Actuated Heavy Duty Valves

Series II - 14, 92, 376, 20, 562

Features

- Original Shear-Seal[®] technology
- ► Air or hydraulic integrated actuator
- ▶ 2- and 3-position
- Superior shifting performance
- ► High velocity flow
- Compact design
- Corrosion resistant materials
- Position indication

Applications

- Land-based & offshore oil drilling controls
 BOP control units
- Steel mills
- Shipboard hydraulic control systems
- Industrial hydraulic power units
- Refineries and chemical processing plants

General Specifications*

- Main Valve

Working Pressure:	Hydraulic up to 3,000 or 6,000 psi (206 bar or 413 bar) Air up to 4,000 psi (276 bar)
Back Pressure:	Must not exceed 250 psi (17.2) bar at return port for satisfactory operation
Proof Pressure:	1-1/2 times working pressure except at return port
Burst Pressure:	2-1/2 times working pressure except at return port (3,000 psi [206 bar])
Pressure Drop (all Valves):	See supplemental guide for detailed information
Porting:	1/4", 3/8", 1/2", 3/4", 1", & 1-1/2" NPT Std. (SAE J1926 Opt.)
Media Temperature Range:	-40° to +250°F (-40° to +121°C)
Handle Detent:	All valves have 3-position detents for manual shift to Center position
Panel Mounting:	Standard for 1/4"- 1/2" valves Refer to sales drawings for 1" & 1-1/2" valves
Wetted Materials: Body: Shaft: Rotor & Seals: Standard O-Rings: Back-up Rings:	Al-Ni bronze Stainless steel 400 series stainless steel Buna N Teflon®
External: Housing: Hardware: Handle & Detent Disc:	Al-Ni Bronze Stainless Steel Stainless Steel

Patent# US D521.598 S

Patent# US D521.599 S



- Pilot Actuator

Working Pressure:	
Air:	80 psi (5.2 bar) minimum
Hydraulic:	250 psi (17.2 bar) maximum 500 psi (34 bar) minimum
	1,500 psi (103 bar) maximum
Porting:	1/4"- 18 NPT
Media Temperature Range:	-40° to +250°F (-40° to +121°C
Speed of Operation:	Greater than or equal to 1/2 second to avoid damage.
Materials: Cylinder:	Air -Amalga (Std.) -Stainless steel (Opt.) Hydraulic - Stainless steel (Std.)
End Plate:	Stainless steel 1/4", 3/8", 1/2" Al-Ni Bronze 3/4" 1" & 1-1/2"
Hardware:	Stainless steel

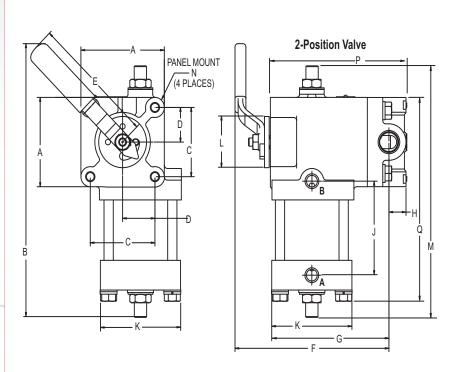
^{*} See product configurator for additional options.

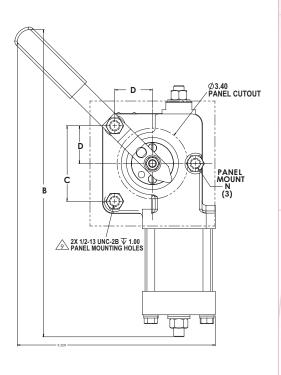




Technical Drawings

2-Position Valve





1/4", 3/8", 1/2"

Refer to Sales Drawings for more detailed information

3/4", 1", 1 1/2"

2-POSITION FLOW PATTERN SELECTOR (VIEWED FROM SHAFT END)



HANDLE ORENTATION (AS SHOWN CW) (ACTUATOR PORT 'B' PRESSURIZED)

HANDLE ORENTATION (AS SHOWN CCW) (ACTUATOR PORT 'A' PRESSURIZED)



CLOSED CENTER MANIPULATOR FLOW PATTERN (VIEWED FROM SHAFT END)



HANDLE ORENTATION (AS SHOWN CW) (ACTUATOR PORT 'B' PRESSURIZED)



HANDLE CENTERED (MANUALLY OVERRIDE ONLY)



HANDLE ORENTATION (AS SHOWN CW) (ACTUATOR PORT 'A' PRESSURIZED)



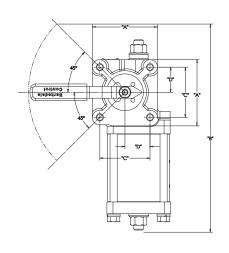
Porting	Α	В	С	D	F	F	G	Н	J	К	1	М	N	Р	O	R	S	Т	U
1/4"	2.75	10.38	2.00	1.00	5.00	5.72	4.25	0.50	3.34	3.25	1.94	9.43	3/8-18 UNC	4.88	7.44	NA	NA	NA.	NA
NPT	(69.9)	(254.0)	(50.8)	(25.4)	(127.0)	(146.1)	(108)	(12.7)	(85)	(82.6)	(49.2)	(231.7)		(124.0)	(189.0)				
3/8" & 1/2"	3.406	10.937	2.625	1.312	5.00	6.25	4.750	0.688	3.531	3.25	1.94	9.531	3/8-18 UNC	5.50	7.85	NA	NA	NA	NA
NPT	(86.5)	(277.8)	(66.7)	(33.3)	(127.0)	(158.8)	(120.65)	(17.46)	(89.7)	(82.6)	(49.2)	(242.1)		(139.7)	(199.3)				
3/4" & 1" 2 pos	4.781	14.375	3.625	1.812	9.00	8.75	6.562	1.00	4.25	3.50	3.00	12.00	1/2-13 UNC	7.562	10.125	NA	NA	NA	NA
NPT	(121.4)	(365.1)	(92)	(46)	(228.6)	(222.3)	(166.6)	(25.4)	(108)	(88.9)	(76.2)	(482.0)		(192.0)	(257.0)				
1-1/2" 2 pos	6.75	16.00	5.312	2.656	9.00	10.50	8.139	1.50	4.00	4.75	3.00	12.00	1/2-13 UNC	8.31	NA	NA	NA	NA	NA
NPT	(171.5)	(406.4)	(134.9)	(67.5)	(228.6)	(266.7)	(209)	(38.1)	(101.6)	;(120.7)	(76.2)	(482.0)		(211.1)					

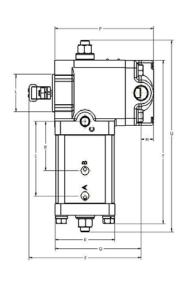
Actuated Heavy Duty Valves

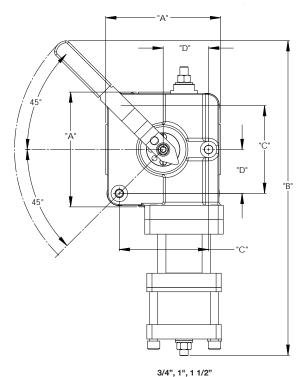
Series II - 14, 92, 376, 20, 562

Technical Drawings

3-Position Valve







1/4", 3/8", 1/2"

Refer to Sales Drawings for more detailed information

3-POSITION FLOW PATTERN SELECTOR (VIEWED FROM SHAFT END)



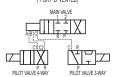
HANDLE ORENTATION (AS SHOWN CW)





HANDLE ORENTATION (AS SHOWN CCW) (ACTUATOR PORT B' & C'PRESSURIZED) (ACTUATOR PORT 'A' & C' PRESSURIZED) (ACTUATOR PORT 'A' PRESSURIZED)

(PORTS 'A' VENTED) (PORT B' VENTED) (PORT B' VENTED)



CLOSED CENTER MANIPULATOR FLOW PATTERN (VIEWED FROM SHAFT END)







HANDLE ORENTATION (AS SHOWN CW) (ACTUATOR PORT 'B' PRESSURIZED)

HANDLE CENTERED (MANUALLY OVERRIDE ONLY)

HANDLE ORENTATION (AS SHOWN CW) (ACTUATOR PORT 'A' PRESSURIZED)



Porting	Α	В	С	D	E	F	G	Н	J	K	L	M	N	Р	Q	R	S	Т	U
1/4"	2.75	10.38	2.00	1.00	5.00	5.72	4.25	0.50	3.34	3.25	1.94	9.43	3/8-18 UNC	4.88	7.44	2.44	3.75	6.44	10.468
NPT	(69.9)	(254.0)	(50.8)	(25.4)	(127.0)	(146.1)	(108)	(12.7)	(85)	(82.6)	(49.2)	(231.7)		(124.0)	(189.0)	(62)	(95.3)	(214.4)	(265.9)
3/8" & 1/2"	3.406	10.937	2.625	1.312	5.00	6.25	4.75	0.688	3.531	3.25	1.94	9.531	3/8-18 UNC	5.50	7.85	2.56	3.88	8.688	10.25
NPT	(86.5)	(277.8)	(66.7)	(33.3)	(127.0)	(158.8)	(120.65)	(17.46)	(89.7)	(82.6)	(49.2)	(242.1)		(139.7)	(199.3)	(65.1)	(98.4)	(220.7)	(260.4)
3/4" & 1" 3 pos	4.813	17.313	3.625	1.812	9.00	8.750	6.562	1.00	4.250	4.50	3.00	12.00	1/2-13 UNC	7.563	NA	3.938	7.063	NA	15.188
NPT	(122.3)	(439.8)	(92)	(46)	(228.6)	(222.3)	(166.6)	(25.4)	(108)	(114.3)	(76.2)	(482.0)		(192.1)		(100)	(179.4)		(385.8)
1-1/2" 3-Pos	7.00	18.75	5.25	2.656	9.00	10.50	8.138	1.50	4.00	4.50	3.00	17.50	1/2-13 UNC	8.31	NA	4.188	7.313	NA	17.50
NPT	(177.8)	(476.3)	(133.4)	(67.5)	(228.6)	(266.7)	(209)	(38.1)	(101.6)	(114.3)	(76.2)	(444.5)		(211.1)		(106.4)	(185.7)		(444.5)



Flow Capacity

			Capacity (App	Approx. Shipping	Approx. Shipping			
	Main Valve	20 ft/sec.	40 ft/sec.	60 ft/sec.	Min. Flow	Cv	Weight	Weight
	Port Size	gpm (l/min.)	gpm (l/min.)	gpm (l/min.)	Passage Dia.	Factor	2 Pos.	3 Pos.
A14/A92 &	1/4"	3 (11)	6 (23)	9 (34)	1/4"	0.95	30	32
A376	3/8" & 1/2"	9 (34)	19 (72)	28 (106)	7/16"	3.20	35	37
Series	3/4" & 1"	25 (95)	50 (189)	75 (284)	23/32"	9.20	50	52
Valve	1-1/2"	57 (217)	114 (433)	171 (650)	1-3/32"	21.00	129	134
A20/A562	1/4"	3 (11)	6 (23)	9 (34)	1/4"	0.95	30	32
Series	1/2"	5 (19)	10 (36)	15 (57)	5/16"	1.60	35	37
Valve	1"	9 (34)	19 (72)	28 (106)	7/16"	3.20	50	52

Series II 14 3,000 psi (206 bar), 4-way selector or diverter 92 3,000 psi (206 bar), 4-way closed center manipulator 18 3,000 psi (206 bar), 4-way sub-plate mount selector/diverter or closed center manipulator 20 6,000 psi (206 bar), 4-way sub-plate mount selector/diverter or closed center manipulator 20 6,000 psi (412 bar), 4-way selector or diverter or hydraulic oil, 2,000 psi air (14, 92 & 376 Series) 6 6,000 psi (412 bar), 4-way selector or diverter or hydraulic oil, 2,000 psi air (20 & 562 series) 9 Diverter annipulator 1 1/4" NPT (SAE Option) 2 3/8" NPT (14 and 92 series only) (SAE Option) 1 1/2" NPT (SAE Option) 5 1" NPT (SAE Option) 7 1 1/2" NPT (14 and 92 series only) (SAE Option) 1 1/2" NPT (SAE Option) C Closed center O Open center (tandem center) Closed center manipulator C Standard and 21 and 650 caries				2	С	W	'	1 :	,		14	Α	Example:	ator	nfigur	ct Cor	rodı	
H Hydraulic cylinder 14 3,000 psi (206 bar), 4-way selector or diverter 3,000 psi (206 bar), 4-way closed center manipulator 3,000 psi (206 bar), 4-way selector, diverter or manipulator 3,000 psi (206 bar), 4-way sub-plate mount selector/diverter or closed center manipulator 6,000 psi (412 bar), 4-way selector or diverter 6 6,000 psi (412 bar), 4-way selector or diverter 6 6,000 psi (412 bar), 4-way selector or diverter 6 6,000 psi (412 bar), 4-way closed center manipulator 6 6,000 psi (412 bar), 4-way closed center manipulator 6 6,000 psi (412 bar), 4-way closed center manipulator 6 6,000 psi (412 bar), 4-way closed center manipulator 6 6,000 psi (412 bar), 4-way closed center manipulator 6 6,000 psi (412 bar), 4-way closed center manipulator 6 6,000 psi (412 bar), 4-way closed center manipulator 6 6,000 psi (412 bar), 4-way closed center 7 7 7 7 7 7 7 7 7																r Media	ctuato	1
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Pressure Range 3,000 psi (206 bar), 4-way selector or diverter 3,000 psi (206 bar), 4-way closed center manipulator 18 3,000 psi (206 bar), 4-way sub-plate mount selector/diverter or closed center manipulator 376 3,000 psi (206 bar), 4-way sub-plate mount selector/diverter or closed center manipulator 20 6,000 psi (412 bar), 4-way selector or diverter 562 6,000 psi (412 bar), 4-way closed center manipulator 1 1/4" NPT (SAE Option) 2 3/8" NPT (14 and 92 series only) (SAE Option) 1 1/2" NPT (SAE Option) 3 1/2" NPT (SAE Option) 5 1" NPT (SAE Option) 1 1/2" NPT (SAE Option) C Closed center C Closed center C Closed center C Closed center O Open center (tandem center) C Closed center	al O-ring Materia	ptiona													linder	ydraulic cyl	н н	
14 3,000 psi (206 bar), 4-way selector or diverter 3,000 psi (206 bar), 4-way closed center manipulator 18 3,000 psi (206 bar), straight porting, 4-way selector, diverter or manipulator 376 3,000 psi (206 bar), 4-way sub-plate mount selector/diverter or closed center manipulator 20 6,000 psi (412 bar), 4-way selector or diverter 6,000 psi (412 bar), 4-way selector or diverter 662 6,000 psi (412 bar), 4-way selector or diverter 662 6,000 psi (412 bar), 4-way closed center manipulator Port Size 1 1/4" NPT (SAE Option) 2 3/8" NPT (14 and 92 series only) (SAE Option) 3 1/2" NPT (14 and 92 series only) (SAE Option) 5 1" NPT (SAE Option) 7 1 1/2" NPT (14 and 92 series only) (SAE Option) Closed center manipulator Position Position - B Position 3 x 2 cor - C Allows 4 x 2 cor - C	See supplemental gui	-Zxx															ries I	•
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3,000 psi (206 bar), straight porting, 4-way selector, diverter or manipulator 3,000 psi (206 bar), 4-way sub-plate mount selector/diverter or closed center manipulator 6,000 psi (412 bar), 4-way selector or diverter 6,000 psi (412 bar), 4-way selector or diverter 6,000 psi (412 bar), 4-way closed center manipulator 7, 11/2" NPT (SAE Option) 1, 2,000 psi lubricated water or hydraulic oil, 2,000 psi air (20 & 562 series) 8,000 psi lubricated water or hydraulic oil, 2,000 psi air (20 & 562 series) 9,000 psi lubricated water or hydraulic oil, 2,000 psi air (20 & 562 series) 9,000 psi (412 bar), 4-way closed center manipulator 8,000 psi lubricated water or hydraulic oil, 2,000 psi air (20 & 562 series) 9,000 psi (412 bar), 4-way closed center or hydraulic oil, 2,000 psi air (20 & 562 series) 9,000 psi (412 bar), 4-way closed center or hydraulic oil, 2,000 psi air (20 & 562 series) 9,000 psi lubricated water or hydraulic oil, 2,000 psi air (20 & 562 series) 9,000 psi (412 bar), 4-way closed center or hydraulic oil, 2,000 psi air (20 & 562 series) 9,000 psi (412 bar), 4-way closed center or hydraulic oil, 2,000 psi air (20 & 562 series) 9,000 psi (412 bar), 4-way closed center or hydraulic oil, 2,000 psi air (20 & 562 series) 9,000 psi (412 bar), 4-way closed center or hydraulic oil, 2,000 psi air (20 & 562 series) 9,000 psi (412 bar), 4-way closed center or hydraulic oil, 2,000 psi air (20 & 562 series) 9,000 psi (412 bar), 4-way closed center or hydraulic oil, 2,000 psi air (20 & 562 series) 9,000 psi (412 bar), 4-way closed center or hydraulic oil, 4 Air or other gasses 9,000 psi (412 bar), 4-way closed center or hydraulic oil, 4 Air or other gasses 9,000 psi (412 bar), 4-way closed center or hydraulic oil, 4 Air or other gasses 9,000 psi (412 bar), 4-way closed center or hydraulic oil, 4 Air or other gasses 9,000 psi (412 bar), 4-way closed center 9,000 psi (412 bar), 4-way closed center 1, 4,500 psi (412 bar), 4-way closed center 1, 4,500 psi (412 bar), 4-way closed center 1, 4,500 ps			- B						Rang	sure	Pres		center	way ciose				
3,000 psi (206 bar), 4-way sub-plate mount selector/diverter or closed center manipulator 6,000 psi (412 bar), 4-way selector or diverter -MS SAE J19: Stainles: (Air) Position 1 1/4" NPT (SAE Option) 3 3/8" NPT (14 and 92 series only) (SAE Option) 1 1/2" NPT (SAE Option) 7 1 1/2" NPT (SAE Option) C Closed center O Open center (tandem center) Closed center manipulator Standard on 92 and 562 paries	onverter 3-position valve to uated with 2 inlets	Allows	- C					, 2,000	Iraulic	or hy	3		g, 4-way					
6 or hydraulic oil, 2,000 psi air (20 & 562 series) 6 or hydraulic oil, 2,000 psi air (20 & 562 series) 7 or hydraulic oil, 2,000 psi air (20 & 562 series) 8 or hydraulic oil, 2,000 psi air (20 & 562 series) 9 or hydraulic oil, 2,000 psi air (20 & 562 series) 9 or hydraulic oil, 2,000 psi air (20 & 562 series) 9 or hydraulic oil, 2,000 psi air (20 & 562 series) 9 or hydraulic oil, 2,000 psi air (20 & 562 series) 9 or hydraulic oil, 2,000 psi air (20 & 562 series) 9 or hydraulic oil, 2,000 psi air (20 & 562 series) 9 or hydraulic oil, 2,000 psi air (20 & 562 series) 9 or hydraulic oil, 2,000 psi air (20 & 562 series) 9 or hydraulic oil, 2,000 psi air (20 & 562 series) 9 or hydraulic oil, 2,000 psi air (20 & 562 series) 9 or hydraulic oil, 2,000 psi air (20 & 562 series) 9 or hydraulic oil, 2,000 psi air (20 & 562 series) 9 or hydraulic oil, 2,000 psi air (20 & 562 series) 9 or hydraulic oil, 2,000 psi air (20 & 562 series) 9 or hydraulic oil, 2,000 psi air (20 & 562 series)	osi working pressure	4,500	-H				hau			` 1								
562 6,000 psi (412 bar), 4-way closed center manipulator Working Media 1 1/4" NPT (SAE Option) 2 3/8" NPT (14 and 92 series only) (SAE Option) 3 1/2" NPT (SAE Option) 4 3/4" NPT (SAE Option) 5 1" NPT (SAE Option) 7 1 1/2" NPT (14 and 92 series only) (SAE Option) C Closed center O Open center (tandem center) C Closed center manipulator Standard on 92 and 562 perios	osi working pressure	5,000 p	-M					, 2,000	Iraulic	or hy	6							
working Media 1	er flow pattern	Diverte	-D					s)	562 se	(20 8			or or diverter	way selec	12 bar), 4	,000 psi (4 i	20	
Working Media 1 1/4" NPT (SAE Option) 2 3/8" NPT (14 and 92 series only) (SAE Option) 3 1/2" NPT (SAE Option) 4 3/4" NPT (SAE Option) 5 1" NPT (SAE Option) 7 1 1/2" NPT (14 and 92 series only) (SAE Option) Position 2 2-position 3 3-position Flow Pattern C Closed center O Open center (tandem center) Closed center manipulator Standard on 92 and 562 paging.	1926 Porting	SAE J ⁴	-MS		_								center	way close				
W Lubricated water or hydraulic oil A Air or other gasses Position Position Air or other gasses V Lubricated water or hydraulic oil A Air or other gasses Position 2 2-position 3 3-position 7 11/2" NPT (SAE Option) C Closed center O Open center (tandem center) Closed center manipulator Standard on 92 and 562 gards	ess Steel Cylinder		-SS						ledia	ing l	Work					•		
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3 1/2" NPT (SAE Option) 4 3/4" NPT (14 and 92 series only) (SAE Option) 5 1" NPT (SAE Option) 7 1 1/2" NPT (14 and 92 series only) (SAE Option) C Closed center O Open center (tandem center) Closed center manipulator Standard on 92 and 562 paging								sses	other (Air o	Α					,		
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5 1" NPT (SAE Option) 7 1 1/2" NPT (14 and 92 series only) (SAE Option) C Closed center O Open center (tandem center) Closed center manipulator Standard on 92 and 562 paging			1			_			ern –	Patt	Flow		SAE Option)	ries only)	4 and 92 s	'4" NPT (14	4 3	
7 1 1/2" NPT (14 and 92 series only) (SAE Option) Open center (tandem center) Closed center manipulator Standard on 92 and 562 series	al Guide for the appropria														Option)	' NPT (SAE	5	
Closed center manipulator Standard on 92 and 562 spring							nter)	ndem c					(SAE Option)	series only	14 and 92	1/2" NPT (7	
Standard on 02 and 562 sories			-															
Optional on 376 Series in closed center only					er only		series n close	and 56 Series	ard on al on 3	Stand	Q					ation —	ort Lo)
R Regular side porting Not available on 14 and 20 Series						es	∠u Ser	1 14 and	allable	ivot a					porting	egular side	R F	

Manifold porting (376 series only) Panel mount with side porting