

## Enerpac System Components:

All the additional elements you need to complete your high pressure hydraulic system and get started.

Engineered to work with your Enerpac cylinders, pumps and tools, all Enerpac components are designed to the most exacting standards.

With this complete line of hydraulic hoses, couplers, fittings, manifolds, oil and gauges, Enerpac has the accessories to complement your system and ensure the efficient operation, long life and safety of your hydraulic equipment.



### Yellow Pages

For sample system set-ups and how to correctly specify your system components, please view the Enerpac "Yellow Pages" section in this catalogue.

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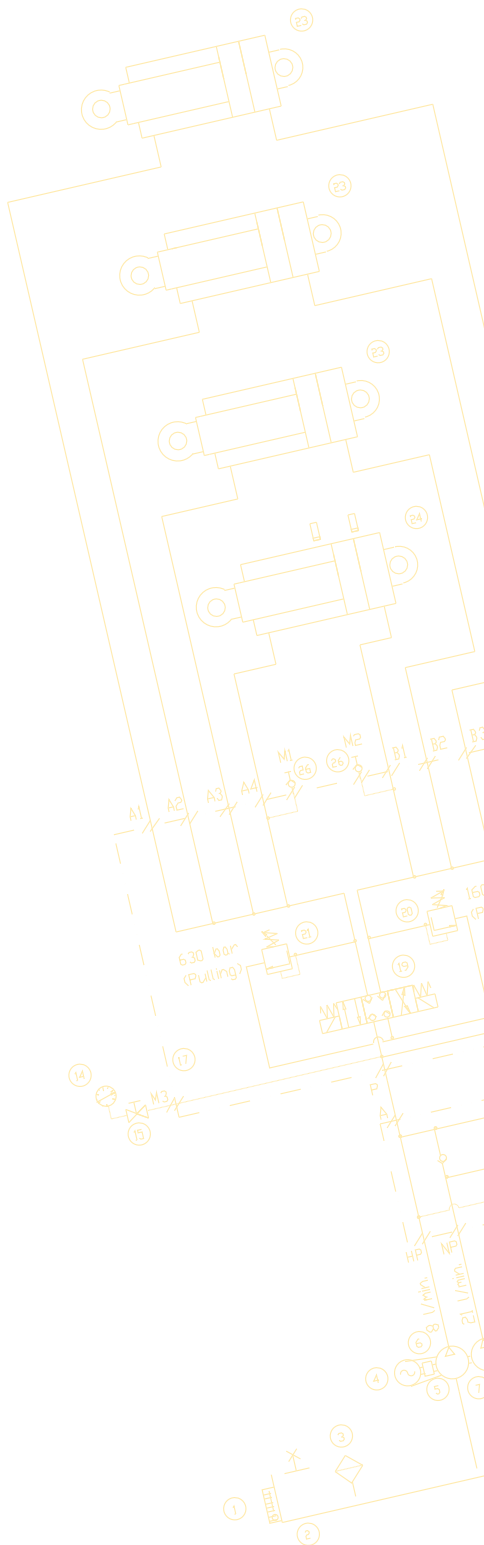
### Maintain System Integrity

Use Enerpac System Components, designed to interface with Enerpac cylinders, pumps and tools to ensure your system operates at peak performance.



# System Components & Control Valves Overview

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▼ HC7206



## Thermo-Plastic Safety Hoses (H700-Series)

- For demanding applications, featuring a 4:1 safety factor
- Maximum working pressure of 700 bar
- Outside jacket is polyurethane, to provide maximum abrasion resistance
- Exhibits low volumetric expansion under pressure to enhance overall system efficiency
- Vinyl strain relief guard on both ends of hose to improve life and durability on all models.

▼ To prevent back pressure and to increase cylinder retraction speed, when using long hoses with single-acting cylinders, the Enerpac HC7300-Series of hoses with increased internal diameter is the best choice.



## Safety and Quality



To ensure the integrity of your system, specify only Enerpac hydraulic hoses.

### WARNING !

- Do not exceed 700 bar maximum pressure.
- Do not handle hoses which are under pressure.

More safety instructions in our 'Yellow pages'.

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## ▼ Hose End Couplings

1/4" NPTF	
3/8" NPTF	
A604	
A630	
AH604	
AH630	
C604	
CH604	

# High Pressure Hydraulic Hoses



## Hose Oil Capacity

When using greater hose lengths, it is sometimes necessary to fill the pump reservoir after filling the hoses.

To determine the hose oil capacity, use the following:

For 6,4 mm inside diameter hoses:

Capacity (cm<sup>3</sup>) = 32,1699 x Length (m)

For 9,7 mm inside diameter hoses:

Capacity (cm<sup>3</sup>) = 73,8981 x Length (m)

## H700 Series



Inside Diameter:

**6,4 - 9,7 mm**

Length:

**0,6 - 15 m**

Maximum Operating Pressure:

**700 bar**

Internal Diameter (mm)	Hose End Assemblies and Couplers *		Hose Length (m)	Model Number	Weight (kg)		
	End one	End two					
6,4	1/4" NPTF		-	-	-		
				-	-		
		A630	1,8	HB7206QB	1,1		
				-	-		
	3/8" NPTF	CH604		1,8	HC7206Q	1,0	
				0,6	H7202	0,5	
				0,9	H7203	0,7	
				1,8	H7206	0,9	
				3,0	H7210	1,4	
				6,1	H7220	2,8	
				9,1	H7230	4,5	
				15	H7250	7,0	
		A604		-	-	-	
				1,8	HA7206B	1,1	
				-	-	-	
				-	-	-	
			AH604		-	-	-
					1,8	HA7206	1,0
	AH630		3,0	HA7210	1,5		
			1,8	HB7206	1,0		
	C604		0,9	HC7203B	1,0		
			1,8	HC7206B	1,3		
			3,0	HC7210B	1,8		
			0,9	HC7203	0,8		
CH604		1,8	HC7206	1,0			
		3,0	HC7210	1,5			
		6,1	HC7220	2,9			
		1,8	HC7206C	1,1			
CH604	CH604		6,1	HC7220C	3,0		
			15	HC7250C	7,0		
			1,8	H7306	1,6		
9,7	3/8" NPTF	3/8" NPTF	3,0	H7310	2,4		
			6,1	H7320	4,5		
			9,1	H7330	7,3		
			15	H7350	11,5		
		CH604		1,8	HC7306	1,7	
				3,0	HC7310	2,5	
				6,1	HC7320	5,1	
				1,8	H7306	1,6	

\* For technical information on couplers see next page.



## GA45GC Gauge Adaptor

Protect yourself from system overloading by simply ordering one part number for a pre-assembled gauge, adaptor block and coupler.

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## Torque Wrench Hoses

Use Enerpac THQ-Series twin safety hoses with double-acting wrenches to ensure the integrity of your hydraulic system.

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## Fittings

For additional fittings see the fitting page of the System Components section.

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## Premium Hydraulic Oil

Use only genuine Enerpac hydraulic oil. Wrong fluid can destroy seals and pump and will render your warranty null and void your guarantee.

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▼ Shown: FH604, FR400, AR630, C604, AH604, AR400



## 3/8" High Flow Couplers

- Standard equipment on most Enerpac cylinders
- Recommended for use on all Enerpac pumps and cylinders where space and porting permits
- Includes "2-in-1" dust cap for use on male and female couplers.

## 3/8" High Pressure 'Flush-face' Couplers

- Featuring "Push-to-connect" operation, to guarantee good connection every time
- Flush-face, zero-leak operation for minimal spillage and reduced pressure drop
- HTMA \* recognized for safety and performance
- Will not interchange with low pressure couplers.

## 3/8" Regular Spee-D-Couplers®

- For medium duty applications with hand pumps
- Includes female aluminium dust cap.

## 1/4" Regular Couplers

- For use with small cylinders and hand pumps
- Includes female aluminium dust cap.

## 1/4" Spin-on Torque Wrench Couplers

- For use with 700 bar S, W, RSL, DSX and HMT-Series torque wrenches, THQ-Series hoses and 700 bar torque pumps.

\* Hydraulic Tool Manufacturers Association.

## Quick Connection of Hydraulic Lines



### Thread sealer

To seal NPTF threads use one of the new anaerobic thread sealers or Teflon paste. When using Teflon Tape, apply the tape one thread from the end of a fitting to prevent it from winding up in the hydraulic system.



### WARNING!

Couplers should be pressurized only when completely connected and should not be coupled or uncoupled when pressurized.

More safety instructions in our 'Yellow Pages'.

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### F-Series

Flush-faced couplers provide reduced pressure drop versus other types and are preferred in dirty, grimy construction and mining environments due to easy clean, non-dirt trapping faces.

▼ With the use of Enerpac high flow couplers, hoses are easily installed for multiple hydraulic line connections in this 34 points PLC-controlled lifting system.



# Hydraulic Couplers



## CT604 Safety Tool

Use the Enerpac CT604 to relieve hydraulic back pressure by safely bleeding the hydraulic coupler.

NOTE: For use on CR400 and CH604 700 bar High-Flow Couplers only

Minimize injuries from projectile parts and under-skin hydraulic fluid injections by eliminating unsafe coupler bleeding practices. The CT604 is Enerpac-engineering safe for use at 700 bar.

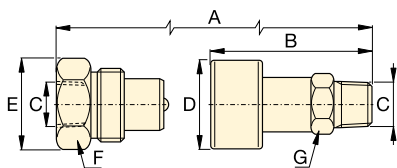
## A, C, F, T Series



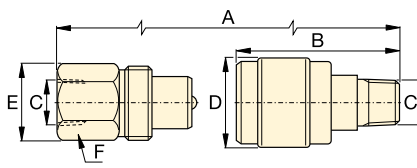
Maximum Flow Capacity:  
**7,6 - 40,0 l/min**

Thread:  
**1/4" - 3/8" NPTF**

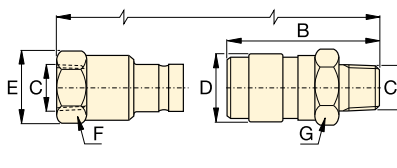
Maximum Operating Pressure:  
**700 bar**



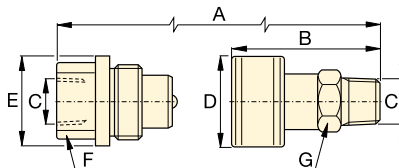
**C604**



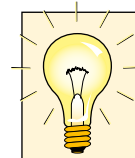
**A604  
A630**



**F604**



**T630**








### Metal Dust Caps

Steel dust caps are available for the C604 series couplers.

Order model number:

**CD411M** for female half

**CD415M** for male half

Maximum Flow Capacity (l/min)	Coupler Type	Model Numbers			Dimensions (mm)							Dust Cap(s) Modelnr.
		Complete Set	Female Half	Male Half	A*	B	C	D	E	F	G	
35	700 bar High-Flow Coupler 	<b>C604</b>	<b>CR400</b>	<b>CH604</b>	83	64	3/8" NPTF	35	36	32	25	(2x) <b>CD411</b>
40	700 bar Flush-Face Coupler 	<b>F604</b>	<b>FR400</b>	<b>FH604</b>	111	72	3/8" NPTF	31	31	27	29	-
7,6	700 bar Regular Spee-D-Coupler® 	<b>A604</b>	<b>AR400</b>	<b>AH604</b>	77	42	3/8" NPTF	28	26	23	19	<b>Z410</b> female only
7,6	700 bar Regular Coupler 	<b>A630</b>	<b>AR630</b>	<b>AH630</b>	66	35	1/4" NPTF	22	20	19	15	<b>Z640</b> female only
11,4	700 bar Spin-on Coupler 	<b>T630</b>	<b>TR630</b>	<b>TH630</b>	73	60	1/4" NPTF	29	29	19	21	-

\* Value A is total length when male and female half are connected.

▼ Shown: HF102L, HF105L



- Maximum pump volumetric efficiency
- Maximum internal heat transfer
- Prevents pump cavitation
- Additives prevent rust, oxidation and sludge
- High viscosity index
- Maximum film protective lubricity.

## The Genuine Range

### Hydraulic Oil

Contents	Model Number	Use only genuine Enerpac Hydraulic Oil. The use of any other fluid will render your Enerpac warranty null and void.
5 litres	<b>HF105L</b>	
20 litres	<b>HF102L</b>	
205 litres	<b>HF104L</b>	

### ▼ OIL SPECIFICATION CHART

Viscosity Index	100 min
Viscosity (cSt @ 40 °C)	32
API Gravity	31-33
Density (cSt @ 15 °C)	875
Flash point	204 °C
Pour point	-32 °C
Colour	Blue
Working Temperature Range	0 - 60 °C
Ideal working temperature	40 °C

## 700 bar Manifolds

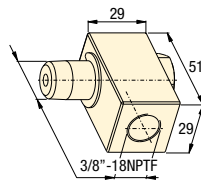
Description	Model Number	Dimensions (mm)
<b>7-port Manifold, short</b>	<b>A64</b>	
<b>7-port Manifold, long</b> allows direct mounting of control valves to the manifold.	<b>A65</b>	
<b>6-port Manifold, hexagon</b> Plugs furnished for all ports 3/8"-18 NPTF.	<b>A66</b>	
<b>Control Manifolds</b> For control of 2 or 4 single-acting cylinders simultaneously. <b>AM21</b> with 5 ports 3/8"NPTF. <b>AM41</b> with 7 ports 3/8"NPTF.	<b>AM21</b> <b>AM41</b>	
<b>4-way Manifold Assemblies</b> CR400 female couplers on all 3/8"NPTF ports. With glycerine filled pressure gauges, shut-off valves and robust protection frame. <b>AMGC41</b> for 4x s/a cylinders <b>AMGC42</b> for 4x d/a cylinders.	<b>AMGC41</b> <b>AMGC42</b>	

# Hydraulic Oil, Manifolds and Fittings




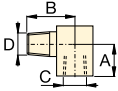

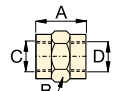
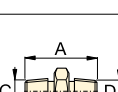

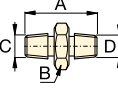
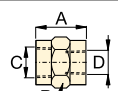
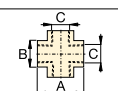

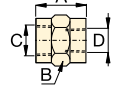
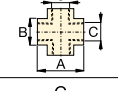

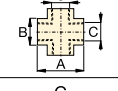

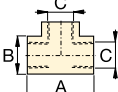
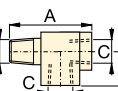

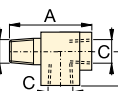

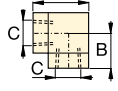
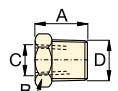

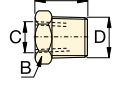
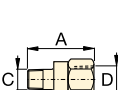
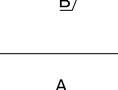

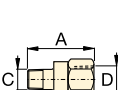
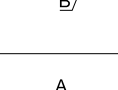
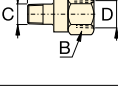
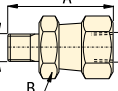

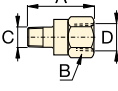
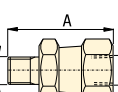


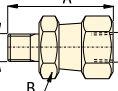
## 3/8" Swivel Connector

360 degree swivel coupler for optimal orientation of the hydraulic connection on cylinders, pumps and hoses.  
Order Model Number. XSC1



## HF A, AM BFZ FZ Series



700 bar Fittings		Model Number	Dimensions (mm)				Diagram							
			A	B	C	D								
<b>Street Elbow</b>			<b>FZ1616</b>	23	33	3/8"-18 NPTF	3/8"-18 NPTF							
From:	3/8"-NPTF Male													
To:	3/8"-NPTF Female													
<b>Reducing Connector</b>			<b>FZ1615</b>	28	25	3/8"-18 NPTF	1/4"-18 NPTF							
From:	3/8"-NPTF Female													
To:	1/4"-NPTF Female													
From:	1/2"-NPTF Female	<b>FZ1625</b>	47	29	1/2"-14 NPTF	3/8"-18 NPTF								
To:	3/8"-NPTF Female													
<b>Hexagon Nipple</b>			<b>FZ1608</b>	38	16	1/4"-18 NPTF	1/4"-18 NPTF							
From:	1/4"-NPTF													
To:	1/4"-NPTF													
From:	3/8"-NPTF								<b>FZ1619</b>	51	19	3/8"-18 NPTF	3/8"-18 NPTF	
To:	3/8"-NPTF													
From:	3/8"-NPTF	<b>FZ1617</b>	37	19	3/8"-18 NPTF	3/8"-18 NPTF								
To:	3/8"-NPTF													
<b>Coupling</b>			<b>FZ1614</b>	29	23	3/8"-18 NPTF	3/8"-18 NPTF							
From:	3/8"-NPTF													
To:	3/8"-NPTF													
From:	1/4"-NPTF	<b>FZ1605</b>	29	19	1/4"-18 NPTF	1/4"-18 NPTF								
To:	1/4"-NPTF													
<b>Cross</b>			<b>FZ1613</b>	45	25	3/8"-18 NPTF	-							
From:	3/8"-NPTF Female													
To:	3/8"-NPTF Female													
<b>Tee</b>			<b>FZ1612</b>	45	25	3/8"-18 NPTF	-							
From:	3/8"-NPTF													
To:	3/8"-NPTF													
From:	1/4"-NPTF	<b>FZ1637</b>	45	24	1/4"-18 NPTF	-								
To:	1/4"-NPTF													
<b>Street Tee</b>			<b>BFZ16312</b>	56	26	3/8"-18 NPTF	3/8"-18 NPTF							
From:	3/8"-NPTF Female													
To:	3/8"-NPTF Male													
<b>Elbow</b>			<b>FZ1610</b>	33	20	3/8"-18 NPTF	-							
From:	3/8"-NPTF													
To:	3/8"-NPTF													
From:	1/4"-NPTF	<b>FZ1638</b>	36	24	1/4"-18 NPTF	-								
To:	1/4"-NPTF													
<b>Reducer</b>			<b>FZ1630</b>	19	19	1/4"-18 NPTF	3/8"-18 NPTF							
From:	3/8"-NPTF													
To:	1/4"-NPTF													
From:	1/4"-NPTF								<b>BFZ1630</b>	28	22	1/4"-18 NPTF	1/2"-14 NPTF	
To:	1/2"-NPTF													
From:	3/8"-NPTF	<b>BFZ16301</b>	19	19	G1/4"	3/8"-18 NPTF								
To:	G1/4"													
<b>Adaptor</b>			<b>BFZ-16411</b>	35	19	1/4"-18 NPTF	G1/4"							
From:	G1/4"													
To:	1/4"-NPTF													
From:	G1/4"								<b>BFZ-16421</b>	31	19	1/8"-27 NPTF	G1/4"	
To:	1/8"-NPTF													
From:	G3/8"	<b>BFZ-16323</b>	43	24	1/4"-18 NPTF	G3/8"								
To:	1/4"-NPTF													
From:	G3/8"	<b>BFZ-16324</b>	43	24	3/8"-18 NPTF	G3/8"								
To:	3/8"-NPTF													
<b>Adaptor</b>			<b>FZ1055</b>	44	23	1/4"-18 NPTF	3/8"-18 NPTF							
From:	1/4"-NPTF													
To:	3/8"-NPTF													
From:	1/4"-NPTF								<b>FZ1642</b>	30	19	1/8"-27 NPTF	1/4"-18 NPTF	
To:	1/8"-NPTF													
From:	1/2"-NPTF	<b>FZ1634</b>	42	28	3/8"-18 NPTF	1/2"-18 NPTF								
To:	3/8"-NPTF													
<b>Swivel Fitting</b>			<b>FZ1660</b>	40	22	3/8"-18 NPTF	3/8"-18 NPTF							
From:	3/8"-NPTF Male													
To:	3/8"-NPTF Female													



▼ Shown from left to right: SFM41, SFM42 Split-Flow Manifolds



- Split-Flow Manifolds improve safety, precision and control in lifting and lowering operations
- Pressure gauge, flow control valve in each outlet port; CR400 couplers installed in each inlet and outlet port
- Regulates both advance and retract speeds: lifting and lowering
- 1 inlet, 4 outlets. Maximum of 4 cylinders per manifold: SFM41 for single-acting cylinders, SFM42 for double-acting cylinders
- Minimum pump oil flow: 1,40 l/min to deliver 0,15 - 0,25 l/min per cylinder
- Maximum difference among outlets: 10% of the stroke (in 150 mm)
- More cylinders can be controlled simultaneously by connecting several SFM-models parallel.



## Improved safety on basic simultaneous lifting applications



### Pressure Gauges G2535L

Glycerine filled pressure gauges are installed in each outlet pressure line to monitor the pressure of each cylinder.



### Optimum Performance

Minimum pump oil flow must be 1,40 l/min to deliver 0,15-0,25 l/min per cylinder. Enerpac recommends to use

Z-Class electric or gasoline pumps from the ZE5 and ZG-Series.



### SFP-Series, Split-Flow Pumps

When a higher accuracy is required across cylinder strokes in a multi-point lifting or lowering application Enerpac recommends

to use the SFP-Series Split-Flow Pumps.



### Contact Enerpac!

Contact the Enerpac office nearest to you for advice and technical assistance in the layout of your ideal Lifting

System or visit us at: [www.enerpac.com](http://www.enerpac.com).

Or ask Enerpac for assistance:

[enerpac.com/contact-us](http://enerpac.com/contact-us)

◀ To repair the foundation, silos needed to be lifted, levelled and structurally supported. Powered by a ZE5-Series electric pump the split-flow manifold used to operate multiple hydraulic cylinders.



### Split-Flow Manifolds

The SFM-Series offer an economical solution for basic multi-point simultaneous lifting applications and enables a single operator to control a maximum of 4 lifting points from one manifold.

The Split-Flow Manifolds are equipped with pressure compensated flow control valves, to preset and limit advance and retract speed of each cylinder, allowing to move up to 4 cylinders simultaneously.

The SFM-Series provide more lifting and lowering control compared to AM-Series Control Manifolds. See flow control valve adjustments table below.

Minimum pump oil flow must be 1,40 l/min (ZE5-Series pumps) to deliver 0,15 - 0,25 l/min per cylinder. Several SFM-models can be connected parallel to the same pump to allow simultaneous operation of 8, 12 or 16 cylinders.

Higher flow pumps are required to achieve faster advance speeds. A 20% higher oil flow must be considered for a proper speed compensation.

Example : when using 4 cylinders: if oil flow of 0,45 l/min is required per cylinder, the pump oil flow must be:  
 $4 \times 0,45 = 1,8 \text{ l/min} + 20\% = 2,16 \text{ l/min}$ .

The maximum stroke deviation between the cylinders can reach up to 10% in 150 mm depending on the cylinder pressure. Oil flow adjustment is also possible during cylinder operation by fine tuning using the flow control valves.

All cylinders connected to the SFM-manifold must have the same capacity (effective area). Both advance and retract speed are limited by the same valves. Use hoses of the same lengths to improve the accuracy of the hydraulic system. Improved precision when difference of pressures among the cylinders is within 200 bar.

### SFM Series



Inlet Connection:  
**1x power pump**

Outlet Connections:  
**Max. 4 cylinders**

Minimum Pump Flow Required:  
**1,40 l/min**

Maximum Operating Pressure:  
**700 bar**



### Load Holding

Use **V66 check valves** for load holding applications with single-acting cylinders.

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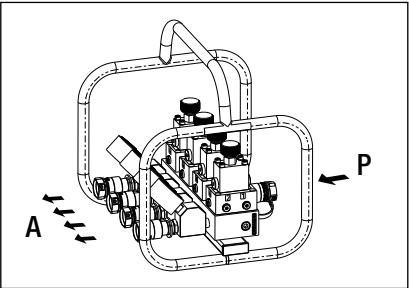
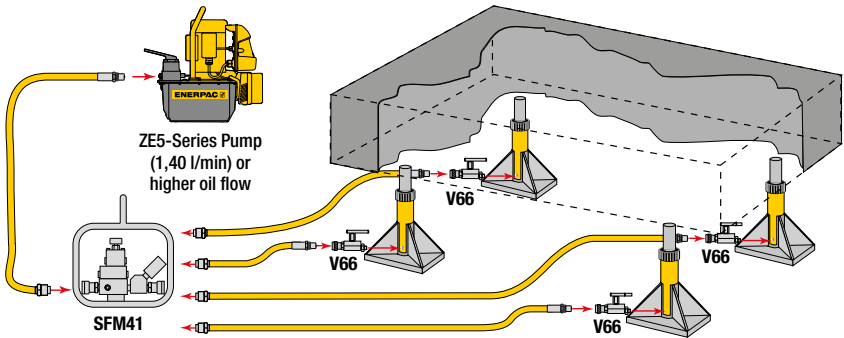
### Hoses

Energac offers a complete line of high-quality hydraulic hoses. To ensure the integrity of your system, specify only Energac hydraulic hoses. Energac recommends to use hoses of the same lengths between the SFM and cylinders to improve system accuracy.

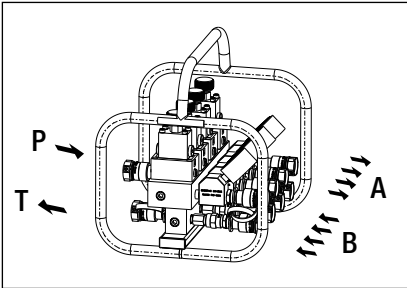


### Flow Control Valves

The Split-Flow Manifold has pressure compensated flow control valves installed in each outlet line. The oil flow from the SFM-Manifold to each cylinder can be adjusted by turning the knob on the valve.



SFM41



SFM42

### ▼ SPLIT-FLOW MANIFOLDS

For use with cylinders	Model Number	Minimum oil flow to each cylinder (l/min)	Female couplers included	Dimensions L x W x H (mm)	(kg)
4x single-acting	<b>SFM41</b>	0,15	CR400	370 x 335 x 375	24
4x double-acting	<b>SFM42</b>	0,15	CR400	370 x 335 x 375	30

Flow Control Valve Adjustments			
Number of Knob Turns	Oil Flow (l/min)	Number of Knob Turns	Oil Flow (l/min)
1/2	0,15	3	1,9
1	0,45	3 1/2	3,6
1 1/2	0,75	4	5,6
2	0,90	4 1/2	8,3
2 1/2	1,3	Open	10,3

▼ Shown from left to right: GF230B, GF835B, GP10S

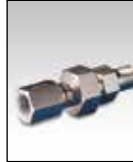


- **GF-series gauges:** calibrated with dual scale reading for pressure (bar) and force (kN)
- **GF-series gauges:** all pressure sensing parts are sealed and dampened by glycerine for long life
- **GP-series gauges:** calibrated with dual scale reading for pressure in bar and psi
- **Excellent readability:** gauge face dimensions 100 mm
- **Fast, easy installation**
- **Stainless steel gauge cases for corrosion resistance.**

▼ A GP10S gauge is used on this press to check the hydraulic pressure required to bend flat steel bar.



## Visual Reference for System Pressure and Force



### Auto-Damper Valve V10

For automatic control of gauge fluctuations, the V10 Auto-Damper Valve controls the movement of the gauge needle by restricting oil flow in and out of the gauge. No adjustments needed.

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### Snubber Valve V91

Infinitely adjustable for metering oil out of a gauge. The V91 Snubber Valve is also suitable as a shut-off valve to protect the gauge during high cycle applications.

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### Used With

All cylinders
All cylinders
5 ton RC, RSM-cylinders
10 ton RC, RCS, RSM-cylinders
All 25 ton RC-cylinders
All 50 ton RC, RR-cylinders
13 ton RCH-Series
RCS201, 302
RCS502, 1002
RCH202, 302, 603
25, 30, 50 ton RC, RCS, RSM, RR
75 and 95 ton RC, RR-cylinders
150 and 200 ton RR-cylinders



10 ton VLP Presses
25 ton XLP Presses
50 ton XLP, BPR Presses
100 ton VLP, BPR Presses
200 ton VLP, BPR Presses



# Hydraulic Force & Pressure Gauges



### Maximum Indicator Pointer

Indicator retains peak readings of pressure or force generated by the system.

Can easily be installed on GP and H-Series gauges. Order model nr: **BSA881**.



### Pressure Gauges

To measure the input pressure into cylinders or high pressure systems. Also for all testing applications.

### Force Gauges

To measure external load supported by a cylinder or jack in kN. For pressing parts together under pre-determined loads, weighing, testing, etc.

**GP-Series** are dry gauges.

**GF-Series** are glycerine filled gauges.

## GF GP Series



Pressure Range:

**0 - 1000 bar**

Force Range:

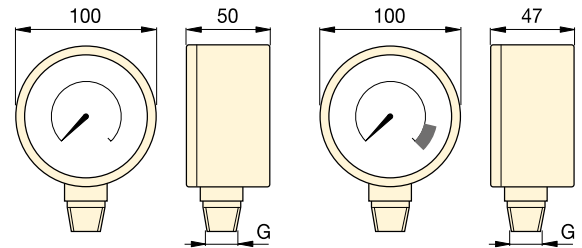
**0 - 2000 kN**

Gauge Face Diameter:

**100 mm**




Accuracy, % of full scale:

**± 1%**



GP-serie

GF-serie

Gauge Type and Calibration				Units per Division	Model Number *	Thread G	Gauge Adaptor		
							 143		
bar	psi	bar	kN				Required		
							GA1	GA2	GA3
0-700	0-10.000	-	-	10 bar, 100 psi	<b>GP10S</b>	1/2" NPTF	●	●	
0-1000	0-15.000	-	-	10 bar, 200 psi	<b>GP15S</b>	1/2" NPTF	●	●	
-	-	0-700	0-45	10 bar, 0,5 kN	<b>GF5B</b>	1/2" NPTF	●	●	
-	-	0-700	0-100	10 bar, 1 kN	<b>GF10B</b>	1/2" NPTF	●	●	
-	-	0-700	0-232	10 bar, 2 kN	<b>GF20B</b>	1/2" NPTF	●	●	
-	-	0-700	0-500	10 bar, 5 kN	<b>GF50B</b>	1/2" NPTF	●	●	
-	-	0-700	0-124	10 bar, 1 kN	<b>GF120B</b>	1/2" NPTF	●	●	
-	-	0-700	0-175/275	10 bar, 2 + 5 kN	<b>GF230B</b>	1/2" NPTF	●	●	
-	-	0-700	0-450/900	10 bar, 5 + 10 kN	<b>GF510B</b>	1/2" NPTF	●	●	
-	-	0-700	0-210/320/570	10 bar, 5 kN	<b>GF813B</b>	1/4" NPTF			●
-	-	0-700	0-232/300/500	10 bar, 5 kN	<b>GF835B</b>	1/4" NPTF			●
-	-	0-700	0-720/930	10 bar, 10 kN	<b>GF871B</b>	1/4" NPTF			●
-	-	0-700	0-1400/2000	10 bar, 25 kN	<b>GF200B</b>	1/4" NPTF			●
-	-	0-700	0-100	10 bar, 1 kN	<b>GF10B</b>	1/2" NPTF	●	●	
-	-	0-700	0-232	10 bar, 2 kN	<b>GF20B</b>	1/2" NPTF	●	●	
-	-	0-700	0-500	10 bar, 5 kN	<b>GF50B</b>	1/2" NPTF	●	●	
-	-	0-700	0-720/930	10 bar, 10 kN	<b>GF871B</b>	1/4" NPTF			●
-	-	0-700	0-1400/2000	10 bar, 25 kN	<b>GF200B</b>	1/4" NPTF			●

\* GF-Series Force gauges with imperial scale reading (psi, lbs) are available by changing the suffix 'B' into 'P'.

▼ Shown from left to right: H4049L, G2534R, G4089L, G2535L, G4040L



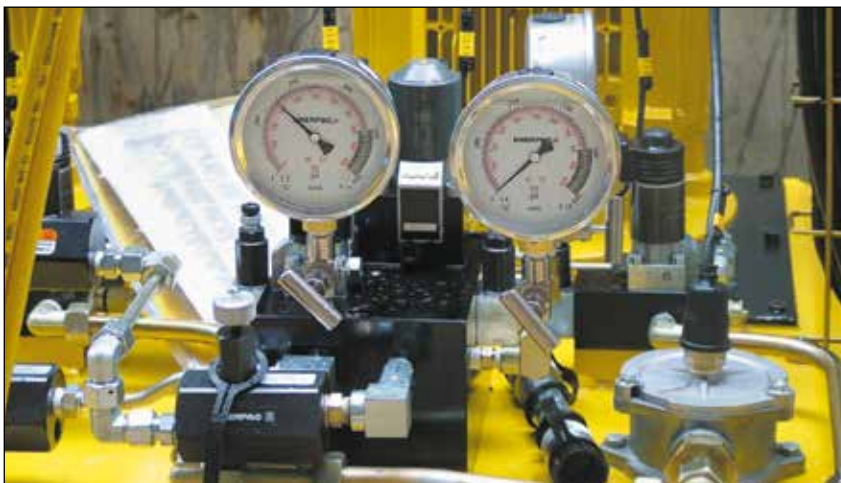
## Visual Reference of System Pressure

### Glycerine Filled (G-Series)

- Dual scale reading calibrated in bar and psi
- All pressure sensing parts sealed and dampened by glycerine for long life
- Includes safety blow-out disk and pressure equalizing membrane
- Gauge snubbers or needle valves recommended for high cycle applications.

### High Cycle Dry Gauges (H-Series)

- Dual scale reading calibrated in bar and psi
- Ideal for use in many applications, specifically for high cycle and harsh environments
- Gauge snubbers or needle valves recommended to shut off gauge when not in use.



#### Gauge adaptor assembly

45° Angled gauge adaptor **GA45GC** improves safe working conditions.

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#### Gauge Adaptor

For easy gauge installation into almost any system, Enerpac offers a complete line of gauge adaptors.

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#### Snubber Valve V91

Infinitely adjustable for metering oil out of a gauge. The V91 Snubber Valve is also suitable as a shut-off valve to protect the gauge during high cycle applications.

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◀ When lifting or pressing, always use a gauge. A gauge is your 'window' to the system. It lets you see what's going on.

# Hydraulic Pressure Gauges



**CAUTION! When lifting or pressing, always use a gauge**

Do not override factory setting of relief valves. Always use a gauge to check system pressure. A gauge is your 'window' to the system. It lets you see what's going on. See our Safety Instructions.

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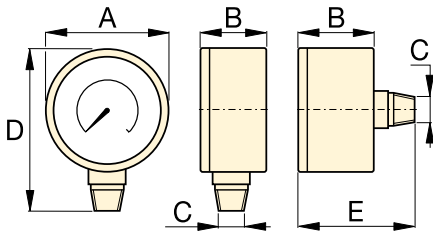
## G H Series



Pressure Range:  
**0 - 1000 bar**

Face Diameter:  
**63 - 100 mm**

Accuracy, % of full scale:  
**± 1,0 - 1,5%**



Size (mm)	Connection	Dimensions (mm)				
		A	B	C	D	E
63	Lower Mount	63	37	¼" NPTF	84	-
63	Center Rear	63	37	¼" NPTF	-	63
100	Lower Mount	100	29	¼" NPTF	121	-
100	Lower Mount	100	49	½" NPTF	136	-

Note: dimensions for reference only.



**Maximum Indicator Pointer**  
Indicator retains peak readings of pressure or force generated by the system.

Can easily be installed on GP and H-Series ø 100 mm gauges. Order model nr: **BSA881**.

### ▼ SELECTION CHART

Gauge Series	Pressure Range		Model Number				Major Graduation		Minor Graduation		Major Graduation		Minor Graduation	
			ø 63 ¼" NPTF Lower Mount	ø 63 ¼" NPTF Center Rear	ø 100 ¼" NPTF Lower Mount	ø 100 ½" NPTF Lower Mount	bar		psi		psi		psi	
	(bar)	(psi)	Accuracy: ± 1,5 %		Accuracy: ± 1,0 %		ø 63	ø 100	ø 63	ø 100	ø 63	ø 100	ø 63	ø 100
	G-Series	0-7	0-100	G2509L	-	-	-	1	-	0,01	-	10	-	2
0-11		0-160	G2510L	-	-	-	1	-	0,02	-	10	-	2	-
0-14		0-200	G2511L	-	-	-	1	-	0,02	-	50	-	5	-
0-20		0-300	G2512L	-	-	-	5	-	0,50	-	50	-	5	-
0-40		0-600	G2513L	-	-	-	10	-	1	-	100	-	10	-
0-70		0-1.000	G2514L	G2531R	-	-	10	-	1	-	100	-	20	-
0-140		0-2.000	G2515L	-	-	-	10	-	5	-	500	-	50	-
0-200		0-3.000	G2516L	-	-	-	50	-	5	-	500	-	50	-
0-400		0-6.000	G2517L	G2534R	-	-	100	-	10	-	1000	-	100	-
0-700		0-10.000	G2535L	G2537R	G4088L	G4039L	100	100	10	10	2000	1000	200	100
0-1000	0-15.000	G2536L	G2538R	G4089L	G4040L	100	100	20	20	3000	3000	200	200	
H-Series	0-700	0-10.000	-	-	H4049L	H4071L	-	100	-	10	-	1000	-	100

▼ Gauge shown: **T6003L**



- **Dual scale reading calibrated in bar and psi**
- **All gauges have spring-loaded backs with rubber blow-out plugs to protect case assembly in case of over-pressurization**
- **Integral maximum indicator pointer standard included**
- **2800 and 3500 bar models include flange mounting**
- **½" NPTF versions are made of high strength alloy steel**
- **0.25" cone models are made of 316 stainless steel, with 403 stainless steel on 2800 and 3500 bar models.**

▼ An Enerpac P2282 hand pump equipped with a T6011L test system gauge is used for proof pressure testing of hydraulic valves.



## T Series

Pressure Range:  
**0 - 3500 bar**

Face Diameter:  
**162 - 192 mm**

Accuracy, % of full scale:  
**± 0,5 - 1,5%**



### Cone Mount Gauge Adaptor

Contains fittings to connect ¼" cone fitting gauge to ⅜" cone system. Kit includes 43-301 tee, 43-704 gauge adaptor and 45-116 tubing. Order model number: **83-011**.

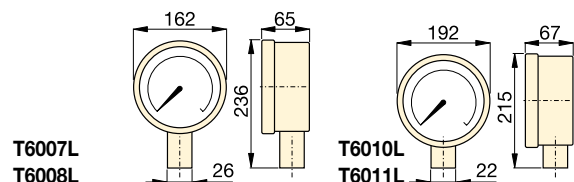
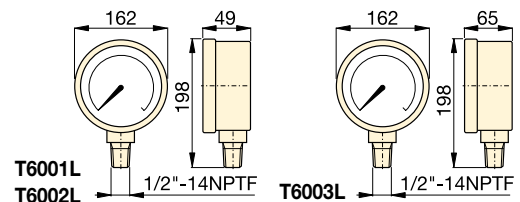
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### Cone Mount Gauge Connector

For connecting gauges with 0.25" cone fitting directly to model number **11-100** or **11-400** pump (page 84). May be used with other

0.25" cone systems  
Order model number: **43-704**



Pressure Range (bar)	Pressure Range (psi)	Model Number		Number Intervals (bar)	Graduation Intervals (bar)	Number Intervals (psi)	Graduation Intervals (psi)
		Alloy Steel ½" NPTF	Stainless Steel 0,25 cone				
0-70 <sup>1)</sup>	0-1000	<b>T6001L</b>	–	10	1	100	10
0-350 <sup>1)</sup>	0-5000	<b>T6002L</b>	–	50	5	500	50
0-700 <sup>1)</sup>	0-10.000	<b>T6003L</b>	<b>T6007L</b>	100	10	1.000	100
0-1400 <sup>1)</sup>	0-20.000	–	<b>T6008L</b>	200	20	1.000	100
0-2800 <sup>2)</sup>	0-40.000	–	<b>T6010L</b>	500	20	5.000	200
0-3500 <sup>2)</sup>	0-50.000	–	<b>T6011L</b>	500	50	5.000	200

<sup>1)</sup> Accuracy ± 0,5%

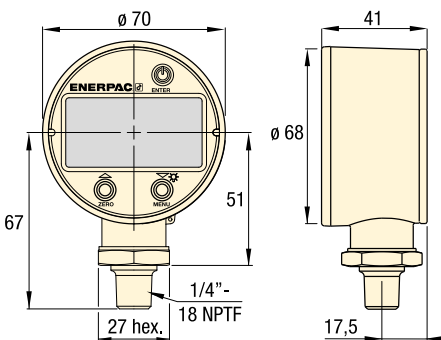
<sup>2)</sup> Accuracy ± 1,5%

# Digital Hydraulic Pressure Gauge

▼ Gauge shown: DGR2



- Rated for system pressure up to 1380 bar
- Displays in bar, psi, MPa and kg/cm<sup>2</sup>
- Zero reset - ensures that gauge reads actual pressure
- IP65 protection, UL listed, CE and RoHS compliant
- Batteries included, condition indicator on read-out
- Shut-off selectable – menu driven
- Back-lit readout allows easy reading in less than ideal lighting
- Protective cover included.



High Pressure Rating (bar)		High Pressure Rating (MPa)		Model Number	High Pressure Rating (psi)		High Pressure Rating (kg/cm <sup>2</sup> )	
Range	Resolution	Range	Resolution		Range	Resolution	Range	Resolution
0-1380	0,1	0-140	0,01	<b>DGR2</b>	0-20.000	1	0-1400	0,1

Weight: 0,23 kg.

## DGR Series

Pressure Range:

**0 - 1380 bar**

Voltage:

**3 Volt (battery)**

Accuracy, % of full scale:

**± 0,25%**



### Gauge Adaptor

For easy gauge installation into almost any system, Enerpac offers a complete line of gauge adaptors. Maximum operating pressure 700 bar.

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▼ Greater accuracy and easier to read: enhance your ability to monitor and control hydraulic system pressure up to 1380 bar.





▼ Shown: GA45GC



- 45° angled gauge improves visibility
- Slim and narrow design
- Easy to fit in a broad range of systems
- Maximize controlled load movement
- Glycerin dampened gauge with dual scale
- Enerpac High-Flow female coupler CR400.

## GA45GC Series

Connection 1:  
**3/8" NPTF male**

Connection 2:  
**CR400 coupler**

Maximum Operating Pressure:  
**700 bar**



### 4-Way Manifold assembly complete with gauges

Offering ease of portability and convenience with an ergonomic robust design, ready for use.

CR400 female couplers on all ports allow the manifold to be quickly connected to up to 4 cylinders. Glycerine filled, 700 bar gauges and shut-off valves allow operators to work safely. All protected by the robust protection frame.

Manifold Type (Used for cylinders)	Model Number
4x Single-acting	<b>AMGC41</b>
4x Double-acting	<b>AMGC42</b>

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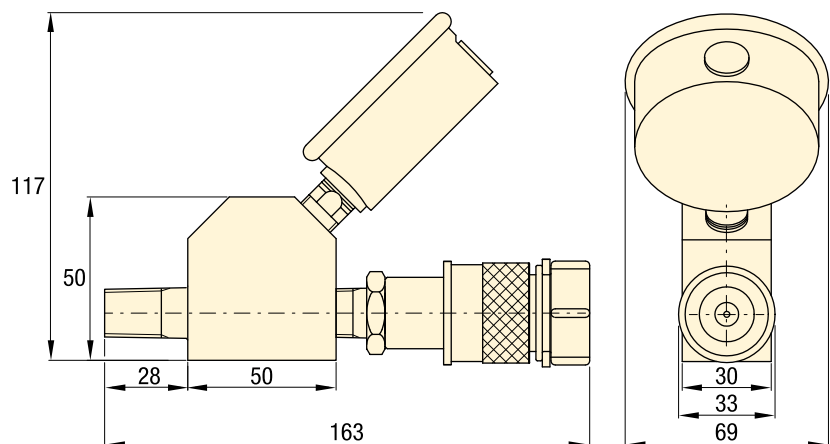


### Power Box

Portable tool box with hand pump, GA45GC gauge adaptor assembly, hose and RC, RSM, RCS-cylinder, WR5 wedgie or LW16 lifting wedge.

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▼ The Gauge Adaptor Assembly is the window to your system; allows easy reading of the pressure for safe operation.



Model Number	Gauge Port (1/4" NPTF)	Male End (NPTF)	Female End (3/8" NPTF)	Gauge Range	
				(bar)	(psi)
<b>GA45GC</b>	G2535L	3/8" -18	CR400	0 - 700	0 - 10.000

# Gauge Accessories

▼ Shown from left to right: GA3, V91, GA1, GA2, GA4, NV251, GA918



## GA, NV, V Series

Maximum Operating Pressure:  
**700 bar**

▼ A gauge is easily installed into your hydraulic system using a gauge adaptor.



**Gauge Adaptors (GA-Series)**

- For easy mounting of a pressure gauge onto your system
- Male end screws into pump or cylinder port, female end accepts hose or coupler, 3<sup>rd</sup> port is for gauge connection
- GA918 provides for swivel connection.

Model Number	Gauge Port (NPTF)	Male End (NPTF)	Female End (NPTF)	Dimensions (mm)					
				A	B	C	D	E	F
GA1	1/2"	3/8"	3/8"	71	31	1/2" NPTF	3/8" NPTF	3/8" NPTF	32
GA2	1/2"	3/8"		155	35	1/2" NPTF	3/8" NPTF	3/8" NPTF	32
GA3	1/4"	3/8"		133	35	1/4" NPTF	3/8" NPTF	3/8" NPTF	32
GA4	1/2"	1/4"		111	35	1/2" NPTF	1/4" NPTF	3/8" NPTF	32

**GA1**

**GA2, GA3, GA4**

**Swivel Adaptor (GA918)**

- Simplifies gauge installation and reading.

Model Number	Dimensions (mm)							
	A	B	C	D	E	S	S1	
GA918	117	43	1/2" NPTF	28,5	1/2" NPTF	29	38	

**GA918**

**Needle Valves (V- and NV-Series)**

- Both NV251 and V91 provide positive shut-off
- 316 stainless steel stem, 24 threads/in (NV251).

Model Number	Orifice (mm)	Thread Size	Dimensions (mm)						
			A	B	C	D	E	F	H
NV251	4,3	1/4" NPTF	57	29	1/4" NPTF	57	46	19	19
V91	4,8	1/2" NPTF	89	32	1/2" NPTF	64	32	37	37

**NV251**

**V91**

▼ From left to right: V152, V66, V82, V161, V42, V17



## Your Hydraulic Control Solution



### Valve Applications

To see these valves used in typical hydraulic circuits, please see our 'Yellow Pages'.

Page: **410**

▼ The V152 pressure relief valve limits the pressure or force developed in the hydraulic system.



- All valves are rated for 700 bar operating pressure
- All valves feature NPTF porting to insure against leakage at rated pressure
- All valves are painted, coated, or plated for corrosion resistance
- Viton® seals (in V66NV and V152NV) for high temperature applications, nickel-plated for maximum corrosion resistance.

Valve dimensions in mm

<p><b>V82</b></p>	<p><b>V182</b></p>	<p><b>V8F</b></p>	<p><b>V91</b></p>
<p><b>V10</b></p>	<p><b>V17</b></p>	<p><b>V42</b></p>	
<p><b>V66, V66NV</b></p>	<p><b>V66F</b></p>	<p><b>V152, V152NV</b></p>	<p><b>V161</b></p>

# Pressure and Flow Control Valves



## Control Manifolds

For two or four port manifolds with integral flow control valves, see the manifold page of the System Components section.

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## Fittings


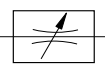

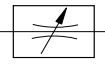



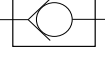

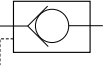

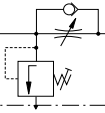

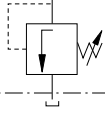

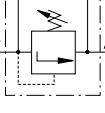
For additional fittings see the fitting page of the System Components section in this catalogue.

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## V Series



Maximum Operating Pressure:  
**700 bar**

Valve Type and Model Number	Description	Hydraulic Symbol
<b>Needle Valve</b> <b>V82</b> <b>V182</b> <b>V8F</b>	 <p><b>V82:</b> To control cylinder speed. Can also be used as shutoff valve for temporary load holding. 3/8" NPTF ports, nickle plated.  <b>V182:</b> Same as V82, but with 1/4" NPTF female ports, nickle plated.</p>	<p>Also suitable for gauge snubbing (also V82).  <b>V8F:</b> Like V82, but with very fine metering for precise flow control 0,16 - 14,7 l/min at 275 bar. <b>Not recommended as shut-off valve.</b></p> 
<b>Snubber Valve</b> <b>V91</b>	 <p><b>V91:</b> Infinitely adjustable for metering oil out of a gauge to prevent snapping of gauge pointer when load or pressure is suddenly released.</p>	<p>Also suitable as shutoff valve to protect the gauge during high cycling applications.  1/2" NPTF male and female threads for use with GA1, GA2 or GA4 gauge adaptors.</p> 
<b>Auto Damper® Valve</b> <b>V10</b>	 <p><b>V10:</b> To be used when gauge pressure must be monitored during high cycle applications. Creates a flow resistance when load is released suddenly.</p>	<p>No adjustments are necessary.  1/2" NPTF male and female threads for use with GA1, GA2 or GA4 gauge adaptors.</p> 
<b>Check Valve</b> <b>V17</b>	 <p><b>V17:</b> Ruggedly built to resist shock and operate with low pressure drop. Closes smoothly without pounding.  3/8" NPTF female port.</p>	
<b>Pilot Operated Check Valve</b> <b>V42</b>	 <p><b>V42:</b> Can be mounted at the cylinder to hold the load in case of system pressure loss. Normally used with doubleacting cylinders where pilot port receives pressure from a Tee-fitting in the cylinder retract line.</p>	<p>3/8" NPTF female ports.  Pilot presure ratio 14% (6,5:1).</p> 
<b>Manually Operated Check Valve</b> <b>V66, V66NV *  V66F</b>	 <p><b>V66, V66NV:</b> For load holding applications with single and double acting cylinders. Valves allow oil to flow back to tank when cylinder retracts.</p>	<p><b>V66NV</b> with Viton seals, nickelplated.  <b>V66F:</b> Similar to V66, but with very fine metering capability for precise flow control. V66F is not designed for load holding.</p> 
<b>Pressure Relief Valve</b> <b>V152</b> <b>V152NV *</b>	 <p><b>V152:</b> Limits pressure developed by the pump in hydraulic circuit, thus limiting the force imposed on other components. Valve opens whenever preset pressure is reached.</p>	<p>To increase pressure setting, turn handle clockwise. Includes:</p> <ul style="list-style-type: none"> <li>• 0,9 m return line hose kit,</li> <li>• ± 3% repeatability,</li> <li>• 55 - 700 bar adjustment range.</li> </ul> 
<b>Sequence Valve</b> <b>V161</b>	 <p><b>V161:</b> To control oil flow to a secondary circuit. Flow is blocked until system pressure rises to the V161 setting. When this pressure level is reached, the V161 opens to allow flow to the secondary circuit.</p>	<p>A pressure differential is always maintained between the primary and secondary circuit.  <b>Mininum operating pressure: 140 bar.</b></p> 

\* See page 64 for more information about products for use in high temperature and extreme environment applications.