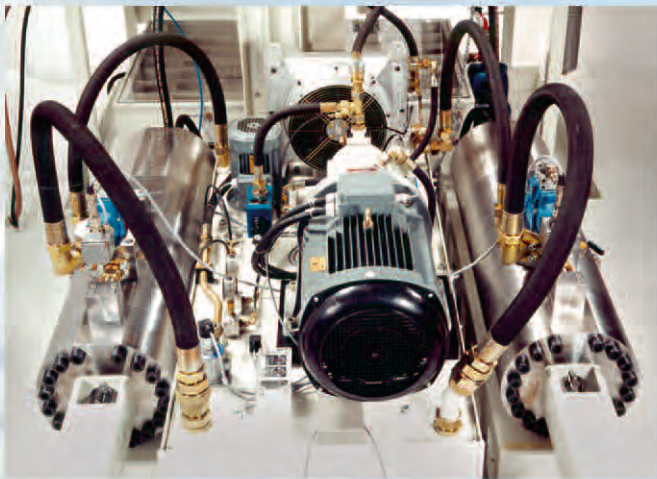
MAXIMATOR *Service*

MAXIMATOR – Complete solutions for high-pressure technique

Components

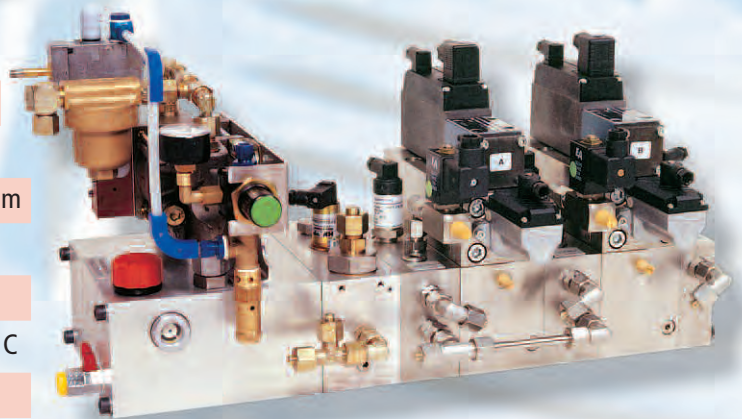
Pressure intensifiers with pneumatic or hydraulic drive

Maximum operating pressure:	15,000 bar
Frequencies:	up to approx. 30 cps
Operating medium:	Oil, water, HFA, HFC



Proportional valves for liquids and gases

Nominal size:	HPV 10	HPV 4
Weight:	20.5 kg	10.5 kg
Dimensions (WxDxH):	300x105x230 mm	290x80x180 mm
Norminal width:	10 mm	4 mm
Max. operating pressure:	1000 bar	1000 bar
Operating temperature:	-10° C to +80° C	-10° C to +80° C
Sealing:	metallic	metallic



High-pressure components

- Valves – fittings – tubing
- Fittings, screw fittings
- Non-return valves
- Air operated diaphragm and piston valves
- Pressure gauges, hoses, adapters
- As well as other extensive accessories

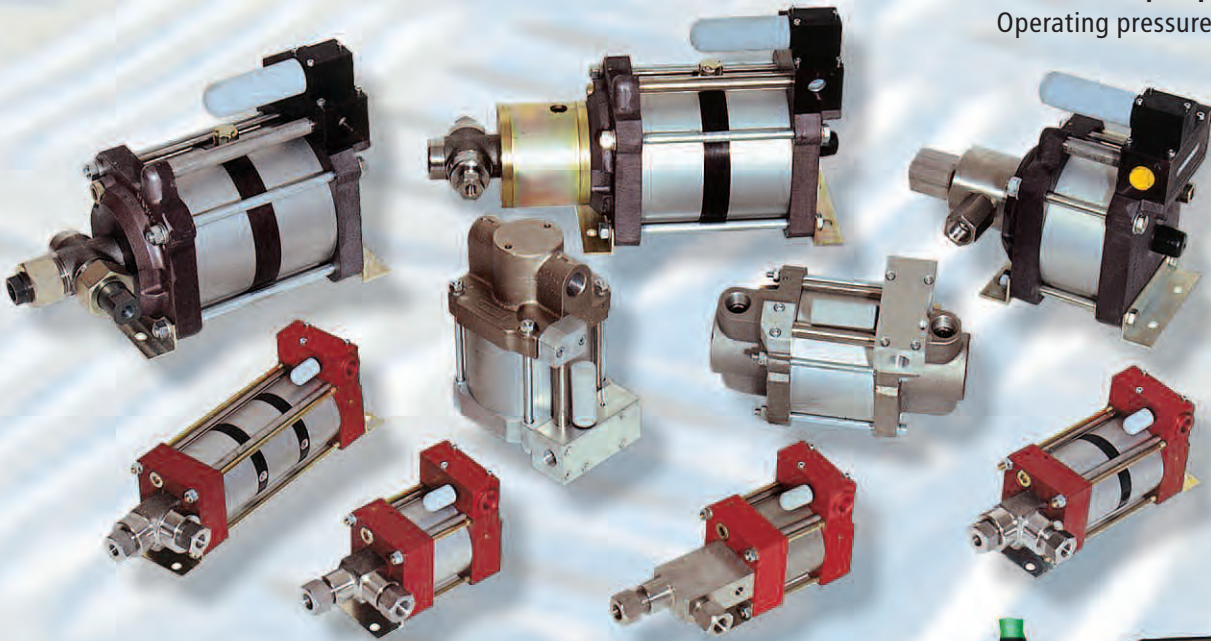
Maximum operating pressure:	10,500 (15,000) bar
Material:	Stainless steel
Nominal widths:	0,15 – 17,48 mm



Other pressure ranges, test media, pressure generations or dimensions are available on request.

MAXIMATOR stands for pressure increase with liquids

Air driven liquid pumps
Operating pressure up to 5,500 bar



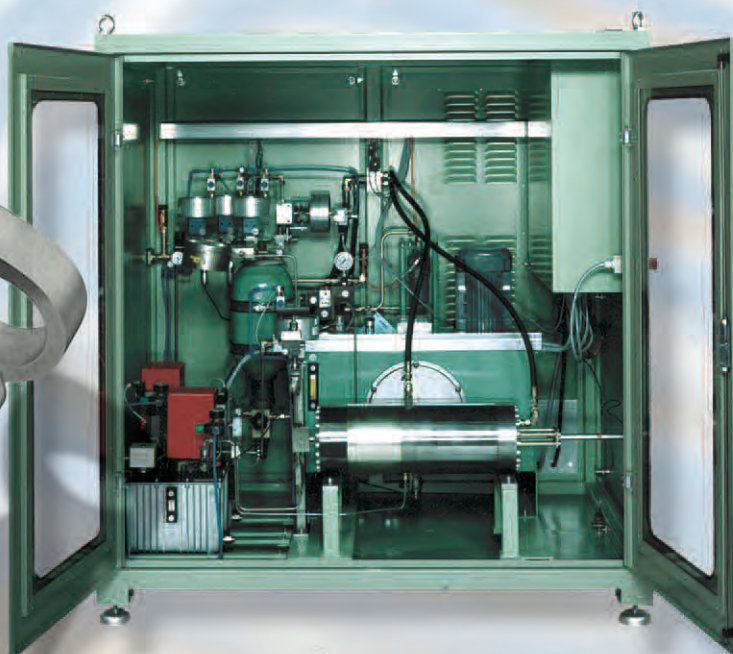
Hydraulic power packs for oil, water and other media

- Tool hydraulic systems
- Hydraulic clamping systems
- Water hydraulic systems

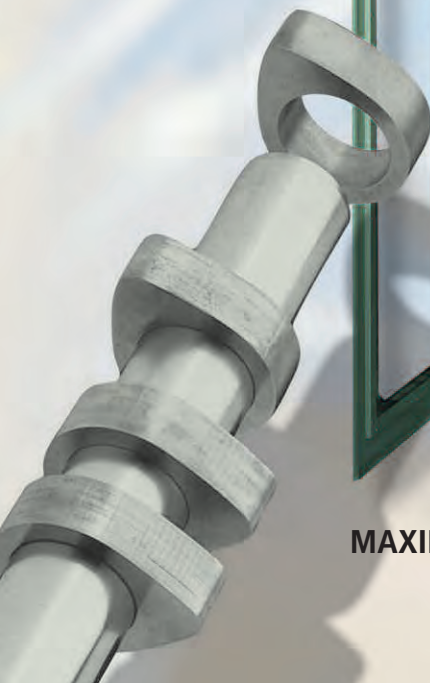


Test benches and pressure-generating systems

- Pressure, burst pressure and pulse test
- Leak and functional tests
- Autofrettage



MAXIMATOR – Complete solutions for high-pressure technique



MAXIMATOR stands for pressure increase of gases

Air driven boosters and gas compressors
Operating pressures up to 1,300 bar



Booster stations and compressor stations

- Local pressure increase of industrial compressed air
- Cylinder transfer
- Charging of accumulators

Compressor, test and control systems

- Central supply for gas assist injection systems
- Test and control units for compressed air and gases
- Complete systems for filling air bag cartridges



MAXIMATOR – Complete solutions for high-pressure technique

MAXIMATOR®

High-pressure pumps for different liquids (oil, water, emulsion etc.)

- easy to maintain, ex-proof
- low energy consumption
- operating pressures up to max. 5,500 bar

Compressed Air Amplifiers

- For increasing air pressure
- Specific air pressure amplification to suit your requirements
- Connection to electrical supply not necessary
- Operating pressure max. 40 bar

High Pressure Compressors

- For pressurizing gases (nitrogen, oxygen, inert gases)
- Simple handling
- Intrinsically safe and explosion proof i. e. not electromotive, but pneumatically powered
- Operating pressure max. 1,000 bar

Gas Assist Injection Systems

- Compressor stations with pneumatic, electric or hydraulic drive
- Control modules with 2, 4 or 8 valves
- Control modules with integrated booster station
- External core pull control systems

High Pressure Valves, Fittings, Tubing

- Stainless steel design
- Temperatures from -250° C to +650° C for liquids and gases
- Maximum outlet pressures up to 10,500 bar



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MAXIMATOR®

HIGH PRESSURE
TECHNOLOGY
HYDRAULICS
PNEUMATICS
TESTING
EQUIPMENT



MAXIMATOR GmbH

Gas Assisted Moulding (GID)
Water Assisted Moulding (WID)

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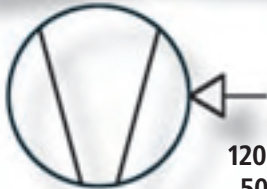
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Products and services



Consultancy

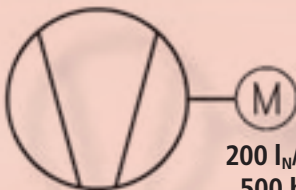
- Mould design
- Patents
- Process design



120 l_N/min
500 bar

N₂ Compressor, pneumatic drive

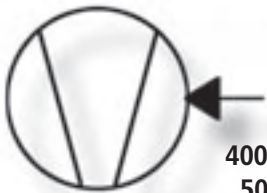
- free of oil and grease
- proprietary manufacturing



200 l_N/min
500 bar

N₂ Compressor, electric drive

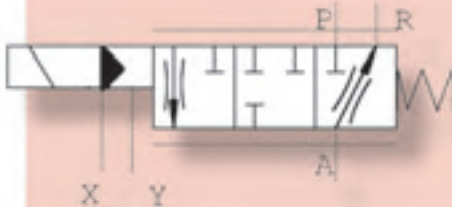
- free of oil and grease
- high performance
- low energy



400 l_N/min
500 bar

N₂ Compressor, hydraulic drive

- free of oil and grease



N₂ Control

- high reproducibility – stainless steel
- fast response time
- suitable for water-assisted systems (WID)
- metallic sealing



H₂O
Injektion

WID - Water Assisted Molding

- Volume-flow and pressure-control
- Compact design for 2 cavities
- Tik-WIT qualified with integrated injector control and blow out function



N₂ Injector

- self-cleaning function
- fast replacement with open mould



Field service

- swift logistic
- maintenance contracts
- skilled personnel



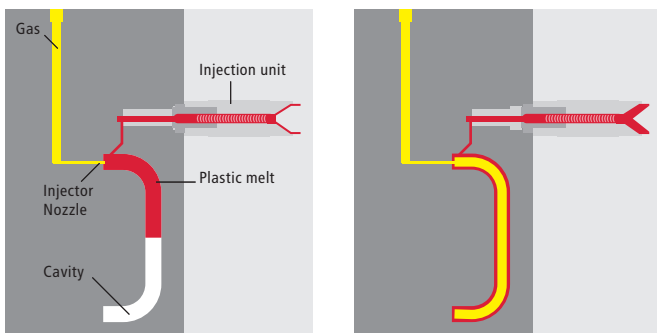
Gas-assisted Systems

This special technology is applied in plastics injection moulding and provides the following advantages:

- Reduction of cycle times
- Prevention of sunk spots
- Reduction of locking forces
- Low-warp mouldings
- Simplified mould design
- Reduction of ridge formation
- Material savings

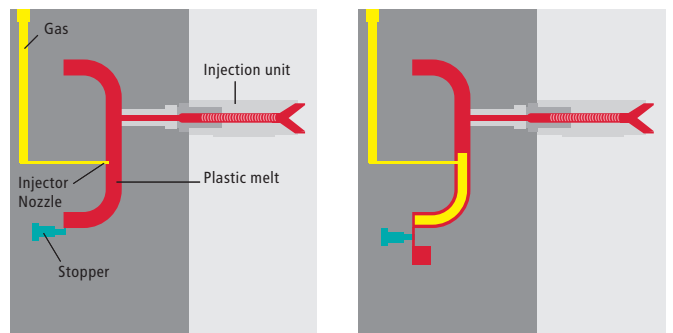


Short shot gas assisted moulding



A predefined short shot of plastic melt is injected into the mould. During or right after this injection gas is injected, causing the material to inflate and fill the mold cavity. The gas can be injected by injector nozzels placed directly in the mould or runner or through the sprue of the injection unit

Full shot or spillover gas assisted moulding



Plastic melt is injected and the cavity is filled volumetric. After applying a short period of packing pressure, the stopper opens the spillover cavity and allows the gas to core out the melt.

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Examples of use GID / WID



Gas injection



Water injection



Gas injection



Gas injection



Gas injection

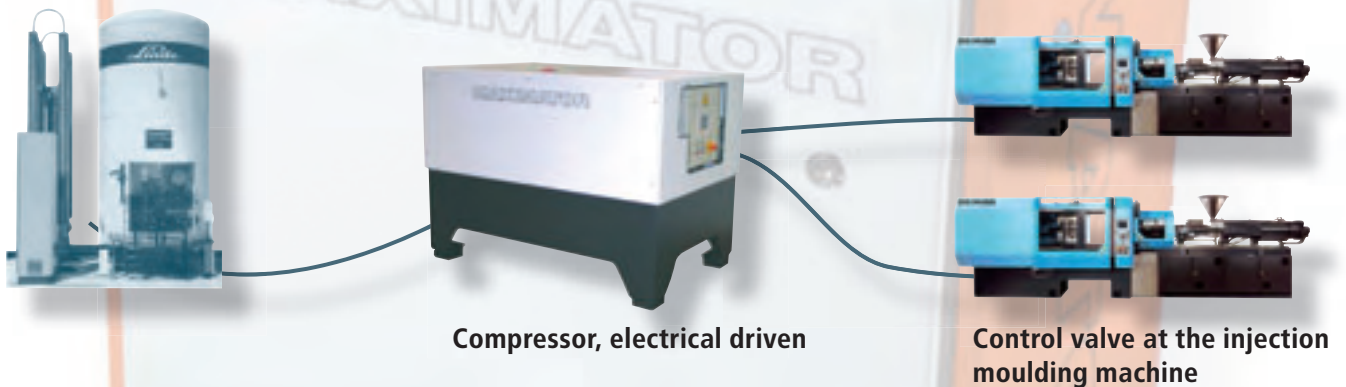
MAXIMATOR® Technics for Market Leader

Production program

Compressor station Type VP (cf. Page 7)



Compressor station Type VE (cf. Page 8)



Compressor station Type VH (cf. Page 9)



Compressor station Type VP/120/500/300

Compressor with continuous pressure generation

- cart-type
- full use of cylinder pressure
- oil- and grease-free compression
- without accessory electrical energy
- without cooling water

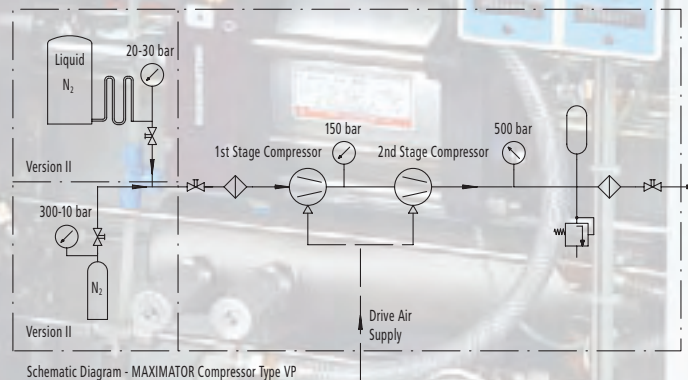
This mobile compressor station is a self-contained pneumatic driven gas compression unit in compact design.

The compressor continuously delivers N₂ into a storage tank and thus ensures that the pressure in this storage tank is always within the adjustable limiting values.

The required gas volume of the connected control modules is provided by the storage tank. The concept permits a considerable increase of the delivery output by means of 300 bar (200 bar) N₂ cylinders.



Compressor, pneumatic drive



Technical parameters

Operating pressure	20 – 500 bar, adjustable via pressure reducer
Compressor output at 18 bar admission pressure	120 l _N /min*
Compressor output at 300 bar admission pressure	400 l _N /min
N ₂ outlet	M16 x 1,5 (Ermeto 8S) 4 Nos.
N ₂ inlet	M16 x 1,5 (Ermeto 8S) 1 Nos.
N ₂ storage tank	5 l / 550 bar
N ₂ admission pressure (from evaporator)	20 bar – 36 bar
N ₂ recuperation	M16 x 1,5 (Ermeto 8S) 4 Nos. (Optional)
N ₂ cylinder supply	300 – 10 bar
N ₂ cylinder connector 2 Nos.	W24, 32 x 1/14 (200 bar) / 300 bar
Pressurised air drive	5 – 11 bar / IT 1/2" hose nozzle
Pressurised air consumption	1480 l _N /min – 1980 l _N /min
Dimensions (WxDxH)	(720/560/1230) mm
Casing	cart-type with guide rollers
Weight (incl. packaging)	211 kg (315 kg)

* Following VDMA 4362 Tolerance ± 5 %

Compressor station Type VE/200/500/10

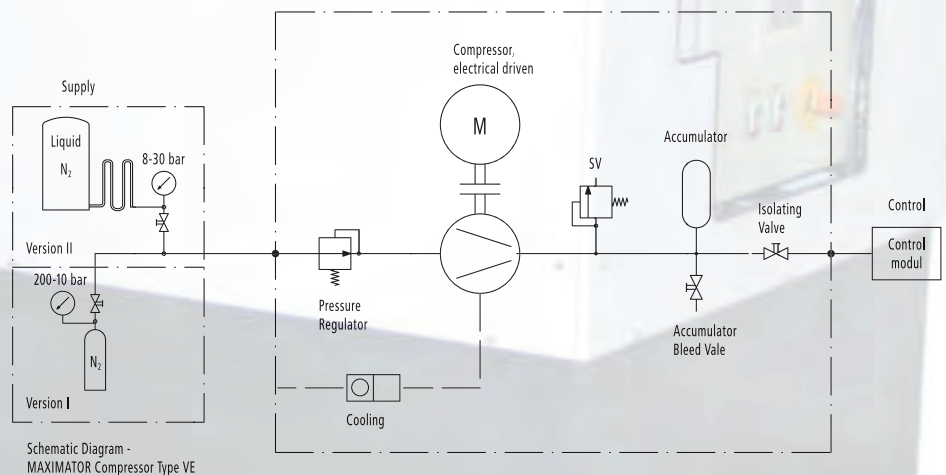
Compressor station with continuous pressure generation

- oil free
- dry run unit
- electric drive
- no external cooling water connection

This compressor station is a dry running, four-stage, electrically driven compressor. Compression is performed without any oil to prevent oil impurification. The compressor stages are harmonised which guarantees a high compressor output rate. Safe operations are ensured by employment of high-pressure stages that have proven for decades in our pneumatically driven compressors. Priorities of the design were easy maintenance and easy handling.



Compressor, electrical driven



Technical parameters

Operating pressure	500 bar
Compressor output	200 l _N /min
N ₂ outlet	M 16x1,5 (4 Nos.)
N ₂ inlet	M 22x1,5
N ₂ storage tank	5 l / 550 bar
N ₂ admission pressure	10 bar
Connected electrical load	400 VAC – 15kW
Casing	For forklift truck transport
Dimensions (WxDxH)	(1800/1230/965) mm
Weight	450 kg
Cooling (internal)	Water / air

Compressor station Type VH/400/500/R

Compressor with continuous pressure generation

- nitrogen pressure max. 500 bar
- compressor output 400 lN/min
- gas recovery
- low-noise

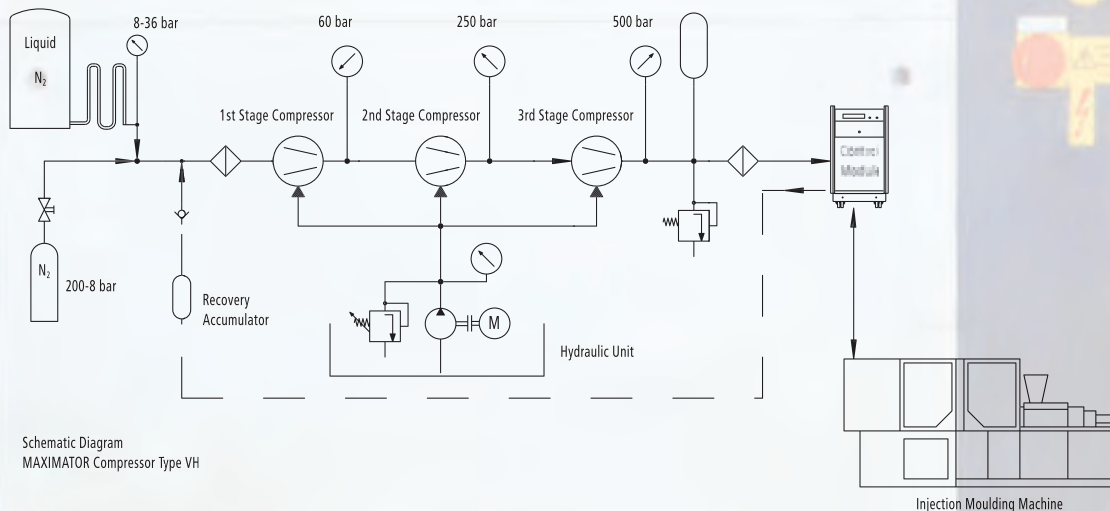
This central supply station is a self-contained hydraulic driven gas compression unit in compact design.

The compressor continuously delivers N₂ into a storage tank and thus ensures that the pressure in this storage tank is always within the adjustable limiting values.

The recovered gas volume of the control modules is stored in a buffer tank, thus a large quantity of the gas is re-supplied to the compressor. The individual compressors are individually driven with proportional equipment which ensures their smooth running with low sound emission.



Compressor, hydraulic driven



Technical parameters

Operating pressure	200 – 500 bar, variable*
Compressor output	400 l _N /min**
HP storage tank	10 l / 550 bar
N ₂ admission pressure	8 – 36 bar
N ₂ inlet	M22x1,5 24° cone (Ermeto 15L)
N ₂ outlet	M20x1,5 24° cone (Ermeto 12S) 4 Nos.
Pressurised air inlet	T 1/2" (internal thread – IT)
Driving power	22 kW max.
Cooling water connection	Internal thread 3/4" / 0,8 m ³ / hr / T _{inlet} = 14° C
Dimensions (WxDxH)	(2180/1000/1900) mm
Weight	1600 kg

* Factory adjustment: ca. 480 – 430 bar, **Following VDMA 4362 Tolerance ± 5 % (at 14 bar admission pressure)

Control module with 2 and 4 valves Type RM/500/R2 and Type RM/500/R4

Pressure control by means of control module

- high reproducibility
- pressure profile freely selectable
- defined interface to all injection moulding machines
- graphic representation of curve progressions
- optional with Gas Injection Control (GIC)

This control module is a self-contained functional unit that can be adapted to all injection moulding machines, irrespective of their type and make. Gas discharge begins after reception of the start signal.

Pressure control is carried out by means of high-dynamic 3/3-port directional proportional control valves in order to avoid change-over marks and melt stoppage.



Control module with 4 valves



Control module user interface

Rising and falling ramps can be freely adjusted. Thus, rough internal surfaces in the gas bubble are avoided. The control module is compact and operator-friendly.

Technical parameters	RM/500/2	RM/500/4
Valves	2 Nos. stainless steel	4 Nos. stainless steel
Control tolerance	± 500 mbar	± 500 mbar
Range of control	5 – 500 bar	5 – 500 bar
Response period	28 msec	28 msec
Pressure stages	10	10
Data storage	20 pressure profiles	20 pressure profiles
HP filters	3 Nos., 60 µm	6 Nos., 60 µm
Curve representation	2 curves	4 curves
Dimensions (WxDxH)	(720/560/1230) mm	(720/560/1230) mm
N ₂ inlet	M16 x 1,5 (Ermeto 85) 1 Nos.	M16 x 1,5 (Ermeto 85) 1 Nos.
N ₂ outlet	M16 x 1,5 (Ermeto 85) 2 Nos.	M16 x 1,5 (Ermeto 85) 4 Nos.
Voltage supply	220V / 50Hz (110 V / 60Hz) / 2A	220V / 50Hz (110 V / 60Hz) / 2A
Weight (incl. packaging)	226 kg (316 kg)	374 kg (464 kg)

Compressor control module Type RM/500/2/VP/80/500

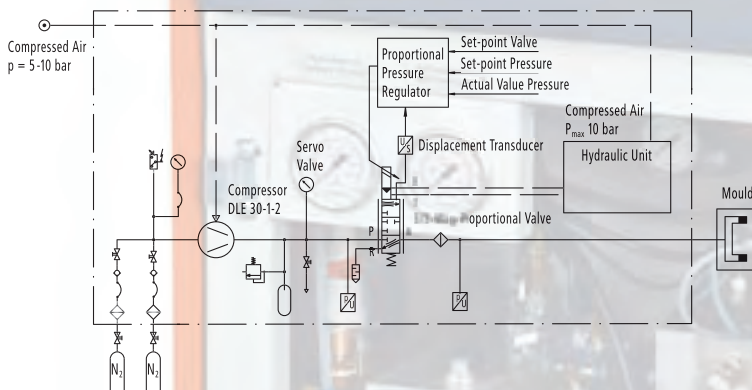
Control module with continuous pressure generation

- gas pressure up to 500 bar
- output volume 80 lN/min*
- pressure profiles freely selectable
- defined interface to all injection moulding machines

This control module is a self-contained functional unit that can be adapted to all injection moulding machines, irrespective of their type and make. Pressure is generated by means of a pneumatic driven piston compressor. The compressor continuously delivers into a storage tank and thus ensures that the pressure in this storage tank is always within the adjustable limiting values.



Compressor control module with 2 valves



Gas discharge begins after reception of the start signal. Pressure control is effected by means of high-dynamic 3/3-port directional proportional control valves in order to avoid change-over marks and melt stoppage. The curve progression can be freely adjusted as a ramp function and serves targeted gas filling and adjusted unloading of mouldings.

Technical parameters

Valves	2 Nos. stainless steel
Control tolerance	± 500 mbar
Range of control	5 – 500 bar
Response period	28 msec
Pressure stages	10
Data storage	20 pressure profiles
HP filters	3 Nos., 60 µm
Curve representation	2 curves
Dimensions (WxDxH)	(720/560/1230) mm
N ₂ outlet	M16 x 1,5 (Ermeto 8S) 2 Nos.
N ₂ storage tank	2,5 l / 550 bar
N ₂ cylinder-based supply	300 – 10 bar
N ₂ cylinder connection	W24 x 1/14 (300 bar and 200 bar cylinders)
Compressor DLE30-1-2	80 l _N /min, 500 bar
Compressed-air drive	min. 8 bar, 1/2" hose nozzle
Compressed-air consumption	400 – 1480 l _N /min.
Weight (incl. packaging)	275 kg (328 kg)
Voltage supply	220V / 50Hz (110 V / 60Hz) / 2A

* Following VDMA 4362 Tolerance ± 5 %

Nitrogen flushing module Type SM/500/1-4

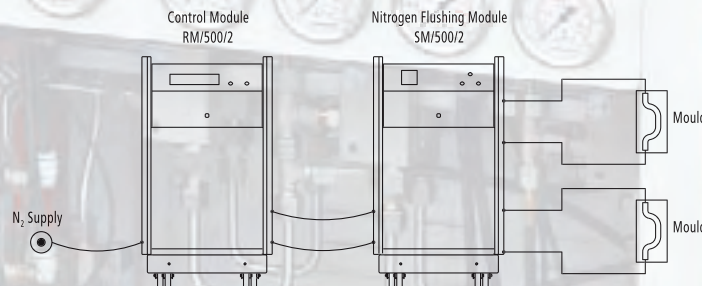
Advantages:

- cost savings due to reduction of cycle time
- simple user interface
- defined interface to all injection moulding machines
- 1, 2 or 4 cavity design available

The MAXIMATOR flushing module is used for pressurised flushing of GID Products with nitrogen. Cycle times can be reduced due to the cooling effect of the flushing process. The flushing velocity is adjustable by means of a throttle. An extra flushing connection and an external valve for fast pressure bleeding are available as an option.



Nitrogen flushing module
Type SM/500



Technical parameters

Cavities	2 or 4
Operating pressure	500 bar
Nitrogen connections	
N ₂ inlet	Ermeto 8S
N ₂ outlet	Ermeto 8S
Release	Ermeto 8S
Compressed air	G 1/2"
Electric connections	
Voltage supply	230(110) V / 50(60) Hz
Electrical load	0,3 kW
PLC control	
Operation terminal	Siemens OP 7
Depth	500 mm
Wide	720 mm
Hight	1270 mm
Weight	approx. 155 kg

GAS INJECTION CONTROL

Process monitoring

Type **GIC/500/2**

Advantages

- Process monitoring in conformity with DIN ISO 9000
- Monitoring of gas consumption
- Detection of mould leakages
- Cost reduction
- GOOD/BAD criteria via Interfaces
- also conditionable for multicavities

Description

The process monitoring module is positioned between control module and mould. The introduced N₂ volume and the recirculated N₂ volume are exactly measured. Thus, the system is capable of detecting gas outbursts, injector impurities and mould leakages.

This is the first device for operators to **determine and monitor their gas consumptions**.

Technical parameters	GIC/500/1
Mass sensors	1 No. stainless steel
Measuring range	0 – 500 bar
Response period	150 msec
Dimensions (WxDxH)	(578/216/300) mm
N ₂ inlet/outlet	M16 x 1,5 (Ermeto 8S) 2 Nos.
Control unit	S 7
Voltage supply	220 V / 50 Hz
Accuracy	± 1 % of measured value
Temperature	Room temperature (RT)
Flow rate	min. 0,05 l _N /sec max. 15 l _N /sec (65 kg/h)
Weight	16 kg
I _N conversion (N ₂)	1 g = 0,85 l _N / 1 l _N = 1,17 g



Cavity measuring kit Type **GIC/500/1**



GIC/500
for multiple cavities



Gas injector / injector service kit

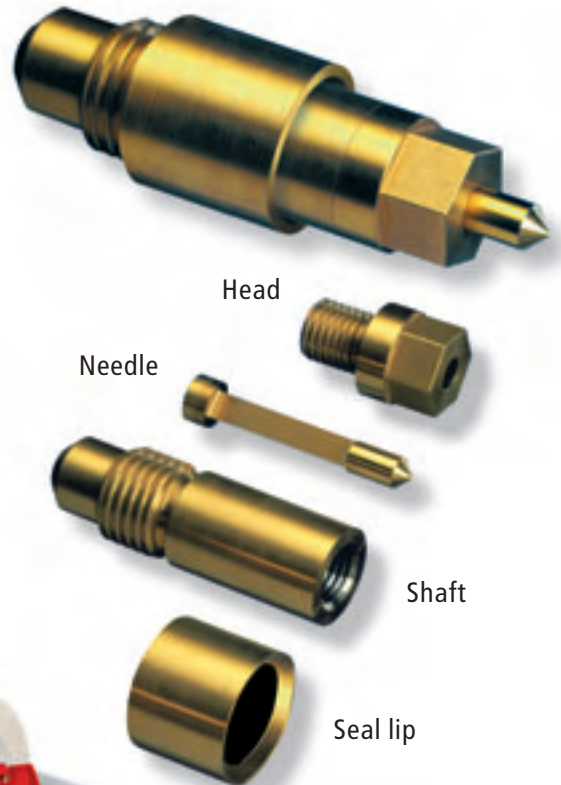
Advantages

- self-cleaning function
- fast replacement with open mould
- high reproducibility
- made in Germany

Mode of functioning

Nitrogen is charged – controlled by the control module – through the mould lines into the injector. The velocity of flow makes the needle move forward.

The freely movable needle extends the moulding time and the cleaning cycle. Additional gas channels prevent the melt from forming a skin around the injector. Upon pressure relief the needle moves backwards and wipes off impurities.



Mould Injector Service Set

Service box for injector installation and cleaning

Service box including:

- Installation tool with torque and injector pin ejector device
- Cleaning tool
- Cleaning fleece



Please, make sure to use only our especially developed Service Set for installation and cleaning

Technical parameters

Type Standard design*	Immersion diameter	Immersion depth	Order ID
M4 x 0,5/4/5	4 mm	5 mm	3920.3814
M4 x 0,5/4/10	4 mm	10 mm	3920.3815
M6 x 1,0/4/5	4 mm	5 mm	3920.3816
M6 x 1,0/4/10	4 mm	10 mm	3920.3817
Type Special design	Immersion diameter	Immersion depth	Order ID
M6 x 1,0/6/5	6 mm	5 mm	3920.3818
M6 x 1,0/6/10	6 mm	10 mm	3920.3819
M4 x 0,5/3/5	3 mm	5 mm	3920.3820
M10 x 1,5/8/5	8 mm	5 mm	3920.3822
M10 x 1,5/8/10	8 mm	10 mm	3920.3823
Type Needle for injector			Order ID
1/100 1°	1,5 mm		3920.3945
3/100 1°	1,5 mm		3920.3946

* Standard: including needle with annular gap 1/100 1°

Proportioning Station Type DSD 500

Advantages

- exact flow-rate control
- easy operation
- automatic adjustment to extruder pressure reduces start-up process
- high degree of forming
- a high-dynamic control valve responds promptly to process changes

Process

Extrusion-foamed plastics open up new opportunities in all segments, e.g.:

- cable insulation
- sheets
- sealing profiles

The proportioning station doses N₂/CO₂ exactly into the extruder. The gas volume is measured at the pressure side. Volume control is insensitive to temperature and optimally adapts to pressure fluctuations with uniform quantity proportioning. The measured values are visualised.

Advantages of the process

- environmental compatibility, since no chemical propellants are used
- cost-effective
- chemically and physiologically inert
- temperature-independent

Impact on the process

The above-described advantages reduce production fluctuations under the same product, material and process conditions.

Technical parameters

Injection pressure	400 bar
Proportioning volume CO ₂	200 g/h to 40 kg/h
Medium	N ₂ / CO ₂
Weight	320 kg
Dimensions (WxDxH)	(610/720/1830) mm
Admission pressure	17 – 55 bar CO ₂ / N ₂ 200 bar
Connection	CO ₂ W 21,80 x 1 3/4"
Connection	N ₂ W 24 x 1 1/4"
Gas connection	M16 x 1,5 24°
Power supply	220 V / 50 Hz / 2A
Compressed air	1/2" hose nozzle min. 6 bar



Gas Proportioning Station



extrusion foamed plastic



stainless steel model

Water Assisted System WID/2/300/1,5

Main characteristic features:

- Volume-flow and pressure-controlled system
- Curve form freely programmable with ramp function
- Compact design for 2 cavities
- Emptying of components by blow-out
- Separate volume monitoring of each cavity also during pure pressure control
- TIK-WIT process selectable via touch panel

Application:

The MAXIMATOR Water-assisted System combines two equipment concepts in one system by providing both volume-flow and pressure control. This innovation remarkably extends the range of potential applications in the plastics industry.



Front view and operator panel

Technical parameters

Type	WID/2/300/1,5
Water outlet	2 x Ermeto 12 S
Operating pressure max.	approx. 300 bar
Inlet filter	20 µm
Pressure intensifiers	2 Nos. (each 1,5L/cavity)
Pressure accumulators	6 pcs. (each 3 x 5 L/cavity)
Operating medium	Cold water, in-house mains 2 - 4 bar
Injector control	oil- and grase free, 2 pcs. /cavity (8 pcs. overall)
Tempering	up to 50°C (optional)
Output capacity, max.	0-15 l/min, at 400 bar
Connected load	400 VAC – 15kW
Monitor	12" TFT SVGA
Compressed air supply	min. 7 bar
Weight	approx. 1,2 t
Dimensions (WxDxH)	(1550/1000/2100) mm

Water Assisted System WID/2/300/1,5

Function:

Pressure is generated by a three-piston pump driven by an electric motor. One pressure accumulator is provided for each cavity. Pressurised water controls the injector.

The pressure accumulator charges the tool either directly via a proportional valve or through a pressure piston. Following reception of the start signal, both volume flow and pressure can be controlled.

Additional volume metering is measuring the whole charged volume in both cases. Specified and generated values are graphically displayed on the touch panel. The touch panel is used for all necessary inputs and monitoring of process data.

The system is also equipped with a temperature and filling level monitoring function. Following depressurisation, components may be blown out with compressed air.

Design and installation are in particular focused on low maintenance demands, clear arrangement and easy handling of system components. This approach reflects the decade-long experience of MAXIMATOR in test stand and process plant engineering.



Front view with open door



External core puller control system Type HAG/160-210/(12; 8)

External core puller control with integrated hydraulics and storage programmable control (PLC)

- controls up to 6 double-acting cylinders or core pullers in the mould
- compatible with all injection moulding machines
- cart-type, for individual applications
- hydraulic pressure up to 210 bar
- 3 independent pressure circuits

The cart-type core puller control system is the ideal complement to all injection moulding machines which are not equipped with core puller control. Its features are easy installation and operation.

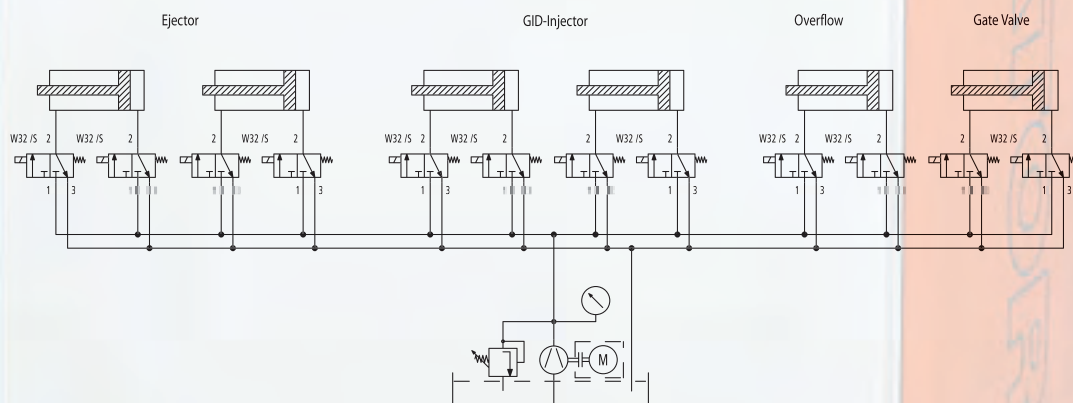
The system can be used to move movable devices at the mould, such as GID injectors or hydraulic gate valves.

The unit is equipped with all safety standards that are required in state-of-the-art injection moulding engineering.

The connection with the injection moulding machine is made via an interface. Limit switches in the mould are processed as signals in our PLC and thus ensure safe operation.



External core puller control



Technical parameters

Valves	12 Nos. seat valves
Hydraulic pressure	20 – 210 bar, adjustable
Control unit	Siemens PLC 7
Drive	6 bar pneumatic or 380V / 50Hz / 10A
Connections	M16x1,5 · 24° cone (Ermeto 8S) 12 Nos.
Compressed air connection	1/2"
Dimensions (WxDxH)	(720/560/1230) mm
Voltage supply	220V / 50Hz (110V / 60Hz) / 2A
Weight (incl. packaging)	190 kg, cart-type (280 kg)

Technics for Market Leader **MAXIMATOR**[®] *Service*

MAXIMATOR After-sales Service Testing at your site

The MAXIMATOR After-sales Service offers, inter alia, the following services:

- maintenance of compressors and control modules
- pressure generation with mobile units
- instrumentation testing of pressure gauging devices
- installation and laying of pipelines and closed circular pipelines

MAXIMATOR provides to you a particularly high-quality product. In addition, you will also benefit from our extraordinary after-sales service irrespective of the location of your site.

You can rely on outstanding technicians and fast-track spare part deliveries.

It goes without saying that MAXIMATOR provides comprehensive documentation of our systems and equipment. During servicing operations we provide to you substitute equipment in order to ensure your process safety.



Service

Service



MAXIMATOR®



High-pressure pumps for oil, water, emulsions

- Minimum maintenance, explosion-proof
- Low energy consumption
- Max. operating pressures 5,500 bars



Compressed air amplifiers

- For increasing air pressure
- Specific air pressure amplification to suit your requirements
- Connection to electrical supply not necessary
- Max. operating pressures 40 bars



High Pressure Compressors

- For pressurizing gases (nitrogen, oxygen, inert gases)
- Simple handling
- Intrinsically safe and explosion proof i.e. not electromotive, but pneumatically powered
- Operating pressure max. 1,000 bar



Test rigs for pressure, bursting pressure and pulse tests

- Expansion hoses, tubing
- Valves, fittings, bolted unions
- Pressure gauges, pressure-operated switches
- Pressure transducers, vessels
- Special test rigs



Valves, tubing, accoutrements for high-pressure technology

- Stainless steel components in excellent workmanship
- Temperature range -250 °C to +650 °C
- Max. operating pressures 10,500 bars

Your Representative:



MAXIMATOR GmbH

Factory

MAXIMATOR GmbH

Walkenrieder Straße 15
D-37449 Zorge/Germany

Telephone: +49 55 86 / 8 03-0

Facsimile: +49 55 86 / 8 03-30 40

Internet

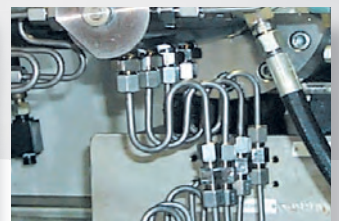
www.maximator.de

eMail: info@maximator.de

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MAXIMATOR®

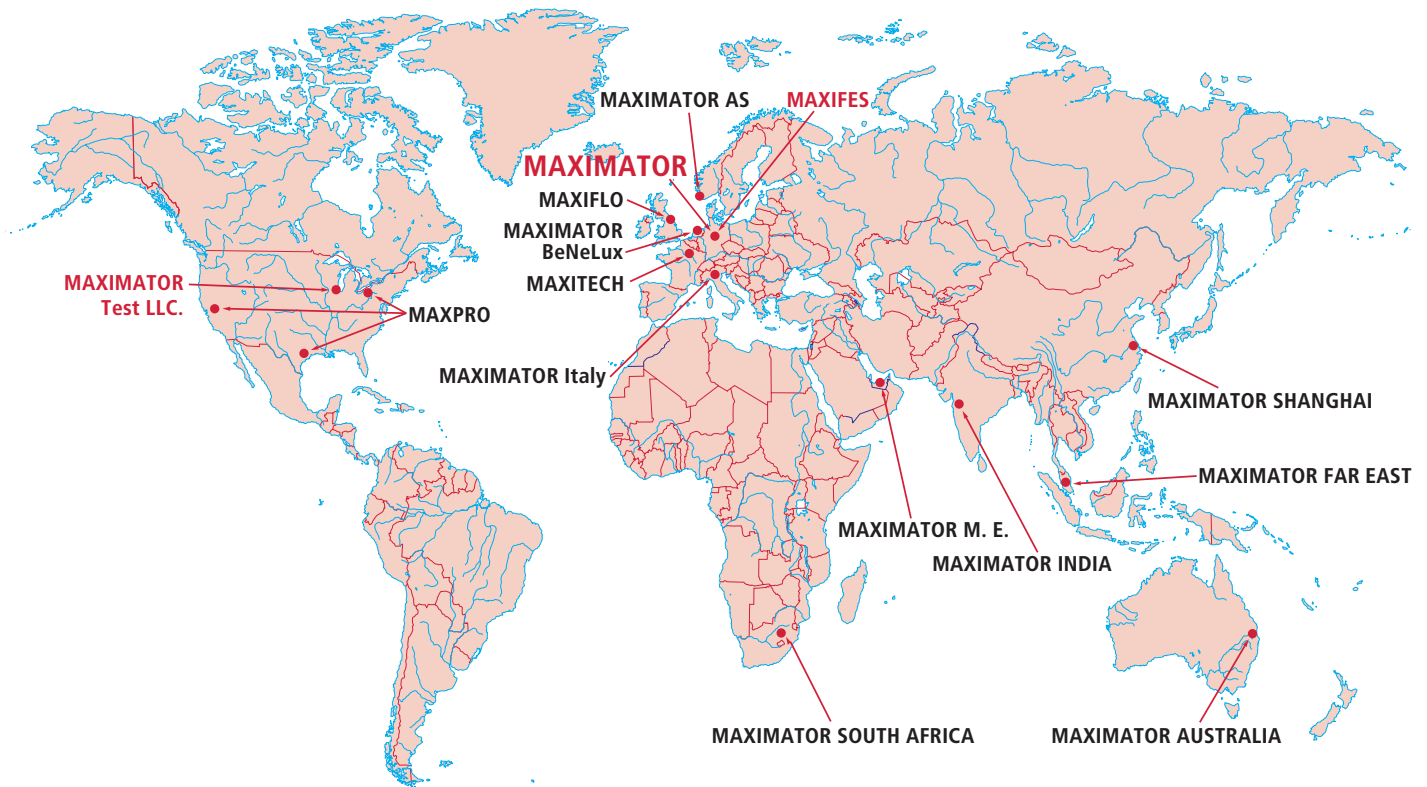
GLOBAL PRESSURE SOLUTIONS



**HIGH PRESSURE
TECHNOLOGY
HYDRAULICS
PNEUMATICS
TESTING EQUIPMENT**

Customer Testing Services

MAXIMATOR worldwide



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For over a decade MAXIMATOR has led the world in both production and testing of high pressure components up to 217,550 psi (15,000 bar). As a strong partner for renowned companies in the automotive and component supplier industry as well as the general engineering and chemical industry we boast the unique expertise to develop not only high-pressure test equipment but, custom stand-alone and serial testing as well.

Your success – Our responsibility

Presently, there are well over one thousand MAXIMATOR machines in operation worldwide performing a wide variety of testing and production tasks.

MAXIMATOR Global Service Solutions boasts decade-long experience in customer support and provides new opportunities to realize your objectives.

MAXIMATOR will provide you the support you need to optimally and efficiently solve your testing assignments, from determining testing parameters to plant start-up and staff training, our service team can efficiently assist your plant operations. High-pressure technology, control and handling – professionalism is our hallmark.

Testing “on demand”

Our test laboratories in Germany and the USA are equipped to perform static pressure testing and burst testing, pressure fatigue testing, as well as autofrettage services – swiftly and precisely. Our services provide you the opportunity to determine the performance parameters and quality features of your products while still in the prototype stage and under real-life conditions.

Our labs can support you with: material validation testing, PPAP testing, and component/assembly validation testing, etc... In short, we can provide you with the data you need to make informed decisions.

Your guarantee - MAXIMATOR Global Service Solutions

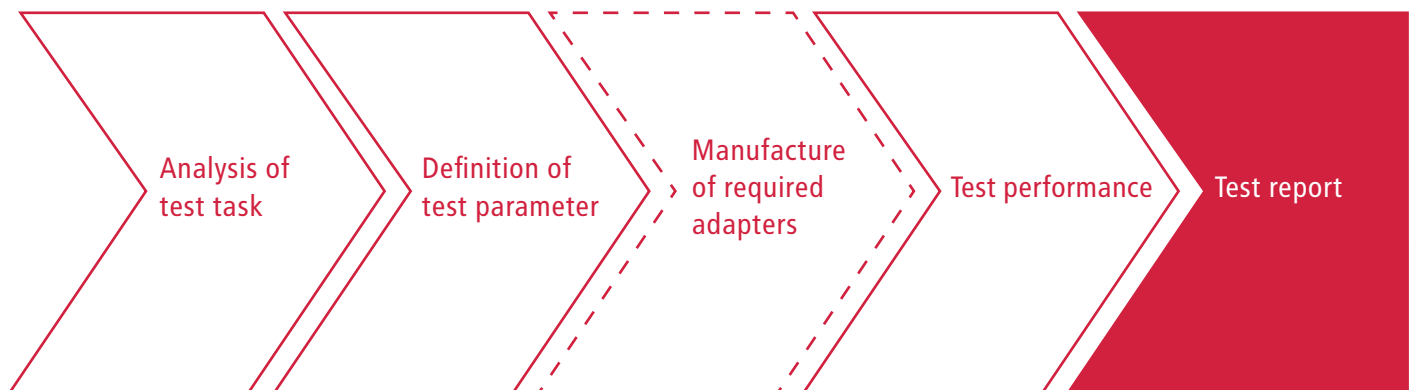
Overview MAXIMATOR Testing Services

Testing services

- ☒ Pulsation and durability testing
- ☒ Pressure testing (also with temperature-controlled environment)
- ☒ Leakage testing
- ☒ Burst pressure testing
- ☒ Autofrettage
- ☒ Rail flushing and assembly



Optimally designed processes



Documentation

When it comes to test reports and documentation, attention to detail is vital and this is exactly why our test reports are accepted by leading automobile manufacturers the world over – without question. We provide comprehensive photo documentation and detailed test results for each test sample or job-lot series. Our standard operating procedure is complete traceability of test results.

- ☒ Results for each test sample
- ☒ Description of special events
- ☒ Exact description of failure location
- ☒ Presentation of test accuracy
- ☒ Photo documentation
- ☒ Factory certificates of pressure gauging instruments



Introduction MAXIMATOR Service Testing Centers

Our test labs MAXFES (Germany) and MAXIMATOR Test, LLC (USA) provide innovative and cost-efficient services to help you solve your high-pressure test tasks. Experienced test engineers and technicians carry out

tests for you, swiftly and reliably. Our unique equipment is capable of performing a wide variety of contract testing orders:

- Pulsation pressure testing
65,250 psi (4,500 bar)/15 Hz
- Pressure and burst pressure testing
up to 217,550 psi (15,000 bar)
- Autofrettage machine
up to 217,550 psi (15,000 bar)
- Temperature chamber
-40°C up to +200°C

Pressure Fatigue Test Service

i Pressure fatigue tests are carried out to evaluate component and material behavior under real-life conditions.

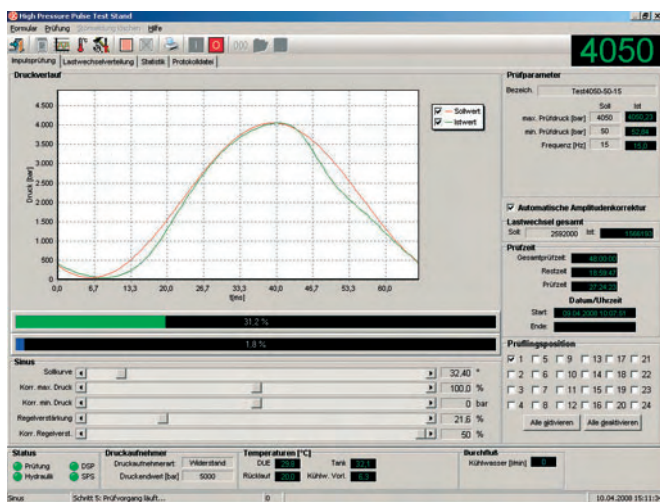
Finite element and durability calculations are often used to determine fatigue strengths. MAXIMATOR pulsation pressure test stands take it to the next level and can be used to correlate FEA results.

Our machines are employed for pressure-exposed hollow parts to validate and evaluate their fracture mechanics.



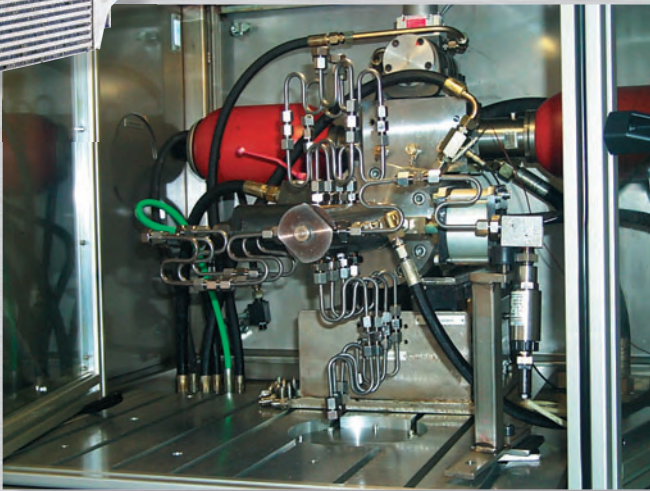
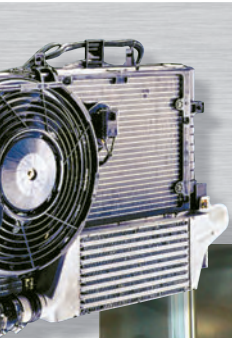
Whether your goal is determination of pressure fatigue endurance of a component or review of design and calculation concepts (FEA simulations), MAXIMATOR pressure pulsation tests provide assurance. Our Service

Centers perform verification of both prototypes in the development phase and qualities of serial production components.



Our services program:

- ☞ Wöhler fatigue tests, also as sequence of variable load parameters
- ☞ Operating load duplication tests
- ☞ All types of pressure cycle testing



High-performance test equipment:

- ☒ Capable of high test pressures up to 65,250 psi (4,500 bar)
- ☒ Capable of high test frequencies up to 15 Hz
- ☒ Simultaneous testing of multiple test samples (depending on test volumes)
- ☒ High test accuracies (documented)

Benefits:

- ☒ Long-term experience and competence in high-pressure and test technologies
- ☒ Support of new developments
- ☒ Ensuring test reproducibility
- ☒ Performance of tests on short notice
- ☒ Shortening of product development cycles
- ☒ Cost-efficient solutions for your testing needs

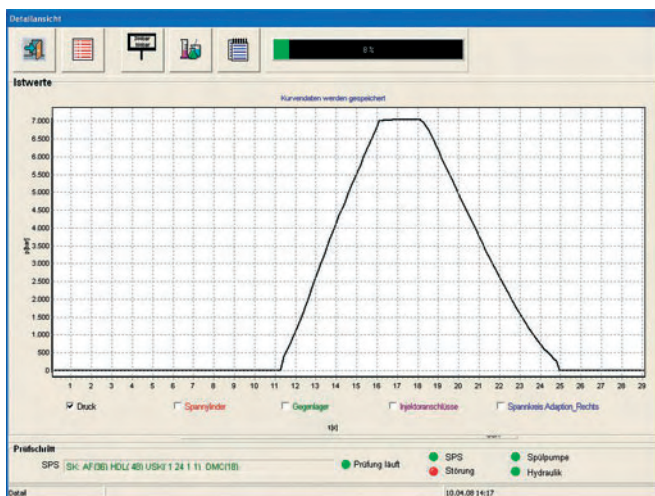
Autofrettage Service

i Autofrettage (Fr.: auto = self
frettage = generation of tensions) is
the name of a method designed to
enhance durability, in particular of
pressure-cycle stressed components.
Subjected to autofrettage are typically
ductile steel components that are
installed into high-pressure plants in
the chemical industry, diesel injection
systems and high internal pressure
forming.
One-time admission of ultra-high pres-
sure up to 217,550 psi (15,000 bar) to a
component generates residual stresses
between inner and outer component
walls that counteract premature
fatigue due to vibration failure.



The autofrettage process can mean significant cost savings as autofrettaged components are able to achieve infinite life or extended life at desired operating pressures – without any design or material modifications.

Applications where autofrettage may be beneficial include diesel injection system components (common rails, fuel lines, injection nozzles, pump housings, etc.), components for water-jet systems and components in high- and extreme-pressure systems (tubes, fittings).



Our services program:

- ☞ Assistance in determining autofrettage pressure levels
- ☞ Autofrettage up to 217,550 psi (15,000 bar)
- ☞ Ability to provide custom proportional clamping equipment
- ☞ Design and manufacture of fixtures and adaptors
- ☞ Test documentation for traceability



MAXIMATOR provides autofrettage services for you. We are capable of processing autofrettage orders at pressures up to 217,550 psi (15,000 bar) swiftly, safely and reliably.

High-performance machines:

- ☒ Generation of autofrettage pressures up to 217,550 psi (15,000 bar)
- ☒ Long-term experience with the autofrettage of components of all shapes and sizes
- ☒ Machines are "German Engineered" by highly trained and competent engineers, designers and technicians
- ☒ Proprietary sealing concepts (proportional clamping equipment)
- ☒ High machine availability
- ☒ High level of reproducibility

Convincing benefits:

- ☒ MAXIMATOR engineers have long-term experience and competence in high-pressure technology
- ☒ Long-term experience in developing sealing elements
- ☒ Cooperation with autofrettage specialists worldwide
- ☒ Consultation and support in determining optimal / maximum autofrettage pressures

Pressure and Burst Pressure Test Service

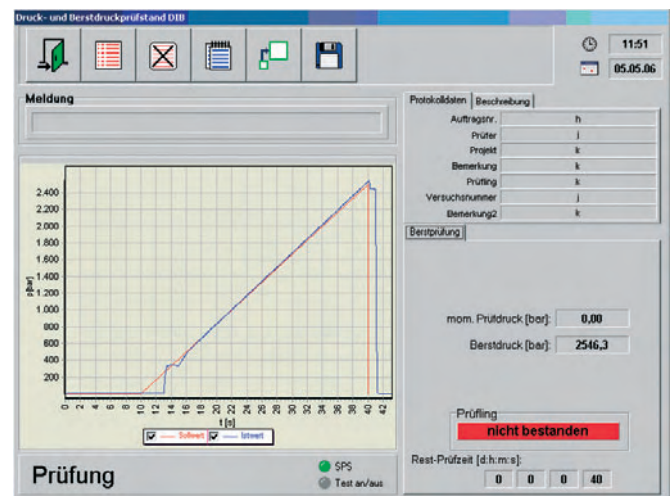
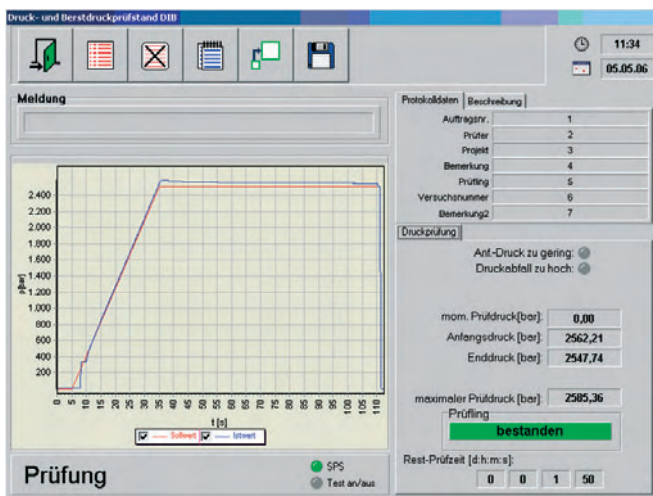
i Burst pressure is a quality feature of tubes and pipes, hosepipes, tanks and pressure-stressed components.

Brake pipes/hoses, power-steering hosepipes, cooling and air-conditioning system components, gasoline injection and diesel system components must endure certain minimum pressures and therefore are often subjected to pressures up to bursting point.



Tightness tests of components using the pressure drop method and the performance of pressure or burst pressure tests are cost-effective methods to determine characteristic component values. MAXIMATOR is capable of carrying out these test methods with or without temperature impacts, hence, certain mechanical strength properties can be arithmetically verified directly on the

component under real-life conditions. As manufacturers of pressure, burst pressure and leakage test equipment we boast long-term experience to optimally meet your testing requirements. Use our know-how, expertise, and the services of our test labs to help you obtain the data you need to make cost saving decisions.





We test components to your exact specifications:

- ☒ Pipelines (low-pressure and high-pressure)
- ☒ Hosepipes
- ☒ Components for diesel and gasoline injection systems
- ☒ High-pressure components and bolted unions
- ☒ Tanks and accumulators

Our comprehensive documentation of test results provides you with the confidence to make precise statements regarding the qualities of your products.

Our services program:

- ☒ Burst pressure tests (with or without temperature)
- ☒ Leakage tests (with or without temperature) with pressure drop method
- ☒ Leakage tests with hydrogen (forming gas 90%N₂/10%H₂)

High-performance machines:

- ☒ Pressure range up to 217,550 psi (15,000 bar)
- ☒ Manufacturer expertise and competence in adaption and pressure-proof sealing
- ☒ Temperature chamber (-40°C up to +200°C)

Benefits:

- ☒ Long-standing competence and experience in high-pressure technology
- ☒ Long-standing experience in developing adapters and sealing elements
- ☒ High level of machine availability for swift performance of your tests

Overview Service



Your success is our top priority. Our 17-strong service team is available to you 24/7 for professional

maintenance, inspection, retrofitting and repair of your equipment – Worldwide.

Our services program:

- ☞ Machine installation and start-up
- ☞ Inspection services
- ☞ MAXIMATOR training service
- ☞ Remote maintenance
- ☞ Maintenance contracts
- ☞ Pressure transducer calibration
- ☞ Installation and placing of pipelines and ring circuits
- ☞ Review of pressure gauging instruments
- ☞ Plant overhaul and upgrading

Your benefits:

- ☞ Installation and start-up by experts with manufacturer know-how
- ☞ On-site training by competent MAXIMATOR service professionals
- ☞ Maintenance and application consultation to safeguard your investment



Machine Installation and Initial Start-Up

Our experienced and competent specialists perform installation and initial start-up in your facility and carefully check to optimize every machine parameter to meet your testing or production requirements.

Save time and costs right from the beginning with our competent product training. After installation and initial start-up of your machine, our MAXIMATOR experts will train your operators on application and maintenance of your machine. Thus, you can increase the service life of your machine, prevent unnecessary downtime and safeguard your investment in the long term.



Inspection Services

With a MAXIMATOR Maintenance Contract we will conduct inspections at regular intervals automatically, carefully and to our exact specifications, to ensure that your MAXIMATOR machines are maintained in top condition. Any necessary repairs are performed during inspection upon request.



MAXIMATOR Training

MAXIMATOR's "hands-on" training develops your personnel into qualified users of MAXIMATOR machines. Our experts will train your in-house service team on preventative maintenance and servicing, and train your engineers and operators on all features of your machine to take full advantage of the machines capabilities.



MAXIMATOR Maintenance Contracts

With the purchase of a MAXIMATOR Service Package you place the maintenance and servicing of your investment into our capable hands and keep tight control over your costs. We ensure not a single inspection is missed and make sure your machine is continually maintained as required. MAXIMATOR Maintenance Contracts offer decisive benefits:

- ☞ Reduction of machine downtime at fixed costs
- ☞ Customer services by one provider
- ☞ Inspections/maintenance/repairs by trained MAXIMATOR service teams
- ☞ Use of OEM parts in all repairs



Hotline – Telephone Technical Support

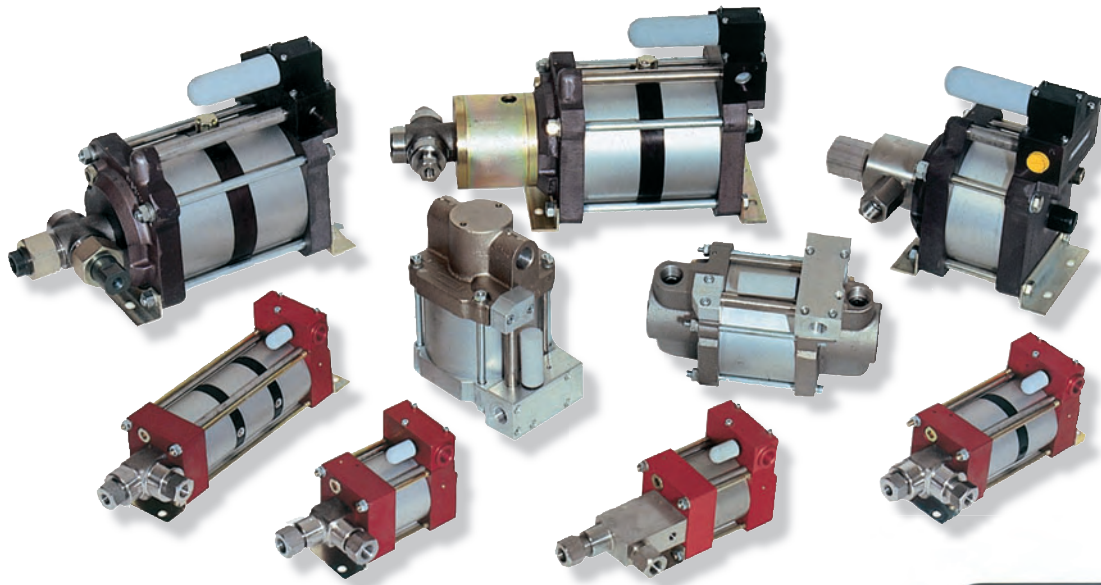
Our service hotline provides optimal and immediate assistance in technical issues. Our qualified engineers and technicians will analyze the fault or malfunction and propose suitable remedial actions.

Hotline: +49 1805-MAXIMATOR · [+49 1805-629 462]*

* with costs · Mon-Fri: 8 am - 10 pm CET; Sat-Sun and Public Holidays: 8 am - 8 pm CET

Product program

MAXIMATOR stands for pressure increase with liquids



Air driven liquid pumps

- ☑ Operating pressure up to 79,750 psi (5,500 bar)

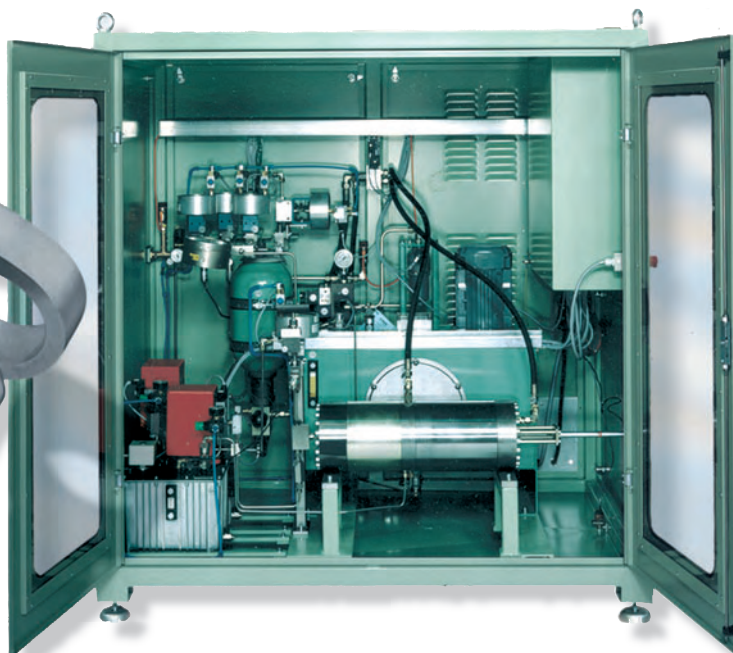
Hydraulic power packs for oil, water and other media

- ☑ Tool hydraulic systems
- ☑ Hydraulic clamping systems
- ☑ Water hydraulic systems

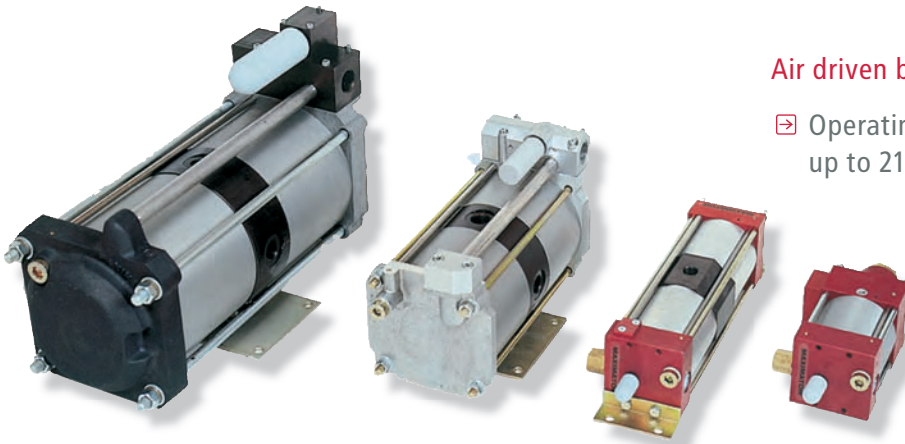


Test benches and pressure-generating systems

- ☑ Pressure, burst pressure and pulse test
- ☑ Leak and functional tests
- ☑ Autofrettage



MAXIMATOR stands for pressure increase of gases

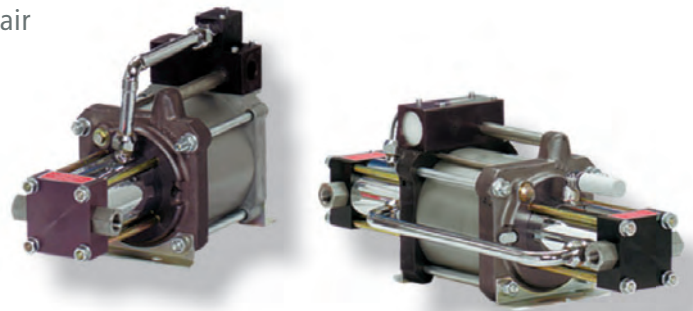


Air driven boosters and gas compressors

- ☞ Operating pressures up to 21,750 psi (1,500 bar)

Booster stations and compressor stations

- ☞ Local pressure increase of industrial compressed air
- ☞ Cylinder transfer
- ☞ Charging of accumulators



Compressor, test and control systems

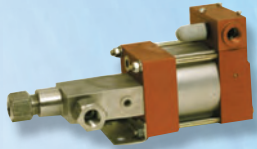
- ☞ Central supply for gas assist injection systems
- ☞ Test and control units for compressed air and gases
- ☞ Complete systems for filling air bag cartridges



MAXIMATOR – Complete solutions for high-pressure technique

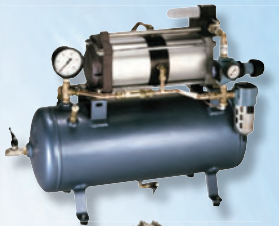
MAXIMATOR®

GLOBAL PRESSURE SOLUTIONS



High-pressure pumps for oil, water, emulsions

- Minimum maintenance, explosion-proof
- Low energy consumption
- Max. operating pressures 79,750 psi (5,500 bar)



Compressed air amplifiers

- For increasing air pressure
- Specific air pressure amplification custom to your application
- Pneumatically powered – no electric required
- Max. operating pressures 580 psi (40 bar)



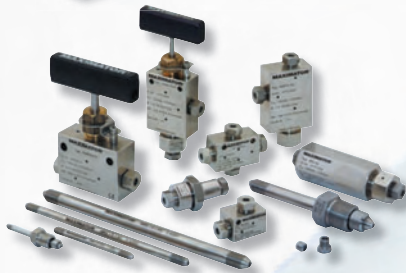
High Pressure Compressors

- For pressurizing gases (nitrogen, oxygen, inert gases)
- Simple operation
- Intrinsically safe and explosion proof pneumatically powered
- Operating pressures up to 21,750 psi (1,500 bar)



Testing and production rigs for autofrettage, pressure, burst pressure and pulse testing

- Expansion hoses, tubing
- Injector assemblies
- Common rails, fuel lines
- Valves, fittings, bolted unions
- Pressure gauges, pressure-operated switches
- Pressure transducers, vessels
- Special test rigs



Valves, tubing, fittings for high-pressure technology

- Stainless steel components in excellent workmanship
- Temperature range -250 °C to +650 °C
- Operating pressures up to 152,000 psi (10,500 bar)

MAXIMATOR GmbH

Factory MAXIMATOR GmbH
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Germany

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eMail: info@maximator.de

Your Representative:

MAXIMATOR®

AIR DRIVEN
LIQUID PUMPS
AIR DRIVEN
AIR AMPLIFIERS
AIR DRIVEN
GAS BOOSTERS
HIGH PRESSURE
VALVES, FITTINGS
AND TUBING
TEST AND
CALIBRATION
EQUIPMENT

Member
NACE[®]
INTERNATIONAL
THE CORROSION SOCIETY[®]



MAXIMATOR GmbH



On- & Offshore Solutions
for the
Oil and Gas Industry

MAXIMATOR is one of the world leading manufacturers of air driven liquid pumps, air amplifiers, gas boosters, high pressure valves, fittings and tubing as well as associated products used in the oil and gas industry.

With more than 30 years of experience in high pressure technology MAXIMATOR today designs and manufactures a full line of high pressure equipment. Our two production plants in Zorge and Nordhausen together with sales offices around the world give us the force to support our customers in the best possible manner.

As a first class quality manufacturer (ISO 9001 certified) our principle always is

- Customer-oriented
- Problem-solving
- Reliability
- Flexibility
- Availability

MAXIMATOR products are used by major National and International operating Companies. Please ask for our extended reference list.

To better serve our customers in the oil and gas industry we closely cooperate with customers, material and component suppliers, universities, public and private organizations.

MAXIMATOR is a member of the NACE association (No. 198024-01).



Our technical capabilities in mechanics, hydraulics, pneumatics, electrics, PLC and MMI allow us to act and react flexibly to your demands. We are always open to hear what the market looks for and to offer customized components and systems to match your needs.



MAXIMATOR Valves, Fittings and Tubing

MAXIMATOR manufactures an extended line of high pressure valves, fittings and tubing.

Benefits of the new MAXIMATOR valve and fitting line:

- Valves and fittings for 2,500 bar (36,000 psi) and above are manufactured from special material (316 SS modified)
- This material gives a better yield strength / tensile strength than standard 316 SS
- Visibly higher life time especially under pulsating conditions
- Quality product „Made in Germany“
- High flexibility and next day delivery (for most items)

- Autofrettage possible
- Valves and fittings for sour gas SOG service available according to NACE specifications
- Special design on customer request

Pressure Ranges:

- 1,500 bar (21,100 psi)
- 2,500 bar (36,000 psi) (valves only)
- 4,500 bar (65,000 psi)
- 7,000 bar (101,000 psi)
- 10,500 bar (152,000 psi)
- 15,000 bar (214,500 psi)

Please ask for our brochure „Valves, Fittings and Tubing“ or download under www.maximator.de.



MAXIMATOR Air Driven Liquid Pumps, Power Units and Test Systems

6 lines of air driven liquid pumps
Pressures from 4 bar (58 psi) up to
5,500 bar (79,750 psi).

Liquid flow from 0,1 liter per minute up to
30 liter per minute.

Typical applications for MAXIMATOR pumps
and pump systems:

Hydrostatic pressure testing	Valve actuation
Valve testing	Pressure testing of hoses
Leak testing	Tank testing
Flushing drill pipes	Flush out
Line flushing	Injection (water, oil, chemicals)
Metering	Dosing
Hydraulic power source	Hydraulic drive
Bolt tensioning	Nut torquing
Fire protection	Lubrication
Wellhead shutdown systems	



Please ask for our brochure „Liquid Pumps“
or download under www.maximator.de.

MAXIMATOR offers a high level of technical
expertise, engineering and service.

MAXIMATOR products for testing, control
and calibration services, tooling as well as
torque and tension applications.



In cooperation with our partners we are in a position
to serve you with outstanding solutions at
competitive pricing.



MAXIMATOR Pumps

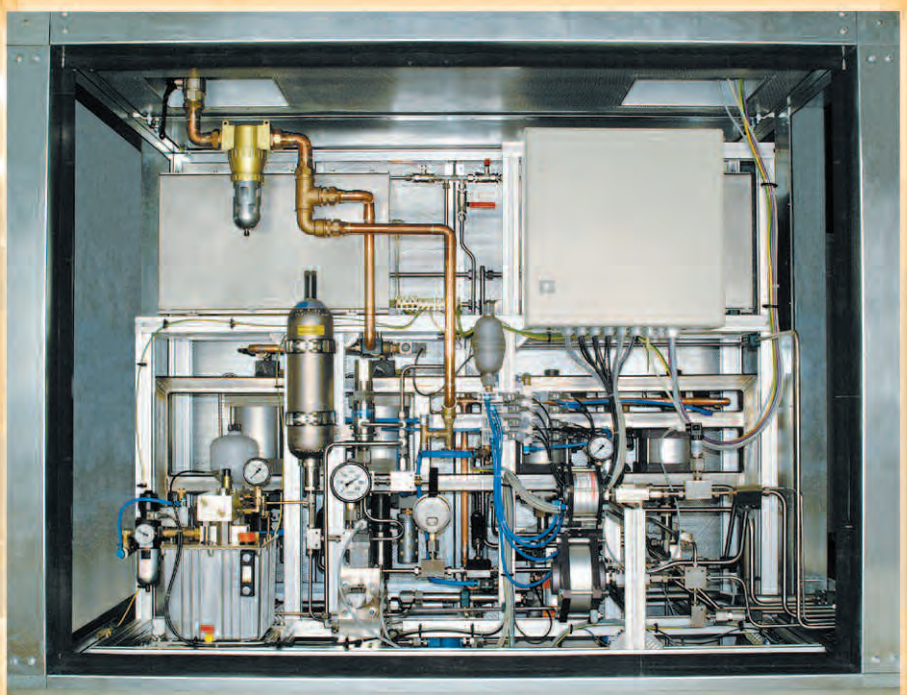
- are mostly made of stainless steel or aluminium
- Full stainless steel pumps available on request
- Double acting pumps available
- Plastic air drive pump for water and oil service (stainless steel design)
- Grout pumps, 2-K-Pumps
- Lowest noise level
- According to NACE available on request
- According to ATEX directive available on request
- ISO 9001 : 2000 certified



MAXIMATOR Air Driven Liquid Pumps, Power Units and Test Systems

Available options and accessories:

- Stroke counter adjustable
- Chart pressure recorder
- Pressure switches (all stainless steel)
- Relief valves (all stainless steel)
- Hand lever option for several pumps available
- Several other options on request!





MAXIMATOR Air Driven Air Amplifiers and Gas Boosters, Power Units and Test Systems

4 lines of air driven air amplifiers
 Pressures from 1 bar (14 psi) up to 50 bar (715 psi).
 Air flow from 10 standard liter per minute up to 2,500 standard liter per minute.

4 lines of air driven gas boosters
 Pressures from 1 bar (14 psi) up to 1,500 bar (21,100 psi).
 Gas flow from 100 standard liter per minute up to 500 standard liter per minute.

Please ask for our brochures „Air Amplifiers“ and „Gas Boosters“ or download under www.maximator.de.

Typical applications for MAXIMATOR gas boosters and booster systems:

Diving	Helium leak detection
Fire fighting	Survival craft
Gas transfer circuit breaker	Gas transfers
Top-Up of accumulators	Gas testing
Diesel engine starter	Transportation
Oxygen charging systems	

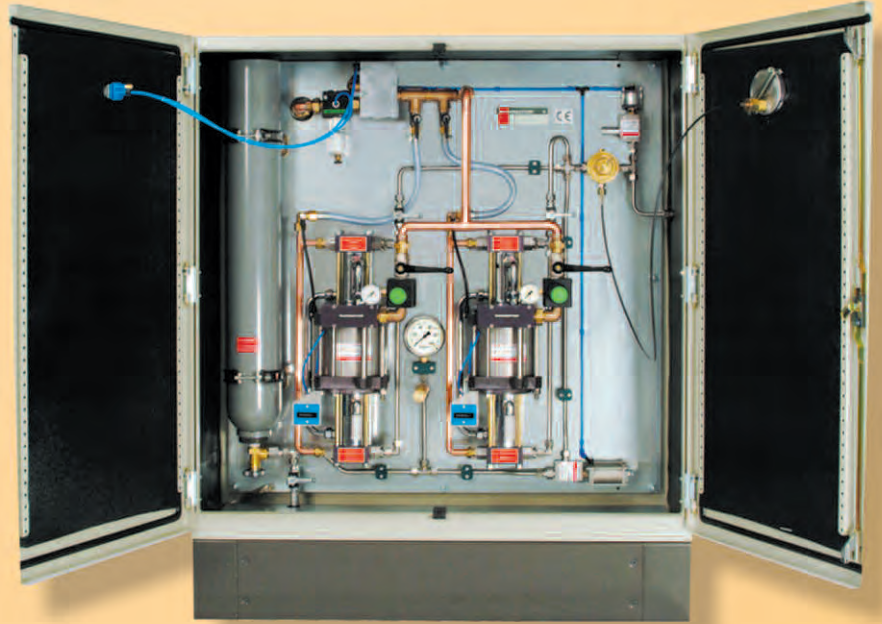


MAXIMATOR multi booster gas packaged systems
 Type DLE 75 - XX

MAXIMATOR Air Driven Air Amplifiers and Gas Boosters, Power Units and Test Systems

Air and gas driven test units for gas transfers, top-up of accumulators and gas testing of hoses, bottles, valves and other components with compressed air or gas up to 1,500 bar (21,100 psi).

MAXIMATOR gas boosters type DLE are usable for gases like nitrogen, argon, helium, oxygen etc. The air and gas driven test units are reliable, easy to maintain, compact and robust. All gas boosters are contaminant free with full separation between drive section and gas section.

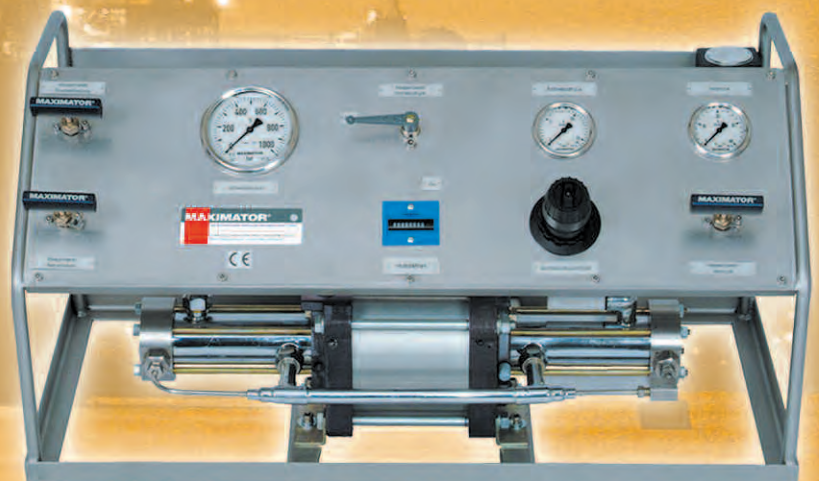


Available options and accessories:

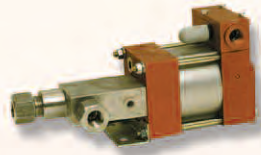
- Stroke counter adjustable
- Chart pressure recorder
- Pressure switches (all stainless steel)
- Relief valves (all stainless steel)
- Several other options like automatic start/stop-valve on request!

MAXIMATOR experience – your benefit

- Excellent technical support
- First class quality
- Immediate shipment
- Worldwide service – 24 hours a day



MAXIMATOR®



Air Driven Liquid Pumps

- Easy to maintain, ex-proof
- Low energy consumption
- Operating pressures up to max. 5,500 bar



Air Driven Air Amplifiers

- For increasing air pressure
- Specific air pressure amplification to suit your requirements
- Connection to electrical supply not necessary
- Operating pressure max. 40 bar



Air Driven Gas Boosters

- For pressurizing gases (nitrogen, oxygen, inert gases)
- Simple handling
- Intrinsically safe and explosion proof i. e. not electromotive, but pneumatically powered
- Operating pressure max. 1,000 bar



High Pressure Valves, Fittings, Tubing

- Stainless steel design
- Temperatures from -250° C to +650° C for liquids and gases
- Maximum outlet pressures up to 10,500 bar



Special Test Benches

- Static compression resistance test
- Bursting pressure test
- Impulse pressure test
- Hoses, pipes, valves, hydraulic components can be tested

Your representative:



MAXIMATOR GmbH

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MAXIMATOR®

HIGH PRESSURE TECHNOLOGY • HYDRAULICS • PNEUMATICS • TESTING EQUIPMENT



Valves • Fittings • Tubing

Adapters and
Couplings

Medium Pressure
to 21,000 psi (1,500 bar)

Accessories

High Pressure
to 65,000 psi (4,500 bar)

Tools and
Installation

Ultra High Pressure
to 152,000 psi (10,500 bar)

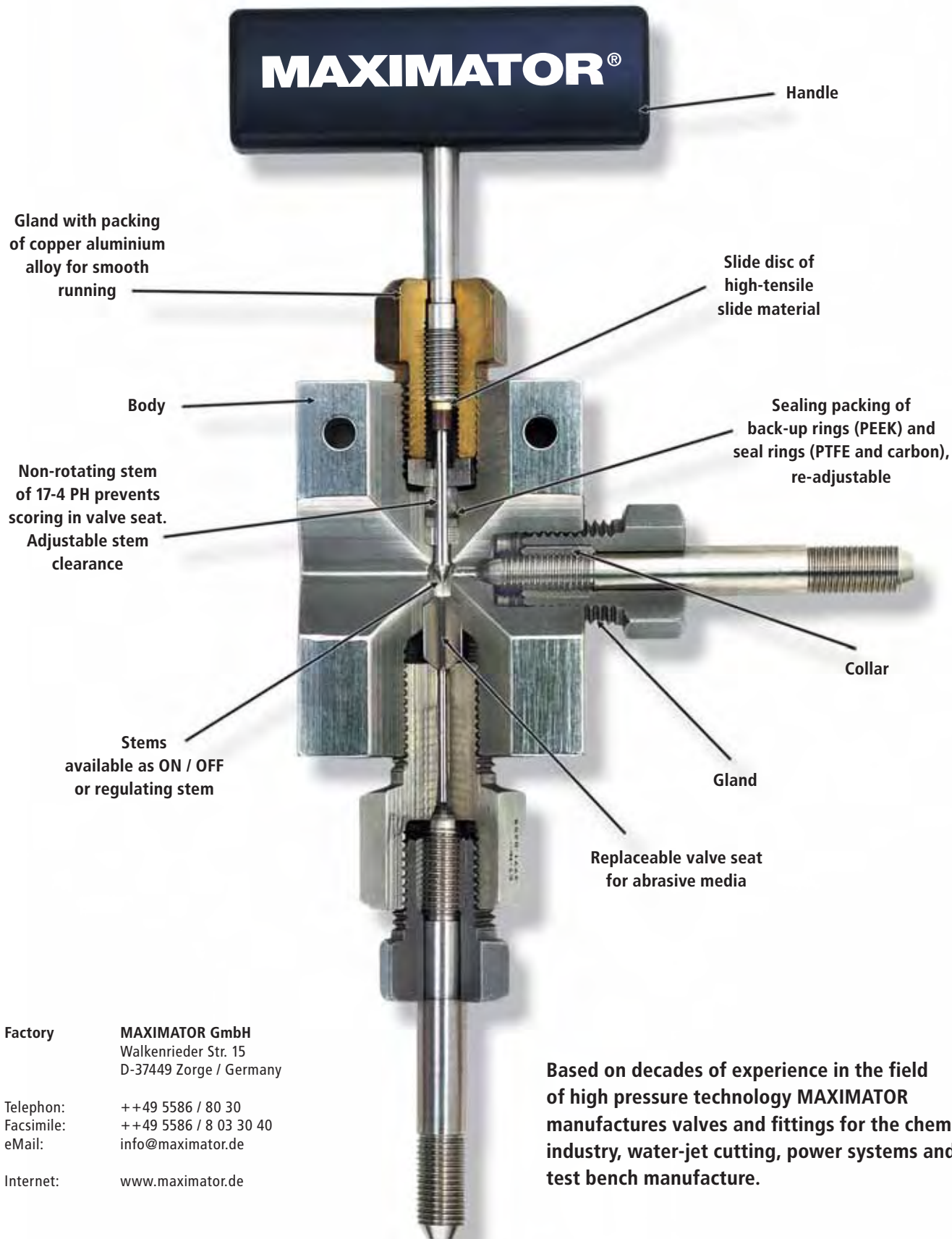
Technical
Information

Valve Actuators

Ball Valves

to 21,000 psi (1,500 bar)

Valve cross sections



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Based on decades of experience in the field of high pressure technology MAXIMATOR manufactures valves and fittings for the chemical industry, water-jet cutting, power systems and test bench manufacture.

State-of-the-art technical know-how based on German engineering, successful system developer and experienced specialist - MAXIMATOR GmbH is a leading supplier of high-pressure and testing technology, hydraulic and pneumatic equipments. Qualified and motivated company members are developing, designing, manufacturing and marketing products internationally which are worldwide employed in process technology plants.

At its headquarter in Zorge and its factory in Nordhausen MAXIMATOR GmbH develops, designs and manufactures high-pressure equipment.



Our work is based on a verified and certified quality management system (DIN EN ISO 9001:2000) - the fundamental asset for implementing technological knowledge successfully and experience in the field of complex systems.

Further sales offices of the company across Germany and partner firms around the world provide fast-tracked individual system solutions, inter alia for valves, fittings and tubings, air-driven fluid pumps, air amplifiers and gas compressors, hydraulic units, test rigs and pressure generating units as well as gas-assisted and water-assisted systems.

Our efficient in-house service department carries out erection, installation and maintenance of components and systems manufactured by MAXIMATOR.



In our purposefully-built development and service centre in Nordhausen MAXIMATOR offers custom-tailored services such as pressure, bursting and impulse pressure tests plus component autofretting.

A modern manufacturing operation has been established at our Nordhausen factory. The plant complies, especially in the high-pressure area, with all requirements to ultra-clean production and thus ensures highest fabrication and quality standards.

The MAXIMATOR team is highly qualified and experienced in high-pressure technologies. Following final inspection the components are shrink wrapped which guarantee dust-free delivery to their destinations.



Continuous marking ensures proper traceability of all MAXIMATOR Valves and Fittings. Following product relevant data are marked by a sophisticated laser device.

Type / Order Code / Maximum Working Pressure / \varnothing High Pressure Tube / Material / Batch Number

Valves, Fittings & Tubing

MAXIMATOR has been designing and manufacturing high pressure equipment for more than thirty years and has a worldwide reputation for quality and reliability, backed by one of the best service organizations in the industry.

► Medium Pressure

A complete line of medium pressure valves, fittings, tubing, check valves, line filters, anti-vibration fittings and safety head assemblies are available through our catalog. All medium pressure valves and fittings use a coned and threaded, medium pressure style connection.

► High Pressure

Whatever your high pressure needs, MAXIMATOR is the source. We supply a complete line of high pressure valves, fittings, tubing, check valves, line filters, anti-vibration fittings and safety head assemblies. All high pressure valves and fittings use the high pressure style connection.

► Ultra High Pressure

In addition to our medium and high pressure lines, we are proud to offer a complete line of ultra high pressure valves, fittings and tubing. They come standard with the 5/16" ultra high pressure coned and threaded connection.

► Valve Actuators

Piston type, air operated, valve actuators are also available from MAXIMATOR. They are mounted on a standard manual valve to provide remote control capability. There are different air to open and air to close actuators available, and selection is based on the valve size, system pressure, and air pressure available.

► Ball Valves

MAXIMATOR now offers ball valves of exceptional quality and performance with a variety of valve styles and process connections. Please consult the Valves, Fittings & Tubing catalog for availability.

► Couplings and Adapters

Joining two different sizes and/or types of connections is easy with the couplings and adapters offered by MAXIMATOR. Now a variety of size combinations are possible!

► Tools & Installation

Precise tools are necessary for manually coning and threading tubing. MAXIMATOR offers these tools, allowing for the coning and threading of medium and high pressure tubing up to 9/16" O.D.



1	Medium Pressure Components Pressures to 21,000 psi (1,500 bar) <i>Valves, Fittings, Anti-Vibration Collet Gland Assemblies, Tubing, Coned and Threaded Nipples, Check Valves, Line Filters, Safety Head Assemblies, Rupture Discs</i>
2	High Pressure Components Pressures to 65,000 psi (4,500 bar) <i>Valves, Fittings, Anti-Vibration Collet Gland Assemblies, Tubing, Coned and Threaded Nipples, Check Valves, Line Filters, Safety Head Assemblies, Rupture Discs</i>
3	Ultra High Pressure Components Pressures to 152,000 psi (10,500 bar) <i>Valves, Fittings, Tubing, Coned and Threaded Nipples</i>
4	Valve Actuators <i>Air to Open (normally closed) , Air to Close (normally open) Actuators</i>
5	Ball Valves Pressures to 21,000 psi (1,500 bar) <i>2-Way Ball Valves- 1/4" Orifice, 3-Way Ball Valves- 3/16" Orifice, Pneumatic and Electric Actuators</i>
6	Adapters, Couplings Pressures to 152,000 psi (10,500 bar) <i>Adapters (male to female, male to male), Couplings (female to female)</i>
7	Accessories <i>Pressure gauges, gauge connections, pressure transducer and high pressure hoses</i>
8	Tools & Installation <i>Coning and Threading Tools, Reseating and Deburr Tools, Tube Connection Details and Instructions, Tubing Minimum Bend Radius, Valve Torque Values</i>
9	Technical Information <i>Pressure vs. Temperature Chart, TÜV Certificate</i>

Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

Valves, Fittings and Tubing Catalog Part Number Generator

Pressure	Component Type	Connection "A"		Stem Type	Body Pattern	Connection "B"		Options
		Size	Type	<i>(only required on needle valves)</i>		Size	Type	
15 = 15,200 psi (1,050 bar)	A = Adapter (male /female)	2 = 1/8"	H = High Pressure	07 = Vee Stem	1 = Two-way straight	<i>If different from Connection "A"</i>		AVA = Anti-Vibration Collet Gland Assembly
21 = 21,000 psi (1,500 bar)	AVA = Anti-Vibration Collet Gland Assembly	4 = 1/4"	M = Medium Pressure					2 = Two-way angle
36 = 36,000 psi (2,500 bar)	B24 = 2-Way Ball Valve	5 = 5/16"	P = NPT Pipe	08 = Regulating Stem	3 = Three-way, two on pressure	<i>If different from Connection "A"</i>		B = Cryogenic Packing (-100°F)
65 = 65,000 psi (4,500 bar)	BC = Ball Check Valve	6 = 3/8"	U = Ultra High Pressure					4 = Three-way, one on pressure
101 = 101,000 psi (7,000 bar)	B3D3 = 3-Way Diverter Ball Valve (90°)	8 = 1/2"	B = BSP Pipe	87 = Vee Stem w/ replaceable seat	5 = Three-way, two stem manifold	<i>If different from Connection "A"</i>		DA = Ball Valve Actuator (Pneumatic Double Acting)
152 = 152,000 psi (10,500 bar)	BF = Bulkhead Coupling	9 = 9/16"	GB = Gauge BSP					88 = Replaceable Stem w/ replaceable seat
	B3S3 = 3-Way Switching Ball Valve (180°)	12 = 3/4"				<i>If different from Connection "A"</i>		EH = Electric Ball Valve Actuator (80-240 Volts AC or DC)
	C = Collar	16 = 1"				<i>If different from Connection "A"</i>		EL = Electric Ball Valve Actuator (12-48 Volts AC or DC)
	CF = Cup Type Filter					<i>If different from Connection "A"</i>		GY = Graphite Braided Yarn Packing (800°F)
	CT = Coning Tool					<i>If different from Connection "A"</i>		HNC = Heavy Duty Air Actuators, Normally Closed
	DF = Dual Disc Line Filter					<i>If different from Connection "A"</i>		HNO = Heavy Duty Air Actuators, Normally Open
	DT = Deburring Tool					<i>If different from Connection "A"</i>		HT = High Temperature Option (1200°F)
	F = Coupling (female / female)					<i>If different from Connection "A"</i>		LT = Low Temperature Option (-423°F)
	G = Gland					<i>If different from Connection "A"</i>		LNC = Light Duty Air Actuators, Normally Closed
	L = Elbow					<i>If different from Connection "A"</i>		LNO = Light Duty Air Actuators, Normally Open
	M = Adapter (male / male)					<i>If different from Connection "A"</i>		MNC = Medium Duty Air Actuators, Normally Closed
	N = Nipple					<i>If different from Connection "A"</i>		MNO = Medium Duty Air Actuators, Normally Open
	OC = O-Ring Check Valve					<i>If different from Connection "A"</i>		SA = Ball Valve Actuator (Pneumatic Single Acting)
	P = Plug					<i>If different from Connection "A"</i>		TG = Teflon Glass Packing (600°F)
	PG = Pressure Gauge					<i>If different from Connection "A"</i>		WO = Without Collars & Glands
	RD = Rupture Disc					<i>If different from Connection "A"</i>		WOC = Without Coating
	RT = Reseating Tool					<i>If different from Connection "A"</i>		2P = Two Piece Component
	SH = Safety Head Assembly					<i>If different from Connection "A"</i>		
	T = Tee					<i>If different from Connection "A"</i>		
	TC = Tubing Cap					<i>If different from Connection "A"</i>		
	TU = Tubing					<i>If different from Connection "A"</i>		
	TT = Threading Tool					<i>If different from Connection "A"</i>		
	UF = Union Coupling					<i>If different from Connection "A"</i>		
	V = Valve					<i>If different from Connection "A"</i>		
	X = Cross					<i>If different from Connection "A"</i>		

Medium Pressure
to 21,000 psi (1,500 bar)

High Pressure
to 65,000 psi (4,500 bar)

Ultra High Pressure
to 152,000 psi (10,500 bar)

Valve Actuators

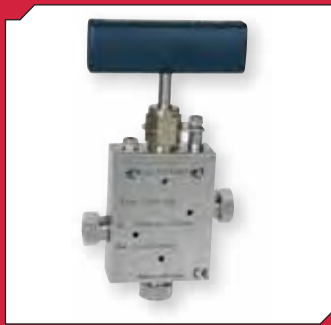
Ball Valves
to 21,000 psi (1,500 bar)

Adapters and
Couplings

Accessories

Tools and
Installation

Technical
Information



Medium Pressure Valves, Fittings and Tubing Pressures to 21,000 psi (1,500 bar)

MAXIMATOR has been designing and manufacturing high pressure equipment for more than thirty years and has a worldwide reputation for quality and reliability, backed by one of the best service organizations in the industry.

Medium Pressure Valves feature:

- ▶ Rising stem design.
- ▶ 316 L (1.4404) wetted parts for excellent corrosion resistance.
- ▶ Metal-to-metal seating achieves bubble-tight shut-off, longer stem and seat life, greater durability for repeated open and close cycles.
- ▶ PTFE and carbon packing with metal back-up rings offers reliable stem to body sealing.
- ▶ Non-rotating stem prevents stem to seat galling.
- ▶ Stem sleeve and packing gland materials have been selected to achieve optimum thread cycle life and reduced handle torque. All stem sleeve threads are rolled, assuring smooth operation.
- ▶ Safety weep holes for all pressure connections and packing area.
- ▶ Six different valve body patterns, with choice of vee or regulating type stem tip.

MAXIMATOR offers a complete line of medium pressure fittings, tubing, check valves, line filters, anti-vibration fittings and safety head assemblies. All medium pressure valves and fittings use the medium pressure style connection. This coned and threaded connection features orifice sizes to match the high flow characteristics of the medium pressure valve, fitting and tubing line.

Note: When selecting multiple items, the pressure rating would be that of the lowest rated component.

Index links

Valves	2-4
Fittings	5-6
Anti-Vibration Collet Gland Assemblies	7
Tubing	8
Coned and Threaded Nipples	9
Check Valves	10-11
Line Filters	12
Safety Head Assemblies and Rupture Discs	13-14

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MAXIMATOR®

Medium Pressure Valves

Pressures to 21,000 psi (1,500 bar)



Ordering Information

Typical catalog number: **21V4M071**

21V	4M	07	1	OPTIONS
Valve Series	O.D. Tube Size	Stem Type	Body Pattern	Extreme temperature option, see below.
21V	4M – 1/4" 6M – 3/8" 9M – 9/16" 12M – 3/4" 16M – 1"	07 – VEE stem 08 – REGULATING stem (tapered tip for regulating and shutoff) 87 – VEE stem with replaceable seat 88 – REGULATING stem with replaceable seat	1 – two-way straight 2 – two-way angle 3 – three-way, two on pressure 4 – three-way, one on pressure 5 – three-way, two-stem manifold	

Special Designs for Extreme Temperatures

Standard valves are supplied with Teflon/Carbon packing and may be operated to 450°F (230°C). High temperature packing and/or extended stuffing box are available for service from -423°F to 1200°F (-217°C to 650°C) by adding the following suffixes to catalog order number.

- **TG** standard valve with teflon glass packing to 600°F (315°C).
- **GY** standard valve with graphite braided yarn packing to 800°F (425°C).
- **HT** extended stuffing box valve with graphite braided yarn packing to 1200°F (650°C).
- **B** standard valve with cryogenic trim materials and Teflon packing to -100°F (-73°C).
- **LT** extended stuffing box valve with teflon packing and cryogenic trim materials to -423°F (-217°C).

Repair Kits

Consult your **MAXIMATOR** representative for repair kits and valve bodies. Refer to the Tools and Installation section for proper maintenance procedures.

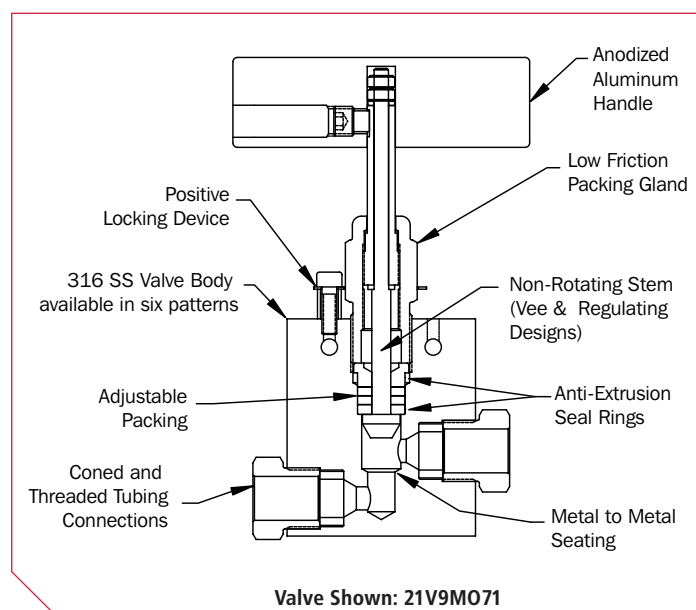
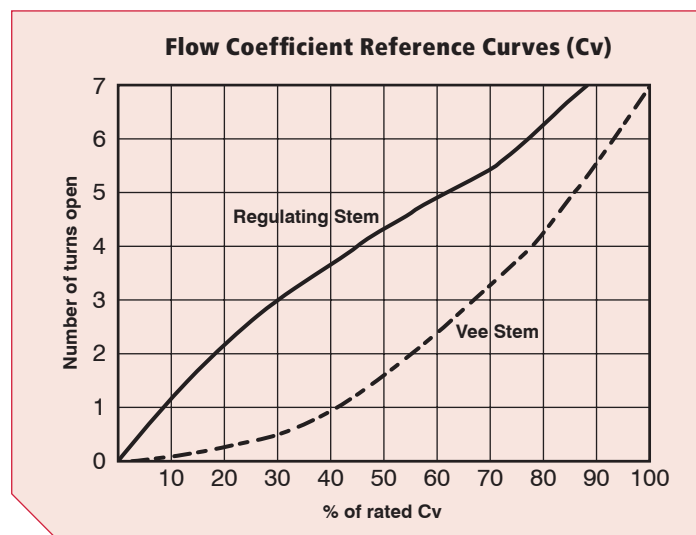
MAXIMATOR medium pressure valves with metal to metal seats have a high level of safety and reliability under adverse operating conditions. These valves may be used both with gases and liquids.

Traceability is ensured through extensively documented data (batch number, maximum pressure, material number, type designation). All medium pressure valves include glands and collars.

O.D. Size in. (mm)	Connection Type	Orifice Size in. (mm)	Rated Cv*	Pressure/Temp. Rating psi @ R.T. (bar)**
1/4 (6.35)	4MF	0.125 (3.2)	0.31	21,000 (1,500)
3/8 (9.53)	6MF	0.219 (5.6)	0.75	21,000 (1,500)
9/16 (14.29)	9MF	0.312 (7.9)	1.30	21,000 (1,500)
3/4 (19.05)	12MF	0.438 (11.1)	2.50	21,000 (1,500)
1 (25.4)	16MF	0.562 (14.3)	4.40	21,000 (1,500)

* Cv values shown are for 2-way straight pattern vee stem valves. For 2-way angle patterns, increase the Cv value by 50%.

** See page 2 in the Technical Section for Pressure/Temperature Rating Chart.



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Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

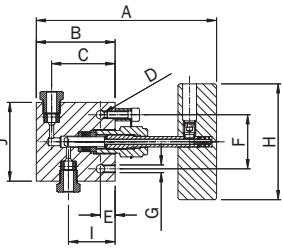
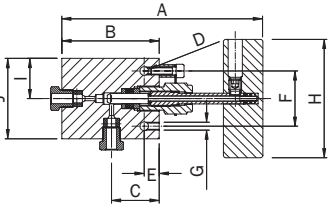
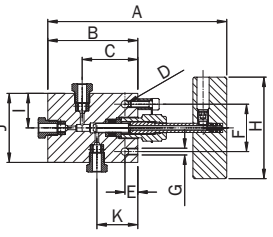
Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

Medium Pressure Valves Pressures to 21,000 psi (1,500 bar)

Valve Pattern	Catalog Number	Stem Type	O.D. Tube in.	Orifice in. (mm)	Dimensions in. (mm)										Valve Panel Hole	Block Thickness
					A	B	C	D	E	F	H	I	J	K		
2-Way Straight																
	21V4M071	Vee	1/4	0.125	4.61	2.01	1.62	0.22	0.37	1.24	2.95	1.19	2.01		0.75	0.79
	21V4M081	Reg		(3.2)	(117)	(51)	(41.1)	(5.6)	(9.5)	(31.5)	(75)	(30.2)	(51)		(19.1)	(20.1)
	21V6M071	Vee	3/8	0.219	4.61	2.01	1.62	0.22	0.37	1.24	2.95	1.19	2.01		0.75	0.79
	21V6M081	Reg		(5.6)	(117)	(51)	(41.1)	(5.6)	(9.5)	(31.5)	(75)	(30.2)	(51)		(19.1)	(20.1)
	21V9M071	Vee	9/16	0.312	6.35	2.88	2.38	0.22	0.37	1.38	3.94	1.75	2.50		1.00	1.02
	21V9M081	Reg		(7.9)	(161.3)	(73.2)	(60.5)	(5.6)	(9.5)	(35)	(100)	(44.5)	(63.5)		(25.4)	(25.9)
	21V12M071	Vee	3/4	0.438	7.05	3.74	3.00	0.43	0.63	1.76	10.31	2.25	3.00		1.25	1.38
	21V12M081	Reg		(11.1)	(179)	(95)	(76)	(11)	(16)	(44.7)	(262)	(57.2)	(76)		(31.8)	(35)
	21V16M071	Vee	1	0.562	8.98	4.65	3.75	0.53	1.13	2.50	10.31	2.81	4.13		1.62	1.77
	21V16M081	Reg		(14.3)	(228)	(118)	(95.3)	(13.5)	(28.7)	(63.5)	(262)	(71.4)	(105)		(41.1)	(45)
2-Way Angle																
	21V4M072	Vee	1/4	0.125	5.00	2.43	1.19	0.22	0.37	1.24	2.95	1.00	2.01		0.75	0.79
	21V4M082	Reg		(3.2)	(127)	(61.7)	(30.2)	(5.6)	(9.5)	(31.5)	(75)	(25.4)	(51)		(19.1)	(20.1)
	21V6M072	Vee	3/8	0.219	5.00	2.43	1.19	0.22	0.37	1.24	2.95	1.00	2.01		0.75	0.79
	21V6M082	Reg		(5.6)	(127)	(61.7)	(30.2)	(5.6)	(9.5)	(31.5)	(75)	(25.4)	(51)		(19.1)	(20.1)
	21V9M072	Vee	9/16	0.312	6.85	3.38	1.75	0.22	0.37	1.38	3.94	1.25	2.50		1.00	1.02
	21V9M082	Reg		(7.9)	(174)	(85.9)	(44.5)	(5.6)	(9.5)	(35)	(100)	(31.8)	(63.5)		(25.4)	(25.9)
	21V12M072	Vee	3/4	0.438	7.56	4.25	2.25	0.43	0.63	1.76	10.31	1.50	3.00		1.25	1.38
	21V12M082	Reg		(11.1)	(192)	(108)	(57.2)	(11)	(16)	(44.7)	(262)	(38)	(76)		(31.8)	(35)
	21V16M072	Vee	1	0.562	9.45	5.12	2.81	0.53	1.13	2.50	10.31	2.07	4.13		1.62	1.77
	21V16M082	Reg		(14.3)	(240)	(130)	(71.4)	(13.5)	(28.7)	(63.5)	(262)	(52.5)	(105)		(41.1)	(45)
3-Way / 2 on Pressure																
	21V4M073	Vee	1/4	0.125	5.20	2.62	1.62	0.22	0.37	1.24	2.95	1.00	2.01	1.19	0.75	0.79
	21V4M083	Reg		(3.2)	(132)	(66.5)	(41.1)	(5.6)	(9.5)	(31.5)	(75)	(25.4)	(51)	(30.2)	(19.1)	(20.1)
	21V6M073	Vee	3/8	0.219	5.20	2.62	1.62	0.22	0.37	1.24	2.95	1.00	2.01	1.19	0.75	0.79
	21V6M083	Reg		(5.6)	(132)	(66.5)	(41.1)	(5.6)	(9.5)	(31.5)	(75)	(25.4)	(51)	(30.2)	(19.1)	(20.1)
	21V9M073	Vee	9/16	0.312	7.09	3.62	2.38	0.22	0.37	1.38	3.94	1.25	2.50	1.75	1.00	1.02
	21V9M083	Reg		(7.9)	(180.1)	(92)	(60.5)	(5.6)	(9.5)	(35)	(100)	(31.8)	(63.5)	(44.5)	(25.4)	(25.9)
	21V12M073	Vee	3/4	0.438	7.97	4.63	3.00	0.43	0.63	1.76	10.31	1.50	3.00	2.25	1.25	1.38
	21V12M083	Reg		(11.1)	(201)	(117.5)	(76)	(11)	(16)	(44.7)	(262)	(38)	(76)	(57.2)	(31.8)	(35)
	21V16M073	Vee	1	0.562	10.20	5.87	3.75	0.53	1.13	2.50	10.31	2.07	4.13	2.81	1.62	1.77
	21V16M083	Reg		(14.3)	(259)	(149)	(95.3)	(13.5)	(28.7)	(63.5)	(262)	(52.5)	(105)	(71.4)	(41.1)	(45)

G - Panel mounting screw thread size 10-24 UNC.
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Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
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Technical Information
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Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

Medium Pressure Valves

Pressures to 21,000 psi (1,500 bar)

Valve Pattern	Catalog Number	Stem Type	O.D. Tube in.	Orifice in. (mm)	Dimensions in. (mm)										Valve Panel Hole	Block Thickness
					A	B	C	D	E	F	H	I	J	K		
3-Way / 1 on Pressure																
	21V4M074	Vee	1/4	0.125 (3.2)	5.00 (127)	2.43 (61.7)	1.19 (30.2)	0.22 (5.6)	0.37 (9.5)	1.24 (31.5)	2.95 (75)	1.00 (25.4)	2.01 (51)	0.75 (19.1)	0.79 (20.1)	
	21V4M084	Reg														
	21V6M074	Vee	3/8	0.219 (5.6)	5.00 (127)	2.43 (61.7)	1.19 (30.2)	0.22 (5.6)	0.37 (9.5)	1.24 (31.5)	2.95 (75)	1.00 (25.4)	2.01 (51)	0.75 (19.1)	0.79 (20.1)	
	21V6M084	Reg														
	21V9M074	Vee	9/16	0.312 (7.9)	6.85 (174)	3.38 (85.9)	1.75 (44.5)	0.22 (5.6)	0.37 (9.5)	1.38 (35)	3.94 (100)	1.25 (31.8)	2.50 (63.5)	1.00 (25.4)	1.02 (25.9)	
	21V9M084	Reg														
	21V12M074	Vee	3/4	0.438 (11.1)	7.56 (192)	4.25 (108)	2.25 (57.2)	0.43 (11)	0.63 (16)	1.76 (44.7)	10.31 (262)	1.50 (38)	3.00 (76)	1.25 (31.8)	1.38 (35)	
	21V12M084	Reg														
	21V16M074	Vee	1	0.562 (14.3)	9.53 (242)	5.12 (130)	2.81 (71.4)	0.53 (13.5)	1.13 (28.7)	2.50 (63.5)	10.31 (262)	2.07 (52.5)	4.13 (105)	1.62 (41.1)	1.77 (45)	
	21V16M084	Reg														
3-Way / 2-Stem Manifold																
	21V4M075	Vee	1/4	0.125 (3.2)	8.54 (217)	3.39 (86)	1.69 (43)	0.22 (5.6)	0.37 (9.5)	1.24 (31.5)	2.95 (75)	1.00 (25.4)	2.01 (51)	1.19 (30.2)	0.75 (19.1)	0.79 (20.1)
	21V4M085	Reg														
	21V6M075	Vee	3/8	0.219 (5.6)	8.54 (217)	3.39 (86)	1.69 (43)	0.22 (5.6)	0.37 (9.5)	1.24 (31.5)	2.95 (75)	1.00 (25.4)	2.01 (51)	1.19 (30.2)	0.75 (19.1)	0.79 (20.1)
	21V6M085	Reg														
	21V9M075	Vee	9/16	0.312 (7.9)	12.06 (306.2)	5.12 (130)	2.56 (65)	0.22 (5.6)	0.37 (9.5)	1.38 (35)	3.94 (100)	1.25 (31.8)	2.50 (63.5)	1.75 (44.5)	1.00 (25.4)	1.02 (25.9)
	21V9M085	Reg														
	21V12M075	Vee	3/4	0.438 (11.1)	13.07 (332)	6.50 (165)	3.25 (82.5)	0.43 (11)	0.63 (16)	1.76 (44.7)	10.31 (262)	1.50 (38)	3.00 (76)	2.25 (57.2)	1.25 (31.8)	1.38 (35)
	21V12M085	Reg														
	21V16M075	Vee	1	0.562 (14.3)	16.18 (411)	7.52 (191)	3.76 (95.5)	0.53 (13.5)	1.13 (28.7)	2.50 (63.5)	10.31 (262)	2.07 (52.5)	4.13 (105)	2.81 (71.4)	1.62 (41.1)	1.77 (45)
	21V16M085	Reg														
2-Way Angle / Replaceable Seat																
	21V4M872	Vee	1/4	0.125 (3.2)	4.84 (123)	2.25 (57.2)	1.19 (30.2)	0.22 (5.6)	0.37 (9.5)	1.24 (31.5)	2.95 (75)	1.00 (25.4)	2.01 (51)	0.75 (19.1)	0.79 (20.1)	
	21V4M882	Reg														
	21V6M872	Vee	3/8	0.219 (5.6)	4.84 (123)	2.25 (57.2)	1.19 (30.2)	0.22 (5.6)	0.37 (9.5)	1.24 (31.5)	2.95 (75)	1.00 (25.4)	2.01 (51)	0.75 (19.1)	0.79 (20.1)	
	21V6M882	Reg														
	21V9M872	Vee	9/16	0.312 (7.9)	6.68 (169.6)	3.21 (81.5)	1.75 (44.5)	0.22 (5.6)	0.37 (9.5)	1.38 (35)	3.94 (100)	1.25 (31.8)	2.50 (63.5)	1.00 (25.4)	1.02 (25.9)	
	21V9M882	Reg														
	21V12M872	Vee	3/4	0.438 (11.1)	7.56 (192)	4.25 (108)	2.25 (57.2)	0.43 (11)	0.63 (16)	1.76 (44.7)	10.31 (262)	1.50 (38)	3.00 (76)	1.25 (31.8)	1.38 (35)	
	21V12M882	Reg														
	21V16M872	Vee	1	0.562 (14.3)	9.57 (243)	5.25 (133.3)	2.81 (71.4)	0.53 (13.5)	1.13 (28.7)	2.50 (63.5)	10.31 (262)	2.07 (52.5)	4.13 (105)	1.62 (41.1)	1.77 (45)	
	21V16M882	Reg														

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Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

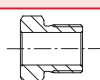

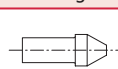

Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

Medium Pressure Fittings Pressures to 21,000 psi (1,500 bar)

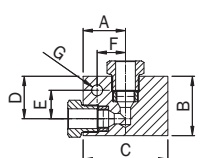
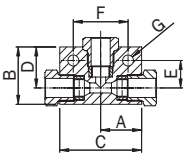
MAXIMATOR medium pressure fittings are designed with the large orifice for use with the 21V series medium pressure valves and medium pressure tubing. All medium pressure fittings have coned and threaded type connections. Mounting holes are standard on all elbows, tees, and crosses.



Tubing Size in. (mm)	Gland	Collar	Plug	Tubing Cap
				
1/4 (6.35)	21G4M	21C4M	21P4M	21TC4M
3/8 (9.53)	21G6M	21C6M	21P6M	21TC6M
9/16 (14.29)	21G9M	21C9M	21P9M	21TC9M
3/4 (19.05)	21G12M	21C12M	21P12M	21TC12M
1 (25.4)	21G16M	21C16M	21P16M	21TC16M

Connection Components

All medium pressure fittings are supplied with glands and collars. Refer to the adjacent chart for ordering any of the connection components individually. When using the plug, the collar is not needed.

Fitting Pattern	Catalog Number	Connection Type	O.D. Tube Size in.	Orifice in. (mm)	Dimensions in. (mm)							Block Thickness
					A	B	C	D	E	F	G	
Elbow												
	21L4M	4MF	1/4	0.125 (3.2)	0.75 (19.1)	1.10 (28)	1.54 (39.1)	0.75 (19.1)	0.49 (12.5)	0.49 (12.5)	0.22 (5.6)	0.63 (16)
	21L6M	6MF	3/8	0.219 (5.6)	1.00 (25.4)	1.38 (35)	2.00 (50.8)	1.00 (25.4)	0.63 (16)	0.63 (16)	0.26 (6.6)	0.79 (20.1)
	21L9M	9MF	9/16	0.359 (9.1)	1.25 (31.8)	1.75 (44.5)	2.50 (63.5)	1.25 (31.8)	0.84 (21.3)	0.84 (21.3)	0.33 (8.4)	1.02 (25.9)
	21L12M	12MF	3/4	0.516 (13.1)	1.50 (38.1)	2.25 (57.2)	3.00 (76)	1.50 (38.1)	1.00 (25.4)	1.00 (25.4)	0.35 (8.9)	1.38 (35)
	21L16M	16MF	1	0.688 (17.4)	2.06 (52.3)	3.00 (76)	4.13 (105)	2.06 (52.3)	1.38 (35)	1.38 (35)	0.53 (13.5)	1.77 (45)
Tee												
	21T4M	4MF	1/4	0.125 (3.2)	0.75 (19.1)	1.10 (28)	1.54 (39.1)	0.75 (19.1)	0.49 (12.5)	0.49 (12.5)	0.22 (5.6)	0.63 (16)
	21T6M	6MF	3/8	0.219 (5.6)	1.00 (25.4)	1.38 (35)	2.00 (50.8)	1.00 (25.4)	0.63 (16)	0.63 (16)	0.26 (6.6)	0.79 (20.1)
	21T9M	9MF	9/16	0.359 (9.1)	1.25 (31.8)	1.75 (44.5)	2.50 (63.5)	1.25 (31.8)	0.84 (21.3)	0.84 (21.3)	0.33 (8.4)	1.02 (25.9)
	21T12M	12MF	3/4	0.516 (13.1)	1.50 (38.1)	2.25 (57.2)	3.00 (76)	1.50 (38.1)	1.00 (25.4)	1.00 (25.4)	0.35 (8.9)	1.38 (35)
	21T16M	16MF	1	0.688 (17.4)	2.06 (52.3)	3.00 (76)	4.13 (105)	2.06 (52.3)	1.38 (35)	1.38 (35)	0.53 (13.5)	1.77 (45)

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Medium Pressure
to 21,000 psi (1,500 bar)

Adapters and
Couplings

High Pressure
to 65,000 psi (4,500 bar)

Accessories

Ultra High Pressure
to 152,000 psi (10,500 bar)

Tools and
Installation

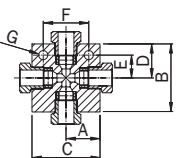
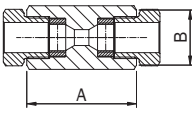
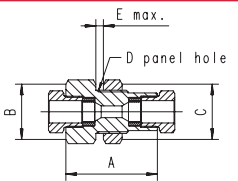
Valve Actuators

Technical
Information

Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

Medium Pressure Fittings Pressures to 21,000 psi (1,500 bar)

Fitting Pattern	Catalog Number	Connection Type	O.D. Tube Size in.	Orifice in. (mm)	Dimensions in. (mm)							Block Thickness
					A	B	C	D	E	F	G	
Cross												
	21X4M	4MF	1/4	0.125 (3.2)	0.77 (19.5)	1.54 (39.1)	1.54 (39.1)	0.77 (19.5)	0.49 (12.5)	0.98 (25)	0.22 (5.6)	0.63 (16)
	21X6M	6MF	3/8	0.219 (5.6)	1.00 (25.4)	2.00 (50.8)	2.00 (50.8)	1.00 (25.4)	0.63 (16)	1.26 (32)	0.26 (6.6)	0.79 (20.1)
	21X9M	9MF	9/16	0.359 (9.1)	1.25 (31.8)	2.50 (63.5)	2.50 (63.5)	1.25 (31.8)	0.84 (21.3)	1.67 (42.6)	0.33 (8.4)	1.02 (25.9)
	21X12M	12MF	3/4	0.516 (13.1)	1.50 (38.1)	3.00 (76)	3.00 (76)	1.50 (38.1)	1.00 (25.4)	2.00 (50.8)	0.35 (8.9)	1.38 (35)
	21X16M	16MF	1	0.688 (17.4)	2.06 (52.3)	4.13 (105)	4.13 (105)	2.06 (52.3)	1.38 (35)	2.76 (70)	0.53 (13.5)	1.77 (45)
Straight Coupling / Union Coupling												
	21F4M	4MF	1/4	0.125 (3.2)	1.62 (41.1)	0.69 (17.5)	Straight Coupling					
	21UF4M						Union Coupling					
	21F6M	6MF	3/8	0.219 (5.6)	1.75 (44.5)	0.88 (22.3)	Straight Coupling					
	21UF6M						Union Coupling					
	21F9M	9MF	9/16	0.359 (9.1)	2.12 (53.8)	1.06 (27)	Straight Coupling					
	21UF9M						Union Coupling					
	21F12M	12MF	3/4	0.516 (13.1)	2.50 (63.5)	1.44 (36.5)	Straight Coupling					
	21UF12M						Union Coupling					
	21F16M	16MF	1	0.688 (17.4)	3.50 (88.9)	2.00 (50.8)	Straight Coupling					
	21UF16M						Union Coupling					
Bulkhead Coupling												
	21BF4M	4MF	1/4	0.125 (3.2)	1.88 (47.8)	1.06 (27)	1.06 (27)	0.81 (20.6)	0.67 (17)			
	21BF6M	6MF	3/8	0.219 (5.6)	2.01 (51)	1.06 (27)	1.06 (27)	0.94 (23.9)	0.39 (9.9)			
	21BF9M	9MF	9/16	0.359 (9.1)	2.38 (60.5)	1.44 (36.5)	1.44 (36.5)	1.12 (28.5)	0.39 (9.9)			
	21BF12M	12MF	3/4	0.516 (13.1)	2.81 (71.4)	1.62 (41.3)	1.62 (41.3)	1.37 (34.8)	0.47 (11.9)			
	21BF16M	16MF	1	0.688 (17.4)	3.54 (89.9)	2.00 (50.8)	2.00 (50.8)	1.68 (42.6)	0.51 (13)			

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Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

Anti-Vibration Collet Gland Assembly Pressures to 21,000 psi (1,500 bar)

MAXIMATOR anti-vibration collet gland assemblies are for use in applications where there could be extreme external mechanical vibrations or shock in tubing lines. These collet gland assemblies are interchangeable with the standard medium pressure coned and threaded tube connections.

In a normal coned and threaded tube connection, any external mechanical loading on the tubing lines, valves or fittings would be concentrated on the first thread of the tube. This can cause failure of the tube at this thinner cross-section. The anti-vibration collet gland assembly grips the tube behind the connection, supporting the tube at the full cross-section and straight area, moving the loading away from the threaded area.

The back part of the assembly has a gland nut that, when tightened properly, compresses a split collet on the tube, providing the beneficial gripping action.

All anti-vibration collet gland assemblies come with a Molybdenum Disulfide Coating to guard against galling of the stainless components.



Gland Pattern	Catalog Number	Part	O.D. Tubing Size in.	Dimensions in. (mm)		
				A	B (Hex.)	C (Hex.)
	21AVA4M	Complete Assembly	1/4	1.27 (32.2)	0.50 (12.7)	0.62 (15.7)
	21AVB4M	Collet Body				
	21AVC4M	Slotted Collet				
	21AVG4M	Gland Nut				
	21AVA6M	Complete Assembly	3/8	1.54 (39.1)	0.62 (15.7)	0.81 (20.6)
	21AVB6M	Collet Body				
	21AVC6M	Slotted Collet				
	21AVG6M	Gland Nut				
	21AVA9M	Complete Assembly	9/16	1.82 (46.2)	0.94 (23.9)	0.94 (23.9)
	21AVB9M	Collet Body				
	21AVC9M	Slotted Collet				
	21AVG9M	Gland Nut				
	21AVA12M	Complete Assembly	3/4	2.01 (51)	1.19 (30.2)	1.25 (31.8)
	21AVB12M	Collet Body				
	21AVC12M	Slotted Collet				
	21AVG12M	Gland Nut				
21AVA16M	Complete Assembly	1	2.44 (62)	1.38 (35)	1.50 (38.1)	
21AVB16M	Collet Body					
21AVC16M	Slotted Collet					
21AVG16M	Gland Nut					

All dimensions are for reference only and subject to change.

Medium Pressure Tubing

Pressures to 21,000 psi (1,500 bar)

MAXIMATOR offers a line of cold drawn thick wall tubing, with flow areas to compliment the large orifice medium pressure valves and fittings. This tubing is made under strict manufacturing and quality control standards and inspections, with dimensional tolerances to match the requirements of the medium pressure coned and threaded connections.

The standard materials are 304 and 316 stainless steels. Other materials may be provided on special request, depending on the specific material, diameters and lengths.



Tubing Tolerances

Normal Tubing Size in. (mm)	Tolerance O.D. in. (mm)
1/4 (6.35)	0.248 / 0.243 (6.299 / 6.172)
3/8 (9.53)	0.370 / 0.365 (9.398 / 9.271)
9/16 (14.29)	0.557 / 0.552 (14.147 / 14.021)
3/4 (19.05)	0.745 / 0.740 (18.923 / 18.796)
1 (25.4)	0.995 / 0.990 (25.273 / 25.174)

Catalog Number	Tube Material	Fits Connection Type	Tube Size in. (mm)		Working Pressure psi (bar)				
			O.D.	I.D.	-325 to 100°F (-198°C to 37°C)	200°F (93°C)	400°F (204°C)	600°F (315°C)	800°F (426°C)
21TU4M-316	316SS	4MF	1/4	0.109	21,000	18,900	17,430	15,960	15,120
21TU4M-304	304SS			(2.77)	(1,500)	(1,300)	(1,200)	(1,100)	(1,040)
21TU6M-316	316SS	6MF	3/8	0.203	21,000	18,900	17,430	15,960	15,120
21TU6M-304	304SS			(5.17)	(1,500)	(1,300)	(1,200)	(1,100)	(1,040)
21TU9M-316	316SS	9MF	9/16	0.312	21,000	18,900	17,430	15,960	15,120
21TU9M-304	304SS			(7.93)	(1,500)	(1,300)	(1,200)	(1,100)	(1,040)
15TU9M-316	316SS	9MF	9/16	0.359	15,200	13,680	12,616	11,552	10,944
15TU9M-304	304SS			(9.12)	(1,050)	(940)	(870)	(790)	(750)
21TU12M-316	316SS	12MF	3/4	0.438	21,000	18,900	17,430	15,960	15,120
15TU12M-316	316SS			(11.13)	(1,500)	(1,300)	(1,200)	(1,100)	(1,040)
				0.516	15,200	13,680	12,616	11,552	10,944
				(13.11)	(1,050)	(940)	(870)	(790)	(750)
21TU16M-316	316SS	16MF	1	0.562	21,000	18,900	17,430	15,960	15,120
15TU16M-316	316SS			(14.27)	(1,500)	(1,300)	(1,200)	(1,100)	(1,040)
				0.688	15,200	13,680	12,616	11,552	10,944
				(17.48)	(1,050)	(940)	(870)	(790)	(750)

All dimensions are for reference only and subject to change.

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MAXIMATOR®

Coned and Threaded Nipples

Pressures to 21,000 psi (1,500 bar)



MAXIMATOR offers a line of coned and threaded medium pressure tube nipples in a variety of lengths for all standard tube sizes.

The coned and threaded medium pressure tube nipples are available in 316 stainless steel.

They are also available in the 15,200 psi (**1,050 bar**) or 21,000 psi (**1,500 bar**) versions for the 9/16", 3/4" and 1" OD tube sizes. See chart below for ordering information.

Special length coned and threaded nipples are available upon request. Consult **MAXIMATOR** for availability and price.

Catalog Numbers are 316 Stainless Steel material							Fits Connection Type	Tube Size in. (mm)		Working Pressure at 100°F psi (bar)
2.75" (69.85) Length	3" (76.2) Length	4" (101.6) Length	6" (152.4) Length	8" (203.2) Length	10" (254) Length	12" (304.8) Length		O.D.	I.D.	
21N4M-2.75-316	21N4M-3-316	21N4M-4-316	21N4M-6-316	21N4M-8-316	21N4M-10-316	21N4M-12-316	4MF	1/4	0.109 (2.77)	21,000 (1,500)
	21N6M-3-316	21N6M-4-316	21N6M-6-316	21N6M-8-316	21N6M-10-316	21N6M-12-316	6MF	3/8	0.203 (5.17)	21,000 (1,500)
		21N9M-4-316	21N9M-6-316	21N9M-8-316	21N9M-10-316	21N9M-12-316	9MF	9/16	0.312 (7.93)	21,000 (1,500)
		15N9M-4-316	15N9M-6-316	15N9M-8-316	15N9M-10-316	15N9M-12-316	9MF	9/16	0.359 (9.12)	15,200 (1,050)
			21N12M-6-316	21N12M-8-316	21N12M-10-316	21N12M-12-316	12MF	3/4	0.438 (11.13)	21,000 (1,500)
			15N12M-6-316	15N12M-8-316	15N12M-10-316	15N12M-12-316	12MF	3/4	0.516 (13.11)	15,200 (1,050)
			21N16M-6-316	21N16M-8-316	21N16M-10-316	21N16M-12-316	16MF	1	0.562 (14.27)	21,000 (1,500)
			15N16M-6-316	15N16M-8-316	15N16M-10-316	15N16M-12-316	16MF	1	0.688 (17.48)	15,200 (1,050)

Standard nipples are not supplied with glands and collars, see Fittings on page 4 for these components.

See adjacent Tubing page 6, for pressure/temperature rating chart.

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Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

Check Valves

Pressures to 21,000 psi (1,500 bar)

O-Ring Check Valves



O-Ring Check Valves

MAXIMATOR o-ring check valves provide high quality directional flow control and tight shutoff for liquids and gases. All check valves are supplied with glands and collars. These check valves are not to be used as a relief device.

Materials.

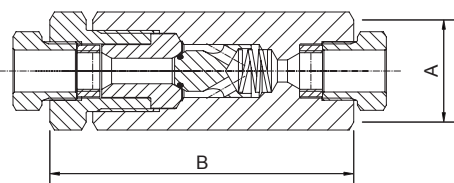
Body, cover, poppet, cover gland: 316 series stainless steel

Spring: 300 series stainless steel

O-ring: Viton "A" [4°F to 392°F (-20°C to 200°C)]

Valve Pattern	Catalog Number	Connection Type	Pressure Rating psi (bar)	Orifice in. (mm)	Rated (Cv)	Dimensions in. (mm)	
						A (Hex.)	B

O-Ring Check Valves



210C4M	4MF	21,000 (1,500)	0.125 (3.2)	0.28	0.88 (22.3)	2.91 (73.9)
210C6M	6MF	21,000 (1,500)	0.219 (5.6)	0.84	1.06 (27)	3.31 (84.1)
210C9M	9MF	21,000 (1,500)	0.359 (9.1)	2.30	1.44 (36.5)	4.21 (106.9)
210C12M	12MF	21,000 (1,500)	0.516 (13.1)	4.70	2.00 (50.8)	5.43 (137.9)
210C16M	16MF	21,000 (1,500)	0.688 (17.4)	7.40	2.00 (50.8)	6.57 (166.9)

CAUTION: FREQUENT INSPECTIONS of O-Rings are necessary to ensure proper service of the check valve. O-Rings have shown satisfactory service life in testing, however different service conditions may lead to variations in cycle and shelf life.

All dimensions are for reference only and subject to change.

MAXIMATOR®

Check Valves

Pressures to 21,000 psi (1,500 bar)

Medium Pressure
to 21,000 psi (1,500 bar)

Adapters and
Couplings

High Pressure
to 65,000 psi (4,500 bar)

Accessories

Ultra High Pressure
to 152,000 psi (10,500 bar)

Tools and
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Information

Ball Valves
to 21,000 psi (1,500 bar)

Ball Check Valves



Ball Check Valves

MAXIMATOR ball check valves prevent reverse flow where bubble tight shutoff is not mandatory. These check valves are designed with a ball cradled floating poppet to assure positive inline seating. This poppet design allows full flow around the ball to minimize pressure drop. Check valves are rated to 660°F (350°C). All check valves are supplied with glands and collars. These check valves are not to be used as a relief device.

Materials.

Body, cover, poppet, cover gland: 316L series stainless steel
Ball and spring: 300 series stainless steel

Valve Pattern	Catalog Number	Connection Type	Pressure Rating psi (bar)	Orifice in. (mm)	Rated (Cv)	Dimensions in. (mm)	
						A (Hex.)	B
Ball Check Valves							
	21BC4M	4MF	21,000 (1,500)	0.125 (3.2)	0.28	0.88 (22.3)	2.91 (73.9)
	21BC6M	6MF	21,000 (1,500)	0.219 (5.6)	0.84	1.06 (27)	3.31 (84.1)
	21BC9M	9MF	21,000 (1,500)	0.359 (9.1)	2.30	1.44 (36.5)	4.21 (106.9)
	21BC12M	12MF	21,000 (1,500)	0.516 (13.1)	4.70	2.00 (50.8)	5.43 (137.9)
	21BC16M	16MF	21,000 (1,500)	0.688 (17.4)	7.40	2.00 (50.8)	6.57 (166.9)

CAUTION: FREQUENT INSPECTIONS of O-Rings are necessary to ensure proper service of the check valve. O-Rings have shown satisfactory service life in testing, however different service conditions may lead to variations in cycle and shelf life.

All dimensions are for reference only and subject to change.

Line Filters

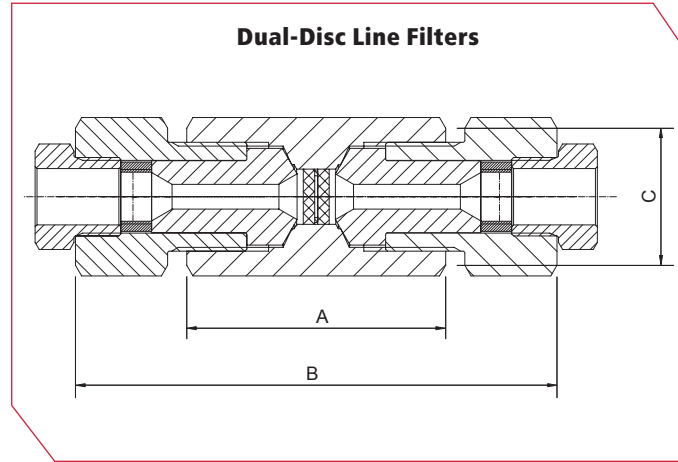
Pressures to 21,000 psi (1,500 bar)

Dual-Disc Line Filters

MAXIMATOR dual-disc line filters are used to filter process fluids in high pressure systems. This design helps remove the large particles first through a coarse primary disc, which then allows a secondary disc to provide a smaller micron filtration. These filter elements are designed to withstand pressure surges without cracking, flaking, or rupturing. Filter elements come standard in the following micron sizes: 5/8, 8/30, 30/56 (secondary/primary). Filters are rated for temperatures -60°F to 660°F (-50°C to 350°C). All line filters come with glands and collars.

Materials

Body: cover, cover gland: 316L series stainless steel
Element: 316 stainless steel

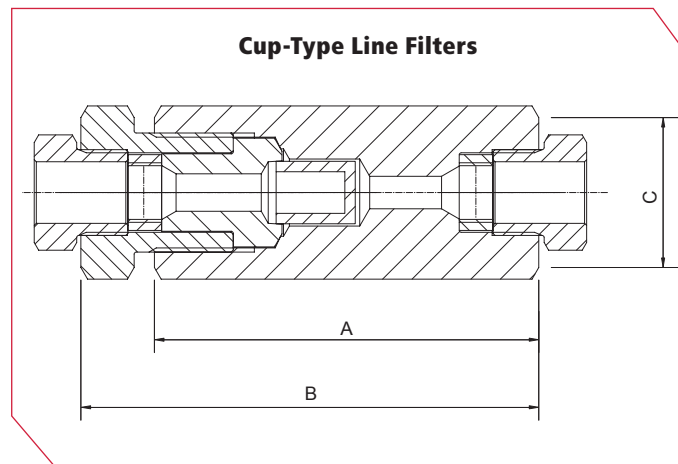


Cup-Type Line Filters

MAXIMATOR cup-type line filters are used when maximum filtration surface area and a single micron size element is preferred. This design increases the filter area as much as 6 times the area of the disc type filter, and will permit higher flow rates with a lower pressure drop, and longer intervals between element changes. Filter elements come standard in 5, 30, or 56 micron sizes and are easily replaced. Filters are rated for temperatures -60°F to 660°F (-50°C to 350°C). All line filters come with glands and collars.

Materials:

Body, cover, cover gland: 316L series stainless steel
Element: 316 stainless steel



Catalog Number	Pressure Rating psi (bar)	Orifice in. (mm)	Micron Size	Connection Type	Filter Element Area in. ² (mm) ²	Dimensions in. (mm)		
						A	B	C (Hex.)

Dual-Disc Line Filters								
21DF9M - 5/8	21,000 (1,500)	0.312 (7.9)	5/8	9MF	0.25 (160)	2.68 (68.1)	4.96 (126)	1.44 (36.5)
21DF9M - 8/30			8/30					
21DF9M - 30/56			30/56					

Cup-Type Line Filters								
21CF4M-5	21,000 (1,500)	0.125 (3.2)	5	4MF	0.82 (530)	2.38 (60.5)	2.87 (72.9)	0.88 (22.3)
21CF4M-30			30					
21CF4M-56			56					
21CF6M-5	21,000 (1,500)	0.219 (5.6)	5	6MF	0.82 (530)	2.83 (71.8)	3.35 (85.1)	1.06 (27)
21CF6M-30			30					
21CF6M-56			56					
21CF9M-5	21,000 (1,500)	0.359 (9.1)	5	9MF	1.55 (1,000)	3.63 (92.2)	4.33 (110)	1.44 (36.5)
21CF9M-30			30					
21CF9M-56			56					
21CF12M-5	21,000 (1,050)	0.516 (13.1)	5	12MF	6.14 (3,960)	5.75 (146)	6.57 (166.9)	2.00 (50.8)
21CF12M-30			30					
21CF12M-56			56					
21CF16M-5	21,000 (1,500)	0.688 (17.4)	5	16MF	6.14 (3,960)	5.75 (146)	6.57 (166.9)	2.00 (50.8)
21CF16M-30			30					
21CF16M-56			56					

It is recommended that all fluids entering a high pressure system be thoroughly cleaned. Maximator filters are designed to remove small amounts of process particles. Pressure differential should not exceed 1000 psi across the filter elements.

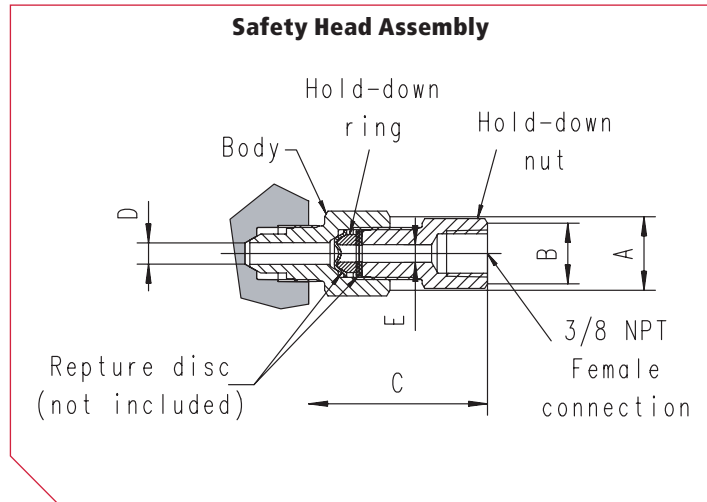
All dimensions for reference only and are subject to change.

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MAXIMATOR®

Safety Head Assembly Pressures to 21,000 psi (1,500 bar)

MAXIMATOR safety head assemblies are used to provide over-pressure protection to high pressure systems. These safety head assemblies are to be used with the appropriate 1/4" angular rupture disc listed in the chart below.



Safety Head Assembly Catalog Number without Disc	Fits Connection Type	Pressure Rating psi (bar)	Body Torque ft - lbs. (Nm)	Dimensions in. (mm)				
				A (Hex.)	B (Hex.)	C (LG.)	D (I.D.)	E (I.D.)
21SH4M	4MF	21,000 (1,500)	20 (30)	1.06 (27)	0.88 (22.3)	2.48 (63)	0.109 (2.8)	0.250 (6.3)
21SH6M	6MF	21,000 (1,500)	30 (40)	1.06 (27)	0.88 (22.3)	2.72 (69.1)	0.203 (5.1)	0.250 (6.3)
21SH9M	9MF	21,000 (1,500)	55 (75)	1.06 (27)	0.88 (22.3)	2.51 (63.7)	0.312 (7.9)	0.250 (6.3)
21SH12M	12MF	21,000 (1,500)	90 (120)	1.19 (30.2)	0.88 (22.3)	2.72 (69.1)	0.312 (7.9)	0.250 (6.3)
21SH16M	16MF	21,000 (1,500)	150 (200)	1.44 (36.6)	0.88 (22.3)	2.72 (69.1)	0.312 (7.9)	0.250 (6.3)

All dimensions for reference only and are subject to change.

Medium Pressure
to 21,000 psi (1,500 bar)

Adapters and
Couplings

High Pressure
to 65,000 psi (4,500 bar)

Accessories

Ultra High Pressure
to 152,000 psi (10,500 bar)

Tools and
Installation

Valve Actuators

Technical
Information

Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

1/4" Angular Rupture Discs



1/4" angular seat rupture discs are designed to be used with the safety head assemblies that are show above. Minimum rupture disc pressure ratings should be at least 110% of system operating pressure. The standard material is Inconel. The pressure ranges indicated in the table below are at room temperature (72°F). Other materials and pressure ranges are available upon request.

Catalog Number	Pressure range psi (bar)
RD-1000	970 - 1,060 (66.9-73.1)
RD-1200	1,164 - 1,272 (80.3-87.7)
RD-1500	1,455 - 1,590 (99.7-109.7)
RD-1750	1,697 - 1,855 (117-127.9)
RD-2000	1,940 - 2,120 (133.8-146.2)
RD-2500	2,425 - 2,650 (167.2-182.8)
RD-3000	2,910 - 3,180 (200.7-219.3)
RD-3500	3,395 - 3,710 (234.1-255.9)
RD-4000	3,880 - 4,240 (267.6-292.4)
RD-4500	4,365 - 4,770 (301-329)
RD-5000	4,850 - 5,300 (334.5-365.5)

Catalog Number	Pressure range psi (bar)
RD-5500	5,335 - 5,830 (367.9-402.1)
RD-6000	5,820 - 6,360 (401.4-438.6)
RD-6500	6,305 - 6,890 (434.8-475.2)
RD-7000	6,790 - 7,420 (468.3 - 511.7)
RD-7500	7,275 - 7,950 (501.7-548.3)
RD-8000	7,760 - 8,480 (535.2 - 584.8)
RD-8500	8,245 - 9,010 (568.6 - 621.4)
RD-9000	8,730 - 9,540 (602.1 - 657.9)
RD-9500	9,215 - 10,070 (635.5 - 694.5)
RD-10000	9,700 - 10,600 (669 - 731)
RD-11000	10,670 - 11,660 (735.9 - 804.1)

Catalog Number	Pressure range psi (bar)
RD-12000	11,640 - 12,720 (802.8 - 877.2)
RD-13000	12,610 - 13,780 (869.7 - 950.3)
RD-14000	13,580 - 14,840 (936.6 - 1023.4)
RD-15000	14,550 - 15,900 (1,003.4 - 1,096.6)
RD-16000	15,520 - 16,960 (1,070.3 - 1,169.7)
RD-17000	16,490 - 18,020 (1,137.2 - 1,242.8)
RD-18000	17,460 - 19,080 (1,204.1 - 1,315.9)
RD-19000	18,430 - 20,140 (1,271 - 1,389)
RD-20000	19,400 - 21,200 (1,337.9 - 1,462.1)
RD-21000	20,370 - 22,260 (1,404.8 - 1,535.2)
RD-22000	21,340 - 23,320 (1,471.7 - 1,608.3)



Rupture Discs are individually packed and marked type plate.



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Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)



High Pressure Valves, Fittings and Tubing Pressures to 65,000 psi (4,500 bar)

MAXIMATOR has been designing and manufacturing high pressure equipment for more than thirty years and has a worldwide reputation for quality and reliability, backed by one of the best service organizations in the industry.

High Pressure Valves feature:

- ▶ Rising stem design.
- ▶ 316 L (1.4404) wetted parts for excellent corrosion resistance.
- ▶ Metal-to-metal seating achieves bubble-tight shut-off, longer stem and seat life, greater durability for repeated open and close cycles.
- ▶ PTFE and carbon packing with metal back-up rings offers reliable stem to body sealing.
- ▶ Non-rotating stem prevents stem to seat galling.
- ▶ Stem sleeve and packing gland materials have been selected to achieve optimum thread cycle life and reduced handle torque. All stem sleeve threads are rolled, assuring smooth operation.
- ▶ Safety weep holes for all pressure connections and packing area.
- ▶ Six different valve body patterns, with choice of vee or regulating type stem tip.

MAXIMATOR offers a complete line of high pressure fittings, tubing, check valves, line filters, anti-vibration fittings and safety head assemblies. All high pressure valves and fittings use the high pressure style connection.

Note: When selecting multiple items, the pressure rating would be that of the lowest rated component.

Index links to:

Valves rated to 36,000 psi (2,500 bar) ..2-3

Valves rated to 65,000 psi (4,500 bar) . 4-5

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Anti-Vibration Collet Gland Assemblies 8

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Check Valves 11

Line Filters. 12

Safety Head Assemblies and Rupture Discs 13-14

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MAXIMATOR®

High Pressure Valves

Pressures to 36,000 psi (2,500 bar)



Ordering Information

Typical catalog number: **36V4H071**

36V	4H	07	1	OPTIONS
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Valve Series	O.D. Tube Size	Stem Type	Body Pattern	Extreme temperature option, see below.
36V	4H - 1/4"	07 - VEE stem	1 - two-way straight	
	6H - 3/8"	08 - regulating stem (tapered tip for regulating and shutoff)	2 - two-way angle	
	9H - 9/16"	87 - VEE stem with replaceable seat	3 - three-way, two on pressure	
		88 - regulating stem with replaceable seat	4 - three-way, one on pressure	
			5 - three-way, two-stem manifold	

Special Designs for Extreme Temperatures

Standard valves are supplied with Teflon/Carbon packing and may be operated to 450°F (230°C). High temperature packing and/or extended stuffing box are available for service from -423°F to 1200°F (-217°C to 650°C) by adding the following suffixes to catalog order number.

- **TG** standard valve with teflon glass packing to 600°F (315°C).
- **GY** standard valve with graphite braided yarn packing to 800°F (425°C).
- **HT** extended stuffing box valve with graphite braided yarn packing to 1200°F (650°C).
- **B** standard valve with cryogenic trim materials and teflon packing to -100°F (-73°C).
- **LT** extended stuffing box valve with teflon packing and cryogenic trim materials to -423°F (-217°C).

Repair Kits

Consult your **MAXIMATOR** representative for repair kits and valve bodies. Refer to the Tools and Installation section for proper maintenance procedures.

MAXIMATOR high pressure valves with metal to metal seats have a high level of safety and reliability under adverse operating conditions. These valves may be used both with gases and liquids.

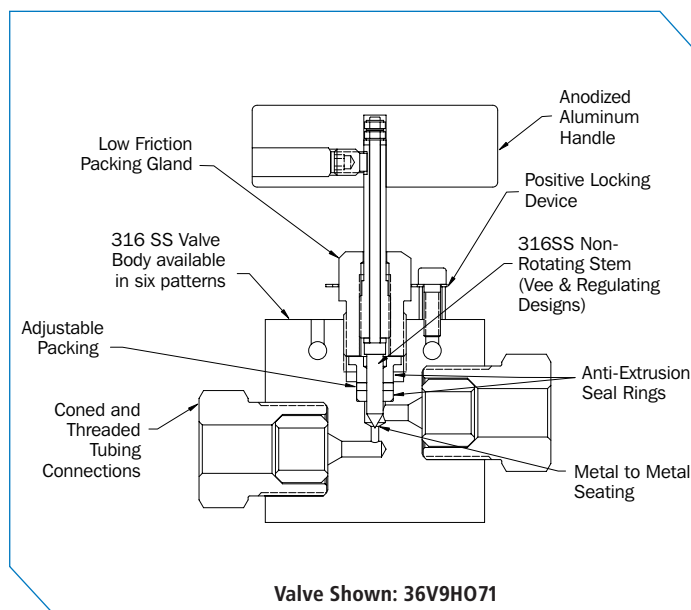
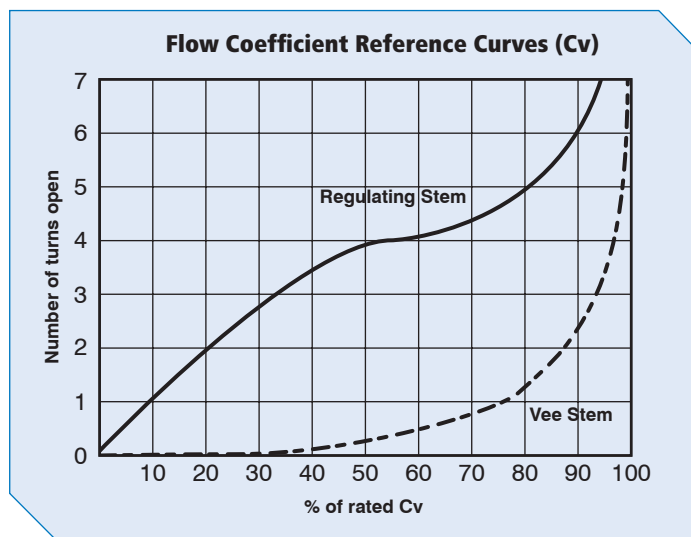
Traceability is ensured through extensively documented data (batch number, max. pressure, material number, type designation). All high pressure valves include glands and collars.

O.D. Size in. (mm)	Connection Type	Orifice Size in. (mm)	Rated Cv*	Pressure/Temp. Rating psi @ R.T.** (bar)
1/4 (6.35)	4HF	0.094 (2.3)	0.12	36,000 (2,500)
3/8 (9.53)	6HF	0.125 (3.2)	0.23	36,000 (2,500)
9/16 (19.05)	9HF	0.125 (3.2)	0.33	36,000 (2,500)

* Cv values shown are for 2-way straight pattern vee stem valves.

For 2-way angle patterns, increase the Cv value by 50%.

** See page 2 in the Technical Section for Pressure/Temperature Rating Chart.



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Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

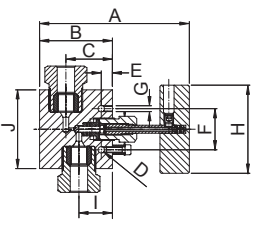
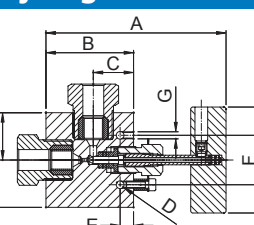
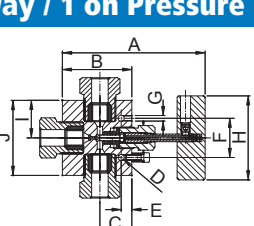
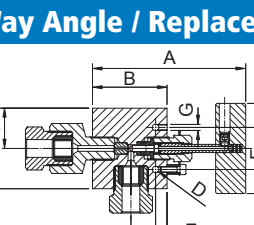
Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

High Pressure Valves Pressures to 36,000 psi (2,500 bar)

Valve Pattern	Catalog Number	Stem Type	O.D. Tube in.	Orifice in. (mm)	Dimensions in. (mm)											Valve Panel Hole	Block Thickness
					A	B	C	D	E	F	H	I	J	K			
	36V4H071	Vee	1/4	0.094	4.96	2.01	1.50	0.22	0.37	1.38	2.95	1.12	2.01		1.00	1.02	
	36V4H081	Reg		(2.3)	(126)	(51)	(38)	(5.6)	(9.5)	(35)	(75)	(28.5)	(51)		(25.4)	(25.9)	
	36V6H071	Vee	3/8	0.125	4.96	2.01	1.50	0.22	0.37	1.38	2.95	1.12	2.01		1.00	1.02	
	36V6H081	Reg		(3.2)	(126)	(51)	(38)	(5.6)	(9.5)	(35)	(75)	(28.5)	(51)		(25.4)	(25.9)	
	36V9H071	Vee	9/16	0.125	5.00	2.44	1.56	0.22	0.37	1.38	2.95	1.12	2.64		1.00	1.54	
	36V9H081	Reg		(3.2)	(127)	(62)	(39.6)	(5.6)	(9.5)	(35)	(75)	(28.5)	(57)		(25.4)	(39.1)	
	36V4H072	Vee	1/4	0.094	4.96	2.01	1.12	0.22	0.37	1.38	2.95	1.00	2.01		1.00	1.02	
	36V4H082	Reg		(2.3)	(126)	(51)	(28.5)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)		(25.4)	(25.9)	
	36V6H072	Vee	3/8	0.125	4.78	2.20	1.10	0.22	0.37	1.38	2.95	1.00	2.01		1.00	1.02	
	36V6H082	Reg		(3.2)	(121.5)	(56)	(28)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)		(25.4)	(25.9)	
	36V9H072	Vee	9/16	0.125	5.00	2.44	1.12	0.22	0.37	1.38	2.95	1.32	2.64		1.00	1.54	
	36V9H082	Reg		(3.2)	(127)	(62)	(28.5)	(5.6)	(9.5)	(35)	(75)	(33.5)	(57)		(25.4)	(39.1)	
	36V4H073	Vee	1/4	0.094	4.69	2.13	1.50	0.22	0.37	1.38	2.95	1.00	2.01	1.12	1.00	1.02	
	36V4H083	Reg		(2.3)	(119.1)	(54.1)	(38)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)	(28.5)	(25.4)	(25.9)	
	36V6H073	Vee	3/8	0.125	5.08	2.50	1.50	0.22	0.37	1.38	2.95	1.00	2.01	1.12	1.00	1.02	
	36V6H083	Reg		(3.2)	(129)	(63.5)	(38)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)	(28.5)	(25.4)	(25.9)	
	36V9H073	Vee	9/16	0.125	5.45	2.87	1.56	0.22	0.37	1.38	2.95	1.32	2.64	1.12	1.00	1.54	
	36V9H083	Reg		(3.2)	(138.5)	(72.9)	(39.6)	(5.6)	(9.5)	(35)	(75)	(33.5)	(57)	(28.5)	(25.4)	(39.1)	
	36V4H074	Vee	1/4	0.094	4.96	2.01	1.12	0.22	0.37	1.38	2.95	1.00	2.01		1.00	1.02	
	36V4H084	Reg		(2.3)	(126)	(51)	(28.5)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)		(25.4)	(25.9)	
	36V6H074	Vee	3/8	0.125	4.76	2.20	1.12	0.22	0.37	1.38	2.95	1.00	2.01		1.00	1.02	
	36V6H084	Reg		(3.2)	(121)	(56)	(28.5)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)		(25.4)	(25.9)	
	36V9H074	Vee	9/16	0.125	5.00	2.44	1.12	0.22	0.37	1.38	2.95	1.32	2.64		1.00	1.54	
	36V9H084	Reg		(3.2)	(127)	(62)	(28.5)	(5.6)	(9.5)	(35)	(75)	(33.5)	(57)		(25.4)	(39.1)	
	36V4H075	Vee	1/4	0.094	8.23	3.07	1.54	0.22	0.37	1.38	2.95	1.00	2.01	1.12	1.00	1.02	
	36V4H085	Reg		(2.3)	(209)	(78)	(39.1)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)	(28.5)	(25.4)	(25.9)	
	36V6H075	Vee	3/8	0.125	8.39	3.25	1.61	0.22	0.37	1.38	2.95	1.00	2.01	1.12	1.00	1.02	
	36V6H085	Reg		(3.2)	(213)	(82.5)	(40.9)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)	(28.5)	(25.4)	(25.9)	
	36V9H075	Vee	9/16	0.125	8.90	3.74	1.88	0.22	0.37	1.38	2.95	1.32	2.64	1.12	1.00	1.54	
	36V9H085	Reg		(3.2)	(226)	(95)	(47.8)	(5.6)	(9.5)	(35)	(75)	(33.5)	(57)	(28.5)	(25.4)	(39.1)	
	36V4H872	Vee	1/4	0.094	4.96	2.38	1.12	0.22	0.37	1.38	2.95	1.00	2.01		1.00	1.02	
	36V4H882	Reg		(2.3)	(126)	(60.5)	(28.5)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)		(25.4)	(25.9)	
	36V6H872	Vee	3/8	0.125	4.96	2.38	1.12	0.22	0.37	1.38	2.95	1.00	2.01		1.00	1.02	
	36V6H882	Reg		(3.2)	(126)	(60.5)	(28.5)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)		(25.4)	(25.9)	
	36V9H872	Vee	9/16	0.125	5.00	2.44	1.18	0.22	0.37	1.38	2.95	1.32	2.64		1.00	1.54	
	36V9H882	Reg		(3.2)	(127)	(62)	(30)	(5.6)	(9.5)	(35)	(75)	(33.5)	(57)		(25.4)	(39.1)	

G - Panel mounting screw thread size 10-24 UNC.
All dimensions are for reference only and subject to change.

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Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

High Pressure Valves

Pressures to 65,000 psi (4,500 bar)



Ordering Information

Typical catalog number: **65V4H071**

65V	4H	07	1	OPTIONS
Valve Series	O.D. Tube Size	Stem Type	Body Pattern	Extreme temperature option, see below.
65V	4H – 1/4" 6H – 3/8" 9H – 9/16"	07 – VEE stem 08 – regulating stem (tapered tip for regulating and shutoff) 87 – VEE stem with replaceable seat 88 – regulating stem with replaceable seat	1 – two-way straight 2 – two-way angle 3 – three-way, two on pressure 4 – three-way, one on pressure 5 – three-way, two-stem manifold	

Special Designs for Extreme Temperatures

Standard valves are supplied with Teflon/Carbon packing and may be operated to 450°F (230°C). High temperature packing and/or extended stuffing box are available for service from -423°F to 1200°F (-217°C to 650°C) by adding the following suffixes to catalog order number.

- **TG** standard valve with teflon glass packing to 600°F (315°C).
- **GY** standard valve with graphite braided yarn packing to 800°F (425°C).
- **HT** extended stuffing box valve with graphite braided yarn packing to 1200°F (650°C).
- **B** standard valve with cryogenic trim materials and teflon packing to -100°F (-73°C).
- **LT** extended stuffing box valve with teflon packing and cryogenic trim materials to -423°F (-217°C).

Repair Kits

Consult your **MAXIMATOR** representative for repair kits and valve bodies. Refer to the Tools and Installation section for proper maintenance procedures.

MAXIMATOR high pressure valves with metal to metal seats have a high level of safety and reliability under adverse operating conditions. These valves may be used both with gases and liquids.

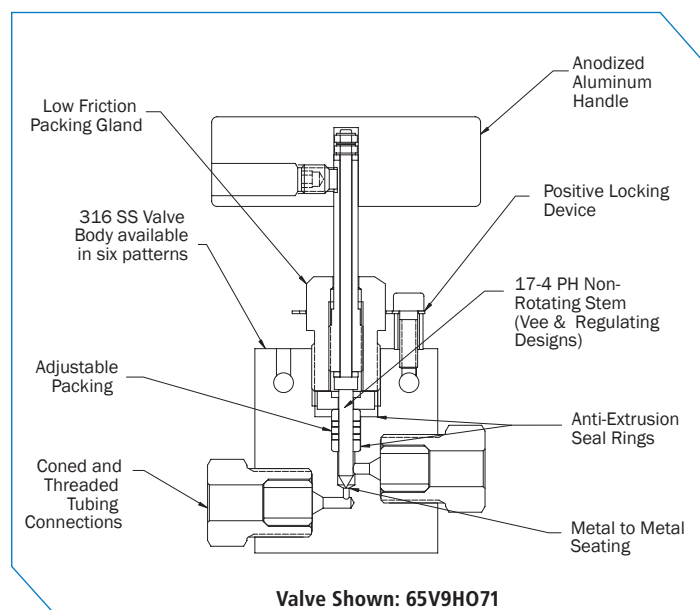
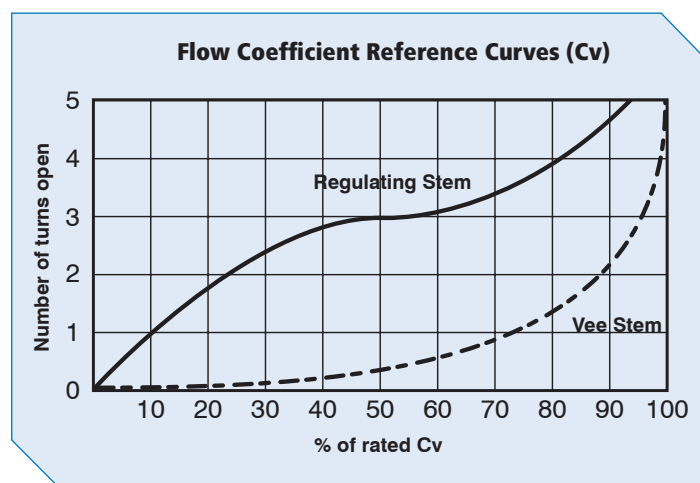
Traceability is ensured through extensively documented data (batch number, maximum pressure, material number, type designation). All high pressure valves include glands and collars.

O.D. Size in. (mm)	Connection Type	Orifice Size in. (mm)	Rated Cv*	Pressure/Temp. Rating psi (bar) @ R.T.**
1/4 (6.35)	4HF	0.062 (1.6)	0.08	65,000 (4,500)
3/8 (9.53)	6HF	0.062 (1.6)	0.09	65,000 (4,500)
9/16 (19.05)	9HF	0.078 (2)	0.14	65,000 (4,500)

* Cv values shown are for 2-way straight pattern vee stem valves.

For 2-way angle patterns, increase the Cv value by 50%.

** See page 2 in the Technical Section for Pressure/Temperature Rating Chart.



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Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

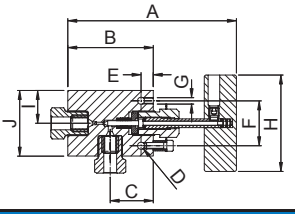
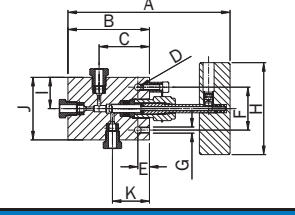
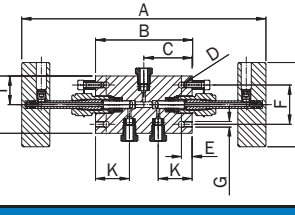
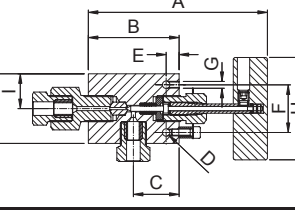
Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

High Pressure Valves Pressures to 65,000 psi (4,500 bar)

Valve Pattern	Catalog Number	Stem Type	O.D. Tube in.	Orifice in. (mm)	Dimensions in. (mm)										Valve Panel Hole	Block Thickness
					A	B	C	D	E	F	H	I	J	K		
2-Way Straight																
	65V4H071	Vee	1/4	0.062	4.67	2.13	1.69	0.22	0.37	1.38	2.95	1.32	2.01		1.00	1.02
	65V4H081	Reg		(1.6)	(118.6)	(54.1)	(43)	(5.6)	(9.5)	(35)	(75)	(33.5)	(51)		(25.4)	(25.9)
	65V6H071	Vee	3/8	0.062	4.80	2.24	1.69	0.22	0.37	1.38	2.95	1.32	2.01		1.00	1.02
	65V6H081	Reg		(1.6)	(122)	(56.9)	(43)	(5.6)	(9.5)	(35)	(75)	(33.5)	(51)		(25.4)	(25.9)
	65V9H071	Vee	9/16	0.078	5.04	2.50	1.75	0.22	0.37	1.38	2.95	1.30	2.64		1.00	1.54
	65V9H081	Reg		(2)	(128)	(63.5)	(44.5)	(5.6)	(9.5)	(35)	(75)	(33)	(57)		(25.4)	(39.1)
2-Way Angle																
	65V4H072	Vee	1/4	0.062	4.96	2.38	1.34	0.22	0.37	1.38	2.95	1.00	2.01		1.00	1.02
	65V4H082	Reg		(1.6)	(126)	(60.5)	(34)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)		(25.4)	(25.9)
	65V6H072	Vee	3/8	0.062	5.16	2.62	1.32	0.22	0.37	1.38	2.95	1.00	2.01		1.00	1.02
	65V6H082	Reg		(1.6)	(131)	(66.5)	(33.5)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)		(25.4)	(25.9)
	65V9H072	Vee	9/16	0.078	5.35	2.80	1.32	0.22	0.37	1.38	2.95	1.32	2.64		1.00	1.54
	65V9H082	Reg		(2)	(136)	(71.1)	(33.5)	(5.6)	(9.5)	(35)	(75)	(33.5)	(57)		(25.4)	(39.1)
3-Way / 2 on Pressure																
	65V4H073	Vee	1/4	0.062	4.96	2.38	1.69	0.22	0.37	1.38	2.95	1.00	2.01	1.32	1.00	1.02
	65V4H083	Reg		(1.6)	(126)	(60.5)	(43)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)	(33.5)	(25.4)	(25.9)
	65V6H073	Vee	3/8	0.062	5.31	2.76	1.69	0.22	0.37	1.38	2.95	1.00	2.01	1.32	1.00	1.02
	65V6H083	Reg		(1.6)	(134.9)	(70.1)	(43)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)	(33.5)	(25.4)	(25.9)
	65V9H073	Vee	9/16	0.078	5.71	3.15	1.75	0.22	0.37	1.38	2.95	1.32	2.64	1.30	1.00	1.54
	65V9H083	Reg		(2)	(145)	(80)	(44.5)	(5.6)	(9.5)	(35)	(75)	(33.5)	(57)	(33)	(25.4)	(39.1)
3-Way / 1 on Pressure																
	65V4H074	Vee	1/4	0.062	4.96	2.38	1.32	0.22	0.37	1.38	2.95	1.00	2.01		1.00	1.02
	65V4H084	Reg		(1.6)	(126)	(60.5)	(33.5)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)		(25.4)	(25.9)
	65V6H074	Vee	3/8	0.062	5.16	2.62	1.32	0.22	0.37	1.38	2.95	1.00	2.01		1.00	1.02
	65V6H084	Reg		(1.6)	(131)	(66.5)	(33.5)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)		(25.4)	(25.9)
	65V9H074	Vee	9/16	0.078	5.35	2.80	1.32	0.22	0.37	1.38	2.95	1.32	2.64		1.00	1.54
	65V9H084	Reg		(2)	(136)	(71.1)	(33.5)	(5.6)	(9.5)	(35)	(75)	(33.5)	(57)		(25.4)	(39.1)
3-Way / 2-Stem Manifold																
	65V4H075	Vee	1/4	0.062	8.56	3.44	1.72	0.22	0.37	1.38	2.95	1.00	2.01	1.32	1.00	1.02
	65V4H085	Reg		(1.6)	(217.4)	(87.4)	(43.7)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)	(33.5)	(25.4)	(25.9)
	65V6H075	Vee	3/8	0.062	8.56	3.76	1.89	0.22	0.37	1.38	2.95	1.00	2.01	1.32	1.00	1.02
	65V6H085	Reg		(1.6)	(217.4)	(95.5)	(48)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)	(33.5)	(25.4)	(25.9)
	65V9H075	Vee	9/16	0.078	9.25	4.13	2.07	0.22	0.37	1.38	2.95	1.32	2.64	1.30	1.00	1.54
	65V9H085	Reg		(2)	(235)	(105)	(52.6)	(5.6)	(9.5)	(35)	(75)	(33.5)	(57)	(33)	(25.4)	(39.1)
2-Way Angle / Replaceable Seat																
	65V4H872	Vee	1/4	0.062	5.16	2.62	1.32	0.22	0.37	1.38	2.95	1.00	2.01		1.00	1.02
	65V4H882	Reg		(1.6)	(131)	(66.5)	(33.5)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)		(25.4)	(25.9)
	65V6H872	Vee	3/8	0.062	5.16	2.62	1.32	0.22	0.37	1.38	2.95	1.00	2.01		1.00	1.02
	65V6H882	Reg		(1.6)	(131)	(66.5)	(33.5)	(5.6)	(9.5)	(35)	(75)	(25.4)	(51)		(25.4)	(25.9)
	65V9H872	Vee	9/16	0.078	5.16	2.62	1.32	0.22	0.37	1.38	2.95	1.32	2.64		1.00	1.54
	65V9H882	Reg		(2)	(131)	(66.5)	(33.5)	(5.6)	(9.5)	(35)	(75)	(33.5)	(57)		(25.4)	(39.1)

G - Panel Mounting Screw Thread Size 10-24 UNC.
All dimensions are for reference only and subject to change.

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Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

High Pressure Fittings Pressures to 65,000 psi (4,500 bar)

MAXIMATOR high pressure fittings are designed to be used with the 36V and 65V series high pressure valves and high pressure tubing. All high pressure fittings have coned and threaded type connections. Mounting holes are standard on all elbows, tees, and crosses.

Tubing Size	Gland	Collar	Plug	Tubing Cap
1/4	65G4H	65C4H	65P4H	65TC4H
3/8	65G6H	65C6H	65P6H	65TC6H
9/16	65G9H	65C9H	65P9H	65TC9H

Connection Components

All high pressure fittings are supplied with glands and collars. Refer to the adjacent chart for ordering any of the connection components individually. When using the plug, the collar is not needed.



Fitting Pattern	Catalog Number	Connection Type	O.D. Tube Size in.	Orifice in. (mm)	Dimensions in. (mm)							Block Thickness
					A	B	C	D	E	F	G	

Elbow												
	65L4H	4HF	1/4	0.094 (2.3)	0.89 (22.6)	1.02 (25.9)	1.54 (39.1)	0.63 (16)	0.46 (11.7)	0.65 (16.5)	0.22 (5.6)	1.02 (25.9)
	65L6H	6HF	3/8	0.125 (3.2)	1.26 (32)	1.50 (38.1)	2.01 (51)	0.98 (24.9)	0.72 (18.3)	0.69 (17.5)	0.26 (6.6)	1.02 (25.9)
	65L9H	9HF	9/16	0.188 (4.8)	1.89 (48)	1.89 (48)	2.64 (67)	1.10 (28)	0.83 (21.1)	0.94 (23.9)	0.33 (8.4)	1.54 (39.1)

Tee												
	65T4H	4HF	1/4	0.094 (2.3)	1.00 (25.4)	1.26 (32)	2.01 (51)	0.89 (22.6)	0.46 (11.7)	1.30 (33)	0.22 (5.6)	1.02 (25.9)
	65T6H	6HF	3/8	0.125 (3.2)	1.00 (25.4)	1.57 (39.9)	2.01 (51)	1.06 (26.9)	0.72 (18.3)	1.38 (35)	0.26 (6.6)	1.02 (25.9)
	65T9H	9HF	9/16	0.188 (4.8)	1.32 (33.5)	2.13 (54.1)	2.64 (67)	1.38 (35)	0.83 (21.1)	1.89 (48)	0.33 (8.4)	1.54 (39.1)

See page 2 in the Technical Section for pressure/temperature rating chart. All dimensions are for reference only and are subject to change.

All technical and dimensional information subject to change. All general Terms and Conditions of sale, including limitations of our liability, apply to all products and services sold.

Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

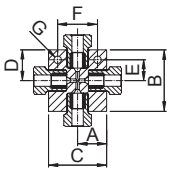
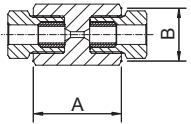
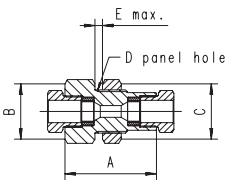
Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

High Pressure Fittings Pressures to 65,000 psi (4,500 bar)

Fitting Pattern	Catalog Number	Connection Type	O.D. Tube Size in.	Orifice in. (mm)	Dimensions in. (mm)							Block Thickness
					A	B	C	D	E	F	G	
Cross												
	65X4H	4HF	1/4	0.094 (2.3)	1.00 (25.4)	1.26 (32)	2.01 (51.1)	0.63 (16)	0.46 (11.7)	1.30 (33)	0.22 (5.6)	1.02 (25.9)
	65X6H	6HF	3/8	0.125 (3.2)	1.00 (25.4)	2.13 (54.1)	2.01 (51.1)	1.06 (27)	0.72 (18.3)	1.38 (35)	0.26 (6.6)	1.02 (25.9)
	65X9H	9HF	9/16	0.188 (4.8)	1.32 (33.5)	2.76 (70.1)	2.64 (67)	1.38 (35)	0.83 (21.1)	1.89 (48)	0.33 (8.4)	1.54 (39.1)
Straight Coupling / Union Coupling												
	65F4H	4HF	1/4	0.094 (2.3)	1.38 (35)	1.06 (27)	Straight Coupling					
	65UF4H						Union Coupling					
	65F6H	6HF	3/8	0.125 (3.2)	1.77 (45)	1.06 (27)	Straight Coupling					
	65UF6H						Union Coupling					
	65F9H	9HF	9/16	0.188 (4.8)	2.19 (55.6)	1.44 (36.6)	Straight Coupling					
	65UF9H						Union Coupling					
Bulkhead Coupling												
	65BF4H	4HF	1/4	0.094 (2.3)	1.89 (48)	1.06 (27)	1.06 (27)	0.94 (23.9)	0.16 (4)			
	65BF6H	6HF	3/8	0.125 (3.2)	2.38 (60.5)	1.44 (36.6)	1.44 (36.6)	1.12 (28.5)	0.35 (8.9)			
	65BF9H	9HF	9/16	0.188 (4.8)	2.76 (70.1)	1.63 (41.3)	1.63 (41.3)	1.43 (36.3)	0.67 (17)			

See page 2 in the Technical Section for pressure/temperature rating chart.
All dimensions are for reference only and are subject to change.

Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

Anti-Vibration Collet Gland Assembly

Pressures to 65,000 psi (4,500 bar)

MAXIMATOR anti-vibration collet gland assemblies are for use in applications where there could be extreme external mechanical vibrations or shock in tubing lines. These collet gland assemblies are interchangeable with the standard high pressure coned and threaded tube connections.

In a normal coned and threaded tube connection, any external mechanical loading on the tubing lines, valves or fittings, would be concentrated on the first thread of the tube. This can cause failure of the tube at this thinner cross-section. The anti-vibration collet gland assembly grips the tube behind the connection, supporting the tube at the full cross-section and straight area, moving the loading away from the threaded area.

The anti-vibration collet gland assembly, when tightened properly, compresses a split collet on the tube, providing the beneficial gripping action.

All anti-vibration collet gland assemblies come with a Molybdenum Disulfide Coating to guard against galling of the stainless components.



Gland Pattern	Catalog Number	Part	O.D. Tubing Size in.	Dimensions in. (mm)	
				A	B (Hex.)
	65AVA4H	Complete Assembly	1/4	0.83 (21.1)	0.62 (15.7)
	65AVFC4H	Flat Collar			
	65AVC4H	Slotted Collet			
	65AVG4H	Gland Nut			
	65AVA6H	Complete Assembly	3/8	1.16 (29.5)	0.81 (20.6)
	65AVFC6H	Flat Collar			
	65AVC6H	Slotted Collet			
	65AVG6H	Gland Nut			
	65AVA9H	Complete Assembly	9/16	1.50 (38)	1.19 (30.2)
	65AVFC9H	Flat Collar			
	65AVC9H	Slotted Collet			
	65AVG9H	Gland Nut			

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MAXIMATOR®

High Pressure Tubing Pressures to 65,000 psi (4,500 bar)

MAXIMATOR offers a line of cold drawn thick wall tubing, with flow areas to compliment the high pressure valves and fittings. This tubing is made under strict manufacturing and quality control standards and inspections, with dimensional tolerances to match the requirements of the high pressure coned and threaded connections.

The standard materials are 304 and 316 stainless steels. Other materials may be provided on special request, depending on the specific material, diameters and lengths.



Tubing Tolerances

Normal Tubing Size in. (mm)	Tolerance O.D. in. (mm)
1/4 (6.35)	0.248 / 0.243 (6.299 / 6.172)
3/8 (9.53)	0.370 / 0.365 (9.398 / 9.271)
9/16 (14.29)	0.557 / 0.552 (14.148 / 14.021)

Catalog Number	Tube Material	Fits Connection Type	Tube Size in. (mm)		Working Pressure psi (bar)				
			O.D.	I.D.	-325 to 100°F (-198°C to 57°C)	200°F (93°C)	400°F (204°C)	600°F (315°C)	800°F (426°C)
65TU4H-316	316SS	4HF	1/4 (6.35)	0.083 (2.11)	65,000 (4,500)	58,500 (4,050)	53,950 (3,750)	49,400 (3,400)	46,800 (3,250)
65TU4H-304	304SS								
65TU6H-316	316SS	6HF	3/8 (9.53)	0.125 (3.18)	65,000 (4,500)	58,500 (4,050)	53,950 (3,750)	49,400 (3,400)	46,800 (3,250)
65TU6H-304	304SS								
65TU9H-316	316SS	9HF	9/16 (14.29)	0.188 (4.77)	65,000 (4,500)	58,500 (4,050)	53,950 (3,750)	49,400 (3,400)	46,800 (3,250)
65TU9H-304	304SS								
65TU4H-HP160	HP160	4HF	1/4 (6.35)	0.06 (1.59)	101,000 (7,000)	82,600 (5,740)	72,600 (5,040)	66,500 (4,620)	61,500 (4,270)
65TU6H-HP160	HP160	6HF	3/8 (9.53)	0.16 (3.97)	152,000 (10,500)	124,000 (8,650)	108,800 (7,560)	99,800 (6,930)	92,200 (6,400)

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Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

Coned and Threaded Nipples

Pressures to 65,000 psi (4,500 bar)



MAXIMATOR offers a line of coned and threaded high pressure tube nipples in a variety of lengths for all standard tube sizes.

The coned and threaded high pressure tube nipples are available in 316 stainless steel. See chart below for ordering information.

Special length coned and threaded nipples are available upon request. Consult **MAXIMATOR** for availability and price.

Catalog Numbers are 316 Stainless Steel material							Fits Connection Type	Tube Size in. (mm)		Working Pressure at 100°F psi (mm)
2.75" (69.85) Length	3" (76.2) Length	4" (101.6) Length	6" (152.4) Length	8" (203.2) Length	10" (254) Length	12" (304.8) Length		O.D.	I.D.	
65N4H-2.75-316	65N4H-3-316	65N4H-4-316	65N4H-6-316	65N4H-8-316	65N4H-10-316	65N4H-12-316	4HF	1/4	0.083 (2.11)	65,000 (4,500)
	65N6H-3-316	65N6H-4-316	65N6H-6-316	65N6H-8-316	65N6H-10-316	65N6H-12-316	6HF	3/8	0.125 (3.17)	65,000 (4,500)
		65N9H-4-316	65N9H-6-316	65N9H-8-316	65N9H-10-316	65N9H-12-316	9HF	9/16	0.188 (4.77)	65,000 (4,500)

Standard nipples are not supplied with glands and collars, see Fittings on page 6 for these components.

See adjacent Tubing page 8, for pressure/temperature rating chart.

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Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

Check Valves

Pressures to 65,000 psi (4,500 bar)

Medium Pressure
to 21,000 psi (1,500 bar)

Adapters and
Couplings

High Pressure
to 65,000 psi (4,500 bar)

Accessories

Ultra High Pressure
to 152,000 psi (10,500 bar)

Tools and
Installation

Valve Actuators

Technical
Information

Ball Valves
to 21,000 psi (1,500 bar)

O-Ring Check Valves



O-Ring Check Valves

MAXIMATOR o-ring check valves provide high quality directional flow control and tight shutoff for liquids and gases. All check valves are supplied with glands and collars. These check valves are not to be used as a relief device.

Materials.

Body, cover, poppet, cover gland: 316 series stainless steel

Spring: 300 series stainless steel

O-ring: Viton "A" [-4°F to 392°F (-20°C to 200°C)]

Ball Check Valves



Ball Check Valves

MAXIMATOR ball check valves prevent reverse flow where bubble tight shutoff is not mandatory. These check valves are designed with a ball cradled floating poppet to assure positive inline seating. This poppet design allows full flow around the ball to minimize pressure drop. Check valves are rated to 660°F (350°C). All check valves are supplied with glands and collars. These check valves are not to be used as a relief device.

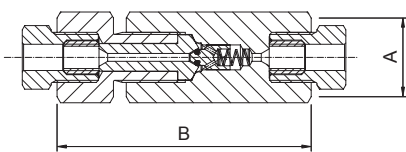
Materials.

Body, cover, poppet, cover gland: 316 L series stainless steel

Ball and spring: 300 series stainless steel

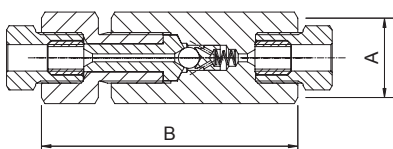
Valve Pattern	Catalog Number	Connection Type	Pressure Rating psi (bar)	Orifice in. (mm)	Rated (Cv)	Dimensions in. (mm)	
						A (Hex.)	B

O-Ring Check Valves



65OC4H	4HF	65,000 (4,500)	0.094 (2.3)	0.15	1.19 (30.2)	3.40 (86.4)
65OC6H	6HF	65,000 (4,500)	0.125 (3.2)	0.28	1.19 (30.2)	3.81 (96.8)
65OC9H	9HF	65,000 (4,500)	0.188 (4.8)	0.63	1.63 (41.4)	4.61 (117.1)

Ball Check Valves



65BC4H	4HF	65,000 (4,500)	0.094 (2.3)	0.15	1.19 (30.2)	3.40 (86.4)
65BC6H	6HF	65,000 (4,500)	0.125 (3.2)	0.28	1.19 (30.2)	3.81 (96.8)
65BC9H	9HF	65,000 (4,500)	0.188 (4.8)	0.63	1.63 (41.3)	4.61 (117.1)

CAUTION: FREQUENT INSPECTIONS of O-Rings are necessary to ensure proper service of the check valve. O-Rings have shown satisfactory service life in testing, however different service conditions may lead to variations in cycle and shelf life.

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MAXIMATOR®

Line Filters

Pressures to 65,000 psi (4,500 bar)

Dual-Disc Line Filters

MAXIMATOR dual-disc line filters are used to filter process fluids in high pressure systems. This design helps remove the large particles first through a coarse primary disc, which then allows a secondary disc to provide a smaller micron filtration. These filter elements are designed to withstand pressure surges without cracking, flaking, or rupturing. Filter elements come standard in the following micron sizes: 5/8, 8/30, 30/56 (secondary/primary). Filters are rated for temperatures -60°F to 660°F (-50°C to 350°C). All line filters come with glands and collars.

Materials

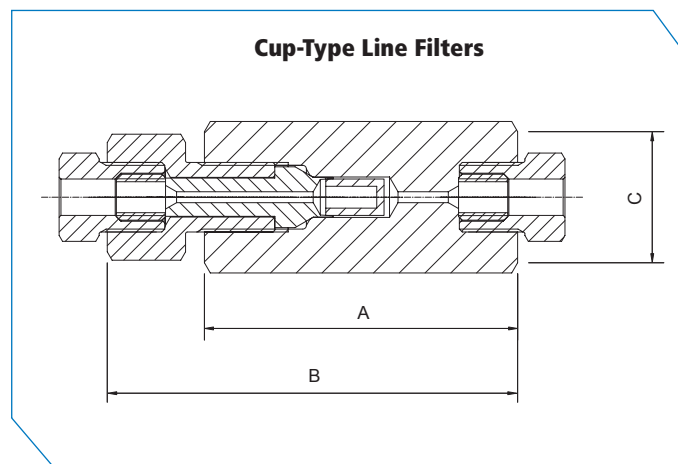
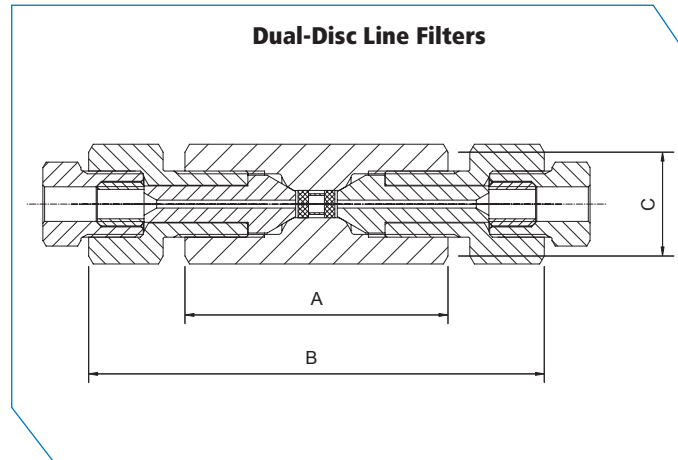
Body, cover, cover gland: 316 series stainless steel
Element: 300 series stainless steel

Cup-Type Line Filters

MAXIMATOR cup-type line filters are used when maximum filtration surface area and a single micron size element is preferred. This design increases the filter area as much as 6 times the area of the disc type filter, and will permit higher flow rates with a lower pressure drop, and longer intervals between element changes. Filter elements come standard in 5, 30, or 56 micron sizes and are easily replaced. Filters are rated for temperatures -60°F to 660°F (-50°C to 350°C). All line filters come with glands and collars.

Materials:

Body, cover, cover gland: 316 series stainless steel
Element: 300 series stainless steel



Catalog Number	Pressure Rating psi (bar)	Orifice in. (mm)	Micron Size	Connection Type	Filter Element Areas in. ² (mm ²)	Dimensions in. (mm)		
						A	B	C (Hex.)
Dual-Disc Line Filters								
65DF4H-5/8	65,000 (4,500)	0.094 (2.3)	5/8	4HF	0.07 (50)	2.99 (76)	4.8 (121.9)	1.19 (30.2)
65DF4H-8/30			8/30					
65DF4H-30/56			30/56					
65DF6H-5/8	65,000 (4,500)	0.125 (3.2)	5/8	6HF	0.07 (50)	2.99 (76)	5.29 (134.4)	1.19 (30.2)
65DF6H-8/30			8/30					
65DF6H-30/56			30/56					
65DF9H-5/8	65,000 (4,500)	0.188 (4.8)	5/8	9HF	0.15 (95)	3.39 (86.1)	5.75 (146)	1.44 (36.6)
65DF9H-8/30			8/30					
65DF9H-30/56			30/56					
Cup-Type Line Filters								
65CF4H-5	65,000 (4,500)	0.094 (2.3)	5	4HF	0.82 (530)	3.39 (86.1)	4.25 (108)	1.44 (36.6)
65CF4H-30			30					
65CF4H-56			56					
65CF6H-5	65,000 (4,500)	0.125 (3.2)	5	6HF	0.82 (530)	3.39 (86.1)	4.44 (112.8)	1.44 (36.6)
65CF6H-30			30					
65CF6H-56			56					
65CF9H-5	65,000 (4,500)	0.188 (4.8)	5	9HF	0.82 (530)	4.06 (103.1)	5.28 (134.1)	1.63 (41.3)
65CF9H-30			30					
65CF9H-56			56					

It is recommended that all fluids entering a high pressure system be thoroughly cleaned. Maximator filters are designed to remove small amounts of process particles. Pressure differential should not exceed 1000 psi across the filter elements.

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Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

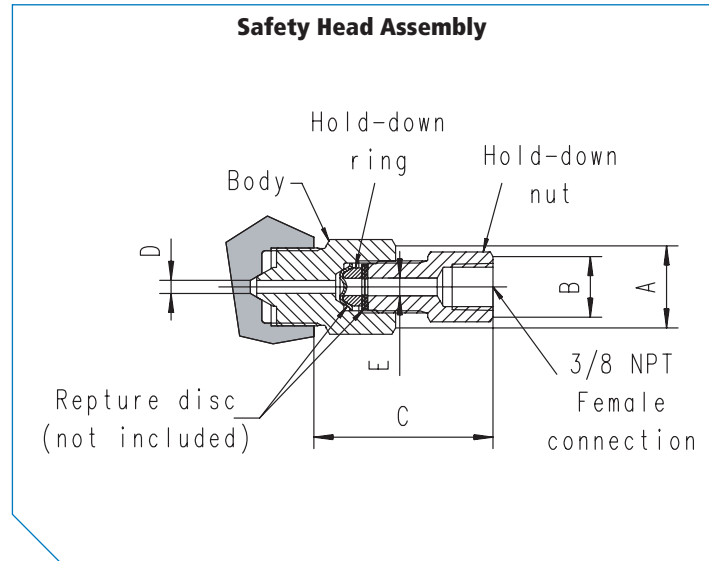
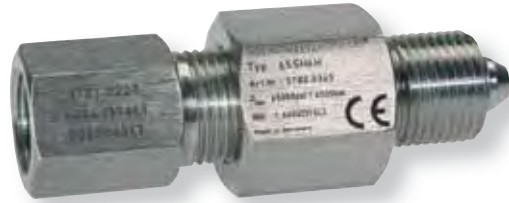
Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

Safety Head Assembly Pressures to 65,000 psi (4,500 bar)

MAXIMATOR safety head assemblies are used to provide over-pressure protection to high pressure systems. These safety head assemblies are to be used with the appropriate 1/4" angular rupture disc listed in the chart below.



Safety Head Assembly Catalog Number without Disc	Fits Connection Type	Pressure Rating psi (bar)	Body Torque ft - lbs. (Nm)	Dimensions in. (mm)				
				A (Hex.)	B (Hex.)	C (L.G.)	D (I.D.)	E (I.D.)
65SH4H	4HF	65,000 (4,500)	25 (35)	1.06 (26.9)	0.88 (22.4)	2.57 (65.3)	0.083 (2.11)	0.250 (6.4)
65SH6H	6HF	65,000 (4,500)	50 (70)	1.06 (26.9)	0.88 (22.4)	2.54 (64.5)	0.125 (3.2)	0.250 (6.4)
65SH9H	9HF	65,000 (4,500)	110 (150)	1.19 (30.2)	0.88 (22.4)	2.48 (63)	0.188 (4.8)	0.250 (6.4)

All dimensions are for reference only and are subject to change.

Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

1/4" Angular Rupture Discs Pressures to 65,000 psi (4,500 bar)

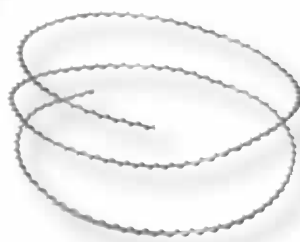


1/4" angular seat rupture discs are designed to be used with the safety head assemblies that are shown above. Minimum rupture disc pressure ratings should be at least 110% of system operating pressure. The standard rupture disc material is Inconel. The pressure ranges indicated in the table below are at room temperature (72°F). Other materials and pressure ranges are available upon request.

Catalog Number	Pressure range psi (bar)	Catalog Number	Pressure range psi (mm)	Catalog Number	Pressure range psi (bar)	Catalog Number	Pressure range psi (bar)
RD-1200	1,164 - 1,272 (80.3 - 87.7)	RD-7000	6,790 - 7,420 (468.3 - 511.7)	RD-17000	16,490 - 18,020 (1,137.2 - 1,242.8)	RD-30000	29,100 - 31,800 (2,006.9 - 2,193.1)
RD-1500	1,455 - 1,590 (99.7 - 109.7)	RD-7500	7,275 - 7,950 (501.7 - 548.3)	RD-18000	17,460 - 19,080 (1,204.1 - 1,315.9)	RD-32500	31,525 - 34,450 (2,174.1 - 2,375.9)
RD-1750	1,697 - 1,855 (117 - 127.9)	RD-8000	7,760 - 8,480 (535.2 - 584.8)	RD-19000	18,430 - 20,140 (1,271 - 1,389)	RD-35000	33,950 - 37,100 (2,341.4 - 2,558.6)
RD-2000	1,940 - 2,120 (133.8 - 146.2)	RD-8500	8,245 - 9,010 (568.6 - 621.4)	RD-20000	19,400 - 21,200 (1,337.9 - 1,462.1)	RD-37500	36,375 - 39,750 (2,508.6 - 2,741.4)
RD-2500	2,425 - 2,650 (167.2 - 182.8)	RD-9000	8,730 - 9,540 (602.1 - 657.9)	RD-21000	20,370 - 22,260 (1,404.8 - 1,535.2)	RD-40000	38,880 - 42,400 (2,681.4 - 2,924.1)
RD-3000	2,910 - 3,180 (200.7 - 219.3)	RD-9500	9,215 - 10,070 (635.5 - 694.5)	RD-22000	21,340 - 23,320 (1,471.7 - 1,608.3)	RD-42500	41,255 - 45,050 (2,845.2 - 3,106.9)
RD-3500	3,395 - 3,710 (234.1 - 255.9)	RD-10000	9,700 - 10,600 (669 - 731)	RD-23000	22,310 - 24,380 (1,538.6 - 1,681.4)	RD-45000	43,650 - 47,700 (3,010.3 - 3,289.7)
RD-4000	3,880 - 4,240 (267.6 - 292.4)	RD-11000	10,670 - 11,660 (735.9 - 804.1)	RD-24000	23,280 - 25,440 (1,605.5 - 1,754.5)	RD-47500	46,075 - 50,350 (3,177.6 - 3,472.4)
RD-4500	4,365 - 4,770 (301 - 329)	RD-12000	11,640 - 12,720 (802.8 - 877.2)	RD-25000	24,250 - 26,500 (1,672.4 - 1,827.6)	RD-50000	48,500 - 53,000 (3,344.8 - 3,655.2)
RD-5000	4,850 - 5,300 (334.5 - 365.5)	RD-13000	12,610 - 13,780 (869.7 - 950.3)	RD-26000	25,220 - 27,560 (1,672.4 - 1,827.6)	RD-55000	53,350 - 58,300 (3,679.3 - 4,020.7)
RD-5500	5,335 - 5,830 (367.9 - 402.1)	RD-14000	13,580 - 14,840 (936.6 - 1023.4)	RD-27000	26,190 - 28,620 (1,806.2 - 1,973.8)	RD-60000	58,200 - 63,600 (4,013.8 - 4,386.2)
RD-6000	5,820 - 6,360 (401.4 - 438.6)	RD-15000	14,550 - 15,900 (1,003.4 - 1,096.6)	RD-28000	27,160 - 29,680 (1,873.1 - 2,046.9)	RD-67500	65,475 - 71,550 (4,515.5 - 4,934.5)
RD-6500	6,305 - 6,890 (434.8 - 475.2)	RD-16000	15,520 - 16,960 (1,070.3 - 1,169.7)	RD-29000	28,130 - 30,740 (1,940 - 2,120)	RD-70000	67,900 - 74,200 (4,682.8 - 5,117.2)



Rupture Discs are individually packed and marked type plate.



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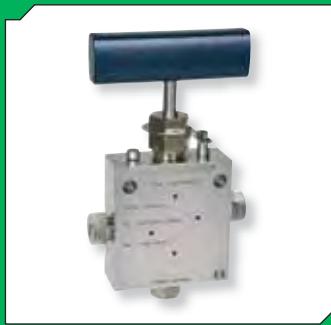
Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)



Ultra High Pressure Valves, Fittings and Tubing Pressures to 152,000 psi (10,500 bar)

MAXIMATOR has been designing and manufacturing high pressure equipment for more than thirty years and has a worldwide reputation for quality and reliability, backed by one of the best service organizations in the industry.

Ultra High Pressure Valves feature:

- ▶ Rising stem design.
- ▶ 316SS wetted parts with a 17-4 PH stem provides excellent corrosion resistance.
- ▶ Metal-to-metal seating achieves bubble-tight shut-off, longer stem and seat life and greater durability for repeated open and close cycles.
- ▶ PTFE and carbon packing with metal back-up rings offers reliable stem to body sealing.
- ▶ Non-rotating stem prevents stem to seat galling.
- ▶ Stem sleeve and packing gland materials have been selected to achieve optimum thread cycle life and reduced handle torque. All stem sleeve threads are rolled, assuring smooth operation.
- ▶ Safety weep holes for all pressure connections and packing area.
- ▶ Three different valve body patterns, with vee type stem tip.

MAXIMATOR offers a complete line of ultra high pressure valves, fittings and tubing. They come standard with the 5/16" ultra high pressure coned and threaded connection.

Note: When selecting multiple items, the pressure rating would be that of the lowest rated component.

Index links

Valves rated to 101,000 psi (7,000 bar) 2

Fittings rated to 152,000 psi (10,500 bar) 3

Tubing & Coned and Threaded Nipples 4

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Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
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to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

Ultra High Pressure Valves

Pressures to 101,000 psi (7,000 bar)



Ordering Information

Typical catalog number: **101V5U071**

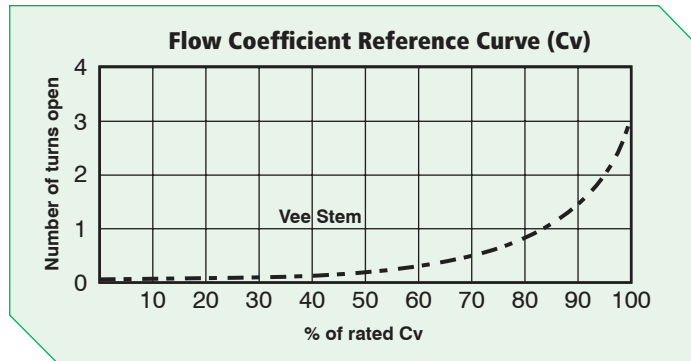
101V	5U	07	1
Valve Series	O.D. Tube Size	Stem Type	Body Pattern
101V	5U - 5/16"	07 - VEE stem	1 - two-way straight 2 - two-way angle 3 - three-way, two on pressure

O.D. Size in. (mm)	Connection Type	Orifice Size in. (mm)	Rated Cv*	Pressure/Temp. Rating psi (bar) @ R.T.**
5/16 (7.94)	5UF	0.062 (1.58)	0.09	101,000 (10,500)

* Cv values shown are for 2-way straight pattern vee stem valves.

For 2-way angle patterns, increase the Cv value by 50%

** See page 2 in the Technical Section for Pressure/Temperature Rating Chart.



Temperature Ranges

Standard valves are supplied with Teflon/Carbon packing and may be operated to 450°F (230°C). Consult MAXIMATOR for higher temperature packing ratings.

Valve Pattern	Catalog Number	Stem type	O.D. Tube in.	Orifice in. (mm)	Dimensions in. (mm)										Valve Panel Hole	Block Thickness
					A	B	C	D	E	F	H	I	J	K		

2-Way Straight																
	1015U071	Vee	5/16	0.062 (1.58)	5.43 (137.9)	2.44 (62)	1.75 (44.5)	0.33 (8.4)	0.51 (13)	1.77 (45)	3.94 (100)	1.44 (36.6)	3.03 (77)	1.12 (28.5)	1.26 (32)	

2-Way Angle																
	1015U072	Vee	5/16	0.062 (1.58)	6.18 (157)	2.99 (76)	1.44 (36.6)	0.33 (8.4)	0.35 (8.9)	1.97 (50)	3.94 (100)	1.50 (38.1)	2.28 (57.9)	0.51 (13)	1.12 (28.5)	1.26 (32)

3-Way / 2 on Pressure																
	1015U073	Vee	5/16	0.062 (1.58)	6.44 (163.6)	3.25 (82.6)	1.75 (44.5)	0.33 (8.4)	0.51 (13)	1.77 (45)	3.94 (100)	1.52 (38.6)	3.03 (77)	1.44 (36.6)	1.12 (28.5)	1.26 (32)

G - Panel mounting screw size 10-24 UNC.
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Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators



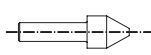

Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

Ultra High Pressure Fittings Pressures to 152,000 psi (10,500 bar)

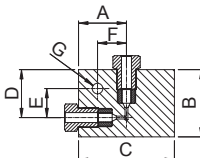
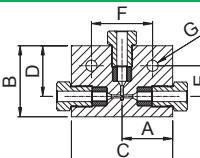
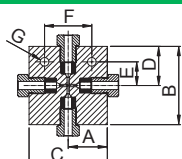
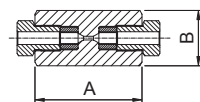
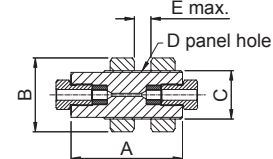
MAXIMATOR ultra high pressure fittings are designed to be used with the 101V series ultra high pressure valves and ultra high pressure tubing. All ultra high pressure fittings have coned and threaded type connections and are supplied with glands and collars. Mounting holes are standard on all elbows, tees, and crosses.



Tubing Size	Gland	Collar	Plug	Tubing Cap
$5/16$	 152G5U	 152C5U	 152P5U	 152TC5U

Connection Components

All ultra high pressure fittings are supplied with glands and collars. Refer to the adjacent chart for ordering any of the connection components individually. When using the plug, the collar is not needed.

Fitting Pattern	Catalog Number	Connection Type	O.D. Tube Size in.	Orifice in. (mm)	Dimensions in. (mm)							Block Thickness
					A	B	C	D	E	F	G	
Elbow												
	152L5U	5UF	$5/16$	0.094 (2.4)	1.52 (38.6)	2.13 (54.1)	3.03 (77)	1.52 (38.6)	0.92 (23.4)	0.92 (23.4)	0.33 (8.4)	1.26 (32)
Tee												
	152T5U	5UF	$5/16$	0.094 (2.4)	1.52 (38.6)	2.13 (54.1)	3.03 (77)	1.52 (38.6)	0.92 (23.4)	1.83 (46.5)	0.33 (8.4)	1.26 (32)
Cross												
	152X5U	5UF	$5/16$	0.094 (2.4)	1.52 (38.6)	3.03 (77)	3.03 (77)	1.52 (38.6)	0.92 (23.4)	1.83 (46.5)	0.33 (8.4)	1.26 (32)
Straight Coupling / Union Coupling												
	152F5U	5UF	$5/16$	0.094 (2.4)	2.64 (67.1)	1.19 (30.2)	Straight Coupling					
	152UF5U						Union Coupling					
Bulkhead Coupling												
	152BF5U	5UF	$5/16$	0.094 (2.4)	3.27 (83.1)	2.17 (55.1)	1.42 (36.1)	1.43 (36.3)	0.87 (22.1)			

See page 2 in the Technical Section for pressure/temperature rating chart.
All dimensions for reference only and are subject to change.

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Adapters and Couplings
 Medium Pressure
 to 21,000 psi (1,500 bar)

Accessories
 High Pressure
 to 65,000 psi (4,500 bar)

Tools and Installation
 Ultra High Pressure
 to 152,000 psi (10,500 bar)

Technical Information
 Valve Actuators

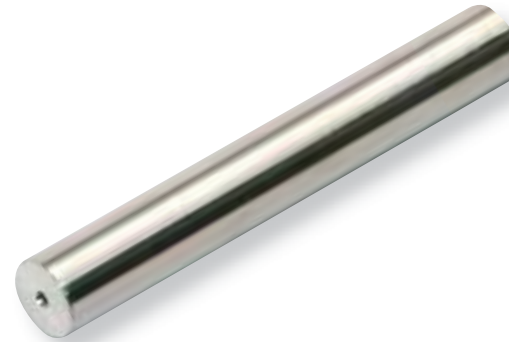
Ball Valves
 to 21,000 psi (1,500 bar)

MAXIMATOR®

Ultra High Pressure Tubing & Threaded Nipples

Pressures to 152,000 psi (10,500 bar)

MAXIMATOR offers a line of cold drawn thick wall tubing, with flow areas to compliment the ultra high pressure valve and fitting line. This tubing is made under strict manufacturing and quality control standards and inspections, with dimensional tolerances to match the requirements of the ultra high pressure coned and threaded connections. The standard material is 316 stainless steel.



Tubing Tolerances

Normal Tubing Size in. (mm)	Tolerance O.D. in. (mm)
5/16 (7.94)	0.310 / 0.306 (7.874 / 7.72)

Catalog Number	Tube Material	Fits Connection Type	Tube Size in. (mm)		Working Pressure psi (bar)				
			O.D.	I.D.	-325 to 100°F (-198°C to 37°C)	200°F (93°C)	400°F (204°C)	600°F (315°C)	800°F (426°C)
152TU5U-316	316SS	5UF	5/16 (7.94)	0.062 (1.58)	152,000 (10,500)	136,800 (9,500)	126,160 (8,700)	115,520 (8,000)	109,44 (7,600)
152TU5U-HP160	HP160	5UF	5/16 (7.94)	0.062 (1.58)	152,000 (10,500)	124,000 (8,600)	108,800 (7,560)	99,800 (6,930)	92,200 (6,400)

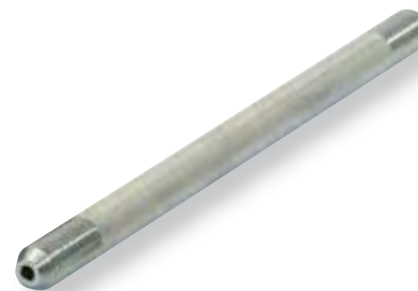
All dimensions are for reference only and subject to change.

Coned and Threaded Nipples

MAXIMATOR offers a line of coned and threaded ultra high pressure tube nipples in a variety of lengths.

The coned and threaded ultra high pressure tube nipples are available in 316 stainless steel. See chart below for ordering information.

Special length coned and threaded nipples are available upon request. Consult **MAXIMATOR** for availability and price.



Catalog Numbers are 316 Stainless Steel material					Fits Connection Type	Tube Size in. (mm)		Working Pressure at 100°F psi (bar)
4" (101.6) Length	6" (152.4) Length	8" (203.2) Length	10" (254) Length	12" (304.8) Length		O.D.	I.D.	
152N5U-4-316	152N5U-6-316	152N5U-8-316	152N5U-10-316	152N5U-12-316	5UF	5/16 (7.94)	0.062 (1.58)	152,000 (10,500)

Standard nipples are not supplied with glands and collars, see Fittings on page 3 for these components.

See the above chart for Pressure/Temperature Rating.

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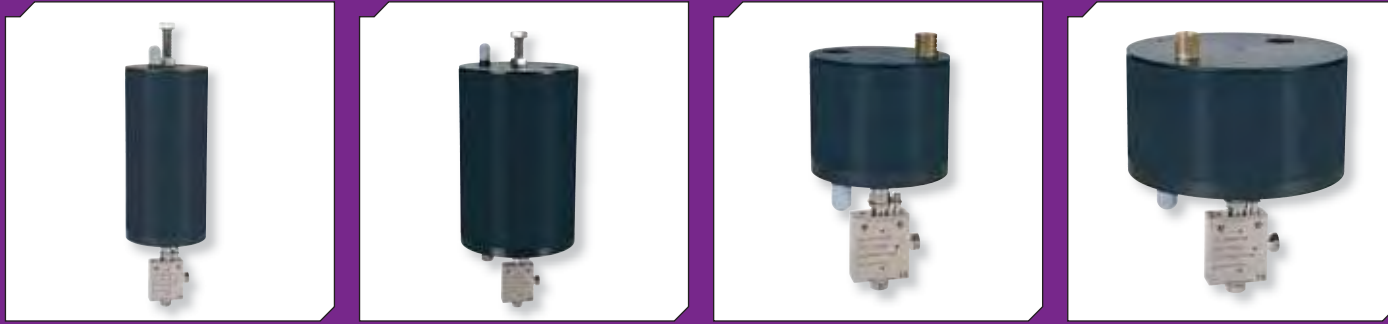
Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)



Valve Actuators

MAXIMATOR air operated valve actuators are piston type design, and are mounted on a standard manual valve to provide remote control capability. There are two air to open actuators available, and selection is based on the valve size, system pressure, and air pressure available.

Valve Actuator features:

- ▶ Piston style valve actuator design offers dependable operation and longer actuator cycle life.
- ▶ Actuators can be added to standard manual valve bodies to provide remote control capabilities in process applications.
- ▶ Two different size actuators are available to cover varying plant air supplies.
- ▶ Actuators are made of anodized aluminum, which provides good corrosion resistance.
- ▶ Actuators are available in normally open or normally closed configuration.

MAXIMATOR offers a complete line of high pressure valves, fittings and tubing to compliment the valve actuator line.

Note: When selecting multiple items, the pressure rating would be that of the lowest rated component.

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Air to Close / Normally Open 4-5

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MAXIMATOR®

Air Valve Actuators

Air to Open, Normally Closed

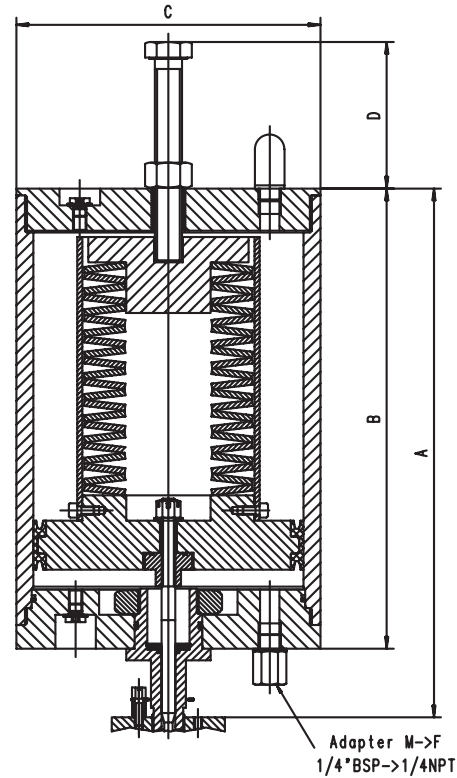
Ordering Information

Select the basic manual valve from the appropriate pressure section, then add the actuator suffix number to the end of the manual valve catalog number.

Example: 21V4M071-MNC, medium duty actuator, normally closed. This valve can be operated at 21,000 psi (1,500 bar) with an air supply of 118 psi (8.1 bar) to the valve actuator.

Technical Information

Maximum allowable working pressure for actuator	145 psi (10 bar)
Maximum operation temperature range for actuator	-22°F to +176°F (-30°C to 80°C)
Actuator material	Anodized Aluminum
Air connection size:	1/4" BSP Female (1/4" NPT Female Adapter)



Actuator Type	Ordering Suffix	Piston Area in. ² (mm ²)	A in. (mm)	B in. (mm)	C in. (mm)	D* in. (mm)
Light Duty	-LNC	12.17 (7,854)	11.60 (294.6)	10.00 (254)	4.72 (120)	2.50 (63.5)
Medium Duty	-MNC	20.57 (13,273)	11.60 (294.6)	10.00 (254)	5.91 (150)	2.50 (63.5)
Heavy Duty	-HNC	31.15 (20,100)	13.30 (337.8)	10.70 (271.8)	7.10 (180.3)	2.75 (69.9)

* D dimension is an approximation only.

Valve Series	Air Actuator			Air Pressure Regulated to Open Valve At: System Pressure ksi (bar)							Max. Pressure psi (bar)	Flow Value Cv*		
	Type	Ordering Suffix	Data	0-7 (0-480)	10 (700)	12 (830)	14 (970)	16 (1,100)	18 (1,250)	20 (1,400)			21 (1,500)	
21V4 and 21V6	Light Duty	-LNC	Air Pressure psi (bar)	130 (9)	136 (9.4)	141 (9.7)	145 (10)						14,500 (1,000)	0.37 - 1/4" 0.75 - 3/8"
			Spring Pre-compression in. (mm)	1.00 (25.4)	1.12 (28.4)	1.28 (32.5)	1.38 (35.0)							
			Stem Travel in. (mm)	0.33 (8.4)										
	Medium Duty	-MNC	Air Pressure psi (bar)	98 (6.8)	102 (7)	104 (7.2)	107 (7.4)	110 (7.6)	112 (7.7)	116 (8)	118 (8.1)		21,000 (1,500)	
			Spring Pre-compression in. (mm)	1.00 (25.4)	1.12 (28.4)	1.28 (32.5)	1.38 (35.0)	1.49 (37.8)	1.58 (40.1)	1.71 (43.4)	1.77 (45)			
			Stem Travel in. (mm)	0.33 (8.4)										
	Heavy Duty	-HNC	Air Pressure psi (bar)	86 (5.9)	92 (6.3)	94 (6.5)	96 (6.6)	98 (6.8)	100 (6.9)	102 (7)	103 (7.1)		21,000 (1,500)	
			Spring Pre-compression in. (mm)	0.68 (17.2)	0.78 (19.8)	0.81 (20.6)	0.87 (22.1)	0.91 (23.1)	0.94 (23.9)	1.00 (25.4)	1.03 (26.2)			
			Stem Travel in. (mm)	0.33 (8.4)										
21V9	Heavy Duty	-HNC	Air Pressure psi (bar)	116 (8)	130 (8.9)	138 (9.5)	145 (10)						14,500 (1,000)	1.75"
			Spring Pre-compression in. (mm)	0.47 (11.3)	0.94 (23.9)	1.44 (36.6)	2.00 (50.8)							
			Stem Travel in. (mm)	0.50 (12.7)										

* Cv value is for straight pattern vee stem valves. Increase this value by 50% for angle pattern valves.

Cv Values vary due to compression of actuator spring, adjusted based on system pressure. Values shown are for maximum stem travel.

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Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

Air Valve Actuators Air to Open, Normally Closed

Valve Series	Air Actuator			Air Pressure Regulated to Open Valve At: System Pressure ksi (bar)							Max. Pressure psi (bar)	Flow Value Cv*	
	Type	Ordering Suffix	Data	0-7 (0-480)	10 (700)	15 (1,050)	20 (1,400)	25 (1,800)	30 (2,000)	35 (2,400)			36 (2,500)
36V	Light Duty	-LNC	Air Pressure psi (bar)	116 (8)	125 (8.6)	133 (9.2)	145 (10)					20,000 (1,400)	0.12 - 1/4" 0.23 - 3/8" 0.33 - 9/16
			Spring Pre-compression in. (mm)	0.94 (23.9)	1.03 (26.2)	1.28 (32.5)	1.44 (36.6)						
			Stem Travel in. (mm)	0.15 (3.8)									
	Medium Duty	-MNC	Air Pressure psi (bar)	93 (6.4)	96 (6.6)	103 (7.1)	108 (7.4)	113 (7.8)	116 (8)			29,000 (2,000)	
			Spring Pre-compression in. (mm)	0.94 (23.9)	1.03 (26.2)	1.28 (32.5)	1.44 (36.6)	1.58 (40.1)	1.73 (43.9)				
			Stem Travel in. (mm)	0.15 (3.8)									
	Heavy Duty	-HNC	Air Pressure psi (bar)	74 (5.1)	76 (5.2)	81 (5.6)	86 (6)	91 (6.3)	96 (6.6)	101 (7)	102 (7)	36,000 (2,500)	
			Spring Pre-compression in. (mm)	0.75 (19.1)	0.81 (20.6)	0.88 (22.4)	0.94 (23.9)	1.03 (26.2)	1.12 (28.4)	1.19 (30.2)	1.25 (31.7)		
			Stem Travel in. (mm)	0.15 (3.8)									
65V	Light Duty	-LNC	Air Pressure psi (bar)	102 (7)	110 (7.6)	122 (8.4)	131 (9)	145 (10)				40,000 (2,800)	0.08 - 1/4" 0.09 - 3/8" 0.14 - 9/16
			Spring Pre-compression in. (mm)	0.75 (19.1)	0.84 (21.3)	1.06 (26.9)	1.25 (31.7)	1.44 (36.6)					
			Stem Travel in. (mm)	0.37 (9.4)									
	Medium Duty	-MNC	Air Pressure psi (bar)	81 (5.6)	84 (5.8)	97 (6.7)	100 (6.9)	110 (7.6)	118 (8.1)			50,000 (3,500)	
			Spring Pre-compression in. (mm)	0.75 (19.1)	0.84 (21.3)	1.06 (26.9)	1.25 (31.7)	1.44 (36.6)	1.63 (41.4)				
			Stem Travel in. (mm)	0.37 (9.4)									
	Heavy Duty	-HNC	Air Pressure psi (bar)	65 (4.5)	70 (4.8)	75 (5.2)	80 (5.5)	85 (5.9)	90 (6.2)	95 (6.6)	97 (6.7)	65,000 (4,500)	
			Spring Pre-compression in. (mm)	0.53 (13.5)	0.56 (14.2)	0.63 (16)	0.81 (20.6)	0.94 (23.9)	0.97 (24.6)	1.00 (25.4)	1.03 (26.2)		
			Stem Travel in. (mm)	0.37 (9.4)									
101V	Light Duty	-LNC	Air Pressure psi (bar)	72 (5)	87 (6)	109 (7.5)	123 (8.5)	145 (10)				60,000 (4,100)	0.08
			Spring Pre-compression in. (mm)	0.88 (22.4)	0.94 (23.9)	1.31 (33.3)	1.55 (39.4)	1.88 (47.8)					
			Stem Travel in. (mm)	0.28 (7.1)									
	Medium Duty	-MNC	Air Pressure psi (bar)	84 (5.8)	90 (6.2)	102 (7)	114 (7.9)	126 (8.7)				60,000 (4,100)	
			Spring Pre-compression in. (mm)	0.88 (22.4)	0.94 (23.9)	1.31 (33.3)	1.55 (39.4)	1.88 (47.8)					
			Stem Travel in. (mm)	0.28 (7.1)									
	Heavy Duty	-HNC	Air Pressure psi (bar)	60 (4.1)	66 (4.6)	76 (5.2)	86 (5.9)	96 (6.6)	106 (7.3)	116 (8)	122 (8.4)	101,000 (7,000)	
			Spring Pre-compression in. (mm)	0.56 (14.2)	0.63 (16)	0.78 (19.8)	0.88 (22.4)	1.03 (26.2)	1.15 (29.2)	1.28 (32.5)	1.38 (35.1)		
			Stem Travel in. (mm)	0.28 (7.1)									

* Cv value is for straight pattern vee stem valves. Increase this value by 50% for angle pattern valves.

Cv Values vary due to compression of actuator spring, adjusted based on system pressure. Values shown are for maximum stem travel.

All technical and dimensional information subject to change. All general Terms and Conditions of sale, including limitations of our liability, apply to all products and services sold.

Adapters and Couplings

Medium Pressure
to 21,000 psi (1,500 bar)

High Pressure
to 65,000 psi (4,500 bar)

Ultra High Pressure
to 152,000 psi (10,500 bar)

Ball Valves
to 21,000 psi (1,500 bar)

Accessories

Tools and Installation

Valve Actuators

Technical Information

MAXIMATOR®

Air Valve Actuators

Air to Close, Normally Open

Ordering Information

Select the basic manual valve from the appropriate pressure section, then add the actuator suffix number to the end of the manual valve catalog number.

Example: 21V4M071-MNO, medium duty actuator, normally open. This valve can be operated at 21,000 psi (1,500 bar) with an air supply of 106 psi (7.3 bar) to the valve actuator.

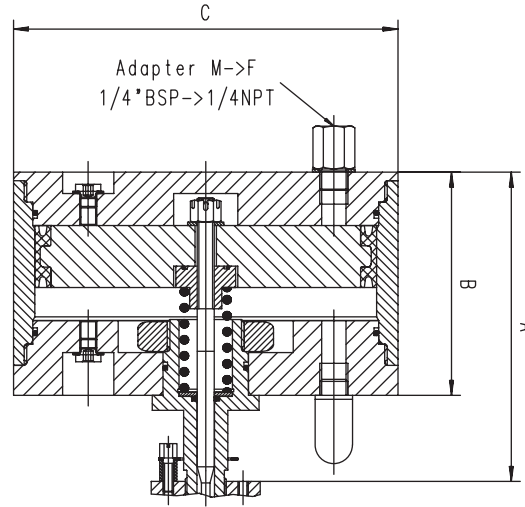
Technical Information

Maximum allowable working pressure for actuator 145 psi (10 bar)

Maximum operation temperature range for actuator -22°F to +176°F (-30°C to +80°C)

Actuator material Anodized Aluminum

Air connection size: 1/4" BSP Female (1/4" NPT Female Adapter)



Actuator Type	Ordering Suffix	Piston Area in. ² (mm ²)	A in. (mm)	B in. (mm)	C in. (mm)
Light Duty	-LNO	12.17 (7,854)	5.70 (145)	4.10 (104.1)	4.72 (120)
Medium Duty	-MNO	20.57 (13,273)	5.70 (145)	4.10 (104.1)	5.91 (150)
Heavy Duty	-HNO	31.15 (20,100)	5.70 (145)	4.10 (104.1)	7.10 (180.3)

Valve Series	Air Actuator		Air Pressure Regulated to Close Valve At: System Pressure ksi (bar)								Max. Pressure psi (bar)	Stem Travel in. (mm)	Flow Value Cv*
	Type	Ordering Suffix	0-7 (0-480)	10 (700)	12 (830)	14 (970)	16 (1,100)	18 (1,250)	20 (1,400)	21 (1,500)			
21V4 and 21V6	Light Duty	-LNO	87 (6)	99 (6.8)	104 (7.2)	115 (7.9)	117 (8.1)	130 (9)	142 (9.8)	145 (10)	21,000 (1,500)	0,33 (8.4)	0.31 - 1/4" 0.75 - 3/8"
	Medium Duty	-MNO	72 (5)	79 (5.4)	83 (5.7)	88 (6.1)	93 (6.4)	98 (6.8)	103 (7.1)	106 (7.3)	21,000 (1,500)	0,33 (8.4)	
	Heavy Duty	-HNO	52 (3.6)	56 (3.9)	59 (4.1)	62 (4.3)	65 (4.5)	68 (4.7)	71 (4.9)	75 (5.2)	21,000 (1,500)	0,33 (8.4)	
21V9	Heavy Duty	-HNO	88 (6.1)	100 (6.9)	108 (7.4)	116 (8)	124 (8.5)	132 (9.1)	140 (9.7)	146 (10)	21,000 (1,500)	0.50 (12.7)	1.75

* Cv value is for straight pattern vee stem valves. Increase this value by 50% for angle pattern valves.

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Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

Air Valve Actuators

Air to Close, Normally Open

Valve Series	Air Actuator		Air Pressure Regulated to Close Valve At: System Pressure ksi (bar)								Max. Pressure psi (bar)	Stem Travel in (mm)	Flow Value Cv*
	Type	Ordering Suffix	0-7 (0-480)	10 (700)	15 (1,050)	20 (1,400)	25 (1,800)	30 (2,000)	35 (2,400)	36 (2,500)			
36V	Light Duty	-LNO	73 (5)	78 (5.4)	91 (6.3)	106 (7.3)	119 (8.2)	128 (8.8)	142 (9.8)	145 (10)	36,000 (2,500)	0.15 (3.8)	0.12 - 1/4" 0.23 - 3/8" 0.33 - 9/16"
	Medium Duty	-MNO	65 (4.5)	69 (4.8)	76 (5.2)	83 (5.7)	90 (6.2)	99 (6.8)	106 (7.3)	108 (7.4)	36,000 (2,500)	0.15 (3.8)	
	Heavy Duty	-HNO	44 (3.1)	50 (3.4)	56 (3.9)	63 (4.3)	70 (4.8)	77 (5.3)	84 (5.8)	86 (5.9)	36,000 (2,500)	0.15 (3.8)	
			0-7 (0-480)	10 (700)	20 (1,400)	30 (2,000)	40 (2,800)	50 (3,500)	60 (4,100)	65 (4,500)			
65V	Light Duty	-LNO	58 (4)	70 (4.8)	77 (5.3)	91 (6.3)	106 (7.3)	123 (8.5)	133 (9.2)	145 (10)	65,000 (4,500)	0.37 (9.4)	0.08 - 1/4" 0.09 - 3/8" 0.14 - 9/16"
	Medium Duty	-MNO	55 (3.8)	57 (3.9)	66 (4.5)	76 (5.2)	85 (5.9)	93 (6.4)	102 (7)	107 (7.4)	65,000 (4,500)	0.37 (9.4)	
	Heavy Duty	-HNO	30 (2.1)	32 (2.2)	42 (2.9)	52 (3.6)	62 (4.3)	72 (5)	82 (5.7)	86 (5.9)	65,000 (4,500)	0.37 (9.4)	
			0-7 (0-480)	15 (1,050)	30 (2,000)	45 (3,100)	60 (4,100)	75 (5,200)	90 (6,200)	101 (7,000)			
101V	Light Duty	-LNO	65 (4.5)	87 (6)	106 (7.3)	131 (9)					45,000 (3,100)	0.28 (7.1)	0.08
	Medium Duty	-MNO	61 (4.2)	73 (5.0)	89 (6.1)	96 (6.6)	108 (7.4)	119 (8.2)	131 (9)	140 (9.7)	101,000 (7,000)	0.28 (7.1)	
	Heavy Duty	-HNO	40 (2.8)	45 (3.1)	55 (3.8)	65 (4.5)	75 (5.2)	85 (5.9)	95 (6.6)	102 (7)	101,000 (7,000)	0.28 (7.1)	

* Cv value is for straight pattern vee stem valves. Increase this value by 50% for angle pattern valves.

Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)



Ball Valves

Pressures to 21,000 psi (1,500 bar)

MAXIMATOR ball valves provide superior quality and performance with a variety of valve styles and process connections. All medium and high pressure connections are supplied with glands and collars.

Ball Valves feature:

- ▶ One-piece, trunion mounted style stem design eliminates shear failure found in two-piece stem designs.
- ▶ Choice of 3/16" and 1/4" ball orifices provides minimal pressure drops.
- ▶ Re-torqueable seat glands for longer seat life and dependability.
- ▶ Torlon Ball Seat material offers excellent sealing capabilities.
- ▶ 316 cold worked stainless steel body, and 17-4 PH stem offers excellent corrosion resistance.
- ▶ Ball valves are available in 90° and 180° open to close with a positive stop.
- ▶ Available with Pneumatic or Electric actuators.
- ▶ Available in medium, high and FNPT pressure connections.
- ▶ Full materials traceability.
- ▶ Safety weep holes for all pressure connections and packing area.

MAXIMATOR offers a complete line of high pressure components to compliment the 2-way and 3-way Ball Valve line.

Note: When selecting multiple items, the pressure rating would be that of the lowest rated component.

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2-Way Ball Valves 2

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Pneumatic Actuators..... 4

Electric Actuators 5

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3999.1827 – DSB 09/2007

Adapters and
Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and
Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical
Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

MAXIMATOR®

2-Way Ball Valves - 1/4" Orifice

Pressures to 21,000 psi (1,500 bar)



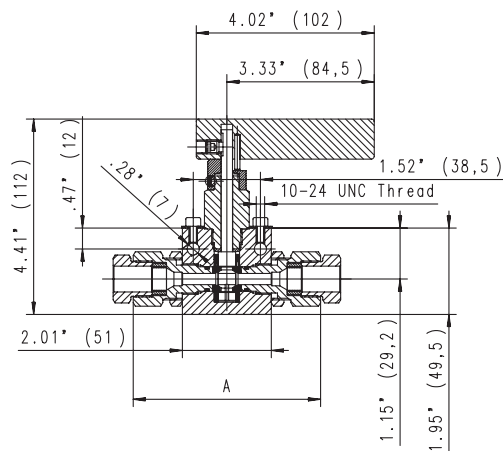
MAXIMATOR 2-Way Ball Valves have 1/4" orifices and are capable of safe handling of liquids and gases up to 21,000 psi (**1,500 bar**) pressure. Their 90° handle rotation allows for full flow capabilities with minimal pressure drop. Robust one-piece trunnion style stem design eliminates shear failure that is found in a two-piece stem design. Ball seats are made of Torlon material providing excellent sealing capabilities with low handle operating torque. Re-torqueable seat glands provide longer valve life and dependability. Standard valves are supplied with Viton O-Rings rated to 300°F (**150°C**).

Ordering Information

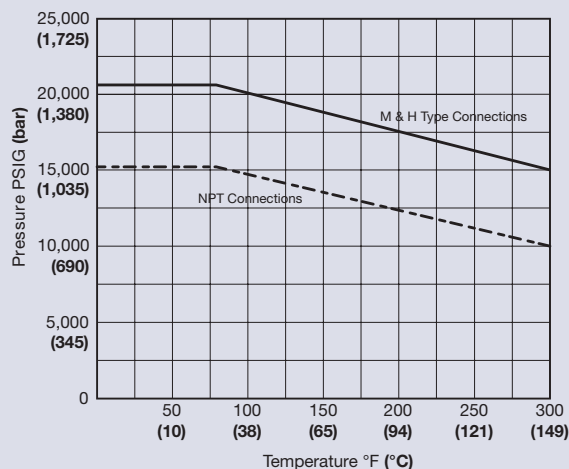
Typical catalog number: **21B244M**

21	B2	4	4M	-
Pressure (x 1000 psi)	Valve Series	Orifice Diameter	Connection Type	Options
15 = 15,200 psi (1,050 bar) 21 = 21,000 psi (1,500 bar)	B2 = Ball Valve 2-way	4 = 1/4"	See chart below	See Ball Valve Actuators (page 4 & 5)

Manually Operated 2-Way Ball Valve



Pressure Temperature Ratings



Catalog Number	Pressure Rating @ RT psi. (bar)	O.D Tubing Size in.	Connection Type	Orifice Size in. (mm)	Cv	Dimension A in. (mm)	Valve Panel Hole in. (mm)	Block Thickness in. (mm)
21B244M	21,000 (1,500)	1/4	4MF	0.109 (2.8)	0.31	4.21 (107)	1.03 (26.2)	1.00 (25.4)
21B246M	21,000 (1,500)	3/8	6MF	0.203 (5.2)	1.70	4.21 (107)	1.03 (26.2)	1.00 (25.4)
21B249M	21,000 (1,500)	9/16	9MF	0.250 (6.4)	2.70	4.21 (107)	1.03 (26.2)	1.00 (25.4)
21B244H	21,000 (1,500)	1/4	4HF	0.094 (2.4)	0.20	4.21 (107)	1.03 (26.2)	1.00 (25.4)
21B246H	21,000 (1,500)	3/8	6HF	0.125 (3.2)	0.45	4.21 (107)	1.03 (26.2)	1.00 (25.4)
21B249H	21,000 (1,500)	9/16	9HF	0.188 (4.8)	1.45	4.84 (123)	1.03 (26.2)	1.38 (35.1)
15B242P	15,200 (1,050)	1/8	FNPT	0.250 (6.4)	2.70	4.21 (107)	1.03 (26.2)	1.00 (25.4)
15B244P	15,200 (1,050)	1/4	FNPT	0.250 (6.4)	2.70	4.21 (107)	1.03 (26.2)	1.00 (25.4)
15B246P	15,200 (1,050)	3/8	FNPT	0.250 (6.4)	2.70	4.21 (107)	1.03 (26.2)	1.00 (25.4)
15B248P	15,200 (1,050)	1/2	FNPT	0.250 (6.4)	2.70	4.84 (123)	1.03 (26.2)	1.38 (35.1)

Caution: Ball valves are not recommended for small molecular gases (Hydrogen, Helium).
All dimensions are for reference only and subject to change.

All technical and dimensional information subject to change. All general Terms and Conditions of sale, including limitations of our liability, apply to all products and services sold.

Adapters and Couplings
 Medium Pressure to 21,000 psi (1,500 bar)
Accessories
 High Pressure to 65,000 psi (4,500 bar)
Tools and Installation
 Ultra High Pressure to 152,000 psi (10,500 bar)
Valve Actuators
 Technical Information
Ball Valves
 to 21,000 psi (1,500 bar)

MAXIMATOR®

3-Way Ball Valves - 3/16" Orifice Pressures to 21,000 psi (1,500 bar)



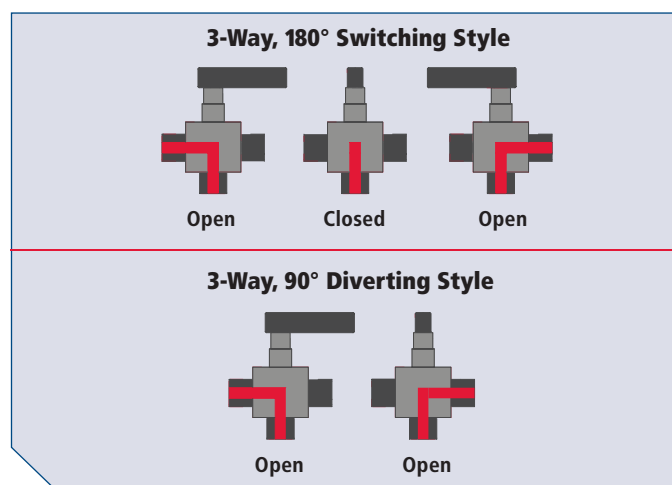
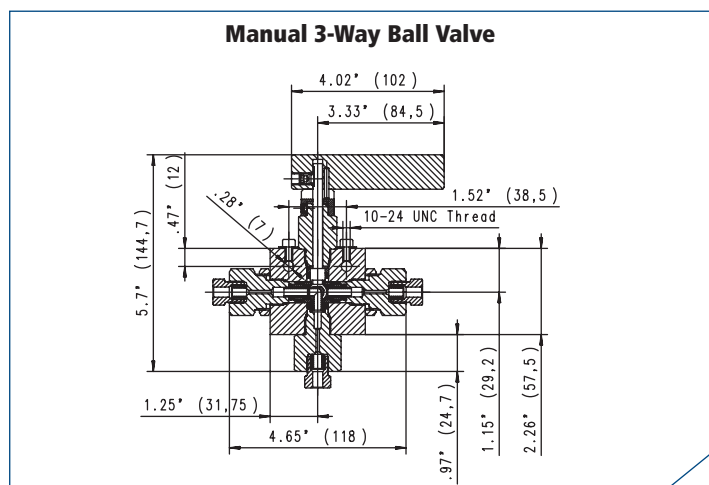
MAXIMATOR 3-Way Ball Valves have 3/16" orifices and are capable of safe handling of liquids and gases up to 21,000 psi (1,500 bar) pressure. Robust one-piece trunnion style stem design eliminates shear failure that is found in a two-piece stem design. There are two styles in the 3-way design:

- The 180° rotating Switching Ball Valve is designed to have fluid enter in through the bottom connection and can be switched to either side connection. Also, the valve can be closed in the center "Off" position.
- The 90° rotating Diverting Ball Valve is designed to have fluid enter in through the bottom connection and can be diverted to either side connection. There is no center off position in the diverting design.

Ordering Information

Typical catalog number: **21B3S34M**

21	B3S	3	4M	-
Pressure (x 1000 psi)	Valve Series	Orifice Diam-	Connec-tion	Options
15 = 15,200 psi (1,050 bar) 21 = 21,000 psi (1,500 bar)	B3S = 180°Switching B3D = 90°Diverting	3 = 3/16	See chart below	See Ball Valve Actuators (page 4 & 5)



Catalog Number		Pressure Rating @ RT psi. (bar)*	O.D Tubing Size in.	Connection Type	Orifice Size in. (mm)	Cv	Valve Panel Hole in. (mm)	Block Thickness in. (mm)
3-Way 180° Switching	3-Way 90° Diverting							
21B3S34M	21B3D34M	21,000 (1,500)	1/4	4MF	0.109 (2.8)	0.15	1.03 (26.2)	1.00 (25.4)
21B3S36M	21B3D36M	21,000 (1,500)	3/8	6MF	0.188 (4.8)	0.71	1.03 (26.2)	1.00 (25.4)
21B3S39M	21B3D39M	21,000 (1,500)	9/16	9MF	0.188 (4.8)	0.71	1.03 (26.2)	1.00 (25.4)
21B3S34H	21B3D34H	21,000 (1,500)	1/4	4HF	0.094 (2.4)	0.10	1.03 (26.2)	1.00 (25.4)
21B3S36H	21B3D36H	21,000 (1,500)	3/8	6HF	0.125 (3.2)	0.22	1.03 (26.2)	1.00 (25.4)
21B3S39H	21B3D39H	21,000 (1,500)	9/16	9HF	0.188 (4.8)	0.71	1.03 (26.2)	1.00 (25.4)
15B3S32P	15B3D32P	15,200 (1,050)	1/8	FNPT	0.188 (4.8)	0.71	1.03 (26.2)	1.00 (25.4)
15B3S34P	15B3D34P	15,200 (1,050)	1/4	FNPT	0.188 (4.8)	0.71	1.03 (26.2)	1.00 (25.4)
15B3S36P	15B3D36P	15,200 (1,050)	3/8	FNPT	0.188 (4.8)	0.71	1.03 (26.2)	1.00 (25.4)
15B3S38P	15B3D38P	15,200 (1,050)	1/2	FNPT	0.188 (4.8)	0.71	1.03 (26.2)	1.00 (25.4)

* Maximum side connection inlet pressure is 15,000 psig.

Caution: Ball valves are not recommended for small molecular gases (Hydrogen, Helium).

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See page 2 for pressure/temperature rating chart.
All dimensions are for reference only and subject to change.

Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

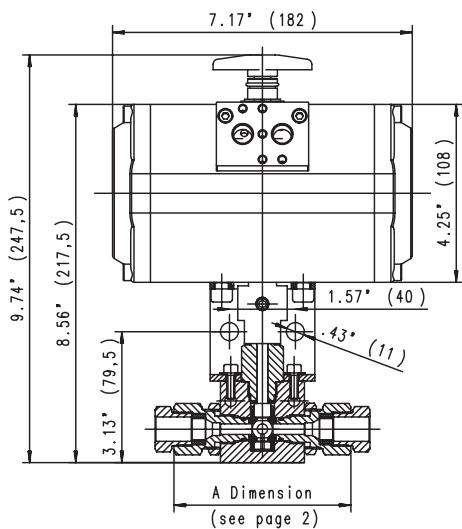
Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

Air Operated 2-Way Ball Valve



Pneumatic Actuator Features

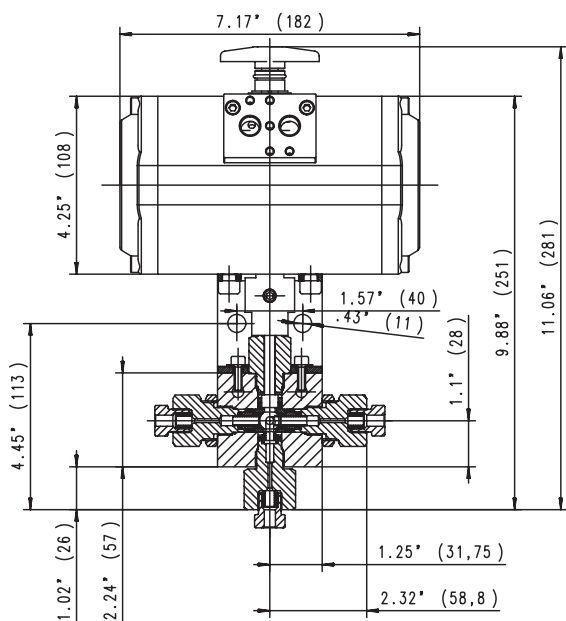
- ▶ Pneumatic actuators are designed to be used with 2-way & 3-way style ball valves for remote operation.
- ▶ Two styles available:
 - Double acting: (air to open / air to close)
 - Single acting: (air to open / spring to close)
- ▶ Optional limit switches with visual indication available.
- ▶ Actuators are anodized aluminum, which provides good corrosion resistance. Stainless steel material is available upon request.
- ▶ Maximum operating air pressure is 145 psi (**10 bar**).
- ▶ Inlet air supply connection is 1/8" FNPT
- ▶ Actuator operating temperature:
 - 4°F to 203°F (-20°C to 95°C).
- ▶ Minimal required air pressure is 80 psi (**5.5 bar**).
- ▶ Opening & closing time is less than one second.

Ordering Information

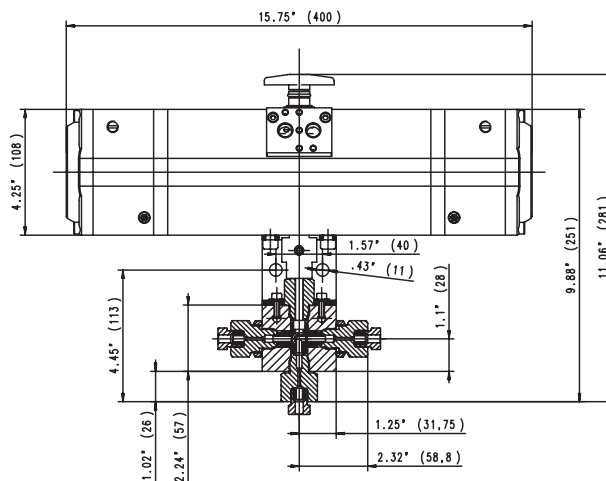
Simply add suffix to the manual ball valve catalog number:

- **DA** (Double Acting Air Actuators)
- **SA** (Single Acting Air Actuators)

**Air Operated 3-Way Ball Valve,
90° Diverter Style**



**Air Operated 3-Way Ball Valve,
180° Switching Style**



(Available in double acting only)



Electric Actuator Features

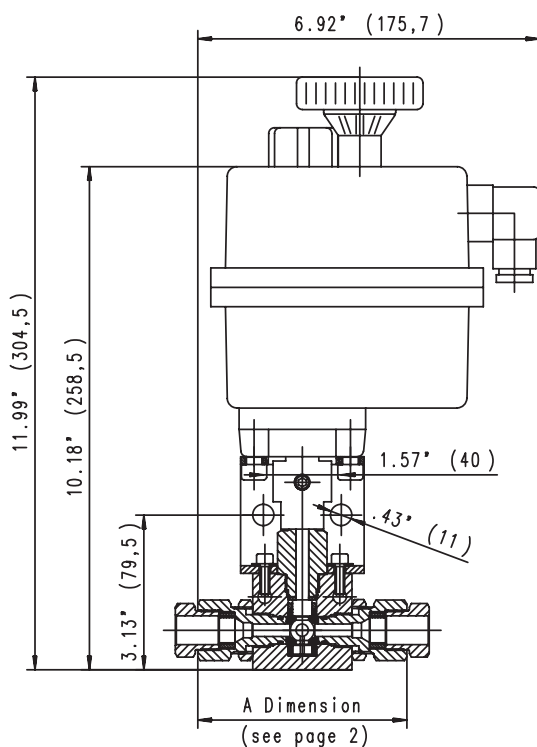
- ▶ Electric actuators are designed to be used with 2-way & 3-way style ball valves for remote operation.
- ▶ Actuators will accept a wide range of single phase input voltages from 12 to 240 volts DC or AC current.
- ▶ Optional limit switches with visual indication available.
- ▶ Manual override option is standard.
- ▶ Actuators are made with polyamide material, which provides good corrosion resistance.
- ▶ Actuator operating temperature:
-0°F to 160°F (-18°C to 70°C).
- ▶ Opening & closing time is less than ten seconds with 90° actuators.

Ordering Information

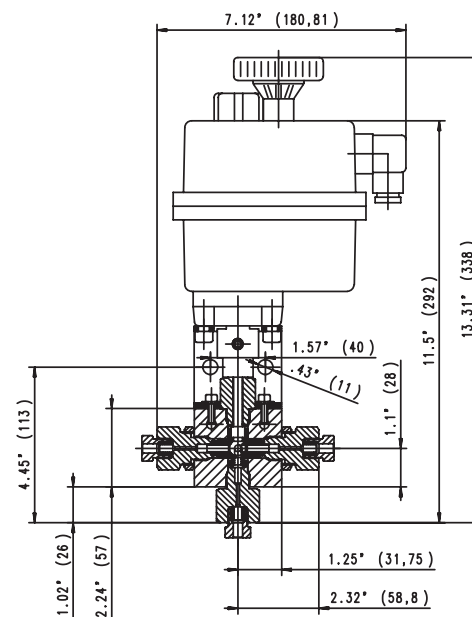
Simply add suffix to the manual ball valve catalog number:

- **EL** = Electric Actuator, lower voltage,
(12 - 48 Volts AC or DC)
- **EH** = Electric Actuator, higher voltage,
(80 - 240 Volts AC or DC)

Electrically Operated 2-Way Ball Valve



Electrically Operated 3-Way Ball Valve



All dimensions are for reference only and are subject to change



Adapters and Couplings

Pressures to 152,000 psi (10,500 bar)

MAXIMATOR designs and manufactures a wide variety of adapters and couplings in an array of styles and sizes. The adapters in this section are considered standard and readily available. Other materials and configurations are available upon request.

Adapters, Couplings & Accessories feature:

- ▶ Adapters & Couplings are 316 cold worked stainless steel material.
- ▶ Traceability is ensured by component laser etching, and through extensive documentation which includes: part number, pressure, material batch numbers, and connection type.
- ▶ Adapters are available in one or two-piece designs.
- ▶ Safety weep holes come standard on all pressure connections.
- ▶ All medium, high and ultra high pressure Adapters and Couplings come complete with glands and collars.

MAXIMATOR offers a complete line of standard high pressure adapters and couplings to compliment our valve line. Special design adapters and materials are available upon request.

Note: When selecting multiple items, the pressure rating would be that of the lowest rated component.

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Couplings (female to female) &
Adapters (male to male) 5-8

Factory

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Internet

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Adapters and Couplings

Adapters (male to female)

Adapters (male to female)

MAXIMATOR male to female adapters allow the joining of male to female connections. The two connections can be a variety of tube or pipe connection types, with different size combinations possible. All adapters are made of 316 cold worked stainless steel material; other materials are available upon request. Glands and collars are included with each female tube connection.

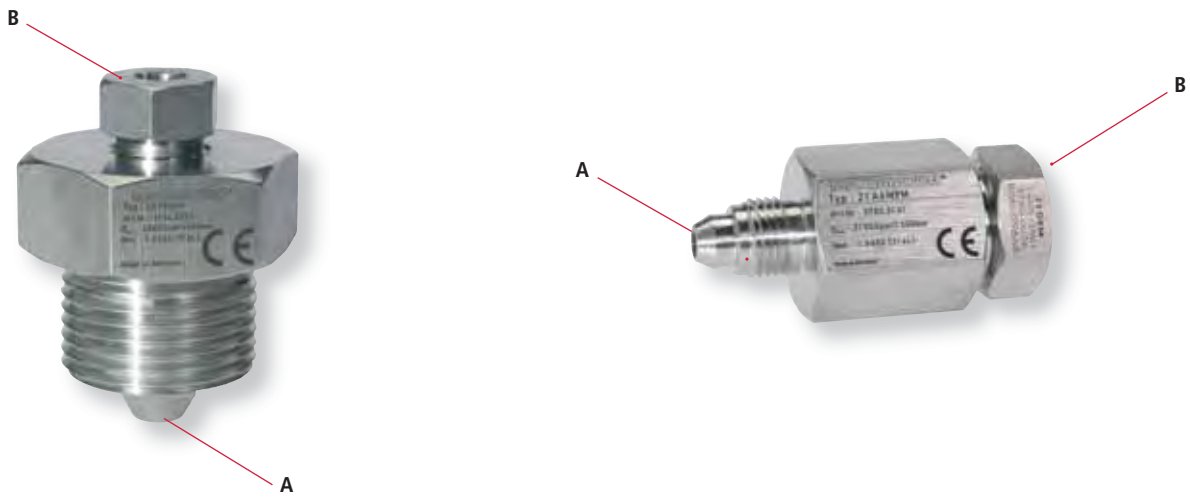


Instructions

Find the male connection you want on the adapter in the "A" column and the female connection of the adapter in the "B" column. At the intersection of the two columns is the appropriate catalog number.

Pressure Series	Male Connection "A"			Female Connection "B"				
	Tube Size in.	Connection Type	Maximum Pressure psi (bar)*	Female Medium Pressure 21,000 psi (1,500 bar)				
				1/4" 4MF	3/8" 6MF	9/16" 9MF	3/4" 12MF	1" 16MF
Male Medium	1/4	4MM	21,000 (1,500)		21A4M6M	21A4M9M	21A4M12M	21A4M16M
	3/8	6MM	21,000 (1,500)	21A6M4M		21A6M9M	21A6M12M	21A6M16M
	9/16	9MM	21,000 (1,500)	21A9M4M	21A9M6M		21A9M12M	21A9M16M
	3/4	12MM	21,000 (1,500)	21A12M4M	21A12M6M	21A12M9M		21A12M16M
	1	16MM	21,000 (1,500)	21A16M4M	21A16M6M	21A16M9M	21A16M12M	
Male High	1/4	4HM	65,000 (4,500)	21A4H4M	21A4H6M	21A4H9M	21A4H12M	21A4H16M
	3/8	6HM	65,000 (4,500)	21A6H4M	21A6H6M	21A6H9M	21A6H12M	21A6H16M
	9/16	9HM	65,000 (4,500)	21A9H4M	21A9H6M	21A9H9M	21A9H12M	21A9H16M
Male Ultra High	5/16	5UM	152,000 (10,500)	21A5U4M	21A5U6M	21A5U9M	21A5U12M	21A5U16M
Male Pipe	1/8	MNPT	15,200 (1,050)	15A2P4M	15A2P6M	15A2P9M	15A2P12M	15A2P16M
	1/4	MNPT	15,200 (1,050)	15A4P4M	15A4P6M	15A4P9M	15A4P12M	15A4P16M
	3/8	MNPT	15,200 (1,050)	15A6P4M	15A6P6M	15A6P9M	15A6P12M	15A6P16M
	1/2	MNPT	15,200 (1,050)	15A8P4M	15A8P6M	15A8P9M	15A8P12M	15A8P16M
	3/4	MNPT	15,200 (1,050)	15A12P4M	15A12P6M	15A12P9M	15A12P12M	15A12P16M
	1	MNPT	15,200 (1,050)	15A16P4M	15A16P6M	15A16P9M	15A16P12M	15A16P16M
Male British Standard Pipe	1/8	MBSP	15,200 (1,050)	15A2B4M	15A2B6M	15A2B9M	15A2B12M	15A2B16M
	1/4	MBSP	15,200 (1,050)	15A4B4M	15A4B6M	15A4B9M	15A4B12M	15A4B16M
	3/8	MBSP	15,200 (1,050)	15A6B4M	15A6B6M	15A6B9M	15A6B12M	15A6B16M
	1/2	MBSP	15,200 (1,050)	15A8B4M	15A8B6M	15A8B9M	15A8B12M	15A8B16M
	3/4	MBSP	15,200 (1,050)	15A12B4M	15A12B6M	15A12B9M	15A12B12M	15A12B16M
	1	MBSP	15,200 (1,050)	15A16B4M	15A16B6M	15A16B9M	15A16B12M	15A16B16M

* The pressure rating of any adapter is the value of the lowest rated connection in the fitting. Note: All Maximator adapters come standard in the "one-piece" design style. Adapters with the two piece design are available by adding a suffix -2P after the part numbers listed above. Both designs are identical in length, and are interchangeable with each other.



Female Connection "B"																
Female High Pressure 65,000 psi (4,500 bar)			Female Ultra-High Pressure 152,000 psi (10,500 bar)	Female Pipe 15,200 psi (1,050 bar)						Female British Standard Pipe 15,200 psi (1,050 bar)						
1/4" 4HF	3/8" 6HF	9/16" 9HF	5/16" 5UF	1/8" FNPT	1/4" FNPT	3/8" FNPT	1/2" FNPT	3/4" FNPT	1" FNPT		1/8" FBSP	1/4" FBSP	3/8" FBSP	1/2" FBSP	3/4" FBSP	1" FBSP
21A4M4H	21A4M6H	21A4M9H	21A4M5U	15A4M2P	15A4M4P	15A4M6P	15A4M8P	15A4M12P	15A4M16P		15A4M2B	15A4M4B	15A4M6B	15A4M8B	15A4M12B	15A4M16B
21A6M4H	21A6M6H	21A6M9H	21A6M5U	15A6M2P	15A6M4P	15A6M6P	15A6M8P	15A6M12P	15A6M16P		15A6M2B	15A6M4B	15A6M6B	15A6M8B	15A6M12B	15A6M16B
21A9M4H	21A9M6H	21A9M9H	21A9M5U	15A9M2P	15A9M4P	15A9M6P	15A9M8P	15A9M12P	15A9M16P		15A9M2B	15A9M4B	15A9M6B	15A9M8B	15A9M12B	15A9M16B
21A12M4H	21A12M6H	21A12M9H	21A12M5U	15A12M2P	15A12M4P	15A12M6P	15A12M8P	15A12M12P	15A12M16P		15A12M2B	15A12M4B	15A12M6B	15A12M8B	15A12M12B	15A12M16B
21A16M4H	21A16M6H	21A16M9H	21A16M5U	15A16M2P	15A16M4P	15A16M6P	15A16M8P	15A16M12P	15A16M16P		15A16M2B	15A16M4B	15A16M6B	15A16M8B	15A16M12B	15A16M16B
	65A4H6H	65A4H9H	65A4H5U	15A4H2P	15A4H4P	15A4H6P	15A4H8P	15A4H12P	15A4H16P		15A4H2B	15A4H4B	15A4H6B	15A4H8B	15A4H12B	15A4H16B
	65A6H4H	65A6H9H	65A6H5U	15A6H2P	15A6H4P	15A6H6P	15A6H8P	15A6H12P	15A6H16P		15A6H2B	15A6H4B	15A6H6B	15A6H8B	15A6H12B	15A6H16B
	65A9H4H	65A9H6H	65A9H5U	15A9H2P	15A9H4P	15A9H6P	15A9H8P	15A9H12P	15A9H16P		15A9H2B	15A9H4B	15A9H6B	15A9H8B	15A9H12B	15A9H16B
	65A5U4H	65A5U6H	65A5U9H	15A5U2P	15A5U4P	15A5U6P	15A5U8P	15A5U12P	15A5U16P		15A5U2B	15A5U4B	15A5U6B	15A5U8B	15A5U12B	15A5U16B
	15A2P4H	15A2P6H	15A2P9H	15A2P5U												
	15A4P4H	15A4P6H	15A4P9H	15A4P5U												
	15A6P4H	15A6P6H	15A6P9H	15A6P5U												
	15A8P4H	15A8P6H	15A8P9H	15A8P5U												
	15A12P4H	15A12P6H	15A12P9H	15A12P5U												
	15A16P4H	15A16P6H	15A16P9H	15A16P5U												
	15A2B4H	15A2B6H	15A2B9H	15A2B5U												
	15A4B4H	15A4B6H	15A4B9H	15A4B5U												
	15A6B4H	15A6B6H	15A6B9H	15A6B5U												
	15A8B4H	15A8B6H	15A8B9H	15A8B5U												
	15A12B4H	15A12B6H	15A12B9H	15A12B5U												
	15A16B4H	15A16B6H	15A16B9H	15A16B5U												

* The pressure rating of any adapter is the value of the lowest rated connection in the fitting.

MAXIMATOR®

Adapters and Couplings

Couplings and Adapters

Couplings (female to female)

MAXIMATOR couplings are female to female fittings that allow the joining of two different sizes and/or types of connections for a variety of size combinations. All couplings and adapters are made of 316 cold worked stainless steel material; other materials are available upon request. Glands and collars are included with each female tube connection.

Instructions

Find the first connection you want in the "A" column and the other connection in the "B" column. At the intersection of the two columns is the appropriate catalog number.



Pressure Series	Female Connection "A"			Female Connection "B"				
	Tube Size in.	Connection Type	Maximum Pressure psi (bar)*	Female Medium Pressure 21,000 psi (1,500 bar)				
				1/4" 4MF	3/8" 6MF	9/16" 9MF	3/4" 12MF	1" 16MF
Female Medium	1/4	4MF	21,000 (1,500)	21F4M	21F4M6M	21F4M9M	21F4M12M	21F4M16M
	3/8	6MF	21,000 (1,500)		21F6M	21F6M9M	21F6M12M	21F6M16M
	9/16	9MF	21,000 (1,500)			21F9M	21F9M12M	21F9M16M
	3/4	12MF	21,000 (1,500)				21F12M	21F12M16M
	1	16MF	21,000 (1,500)					21F16M
Female High	1/4	4HF	65,000 (4,500)					
	3/8	6HF	65,000 (4,500)					
	9/16	9HF	65,000 (4,500)					
Female Ultra High	5/16	5UF	152,000 (10,500)					

* The pressure rating of any adapter is the value of the lowest rated connection in the fitting.

Adapters (male to male)

MAXIMATOR male to male adapters allow the joining of two different sizes and/or types of tube or pipe female connections.



Pressure Series	Male Connection "A"			Male Connection "B"				
	Tube Size in.	Connection Type	Maximum Pressure psi (bar)*	Male Medium Pressure 21,000 psi (1,500 bar)				
				1/4" 4MM	3/8" 6MM	9/16" 9MM	3/4" 12MM	1" 16MM
Male Medium	1/4	4MM	21,000 (1,500)	21M4M	21M4M6M	21M4M9M	21M4M12M	21M4M16M
	3/8	6MM	21,000 (1,500)		21M6M	21M6M9M	21M6M12M	21M6M16M
	9/16	9MM	21,000 (1,500)			21M9M	21M9M12M	21M9M16M
	3/4	12MM	21,000 (1,500)				21M12M	21M12M16M
	1	16MM	21,000 (1,500)					21M16M
Male High	1/4	4HM	65,000 (4,500)					
	3/8	6HM	65,000 (4,500)					
	9/16	9HM	65,000 (4,500)					
Male Ultra High	5/16	5UM	152,000 (10,500)					

* The pressure rating of any adapter is the value of the lowest rated connection in the fitting.

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Medium Pressure
to 21,000 psi (1,500 bar)

High Pressure
to 65,000 psi (4,500 bar)

Ultra High Pressure
to 152,000 psi (10,500 bar)

Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

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Ball Valves



Female Connection "B"																
Female High Pressure 65,000 psi (4,500 bar)			Female Ultra High Pressure 152,000 psi (10,500 bar)	Female Pipe 15,200 psi (1,050 bar)						Female British Standard Pipe 15,200 psi (1,050 bar)						
1/4" 4HF	3/8" 6HF	9/16" 9HF	5/16" 5UF	1/8" FNPT	1/4" FNPT	3/8" FNPT	1/2" FNPT	3/4" FNPT	1" FNPT		1/8" FBSP	1/4" FBSP	3/8" FBSP	1/2" FBSP	3/4" FBSP	1" FBSP
21F4M4H	21F4M6H	21F4M9H	21F4M5U	15F4M2P	15F4M4P	15F4M6P	15F4M8P	15F4M12P	15F4M16P		15F4M2B	15F4M4B	15F4M6B	15F4M8B	15F4M12B	15F4M16B
21F6M4H	21F6M6H	21F6M9H	21F6M5U	15F6M2P	15F6M4P	15F6M6P	15F6M8P	15F6M12P	15F6M16P		15F6M2B	15F6M4B	15F6M6B	15F6M8B	15F6M12B	15F6M16B
21F9M4H	21F9M6H	21F9M9H	21F9M5U	15F9M2P	15F9M4P	15F9M6P	15F9M8P	15F9M12P	15F9M16P		15F9M2B	15F9M4B	15F9M6B	15F9M8B	15F9M12B	15F9M16B
21F12M4H	21F12M6H	21F12M9H	21F12M5U	15F12M2P	15F12M4P	15F12M6P	15F12M8P	15F12M12P	15F12M16P		15F12M2B	15F12M4B	15F12M6B	15F12M8B	15F12M12B	15F12M16B
21F16M4H	21F16M6H	21F16M9H	21F16M5U	15F16M2P	15F16M4P	15F16M6P	15F16M8P	15F16M12P	15F16M16P		15F16M2B	15F16M4B	15F16M6B	15F16M8B	15F16M12B	15F16M16B
65F4H	65F4H6H	65F4H9H	65F4H5U	15F4H2P	15F4H4P	15F4H6P	15F4H8P	15F4H12P	15F4H16P		15F4H2B	15F4H4B	15F4H6B	15F4H8B	15F4H12B	15F4H16B
	65F6H	65F6H9H	65F6H5U	15F6H2P	15F6H4P	15F6H6P	15F6H8P	15F6H12P	15F6H16P		15F6H2B	15F6H4B	15F6H6B	15F6H8B	15F6H12B	15F6H16B
		65F9H	65F9H5U	15F9H2P	15F9H4P	15F9H6P	15F9H8P	15F9H12P	15F9H16P		15F9H2B	15F9H4B	15F9H6B	15F9H8B	15F9H12B	15F9H16B
			152F5U	15F5U2P	15F5U4P	15F5U6P	15F5U8P	15F5U12P	15F5U16P		15F5U2B	15F5U4B	15F5U6B	15F5U8B	15F5U12B	15F5U16B

* The pressure rating of any adapter is the value of the lowest rated connection in the fitting.



Male Connection "B"																
Male High Pressure 65,000 psi (4,500 bar)			Male Ultra High Pressure 152,000 psi (10,500 bar)	Male Pipe 15,200 psi (1,050 bar)						Male British Standard Pipe 15,200 psi (1,050 bar)						
1/4" 4HM	3/8" 6HM	9/16" 9HM	5/16" 5UM	1/8" MNPT	1/4" MNPT	3/8" MNPT	1/2" MNPT	3/4" MNPT	1" MNPT		1/8" MBSP	1/4" MBSP	3/8" MBSP	1/2" MBSP	3/4" MBSP	1" MBSP
21M4M4H	21M4M6H	21M4M9H	21M4M5U	15M4M2P	15M4M4P	15M4M6P	15M4M8P	15M4M12P	15M4M16P		15M4M2B	15M4M4B	15M4M6B	15M4M8B	15M4M12B	15M4M16B
21M6M4H	21M6M6H	21M6M9H	21M6M5U	15M6M2P	15M6M4P	15M6M6P	15M6M8P	15M6M12P	15M6M16P		15M6M2B	15M6M4B	15M6M6B	15M6M8B	15M6M12B	15M6M16B
21M9M4H	21M9M6H	21M9M9H	21M9M5U	15M9M2P	15M9M4P	15M9M6P	15M9M8P	15M9M12P	15M9M16P		15M9M2B	15M9M4B	15M9M6B	15M9M8B	15M9M12B	15M9M16B
21M12M4H	21M12M6H	21M12M9H	21M12M5U	15M12M2P	15M12M4P	15M12M6P	15M12M8P	15M12M12P	15M12M16P		15M12M2B	15M12M4B	15M12M6B	15M12M8B	15M12M12B	15M12M16B
21M16M4H	21M16M6H	21M16M9H	21M16M5U	15M16M2P	15M16M4P	15M16M6P	15M16M8P	15M16M12P	15M16M16P		15M16M2B	15M16M4B	15M16M6B	15M16M8B	15M16M12B	15M16M16B
65M4H	65M4H6H	65M4H9H	65M4H5U	15M4H2P	15M4H4P	15M4H6P	15M4H8P	15M4H12P	15M4H16P		15M4H2B	15M4H4B	15M4H6B	15M4H8B	15M4H12B	15M4H16B
	65M6H	65M6H9H	65M6H5U	15M6H2P	15M6H4P	15M6H6P	15M6H8P	15M6H12P	15M6H16P		15M6H2B	15M6H4B	15M6H6B	15M6H8B	15M6H12B	15M6H16B
		65M9H	65M9H5U	15M9H2P	15M9H4P	15M9H6P	15M9H8P	15M9H12P	15M9H16P		15M9H2B	15M9H4B	15M9H6B	15M9H8B	15M9H12B	15M9H16B
			152M5U	15M5U2P	15M5U4P	15M5U6P	15M5U8P	15M5U12P	15M5U16P		15M5U2B	15M5U4B	15M5U6B	15M5U8B	15M5U12B	15M5U16B

* The pressure rating of any adapter is the value of the lowest rated connection in the fitting.
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**Adapters and
Couplings**

Medium Pressure
to 21,000 psi (1,500 bar)

Accessories

High Pressure
to 65,000 psi (4,500 bar)

**Tools and
Installation**

Ultra High Pressure
to 152,000 psi (10,500 bar)

**Technical
Information**

Valve Actuators

Ball Valves

to 21,000 psi (1,500 bar)



Accessories

Pressure gauges, transducers and high pressure hoses

MAXIMATOR has been designing and manufacturing high pressure equipment for more than thirty years and has a worldwide reputation for quality and reliability, backed by one of the best service organizations in the industry.

High Pressure Valves feature:

- ▶ pressure gauges up to max. 101,000 psi (**7,000 bar**)
- ▶ robust and safe pressure transducers up to max. 116,000 psi (**8,000 bar**)
- ▶ comprehensive range of HP hoses for max. 58,000 psi (**4,000 bar**)

Note: When selecting multiple items, the pressure rating would be that of the lowest rated component.

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Gauges rated to
101,000 psi (**7,000 bar**)2

Transducers rated to
116,000 psi (**8,000 bar**)2

Connections3

High pressure hoses rated to
58,000 psi (**4,000 bar**)4

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MAXIMATOR®

Pressure gauges and transducers

MAXIMATOR provides pressure gauges up to max. 101,000 psi (**7,000 bar**). Their connections are adjusted to the **MAXIMATOR** high pressure program (cf. the table below).

All pressure gauges are liquid damped and conform to accuracy class 1.0.

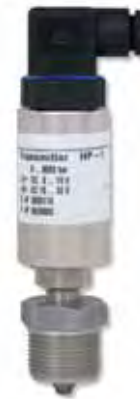


Pressure range	Catalog Number	Connection Type	Diameter in. (mm)	Accuracy class
bar (psi)				
0–1,000 bar (0–14,500 psi)	3300.0152	1/2" BSP	3.9" (100)	1.0
0–1,000 bar (0–14,500 psi)	3300.0164	1/2" BSP	6.3" (160)	1.0
0–1,600 bar (0–23,200 psi)	3300.0108	1/2" BSP	3.9" (100)	1.0
0–1,600 bar (0–23,200 psi)	3300.0165	1/2" BSP	6.3" (160)	1.0
0–2,500 bar (0–36,000 psi)	3300.0153	1/2" BSP	3.9" (100)	1.0
0–2,500 bar (0–36,000 psi)	3300.0166	1/2" BSP	6.3" (160)	1.0
0–4,000 bar (0–58,000 psi)	3300.0167	4 H (9/16"-18 UNF)	6.3" (160)	1.0
0–6,000 bar (0–87,000 psi)	3300.1497	5 U (5/8"-18 UNF)	6.3" (160)	1.0
0–7,000 bar (0–101,000 psi)	3300.3251	5 U (5/8"-18 UNF)	6.3" (160)	1.0

Gauges with different pressure ranges, diameters and accuracy classes upon request.

MAXIMATOR supplies robust and safe pressure transducers up to max. 116,000 psi (**8,000 bar**). Main features of the transducers are their high accuracy and good longevity.

Their connections are adjusted to the **MAXIMATOR** HP system. Output 0 to 10 VDC.



Pressure range psi (bar)	Catalog Number	Connection Type	Temperature	Accuracy class
36,000 (2,500)	3503.4475	4 H (9/16"-18 UNF)	-4°F to 170°F (-20°C to 80°C)	0.5
58,000 (4,000)	3503.4476	4 H (9/16"-18 UNF)	-4°F to 170°F (-20°C to 80°C)	0.5
116,000 (8,000)	3503.4477	5 U (5/8"-18 UNF)	-4°F to 170°F (-20°C to 80°C)	0.5

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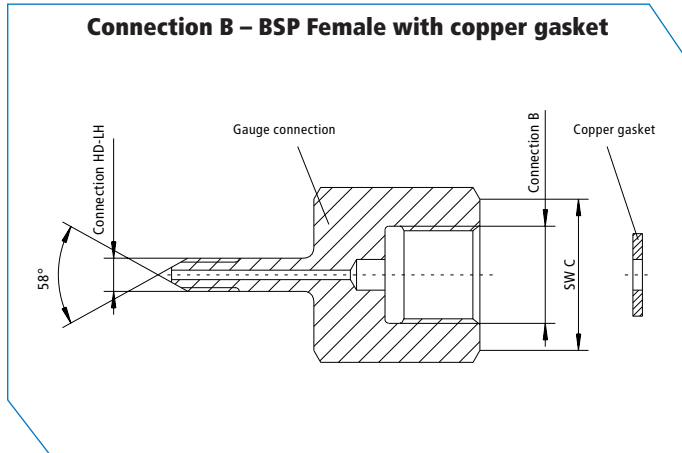
Adapters and Couplings
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to 21,000 psi (1,500 bar)

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to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

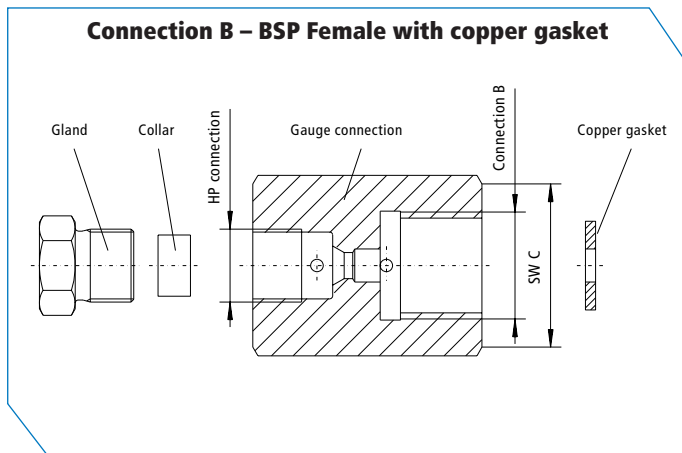
Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)



Typ	Catalog Number	Connection HD-LH	Connection B	SW C
21A4M4GB	3780.2183	4M (1/4-28-UNF-LH)	1/4 BSP	27
21A4M8GB	3780.2169	4M (1/4-28-UNF-LH)	1/2 BSP	36
21A6M8GB	3780.2170	6M (3/8-24UNF-LH)	1/2 BSP	36
21A9M8GB	3780.2179	9M (9/16-18UNF-LH)	1/2 BSP	36
21A12M8GB	3780.2193	12M (3/4-16UNF-LH)	1/2 BSP	36
21A16M8GB	3780.2194	16M (1-14UNF-LH)	1/2 BSP	36
36A4H8GB	3780.2180	4H (1/4-28UNF-LH)	1/2 BSP	36
36A6H8GB	3780.2181	6H (3/8-24UNF-LH)	1/2 BSP	36
36A9H8GB	3780.2182	9H (9/16-18UNF-LH)	1/2 BSP	36

NPT connections see adapters



Typ	Catalog Number	Connection HD-LH	Connection B	SW C	Pressure psi (bar)
21F4M4GB	3770.2187	4M (7/16-20UNF)	1/4 BSP	27	21,000 (1,500)
21F4M8GB	3770.2184	4M (7/16-20UNF)	1/2 BSP	36	21,000 (1,500)
21F6M4GB	3770.2188	6M (9/16-18UNF)	1/4 BSP	36	21,000 (1,500)
21F6M8GB	3770.2185	6M (9/16-18UNF)	1/2 BSP	36	21,000 (1,500)
21F4H4GB	3770.2189	4H (9/16-18UNF)	1/4 BSP	36	36,000 (2,500)
21F4H8GB	3770.2186	4H (9/16-18UNF)	1/2 BSP	36	36,000 (2,500)

NPT connections see adapters

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MAXIMATOR®

High pressure hoses

MAXIMATOR provides a comprehensive range of HP hoses in high-quality thermoplastic synthetic materials. Pressure substrates are of steel and compatible materials.

These flexible connections are suited for max. operating pressures of 58,000 psi (**4,000 bar**).

Upon request, **MAXIMATOR** also supplies HP hoses with glands and collars to make them fit for integration into a 65,000 psi (**4,500 bar**) high pressure system. The bending radius must not exceed 12,6 in. (**320 mm**).



9/16" - 18 UNF

3/8" - 24 UNF

1/4" - 28 UNF

DKR 1/4"

Pressure range psi (bar)	Catalog Number	Connection Type	Type	Diameter in. (mm)		Length in (mm)
				outside	inside	
14,000 (1,000)	3300.0233	DKR 1/4" Union Nut	SK2005St	0.37 (9.4)	0.20 (5)	39 (1000)
14,000 (1,000)	3300.4073	DKR 1/4" Union Nut	SK2005St	0.37 (9.4)	0.20 (5)	79 (2000)
14,000 (1,000)	3300.0235	DKR 1/4" Union Nut	SK2005St	0.37 (9.4)	0.20 (5)	118 (3000)
26,000 (1,800)	3300.0191	DKR 1/4" Union Nut	SK4005St	0.44 (11.2)	0.20 (5)	39 (1000)
26,000 (1,800)	3300.1982	DKR 1/4" Union Nut	SK4005St	0.44 (11.2)	0.20 (5)	79 (2000)
26,000 (1,800)	3300.2082	DKR 1/4" Union Nut	SK4005St	0.44 (11.2)	0.20 (5)	118 (3000)
26,000 (1,800)	3300.2197	1/4"-28UNF-LH	SK4005St	0.44 (11.2)	0.20 (5)	39 (1000)
26,000 (1,800)	3300.3987	1/4"-28UNF-LH	SK4005St	0.44 (11.2)	0.20 (5)	79 (2000)
26,000 (1,800)	3300.3815	1/4"-28UNF-LH	SK4005St	0.44 (11.2)	0.20 (5)	118 (3000)
36,000 (2,500)	3300.0206	DKR 1/4" Union Nut	SK6005St	0.53 (13.4)	0.20 (5)	39 (1000)
36,000 (2,500)	3300.0207	DKR 1/4" Union Nut	SK6005St	0.53 (13.4)	0.20 (5)	79 (2000)
36,000 (2,500)	3300.0208	DKR 1/4" Union Nut	SK6005St	0.53 (13.4)	0.20 (5)	118 (3000)
36,000 (2,500)	3300.1278	1/4"-28UNF-LH	SK6005St	0.53 (13.4)	0.20 (5)	39 (1000)
36,000 (2,500)	3300.2384	1/4"-28UNF-LH	SK6005St	0.53 (13.4)	0.20 (5)	79 (2000)
36,000 (2,500)	3300.3423	1/4"-28UNF-LH	SK6005St	0.53 (13.4)	0.20 (5)	118 (3000)
58,000 (4,000)	3300.1409	3/8"-24UNF-LH	SK8005St	0.55 (14.0)	0.18 (4.6)	39 (1000)
58,000 (4,000)	3300.5712	3/8"-24UNF-LH	SK8005St	0.55 (14.0)	0.18 (4.6)	79 (2000)
58,000 (4,000)	3300.4923	3/8"-24UNF-LH	SK8005St	0.55 (14.0)	0.18 (4.6)	118 (3000)
58,000 (4,000)	3300.5713	9/16"-18UNF-LH	SK8005St	0.55 (14.0)	0.18 (4.6)	39 (1000)
58,000 (4,000)	3300.5988	9/16"-18UNF-LH	SK8005St	0.55 (14.0)	0.18 (4.6)	79 (2000)
58,000 (4,000)	3300.2048	9/16"-18UNF-LH	SK8005St	0.55 (14.0)	0.18 (4.6)	118 (3000)

Hoses for other operating pressures and nominal widths as well connection combinations can be supplied upon request.

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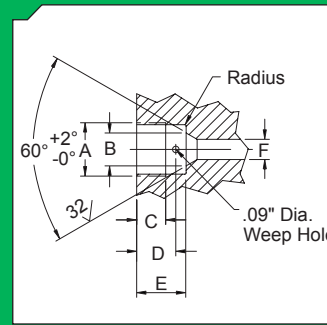
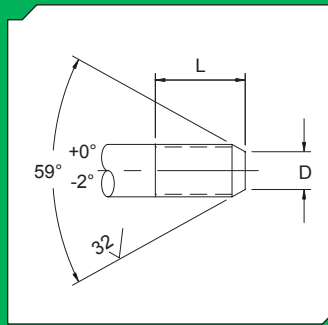
Adapters and
Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and
Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical
Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)



Tools & Installation

MAXIMATOR offers manual Coning and Threading tools that are designed to prepare accurate tubing ends to accept the medium, high and ultra high pressure connections.

Tools & Installation feature:

- ▶ Manual Coning and Threading Coning tools are designed to thread up to 9/16" OD tubing.
- ▶ One size Coning and Threading tool with interchangeable bushings and thread dies eliminates multiple tool inventories.
- ▶ Internal needle bearings and high strength materials offers ease of operation and extended tool life.
- ▶ Coning blades are designed to cut both the angle and straight areas to insure good concentricity between the sealing surfaces.
- ▶ Precision Reseating Tools to repair damaged female high pressure connections without full disassembly of components.

MAXIMATOR offers a complete line of manual tools for the proper preparation of medium, high and ultra high pressure connections to 9/16" OD tubing. For complete coning and threading instructions see MAXIMATOR's website at www.maximator.de.

Note: When selecting multiple items, the pressure rating would be that of the lowest rated component.

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Coning and Threading Tools	2
Reseating and Deburr Tools	3
Tube Connection Details	4
Assembly Instructions	5
Tubing Minimum Bend Radius & Valve Torque Values	6

Factory

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Internet

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Adapters and Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
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to 65,000 psi (4,500 bar)

Tools and Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)



MAXIMATOR offers tools for coning and threading tubing up to 9/16" O.D. These are precise tools that allow manual coning and threading of medium, high, and ultra high pressure tubing. Please refer to the Maxpro Technologies website, www.maxprotech.com, and click on the VFT button to find detailed instructions for the coning and threading process.

Coning Tools

The coning tool comes complete with blades, collet and tools. The blades and tool feed nut allow the user to control the cutting feed rate and face the end of the tube when complete. The blades and collet can be changed for other sizes, while using the same base tool.

Tubing Size O.D. x I.D. in. (mm)	Tubing Pressure psi (bar) @ R.T.	Connection Type	Coning Tool Complete Catalog Number	Replacement Part Information	
				Collet Part Number	Coning Blades Part Number
1/4 x .109 (6.35 x 2.77)	21,000 (1,500)	4MM	CT4M	3781.1009	3781.1014
3/8 x .203 (9.53 x 5.17)	21,000 (1,500)	6MM	CT6M	3781.1010	3781.1013
9/16 x .312 (14.29 x 7.93)	21,000 (1,500)	9MM	CT9M	3781.1011	3781.1012
9/16 x .359 (14.29 x 9.13)	15,200 (1,050)	9MM	CT9M.359	3781.1011	3781.1179
1/4 x .083 (6.35 x 2.11)	65,000 (4,500)	4HM	CT4H	3781.1009	3781.0843
3/8 x .125 (9.53 x 3.17)	65,000 (4,500)	6HM	CT6H	3781.1010	3781.1017
9/16 x .188 (14.29 x 4.77)	65,000 (4,500)	9HM	CT9H	3781.1011	3781.1016
5/16 x .062 (7.94 x 1.58)	152,000 (10,500)	5UM	CT5U	3781.0846	3781.0843



Threading Tools

The threading tool comes complete with the threading die and bushing. The thread is a left hand type. The thread die and bushing can be changed for other sizes, while using the same base tool.

Tubing Size O.D. x I.D. in. (mm)	Tubing Pressure psi (bar) @ R.T.	Connection Type	Left Hand Thread Size (UNF class 2)	Threading Tool Complete Catalog Number	Replacement Part Information	
					Die Part Number	Bushing Part Number
1/4 x .109 (6.35 x 2.77)	21,000 (1,500)	4MM	1/4-28	TT4	3781.1061	3781.1055
3/8 x .203 (9.53 x 5.17)	21,000 (1,500)	6MM	3/8-24	TT6	3781.1059	3781.1053
9/16 x .312 (14.29 x 7.93)	21,000 (1,500)	9MM	9/16-18	TT9	3781.1060	3781.1054
9/16 x .359 (14.29 x 9.13)	15,200 (1,050)	9MM	9/16-18	TT9	3781.1060	3781.1054
1/4 x .083 (6.35 x 2.11)	65,000 (4,500)	4HM	1/4-28	TT4	3781.1061	3781.1055
3/8 x .125 (9.53 x 3.17)	65,000 (4,500)	6HM	3/8-24	TT6	3781.1059	3781.1053
9/16 x .188 (14.29 x 4.77)	65,000 (4,500)	9HM	9/16-18	TT9	3781.1060	3781.1054
5/16 x .062 (7.94 x 1.58)	152,000 (10,500)	5UM	5/16-24	TT5	3781.1058	3781.0152

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Reseating Tools

The reseating tool is designed to rework an existing damaged coned and threaded connection without full disassembly of the component. The reseating tool will resurface the sealing surfaces of the medium, high, and ultra high pressure connections up to 9/16" tubing.

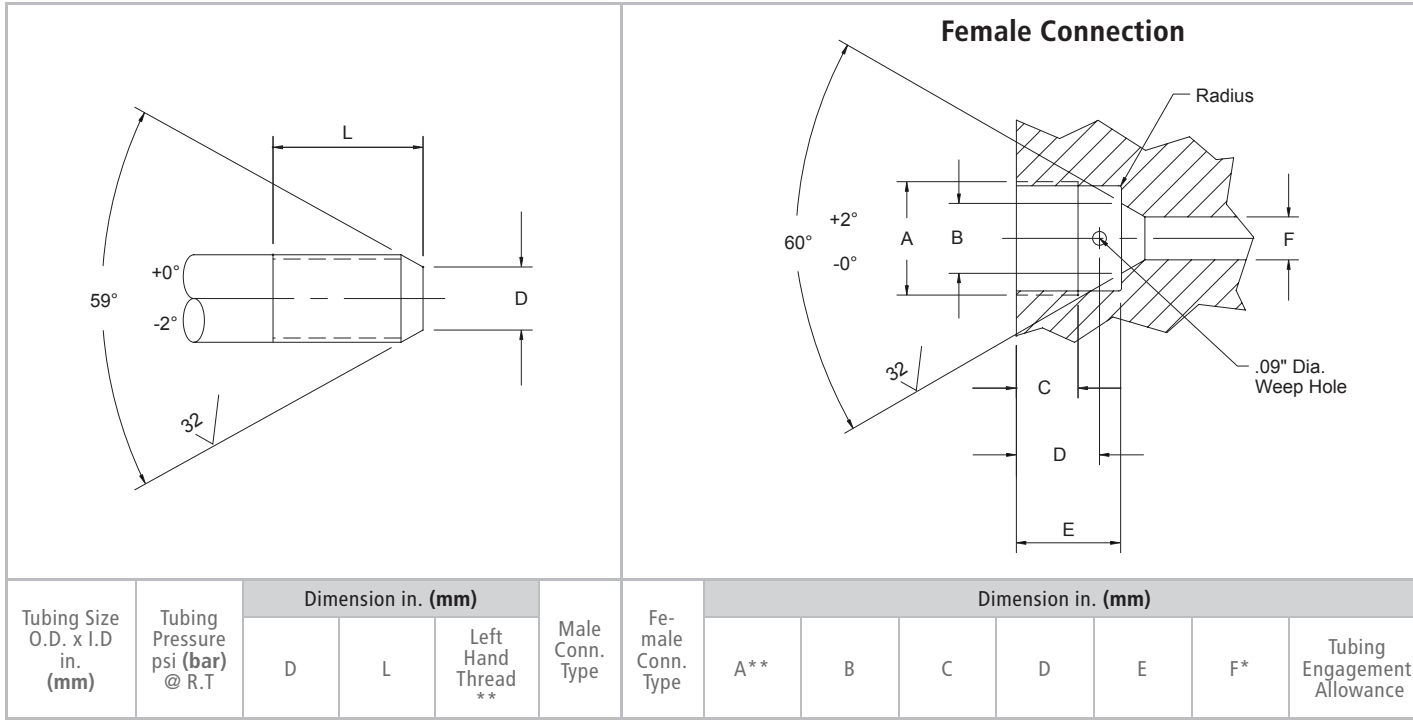
Tubing Size O.D. x I.D. in. (mm)	Tubing Pressure psi (bar) @ R.T.	Connection Type	Reseating Tool Complete Catalog Number	Replacement Part Information		
				Cutter Part Number	Bushing Part Number	Gland Part Number
1/4 x .109 (6.35 x 2.77)	21,000 (1,500)	4MF	RT4M	3781.0647	n/a	3781.0649
3/8 x .203 (9.53 x 5.17)	21,000 (1,500)	6MF	RT6M	3781.0650	n/a	3781.0651
9/16 x .312 (14.29 x 7.93)	21,000 (1,500)	9MF	RT9M	3781.0656	n/a	3781.0655
9/16 x .359 (14.29 x 9.13)	15,200 (1,050)	9MF	RT9M	3781.0656	n/a	3781.0655
1/4 x .083 (6.35 x 2.11)	65,000 (4,500)	4HF	RT4H	3781.0647	1700.0719	3781.0648
3/8 x .125 (9.53 x 3.17)	65,000 (4,500)	6HF	RT6H	3781.0645	1700.0718	3781.0646
9/16 x .188 (14.29 x 4.77)	65,000 (4,500)	9HF	RT9H	3781.0532	1700.0613	3781.0533
5/16 x .062 (7.94 x 1.58)	152,000 (10,500)	5UF	RT5U	3781.0532	n/a	3781.0652



Deburring Tools

The deburring tool is designed to remove the metal burr on the inside diameter of the tubing after the cutting process. The reseating tool will work on all medium, high, and ultra high pressure connections up to 9/16" tubing.

Tubing Size O.D. x I.D. in. (mm)	Tubing Pressure psi (bar) @ R.T.	Connection Type	Deburring Tool Complete Catalog Number	Replacement Part Information
				Bushing Part Number
1/4 x .109 (6.35 x 2.77)	21,000 (1,500)	4MM	DT4	1452.0821
3/8 x .203 (9.53 x 5.17)	21,000 (1,500)	6MM	DT4	1452.0821
9/16 x .312 (14.29 x 7.93)	21,000 (1,500)	9MM	DT4	1452.0821
9/16 x .359 (14.29 x 9.13)	15,200 (1,050)	9MM	DT5	1452.4605
1/4 x .083 (6.35 x 2.11)	65,000 (4,500)	4HM	DT4	1452.0821
3/8 x .125 (9.53 x 3.17)	65,000 (4,500)	6HM	DT4	1452.0821
9/16 x .188 (14.29 x 4.77)	65,000 (4,500)	9HM	DT4	1452.0821
5/16 x .062 (7.94 x 1.58)	152,000 (10,500)	5UM	DT4	1452.0821



Medium Pressure													
1/4 x .109 (6.35 x 2.77)	21,000 (1,500)	0.141 (3.6)	0.344 (8.7)	1/4-28	4MM	4MF	7/16-20	0.19 (4.7)	0.28 (7)	0.37 (9.5)	0.51 (13)	0.109 (2.7)	0.55 (14)
3/8 x .203 (9.53 x 5.17)	21,000 (1,500)	0.250 (6.4)	0.438 (11.1)	3/8-24	6MM	6MF	9/16-18	0.31 (7.7)	0.38 (9.6)	0.50 (12.7)	0.62 (15.7)	0.203 (5.1)	0.69 (17.5)
9/16 x .312 (14.29 x 7.93)	21,000 (1,500)	0.406 (10.3)	0.500 (12.7)	9/16-18	9MM	9MF	13/16-16	0.50 (12.7)	0.44 (11.2)	0.59 (15.1)	0.75 (19.1)	0.312 (7.8)	0.84 (21.3)
9/16 x .359 (14.29 x 9.13)	15,200 (1,050)	0.438 (11.1)	0.500 (12.7)	9/16-18								0.359 (9.1)	0.83 (21.1)
3/4 x .438 (19.05 x 11.12)	21,000 (1,500)	0.562 (14.3)	0.625 (15.9)	3/4-16	12MM	12MF	3/4-14 NPS	0.62 (15.7)	0.50 (12.7)	0.72 (18.3)	0.94 (23.9)	0.438 (11.1)	1.00 (25.4)
3/4 x .516 (19.05 x 13.1)	15,200 (1,050)	0.578 (14.7)	0.625 (15.9)	3/4-16								0.516 (13.1)	0.99 (25.1)
1 x .562 (25.4 x 14.27)	21,000 (1,500)	0.719 (18.3)	0.781 (19.8)	1-14	16MM	16MF	1-3/8-12	0.88 (22.4)	0.81 (20.6)	1.06 (27)	1.31 (33.3)	0.562 (14.3)	1.44 (36.6)
1 x .688 (25.4 x 17.47)	15,200 (1,050)	0.812 (20.6)	0.781 (19.8)	1-14								0.688 (17.5)	1.38 (35.1)
High Pressure													
1/4 x .083 (6.35 x 2.11)	65,000 (4,500)	0.125 (3.2)	0.562 (14.3)	1/4-28	4HM	4HF	9/16-18	0.17 (4.2)	0.39 (10)	0.39 (10)	0.45 (11.5)	0.094 (2.3)	0.50 (12.7)
3/8 x .125 (9.53 x 3.17)	65,000 (4,500)	0.219 (5.6)	0.750 (19.1)	3/8-24	6HM	6HF	3/4-16	0.26 (6.5)	0.53 (13.5)	0.53 (13.5)	0.63 (16)	0.118 (3)	0.69 (17.5)
9/16 x .188 (14.29 x 4.77)	65,000 (4,500)	0.281 (7.1)	0.938 (23.8)	9/16-18	9HM	9HF	1-1/8-12	0.38 (9.7)	0.62 (15.7)	0.62 (15.7)	0.75 (19.1)	0.188 (4.8)	0.84 (21.3)
Ultra High Pressure													
5/16 x 0.62 (7.95 x 1.58)	152,000 (10,500)	0.125 (3.2)	0.687 (17.4)	5/16-24	5UM	5UF	5/8-18	0.25 (6.2)	0.63 (16)	0.93 (23.5)	1.06 (27)	0.09 (2.3)	1.25 (31.75)

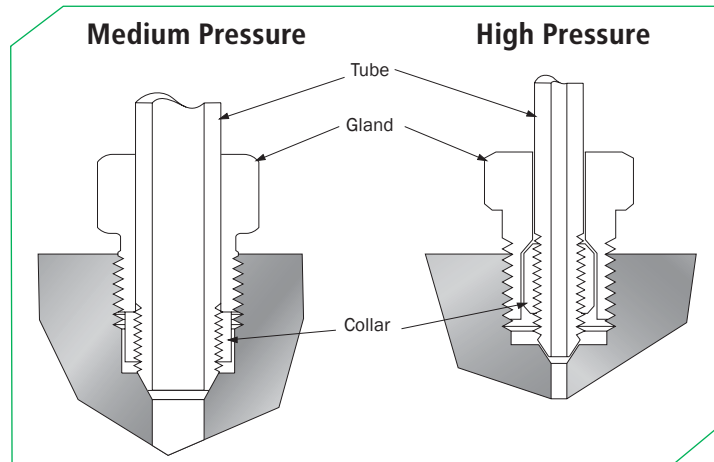
* Port diameters may vary depending on specific valve or fitting component type. See actual component catalog page for orifice sizes and pressure ratings.

** Unified National Fine thread, Class 2.

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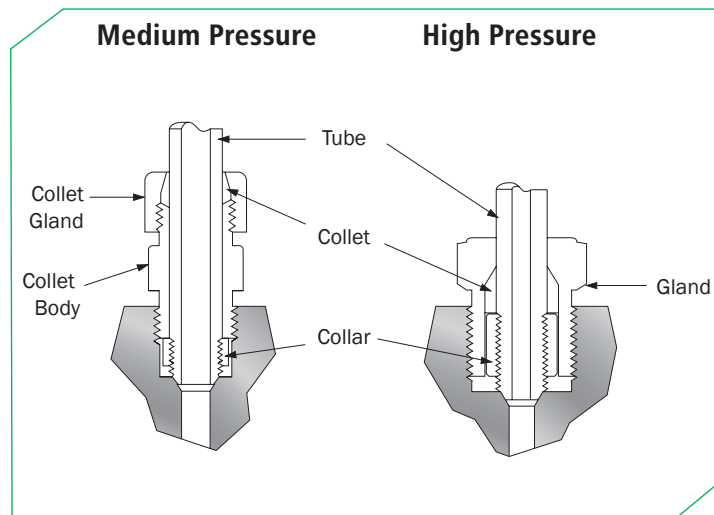
Assembly of Standard Coned & Threaded Connections



Assembly Instructions:

1. Insert the gland onto the tubing. Thread the left handed collar onto the tube until at least one or two threads are exposed from the tapered coned end.
2. Apply a compatible lubricant to the gland threads and the back side of the collar where it comes in contact with the gland. Also lubricate the tapered cone portion of the tube. This will help protect the sealing surfaces from galling during the assembly process.
3. Insert the tubing into the connection and tighten the assembly hand tight. Then use a torque wrench to tighten the connection to the appropriate value in the table below. It is good practice to use an additional wrench to prevent the opposite connection from turning.

Assembly of Anti-Vibration Collet Gland Connections



Assembly Instructions

1. The High Pressure Anti-Vibration Collet Gland Assembly can be installed using the same procedure as the standard coned and threaded connection. (see above steps 1 through 3) The high pressure collet grips the tube when the connection gland is tightened.
2. When using the Medium Pressure Anti-Vibration Collet Assembly, the procedure is the same as that of the standard coned and threaded connection (see above steps 1 through 3) with the additional step below.
3. Once the Collet Body has been tightened to the appropriate torque value in the table below, the Collet Gland can be turned 1 - 1/4 turns past hand tight. This will compress the collet against the tube. After the initial compression of the collet, any additional retightening would only require 3/4 of a turn past hand tight.

Torque Values

Tubing Size O.D. x I.D. in. (mm)	Tubing Pressure psi (bar) @ R.T.	Connection Type	Tube Gland Hex Size in. (mm)	Required Torque ft-lbs. (Nm)
1/4 x .109 (6.35 x 2.77)	21,000 (1,500)	4M	1/2 (12.7)	20 (30)
3/8 x .203 (9.53 x 5.17)	21,000 (1,500)	6M	5/8 (15.9)	30 (40)
9/16 x .312 (14.29 x 7.93)	21,000 (1,500)	9M	15/16 (23.8)	55 (75)
9/16 x .359 (14.29 x 9.13)	15,200 (1,050)	9M	15/16 (23.8)	55 (75)
3/4 x .438 (19.05 x 11.12)	21,000 (1,500)	12M	1-3/16 (30.2)	90 (120)
3/4 x .516 (19.05 x 13.1)	15,200 (1,050)	12M	1-3/16 (30.2)	90 (120)
1 x .562 (25.4 x 14.27)	21,000 (1,500)	16M	1-3/8 (34.9)	150 (200)
1 x .688 (25.4 x 17.47)	15,200 (1,050)	16M	1-3/8 (34.9)	150 (200)
1/4 x .083 (6.35 x 2.11)	65,000 (4,500)	4H	5/8 (15.9)	25 (35)
3/8 x .125 (9.53 x 3.17)	65,000 (4,500)	6H	13/16 (20.6)	50 (70)
9/16 x .188 (14.29 x 4.77)	65,000 (4,500)	9H	1-3/16 (30.2)	110 (150)
5/16 x .062 (7.94 x 1.58)	152,000 (10,500)	5U	3/4 (19.05)	70 (95)

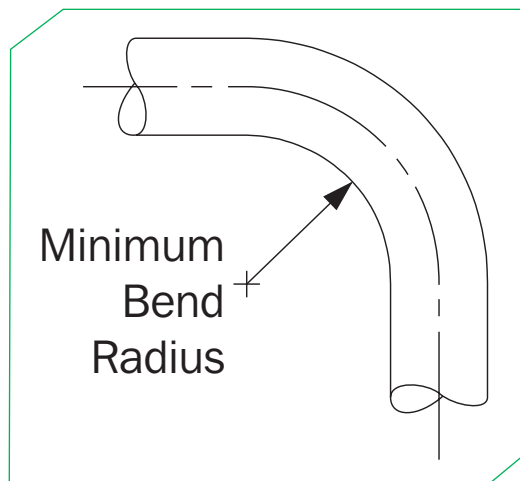
All dimensions are for references only and are subject to change.

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Minimum Bend Radius for 316SS & 304SS Tubing

Tubing Size O.D. x I.D. in. (mm)	Tubing Pressure psi (bar) @ R.T.	Recommended Minimum Bend Radius in. (mm)
1/4 x .109 (6.35 x 2.77)	21,000 (1,500)	1.25 (31.8)
3/8 x .203 (9.53 x 5.17)	21,000 (1,500)	1.75 (44.5)
9/16 x .312 (14.29 x 7.93)	21,000 (1,500)	2.63 (66.8)
9/16 x .359 (14.29 x 9.13)	15,200 (1,050)	2.63 (66.8)
3/4 x .438 (19.05 x 11.12)	21,000 (1,500)	3.50 (88.9)
3/4 x .516 (19.05 x 13.1)	15,200 (1,050)	3.50 (88.9)
1 x .562 (25.4 x 14.27)	21,000 (1,500)	4.63 (117.6)
1 x .688 (25.4 x 17.47)	15,200 (1,050)	4.63 (117.6)
1/4 x .083 (6.35 x 2.11)	65,000 (4,500)	1.25 (31.8)
3/8 x .125 (9.53 x 3.17)	65,000 (4,500)	1.75 (44.5)
9/16 x .188 (14.29 x 4.77)	65,000 (4,500)	2.63 (66.8)
5/16 x .062 (7.94 x 1.58)	152,000 (10,500)	6.00 (152.4)

All dimensions are for references only and are subject to change.



Needle Valve Torque Values

Valve Series	Tubing Size in. (mm)	Packing Gland Hex in. (mm) Size	Packing Gland Torque ft.-lbs. (Nm)	Running Torque in.-lbs. (Nm)	Seating Torque in.-lbs. (Nm)
Medium Pressure 21,000 psig @ RT 21V	1/4 (6.35)	5/8 (15.9)	30 (40)	40 (4.5)	55 (6.2)
	3/8 (9.53)	5/8 (15.9)	30 (40)	40 (4.5)	55 (6.2)
	9/16 (14.29)	13/16 (20.6)	60 (80)	60 (6.8)	90 (10.2)
	3/4 (19.05)	15/16 (23.8)	3/4 turn	300 (33.9)	360 (40.7)
	1 (25.4)	1 3/8 (34.9)	3/4 turn	360 (40.7)	600 (67.8)
High Pressure 36,000 psig @ RT 36V	1/4 (6.35)	13/16 (20.6)	45 (60)	50 (5.6)	60 (6.8)
	3/8 (9.53)				
	9/16 (14.29)				
High Pressure 65,000 psig @ RT 65V	1/4 (6.35)	13/16 (20.6)	40 (55)	65 (7.3)	75 (8.5)
	3/8 (9.53)				
	9/16 (14.29)				
Ultra High Pressure 101,000 psig @ RT 101V	5/16 (7.94)	15/16 (23.8)	60 (80)	100 (11.3)	120 (13.6)

All dimensions are for references only and are subject to change.

Adapters and
Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

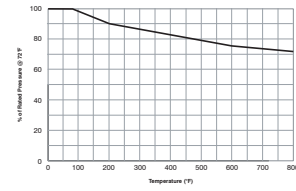
Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and
Installation
Ultra High Pressure
to 152,000 psi (10,500 bar)

Technical
Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

CERTIFIED
ISO-9001:2000



Technical Information

MAXIMATOR has been designing and manufacturing high pressure equipment for more than thirty years and has a worldwide reputation for quality and reliability. Their work is based on a certified quality management system (DIN EN ISO 9001:2000) - the fundamental asset for successfully implementing technical knowledge and experience in the field of complex systems.

Product features:

- ▶ Maximator's Quality Management System meets all requirements of DIN EN ISO 9001:2000, TÜV Certification to 11-15-2009.
- ▶ All valves, fittings and tubing are designed in accordance with the European Pressure Equipment Directive 97/23/EC.
- ▶ Pressure vs. Temperature chart for 316 cold worked stainless steel.

MAXIMATOR GmbH is the exclusive European distributor for Maximator products. At Maximator our industry experience is unparalleled. Whether General Industrial, Oil & Gas, Water Jet, Chemical or Petrochemical applications, our teams of experienced engineers and highly trained professionals have worked in the high pressure industry for decades and are prepared to support your needs. Our guiding principles are safety, quality, and dependability. Our comprehensive inventory will ensure quick delivery that is unmatched in today's environment.

Note: When selecting multiple items, the pressure rating would be that of the lowest rated component.

Technical Information Index

Pressure vs. Temperature chart 2

TÜV Certificate 3

Factory

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Internet

All technical and dimensional information subject to change. All general Terms and Conditions of sale, including limitations of our liability, apply to all products and services sold.

Adapters and
Couplings
Medium Pressure
to 21,000 psi (1,500 bar)

Accessories
High Pressure
to 65,000 psi (4,500 bar)

Tools and
Installation
Ultra High Pressure
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Information
Valve Actuators

Ball Valves
to 21,000 psi (1,500 bar)

Technical Information

The information in this section is presented as general data for assisting a user in the selection of valves, fittings and tubing for elevated pressure and/or temperature applications in liquid or gas plumbing systems.

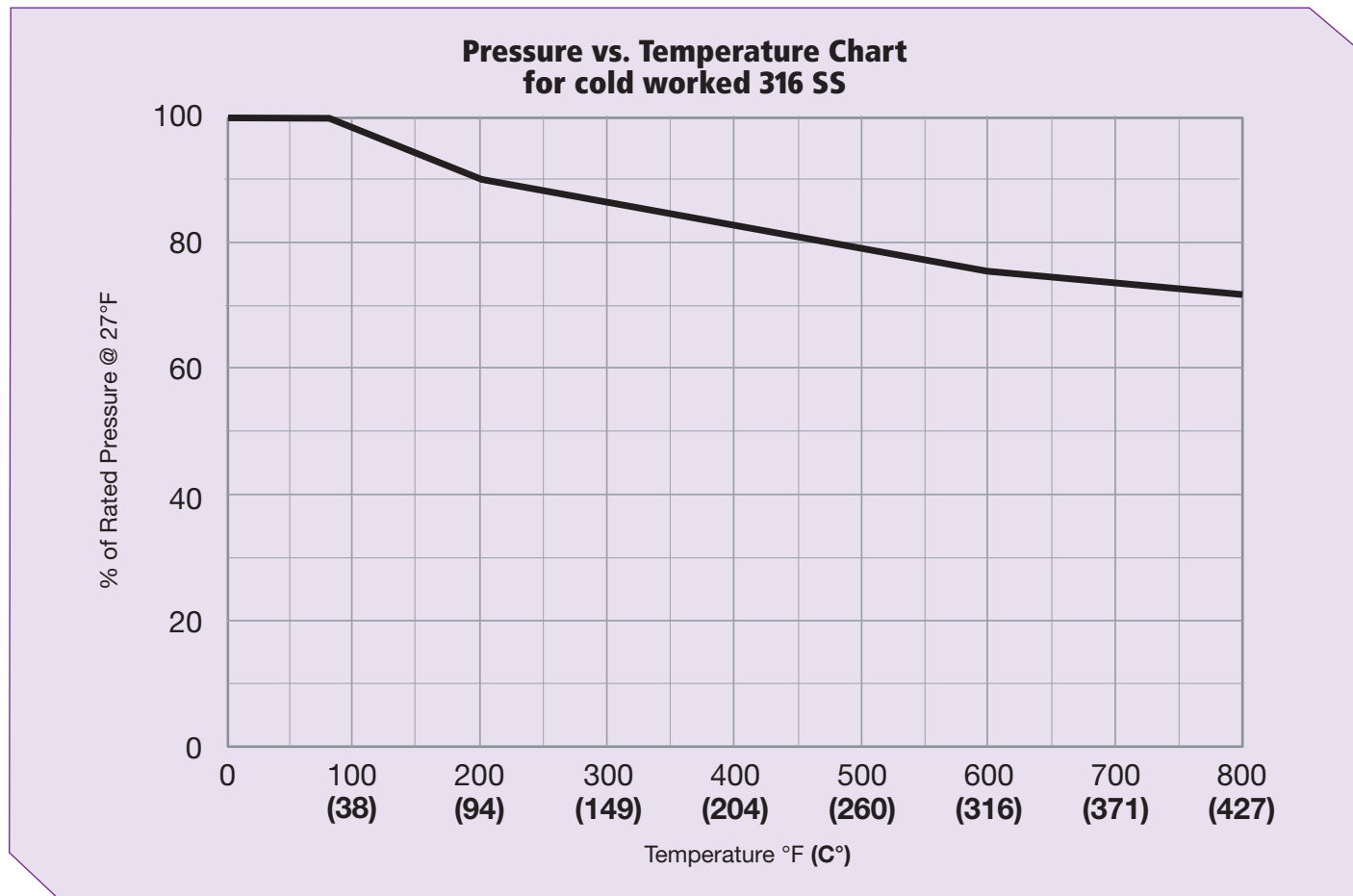
Maximator's medium, high and ultra-high pressure valves, fittings and tubing are good for most services from light vacuum up to 152,000 psi, depending on the pressure series selected. Coned and threaded type tube fittings, standard on all Maximator valves and fittings, can be used for most liquids and gases including lighter gases such as Hydrogen and Helium.

Compatibility of the valve, fitting and tubing materials with the actual process fluid is ultimately the responsibility of the user. Maxpro Technologies can assist in applications but is not an authority on all process fluids.

Some special applications such as Oxygen service require special cleaning and that option is available from Maxpro Technologies.

Below is a reference chart showing the effects of pressure versus temperature of cold worked 316 stainless steel material. When operating temperatures are above 800°F, a phenomenon called intergranular corrosion can occur. This condition can permanently change the material properties of the cold worked stainless material. Once the material has seen this elevated temperature, the material is considered to be permanently altered and a lower allowable pressure applies.

Other factors such as creep resistance, packing design and materials, corrosion resistance, cyclic conditions, and other process variables may affect the use of components at elevated temperatures. Consult factory when operating above 800°F.



Note: The above pressure temperature chart is for 316 cold worked materials, this chart does not account for the temperature rating of packing or o-ring material which could be the limiting factor. Contact factory for other material limitations.

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3999.1831 – DSB 09/2007



CERTIFICATE

The TÜV CERT Certification Body
of TÜV Thüringen e.V.

certifies in accordance with TÜV CERT
procedure that

MAXIMATOR GmbH

Walkenrieder Straße 15
37449 Zorge / Germany

Uferstraße 11
99734 Nordhausen / Germany

has established and applies a quality management system for

**Design, manufacturing and sale of high pressure technics,
hydraulics, pneumatics and test technology**

An audit was performed, Report No. 3330 20WJ G0

Proof has been furnished that the requirements according to

EN ISO 9001:2000

are fulfilled. The certificate is valid until **2009-11-15**
First certification 1994

Certificate Registration No. 15 100 4011



Jena, 2006-11-16



A. Doehsel
TÜV CERT Certification Body
of TÜV Thüringen e. V.