



HYDRAULIC VALVES

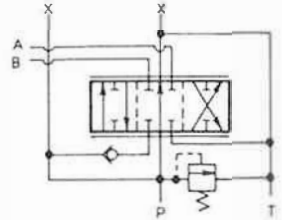
DIRECTIONAL CONTROL AD SERIES Specification Sheet



AD 1



AD 2



The Cross series AD directional control valves provide good metering characteristics and long dependable service life. Optimum versatility is provided due to the many standard and optional features. Balanced spools are select-fit for minimum leakage and load holding checks prevent load drop when shifting. Parallel flow path permits spools to be operated independently or simultaneously.

GENERAL SPECIFICATIONS

Number of spools	One, two
Maximum working pressure	3000 psi (206 bar)
Maximum shock and surge pressure	4000 psi (276 bar)
Maximum flow capacity	15 gpm (57 l/m)
Maximum spool leakage (at 1000 psi w/100 SUS oil at 120° F)	16 cc/min.
Mounting, any position	Two mounting holes for 1/4" dia. bolts
Weight	1 spool: 8 lbs. (3.6 Kg.) 2 spool: 10 lbs. (4.5 Kg)

MATERIAL SPECIFICATIONS

Body	High tensile strength cast iron
Spools	Ground, plated and polished steel alloy
Seals	Buna N

STANDARD FEATURES

- Integral load holding check valves (prevent reverse flow through valve when shifting)
- Integral differential poppet type relief valve, adjustable (set at 2000 psi, 10 gpm)
- Balanced, select-fit spools (provide minimum leakage, smooth operation)
- External spool seals (permit easy replacement, reduced maintenance cost)
- SAE#10 (5/8") 7/8 - 14 inlet and outlet ports: SAE#8 (1/2") 3/4 - 16 work ports
- Complete handle assembly

OPTIONAL FEATURES AVAILABLE

- Open or closed center positions, 3-way or 4-way operation, 3-position or 4-position (float position), full open center (motoring spool) and other spool options
- Power beyond (permits use of neutral flow at system pressure); also permits field conversion from closed center to open center (tandem) operation

NOTE: Refer to CROSS Valve Technical/Service Sheet for recommendations and limitations.



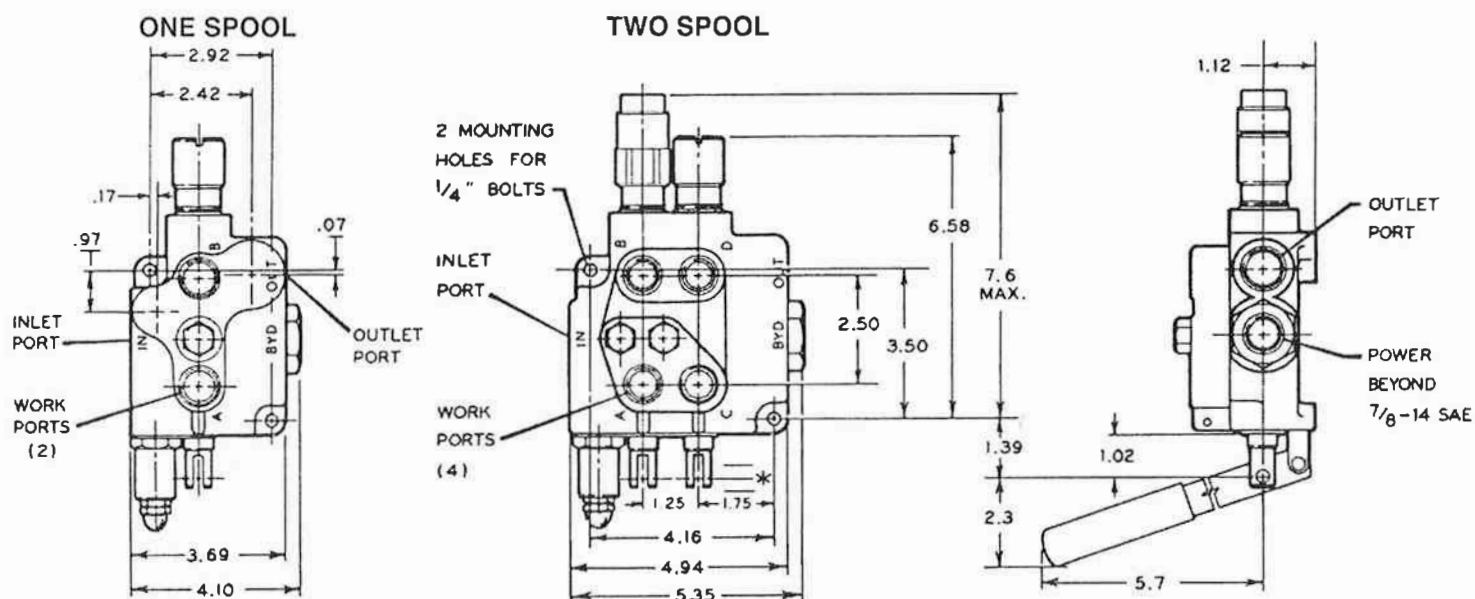
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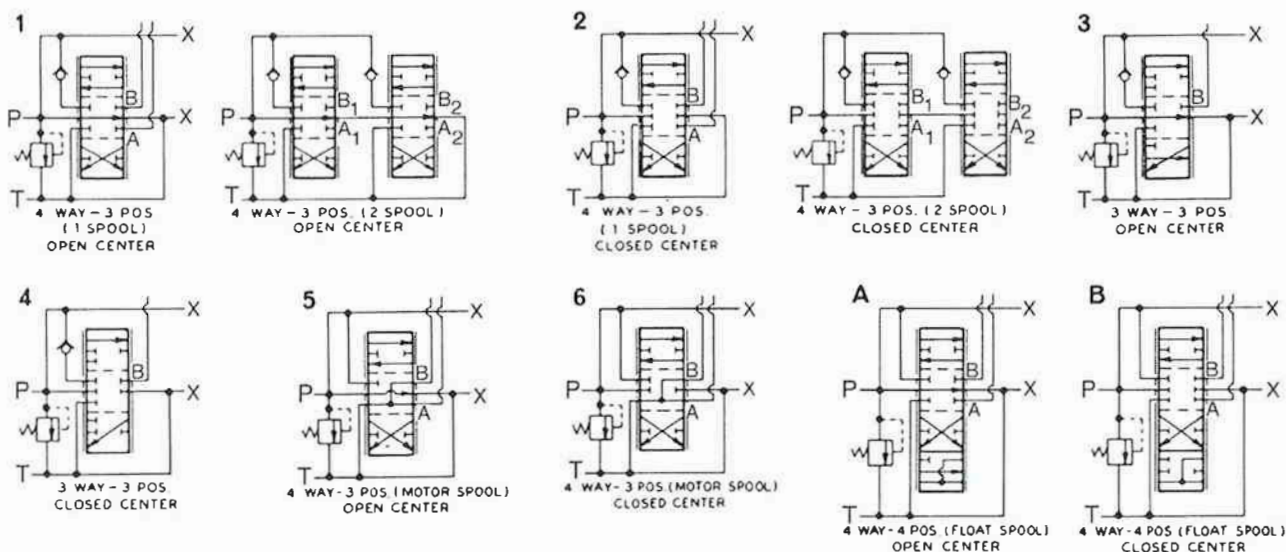
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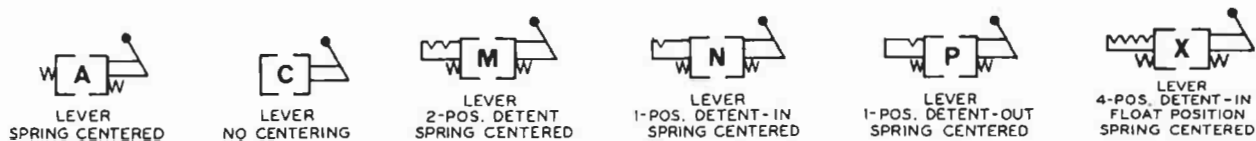
DIMENSIONAL DATA in inches



SPOOL OPTIONS



ACTUATOR OPTIONS





HYDRAULIC VALVES

DIRECTIONAL CONTROL AD SERIES Specification Sheet

TYPICAL PERFORMANCE DATA

PRESSURE DROP (with 100 SUS oil at 120° F, SAE #10 in and out, #8 work ports)

AD 1

FLOW GPM	P-A	P-B	PSI A-T	B-T	P-T
3	9	5	1	1	2
6	21	20	3	3	5
9	42	40	10	11	11
12	65	63	21	20	20
15	90	87	34	32	32

FLOW GPM	FLOAT	PSI P-A-B-T	P-A-B-T
3	12	10	11
6	23	27	29
9	43	53	60
12	65	88	100
15	90	125	140

TO CONVERT	INTO	MULTIPLY BY
GALLONS	LITERS	3.7853
PSI	BAR	0.0690

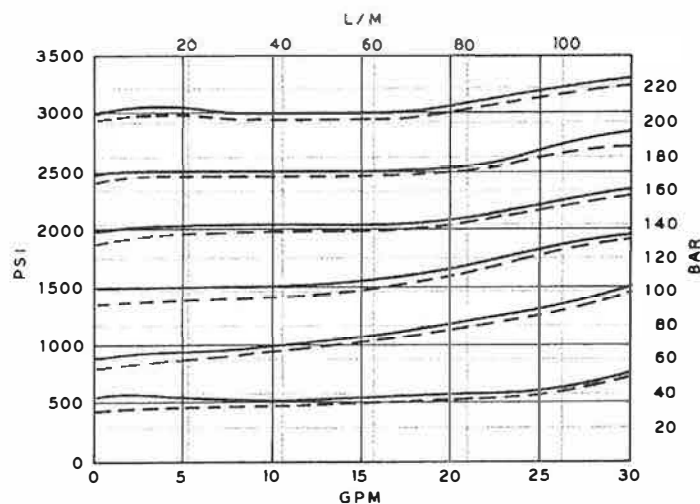
AD 2

FLOW GPM	P-T	P-A	PSI P-B	P-C	P-D
3	4	20	18	20	20
6	12	38	34	40	36
9	28	62	54	72	58
12	46	96	82	110	88
15	71	138	114	156	122

FLOW GPM	A-T	B-T	PSI C-T	D-T	FLOAT A-B	B-A
3	4	4	4	4	10	10
6	12	12	10	10	32	30
9	24	26	22	20	70	64
12	40	44	36	34	118	108
15	60	66	54	50	180	164

FLOW GPM	PSI PABT	PBAT	PCDT	PDCT
3	24	24	24	24
6	52	52	54	48
9	94	88	98	84
12	146	134	158	130
15	212	192	228	286

RELIEF VALVE CHARACTERISTICS



100 SSU oil at 120° F

Opening
Closing



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ORDERING INFORMATION

MODEL NO.	NUMBER-OF SPOOLS	SPOOL TYPE	ACTUATOR OPTIONS	RELIEF VALVE	POWER BEYOND	OUTLET PORT LOCATION	PORT SIZE & TYPE	HANDLE
AD	1	1	A	A		0	0	0
	Single	4-way, 3-position, open center	3 position Spring centered	1000 psi		End Outlet	SAE #10, 7/8-14 In & Out	Complete handle assembly
	2	2	B	B		P*	SAE #8, 3/4-16 Work Ports	1
	Double	4-way, 3-position, closed center	3 position manual detent - no spr. ctrg.	1500 psi		Top Inlet & Outlet		Less Complete handle assembly
		3	C	C	3	H*	1	2
		3-way, 3-position, open center	manual - no detent - no centering spring	2000 psi	Conversion plug	Top Inlet	1/2" NPTF In & Out, 3/8" NPTF Work Ports	Less Handle only (Link, pins & bracket Included)
		4	M	D	4	R	2	
		3-way, 3-position, closed center	2 -position detent, "in&out" spring centering	None	7/8 -14 SAE #10	Rear 3/8" NPTF	SAE #6, 9-16 In & Out & Work Ports	
		5	N	E	5	T	3	
		4-way, 3-position, open center w/motoring spool	1 -position detent, "in" only, spring centering	Other	Closed center plug	Top Outlet	Other	
	6	4-way, 3-position, closed center w/motoring spool	1 -position detent, "out" only, spring centering	F Adjustable 500-1500 psi (set at 1000)				
	A	4-way, 4-position, open center, detent float position	X 4-pos. spring centered to neutral. Detent in float.	G Adjustable 1500-3500 (set at 2000)				
	B	4-way, 4-position, closed center, detent float position	Y 4-pos. spring centered with regen					
	C	4-way, 4-position, open center w/ regen feel position						

EXAMPLE: AD2A1XAG4000 is a manually operated double spool valve, the first spool being 4-way, 4 position, open center, spring centered with detent in float position; the second spool being 4-way, 3-position, open centered spring centered. The adjustable relief valve is set at 2000 psi. Power beyond sleeve with 7/8-14 SAE thread. Inlet and outlet ports SAE #10, 7/8-14. Work ports SAE#8, 3/4-16. Complete handle assembly.

Standard Full Line Valves : (See page 6 in Full Line Catalog for additional information.)

- **SA2** - AD11AG3000 - Single spool 3-position, 4-way
- **SA22** - AD211AAG3000 - Double spool 3-position, 4-way
- **SAF2** - AD2A1XAG3000 - Double spool 1st spool 4-position float, 2nd spool 3-position, 4-way



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