

System

System Components

From the simplest to the most complex hydraulic system, Enerpac's system components help you complete your design. Gauges, pressure switches, couplers and hoses are simple but necessary items for any hydraulic system, and Enerpac can provide the full range. And more specialized components such as accumulators and automatic coupler systems ensure that whatever your need, Enerpac can help.













Technical support

Refer to the "Yellow Pages" of this catalog for:

- Safety instructions
- Basic hydraulic information
- Advanced hydraulic technology
- FMS (Flexible Machining Systems) technology
- Conversion charts and hydraulic symbols

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components

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Auto-coupler systems	WCA, WPA ACCB	146 - 147	
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Manifolds, couplers, hoses, tubing	A, AH/R HLS, T	156	
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Shown: WCA-62, WPA-62



The automatic coupler system allows connection and disconnection of palletized hydraulic circuits. This system eliminates the direct intervention of an operator, allowing hands free, safe functioning of the process. Typical systems include one base station located at the load/unload station operating one or more pallet receivers.

ACCB-2 Control shown with ZW4020HJ-FHLT12U300 Pump.



A 4-way auto coupler is connected to the receiver, mounted on the side of a palletized fixture.



For automated coupling of hydraulic circuits on palletized systems

- Sensing feedback of coupler position allows for fully automated applications
- Horizontal or vertical mounting for flexible installation on machine tools
- Available as 2 or 4 port model to provide a solution to various hydraulic circuit needs
- Adjustment stroke allows clearance for pallet indexing
- Coupler elements supplied with air blow-off nozzles to prevent damage from contamination
- Automatic coupler control box provides pre-programmed safety features to insure proper sequencing of automatic coupler and fixture operations



ACCB-2, Automatic coupler control box

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- Provides automatic or manual control of your 2 or 4 port auto coupler station.
- Panel view informs when auto coupler is retracted or advanced and whether fixture is unclamped or clamped.
- Includes 2 pressure switches, 3 proximity switches.
- Pressure switches monitor clamping and unclamping system pressure.
- Proximity switches inform PLC when auto coupler is advanced or retracted and when pallet is in position for the auto coupling.
- Integrates with ZW4020HJ-FHLTU300 and ZW4020HJ-FHLT300 pumps.

Product selection

Station position	Model number ¹⁾	Adjustable stroke	Oil capacity		Maximum oil flow ²⁾
			in ³		
		in	advance	retract	in ³ /min
▼ 2 port auto coupler					
Base	WCA-62	.20 - .59	.66	.66	60
Base	WCA-82*	4.10 - 4.48	.66	.66	60
Pallet	WPA-62	-	-	-	-
▼ 4 port auto coupler					
Base	WCA-64*	.20 - .59	.66	.66	60
Pallet	WPA-64*	-	-	-	-

¹⁾ For additional pallet clearance, WCA-82 long stroke model are available.

²⁾ Maximum oil flow of coupler elements is 4.3 GPM.

* This product is made to order. Please contact Enerpac for delivery information before specifying in your design.

Swing cylinders
Work supports

Linear cylinders

Power sources

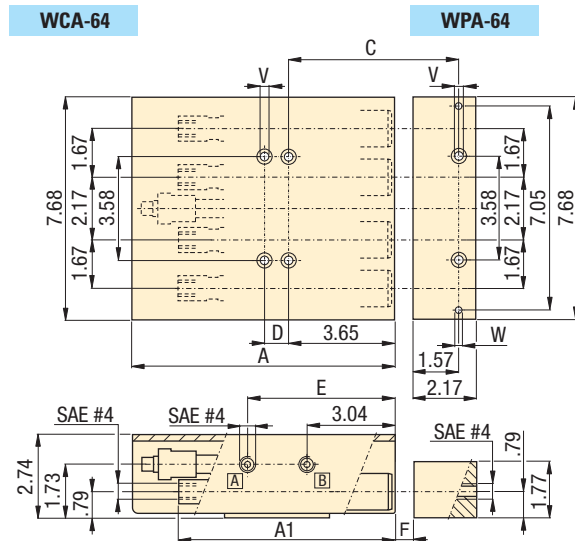
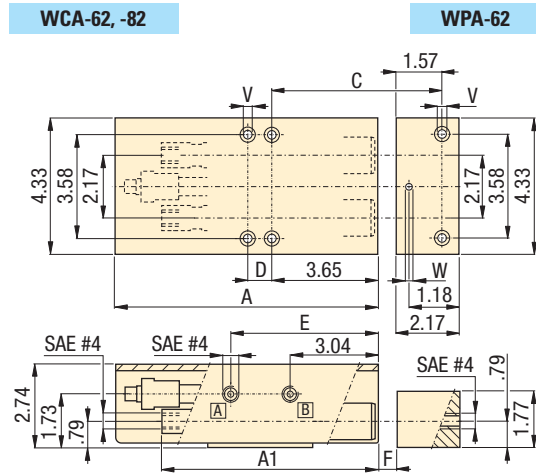
Valves

System components



Product specifications

Model number	Required radial alignment accuracy in	Operating pressure psi	Hydraulic nozzle model number (included)	Air blow-off fitting model No. (included)	Recommended alignment tool
▼ 2 port auto coupler					
WCA-62	± .02	580 - 5000	CDF-6	FZ-2050	AT-1
WCA-82	± .02	580 - 5000	CDF-6	FZ-2050	AT-2
WPA-62	± .02	580 - 5000	CDM-6	FZ-2050	AT-1
▼ 4 port auto coupler					
WCA-64	± .02	580 - 5000	CDF-6	FZ-2050	AT-1
WPA-64	± .02	580 - 5000	CDM-6	FZ-2050	AT-1



Product dimensions in inches []

Model number	A	A1	B	C	D	E	F max.	V ¹⁾ for mounting bolts thread x length	W ²⁾	lbs
▼ 2 port auto couplers										
WCA-62	8.86	7.48	-	5.42	.83	5.09	.394-.413	.312-18UN x 3.00	-	16.8
WCA-82*	15.67	14.03	-	9.36	3.94	8.20	3.70	.312-18UN x 3.00	-	28.8
WPA-62	-	-	-	-	-	-	-	.375-16UN x 2.00	.23	4.0
▼ 4 port auto couplers										
WCA-64*	8.86	7.48	-	5.42	.83	5.09	.394-.413	.312-18UN x 3.00	-	29.1
WPA-64*	-	-	-	-	-	-	-	.375-16UN x 2.00	.23	6.6
▼ Automatic coupler control box³⁾										
ACCB-2	13.78	-	11.81	-	-	-	-	-	-	30.0

¹⁾ Mounting bolts are not included. ²⁾ Drill dowel pin holes after installing WPA.

* This product is made to order. Please contact Enerpac for delivery information before specifying in your design.

Connection: 2-4 ports

Stroke: .20-4.48 inch

Pressure: 580-5000 psi

- E** Acopladores automáticos
- F** Coupleurs automatiques
- D** Automatische Kupplungen

Options

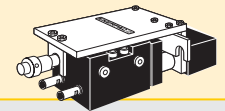
High pressure filters

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AT series alignment tool

Use the AT series alignment tool to adjust the position of the pallet station in relation to the base station.



Hoses

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Important

Use high pressure filters on pallet station outlet ports, to avoid contamination of pallet mounted valves and cylinders.

To guarantee leakage free connections, accurate positioning of the pallet and base stations is crucial. Carefully read the instruction manual included with the product.

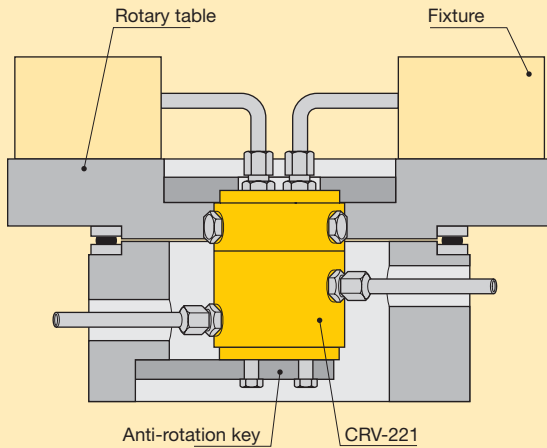
Do not couple or uncouple with the hydraulic nozzles under pressure. This could damage the internal coupler seals.

Do not exceed maximum flow and pressure.

Shown: CRV-221, CR-111



▶ Rotary couplers are specially designed unions to transfer pressurized fluid from a stationary supply line to a rotating device. Used for workholding or clamping device such as fixtures installed on rotating index tables.



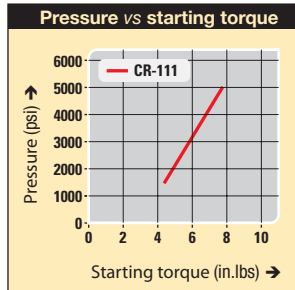
■ In this application eight CRV-221 rotary couplers are installed to power the individual presses of an eight station rotary press table.



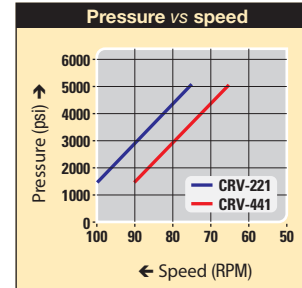
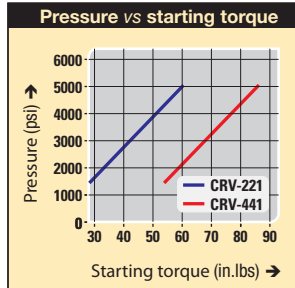
Permanent hydraulic connection on indexing and rotating work stations

- High rotation per minute
- Low starting torque
- Internal oil bearings for increased lifetime
- Manifold mounting adaptors available to reduce fixture plumbing

Starting torque and speed diagrams



Max. operating speed = 30 RPM.



Oil loss CRV-221 = 1.22 in³/h, CRV-441 = 2.44 in³/h

Product selection

No. of radial passages	Model number ¹⁾	Operating pressure range psi	Maximum speed RPM		Starting torque in.lbs	
			1500 psi	5000 psi	1500 psi	5000 psi
1	CR-111	1500-5000	30	30	4.5	8
2	CRV-221	1500-5000	100	75	27	60
4	CRV-441	1500-5000	90	65	53	182

¹⁾ Before selecting, note the starting torque and speed diagrams above.

Manifold mounting adaptor



Mounting adaptor AMP-2, AMP-4

Mounts onto end of two and four passage rotary unions. Allows O-ring mounting directly to fixture.

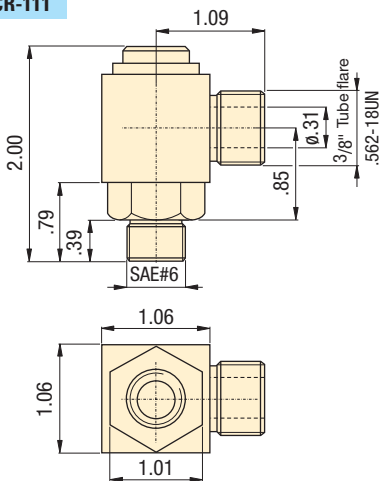
Product selection

Number of radial passages	Model number	Operating pressure range psi	Used with
2	AMP-2	1500-5000	CRV-221
4	AMP-4	1500-5000	CRV-441

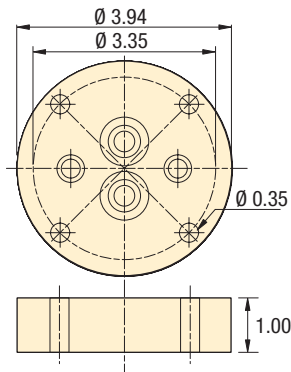


Product dimensions in inches []

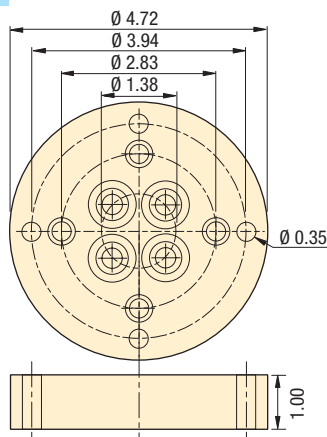
CR-111



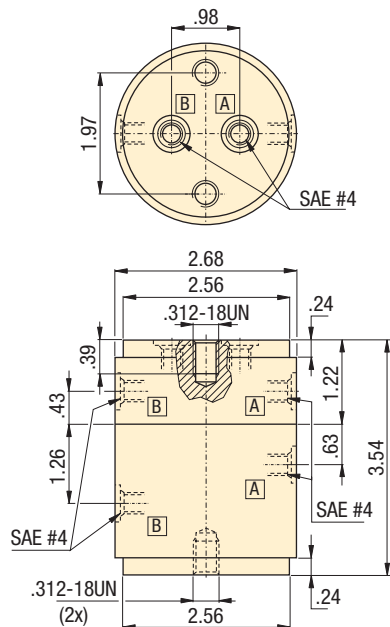
AMP-2



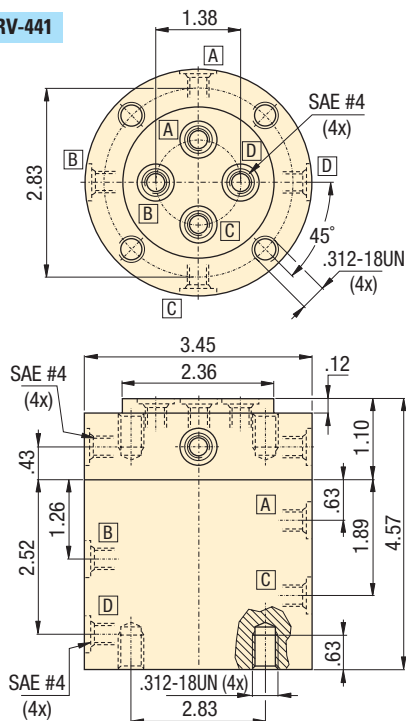
AMP-4



CRV-221



CRV-441



Passages: 1-4 lines

Speed: 30-100 RPM max.

Pressure: 1500-5000 psi

- E** Acoplamiento giratorios
- F** Joints tournants
- D** Drehdurchführungen



Options

Fittings

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Couplers

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Hoses and couplers

156



Important

Before selecting, note the pressure versus starting torque diagrams.

Rotary couplers must be mounted in the center of rotation of the installation.

Anti-rotation keys should be utilized.

For proper application, clamp force, pressures and timing, consult Enerpac for support.

Shown: ACM-1, ACBS-22, ACL-201



Enerpac accumulators supply auxiliary pressure to dampen shock loads or to compensate pressure drop in applications where system pressure needs to be maintained.

Accumulator packages will help maintain system pressure to your fixture when separated from the hydraulic source. The gauge will display system pressure after the circuit is disconnected.

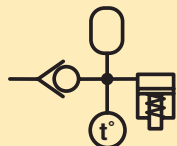
Accumulator applications:

- Energy storage
- Circuit pulsation dampening
- Thermal expansion compensation

Pulse dampening



Thermal expansion



■ ACBS-202 Accumulator package used to maintain pressure on a machine tool fixture



Accumulators

...maintain circuit pressure

- Ideal for high frequency and rapid discharge applications
- ACL series are pre-charged to 1450 psi
- Corrosion resistant bodies on ACL series
- Spring actuated accumulator for ACM-1
- High energy storage capacity in a compact package

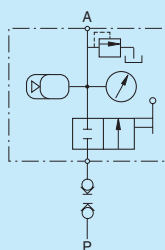
Accumulator coupler packages

...compact design for easy use of accumulators

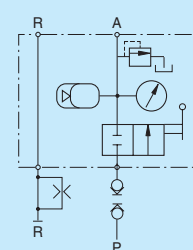
- Single design accommodates both single-acting or double-acting circuit
- Relief valve fitted and ball check shut-off
- Glycerin-filled gauge included
- Supplied standard with one male coupler (AH-652)
- Optional manifold mounting. O-ring seals located on bottom of block only for single-acting circuit

i Accumulator coupler package circuits

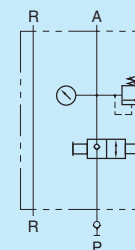
Single-acting circuit
ACBS series



Double-acting circuit
ACBS series



Single- or double-acting circuit
AP-500



globe Product selection

Operating pressure	Model number	Max. rated oil volume	Gas volume	Pre-charged nitrogen pressure	Usable oil capacity
psi		in ³	in ³	psi	in ³ at 5000 psi

▼ Pre-charged accumulators

0-3000	ACM-1	.10	-	-	-
1500-5000	ACL-21A	.90	1.22	1450	.53
1500-5000	ACL-201A	7.70	10.37	1450	4.51
1500-5000	ACL-502A	20.60	27.46	1450	12.0

▼ Accumulator coupler packages

1500-5000	ACBS-22A	0.90	1.22	1450	.53
1500-5000	ACBS-202A	7.70	10.37	1450	4.51
0-5000	AP-500	AP-500 uses WA-502 or WA-5010			

▼ Uncharged accumulators

0-5000 ¹⁾	WA-502	2.50	2.50	-	2.50
0-5000 ¹⁾	WA-5010	10.00	10.00	-	7.50

¹⁾ See pre-charge chart on the next page for hydraulic operating pressures.

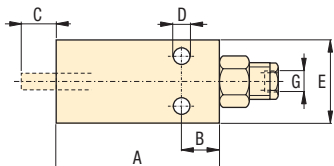


Recommended pre-charge

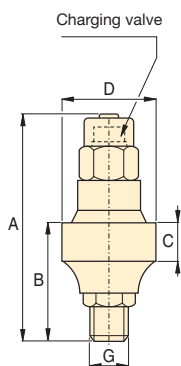
Operating pressure psi	Model number	Nitrogen pressure psi	Usable oil capacity ¹⁾ in ³
0-1000	WA-502	500	1.50
1000-3000	WA-502	1000	2.00
3000-5000	WA-502	1200	2.50
0-1000	WA-5010	500	5.50
1000-3000	WA-5010	1000	6.50
3000-5000	WA-5010	1200	7.50

¹⁾ At maximum operating pressure.

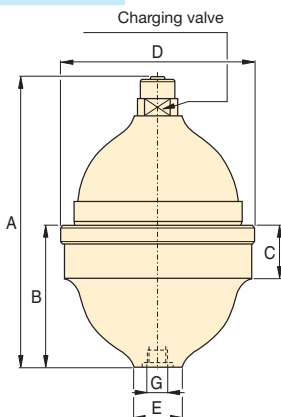
ACM-1



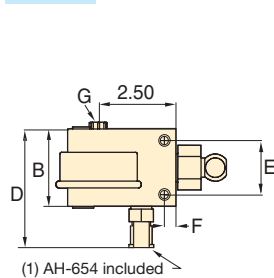
ACL-21A



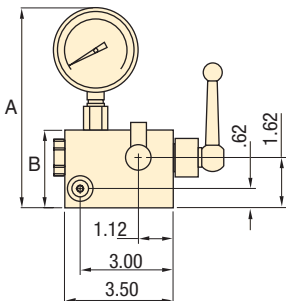
ACL-201A, 502A



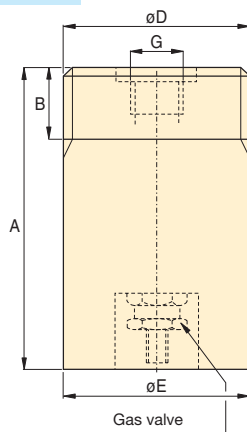
AP-500



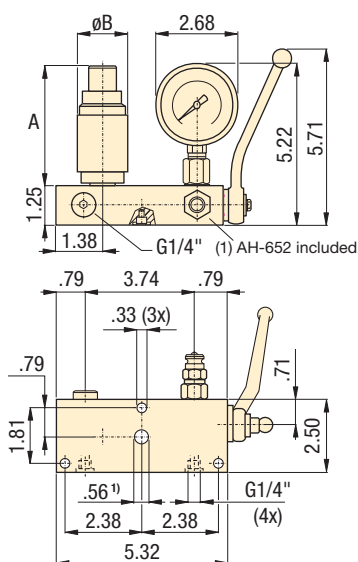
(1) AH-654 included



WA



ACBS



¹⁾ Manifold hole should not exceed Ø .30 inch when port is utilized.

Pressure: 0-5000 psi

Oil volume: .10-20.60 in³

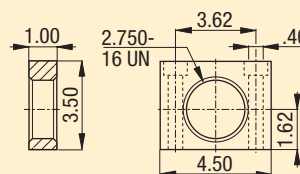
Gas volume: 1.22-27.46 in³

- E** Acumuladores
- F** Accumulateurs
- D** Druckspeicher



Options

AW-50 Mounting block
For WA series accumulators.



Couplers

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High pressure filters

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Hydraulic oil

157 ▶



Fittings

158 ▶



Product dimensions in inches [\pm]

Model number	A	B	C	D	E	F	G	Recommended charging tool	lbs
▼ Pre-charged accumulators									
ACM-1	5.25	.75	.50	.265	1.75	-	.125-27 NPT	-	2.1
ACL-21A	4.14	1.46	.71	1.69	-	-	SAE #4	WAT-2	1.0
ACL-201A	5.39	2.72	1.14	3.33	1.14	-	SAE #6	WAT-2	2.7
ACL-502A	6.73	3.50	1.38	4.49	1.57	-	G3/8"	WAT-2	6.2
▼ Pre-charged accumulator coupler packages									
ACBS-22A	2.69	1.65	-	-	-	-	G1/4"	WAT-2	10.1
ACBS-202A	4.18	3.33	-	-	-	-	G1/4"	WAT-2	11.8
AP-500	6.44	2.50	3.50	3.84	1.75	0.38	SAE #4	WAT-2	11.8
▼ Uncharged accumulators									
WA-502	4.69	1.19	-	2.750-16 UN	2.75	-	SAE #8	WAT-1	7.0
WA-5010	7.13	1.19	-	2.750-16 UN	2.75	-	SAE #8	WAT-1	11.5

Important

Enerpac high pressure in-line filters are required for use with these control units to prevent damage that can be caused by contaminants that have penetrated your hydraulic fluid system.

Order an additional male coupler (AH-652 or AH-654) for use in double-acting hydraulic circuits.

Shown: PSCK-8, IC-51



Swing cylinders
Work supports

Linear cylinders

Power sources

Valves

System components

Enerpac remote mounted pressure switches monitor the hydraulic system to determine any change of pressure. The signal can then be used to control the pump, or other peripheral devices.

IC-series

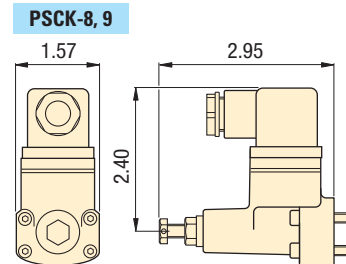
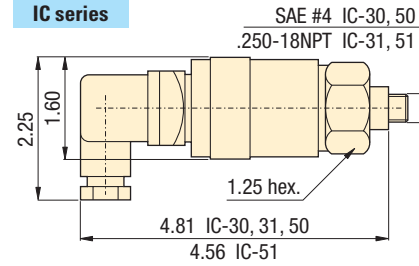
The IC-series electrical pressure switches provide pressure readings for monitoring and/or control of hydraulic system pressure in workholding systems.

■ *Integrated in your hydraulic system, the pressure switch can be used to automate your clamping cycles.*

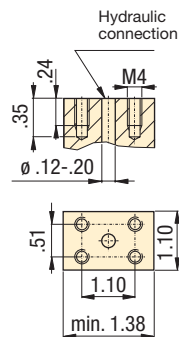


Reliable electrical control of hydraulic power

- Compact design minimizes space requirements on fixture
- Switch is easily adjustable to meet system requirements



mounting dimensions



Product selection

Adjustable pressure range	Electrical specifications	Model number	Deadband	Switch point repeatability	Oil port	
psi	at 50/60 Hz		psi	% of range		lb
▼ Electrical pressure switches						
500-3500	125 VAC @ 5 A	IC-30	100 - 500	+/-2	SAE #4	1.0
500-3500	125 VAC @ 5 A	IC-31	100 - 500	+/-2	.250-18 NPT	1.0
3000-7500	125 VAC @ 5 A	IC-50	250 - 800	+/-2	SAE #4	1.0
3000-7500	125 VAC @ 5 A	IC-51	250 - 800	+/-2	.250-18 NPT	1.0
1450-5000	115 VAC @ 2 A	PSCK-8	250 - 800	+/-2	Manifold mount	0.8
290-3045	115 VAC @ 2 A	PSCK-9	250 - 800	+/-2	Manifold mount	0.8

¹⁾ Electrical harness included with kit.

Pressure: 500-7500 psi

Accuracy: 2%

- (E)** Presostatos
- (F)** Pressostats
- (D)** Druckschalter



Options

Fittings

158 ▶



Gauges

154 ▶



Important

Do not exceed the maximum pressure.

Pressure: 0-15,000 psi

Accuracy: ± 0.2%

Voltage: 3 VDC (battery)

- E** Manómetros digitales
- F** Manomètres digitaux
- D** Digitale Manometer

Options

Fittings

158 ▶



Gauge adaptors

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Important

Do not exceed the maximum pressure.

Gauges can be easily plugged into the hydraulic system using GA-3 gauge adaptor.

Protective Cover

Fits over face of gauge for protection in harsh environments.
Order Model No. **DGR-1PC**.

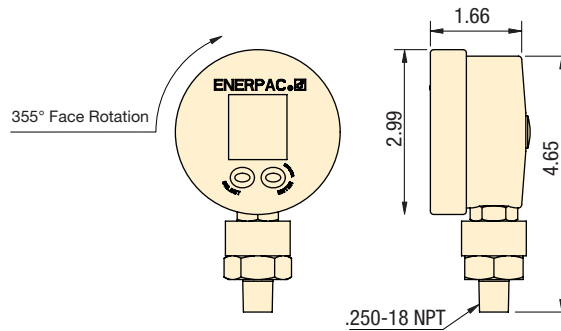
Replacement Battery

Spare battery for preventative maintenance program. Battery has 1400 hours of life in continuous operation.
Order Model No. **DGR-1B**

Easy and precise pressure monitoring

DGR-1

- Rated for system pressure up to 15,000 psi
- Displays in psi, bar, MPa, kPa, mbar/hPa
- Zero reset – ensures that gauge reads actual system pressure
- Protective cover can be ordered separately
- 3 VDC battery included – DGR-1B
 - 1400 hours continuous operation in standard mode
 - IP65 protection
- Two modes
 - Automatic shut off (15 min)
 - Continuous display



Shown: DGR-1



DGR-1B

Enerpac digital pressure gauges offer greater accuracy and are easier to read than conventional dial gauges, greatly enhancing your ability to monitor and control hydraulic system pressure.

DGR-1 Remote Operation

Battery operated for additional flexibility. Includes maximum and minimum pressure capture.

Product selection

Pressure rating		Model number	Pressure rating		Pressure rating		Pressure rating		Pressure rating		lbs
psi			bar	kPa	MPa	mbar					
Range	Interval		Range	Interval	Range	Interval	Range	Interval	Range	Interval	
0-15,000	3	DGR-1	0-1000	0.2	0-20,000	20	0-100	0.02	0-20,000	200	0.5

Shown: GS-2, G-2512L, GS-3



Enerpac gauges provide a safe and inexpensive monitoring system for your hydraulic circuit

Highly reliable and accurate pressure sensing

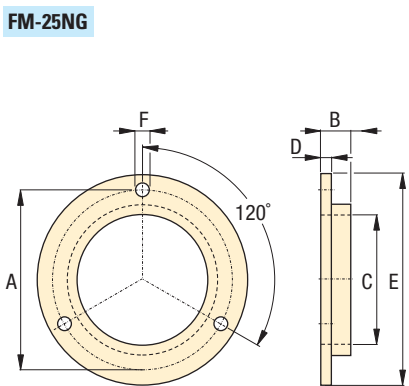
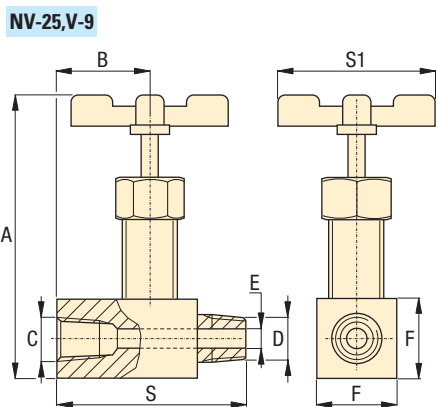
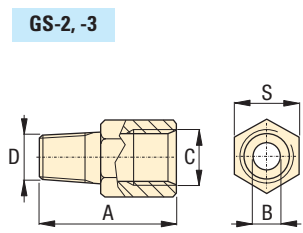
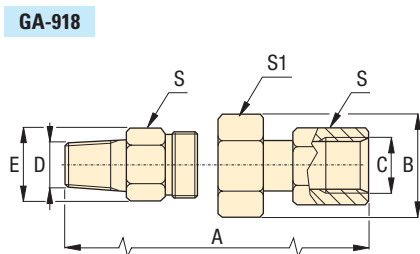
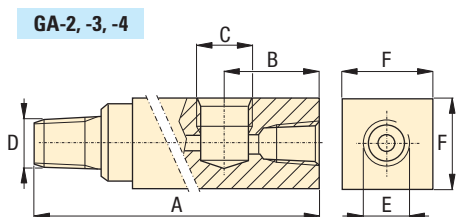
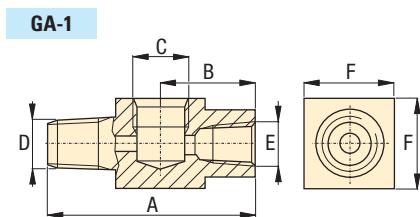
- ± 1.5% accuracy of full scale
- All pressure sensing parts sealed and dampened by glycerine for long life
- Includes safety blow-out disk and pressure equalizing membrane to prevent overpressurization
- Copper alloy, coiled safety Bourdon tube for 1000 psi and higher
- Dual psi and bar scale readings, 2.5 inch gauge face

Gauge accessories for easy installation

- Needle valves providing positive shut-off
- 303 stainless steel stem (NV-25)
- Snubber valves to control pressure surges between gauge and hydraulic system
- Gauge adaptors – male end screws into pump or cylinder, female port accepts hose or coupler, the third port is for gauge connection
- FM-25NG for panel mounting of 2.50 inch diameter gauges

Product selection

Pressure gauge mounting style	Pressure range		Model number	PSI graduation		Bar graduation		A in	B in	D in	G
	psi	bar		Major psi	Minor psi	Major bar	Minor bar				
▼ Pressure gauge – Lower mount											
	0-100	0-7	G-2509L	10	2	1	0.01	3.31	1.46	2.50	1/4" NPT
	0-160	0-11	G-2510L	10	2	1	0.02	3.31	1.46	2.50	1/4" NPT
	0-200	0-14	G-2511L	50	5	1	0.02	3.31	1.46	2.50	1/4" NPT
	0-300	0-20	G-2512L	50	5	5	0.05	3.31	1.46	2.50	1/4" NPT
	0-600	0-40	G-2513L	100	10	10	1	3.31	1.46	2.50	1/4" NPT
	0-1000	0-70	G-2514L	100	20	10	1	3.31	1.46	2.50	1/4" NPT
	0-2000	0-140	G-2515L	500	50	10	2	3.31	1.46	2.50	1/4" NPT
	0-3000	0-200	G-2516L	500	50	50	5	3.31	1.46	2.50	1/4" NPT
	0-6000	0-400	G-2517L	1000	100	100	10	3.31	1.46	2.50	1/4" NPT
	0-10,000	0-700	G-2535L	2000	200	100	10	3.31	1.46	2.50	1/4" NPT
	0-1000	0-70	G-2514SL	100	20	10	1	3.66	1.23	2.50	SAE#4
	0-3000	0-200	G-2516SL	500	50	50	5	3.66	1.23	2.50	SAE#4
	0-6000	0-400	G-2517SL	1000	100	100	10	3.66	1.23	2.50	SAE#4
	0-10,000	0-700	G-2535SL	2000	200	100	10	3.66	1.23	2.50	SAE#4
▼ Pressure gauge – Rear mount											
	0-1000	0-70	G-2531R	100	20	10	1	2.48	1.46	2.50	1/4" NPT
	0-6000	0-400	G-2534R	1000	100	100	10	2.48	1.46	2.50	1/4" NPT
	0-10,000	0-700	G-2537R	2000	200	100	10	2.48	1.46	2.50	1/4" NPT
	0-1000	0-70	G-2531SR	100	20	10	1	2.46	1.23	2.50	SAE #4
	0-3000	0-200	G-2533SR	500	50	50	5	2.46	1.23	2.50	SAE #4
	0-6000	0-400	G-2534SR	1000	100	100	10	2.46	1.23	2.50	SAE #4
	0-10,000	0-700	G-2537SR	2000	200	100	10	2.46	1.23	2.50	SAE #4
	0-1000	0-70	1531R	100	20	10	1	1.99	0.98	1.50	1/8" NPT
	0-3000	0-200	1533R	500	100	50	10	1.99	0.98	1.50	1/8" NPT
	0-6000	0-400	1534R	1000	100	100	10	1.99	0.98	1.50	1/8" NPT
	0-10,000	0-700	1537R	2000	200	100	10	1.99	0.98	1.50	1/8" NPT




Pressure: 0-10,000 psi
 Accuracy: 1.5% /full scale
 Gauge face: ø 2.5 inch


- E** Manómetros
- F** Manomètres
- D** Manometer




Options

Hoses and couplers 
 156 ▶

Digital gauges 
 153 ▶

Pressure switches 
 152 ▶

V-10 Auto Damper® valve 
 140 ▶

Important

Do not exceed maximum pressure.

Gauge snubbers or needle valves are recommended for high cycle applications.

Do not keep gauges under permanent pressure. The use of shut-off valves is recommended.

For basic system set-up information, refer to our "Yellow Pages" section.
 161 ▶

Product dimensions in inches []

Gauge port NPT	Max. pressure psi	Model number	Dimensions							
			A	B	C	D	E	F	S	S1
▼ Gauge adaptors										
1/2"	10,000	GA-1	2.81	1.24	1/2"NPT	3/8"NPT	3/8"NPT	1.25	-	-
1/2"	10,000	GA-2	6.10	1.38	1/2"NPT	3/8"NPT	3/8"NPT	1.25	-	-
1/4"	10,000	GA-3	5.25	1.38	1/4"NPT	3/8"NPT	3/8"NPT	1.25	-	-
1/2"	10,000	GA-4	4.38	1.38	1/2"NPT	1/4"NPT	3/8"NPT	1.25	-	-
▼ Swivel gauge adaptor										
1/2"	10,000	GA-918	2.25	1.72	1/2"NPT	1/2"NPT	1.30	-	1.13	1.50
▼ Gauge shut-off valves										
1/4"	10,000	NV-25	3.50	1.06	1/4"NPT	1/4"NPT	2.50	.88	2.13	2.50
1/2"	10,000	V-9	3.63	1.25	1/2"NPT	1/2"NPT	2.50	1.00	2.13	2.50
▼ Gauge snubber valves										
1/4"	5000	GS-2	1.63	.018	1/4"NPT	SAE #4	-	-	.75	-
1/4"	5000	GS-3	1.63	.018	1/4"NPT	G1/4"	-	-	.75	-
▼ Flange mounting for panel mounting of G series gauges										
-	-	FM-25NG	2.95	.17	2.51	.07	3.35	.14	-	-

Manifolds, couplers, hoses, tubing

Shown: HLS, HF, AH, AR, FL, T, A-series



Use genuine Enerpac manifolds, couplers, hoses and tubings to connect your workholding cylinders or fixtures to the hydraulic power source.

A series, Manifolds

For multiple hydraulic line connections at one central location directing oil to or from a pressure source.

AH/AR series, Couplers

Quick disconnect low leakage couplers for easy connection of hydraulic circuits.

HLS series, Hoses

High pressure hydraulic hoses, featuring a heavy-duty protective plastic coating.

T series, Tubing

High pressure steel tubing, available in 5 ft. lengths.

Manifolds

- Easy to connect
- Mounting holes on all models

Couplers

- Spee-D-Coupler® design allows cylinder to be connected and disconnected in seconds
- For more safety: couplers cannot be connected or disconnected while under hydraulic pressure

Hydraulic hoses and tubings

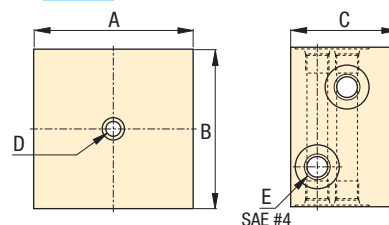
- Heavy-duty coating for abrasion resistance
- Resistant against mineral based hydraulic oil as well as water glycols
- High pressure steel tubing for permanent installations

Important

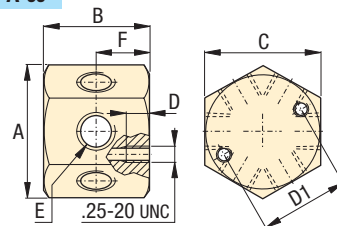
Do not exceed the maximum pressure.

Inspect hoses and tubing frequently and replace as required.

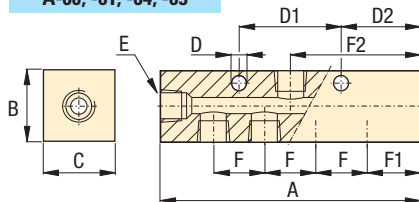
A-63



A-66



A-60, -61, -64, -65



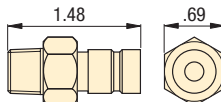
Manifolds dimensions in inches []

Number of ports	Model number	A	B	C	D	D1	D2	E	F	F1	F2	Weight lbs
2 x 4	A-63	3.00	3.00	2.00	.25	-	-	SAE #4	-	-	-	2.0
5	A-60	3.50	1.25	1.25	.28	1.50	1.00	SAE #4	1.50	1.00	1.75	1.0
7	A-61	6.50	1.25	1.25	.28	1.50	1.25	SAE #4	1.00	1.25	3.25	1.4
7	A-64	7.00	1.25	1.25	.25	3.00	1.25	.375-18 NPT	1.50	1.25	3.50	3.3
7	A-65	14.5	1.25	1.25	.25	8.00	1.25	.375-18 NPT	4.00	1.25	7.25	6.1
6	A-66	2.30	1.63	2.00	.52	1.50	-	.375-18 NPT	-	-	-	1.8

Couplers

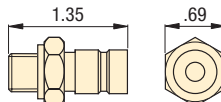
AH-650

Male coupler half
.250-18 NPT



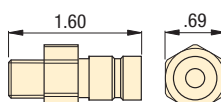
AH-652

Male coupler half
G1/4" BSPP



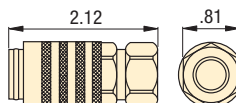
AH-654

Male coupler half
SAE #4 .437-20 UNF



AR-650

Female coupler half
.250-18 NPT



Hoses

Length ft	Model number	Internal diameter in	Maximum pressure psi
▼ 1/4", 37° flare			
1	HLS-512	.19	5000
2	HLS-524	.19	5000
3	HLS-536	.19	5000
4	HLS-548	.19	5000
5	HLS-560	.19	5000
10	HLS-5120	.19	5000
▼ 3/8" NPT			
3	H-9203	.25	10,000
6	H-9206	.25	10,000
10	H-9210	.25	10,000

Tubing

Length ft	Model number	Internal diameter in	External diameter in	Maximum pressure psi
5	T-2560	.152	.25	5000

Options

Fittings

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High-pressure filters

- Keep your hydraulic system clean
- Pleated stainless steel wire mesh screen construction provides large filter area in a compact size
- Rated for full system pressure up to 5000 psi
- Bi-directional design allows filtration of oil in either flow direction
- Two piece body construction for easy replacement of filter elements
- High flow rates are obtainable with a minimum pressure drop
- Threaded port connections on each end simplify installation

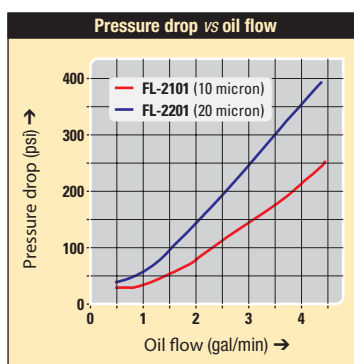
Hydraulic oil

- Ensures effective lubricity
- Protects essential parts

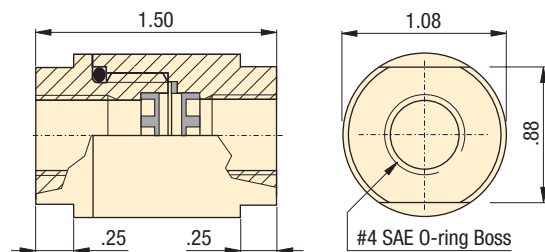
Filtration

20 micron filter provides the longest service life before element replacement

10 micron filter recommended for more sensitive hydraulic components



FL series



High in line pressure filters

Model number	Filtration		Filter element set	lbs
	Nominal	Absolute		
FL-2101	10	25	FL-2101K	.4
FL-2201	20	40	FL-2201K	.4

Hydraulic oil

Contents	Model number	Specifications genuine Enerpac hydraulic oil			
Gal					
.25	HF-100	0 °F	<12,000 S.U.S	Flash, C.O.C.	400°F
1	HF-101	100 °F	150/165 S.U.S	Pour point	-25 °F
5	HF-102	210 °F	42/45 S.U.S	Aniline point	210/220 °F
55	HF-104				

Note: Viscosity index: 100 min

- E** Mangueras, Filtros Acoplamientos, Aceite
- F** Flexibles, Filtres Raccords, Huile
- D** Schläuche, Filter Kupplungen, Öl

High-pressure filters

Compact in line high pressure filters prevent chips and debris that have entered the hydraulic fluid system from damaging hydraulic system components.

Hydraulic oil

Use only genuine Enerpac hydraulic oil to guarantee optimal performance and long life of your hydraulic equipment.

Options

Fittings

158 ▶



Important

Do not exceed the maximum pressure.

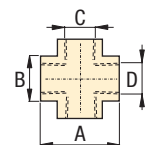
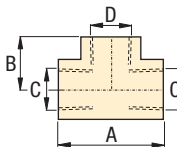
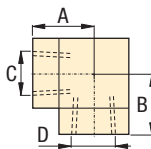
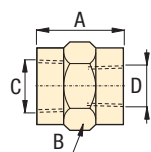
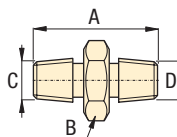
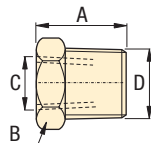
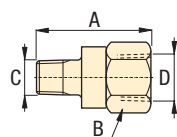
Hydraulic power is distributed by manifolds and transported by hoses and tubing.



Shown: FZ-2023, -2054, -2052



Fitting are used to connect all cylinders, components, power sources, tubes, gauges and hoses in a hydraulic system. Enerpac fittings provide flexible, safe and leak-free connections.



Multiple hydraulic line connections are easily installed with Enerpac fittings and manifolds.



89-119

Proper connection for hydraulic components

- Male and female BSPP, UNF, NPT threaded fittings in common sizes allow easy connection of all components.
- BFZ and FZ-1000 models are 10,000 psi maximum pressure
- FZ-2000 models are 5000 psi maximum pressure

Product selection

From	To	Max. pressure	Model number	Dimensions			
				A	B	C	D
		psi					
▼ Adapters							
Female	Male						
1/4" NPT	1/8" NPT	10,000	FZ-1642	1.18	3/4"	1/8" NPT	1/4" NPT
3/8" NPT	1/4" NPT	10,000	FZ-1055	1.75	15/16"	1/4" NPT	3/8" NPT
1/2" NPT	1/4" NPT	10,000	FZ-1633	1.69	1 1/8"	1/4" NPT	1/2" NPT
1/2" NPT	3/8" NPT	10,000	FZ-1634	1.69	1 1/8"	3/8" NPT	1/2" NPT
1/4" NPT	SAE #8	5000	FZ-2067	1.06	7/8"	3/4"-16	1/4" NPT
3/8" NPT	SAE #8	5000	FZ-2069	1.22	7/8"	3/4"-16	3/8" NPT
▼ Reducers							
Female	Male						
1/4" NPT	3/8" NPT	10,000	FZ-1630	.75	9/16"	1/4" NPT	3/8" NPT
1/4" NPT	1/2" NPT	10,000	FZ-1661	1.09	7/8"	1/4" NPT	1/2" NPT
SAE #6	SAE #8	5000	FZ-2029	1.38	1 1/16"	3/4"-16	9/16"-18
▼ NPT Male Nipples							
1/4" NPT	1/4" NPT	10,000	FZ-1608	1.50	9/16"	1/4" NPT	1/4" NPT
3/8" NPT	3/8" NPT	10,000	FZ-1617	1.50	3/4"	3/8" NPT	3/8" NPT
3/8" NPT	3/8" NPT	10,000	FZ-1619	2.00	3/4"	3/8" NPT	3/8" NPT
3/8" NPT	G1/4"	10,000	BFZ-305	1.42	3/4"	3/8" NPT	G1/4"
▼ NPT Female Connectors							
1/4" NPT	1/4" NPT	10,000	FZ-1605	1.10	3/4"	1/4" NPT	1/4" NPT
3/8" NPT	1/4" NPT	10,000	FZ-1615	1.13	1"	3/8" NPT	1/4" NPT
3/8" NPT	3/8" NPT	10,000	FZ-1614	1.44	15/16"	3/8" NPT	3/8" NPT
1/2" NPT	3/8" NPT	10,000	FZ-1625	1.88	29 mm	1/2" NPT	3/8" NPT
▼ NPT Elbows							
1/4" NPT	1/4" NPT	10,000	FZ-1638	1.42	.94	1/4" NPT	1/4" NPT
3/8" NPT	3/8" NPT	10,000	FZ-1610	1.31	.81	3/8" NPT	3/8" NPT
▼ NPT Tee							
1/4" NPT	1/4" NPT	10,000	FZ-1637	1.77	.94	1/4" NPT	1/4" NPT
3/8" NPT	3/8" NPT	10,000	FZ-1612	1.77	1.00	3/8" NPT	3/8" NPT
▼ NPT Cross							
3/8" NPT	3/8" NPT	10,000	FZ-1613	1.77	1.00	3/8" NPT	3/8" NPT

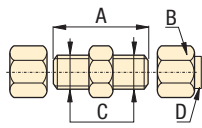
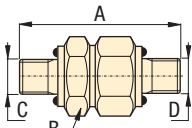
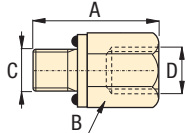


Product selection

From	To	Max. pressure	Model number	Dimensions in inches			
				A	B	C	D

▼ Adapters

Male	Female	Max. pressure	Model number	A	B	C	D
1/8" NPT	SAE #4	5000	FZ-2075	1.06	11/16"	1/8" NPT	7/16"-20
1/4" NPT	SAE #4	5000	FZ-2042	1.31	11/16"	1/4" NPT	7/16"-20
1/4" NPT	G1/4"	10,000	BFZ-16411	1.38	3/4"	1/4" NPT	G1/4"
SAE #4	1/8" NPT	5000	FZ-2008	.97	9/16"	7/16"-20	1/8" NPT
SAE #4	1/4" NPT	5000	FZ-2007	1.14	3/4"	7/16"-20	1/4" NPT
SAE #2	SAE #4	5000	FZ-2022	1.13	11/16"	5/16"-24	7/16"-20
SAE #6	1/4" NPT	5000	FZ-2056	1.16	3/4"	9/16"-18	1/4" NPT
SAE #8	1/4" NPT	5000	FZ-2067	1.13	7/8"	3/4"-16	1/4" NPT
SAE #8	3/8" NPT	5000	FZ-2069	1.28	7/8"	3/4"-16	3/8" NPT
G 1/8"	1/8" NPT	5000	FZ-2055	.95	3/4"	G 1/8"	1/8" NPT
G 1/8"	1/4" NPT	5000	FZ-2060	1.21	3/4"	G 1/8"	1/4" NPT
G 1/8"	#4 SAE	5000	FZ-2066	1.00	11/16"	G 1/8"	7/16"-20
G 1/4"	1/4" NPT	5000	FZ-2023	1.26	7/8"	G 1/4"	1/4" NPT
G 1/4"	#4 SAE	5000	FZ-2065	1.11	3/4"	G 1/4"	7/16"-20



▼ Straight union

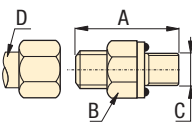
SAE #4	SAE #4	5000	FZ-2005	1.22	9/16"	7/16"-20	7/16"-20
SAE #6	SAE #6	5000	FZ-2028	1.41	11/16"	9/16"-18	9/16"-18
SAE #8	SAE #8	5000	FZ-2040	1.17	7/8"	3/4"-16	3/4"-16

▼ Straight union to tube ends

ø.25	ø.25	5000	FZ-2033*	1.38	9/16"	7/16"-20	7/16"-20
ø.25	ø.25	5000	FZ-2013**	1.19	9/16"	ø.25**	ø.25

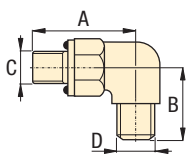
▼ Adaptors to tube end

Male	Tube size	Max. pressure	Model number	A	B	C	D
1/8" NPT	ø.25	5000	R-1054*	1.28	1/2"	1/8" NPT	ø.25
1/4" NPT	ø.25	5000	FZ-2020*	1.41	9/16"	1/4" NPT	ø.25
1/4" NPT	ø.375	5000	FZ-2072*	1.43	9/16"	1/4" NPT	ø.375
1/4" NPT	ø.25	5000	FZ-2012**	1.33	9/16"	1/4" NPT	ø.25
3/8" NPT	ø.25	5000	FZ-2061*	1.44	3/4"	3/8" NPT	ø.25
3/8" NPT	ø.375	5000	FZ-2068*	1.44	3/4"	3/8" NPT	ø.375
SAE #2	ø.25	5000	FZ-2025*	1.24	9/16"	5/16"-24	ø.25
SAE #4	ø.25	5000	FZ-2019*	1.22	9/16"	7/16"-20	ø.25
SAE #4	ø.25	5000	FZ-2001**	1.13	9/16"	7/16"-20	ø.25
SAE #6	ø.25	5000	FZ-2059*	1.30	11/16"	9/16"-18	ø.25
SAE #8	ø.25	5000	FZ-2039*	1.37	7/8"	3/4"-16	ø.25
SAE #8	ø.375	5000	FZ-2070*	1.38	7/8"	3/4"-16	ø.375
G1/8"	ø.25	5000	FZ-2053*	1.18	16 mm	G1/8"	ø.25
G1/4"	ø.25	5000	FZ-2054*	1.26	19 mm	G1/4"	ø.25
G1/4"	ø.375	5000	FZ-2064*	1.42	22 mm	G1/4"	ø.375



▼ Elbow to tube end

Male	Tube size	Max. pressure	Model number	A	B	C	D
11/8" NPT	ø.25	5000	FZ-2074*	.78	0.89	1/8" NPT	ø.25
1/4" NPT	ø.25	5000	FZ-2073*	1.09	1.05	1/4" NPT	ø.25
1/4" NPT	ø.375	5000	FZ-2072*	1.09	1.06	1/4" NPT	ø.375
1/4" NPT	ø.25	5000	FZ-2076**	1.09	1.03	1/4" NPT	ø.25
SAE #2	ø.25	5000	FZ-2024*	.92	0.89	5/16"-24	ø.25
SAE #4	ø.25	5000	FZ-2035*	1.03	0.89	7/16"-20	ø.25
SAE #4	ø.25	5000	FZ-2002**	1.03	0.89	7/16"-20	ø.25
SAE #8	ø.375	5000	FZ-2071*	1.36	1.25	3/4"-16	ø.375
G1/8"	ø.25	5000	FZ-2051*	.89	1.03	G1/8"	ø.25
G1/4"	ø.25	5000	FZ-2052*	1.25	0.89	G1/4"	ø.25
ø.25**	ø.25	5000	FZ-2014**	.89	.89	ø.25**	ø.25



*Flared
**Flareless

Pressure: 0-10,000 psi

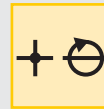
Threads: NPT, UNF, BSPP

For tubing: .25 inch / 8mm

E Acoplamientos

F Raccords

D Verschraubungen



Options

Gauges

154 ▶



Manifolds, couplers, hoses, tubing

156 ▶



Important

Do not exceed the maximum pressure.

Use fittings and tubing in high cycle applications and areas having excessive heat or weld splatter.

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

High pressure hydraulic fittings allow connection of many components with minimum effort.



System components

Yellow pages

Swing cylinders
Work supports

Linear cylinders

Power sources

Valves

System components

Pressure: 0-5000 psi

Threads: NPT, UNF, BSPP

For tubing: .25 inch / 8mm

- E Acoplamiento
- F Raccords
- D Verschraubungen



Options

Manifolds, couplers, hoses, tubing

156 ▶

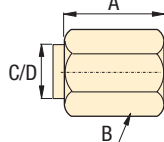
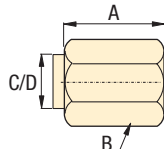
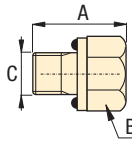
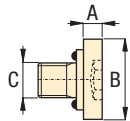
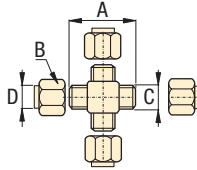
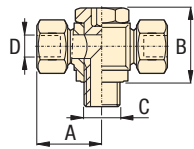
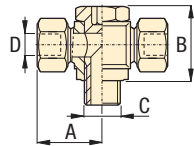
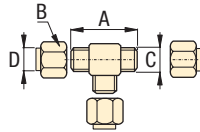
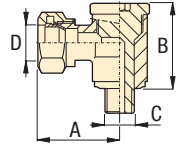


Important

Do not exceed maximum pressure.

Use fittings and tubing in high cycle applications and areas having excessive heat or weld splatter.

High pressure fittings enable the design of hydraulic systems to meet a variety of applications.



Product selection

From	To	Max. pressure	Model number	Dimensions in inches			
				A	B	C	D
		psi					
▼ Swivel banjo BSPP to tube							
Male	Tube size						
G1/4"	ø 8mm	10,000	BFZ-307	1.10	1.18	G1/4"	ø 8mm
▼ Union tee							
ø.25	ø.25	5000	FZ-2021*	1.78	0.89	7/16"-20	ø.25
ø.25	ø.25	5000	FZ-2015**	1.78	0.89	7/16"-20	ø.25
▼ Branch tee							
Male	Tube size						
SAE #4	ø.25	5000	FZ-2036*	1.78	1.03	7/16"-20	ø.25
SAE #4	ø.25	5000	FZ-2004**	1.78	1.03	7/16"-20	ø.25
▼ Swivel T-banjo BSPP to tube							
Male	Tube size						
G 1/4"	ø 8mm	10,000	BFZ-309	1.10	1.18	G 1/4"	ø 8mm
▼ Cross							
ø.25	ø.25	5000	FZ-2034*	1.78	9/16"	7/16"-20	ø.25
ø.25	ø.25	5000	FZ-2016**	1.78	9/16"	ø.25	ø.25
▼ SAE Plug							
SAE #4		5000	FZ-2006	.10	.56	7/16"-20	
SAE #6		5000	FZ-2003	.10	.69	9/16"-18	
▼ SAE Hex Plug							
SAE #8		5000	FZ-2041	.73	7/8"	3/4"-16	
▼ Nut and Sleeve for Tubing							
ø.25		5000	FZ-2037*	.61	9/16"	37°	ø.25
▼ Cap for Tubing							
ø.25		5000	FZ-2038*	.67	9/16"	37°	ø.25
ø.25		5000	FZ-2017**	.73	9/16"	ø.25	ø.25
ø.375		5000	FZ-2011*	.81	11/16"	37°	ø.375

*Flared

**Flareless