



Preferred Catalog

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The following information is provided for reference only and not for engineering purposes; please refer to applicable manufacturer's catalogs for current technical specifications or contact your local HCI representative.



A10 PISTON PUMPS

A10VSO 31 SERIES

(Nominal: 4000 PSI with Max Volume Stop)

MATERIAL NUMBER	DESCRIPTION	CID	CONTROLS	ROTATION / SEALS	SHAFT	THRU DRIVE	INLET	OUTLET
R910940516-000 R902502702 (FPM)	A A10VSO 18 DR /31R-PKC62N00	1.1	Pressure Comp	CW	3/4" x 3/16"		1" (61)	3/4" (61)
R910946934-000 R910930740-000 (FPM)	A A10VSO 18 DFR /31R-PKC62N00	1.1	Pressure & Flow	CW	3/4" x 3/16"		1" (61)	3/4" (61)
R910947413-000	A A10VSO 18 DFR /31R-PKC62K01	1.1	Pressure & Flow	CW	3/4" x 3/16"	SAE A*	1" (61)	3/4" (61)
R910946939-000 R902503236-001 (FPM)	A A10VSO 18 DFR /31R-PSC62N00	1.1	Pressure & Flow	CW	3/4" 11 Tooth		1" (61)	3/4" (61)
R910947685-000	A A10VSO 18 DFR /31L-PKC62N00	1.1	Pressure & Flow	CCW	3/4" x 3/16"		1" (61)	3/4" (61)
R902502752-000	A A10VSO 18 DRG /31R-VKC62N00	1.1	Remote Pressure	CW	3/4" x 3/16"		1" (61)	3/4" (61)
R910987771-000	A A10VSO 18 DRG /31R-PKC62K01	1.1	Remote Pressure	CW	3/4" x 3/16"	SAE A*	1" (61)	3/4" (61)
A10...18 Case Drain SAE #8								
R902400456-000	A AA10VSO 28 DR /31R-PKC62N00	1.71	Pressure Comp	CW	7/8" x 1/4"		1 1/4" (61)	3/4" (61)
R910939606-000 R902502732 (FPM)	A AA10VSO 28 DFR /31R-PKC62N00	1.71	Pressure & Flow	CW	7/8" x 1/4"		1 1/4" (61)	3/4" (61)
R910940792-000 R902502734 (FPM)	A AA10VSO 28 DRG /31R-PKC62N00	1.71	Remote Pressure	CW	7/8" x 1/4"		1 1/4" (61)	3/4" (61)
R910966024-000	A AA10VSO 28 DRG /31R-PKC62K01	1.71	Remote Pressure	CW	7/8" x 1/4"	SAE A*	1 1/4" (61)	3/4" (61)
R902502364-001	A AA10VSO 28 DRG /31L-VSC62N00	1.71	Remote Pressure	CCW / FPM	7/8" 13 Tooth		1 1/4" (61)	3/4" (61)
A10...28 Case Drain SAE #8								
R902502741-000 (FPM)	AA10VSO45DR/31R-VKC62N00	2.75	Pressure Comp	CW / FPM	1" x 1/4"		1 1/2" (61)	1" (61)
R910940544-000	A AA10VSO 45 DR /31R-PKC62N00	2.75	Pressure Comp	CW	1" x 1/4"		1 1/2" (61)	1" (61)
R910939612-000 R910918262-000 (FPM)	A AA10VSO 45 DFR /31R-PKC62N00	2.75	Pressure & Flow	CW	1" x 1/4"		1 1/2" (61)	1" (61)
A10...45 & 71 Case Drain SAE #10								
R902400434-000 R902502701-000 (FPM)	A AA10VSO 71 DR /31R-PKC92N00	4.33	Pressure Comp	CW	1 1/4" x 5/16"		2" (61)	1" (61)
R902400206-000	A AA10VSO 71 DFR /31L-PKC92N00	4.33	Pressure & Flow	CCW	1 1/4" x 5/16"		2" (61)	1" (61)
R902400347-000 R902400497 (FPM)	A AA10VSO 71 DFR /31R-PKC92N00	4.33	Pressure & Flow	CW	1 1/4" x 5/16"		2" (61)	1" (61)
R902400480-000 R902502186 (FPM)	A AA10VSO 71 DFR /31R-PKC92K01	4.33	Pressure & Flow	CW	1 1/4" x 5/16"	SAE A*	2" (61)	1" (61)
R902501633-001	A AA10VSO 71 DRG /31L-VSC94N00	4.33	Remote Pressure	CCW / FPM	1 1/4" 14 Tooth		2" (61)	1 1/4" (61)
A10...45 & 71 Case Drain SAE #10								
R902502997-000	A AA10VSO100 DR /31R-VKC62N00	6.1	Pressure Comp	CW / FPM	1 1/2" x 7/16"		2 1/2" (61)	1 1/4" (62)
R910918441-000	A AA10VSO100 DFR /31R-VKC62N00	6.1	Pressure & Flow	CW / FPM	1 1/2" x 7/16"		2 1/2" (61)	1 1/4" (62)
A10...100 & 140 Case Drain SAE #12								
R902502731-000	A AA10VSO140 DR /31R-VKD62N00	8.54	Pressure Comp	CW / FPM	1 3/4" x 1/2"		2 1/2" (61)	1 1/4" (62)





A10 PISTON PUMPS

A10VO 31 SERIES

(NOMINAL: 4000 PSI, INTERMITTENT 5100 PSI)

MATERIAL NUMBER	DESCRIPTION	CID	CONTROLS	ROTA-TION	SHAFT	THRU DRIVE	INLET	OUTLET
R910907114-000	A A10V O 28 DFR /31R-PSC61N00	1.71	Pressure & Flow	CW	7/8" 13 Tooth	Rear Ports	1 1/4" (61)	3/4" (61)
R910907402-000 R902502726 (FPM)	A A10V O 28 DFR /31R-PSC62N00	1.71	Pressure & Flow	CW	7/8" 13 Tooth		1 1/4" (61)	3/4" (61)
R910908655-000	A A10V O 28 DFR /31R-PSC62K01	1.71	Pressure & Flow	CW	7/8" 13 Tooth	SAE A*	1 1/4" (61)	3/4" (61)
R910908889-000	A A10V O 28 DFR /31R-PSC62K02	1.71	Pressure & Flow	CW	7/8" 13 Tooth	SAE B*	1 1/4" (61)	3/4" (61)
R910940787-000	A A10V O 28 DFR /31L-PSC62N00	1.71	Pressure & Flow	CCW	7/8" 13 Tooth		1 1/4" (61)	3/4" (61)
R910943655-000 R902502703 (FPM)	A A10V O 45 DFR /31R-PSC62N00	2.75	Pressure & Flow	CW	1" 15 Tooth		1 1/2" (61)	1" (61)
R910907404-000 R902502728 (FPM)	A A10V O 45 DFR /31R-PSC62K01	2.75	Pressure & Flow	CW	1" 15 Tooth	SAE A*	1 1/2" (61)	1" (61)
R910908124-000	A A10V O 45 DFR /31L-PSC62N00	2.75	Pressure & Flow	CCW	1" 15 Tooth		1 1/2" (61)	1" (61)
R910940366-000	A A10V O 45 DFR /31L-PSC61N00	2.75	Pressure & Flow	CCW	1" 15 Tooth	Rear Ports	1 1/2" (61)	1" (61)
R910915626-000	A A10V O 45 DFR /31L-PUC62N00	2.75	Pressure & Flow	CCW	7/8" 13 Tooth		1 1/2" (61)	1" (61)
R910910219-000	A A10V O 45 DFR /31L-PSC62K04	2.75	Pressure & Flow	CCW	1" 15 Tooth	SAE B*	1 1/2" (61)	1" (61)
R910927101-003	A A10V O 45 DRG /31L-PSC62N00	2.75	Remote Pressure	CCW	1" 15 Tooth		1 1/2" (61)	1" (61)
R910946984-000	A A10V O 45 DRG /31L-PUC62N00	2.75	Remote Pressure	CCW	7/8" 13 Tooth		1 1/2" (61)	1" (61)
R910947988-001	A A10V O 71 DFR /31L-PSC62K04	4.33	Pressure & Flow	CCW	1 1/4" 14 Tooth	SAE B*	2" (61)	1 1/4" (61)
R902400307-000	A A10V O 71 DFR /31R-PSC92N00	4.3	Pressure & Flow	CW	1 1/4" 14 Tooth		2" (61)	1" (61)
R902401094-000	A A10V O 71 DFR /31R-PSC92K04	4.3	Pressure & Flow	CW	1 1/4" 14 Tooth	SAE B*	2" (61)	1" (61)
R902400196-000	A A10V O 71 DFR /31R-PSC92K07	4.3	Pressure & Flow	CW	1 1/4" 14 Tooth	SAE C*	2" (61)	1" (61)
R902400410-000	A A10V O 71 DFR /31L-PSC91N00	4.33	Pressure & Flow	CCW	1 1/4" 14 Tooth			
R902400273-000	AA10VO71DFR/31L-PSC92N00	4.3	Pressure & Flow	CCW	1 1/4" 14 Tooth		2" (61)	1" (61)
R902413298-000	A A10V O 71 DFR /31L-PSC92K07	4.3	Pressure & Flow	CCW	1 1/4" 14 Tooth	SAE C*	2" (61)	1" (61)
R902501197-000	A A10V O 71 DFR /31L-VSC92K68	4.33	Pressure & Flow	CCW / FPM	1 1/4" 14 Tooth	SAE	2" (61)	1" (61)
R910908135-000	A A10V O100 DFR /31L-PUC62N00	6.1	Pressure & Flow	CCW / NITRILE	1 1/4" 14 Tooth		2 1/2" (61)	1 1/4" (61)

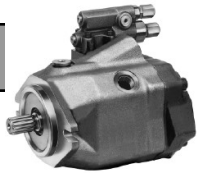
* Consult RA data sheet for input shaft options

SEAL KITS

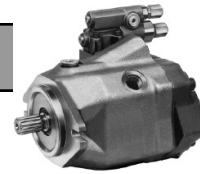
SEAL KIT NUMBER	A10V(S)O 30/31 SERIES SEAL KIT	SEAL KIT NUMBER	A10V(S)O 30/31 SERIES SEAL KIT
R910937565 (NBR "P")	AA10V(S)O 18 30/31-P	R910915846 (NBR "P")	AA10V(S)O 71 30/31-P
R910941171 (FKM "V")	AA10V(S)O 18 30/31-V	R910932985 (FKM "V")	AA10V(S)O 71 30/31-V
R910915845 (NBR "P")	AA10V(S)O 28 30/31-P	R910915847 (NBR "P")	AA10V(S)O 100 30/31-P
R910932983 (FKM "V")	AA10V(S)O 28 30/31-V	R910941168 (FKM "V")	AA10V(S)O 100 30/31-V
R910915885 (NBR "P")	AA10V(S)O 45 30/31-P	R910941169 (NBR "P")	AA10V(S)O 140 30/31-P
R910932984 (FKM "V")	AA10V(S)O 45 30/31-V	R910941170 (FKM "V")	AA10V(S)O 140 30/31-V

**A10 30/31 Series
COMPENSATORS**

COMPENSATOR	ITEM NUMBER
DR	R902453112
DFR	R902453430
DFR1	R902450439
DRG	R902451761



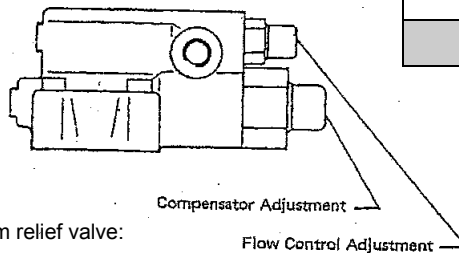
A10 52 SERIES



MATERIAL NUMBER	DESCRIPTION	CID	CONTROLS	ROTATION / SEALS	SHAFT	INLET	OUTLET
R902438335-001	A A10VSO 10 DR /52R-PKC64N00	.64	Pressure Comp	CW / NITRILE	Keyed 3/4"	SAE 12	SAE 12
R902406235-001	A A10VSO 10 DRG /52R-PKC64N00	.64	Remote Pressure	CW / NITRILE	Keyed 3/4"	SAE 12	SAE 12
R910983084-000	A A10V O 28 DR /52R-PSC64N00	1.71	Pressure Comp	CW / NITRILE	7/8" 13 Tooth	SAE 20	SAE 12
R910979815-000	A A10V O 28 DFR /52R-PKC64N00	1.71	Pressure & Flow	CW / NITRILE	Keyed 7/8"	SAE 20	SAE 12
R910976769-000	A A10V O 28 DFR /52R-PSC64N00	1.71	Pressure & Flow	CW / NITRILE	1" 15 Tooth	SAE 20	SAE 12
R910976772-000	A A10V O 28 DFR /52L-PSC64N00	1.71	Pressure & Flow	CCW / NITRILE	7/8" 13 Tooth	SAE 20	SAE 12
R902400300-000 (not normally stocked)	A A10V O 45 DFR /52R-PSC62N00	2.75	Pressure & Flow	CW / NITRILE	1" 15 Tooth	SAE 24	SAE 16
R910970025-000	A A10V O 45 DFR /52R-PUC64N00	2.75	Pressure & Flow	CW / NITRILE	7/8" 13 Tooth	SAE 24	SAE 16
R902502425-001	A A10V O 45 DFR /52R-VUC62N00	2.75	Pressure & Flow	CW / FPM	7/8" 13 Tooth	1 1/2" (61)	1" (61)
R910970020-000	AA10VO45DFR/52L-PUC64N00	2.75	Pressure & Flow	CCW / NITRILE	7/8" 13 Tooth	SAE 24	SAE 16
R902502427-001	A A10V O 45 DFR /52L-VUC62N00	2.75	Pressure & Flow	CCW / FPM	7/8" 13 Tooth	1 1/2" (61)	1" (61)

SEAL KIT NUMBER	A10VO 52 SERIES SEAL KIT	MATERIAL
R910987797	AA10V(S)O 10 52-P	NBR "P"
R987054701	AA10VO 28 52-P	NBR "P"
R987053923	AA10VO 45 52-N	NBR "P"
R987054700	AA10VO 45 52-V	FKM "V"

A10 52 Series COMPENSATORS	
COMPENSATOR	ITEM NUMBER
DR	R902456118
DFR	R902456210
DFR1	R902450440
DRG	R902455384



Set Up Procedure DR Controller

Set Up– DR (pressure) controller without additional system relief valve:

- A) Remove protective cap nut from DR (pressure control) spool. This is the spool closest to the pump body.
- B) Loosen locking nut and turn DR controller adjustment screw counter clockwise until no spring tension can be felt.
- C) Start pump and dead head flow. Gauge pressure should be minimal if step "B" was followed.
- D) Turn DR controller screw clockwise to required system operating pressure.
- E) Tighten locking nut and secure protective cap nut..

Note: For systems with relief valves, be sure to set the relief setting 150 PSI above the DR compensator setting. If the settings are too close together the pump will "hunt" as it tries to stabilize.



AA2FM PISTON MOTORS



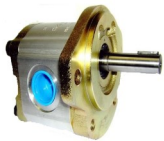
MATERIAL NUMBER	DESCRIPTION	CID	BI-DIRECTIONAL	SEALS	SHAFT	MOUNT	PORTS (Side Rear)
R902193956-001	AA2FM10/61W-VSC530	.63	X	FPM	7/8" 13 Tooth	SAE B 2-Bolt	SAE 12
R902198246-001	AA2FM10/61W-VPC530	.63	X	FPM	32mm x 6mm Key	SAE B 2-Bolt	SAE 12
R902197826-001	AA2FM16/61W-VSC530	0.98	X	FPM	7/8" 13 Tooth	SAE B 2-Bolt	SAE 12
R902198240-001	AA2FM28/61W-VSD520	1.71	X	FPM	1 1/4" 14 Tooth	SAE C 4-Bolt	1/2" (62) Side
R902196639-001	AA2FM32/61W-VBD520	1.95	X	FPM	40mm x 8mm Key	SAE C 4-Bolt	1/2" (62) Side
R902198241-001	AA2FM32/61W-VBD530	1.95	X	FPM	40mm x 8mm Key	SAE C 4-Bolt	SAE 16
R902198031-001	AA2FM32/61W-VSD530	1.95	X	FPM	1 1/4" 14 Tooth	SAE C 4-Bolt	SAE 16
R902202055-001	AA2FM32/61W-VSD520	1.95	X	FPM	1 1/4" 14 Tooth	SAE C 4-Bolt	1/2" (62) Side
R902137551-001	AA2FM45/61W-VSD510	2.78	X	FPM	1 1/4" 14 Tooth	SAE C 4-Bolt	3/4" (62) Rear
R902196957-001	AA2FM45/61W-VSD520	2.78	X	FPM	1 1/4" 14 Tooth	SAE C 4-Bolt	3/4" (62) Side
R909434271-001	AA2FM56/61W-VSD520	3.42	X	FPM	1 1/4" 14 Tooth	SAE C 4-Bolt	1" (62) Side
R902161224-001	AA2FM63/61W-VSD510	3.84	X	FPM	1 1/4" 14 Tooth	SAE C 4-Bolt	3/4" (62) Rear
R902035438-001	AA2FM63/61W-VSD510	3.84	X	FPM	1 1/4" 14 Tooth	SAE C 4-Bolt	3/4" (62) Rear
R902160055-001	AA2FM63/61W-VSD520	3.84	X	FPM	1 1/4" 14 Tooth	SAE C 4-Bolt	1" Flange (62)
R902137512-001	AA2FM80/61W-VQDN520	4.91	X	FPM	1 3/8" 21 Tooth	SAE C 4-Bolt	1" (62) Side
R902163992-001	AA2FM90/61W-VQDN520	5.49	X	FPM	1 3/8" 21 Tooth	SAE C 4-Bolt	1" (62) Side
R902137774-001	AA2FM90/61W-VSD510	5.49	X	FPM	1 3/4" 13 Tooth	SAE C 4-Bolt	1" (62) Rear
R902202156-001	AA2FM125/61W-VBD520	7.63	X	FPM	50mm x 10mm Key	SAE D 4-Bolt	1 1/4" (62) Side
R909409681-001	AA2FM125/61W-VSD520	7.63	X	FPM	1 3/4" 13 Tooth	SAE D 4-Bolt	1 1/4" (62) Side
R902197567-001	AA2FM160/61W-VSD520	9.79	X	FPM	1 3/4" 13 Tooth	SAE D 4-Bolt	1 1/4" (62) Side
R902197564-001	AA2FM180/61W-VBD520	10.98	X	FPM	70mm x 14mm Key	SAE D 4-Bolt	1 1/4" (62) Side
R902193869-001	AA2FM180/61W-VSD510	10.98	X	FPM	1 3/4" 13 Tooth	SAE D 4-Bolt	1 1/4" (62) Rear
R902198019-001	AA2FM180/61W-VSD520	10.98	X	FPM	1 3/4" 13 Tooth	SAE D 4-Bolt	1 1/4" (62) Side



"F" SERIES GEAR PUMPS

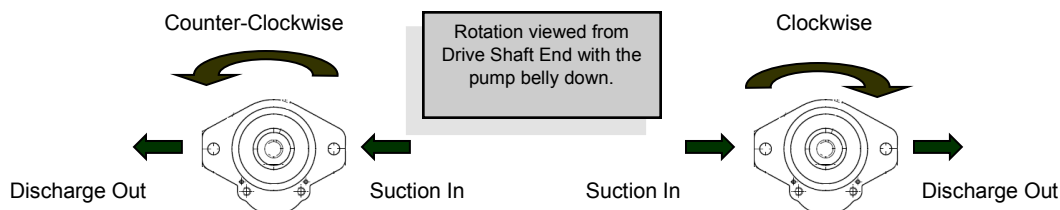


5/8" DIAMETER KEYED SHAFT (SHORT)						5/32" KEYWAY		
P/N	CID	GPM @ 1800 RPM	MAX		PORT SIZE & LOCATION		SHAFT ROTATION	MOUNTING FLANGE
			RPM	PSI	IN	OUT		
9510290022	.35	2.7	3500	3625	SAE 10/Side	SAE 8/ Side	CW	2-bolt "A" 3 1/4" Pilot
9510290023	.51	3.9	3500	3625	SAE 12/Side	SAE 10/Side	CW	2-bolt "A" 3 1/4" Pilot
9510290024	.69	5.3	3000	3625	SAE 12/Side	SAE 10/Side	CW	2-bolt "A" 3 1/4" Pilot
9510290094	.69	5.3	3000	3625	SAE 12/Rear	SAE 10/Rear	CW	2-bolt "A" 3 1/4" Pilot
9510290025	.87	6.7	2500	3625	SAE 12/Side	SAE 10/Side	CW	2-bolt "A" 3 1/4" Pilot
9510290026	1.01	7.8	2000	3625	SAE 12/Side	SAE 10/Side	CW	2-bolt "A" 3 1/4" Pilot
9510290027	1.19	9.2	2000	3045	SAE 12/Side	SAE 10/Side	CW	2-bolt "A" 3 1/4" Pilot
9510290028	1.40	10.9	2000	2610	SAE 12/Side	SAE 10/Side	CW	2-bolt "A" 3 1/4" Pilot
9510290115	1.74	13.5	2000	2465	SAE 16/Side	SAE 10/Side	CW	2-bolt "A" 3 1/4" Pilot



5/8" DIAMETER KEYED SHAFT (LONG)								
P/N	CID	GPM @ 1800 RPM	MAX		PORT SIZE & LOCATION		ROTATION	MOUNTING FLANGE
			RPM	PSI	IN	OUT		
9510290133	.87	6.7	2500	3625	SAE 12/Side	SAE 10/Side	CW	2-bolt "A" 3 1/4" Pilot
9510290135	1.19	9.2	2000	3045	SAE 12/Rear	SAE 10/Rear	CCW	2-bolt "A" 3 1/4" Pilot

PUMP
Seal Kit: R98640006P
Shaft Seal: 1510283035





“F” SERIES GEAR PUMPS



9 - TOOTH SPLINE



P/N	CID	GPM @ 1800 RPM	MAX		PORT SIZE & LOCATION		ROTATION	MOUNTING FLANGE
			RPM	PSI	IN	OUT		
9510290017	.51	3.9	3500	3625	SAE 12/Side	SAE 10/Side	CW	2-bolt "A" 3 1/4" Pilot
9510290077	.51	3.9	3500	3625	SAE 12/Rear	SAE 10/Rear	CW	2-bolt "A" 3 1/4" Pilot
9510290085	.51	3.9	3500	3625	SAE 12/Rear	SAE 10/Rear	CCW	2-bolt "A" 3 1/4" Pilot
9510290039	.69	5.3	3000	3625	SAE 12/Side	SAE 10/Side	CCW	2-bolt "A" 3 1/4" Pilot
9510290414	.69	5.3	3000	3625	SAE 12/Side	SAE 10/Side	CW	2-bolt "A" 3 1/4" Pilot
9510290042	1.19	9.2	2000	3045	SAE 12/Side	SAE 10/Side	CCW	2-bolt "A" 3 1/4" Pilot
9510290126	1.40	10.9	2000	2610	SAE 16/Side	SAE 10/Side	CW	2-bolt "A" 3 1/4" Pilot

“ N “ SERIES GEAR PUMPS

7/8” 13-TOOTH SPLINE



P/N	CID	GPM @ 1800 RPM	MAX		PORT SIZE & LOCATION		SHAFT ROTATION	MOUNTING FLANGE
			RPM	PSI	IN	OUT		
9510390014	1.41	10.9	2500	3335	SAE16/Rear	SAE12/Rear	CW	2-bolt "B" 4" Pilot
9510390002	1.41	10.9	2500	3335	SAE 16/Side	SAE 10/Side	CW	2-bolt "B" 4" Pilot
9510390016	1.73	13.4	2300	3045	SAE16/Rear	SAE12/Rear	CW	2-bolt "B" 4" Pilot
9510390006	2.22	17.3	2100	2610	SAE 20/Side	SAE 12/Side	CW	2-bolt "B" 4" Pilot
9510390190	2.22	17.3	2100	2610	SAE 20/Side	SAE 12/Side	CW	2-bolt "A" 3 1/4" Pilot

PUMP

Seal Kit: R98640011P

Shaft Seal: 1510283023



GEAR PUMPS



To add outboard bearing use: **W58-39** Bearing & **W023-206** Snap Ring

PUMPS							2000 RPM	
Model #	CID.	MAX PSI	MOUNTING PATTERN	ROTATION	SPLINE SHAFT	PORT SIZE	PORT LOCATION	
P2100A290IDDE07-14	1.48	2250	SAE "B" 2 - 4 COMBO	DUAL	7/8 - 13	SAE #12	SIDE	
						SAE #16	REAR	
P2100A290IDZE10-14	1.97	2250	SAE "B" 2 - 4 COMBO	DUAL	7/8 - 13	SAE #16	SIDE	
						SAE #16	REAR	
P2100A290IDZE12-14	2.46	2000	SAE "B" 2 - 4 COMBO	DUAL	7/8 - 13	SAE #16	SIDE	
						SAE #16	REAR	
P2100A090MMZI15-14	2.95	2000	SAE "B" 2 - 4 COMBO	CW	7/8 - 13	SAE #20 x #16	SIDE	
						SAE #20 x #16	REAR	
P2100A190HMZF15-14	2.95	2000	SAE "B" 2 - 4 COMBO	CCW	7/8 - 13	SAE #16 x #20	SIDE	
						SAE #16 x #20	REAR	
P2100A090MMZI20-14	3.94	2000	SAE "B" 2 - 4 COMBO	CW	7/8 - 13	SAE #20 x #16	SIDE	
						SAE #20 x #16	REAR	
P2100A190HMZF20-14	3.94	2000	SAE "B" 2 - 4 COMBO	CCW	7/8 - 13	SAE #16 x #20	SIDE	
						SAE #16 x #20	REAR	



Motor / Pump with outboard bearing (Units can be used as pumps or motors)							
Model #	ADDITIONAL MODELS	CID	MAX PSI	MOUNT	ROTATION	SHAFT	PORT SIZE
M2100A890MDXE10-14	PEK 10 (PK82BPBB)	1.97	2250	SAE "B" 2-4 COMBO	Dual	7/8-13 Tooth	1" NPT Side & Rear
M2100A890MDXE12-14	PEK 12 (PEK112BPBB)	2.46	2000	SAE "B" 2-4 COMBO	Dual	7/8-13 Tooth	1" NPT Side & Rear
M2100A890MDXE15-14	PEK 15 (PK132BPBB)	2.95	2000	SAE "B" 2-4 COMBO	Dual	7/8-13 Tooth	1" NPT Side & Rear
M2100A890MDXK20-14	PEK 17 (PK152BPBB)	3.94	2000	SAE "B" 2-4 COMBO	Dual	7/8-13 Tooth	1" NPT Side & Rear
M2100A890MDXK20-14	PEK 20 (PK172BPBB)	3.94	2000	SAE "B" 2-4 COMBO	Dual	7/8-13 Tooth	1" NPT Side & Rear



DUMP PUMPS			
PART #	CID	R/V Setting	Flow at 1000 RPM
DMD-25-Z-L-MS-20	6.43	2000 PSI	28 GPM
DMD-25-Z-L-MS-25	6.43	2500 PSI	28 GPM
C102D2.5-3	6.43	2500 PSI	28 GPM
DMD-25-Z-L-AS-25 (Air shift)	6.43	2500 PSI	28 GPM

RZ-0206 Sleeve for Permco Dump Pumps
997-00971A Air Shift Kit



GEAR PUMPS

GEAR MOTORS (WITH OUTBOARD BEARINGS) MAX 2000 RPM							
Model #	CID.	MAX PSI	MOUNTING PATTERN	ROT.	SHAFT	PORT SIZE	PORT LOCATION
M2100A783EDZA07-32	1.48	2250	SAE "A" 2 - bolt	Dual	1" Keyed	SAE #12 x #12	Rear
M2100A783ADDE10-32 M20A894BEEF10-32	1.97	2250	SAE "A" 2 - bolt	Dual	1" Keyed	SAE #12 x #12	Side
M2100A783ADZE10-32 M20A894BEAF10-43	1.97	2250	SAE "A" 2 - bolt	Dual	1" Keyed	SAE #16 x #16	Side
M2100A783ADDE12-32 M20A894BEEF12-43	2.46	2000	SAE "A" 2 - bolt	Dual	1" Keyed	SAE #12 x #12	Side
M2100A783IDZE12-32 M20A894JEAFF12-43	2.46	2000	SAE "A" 2 - bolt	Dual	1" Keyed	SAE #16 x #16	Rear & Side
Model #	CID.	MAX PSI	MOUNTING PATTERN	ROT.	SHAFT	PORT SIZE	PORT LOCATION
M2100A790EDZA07-32	1.48	2250	SAE "B" 2 - 4 Combo	Dual	1" Keyed	SAE #12 x #12	Rear
M2100A790ADZE10-32	1.97	2250	SAE "B" 2 - 4 Combo	Dual	1" Keyed	SAE #16 x #16	Side
M2100A790IDZE12-32	2.46	2000	SAE "B" 2 - 4 Combo	Dual	1" Keyed	SAE #16 x #16	Rear & Side
M2100A786ADDE10-14 M20A897BEEF10-25	1.97	2250	SAE "B" 2 - bolt	Dual	7/8 - 13	SAE #12 x #12	Side



Seals

Note: continental shafts require different shaft seals.

Seals: Pump / Motor				
	Pump P30 / P2100, P3000		Motor M20 / M2100	
	P30	P3000, P2100	M20, M30, M31	M2100, M3000
Shaft Seal	391-2883-058 (X73-37-16)	W62-26-16	391-2883-119	W62-49-9
P30 P3000 Housing Gasket (2 per)	391-2884-050 (UB3006-242)	TA-2995-242	391-2884-019 (TA-2005-239)	TA-2995-242
P2100 Housing Gasket (2 per)	391-2884-019	TA-2995-239	M2100 391-2884-019	TA-2995-239
Pocket seal	391-2882-051 (BA3026-2)	Not required	391-2882-051 (BA3026-2)	Not required
Thrust Plates (2 per)	391-2185-913 (AA-1058)	ZZ-0947-TC	391-2185-913 (AA-1058)	ZZ-0947-TC
Roller Bearings	391-0381-906 (Y1032)	X-0921	391-0381-906 (Y1032)	X-0921



ARMS WATER PUMP 4 X 3					
Model #	Water Flow at 2000 RPM	Inlet	Outlet	MOTOR MOUNT	MOTOR SHAFT
A-39-RH-CCW	600 GPM / 100' Head	4"	3"	SAE "B"	7/8" 13 Tooth

Common water pump motor: M2100A786ADDE10-14



GEAR PUMPS & DUMP PUMPS

P50 P5100 PUMPS

P/N	CID	B MOUNT	SHAFT	PSI	Side Ports	Rear Ports	ROTATION
P5151A224AAXK20-54 or 313-9610-663	5.1	2-4 Bolt	7/8" 13 Tooth	2500	1 1/4" NPT	1 1/2" NPT	BI-ROTATION
P5151A224NMZQ25-54	6.375	2-4 Bolt	7/8" 13 Tooth	2500	#24 ORB	#20 ORB	BI-ROTATION
P5100A531ADZK25-14	6.375	4 Bolt	7/8" 13 Tooth	2500	#20 ORB	N/A	BI-ROTATION
313-9116-261 or P5000A531ADXK25-14	6.375	4 Bolt	7/8" 13 Tooth	2000	1 1/4" NPT	N/A	BI-ROTATION



Seals

Note: continental shafts require different shaft seals.

Seals: Pump / Motor

	Pump P50 / P5000		Motor M50 / M5000	
	P50, P51	P5000, P5100	M50	M5000
Shaft Seal	391-2883-103 (X73-37-17)	W62-26-17	391-2883-115	W62-49-8
Housing Gasket (2 per)	391-2884-021	TA-2995-244	391-2884-021	TA-2995-244
Pocket seal	391-2882-051	Not required	391-2882-051	Not required
Thrust Plates (2 per)	391-2185-912 (Y1058)	X-0947-TC	391-2185-912 (Y1058)	X-0947-TC
Roller Bearings	391-0381-905 (S1032)	R-0921	391-0381-905 (S1032)	R-0921



Bushing Pumps

P197 BUSHING PUMPS 2400 RPM

P/N	CID	B MOUNT	SHAFT	PSI	Rear-Side Ports	ROTATION
P197A290RRDA12-14	2.46	2-4 Bolt	7/8" 13 Tooth	4000 PSI	#16 ORB	BI-ROTATION
P197A290RRDA15-14	2.96	2-4 Bolt	7/8" 13 Tooth	3750 PSI	#16 ORB	BI-ROTATION
P197A290SSDA17-14	3.45	2-4 Bolt	7/8" 13 Tooth	3500 PSI	#20 ORB	BI-ROTATION
P197A290SSDA20-14	3.94	2-4 Bolt	7/8" 13 Tooth	3250 PSI	#20 ORB	BI-ROTATION



VANE PUMPS

BASE PUMP#	CID	PSI	MAX RPM	SHAFT	ROTATION	INLET	OUTLET
VT6CM-B28-3L00-C1	5.42	3000	2500 RPM	7/8" 13 Tooth	CCW	1.5 Flange	1" Flange
VT6CM-B31-3L00-C1	6.1	3000	2500 RPM	7/8" 13 Tooth	CCW	1.5 Flange	1" Flange



CAM RING	CODE	CID		CAM RING	CODE	CID
V034-59051	5	1.05		V034-66607	20	3.89
V034-59052	6	1.30		V034-59208	22	4.29
V034-59054	10	2.08		V034-59209	25	4.84
V034-66595	12	2.26		V034-59245	28	5.42
V034-59206	14	2.81		V034-6843	31	6.1
V034-59207	17	3.56				

A simple CAM Ring conversion can convert any base pump to the displacements listed above.

VT6CM PARTS	Item
VS24-10352-0	Seal Kit
V034-70814	(#1) 7/8" x 1/4" Keyed Shaft
V034-70815	(#3) 7/8" 13 Tooth Shaft
V034-59772	Pressure Plate
V034-59774	Port Plate
VS24-30118	25 Cart Kit
VS24-30120	28 Cart Kit

BASE PUMP #	FRONT CID	REAR CID	SHAFT	ROTATION	INLET PORT
VT6CCM-B25-B25-5L00-D100	4.84	4.84	7/8" 13 Tooth	CCW	3" Flange
VT6CCM-B25-B25-5L00-D110	4.84	4.84	7/8" 13 Tooth	CCW	2.5" Flange



VT6CCM SEAL KIT		#5 SHAFT	
VS24-10133		V034-59109	7/8" 13 Tooth

HI-LO AND PTO PUMPS

DELTA HI-LO PUMPS					LOG SPLITTER PUMPS					
P/N	CID	Sequence PSI	Flow at 3600 RPM	HP REQUIRED	MAX		PORT SIZE		SHAFT ROTATION	SHAFT
					RPM	PSI	IN	OUT		
L8-4	.468 + .187	500 PSI	9 GPM (no load)	6 HP	3600	3000	3/4" NPT	1/2" NPT	CW	7/16"
L26-2	1.00 + .416	600 PSI	22 GPM (no load)	12 HP	3600	3000	1.25" TUBE	3/4" NPT	CW	5/8" x 3/16"



AG PTO PUMPS

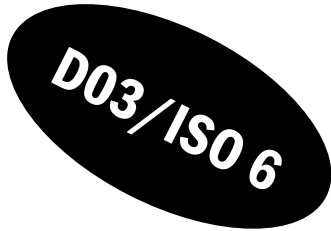
PART #	DYNAMIC	CID	RPM	Theoretical Flow
HC-PTO-7A		2.9	540	6.7 GPM
HC-PTO-2A	GP-PTO-5	5.7	540	13.3 GPM
HC-PTO-1A	GP-PTO-9-6S	9.9	540	23.1 GPM
HC-PTO-3A		5.7	1000	24.6 GPM
HC-P-K11		9.9	1000	42.8 GPM





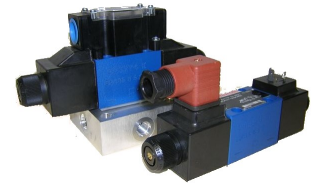
DO3 / ISO 6 VALVES

10-12 GPM / 4600 PSI



VALVE MODEL #		VOLTAGE	Electrical Type	Replacement Coils
R978878237	4WE6D6X/EG12N9DA/62	12 VDC	Conduit	R900021462
R978878241	4WE6D6X/EG24N9DA/62	24 VDC	Conduit	R900021463
R978892650	4WE6D6X/EG24NDA/62	24 VDC	Conduit	R900021463
R978017922	4WE6D6X/EG24N9K4/62	24 VDC	DIN	R900021389
R978874053	4WE6D6X/EW110N9DA/62	110 VAC	Conduit	R900021464
R978017739	4WE 6 D6X/EW110N9DAL/62	110 VAC	Conduit/Lights	R900021464
R978017734	4WE6D6X/EW110N9K4/62	110 VAC	DIN	R900020175
R900551704	4WE 6 D6X/EW110N9K4	110 VAC	DIN	R900020175

VALVE MODEL #		VOLTAGE	Electrical Type	Replacement Coils
R978878249	4WE6E6X/EG12N9DA/62	12 VDC	Conduit	R900021462
R978017783	4WE6E6X/EG12N9K4/62	12 VDC	DIN	R900021388
R978878253	4WE6E6X/EG24N9DA/62	24 VDC	Conduit	R900021463
R978017750	4WE6E6X/EG24N9K4/62	24 VDC	DIN	R900021389
R978875049	4WE6E6X/EW110N9DA/62	110 VAC	Conduit	R900021464
R978873115	4WE6E6X/EW110N9DAL/62	110 VAC	Conduit/Lights	R900021464
R978017737	4WE6E6X/EW110N9K4/62	110 VAC	DIN	R900020175



R900357573 Buna Seal Kit WE 6.6X/E
R900357574 Viton Seal Kit

VALVE MODEL #		VOLTAGE	Electrical Type	Replacement Coils
R978878257	4WE6G6X/EG12N9DA/62	12 VDC	Conduit	R900021462
R978017779	4WE6G6X/EG12N9DAL/62	12 VDC	Conduit/Lights	R900021462
R978017762	4WE6G6X/EG12N9K4/62	12 VDC	DIN	R900021388
R900248467	4WE 6 G6X/EG12NK4	12 VDC	DIN	R900021388
R978878261	4WE6G6X/EG24N9DA/62	24 VDC	Conduit	R900021463
R901224429	4WE6G6X/EG24N9K4/62	24 VDC	DIN	R900021389
R978872815	4WE6G6X/EW110N9DA/62	110 VAC	Conduit	R900021464
R978017738	4WE6G6X/EW110N9K4/62	110 VAC	DIN	R900020175



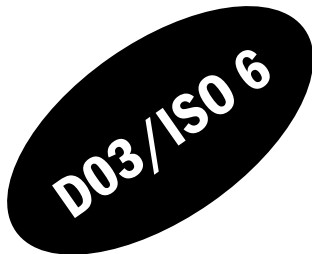
DO3 / ISO 6 VALVES

10-12 GPM / 4600 PSI

VALVE MODEL #		VOLTAGE	Electrical Type	Replacement Coils
R978878265	4WE6H6X/EG12N9DA	12 VDC	Conduit	R900021462
R900903992	4WE6HA6X/EG12N9K4	12 VDC	DIN	R900021388
R978017754	4WE 6 H6X/EG24N9K4/62	24 VDC	DIN	R900021389
R978017797	4WE 6 H6X/EW110N9K4/62	110 VAC	DIN	R900020175



R900357573 Buna Seal Kit WE 6.6X/E
R900357574 Viton Seal Kit



VALVE MODEL #		VOLTAGE	Electrical Type	Replacement Coils
R978878274	4WE6J6X/EG12N9DA/62	12 VDC	Conduit	R900021462
R978890216	4WE6J6X/EG12NDA/62	12 VDC	Conduit	R900021462
R978017761	4WE6J6X/EG12N9K4/62	12 VDC	DIN	R900021388
R978878278	4WE6J6X/EG24N9DA/62	24 VDC	Conduit	R900021463
R978017815	4WE 6 J6X/EG24N9DAL/62	24 VDC	Conduit/Lights	R900021463
R978017756	4WE6J6X/EG24N9K4/62	24 VDC	DIN	R900021389
R978874065	4WE6J6X/EW110N9DA/62	110 VAC	Conduit	R900021464
R978017736	4WE 6 J6X/EW110N9DAL/62	110 VAC	Conduit/Lights	R900021464
R978017733	4WE6J6X/EW110N9K4/62	110 VAC	DIN	R900020175

BOLT KITS	
Part #	Description
R978833365	Bolt Kit
992-011	7" Stud Kit

SUBPLATES		
Part #	Port Size	Relief Cavity
AD03SPS6S	SAE #6	No
6110-1	SAE #8	No
6110-2	SAE #8	T-10A (RPEC)

PARALLEL MANIFOLDS			
Part #	# of Stations	Port Size	Relief Cavity
AD03P022S	2	#10 P & T #8 A & B	No
2500-3-1 AD03P032S	3	#10 P & T #8 A & B	No
AD03P042S	4	#10 P & T #8 A & B	No
AD03CPP	All Ports Blocked Cover Plate		



SERIES MANIFOLDS			
Part #	# of Stations	Port Size	Relief Valve
AD03S022S/S	2	#10 P & T #8 A & B	T-10A (RPEC)
AD03S032S/S	3	#10 P & T #8 A & B	T-10A (RPEC)
AD03S042S/S	4	#10 P & T #8 A & B	T-10A (RPEC)
AD03CPS	P-T Cover Plate		



DO5 / ISO 10 VALVES 15- 30 GPM / 4600 PSI

VALVE MOD-EL #		VOLTAGE	Electrical Type	Replacement Coils
R978908826	4WE10D4X/CG12N9DA	12 VDC	Conduit	R900207929
R900922999	4WE 10 D3X/CG12N9K4	12 VDC	DIN	R900541764
R978910633	4WE10D4X/CG24NDA	24 VDC	Conduit	R900217812
R900589933	4WE 10 D3X/CG24N9K4	24 VDC	DIN	R900019793
R978908566	4WE10D4X/CW110N9DA	110 VAC	Conduit	R900219602
R900598925	4WE 10 D3X/CW110N9K4	110 VAC	DIN	R900019816



R900357578 Buna Seal Kit WE 10.3X/C
R900357580 Buna Seal Kit WE 10.4X/C.D

VALVE MOD-EL #		VOLTAGE	Electrical Type	Replacement Coils
R978907461	4WE10E4X/CG12N9DA	12 VDC	Conduit	R900207929
R978908742	4WE10E4X/CG24N9DA	24 VDC	Conduit	R900217812
R900588201	4WE 10 E3X/CG24N9K4	24 VDC	DIN	R900019793
R978908567	4WE10E4X/CW110N9DA	110 VAC	Conduit	R900219602
R900597186	4WE 10 E3X/CW110N9K4	110 VAC	DIN	R900019816

VALVE MOD-EL #		VOLTAGE	Electrical Type	Replacement Coils
R978908592	4WE10G4X/CG12N9DA	12 VDC	Conduit	R900207929
R978918065	*5-4WE10G3X/CG12N9K4	12 VDC	DIN	R900541764
R900594277	4WE 10 G3X/CG24N9K4	24 VDC	DIN	R900019793
R978908695	4WE10G4X/CW110N9DA	110 VAC	Conduit	R900219602
R900536428	4WE 10 G3X/CW110N9K4	110 VAC	DIN	R900019816

*5 chamber valve for control of spool shift speed.



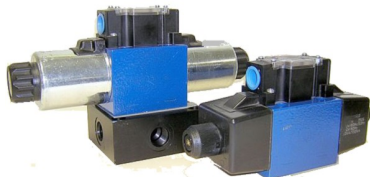
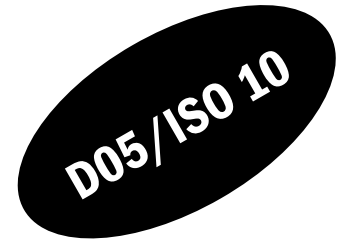
DIN CONNECTORS				
Part #	Color	Size	Strain Relief	Conduit Connector
R901017010	Grey	3/8"	X	
R901017011	Black	3/8"	X	
R900004823	Red	1/2"	X	X
R900011039	Black	1/2"	X	X
R900057453	Black w/light	1/2"	X	X



DO5 / ISO 10 VALVES

15- 30 GPM / 4600 PSI

VALVE MOD-EL #		VOLTAGE	Electrical Type	Replacement Coils
R978909608	4WE10H4X/CG12N9DA	12 VDC	Conduit	R900207929
R900928368	4WE 10 H3X/CG12N9K4	12 VDC	DIN	R900541764
R900597986	4WE 10 H3X/CG24N9K4	24 VDC	DIN	R900019793
R978908593	4WE10H4X/CW110N9DA	110 VAC	Conduit	R900219602
R900517315	4WE 10 H3X/CW110N9K4	110 VAC	DIN	R900019816



VALVE MOD-EL #		VOLTAGE	Electrical Type	Replacement Coils
R978910621	4WE10J4X/CG12N9DA	12 VDC	Conduit	R900207929
R900930080	4WE 10 J3X/CG12N9K4	12 VDC	DIN	R900541764
R900589988	4WE 10 J3X/CG24N9K4	24 VDC	DIN	R900019793
R978908568	4WE10J4X/CW110N9DA	110 VAC	Conduit	R900219602
R900592338	4WE 10 J3X/CW110N9K4	110 VAC	DIN	R900019816

BOLT KITS	
Part #	Description
R978833366	Bolt Kit
992-001	7" Stud Kit

SERIES MANIFOLDS			
Part #	# of Stations	SAE Port Size	Relief Valve
AD05S023S/S	2	#12 P & T #8 A & B	T-3A RPGC
AD05S033S/S	3	#12 P & T #8 A & B	T-3A RPGC



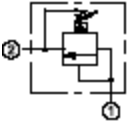
SUBPLATES		
Part #	Port Size	Relief Cavity
6111-1	SAE #10	No
6111-2	SAE #10	T-10A RPEC

PARALLEL MANIFOLDS			
Part #	# of Stations	SAE Port Size	Relief Cavity
AD05P023S	2	#12 P & T #8 A & B	No
2700-3-1 AD05P033S	3	#12 P & T #8 A & B	No
AD05P043S	4	#12 P & T #8 A & B	No
AD05CPP		All Ports Blocked Cover Plate	



CARTRIDGE PRESSURE & LOAD CONTROLS

0-25 GPM RELIEF VALVE CARTRIDGE & BODY (T-10A)



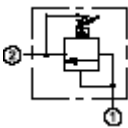
Cartridge Part #	Adjustment	PSI Range
RPECLAN	Screw	100-3000 PSI (Preset 1000 PSI)
RPECKAN	Hand Knob	100-3000 PSI (Preset 1000 PSI)
RPECLBN	Screw	50-1500 PSI
RPECLDN	Screw	25-800 PSI (Preset 400 PSI)

Installation Torque 30-35 lb. ft.
Seal Kit Buna: 990-010-007

Select the cartridge with the PSI range required and then select a body with the desired porting. Note: Cross-port valves use two cartridges.

Body Part #	Port	Style
FAB	3/8" NPT	90 2-Port
FAC	1/2" NPT	90 2-Port
FAI	SAE #6	90 2-Port
FAJ	SAE #8	90 2-Port
FEC	1/2" NPT	T-Body
FEJ	SAE #8	T-Body
FEK	SAE #10	T-Body
YFI	SAE #6	Cross-port
YFJ	SAE #8	Cross-port
YFK	SAE #10	Cross-port

0-50 GPM RELIEF VALVE & BODY (T-3A)

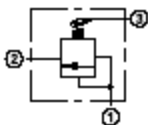


Cartridge Part #	Adjustment	PSI Range
RPGCLAN	Screw	100-3000 PSI (Preset 1000 PSI)
RPGCLBN	Screw	50-1500 PSI (Preset 1000 PSI)

Installation Torque 40-45 lb. ft.
Seal Kit Buna: 990-203-007

Body Part #	Port	Style
CAD	3/4" NPT	90 2-Port
CAL	SAE #12	90 2-Port
CED	3/4" NPT	T-Body
CEL	SAE #12	T-Body
CEM	SAE #16	T-Body
YCM	SAE #16	Cross-port

0-15 GPM SEQUENCE VALVE & BODY (T-11A)

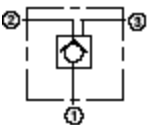


Cartridge Part #	Adjustment	PSI Range
RSDCLAN	Screw	100-3000 PSI (Preset 1000 PSI)

Installation Torque 30-35 lb. ft.
Seal Kit Buna: 990-011-007

Body Part #	Port	Style
ECC	1/2" NPT	90 3-Port
ECI	SAE # 6	90 3-Port
ECJ	SAE # 8	90 3-Port

0-15 GPM PILOT TO OPEN CHECK (T-11A)



Cartridge Part #	Adjustment	Ratio
CKCBXCN	None	3: 1

Installation Torque 30-35 lb. ft.
Seal Kit Buna: 990-011-007

Body Part #	Port	Style
ECC	1/2" NPT	90 3-Port
ECI	SAE # 6	90 3-Port
ECJ	SAE # 8	90 3-Port
YEJ	SAE # 8	Cross-port



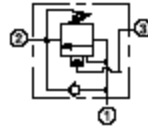
CARTRIDGE LOAD & FLOW CONTROLS

3000 PSI



0-15 GPM COUNTERBALANCE VALVE & BODY (T-11A)

Cartridge Part #	Adjustment	PSI Range
CBCALHN	Screw	1000-4000 PSI (Preset 3000 PSI)

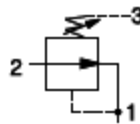


Body Part #	Port	Style
ECC	1/2" NPT	90 3-Port
ECl	SAE # 6	90 3-Port
ECJ	SAE # 8	90 3-Port
YEJ	SAE # 8	Cross-port

Installation Torque 30-35 lb. ft.
Seal Kit Buna: 990-011-007

0-10 GPM PRESSURE REDUCING VALVE & BODY (T-11A)

Cartridge Part #	Adjustment	PSI Range
PBDBLAN	Screw	100-3000 PSI (Preset 200 PSI)
PBDBLBN	Screw	50-1500 PSI (Preset 200 PSI)

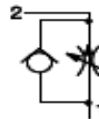


Body Part #	Port	Style
ECC	1/2" NPT	90 3-Port
ECl	SAE # 6	90 3-Port
ECJ	SAE # 8	90 3-Port

Installation Torque 30-35 lb. ft.
Seal Kit Buna: 990-011-007

0.1 - 6 GPM PRESSURE COMPENSATED FLOW CONTROLS (T-13A)

Cartridge Part #	Adjustment	Flow Range
FDBALAN	Screw	0.1 - 6 GPM
FDBAHAN	Hand Knob	0.1-6 GPM

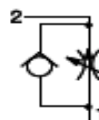


Body Part #	Port	Style
GAB	3/8" NPT	90 2-Port
GAI	SAE #6	90 2-Port
GCJ	SAE #8	Inline

Installation Torque 30-35 lb. ft.
Seal Kit Buna: 990-010-007

0.1 - 12 GPM PRESSURE COMPENSATED FLOW CONTROLS (T-5A)

Cartridge Part #	Adjustment	Flow Range
FDCBLAN	Screw	0.1 - 12 GPM
FDCBHAN	Hand Knob	0.1 - 12 GPM



Body Part #	Port	Style
DAK	SAE #10	90 2-Port

Installation Torque 40-45 lb. ft.
Seal Kit Buna: 990-203-007



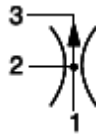
PRIORITY FLOW CONTROL (T-11A)

INLET TO 16 GPM



Cartridge Part #	Adjustment	Priority Flow
FRCALAN-1.00GPM	25% of Setting	1 GPM

Installation Torque 30-35 lb. ft.
Seal Kit Buna: 990-011-007



Body Part #	Port	Style
EAJ	SAE #8	90 3-Port
EAK	SAE #10	90 3-Port

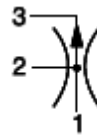
Priority flow 0.1-6 GPM. Orifice disk must be drilled for proper priority flow rate.

PRIORITY FLOW CONTROL (T-2A)

INLET TO 30 GPM

Cartridge Part #	Adjustment	Priority Flow
FRDAXAN-0.70GPM	None	0.7 GPM
FRDAXAN-1.50GPM	None	1.5 GPM
FRDALAN-4.00GPM	25% of Setting	4.0 GPM
FRDAXAN-6.00GPM	None	6.0 GPM

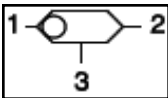
Installation Torque 40-45 lb. ft.
Seal Kit Buna: 990-202-007



Body Part #	Port	Style
BAD	3/4" NPT	90 3-Port
BAL	SAE #12	90 3-Port

Priority flow 0.1-12 GPM. Orifice disk must be drilled for proper priority flow rate.

SHUTTLE VALVES CSAA AND CSAB WITH BODY

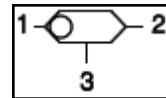


CSAA-EXN-GAI

Note: #3 port in cartridge head.

Valve Part #	Body	Flow	Ports
CSAAEXN	GAI	0-2.5 GPM	SAE #6
CSABXXN	ECl	0-2.5 GPM	SAE #6

Optional Shuttle LSV1-6T-N SAE #6



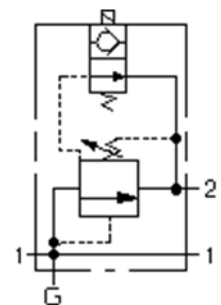
CSABXXN-ECl

Note: ECl is a 3-port body

SUN MANIFOLD SOLUTIONS

"Y" ASSEMBLY

This valve assembly provides 2 functions. It relieves from pressure (port 1) to tank (port 2) when pressure at port 1 exceeds the setting of the valve. The solenoid control allows the valve to be vented, dropping the pressure to a minimal level. This assembly is available in both normally open H option and normally closed C option. The normally open option means the pressure is at a low level until the solenoid is energized. The normally closed option means the pressure is at a high level until the solenoid is energized. Note: Vented Relief Valves run smoother, less abrupt than unloading a pump with a plain solenoid valve.



Normally Open,
"Unloading Valve"

SOLENOID VENTED RELIEF VALVE

MODEL #	PORT SIZE	FLOW	PSI	Voltage
XRCX-LAN-HJ-712	SAE #8	15 GPM	100-3000 PSI	12 VDC



HIGH COUNTRY TEK ELECTONIC SOLUTIONS



DVC Family of Controllers:

- Expandable family of programmable controllers
- SAE J1939 interface where required
- "On-Module" Diagnostic LED indicators
- Program with HCT Intella suite software
- Multi-Pole heavy duty connectors
- Applications examples: turbine control, harvesters, railway equipment, aerial lifts, shredders...



- Questions to help select the right controller group for your application

1. What is the application: harvester, sprayer, shaker, lift, conveyor...
2. What is being controlled (**Output**): pump control, valve control (1 or 2 solenoids)
3. What is the valve coil voltage and current needed? (12 VDC, 24 VDC)
4. What is the input source: potentiometer, joystick or other system?

- If it is **automated (PLC)**, maybe including some additional inputs or logic functions, look at the DVC series of controllers. Note: these controllers normally require programming development.
- If it is **manual**, like a joystick or potentiometer, look at the plug top controller, analog drivers or the EPC -2 dual channel driver with easy to use computer based GUIs.

Multi-Module
Fully Expandable
Systems

'Standard' Stand-
Alone Controllers

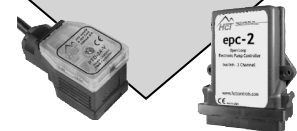
Plug Top Drivers:

- Open Loop control
- 12 or 24VDC versions
- DIN 43650 interface
- Variable 'Dither' signal
- 3A at 12V or 1.5A at 24V supply
- Separate adjustable UP / DOWN Ramps
- Voltage OR Current command input versions
- Pre-wired with 10 feet color coded cable
- Fully sealed to NEMA 6P / IP 67



EPC-2 Dual Channel Driver:

- Multiple application potential
- Free software (RS 232 Compliant)
- CE Compliant, IP 68
- Simple set-up using PC based
- Proportional valves, pump controls....
- Practically "Plug and Play"



Analog Drivers:

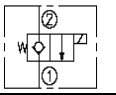
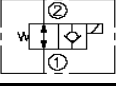
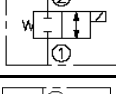
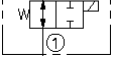
- Tried and True
- HAU and HAG Controllers
- 12 or 24 VDC versions
- Easy to install
- Turn pot adjustments
- Ramp control





SV08 CARTRIDGE SOLENOID VALVES WITH ALUMINUM BODIES 3000 PSI

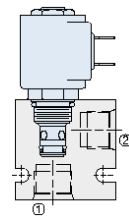
SV08 2-WAY VALVES

	PART #	FLOW	TYPE
	SV08-20-0-N-00	6 GPM	Normally Closed Poppet
	SV08-20M-0-N-00	6 GPM	Poppet with override
	SV08-21-0-N-00	6-8 GPM	Normally Open Poppet
	SV08-23-0-N-00	6 GPM	Poppet W/ Open reverse
	SV08-24-0-N-00	4.5 GPM	Normally Closed Spool
	SV08-25-0-N-00	2.5 GPM	Normally Open Spool

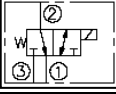
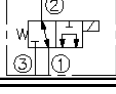
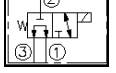
2-WAY ALUMINUM BODIES

2-WAY PART #	PORT SIZE
7024640	SAE #4
7024660	SAE #6
7024680	SAE #8

Installation Torque 18-20 lb. ft.



SV08 3-WAY VALVES

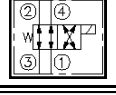

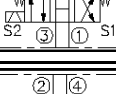
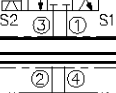
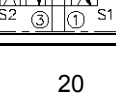
	PART #	FLOW	TYPE
	SV08-30-0-N-00	4 GPM	Spool
	SV08-31-0-N-00	3 GPM	Spool
	SV08-33-0-N-00	3 GPM	Spool

3-WAY ALUMINUM BODIES

3-WAY PART #	PORT SIZE
7024740	SAE #4
7024760	SAE #6

Installation Torque 18-20 lb. ft.

SV08 4-WAY VALVES

	PART #	FLOW	TYPE
	SV08-40-0-N-00	3 GPM	
	SV08-40M-0-N-00	3 GPM	Spool w/ override
	SV08-47A-0-N-00	4 GPM	Spool
	SV08-47B-0-N-00	3 GPM	Spool
	SV08-47C-0-N-00	3 GPM	Spool
	SV08-47D-0-N-00	3 GPM	Spool

SV08 COILS

PART #	VOLTAGE	TYPE
6301010	10 VDC	Dual Spade
6305012	12 VDC	Conduit/18" Lead
6306012	12 VDC	DIN
6301012	12 VDC	Dual Spade
6302012	12 VDC	Dual Lead
6309412	12 VDC	Weatherpack Lead
6301024	24 VDC	Dual Spade
6302024	24 VDC	Dual Lead
6306024	24 VDC	DIN
6309424	24 VDC	Weatherpack Lead
6315115	115VDC	Conduit/18" Lead
6316115	115VDC	DIN
6316024	24 VAC	DIN

Installation Torque 18-20 lb. ft.

4-WAY ALUMINUM BODIES

4-WAY PART #	PORT SIZE
7024860	SAE 6



SV10 CARTRIDGE SOLENOID VALVES

3000 PSI

2-WAY ALUMINUM BODIES

2-WAY PART #	PORT SIZE
7024260	SAE #6
7024280	SAE #8
7024290	SAE #12

Installation Torque 24-26 lb. ft.

SV10 COILS

PART #	VOLTAGE	TYPE
6352012	12 VDC	Dual Lead
6351012	12 VDC	Dual Spade
6356012	12 VDC	DIN
6355012	12 VDC	Conduit/18" Lead
6352024	24 VDC	Dual Lead
6351024	24 VDC	Dual Spade
6356024	24 VDC	DIN
6355024	24 VDC	Conduit/18" Lead
6365115	115 VAC	Conduit/18" Lead
6366115	115 VAC	DIN

Remember to use E coils on demanding applications.
Hydraforce Pg. 3.400.1

3-WAY ALUMINUM BODIES

3-WAY PART #	PORT SIZE
7024360	SAE #6
7024380	SAE #8

Installation Torque 24-26 lb. ft.

4-WAY ALUMINUM BODIES

4-WAY PART #	PORT SIZE
7024460	SAE #6
7024480	SAE #8

Din connectors
Page 15

SV10 2-WAY VALVES

PART #	FLOW	TYPE	
SV10-20-0-N-00	12 GPM	Normally Closed Poppet	
SV10-20M-0-N-00	12 GPM	Poppet with override	
SV10-21-0-N-00	12 GPM	Normally Open Poppet	
SV10-23-0-N-00	8 GPM	Poppet W/ Open reverse	
SV10-24-0-N-00	10 GPM	Normally Closed Spool	
SV10-24M-0-N-00	10 GPM	Spool w/ override	
SV10-25-0-N-00	6 GPM	Normally Open Spool	
SV10-28-0-N-00	10 GPM	Double Blocking	

SV10 3-WAY VALVES

PART #	FLOW	TYPE	
SV10-31-0-N-00	6 GPM	Spool	
SV10-33-0-N-00	5 GPM	Spool	
SV10-34-0-N-00	6 GPM	Spool	

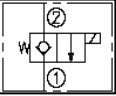
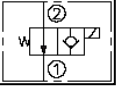
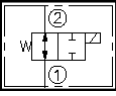
SV10 4-WAY VALVES

PART #	FLOW	TYPE	
SV10-40-0-N-00	6 GPM	Spool	
SV10-40M-0-N-00	6 GPM	Spool with override	
SV10-47A-0-N-00	5 GPM	Spool	
SV10-47C-0-N-00	6 GPM	Spool	
SV10-47D-0-N-00	6 GPM	Spool	



SV12 CARTRIDGE SOLENOID VALVES 3000 PSI (ALUMINUM)

SV12 2-WAY VALVES

	PART #	FLOW	TYPE	Torque
	SV12-20-0-N-00	30 GPM	Normally Closed Poppet	33-37 lb ft.
	SV12-20M-0-N-00	30 GPM	Poppet with override	33-37 lb ft.
	SV12-21-0-N-00	30 GPM	Normally Open Poppet	33-37 lb ft.
	SV12-25-0-N-00	20 GPM	Normally Open Spool	52-60 lb ft.

2-WAY BODY OPTIONS

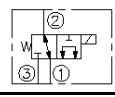
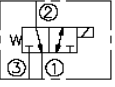
2-WAY PART #	PORT SIZE
7022240	SAE #10
7022250	SAE #12
7022260	SAE #16

SV12 COILS

PART #	VOLTAGE	TYPE
6355012	12 VDC	Conduit/18" Lead
6356012	12 VDC	DIN
6351012	12 VDC	Dual Spade
6352012	12 VDC	Dual Lead
6355024	24 VDC	Conduit/18" Lead
6356024	24 VDC	DIN
6351024	24 VDC	Dual Spade
6352024	24 VDC	Dual Lead
6365115	115 VAC	Conduit/18" Lead
6366115	115 VAC	DIN

SV12 SOLENOID 3-WAY VALVES

SV12 3-WAY VALVES

	PART #	FLOW	TYPE	Torque
	SV12-31-0-N-00	16 GPM	Spool	52-60 lb ft.
	SV12-34-0-N-00	16GPM	Spool	52-60 lb ft.
	Note: Use ports 2 or 3 for inlet			

NOTE: SV12 3-WAY CARTRIDGES MUST USE "E" COILS ONLY-

3-WAY BODY OPTIONS

3-WAY PART #	PORT SIZE
7022320	SAE #8
7022340	SAE #12

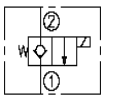
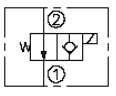
SV12 3-WAY "E" COILS

3-WAY PART #	12 VDC	TYPE
6852012	12 VDC	Dual Lead "E" series
6956012	12 VDC	Din "E" series



SV16 SOLENOID VALVES

SV16 2-WAY VALVES

	PART #	FLOW	TYPE	Torque
	SV16-20-0-N-00	35 GPM	Normally Closed Poppet	46-54 lb ft
	SV16-21-0-N-00	35 GPM	Normally Open Poppet	46-54 lb ft
	SV16-23-0-N-00	35 GPM	Poppet W/ Open reverse	46-54 lb ft

SV16 BODY OPTIONS

2-WAY PART #	PORT SIZE
7023230	SAE #12
7023240	SAE #16

Din connectors
Page 15

SV16 COILS

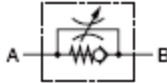
PART #	12 VDC	TYPE
6352012	12 VDC	Dual Lead
6351012	12 VDC	Dual Spade
6356012	12 VDC	DIN
6355012	12 VDC	Conduit/18" Lead
6352024	24 VDC	Dual Lead
6351024	24 VDC	Dual Spade
6356024	24 VDC	DIN
6355024	24 VDC	Conduit/18" Lead
6365115	115 VAC	Conduit/18" Lead
6366115	115 VAC	DIN



CHECK, NEEDLE, FLOW & BALL VALVES

DRV FLOW CONTROL 5000 PSI

MODEL #	SIZE
00705518	1/4" NPT
00705522	SAE #4
00705530	3/8" NPT
00705542	1/2" NPT
00705554	3/4" NPT
00705566	1" NPT



CHECK VALVE 5000 PSI

MODEL #	SIZE	CRACKING PRESSURE
00705830	1/4" NPT	7 PSI
00705833	3/8" NPT	7 PSI
00705834	#6 SAE	7 PSI
00705836	1/2" NPT	7 PSI
00705837	#8 SAE	7 PSI
00705839	3/4" NPT	7 PSI
00705840	#12 SAE	7 PSI
00705842	1" NPT	7 PSI
00705845	1 1/4" NPT	7 PSI



"RV" Series
7 PSI Check

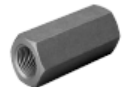
DV NEEDLE VALVE 5000 PSI

MODEL #	SIZE
00705018	1/4" NPT
00705030	3/8" NPT
00705042	1/2" NPT
00705054	3/4" NPT
00705066	1" NPT



CHECK VALVE 65 PSI SPRING

MODEL #	SIZE	CRACKING PRESSURE
02075432	3/8" NPT	65 PSI
02062307	1/2" NPT	65 PSI
00706701	3/4" NPT	65 PSI
00706781	1" NPT	65 PSI



"RV" Series
65 PSI Check

Note: A needle valve meters flow in both directions, whereas a flow control meters flow in only one direction.

PRESSURE COMP FLOW CONTROL 5000 PSI

MODEL #	SIZE
00706079	3/8" NPT
00706087	1/2" NPT



SRVR SERIES

HIGH PRESSURE BALL VALVE

MODEL #	SIZE	PRESSURE
02060280	1/4" NPT	7250 PSI
02060281	3/8" NPT	7250 PSI
02060282	1/2" NPT	5800 PSI
02060283	3/4" NPT	5000 PSI
02060284	1" NPT	5000 PSI
02060285	1 1/4" NPT	5000 PSI



3-WAY BALL VALVE

MODEL #	SIZE	PRESSURE
02060712	1/2" NPT	4600 PSI





SD5 SINGLE SPOOL DIRECTIONAL CONTROL VALVES 12 GPM / 4600 PSI



* JG3 Relief Max 2900 PSI

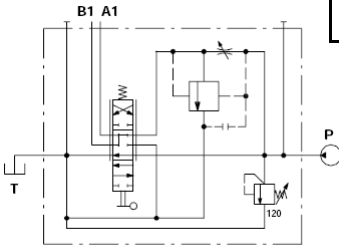
"A" Port



One Spool 4-WAY 3-POSITION SPRING CENTERED	NOMINAL FLOW	SPOOL	PARALLEL FLOW PATH	"P" & "T" PORTS	"A" & "B" PORTS	RELIEF SETTING
SD5/1-P(JG3-120)/18L/AET-SAE FVL102139001	12 GPM	Cylinder	Open Center	SAE #8	SAE #6	1750 PSI *
SD5/1-P(JG3-120)28L/AET-SAE FVL102139012	12 GPM	Motor	Open Center	SAE #8	SAE #6	1750 PSI *
TWO SPOOLS						
SD5/2-P(JG3) /18L/18L/AET-SAE FVL102219002	12 GPM	Cyl / Cyl	Open Center	SAE #8	SAE #6	1750 PSI *
SD5/2-P(JG3) 18L/28L/AET FVL90521828	12 GPM	Cyl / Motor	Open Center	SAE #8	SAE #6	1750 PSI *
SD5/2-P(JG3) /28L/28L/AET-SAE FVL102219056	12 GPM	Motor / Motor	Open Center	SAE #8	SAE #6	1750 PSI *
THREE SPOOLS						
SD5/3-P(JG3)18L/X3/AET-SAE FVL102319002	12 GPM	Cyl / Cyl / Cyl	Open Center	SAE #8	SAE #6	1750 PSI *
FOUR SPOOLS						
SD5/4-P(JG3) /18LX4-AET-SAE FVL102419001	12 GPM	Cyl / Cyl / Cyl / Cyl	Open Center	SAE #8	SAE #6	1750 PSI *
FIVE SPOOLS						
SD5/5P(KG3)/18L/18L/18L/18 FVL102519001	12 GPM	Cyl / Cyl / Cyl / Cyl / Cyl	Open Center	SAE #8	SAE #6	1750 PSI *

- SD5 valve: Pull pressurizes "A" port and Push pressurizes "B" port.

One Spool with Priority Flow Control 4-WAY 3-POSITION SPRING CENTERED	NOMINAL FLOW	SPOOL	PARALLEL FLOW PATH	"T" PORT	"P, A" & "B" PORTS
SDM105/1-P(JG3-175)M/ED210L/	12 GPM	Motor / detent in one position	Open Center	SAE #10	SAE #8



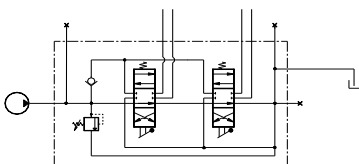
The SDM105 has a priority flow control inlet to limit flow while directing the excess flow back to the tank galley of the valve. See the SD5 literature for further details.

SD5 ACCESSORIES

* JG3 Relief Max 2900 PSI

PART #	DESCRIPTION
FVL3CU1210130	#1 Cylinder Spool
FVL3CU1225130	#2 Motor Spool
FVL3CU1231130	SD-5 #3 Single Acting on "A"
FVL5V11105000	#11 3 Position Detent
FVL5V09202010	9BZ Detent Position 1
FVL5LEV105000	Pivot (Lever) Box

PART #	OUTLET OPTIONS
FVL3XTAP522282	AEK Closed Center Plug
FVL3XGIU527470	AE Power Beyond Plug
FVLXTAP623170	AET Open Center Plug
XTAP623282	SD5 Relief Plug
FVL3SOF136240	Rubber Bellows



PART #	HANDLES	LENGTH
FVL170011012	AL01/M8X120 (Standard)	5"
FVL170011020	AL01/M8X200	8"
AL01/M8X200-45DEG	AL01/M8X200-45DEG	8" 45°





SD11 DIRECTIONAL CONTROL VALVE

18 GPM / 4600 PSI

SINGLE SPOOL 4-WAY 3-POSITION SPRING CENTERED	NOMINAL FLOW	SPOOL	PARALLEL FLOW PATH	"P" & "T" PORTS	"A" & "B" PORTS	RELIEF SETTING
SD11/1-P(KG3)/18L/AET FVL104169002	18 GPM	Cylinder	Open Center	SAE #10	SAE #8	1750 PSI *
TWO-SPOOL						
SD11/2-P(KG3)/18L/18LAET FVL104219001	18 GPM	Cyl / Cyl	Open Center	SAE #10	SAE #8	1750 PSI *
THREE-SPOOL						
SD11/3-P(KG3)/18L/18L/18L-AET FVL104319004	18 GPM	Cyl / Cyl / Cyl	Open Center	SAE #10	SAE #8	1750 PSI *
FOUR-SPOOL						
SD11/4-P(KG3)/18L/18L/18L/18L-AET FVL104419001	18 GPM	Cyl/ Cyl / Cyl / Cyl	Open Center	SAE #10	SAE #8	1750 PSI *



* JG3 Relief Max 2900 PSI

- The SD11 valve series is versatile allowing for spool conversions, various outlet options and control options such as detents.

SD11 ACCESSORIES

PART #	DESCRIPTION	PART #	OUTLET OPTIONS
FVL3CU1410130	#1 Cylinder Spool	FVL3XTAP532450	AEK Closed Center Plug
FVL3CU1425130	#2 Motor Spool	FVL3XGIU532660	AE Power Beyond Plug
FVL3CU1431130	#3 Single Acting Spool on "A"	3XTAP732201	AET Open Center Plug
FVL5V11110000	3 Position Detent #11	FVLXTAP526340	Relief Plug
FVL5LEV110000	Lever Box		

PART #	HANDLES	LENGTH
FVL170012015	AL01/M10X150	6"
FVL170012020	AL01/M10X200 (Standard)	8"

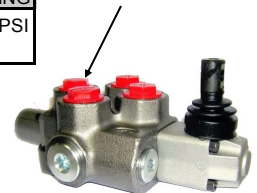


SD18 DIRECTIONAL CONTROL VALVE

42 GPM / 3620 PSI

4-WAY 3-POSITION SPRING CENTERED	NOMINAL FLOW	SPOOL	PARALLEL FLOW PATH	"P" & "T" PORTS	"A" & "B" PORTS	RELIEF SETTING
SD18/1-P(KG3)/18L/AET FVL106119001	42 GPM	Cylinder	Open Center	SAE #16	SAE #12	1750 PSI *

"A" Port



- The SD18 valve series is available with multiple spools and spool control options.

SD18 ACCESSORIES

PART #	SPOOL OPTIONS	DESCRIPTION	OUTLET OPTION
3CU1610130	#2 Motor Spool	3XTAP838200	AEK Closed Center Plug
FVL3CU1625130	#3 Single Acting Spool on "A"	FVL3XGIU546810	AE Power Beyond Plug
FVL5V11110000	3 Position Detent #11	3XTAP640250	AET Open Center Plug

* JG3 Relief Max 2900 PSI

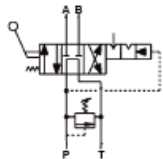
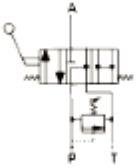
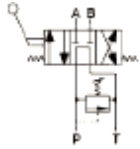
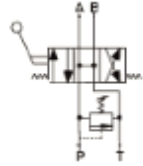
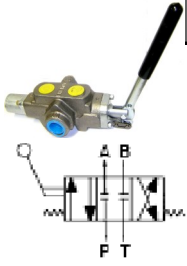
A port location is on spring side.
B port location is on the lever side.

PART #	HANDLES	LENGTH
FVL170013020	AL01/M12X200	8"
FVL170013025	AL01/M12X250 (Standard)	10"





SINGLE SPOOL DIRECTIONAL CONTROL VALVES 20 GPM / 2500 PSI



PART NUMBER 4-WAY 3-POSITION	NOMINAL FLOW	FLOW PATH	CONTROL OPTION	"P" & "T" PORTS	"A" & "B" PORTS	RELIEF SETTING
10207	20 GPM	Closed Center	Spring Centered	3/4" NPT	1/2" NPT	No Relief
10208	20 GPM	Closed Center	Spring Centered	3/4" NPT	3/4" NPT	No Relief
10211	20 GPM	Closed Center	Detent All Positions	3/4" NPT	1/2" NPT	No Relief
10228	20 GPM	Open Center All Ports	Spring Centered	3/4" NPT	1/2" NPT	2000 PSI
10229	20 GPM	Open Center All Ports	Spring Centered	3/4" NPT	3/4" NPT	2000 PSI
10232	20 GPM	Open Center All Ports	Detent All Positions	3/4" NPT	1/2" NPT	2000 PSI
10233	20 GPM	Open Center All Ports	Detent All Positions	3/4" NPT	3/4" NPT	2000 PSI
* Maximum recommended relief valve flow rate of 10 GPM AT 2500 PSI						
20038	20 GPM	Tandem Center P-T	Spring Centered	3/4" NPT	1/2" NPT	2000 PSI
20039	20 GPM	Tandem Center P-T	Spring Centered	3/4" NPT	3/4" NPT	2000 PSI
20042	20 GPM	Tandem Center P-T	Detent All Positions	3/4" NPT	1/2" NPT	2000 PSI
PART NUMBER 3-WAY 3-POSITION	NOMINAL FLOW	FLOW PATH	CONTROL OPTION	"P" & "T" PORTS	"A" & "B" PORTS	RELIEF SETTING
20037	20 GPM	Open Center	Single Acting "A"	3/4" NPT	3/4" NPT	2000 PSI
20041	20 GPM	Tandem Center P-T	Detent Single Acting "A"	3/4" NPT	3/4" NPT	2000 PSI
* Maximum recommended relief valve flow rate of 10 GPM AT 2500 PSI						
PART NUMBER Log Splitter Valve	NOMINAL FLOW	FLOW PATH	CONTROL OPTION	"P" & "T" PORTS	"A" & "B" PORTS	RELIEF SETTING
0C000908	20 GPM	Tandem Center P-T	Detent "A" w/ Kick-Out "B" Spring Centered	3/4" NPT	1/2" NPT	2000 PSI

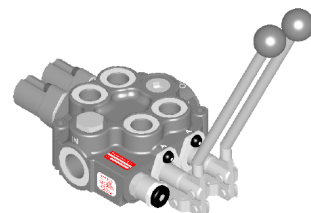
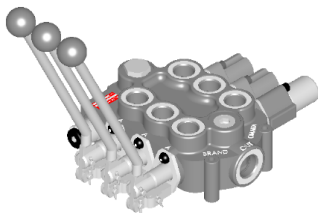
Handle and bracket: 0A002851



2 & 3 SPOOL DIRECTIONAL CONTROL VALVES 18 GPM / 3000 PSI

TWO-SPOOL 4-WAY 3-POSITION	NOMINAL FLOW	FLOW PATH	CONTROL OPTION	"P" & "T" PORTS	"A" & "B" PORTS	RELIEF SETTING
TS2120TSTSLB	18 GPM	Tandem Center P-T	Spring Centered	SAE # 12	SAE #10	1500 PSI
THREE- SPOOL	NOMINAL FLOW	FLOW PATH	CONTROL OPTION	"P" & "T" PORTS	"A" & "B" PORTS	RELIEF SETTING
TS3120TSTSLB	18 GPM	Tandem Center P-T	Spring Centered	SAE # 12	SAE #10	1500 PSI

- Consult the Brand TS catalog for the wide variety of options available for the above two and three spool valves.





WALVOIL SDS150 SECTIONAL CONTROL VALVES

24 GPM / 3000 PSI

SDS150	Item Number	Description
Inlet Section	FVL614266002	SDS150/AC(YG3), w/ relief valve, #12 Ports (Set at 1800)
Work Section(s)	FVL614166001	Cylinder Work Section (SDS150/P18L-SAE)
	FVL614166302	Motor Work Section (SDS150/P-28L-SAE)
RC Outlet Section	FVL614366002	SDS150/RC, SAE-12 Open Center Outlet
Tie Bolt Kits	FVL5TIR110149	Single Section SDS150/1 Tie Bolt Kit
	FVL5TIR110194	Two Section SDS150/2 Tie Bolt Kit
	5TIR110239	Three Section SDS150/3 Tie Bolt Kit
	FVL5TIR110284	Four Section SDS150/4 Tie Bolt Kit
	FVL5TIR110329	Five Section SDS150/5 Tie Bolt Kit
Handle	FVL170012020	Handle M10x200 w/ Black Knob

PARTS	
3CU2410120	SDS150 #1 SPOOL
FVL3CU2425200	SDS150#2 MOTOR SPOOL
FVL3SOF200860	SDS150 LCB RUBBER BELLOW

FVL5V11110000	3 Position Detent
FVL5STA125190	Bracket Kit Valve "feet"
FVL4TAP318010	Plug to convert to Power Beyond or Closed Center



	Outlet Options to convert FVL61466002
RC	Side Outlet
RD	Top Outlet (move SAE 12 plug from top to side)
RE	Top Outlet with power beyond (Add FVL4TAP318010)
RK	Top Outlet with closed center (Add FVL4TAP318010)



VA20 SECTIONAL CONTROL VALVES

35-40 GPM / 2500 PSI

1

VA20 INLET

INLET	"P" PORT	RELIEF	CODE
347-9175-002	SAE #16	R/V Cavity	AA880

2

VA20 RELIEF

RELIEF VALVE	PSI RANGE
391-1873-001	800-2800 PSI (Preset 2000 PSI)



3

VA20 VALVE SECTIONS

VALVE SECTION 4-WAY 3-POSITION	SPOOL	PARALLEL FLOW PATH	CONTROL OPTION	"A" & "B" PORTS	CODE
347-9172-003	Double Acting	Cylinder	Spring Centered	SAE #12	DA7
347-9172-006	Double Acting	Motor	Spring Centered	SAE #12	MA7
347-9172-034	Double Acting	Cylinder	Air Shift	SAE #12	DV7
VALVE SECTION 3-WAY 3-POSITION					
347-9171-003	Single Acting	Cylinder	Spring	SAE #12	SA7

4

VA20 HANDLE / OPTIONS

OPTION	DESCRIPTION
391-1873-063	10" Handle
391-1873-020	Detent Kit
391-1873-206 (Sub C-3520-DM)	• Air Shift Kit

- Air shift kit for section conversions

5

VA20 OUTLET

OUTLET	FLOW	"T" PORT	CODE
347-9176-002	OPEN CENTER	SAE #16	Z880

6

VA20 STUD KITS

BOLT KIT	DESCRIPTION
391-1873-045	Single section stud kit
391-1873-046	Two section stud kit
391-1873-047	Three section stud kit

Listed above are the basic components to build a VA20 valve assembly. Simply begin by selecting an inlet section #1 and then select the required parts through to section #6.

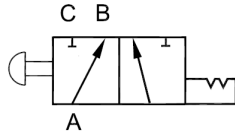
Note: There are many other options available for this series of valve, e.g. power beyond outlets, closed center options, work sections with port reliefs.... Please call for assistance beyond the listed.



SELECTOR / DIVERter VALVES

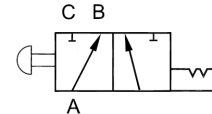
3-WAY 3000 PSI

MODEL #	FLOW	CONTROL	PORT SIZE
B-1152	20 GPM	Detent	1/2" NPT
B-1239	30 GPM	Detent	3/4" NPT



BRAND HYDRAULICS 3-WAY 3000 PSI

MODEL #	FLOW	CON-TROL	PORT SIZE
MS16SAE	45 GPM	Detent	SAE #16



Note: see 3-Way ball valves as alternative



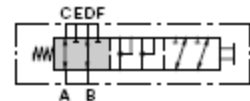
LEVER "DF" DIVERter VALVE

4600 PSI

MODEL #	PART #	FLOW	FLOW PATH	CROSSOVER PATH	CONTROL	PORT SIZE
DF5/6A12LSAE	FVL122382040	16 GPM	6-Way 2-Position	Open	Detent	SAE #8
DF10/6A12LSAE	FVL124382040	24 GPM	6-Way 2-Position	Open	Detent	SAE #10
DF20/6B12LSAE	FVL126392042	37 GPM	6-Way 2-Position	Closed	Detent	SAE #12



DF HANDLES	
MODEL #	DESCRIPTION
FVL170011020 (AL01/M8X200)	Handle for DF5
FVL170013025 (AL01/M10X200)	Handle for DF10
FVL170013025 (AL01/M12X250)	Handle for DF20



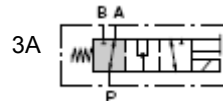
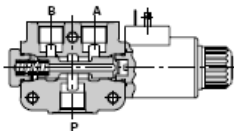
6A



6B

3-WAY ELECTRIC "DFE" DIVERter VALVE

MODEL #	PART #	FLOW	FLOW PATH	CROSSOVER PATH	VOLTAGE	PORT SIZE	DRAIN PORT	MAX PSI
DFE10/3A-18ES-Y202-12VDC/SAE	FVL12A446019	24 GPM	3-Way 2-Position	Open	12 VDC	SAE #10	SAE #6	4600 PSI
DFE20/3A18ES-W201-12VDC	FVL12A646014	37 GPM	3-Way 2-Position	Open	12 VDC	SAE #12	NO	2900 PSI
DFE20/3A-18ES-Y201-12VDC-SAE	FVL12A646020	37 GPM	3-Way 2-Position	Open	12 VDC	SAE #12	SAE #4	4600 PSI

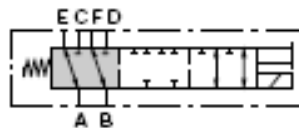


3A

Use drain port for dynamic applications or when exceeding 3000 PSI.

6-WAY ELECTRIC "DFE" DIVERter VALVE

MODEL #	PART #	FLOW	FLOW PATH	CROSSOVER PATH	VOLTAGE	PORT SIZE	DRAIN PORT	MAX PSI
DFE052/6B18ES-W201-12VDC-SAE	FVL12A270034	16 GPM	6-Way 2-Position	Closed	12 VDC	SAE #8	NO	2900 PSI
DFE10/6B-18ES-W202-12VDC	FVL12A486013	24 GPM	6-Way 2-Position	Closed	12 VDC	SAE #10	NO	2900 PSI
DFE20/6B18ES.W201/12VDC	FVL12A686014	37 GPM	6-Way 2-Position	Closed	12 VDC	SAE #12	NO	2900 PSI



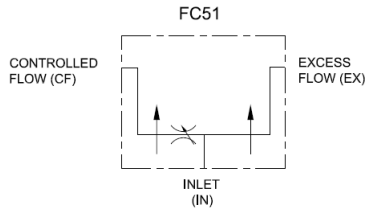
DFE 20 COILS

MODEL #	PART #
12 VDC	4SOL519112
24 VDC	4SOL519124



FC51 & FCR51 PRIORITY FLOW CONTROLS

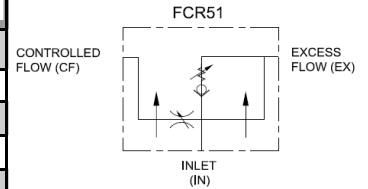
3000 PSI



FC51		3000 PSI
MODEL #	PORT SIZE	FLOW RANGE
FC51-3/8	3/8" NPT	0-8 GPM
FC51-1/2	1/2" NPT	0-16 GPM
FC51-3/4	3/4" NPT	0-30 GPM
FC51-10SAE	SAE #10	0-16 GPM
FC51-12SAE	SAE #12	0-30 GPM



FCR51			3000 PSI
MODEL #	PORT SIZE	FLOW RANGE	RELIEF VALVE
FCR51-1/2	1/2" NPT	0-16 GPM	Set at 1500 PSI
FCR51-3/4	3/4" NPT	0-30 GPM	Set at 1500 PSI
FCR51-10SAE	SAE #10	0-16 GPM	Set at 1500 PSI
FCR51-12SAE	SAE #12	0-30 GPM	Set at 1500 PSI

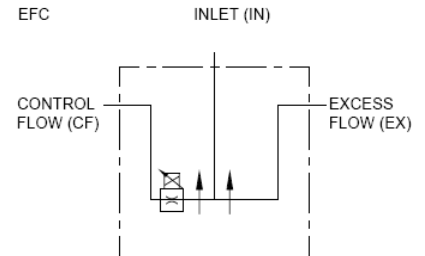


EFC51 ELECTONIC PRIORITY FLOW CONTROLS

3000 PSI



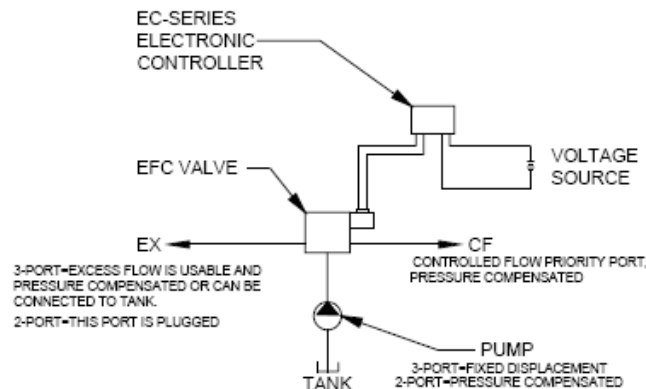
CONTROLLER		12 VDC
MODEL #	STYLE	
EC-12-01	Single Valve Controller	
EC20100	Two Valve Controller	



COMMON VALVES				
MODEL #	STYLE	FLOW RANGE	PORT	VOLTAGE
EFC12-15-12 (2P)	2 Port (EX plugged)	0 - 15 GPM	SAE 12	12 VDC
EFC12-15-12	3 Port	0 - 15 GPM	SAE 12	12 VDC
EFC12-25-12	3 Port	0 - 25 GPM	SAE 12	12 VDC



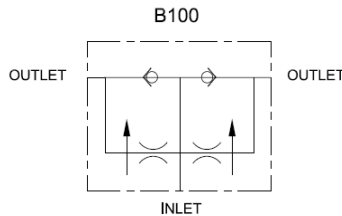
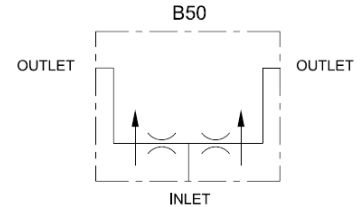
The 2-port valve can be converted to a 3-port by removing the EX plug. However, valve characteristics will be affected.





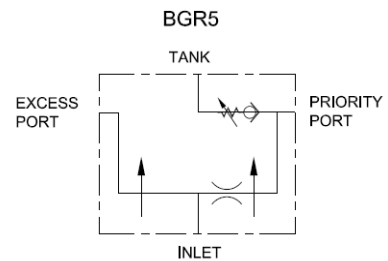
“B” & “BG” PRIORITY FLOW DIVIDERS (NON-ADJUSTABLE) 3000 PSI

B50 DIVIDER ONLY			3000 PSI
MODEL #	PORT SIZE	FLOW	OUTLET RATIO
B50-1/2	1/2" NPT	8-16 GPM	50:50
B50-3/4	3/4" NPT	16-30 GPM	50:50
B50-8SAE	SAE #8	8-16 GPM	50:50
B50-12SAE	SAE #12	16-30 GPM	50:50



B100 DIVIDER FREE REVERSE FLOW			
MODEL #	PORT SIZE	FLOW	OUTLET RATIO
B100-3/8	3/8" NPT	2-8 GPM	50:50
B100-1/2	1/2" NPT	8-16 GPM	50:50
B100-3/4	3/4" NPT	16-30 GPM	50:50
B100-8SAE	SAE #10	8-16 GPM	50:50
B100-12SAE	SAE #12	16-30 GPM	50:50

BGR DIVIDER ONLY			3000 PSI	
MODEL #	WORK PORTS	TANK PORT	PRIORITY FLOW	RELIEF VALVE
BGR501-3/4	3/4" NPT	3/8" NPT	1 GPM	Set at 1500 PSI
BGR503-3/4	3/4" NPT	3/8" NPT	3 GPM	Set at 1500 PSI
BGR503-12SAE	SAE #12	3/8" NPT	3 GPM	Set at 1500 PSI
BGR504-3/4	3/4" NPT	3/8" NPT	4 GPM	Set at 1500 PSI
BGR504-12SAE	SAE #12	3/8" NPT	4 GPM	Set at 1500 PSI
BGR506-3/4	3/4" NPT	3/8" NPT	6 GPM	Set at 1500 PSI
BGR506-12SAE	SAE #12	3/8" NPT	6 GPM	Set at 1500 PSI
BGR508-3/4	3/4" NPT	3/8" NPT	8 GPM	Set at 1500 PSI
BGR508-12SAE	SAE #12	3/8" NPT	8 GPM	Set at 1500 PSI



BG orifice can be drilled for different flow requirements.



CAP & PLUG KITS / O-RING KITS AND SEALANTS

CAP & PLUG KITS

Part #	Description
Pipe Cap & Plug Kit	NPT Threaded Kit
Flat Face Cap & Plug Kit	Flat Face Threaded Kit
JIC Cap & Plug Kit	JIC Threaded Kit



O-RING KITS

Part #	Alternate Kits (Hercules)	Description
K293X36B	574 Kit	Backup O-Ring Kit
K212X20N90	900 Boss Kit	Boss O-Ring Kit
K382X30-N70	568 Kit-A	Standard O-Ring Kit
K500X36MM	Metric O Kit-E	Metric O-Ring Kit
ORK-FF-N90	Flat Face O-Rings	Flat Face O-Ring Kit
7369-0001	---	Assorted Boss, Flat Face & Flange O-Rings



SEALANTS

MODEL #	Description
982-108	Teflon Tape
569-31	Sealant

LOVEJOY QUICK REFERENCE CHARTS

ITEM NUMBER	LONG DESCRIPTION	DETAILS
68514425310	L/AL090/095 SPDR HYTREL OCT 7/8	Spider
68514411070	L/AL090/095 SPIDER NBR SOX	Spider
68514427613	L095-7/16" HUB 3/32x3/64	7/16" x 3/32"
68514426088	L095-1/2" HUB 1/8x1/16 KW	1/2" x 1/8"
68514411085	L095-5/8" HUB 3/16x3/32 KW	5/8" x 3/16"
68514437242	L095-5/8" HUB 5/32x5/64 KEYWAY	5/8" x 5/32"
68514411087	L095-3/4" HUB 3/16x3/32 KW	3/4" x 3/16"
68514411091	L095-1" HUB 1/4x1/8 KW	1" x 1/4"
68514411093	L095-1,1/8" HUB 1/4x1/8 KEYWAY	1 1/8" x 1/4"
68514437900	L095-16/32" HUB 9T DP W/L'LOC	9 Tooth



ITEM NUMBER	LONG DESCRIPTION	DETAILS
68514411486	L/AL099/100 SPDR HYTREL OCT1-1/32	SPIDER
68514411492	L/AL099/100 SPDR SOXOCT1-1/32	SPIDER
68514411494	L099-L100 SPIDERS	SPIDER
68514426089	L100-1/2" HUB 1/8x1/16 KW	1/2" x 1/8"
68514411510	L100-5/8" HUB 3/16x3/32 KW	5/8" x 3/16"
68514437243	L100-5/8" HUB 5/32x5/64	5/8" x 5/32"
68514411512	L100-3/4" HUB 3/16x3/32 KW	3/4" x 3/32"
68514435686	L100-7/8" HUB 1/4x1/8 KW	7/8" x 1/4"
68514411516	L100-1" HUB 1/4x1/8 KW	1" x 1/4"
68514411520	L100-1,1/4" HUB 1/4x1/8 KW	1 1/4" x 1/4"
68514411518	L100-1,1/8" HUB 1/4x1/8 KW	1 1/8" x 1/4"
68514411522	L100-1,3/8" HUB 5/16x5/32	1 3/8" x 5/16"
68514437906	L100-16/32" HUB 13T DP W/L'LOC	13 Tooth

ITEM NUMBER	LONG DESCRIPTION	DETAILS
68514411717	L/AL110 HYTREL SPIDER	SPIDER
68514411724	L/AL110 SPIDER SOX	SPIDER
68514426211	L110-5/8" HUB 3/16x3/32 KW	5/8" x 3/16"
68514437244	L110-5/8" HUB 5/32x5/64 KW	5/8" x 5/32"
68514411735	L110-3/4" HUB 3/16x3/32 KW	3/4" x 3/16"
68514411739	L110-1" HUB 1/4x1/8 KW	1" x 1/4"
68514411747	L110-1,1/2" HUB 3/8x3/16 KW	1 1/2" x 3/8"
68514411743	L110-1,1/4" HUB 1/4x1/8 KW	1 1/4" x 1/4"
68514411749	L110-1,5/8" HUB 3/8x3/16 KW	1 5/8" x 3/8"
68514411746	L110-1,7/16" HUB 3/8x3/16	1 7/16" x 3/8"
68514437912	L110-12/24" HUB 14T DP W/L'LOC	14 Tooth



MEASURING EQUIPMENT: PSI & TEMP GAUGES & FLOW METERS

1/4" BOTTOM MOUNT GAUGES



MODEL #	THREAD SIZE	PSI RANGE
25-901-30"/30 PSI	1/4" Bottom	Vac 30-30 PSI
25-901-60PSI/BAR	1/4" Bottom	0-60 PSI
25-901-300 PSI/BAR	1/4" Bottom	0-300 PSI
25-901-400 PSI/BAR	1/4" Bottom	0-400 PSI
25-901-600 PSI/BAR	1/4" Bottom	0-600 PSI
25-901-1000 PSI/BAR	1/4" Bottom	0-1000 PSI
25-901-1500 PSI/BAR	1/4" Bottom	0-1500 PSI
25-901-2000 PSI/BAR	1/4" Bottom	0-2000 PSI
25-901-3000 PSI/BAR	1/4" Bottom	0-3000 PSI
25-901-5000 PSI/BAR	1/4" Bottom	0-5000 PSI
25-901-6000 PSI/BAR	1/4" Bottom	0-6000 PSI
25-901-10,000 PSI/BAR	1/4" Bottom	0-10,000 PSI



1/4" GAUGE SNUBBER

Valve Part #	Port
NSAB-KXV-BA	1/4" NPT



SUN adjustable gauge snubbers are throttling and shut-off devices used to isolate and protect gauges from line pressure and pointer pulsation.



MAGNETIC TEMP GAUGE

MODEL #	TEMP RANGE
312° F	0-250° F

1/4" BACK PANEL MOUNT GAUGES



MODEL #	THREAD SIZE	PSI RANGE
25-911-160 PSI/BAR W/PMC	1/4" Back	0-160 PSI
25-911-300 PSI/BAR W/PMC	1/4" Back	0-300 PSI
25-911-600 PSI/BAR W/PMC	1/4" Back	0-600 PSI
25-911-1000 PSI/BAR W/PMC	1/4" Back	0-1000 PSI
25-911-3000 PSI/BAR W/PMC	1/4" Back	0-3000 PSI
25-911-5000 PSI/BAR W/PMC	1/4" Back	0-5000 PSI
25-911-6000 PSI/BAR W/PMC	1/4" Back	0-6000 PSI



The adjustability of the globe valves makes them ideal for back pressuring pumps and motors during flow testing.

GLOBE VALVE

MODEL #	Thread	Pressure
FFG2006TA	3/4" NPT	5000 PSI
FFG2008TA	1" NPT	5000 PSI

FLOW METERS 3500 PSI



MODEL #	THREAD SIZE	FLOW RANGE
H601A-015	1/2" NPT	1-15 GPM
H701A-030	3/4" NPT	3-30 GPM
H761A-050	1" NPT	5-50 GPM
F1750-120-ANO	3/4" NPT	1.5-32 GPM



F1750-120-ANO

FLOW METER / TEMP/ PSI & VALVE

MODEL #	Flow	Pressure	Port
RFIK-200-S-6	4-54 GPM	6000 PSI	SAE 16



RESERVOIRS & ACCESSORIES

RESERVOIRS (SIDEMOUNT)

PART #	SIZE	DIMENSIONS	SUCTION PORT	RETURN PORT	BREATHER
A-3100	10 Gallon	12" L x 14" W x 14" H	1 1/4" NPT (Both Sides)	1" NPT (Both Sides)	40 Micron
A-3150	15 Gallon	16" L x 14" W x 16" H	2" NPT (Both Sides)	1 1/4" NPT (Both Sides)	40 Micron
A-3250	25 Gallon	20" L x 15" W x 20" H	2" NPT (Both Sides)	1 1/4" NPT (Both Sides)	40 Micron
A-3300	30 Gallon	24" L x 15" W x 20" H	2" NPT (Both Sides)	1 1/4" NPT (Both Sides)	40 Micron
A-3400	40 Gallon	32" L x 15" W x 20" H	2" NPT (Both Sides)	1 1/4" NPT (Both Sides)	40 Micron



Reservoirs include sight/temp gauge, filler breather cap, and NPT threaded porting.

TANK-MOUNTED STRAINERS 100 MESH

PART #	FLOW	MALE THREAD	FEMALE THREAD	BYPASS
S5-100RV3	5 GPM	1" NPT	1/2" NPT	3 PSI
S10-100RV3	10 GPM	1 1/4" NPT	3/4" NPT	3 PSI
S15-100RV3	15 GPM	1 1/2" NPT	1" NPT	3 PSI
S25-100RV3	25 GPM	2" NPT	1 1/4" NPT	3 PSI
S50-100RV3	50 GPM	3" NPT	2" NPT	3 PSI
S-100-100-RV-5	100 GPM	4" NPT	3" NPT	5 PSI



SIGHT / TEMP GAUGE

PART #	SIZE
T-550-3	3"
T-550-5	5"



THREADED FILLER BREATHERS

PART #	THREAD	MICRON
BF-2143	3/4 NPT	40
P563368	3/4 NPT	40
ABF-3/10	3/4 NPT	10



SUCTION STRAINERS 100 MESH

PART #	LHA #	FLOW	FEMALE THREAD	BYPASS
P173911	SEH-10-1-100-RV3	10 GPM	1" NPT	3 PSI
P173912	SEH-20-1.1/4-100-RV3	20 GPM	1 1/4" NPT	3 PSI
P173913	SEH-30-1.1/2-100-RV3	30 GPM	1 1/2" NPT	3 PSI
P173914	SEH-50-1.1/2-100-RV3	50 GPM	1 1/2" NPT	3 PSI
P173915	SEH-50-2-100-RV3	50 GPM	2" NPT	3 PSI



FILLER BREATHERS

PART #	LHA #	MICRON
P562584	ABB-10N	10
P562603	ABB-40N	40
P563348	PBB-10-5-N (5 PSI relief)	10



LOW PRESSURE BALL VALVES

LOW PRESSURE BALL VALVES

MODEL #	THREAD SIZE	PSI RATING	MODEL #	THREAD SIZE	PSI RATING
P562331	1/4" NPT	710 PSI	P562339	1 1/4" NPT	430 PSI
P562333	3/8" NPT	710 PSI	P562341	1 1/2" NPT	430 PSI
P562336	1/2" NPT	710 PSI	P562343	2" NPT	360 PSI
P563311	3/4" NPT	570 PSI	P562345	2 1/2" NPT	260 PSI
P562338	1" NPT	570 PSI	P562346	3" NPT	230 PSI





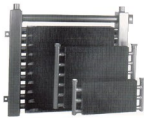
COOLERS, TEMP AND PRESSURE SWITCHES



MA coolers include a 1/2" sensor port for the 96171 Thermostat Controller

MA HEAT EXCHANGERS				200 PSI / 250° F		
PART #	PORT SIZE	FAN VOLTAGE	10 PSI DROP	BTU/HR @ 100° F	12 VDC FAN / AMPS	REPLACEMENT FAN
MA-12-2-4A	SAE #12	12 VDC	20 GPM	20,000	1 / 12.5 amps	69531
MA-18-2-4A	SAE #12	12 VDC	40 GPM	30,000	1 / 10.6 amps	69532
MA-32-2-4A	SAE #16	12 VDC	40 GPM	60,000	2 / 22.2 amps	69533

To accurately select a cooler, review Thermal Transfer's MA or M series catalog. The above is a guideline to selecting a mobile cooler. For example, the MA-12 can flow 20 GPM at a 10 PSI pressure drop while rejecting 20,000 BTU/HR (roughly 7.5 hp rejected).



M SERIES 300 PSI/ 400° F			
MODEL	PORT SIZE	10 PSI DROP	BTU/HR
M-10	1" NPT	12 GPM	6,000
M-15	1" NPT	18 GPM	8,000
M-20	1" NPT	28 GPM	12,500
M-25	1" NPT	33 GPM	23,000
M-30	1 1/4" NPT	47 GPM	30,000

ADJUSTABLE THERMOSTAT CONTROLLER			
MODEL	Sensor	Voltage	Temp Switch Points
96171	3/8" NPT	12 or 24 VDC	100-210° F (20F increments)



TEMP AND PRESSURE SWITCHES



HT Type

HT TEMP SWITCHES		500 PSI MAX			
MODEL	Temp Switch	Circuit	Direction	Thread	Current
HT-2C-130R-WL	130° F	SPDT	Rise	3/8" NPT	5 amp @ 30 VDC
HT-2C-145R-WL-AH	145° F	SPDT	Rise	3/8" NPT	5 amp @ 30 VDC
HT-2C-165R-WLAH	165° F	SPDT	Rise	3/8" NPT	5 amp @ 30 VDC

SQ Type



WX Type



CD Type

WX & CD ADJUSTABLE PRESSURE SWITCHES					
MODEL	Pressure Switch	Circuit	Direction	Thread / Wire	Current
SQ-2	6-30 Adjustable	SPDT	Rise	1/8" NPT	10 A @ 125 VAC 5 A @ 30 VDC
SQ-3	20-120 Adjustable	SPDT	Rise	1/8" NPT	10 A @ 125 VAC 5 A @ 30 VDC
WX-1A-500J	300-800 (Set @ 500)	SPST-NO	Rise	1/4" NPT / Screw	5 A @ 250 VAC 5 A 30 VDC Resistive
WX-1C-1600J/WL	700-2500 (Set @ 1600)	SPDT	Rise	1/4" NPT / Lead	5 A @ 250 VAC 5 A 30 VDC Resistive
CD-1C6-1600J/WL	500-2000 (Set @ 1600)	SPDT	Rise	1/4" NPT / Lead	5 A @ 250 VAC 5 A 30 VDC Resistive



FILTRATION

RETURN LINE SPIN-ON 20 GPM / 200 PSI

PART #	PORT SIZE	NOMINAL	BYPASS	INDICATOR
K041721 (SP15NAGNO)	3/4" NPT	10 Micron	15 PSI	No
CP-750-10P	3/4" NPT	10 Micron	15 PSI	No
P563278	3/4" NPT	No Element Head Only	15 PSI	No
P561131	3/4" NPT	No Element Head Only	25 PSI	Plugged (Add P563298 Gauge)

ELEMENT ONLY

PART #	OLD #	NOMINAL
P551551	SPE-15-10	10 Micron
P551553	SPE-15-25	25 Micron
P560693	SPE-15-10-BTA	10 M Absolute
CP-752-10		10 Micron



RETURN LINE SPIN-ON 60 GPM / 150 PSI

PART #	PORT SIZE	NOMINAL	BYPASS	INDICATOR
K054080 (SP50NAGNO)	1 1/4" NPT	10 Micron	15 PSI	No
P563267	1 1/4" NPT	No Element Head Only	15 PSI	Plugged (Add P563297 Gauge)
P563268	1 1/4" NPT	No Element Head Only	25 PSI	Plugged

ELEMENT ONLY

PART #	OLD #	NOMINAL
P550388	SPE-50-10	10 Micron
P550387	SPE-50-25	25 Micron
P562203	SPE-50-140W	140W
P550251	SPE-60-10	10 Micron
P165875/ P165876	SPE-50-BTA-10 / 10.7" Long	10 M Absolute
P550251	10.7" Length	23 Micron



LOW PRESSURE FILTER 100 GPM / 300 PSI

PART #	PORT SIZE	ABSOLUTE (99%)	BYPASS	INDICATOR
KF3-1KZ25-SD5	SAE #24	15 Micron	30 PSI	Pop-up



MEDIUM PRESSURE FILTER 70 GPM / 800 PSI

PART #	PORT SIZE	ABSOLUTE (99%)	BYPASS	INDICATOR
RLT-9VZ10-S20-D5	SAE #20	9 Micron	40 PSI	Pop-up



HIGH PRESSURE FILTER 20 GPM / 3000 PSI

PART #	PORT SIZE	ABSOLUTE (99%)	BYPASS	INDICATOR
NF301NZ10SD5	SAE #12	9 Micron	40 PSI	Pointer



FILTER CART

- 1 HP 115/60 (13.4 F. L. Amps)
- Pump flow: 11 GPM
- Bypass 15 PSID
- Element: P562204 (nominal 10 micron)
- Optional P562207 (Absolute 10 micron)
- 10' Suction hose
- 10' Pressure hose
- Approximate weight 115 lbs.



COMPONENT	ISO CLEANLINESS LEVEL	SCHROEDER MEDIA
Gear & Vane Pump Directional Valves	19/17/14	Z25 / Z10
Piston Pump	18/16/13	Z10 / Z5
Proportional Valve	18/16/13	Z10 / Z5
Servo Valve	16/14/11	Z1



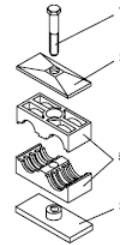
WELD PLATE CLAMPS

HRL—Standard Duty



Available to 2" tube outside diameter

Recommended for systems with less than 1500 PSI operating pressure and no dynamic loads.



HRS Series



Available to 16" nominal pipe size

Recommended for systems with greater than 1500 PSI, pressure surges or temperature fluctuations.

HRZ Series



Available to 1-1/4" nominal pipe size.

Recommended for systems with less than 1500 PSI operating pressure and no dynamic loading.



HRZ SERIES (WELD PLATE)

MODEL #	ID	METRIC SIZE	TUBE SIZE	PIPE SIZE
02059302	.37	9.5 mm	3/8"	
02058874	.5	12.7 mm	1/2"	
02059304	.54	13.7 mm		1/4"
02059305	.63	16 mm	5/8"	
02059306	.67	17.1 mm		3/8"
02058875	.75	19 mm	3/4"	
02059307	.84	21.3 mm		1/2"
02059308	.87	22 mm	7/8"	
02059309	1.00	25.4 mm	1"	
02058881	1.05	26.7 mm		3/4"
02059310	1.33	33.7 mm		1"
02059311	1.5	38 mm	1.5"	

HRL SERIES (WELD PLATE)

MODEL #	ID	METRIC SIZE	TUBE SIZE	PIPE SIZE
02056150	.37	9.5 mm	3/8"	
02056152	.5	12.7 mm	1/2"	
02056153	.55	14 mm		1/4"
02056154	.63	16 mm	5/8"	
02056155	.67	17.1 mm		3/8"
02056156	.75	19 mm	3/4"	
02056157	.84	21.3 mm		1/2"
02056158	.87	22 mm		
02056159	1.00	25.4 mm	1"	
02056160	1.05	26.6 mm		3/4"
02056161	1.26	32 mm	1 1/4"	
02056162	1.33	33.7 mm		1"
02056163	1.50	38 mm	1 1/2"	
02056164	1.65	42 mm		1 1/4"



HRS & HRES (WELD PLATE)

MODEL #	ID	METRIC SIZE	TUBE SIZE	PIPE SIZE
02056179	1.05	26.7 mm		3/4"
02056181	1.33	33.7 mm		1"
02056182	1.50	38 mm	1 1/2"	
02059491	1.18	30 mm	-	-
02059492	1.26	32 mm	1 1/4"	
02059495	1.50	38 mm	1 1/2"	



QUICK COUPLERS

COUPLERS NOTE: "P" DESIGNATES POPPET

COUPLER #	NIPPLE	THREAD SIZE	PSI RATING	FLOW GUIDELINE
4050-2P	4010-2P	1/4" NPT	3000 PSI	3 GPM
4050-3P	4010-3P	3/8" NPT	3000 PSI	6 GPM
4050-4MB	8010-4 / 8010-4P	1/2" NPT	3000 PSI	12 GPM
4050-5	8010-5	3/4" NPT 1/2" BODY	3000 PSI	12 GPM
4050-5P	8101-5P	3/4" NPT 1/2" BODY	3000 PSI	12 GPM
4150-5	4110-5	3/4" NPT	3000 PSI	28 GPM
4050-6	4010-6P	1" NPT	3000 PSI	50 GPM



Normally used in the AG market

There are many additional sizes available for the couplers listed. Refer to Parker's Quick Coupler catalog for current specifications and options.



6600 SERIES COUPLERS 4000 PSI

COUPLER #	NIPPLE	THREAD SIZE	FLOW GUIDELINE
6601-12-12	6602-12-12	3/4" NPT	28 GPM

NON-SPILL COUPLERS 2500 PSI

COUPLER #	NIPPLE	THREAD SIZE	FLOW GUIDELINE
NS-371-6P	NS-372-6P	3/8" NPT	10 GPM



Normally used in the public utility market or for Limb Lopper tools.

FLAT FACE COUPLERS 3000 PSI

COUPLER #	NIPPLE	THREAD SIZE	PSI RATING	FLOW GUIDELINE
FF-371-6FP	FF-372-6FP	3/8" NPT	3000 PSI	6 GPM
FF-371-8FP	FF-372-8FP	1/2" NPT	3000 PSI	12 GPM



HIGH PRESSURE COUPLERS 10,000 PSI

COUPLER #	NIPPLE	THREAD SIZE	FLOW GUIDELINE
3050-3	3010-3	3/8" NPT	6 GPM

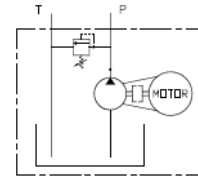




MONARCH AC POWER UNITS

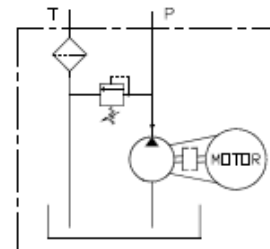


1.5 & 3 HP Power Units					
PART #	HORSE POWER	VOLTAGE	FLOW	TANK SIZE	MAX PRESSURE
M-4598-0105	1.5 HP 3450 RPM	115/230/60 1 Phase	1 GPM	2 Gallon Horizontal	2000 PSI
M-4598-0104	3 HP 3450 RPM	230/460/60 3 Phase	2 GPM	6 Gallon Vertical	2000 PSI



Option: Bolt-on D03 pad K18371

5 HP Power Unit (Fixed Gear)					
PART#	HORSE POWER	VOLTAGE	FLOW	TANK SIZE	MAX PRESSURE
T16C405C01F1-03	5 HP 1800 RPM	230/460/60 3 Phase	3.7 GPM	15 Gallon Vertical	2000 PSI

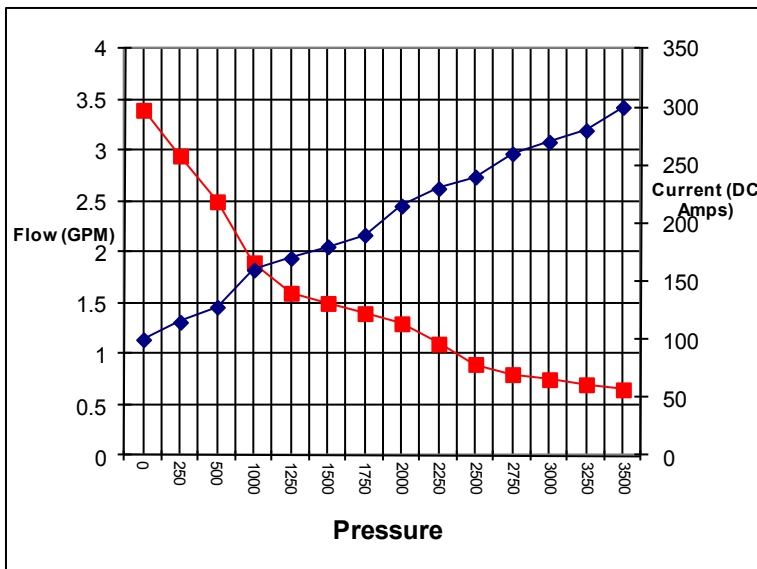


With Return Line Filter



Alternate: Rexroth R978931810

SELECTING MONARCH DC UNITS



KEY:

A = Amps.

T = Single Maximum run time allowed in minutes. Frequently referred to as S2.

% = Maximum allowable run time for repeating 10* minute cycle. Frequently referred to as S3. Note: some motors are rated for a 5 minute cycle and are noted on the chart.

* = No data available.

Example: 08111 Motor. At 100 Amps the motor may be operated continuously for 9.5 minutes after which it must be allowed to completely cool to ambient temperature before the cycle can be repeated. Alternatively, at 100 Amps the motor may be operated for repeated cycles of 150 seconds on and 450 seconds off.

Most D.C. power units operate intermittently and the thermal heat rise is negligible. However, climate, duty cycle, enclosure and the ambient working temperature must all be considered for proper motor selection.

	A	0	75	100	150	225	300
08111 12V	T	*	*	9.5	6.0	3.0	2.0
08058	%	*	*	25%	20%	12%	7%



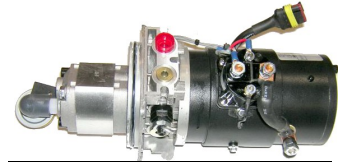
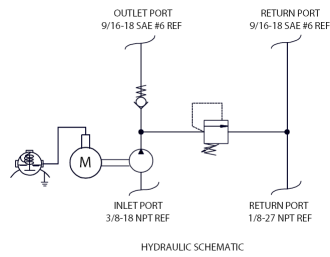
MONARCH DC POWER UNITS

12 VDC PUMP MOTOR WITH P & T PORTS

MODEL #	Pump	Ports	Reservoir Size
M3504-9100	.128 in ³ /rev	SAE #6	Select from table

Plastic Reservoir Options	
Item #	Reservoir Size
K14168	400 IN ³ (7QT, 1.5 GAL)**
K14169	540 IN ³ (9QT 2.25 GAL)**
K14170	715 IN ³ (12QT 3 GAL)**

** All reservoir capacities measured in usable volume.

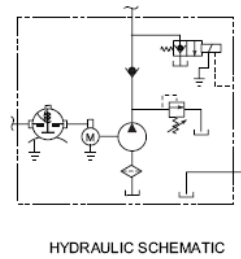


Unit shown as is, reservoir must be selected from the table.

12 VDC SINGLE ACTING POWER UNIT POWER UP, GRAVITY DOWN

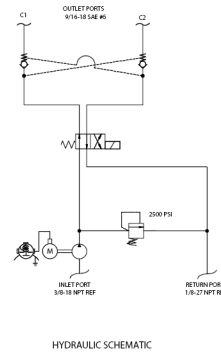
MODEL #	Pump	Ports	Control Harness	Reservoir Size
M-3519-0277	.128 in ³ /rev	SAE #6	Yes	8 QT Poly

(Typically used for power up/gravity down applications)

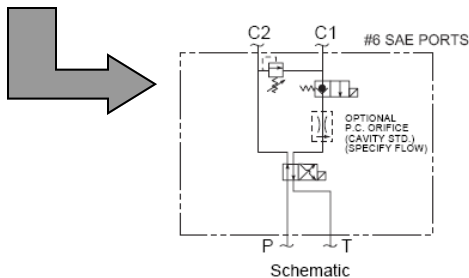


12 VDC DOUBLE ACTING POWER UNIT POWER UP, POWER DOWN

MODEL #	Pump	Ports	Control Harness	Reservoir Size
M-3554-9000	.128 in ³ /rev	SAE #6	Yes	8 Qt Poly
M-3554-9100	.128 in ³ /rev	SAE #6	Yes	Select from table
M-3551-500355118888	.128 in ³ /rev	SAE #6	Yes	8 Qt Poly



Plastic Reservoir Options	
Item #	Reservoir Size
K14168	400 IN ³ (7QT, 1.5 GAL)**
K14169	540 IN ³ (9QT 2.25 GAL)**
K14170	715 IN ³ (12QT 3 GAL)**



PENDANT CONTROL AND CABLE

MODEL #	Type	Voltage	Cable Length
04783-072	Power Up	12 or 24 VDC	6'
17778-072	Power Up & Down	12 or 24 VDC	6'



SOLENOID SWITCH

MODEL #	Type	Type
K-17744	12 VDC	4 Pole
391-2	12 VDC	4 Pole
K17764	24 VDC	4 Pole



HYDRAULIC MOTORS

NEW "WP"



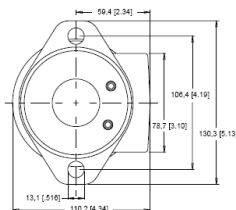
WP ITEM #	CU. IN. DISPL.	MOUNT	PORTS	KEYED SHAFT	MAX CONT. SPEED	MAX CONT. GPM	MAX CONT. TORQUE	MAX CONT. PRESSURE
155050F30B1AAAAA	3.0	4-Bolt	1/2" NPT	1"	1208	16 GPM	805 lb-in	2030 PSI
155050F31B1AAAAA	3.0	4-Bolt	SAE #10	1"	1208	16 GPM	805 lb-in	2030 PSI
155080F30B1AAAAA	4.8	4-Bolt	1/2" NPT	1"	896	16 GPM	1451 lb-in	2320 PSI
155100F30B1AAAAA	5.9	4-Bolt	1/2" NPT	1"	728	16 GPM	1726 lb-in	2320 PSI
155100F31B1AAAAA	5.9	4-Bolt	SAE #10	1"	728	16 GPM	1726 lb-in	2320 PSI
155160F30B1AAAAA	9.4	4-Bolt	1/2" NPT	1"	452	16 GPM	2840 lb-in	2320 PSI
155160F31B1AAAAA	9.4	4-Bolt	SAE #10	1"	452	16 GPM	2840 lb-in	2320 PSI
155200F30B1AAAAA	11.6	4-Bolt	1/2" NPT	1"	367	16 GPM	3365 lb-in	2180 PSI
155200F31B1AAAAA	11.6	4-Bolt	SAE #10	1"	367	16 GPM	3365 lb-in	2180 PSI
155250F30B1AAAAA	14.6	4-Bolt	1/2" NPT	1"	291	16 GPM	3940 lb-in	2030 PSI
155250F31B1AAAAA	14.6	4-Bolt	SAE #10	1"	291	16 GPM	3940 lb-in	2030 PSI
155315F31B1AAAAA	18.5	4-Bolt	SAE #10	1"	228	16 GPM	4071 lb-in	2320 PSI
155400F30B1AAAAA	23.7	4-Bolt	1/2" NPT	1"	155	16 GPM	4320 lb-in	1380 PSI
155400F31B1AAAAA	23.7	4-Bolt	SAE #10	1"	155	16 GPM	4320 lb-in	1380 PSI

WP PARTS	ITEM
155222001	Seal Kit

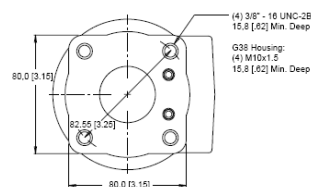
RS SEAL KITS
RS Seal Kit #200222001
After 1989 #200222002

WR COMPARISON TO RS

WHITE "WR" SERIES (White 2008)						WHITE "RS" SERIES					
WR Code	Disp. Cu.in.	Max Cont. RPM	Max Cont. Torque	Max Cont. GPM	Max Cont. PSI	RS Code	Disp. Cu.in.	Rotor Width	Max Cont. RPM	Max Cont. GPM	Max Cont. PSI
40	2.5	1116	823	12	2250	50	3.2	.317	400	6	1750
60	3.6	890	1221	14	2250						
70	4.3	865	1558	16	2500	80	4.6	.463	460	10	1750
90	5.4	691	1965	16	2500	90	5.4	.541	420	10	1750
100	6.1	610	2177	16	2500	100	6.3	.776	510	14	1750
115	6.9	539	2513	16	2500	110	6.8	.681	460	14	1750
130	7.9	472	2797	16	2500	125	7.7	.776	410	14	1500
160	9.8	379	3540	16	2500	160	10	1.00	370	16	1500
200	12.1	308	4088	16	2500	200	12.5	1.25	300	16	1500
240	14.4	249	4850	16	2500	250	15.5	1.551	300	20	1250
320	19.6	188	4584	16	1750	300	17.9	1.791	300	20	1000
400	24.4	152	4873	16	1500	400	24.9	2.501	190	20	1000



"A" mount 3 1/4"



F mount



WR HYDRAULIC MOTORS



whitedriveproducts

“WR”



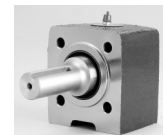
WR ITEM #	CU. IN. DISPL.	MOUNT	PORTS	SHAFT	MAX CONT. SPEED	MAX CONT. GPM	MAX CONT. TORQUE	MAX CONT. PRESSURE
255040A1102AAAAA	2.5 cu. in.	2-Bolt "A"	SAE #10	1" 6B	1116 RPM	12 GPM	823 lb-in	2250 PSI
255040A1110AAAAA	2.5 cu. in.	2-Bolt "A"	SAE #10	1"	1116 RPM	12 GPM	823 lb-in	2250 PSI
255040F3110AAAAA	2.5 cu. in.	4-Bolt	SAE #10	1"	1116 RPM	12 GPM	823 lb-in	2250 PSI
255060A1102AAAAA	3.6 cu. in.	4-Bolt	SAE #10	1" 6B	890 RPM	14 GPM	1221 lb-in	2500 PSI
255060A1110AAAAA	3.6 cu. in.	2-Bolt "A"	SAE #10	1"	890 RPM	14 GPM	1221 lb-in	2500 PSI
255060F3110AAAAA	3.6 cu. in.	4-Bolt	SAE #10	1"	890 RPM	14 GPM	1221 lb-in	2500 PSI
255070A1110AAAAA	4.3 cu. in.	2-Bolt "A"	SAE #10	1"	865 RPM	16 GPM	1558 lb-in	2500 PSI
255070F3110AAAAA	4.3 cu. in.	4-Bolt	SAE #10	1"	865 RPM	16 GPM	1558 lb-in	2500 PSI
255100A1102AAAAA	6.1 cu. in.	2-Bolt "A"	SAE #10	1" 6B	610 RPM	16 GPM	2177 lb-in	2500 PSI
255100A1110AAAAA	6.1 cu. in.	2-Bolt "A"	SAE #10	1"	610 RPM	16 GPM	2177 lb-in	2500 PSI
255100F3110AAAAA	6.1 cu. in.	4-Bolt	SAE #10	1"	610 RPM	16 GPM	2177 lb-in	2500 PSI
255115A1110AAAAA	6.9 cu. in.	2-Bolt "A"	SAE #10	1"	539 RPM	16 GPM	2513 lb-in	2500 PSI
255115F3110AAAAA	6.9 cu. in.	4-Bolt	SAE #10	1"	539 RPM	16 GPM	2513 lb-in	2500 PSI
255130A1110AAAAA	7.8 cu. in.	2-Bolt "A"	SAE #10	1"	472 RPM	16 GPM	2797 lb-in	2500 PSI
255130F3110AAAAA	7.8 cu. in.	4-Bolt	SAE #10	1"	472 RPM	16 GPM	2797 lb-in	2500 PSI
255160A1102AAAAA	9.9 cu. in.	4-Bolt	SAE #10	1" 6B	379 RPM	16 GPM	3540 lb-in	2500 PSI
255160A1110AAAAA	9.9 cu. in.	2-Bolt "A"	SAE #10	1"	379 RPM	16 GPM	3540 lb-in	2500 PSI
255160F3110AAAAA	9.9 cu. in.	4-Bolt	SAE #10	1"	379 RPM	16 GPM	3540 lb-in	2500 PSI
255200A1102AAAAA	12.3 cu. in.	2-Bolt "A"	SAE #10	1" 6B	308 RPM	16 GPM	4088 lb-in	2500 PSI
255200A1110AAAAA	12.3 cu. in.	2-Bolt "A"	SAE #10	1"	308 RPM	16 GPM	4088 lb-in	2500 PSI
255200F3110AAAAA	12.3 cu. in.	4-Bolt	SAE #10	1"	308 RPM	16 GPM	4088 lb-in	2500 PSI
255240A1102AAAAA	14.4 cu. in.	4-Bolt	SAE #10	1" 6B	249 RPM	16 GPM	4850 lb-in	2500 PSI
255240A1110AAAAA	14.4 cu. in.	2-Bolt "A"	SAE #10	1"	249 RPM	16 GPM	4850 lb-in	2500 PSI
255240F3110AAAAA	14.4 cu. in.	4-Bolt	SAE #10	1"	249 RPM	16 GPM	4850 lb-in	2500 PSI
255320A1102AAAAA	19.8 cu. in.	2-Bolt "A"	SAE #10	1" 6B	188 RPM	16 GPM	4584 lb-in	1750 PSI
255320A1110AAAAA	19.8 cu. in.	2-Bolt "A"	SAE #10	1"	188 RPM	16 GPM	4584 lb-in	1750 PSI
255320F3110AAAAA	19.8 cu. in.	4-Bolt	SAE #10	1"	188 RPM	16 GPM	4584 lb-in	1750 PSI
255400A1102AAAAA	24.6 cu. in.	4-Bolt	SAE #10	1" 6B	152 RPM	16 GPM	4873 lb-in	1500 PSI
255400A1110AAAAA	24.6 cu. in.	2-Bolt "A"	SAE #10	1"	152 RPM	16 GPM	4873 lb-in	1500 PSI
255400F3110AAAAA	24.6 cu. in.	4-Bolt	SAE #10	1"	152 RPM	16 GPM	4873 lb-in	1500 PSI

WR PARTS	ITEM
255222001	Seal Kit
255011008	1" 6B Shaft
255011001	1" Keyed Shaft



OVERHUNG LOAD ADAPTORS

Overhung Load Adaptors	Input Mount	Input Shaft	Output Mount	Output Shaft
410 (Zero Max)	4 Bolt WP / WR	1" x 1/4" Key	See Catalog	1" x 1/4" Key
0334-00028 (Hub City)	4 Bolt WP / WR	1" x 1/4" Key	See Catalog	1" x 1/4" Key
210 (Zero Max)	SAE "A" 2 Bolt	1" x 1/4" Key	See Catalog	1" x 1/4" Key
0334-00042 (Hub City)	SAE "A" 2 Bolt	1" x 1/4" Key	See Catalog	1" x 1/4" Key





“RE” HYDRAULIC MOTORS

ITEM #	CU. IN. DISPL.	Rotor Width	MOUNT 3.25" Pilot	PORTS	KEYED SHAFT	MAX CONT. SPEED	MAX CONT. FLOW	MAX CONT. TORQUE	MAX CONT. PRESSURE
500160A5120AAAAA	9.9 cu. in.	.541	4-Bolt	SAE #10	1 1/4"	370 RPM	16 GPM	4200 lb-in	3000 PSI
500200A5110AAAAA	12.4 cu. in.	.681	4-Bolt	SAE #10	1"	300 RPM	18 GPM	4800 lb-in	3000 PSI
500200A5120AAAAA	12.4 cu. in.	.681	4-Bolt	SAE #10	1 1/4"	300 RPM	18 GPM	4800 lb-in	3000 PSI
500260A5120AAAAA	15.9 cu. in.	.872	4-Bolt	SAE #10	1 1/4"	260 RPM	20 GPM	6300 lb-in	3000 PSI
500300A5120AAAAA	18.3 cu. in.	1.000	4-Bolt	SAE #10	1 1/4"	250 RPM	22 GPM	7300 lb-in	3000 PSI
500375A5120AAAAA	22.8 cu. in.	1.251	4-Bolt	SAE #10	1 1/4"	200 RPM	20 GPM	8900 lb-in	3000 PSI
500470A5120AAAAA	28.3 cu. in.	1.552	4-Bolt	SAE #10	1 1/4"	160 RPM	20 GPM	9700 lb-in	2500 PSI
500540A5120AAAAA	32.7 cu. in.	1.791	4-Bolt	SAE #10	1 1/4"	140 RPM	20 GPM	8700 lb-in	2000 PSI
500750A5120AAAAA	45.6 cu. in.	2.501	4-Bolt	SAE #10	1 1/4"	100 RPM	20 GPM	9400 lb-in	1500 PSI



RE PARTS	CODE	SHAFT
500011200	#20	1 1/4" Key
500011201	#10	1" Key
500011300	#22	1 1/4" Tapered
500011600	#02	1" 6-B
500011101	#23	1 1/4" 14 Tooth

SEAL KITS	Seal Kit with Bearings	YEAR
*500444001		(PRE 1989)
500444002	500444111	(1989 and Newer)

HOUSING KIT	HOUSING w/ Bearings & Shaft Seal
500130723	A11 Housing w/ bearings & Shaft Seal
500130823	W31 housing w/ bearings & Shaft Seal



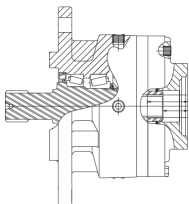
“WS” HYDRAULIC MOTORS

ITEM #	CU. IN. DISPL.	MOUNT	PORTS	KEYED SHAFT	MAX CONT. SPEED	MAX CONT. FLOW	MAX CONT. TORQUE	MAX CONT. PRESSURE
355130A7110AAAAA	8.0 cu. in.	2-Bolt A	SAE #10	1"	580 RPM	20 GPM	3275 lb-in	3000 PSI
355160A7620AAAAA	9.6 cu. in.	2-Bolt A	SAE #10	1 1/4"	465 RPM	20 GPM	4090 lb-in	3000 PSI
355200A7110AAAAA	11.9 cu. in.	2-Bolt A	SAE #10	1"	375 RPM	20 GPM	5100 lb-in	3000 PSI
355200A7123AAAAA	11.9 cu. in.	2-Bolt A	SAE #10	1 1/4"	375 RPM	20 GPM	5100 lb-in	3000 PSI
355320A7110AAAAA	18.7 cu. in.	2-Bolt A	SAE #10	1"	235 RPM	20 GPM	6980 lb-in	2750 PSI
355400A7110AAAAA	24 cu. in.	2-Bolt A	SAE #10	1"	190 RPM	20 GPM	7225 lb-in	2250 PSI
355400A7610AAAAA	24 cu. in.	2-Bolt A	SAE #12	6B Spline	190 RPM	20 GPM	7225 lb-in	2250 PSI

5:1 GEAR BOX

ITEM #	RATIO	OUTPUT SHAFT	MOTOR or BRAKE MOUNT	INPUT KEYED SHAFT	CONTINUOUS TORQUE	WEIGHT
S1CL6KS5	5:1	2.25" X 1/2" Key	SAE "A" 3.25"	1" X 1/4" Key	15,000 lb-in	60 LBS

Gear box can accommodate the brake listed or a motor directly (Note: input shafts)



Static Brake #	Holding Torque	OUTPUT SHAFT	INPUT MOUNT	MOTOR INPUT SHAFT
930620A10ZWAAAAA	5500 lb-in	1" fits in gear box	SAE "A" 3.25"	1" 6B Spline

Full brake release at 450 PSI (Max allowable 3625 PSI)



MOUNTING ACCESSORIES

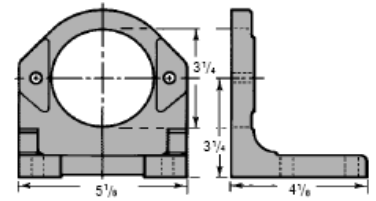
WELD PLATES

Part #	Pilot Dia.
SAE-A	3.25"
SAE-B	4.00"
SAE-C	5.00"



FOOT BRACKET

Part #	SAE A 2 Bolt
FM-40-A2	3.25"



TORQUE ARM

Part #	Pilot
HC-TA-CL4B	1.75" 4 Bolt
HC-SC-1 (5L100100K)	1"x1"x2" Split Coupler



ENERGY CYL 1.5" BORE CYLINDERS

ITEM #	DESCRIPTION	BORE	STROKE	ROD	PIN	PORTS	RETRACTED LENGTH
12992B	1.5" x 4" Cylinder	1 1/2"	4"	1"	1/2"	3/8" NPT	11.75"
12993B	1.5" x 6" Cylinder	1 1/2"	6"	1"	1/2"	3/8" NPT	13.75"
12994B	1.5" x 8" Cylinder	1 1/2"	8"	1"	1/2"	3/8" NPT	15.75"
12995B	1.5" x 10" Cylinder	1 1/2"	10"	1"	1/2"	3/8" NPT	17.75"
12996B	1.5" x 12" Cylinder	1 1/2"	12"	1"	1/2"	3/8" NPT	19.75"

ITEM #	DESCRIPTION
A-3013	Clevis Pin
80417	Cotter Pin
12511X	Seal Kit



ENERGY PARTS: SEAL KITS, ROD CLEAVES AND PINS

HPTR CYLINDER	SEAL KIT NUMBER	BORE x ROD	ROD THREAD	CLEVIS	1" PIN WITH 2 CLIPS
720XX	18289X	2" x 1.125"	1 1/8" -12	18080B	35892B
725XX	18286X	2.5" x 1.125"	1 1/8" -12	18080B	35892B
730XX	18117X	3" x 1.25"	1 1/4" -12	17940B	35892B
735XX	18273X	3.5" x 1.5"	1 1/2" -12	18271B	35892B
740XX	18303X	4" x 2"	1 1/2" -12	18271B	35892B

ITEM #	DESCRIPTION	ROD THREAD
0A001834	Rod Clevis 1"	1" -14 UNS
0A006606	Rod Clevis 1"	1 1/4"-12
0A006607	Rod Clevis 1"	1 1/2"-12
35892B	1" Pin with 2 Clips	



EAGLE TIE-ROD CYLINDERS

2500 PSI



PART #	2" BORE	STROKE	CLOSED Pin to Pin	ROD DIA.	PIN DIA.	PORTS
HTR2004-ORB	2"	4"	14.25"	1.125"	1"	SAE #6
HTR2006-ORB	2"	6"	16.25"	1.125"	1"	SAE #6
HTR2008-ORB	2"	8"	18.25"	1.125"	1"	SAE #6
HTR2008-ASAE-ORB	2"	8"	20.25"	1.125"	1"	SAE #6
HTR2010-ORB	2"	10"	20.25"	1.125"	1"	SAE #6
HTR2012-ORB	2"	12"	22.25"	1.125"	1"	SAE #6
HTR2014-ORB	2"	14"	24.25"	1.125"	1"	SAE #6
HTR2016-ORB	2"	16"	26.25"	1.125"	1"	SAE #6
HTR2018-ORB	2"	18"	28.25"	1.125"	1"	SAE #6
HTR2020-ORB	2"	20"	30.25"	1.125"	1"	SAE #6
HTR2024-ORB	2"	24"	34.25"	1.125"	1"	SAE #6
HTR2030-ORB	2"	30"	40.25"	1.125"	1"	SAE #6
HTR2036-ORB	2"	36"	46.25"	1.125"	1"	SAE #6
HTR2048-125-ORB	2"	48"	58.25"	1.125"	1"	SAE #6

PART #	2 1/2" BORE	STROKE	CLOSED Pin to Pin	ROD DIA.	PIN DIA.	PORTS
HTR2504-ORB	2 1/2"	4"	14.25"	1.125"	1"	SAE #6
HTR2506-ORB	2 1/2"	6"	16.25"	1.125"	1"	SAE #6
HTR2508-ORB	2 1/2"	8"	18.25"	1.125"	1"	SAE #6
HTR2508-ASAE-ORB	2 1/2"	8"	20.25"	1.125"	1"	SAE #6
HTR2510-ORB	2 1/2"	10"	20.25"	1.125"	1"	SAE #6
HTR2512-ORB	2 1/2"	12"	22.25"	1.125"	1"	SAE #6
HTR2514-ORB	2 1/2"	14"	24.25"	1.125"	1"	SAE #6
HTR2516-ORB	2 1/2"	16"	26.25"	1.125"	1"	SAE #6
HTR2518-ORB	2 1/2"	18"	28.25"	1.125"	1"	SAE #6
HTR2520-ORB	2 1/2"	20"	30.25"	1.125"	1"	SAE #6
HTR2524-ORB	2 1/2"	24"	34.25"	1.125"	1"	SAE #6
HTR2530-ORB	2 1/2"	30"	40.25"	HTR 1.25"	1"	SAE #6
HTR2536-ORB	2 1/2"	36"	46.25"	HTR 1.25"	1"	SAE #6
HTR2548-ORB	2 1/2"	48"	58.25"	HTR 1.25"	1"	SAE #6



SAE Cylinder Breathers	
Size	Part Number
#6 SAE	0A009431
#8 SAE	16329A
#10 SAE	16651A

PART #	3" BORE	STROKE	CLOSED Pin to Pin	ROD DIA.	PIN DIA.	PORTS
HTR3004-ORB	3"	4"	14.25"	1.25"	1"	SAE #8
HTR3006-ORB	3"	6"	16.25"	1.25"	1"	SAE #8
HTR3008-ORB	3"	8"	18.25"	1.25"	1"	SAE #8
HTR3008-ASAE-ORB	3"	8"	20.25"	1.25"	1"	SAE #8
HTR3010-ORB	3"	10"	20.25"	1.25"	1"	SAE #8
HTR3012-ORB	3"	12"	22.25"	1.25"	1"	SAE #8
HTR3014-ORB	3"	14"	24.25"	1.25"	1"	SAE #8
HTR3016-ORB	3"	16"	26.25"	1.25"	1"	SAE #8
HTR3016-ORB-150	3"	16"	26.25"	1.5"	1"	SAE #8
HTR3016-ASAE-ORB	3"	16"	31.5"	1.25"	1.25"	SAE #8
HTR3018-ORB	3"	18"	28.25"	1.25"	1"	SAE #8
HTR3020-ORB	3"	20"	30.25"	1.25"	1"	SAE #8
HTR3024-ORB (-150)	3"	24"	34.25"	1.25" or 1.5"	1"	SAE #8
HTR3030-ORB	3"	30"	40.25"	1.25"	1"	SAE #8
HTR3030-ORB-150	3"	30"	40.25"	1.5"	1"	SAE #8
HTR3036-ORB	3"	36"	46.25"	1.5"	1"	SAE #8
HTR3036-ORB-150	3"	36"	46.25"	1.5"	1"	SAE #8
HTR3048-ORB	3"	48"	58.25"	1.5"	1"	SAE #8



EAGLE TIE-ROD CYLINDERS

2500 PSI



PART #	3 1/2" BORE	STROKE	CLOSED Pin to Pin	ROD DIA.	PIN DIA.	PORTS
HTR3504-ORB	3 1/2"	4"	14.25"	1.25"	1"	SAE #8
HTR3506-ORB	3 1/2"	6"	16.25"	1.25"	1"	SAE #8
HTR3508-ORB	3 1/2"	8"	18.25"	1.25"	1"	SAE #8
HTR3508-ASAE-ORB	3 1/2"	8"	20.25"	1.25"	1"	SAE #8
HTR3510-ORB	3 1/2"	10"	20.25"	1.25"	1"	SAE #8
HTR3512-ORB	3 1/2"	12"	22.25"	1.25"	1"	SAE #8
HTR3514-ORB	3 1/2"	14"	24.25"	1.25"	1"	SAE #8
HTR3516-ORB	3 1/2"	16"	26.25"	1.25"	1"	SAE #8
HTR3516-ASAE-ORB	3 1/2"	16"	31.5"	1.25"	1.25"	SAE #8
HTR3518-ORB	3 1/2"	18"	28.25"	1.25"	1"	SAE #8
HTR3520-ORB	3 1/2"	20"	30.25"	1.25"	1"	SAE #8
HTR3524-ORB	3 1/2"	24"	34.25"	1.5"	1"	SAE #8
HTR3530-ORB	3 1/2"	30"	40.25"	1.25"	1"	SAE #8
HTR3536-ORB (-200-ORB)	3 1/2"	36"	46.25"	1.5" or 2"	1"	SAE #8
HTR3548-ORB	3 1/2"	48"	58.25"	1.5"	1"	SAE #8

PART #	4" BORE	STROKE	CLOSED Pin to Pin	ROD DIA.	PIN DIA.	PORTS
HTR4004-ORB	4"	4"	14.25"	1.25"	1"	SAE #8
HTR4006-ORB	4"	6"	16.25"	1.25"	1"	SAE #8
HTR4008-ORB (-150)	4"	8"	18.25"	1.25" or 1.5"	1"	SAE #8
HTR4008-ASAE-ORB	4"	8"	20.25"	1.25"	1"	SAE #8
HTR4010-ORB	4"	10"	20.25"	1.25"	1"	SAE #8
HTR4012-ORB	4"	12"	22.25"	1.25"	1"	SAE #8
HTR4014-ORB	4"	14"	24.25"	1.25"	1"	SAE #8
HTR4014-ORB-200	4"	14"	24.25"	2"	1"	SAE #8
HTR4016-ORB	4"	16"	26.25"	1.25"	1"	SAE #8
HTR4016-200-ORB	4"	16"	26.25"	2"	1"	SAE #8
HTR4016-ASAE-ORB	4"	16"	31.5"	2"	1.25"	SAE #8
HTR4018-ORB	4"	18"	28.25"	1.5"	1"	SAE #8
HTR4018-200-ORB	4"	18"	28.25"	2"	1"	SAE #8
HTR4020-ORB	4"	20"	30.25"	1.5"	1"	SAE #8
HTR4020-ORB-200	4"	20"	30.25"	2"	1"	SAE #8
HTR4024-ORB-150	4"	24"	34.25"	1.5"	1"	SAE #8
HTR4024-ORB-200	4"	24"	34.25"	2"	1"	SAE #8
HTR4030-ORB	4"	30"	40.25"	HTR 2"	1"	SAE #8
HTR4036-ORB	4"	36"	46.25"	HTR 2"	1"	SAE #8
HTR4048-ORB	4"	48"	58.25"	HTR 2"	1"	SAE #8



NPT Cylinder Breathers

Size	Part Number
1/8" NPT	ASP-1BV
1/4" NPT	ASP-2BV
3/8" NPT	ASP-3BV
1/2" NPT	ASP-4BV
3/4" NPT	ASP-6BV
1" NPT	ASP-8BV



PART #	5" BORE	Stroke	CLOSED Pin to Pin	ROD DIA.	PIN DIA.	PORTS
HTR5008-ORB	5"	8"	20.25"	1.5"	1"	SAE #8
HTR5010-ORB	5"	10"	22.25"	1.5"	1"	SAE #8
HTR5012-ORB	5"	12"	24.25"	2"	1"	SAE #8
HTR5014-ORB	5"	14"	26.25"	2"	1"	SAE #8
HTR5016-ORB	5"	16"	28.25"	2"	1"	SAE #8
HTR5018-ORB	5"	18"	30.25"	2"	1"	SAE #8
HTR5020-ORB	5"	20"	32.25"	2"	1"	SAE #8
HTR5024-ORB	5"	24"	36.25"	2"	1"	SAE #8
HTR5030-ORB	5"	30"	42.25"	2"	1"	SAE #8



SPX "POWER TEAM"

Item #	Volume per Stroke	PSI	Cylinder Type	Usable Reservoir	Port
P55	0.16 cu. in.	10,000	Single Acting	45 cu. in.	3/8" NPTF



P55

Single-Speed Pump

Item #	2-Speed Pump Vol/ Stroke (cu. in.)	Stroke Volume Changes @ PSI	PSI	Cylinder Type	Usable Reservoir	Port
P19	.305/ .076	325 PSI	10,000 PSI	Single Acting	20 cu. in.	3/8" NPTF
P59	.662/ .160	325 PSI	10,000 PSI	Single Acting	45 cu. in.	3/8" NPTF
P59L	.720/ .150	850 PSI	10,000 PSI	Single Acting	66 cu. in.	3/8" NPTF
P159	2.60/ .160	325 PSI	10,000 PSI	Single Acting	137 cu. in.	3/8" NPTF



P19

Two-Speed Pumps

Release Valve



P59L

Air Pump	Air PSI Required	PSI	Cylinder Type	Usable Reservoir	Port
P19	40-120	10,000 PSI	Single Acting	98 cu. in.	3/8" NPTF



PA6



PE172

PE172 Electric Pump
For Single Acting Cylinders
1/2 HP, 110/115 VAC
295 cu. in. Reservoir
10,000 PSI
Up to 55 Ton
Pendant Controller 10' Cord

PE554 Electric Pump
For Double Acting Cylinders
1 1/8" HP, 110/115 VAC
525 cu. In. Usable Reservoir
10,000 PSI
Up to 200 Ton
Pendant Controller w/10' Cord



PE554



SPX "POWER TEAM"



3/8" Port, with female quick coupler

Single Acting, Spring Return Cylinders

Item #	Ton	Stroke	Oil Capacity
C106C	10	6 1/8"	13.7 cu. in.
C1010C	10	10 1/8"	22.6 cu. in.
C258C	25	8 1/4"	42.5 cu. in.
C556C	55	6 1/4"	69 cu. in.

LOW PROFILE
Single Acting, Spring Return Cylinder

Item #	Ton	Stroke	Oil Capacity
RLS100	10	7/16"	1 cu. in.
RLS200	20	7/16"	1 cu. in.



Bearing Puller Set

Item #	Ton	Jaw Reach
PH83C	8	7 1/2"

A self contained pulling system in a compact package.



9040

0-10,000 PSI Gauge
2 1/2" Face



Item #	Size	Type
9796	3/8" Male NPT	Male Tip
9798	3/8" Female NPT	Cylinder half



9670

Tee adapter. For installing gauge between pump and hose coupling. 1/4" gauge port, 3/8" connections.



1 Gallon Hydraulic Oil



CONDITIONS OF SALE

PRICES - Orders are accepted with the understanding the price sheet items will be billed at the price in effect at the time of release for shipment, unless otherwise specified in the quotation. Prices are subject to change without notice.

CLERICAL ERRORS – All clerical errors are subject to correction.

SELECTED TERMS AND CONDITIONS

Hydraulic Controls, Inc. ("HCI") has included the following selected terms and conditions as part of this catalog for informational purposes only. Please note that these terms and conditions are incomplete. All sales are subject to HCI Terms and Conditions. Please refer to those terms and conditions for further reference.

DELIVERY – Risk of loss passes to the Buyer upon delivery of the items to the carrier for shipment. Every effort will be made to deliver as promised. Please see HCI Terms and Conditions for further explanation of Buyer and Seller's respective responsibilities regarding delivery.

RETURNS - Returned merchandise will not be accepted without prior written authorization.

WARRANTIES - HCI makes no warranty with respect to items sold other than in accordance with HCI Terms and Conditions. HCI warrants that the goods are as described in this contract, but no other express warranty is made with respect to the goods. If any model or sample was shown Buyer, the model or sample was used merely to illustrate the general type and quality of the goods, and not to represent that the goods would necessarily conform to the model or sample. HCI warrants that all items are to be free from defects in workmanship and materials for a period of sixty (60) days from date of shipment to Buyer, but no warranty is made that the items are fit for a particular purpose or that the items comply with Federal or State OSHA or OSHA related regulations. This warranty is conditioned upon HCI's receipt within ten (10) days after Buyer's discovery of a defect of a written notice stating in what specific material respects the item failed to meet this warranty. Except as expressly set forth in HCI Terms and Conditions, all warranties, express, implied or statutory, including implied warranties of merchantability and fitness for a particular purpose, are hereby disclaimed.



HCI NOTES

Horse Power

HP = GPM x PSI / (1714 x .85 estimated efficiency factor)

Pump Formulas

GPM = CID x RPM / 231

CID = GPM x 231 / RPM

RPM = GPM x 231 / CID

Cylinder Formulas

Force = PSI x Area

PSI = Force / Area

Cycle Time (Seconds) = .26 x Area x Stroke / GPM

GPM = Gallons Per Minute

CID = Cubic Inch Displacement

RPM = Speed, revs / minute

231 = Cubic Inches In One Gallon

PSI = Pounds Per Square Inch

Area = Piston area, Square Inches (Area = πr^2)

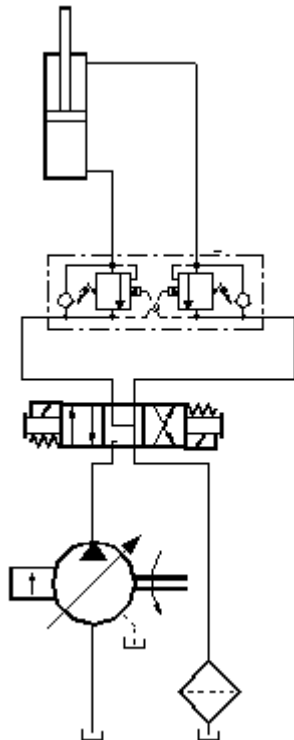
Hydraulic Motor Formulas

CID = Torque (foot-lbs) x 75.36 / PSI

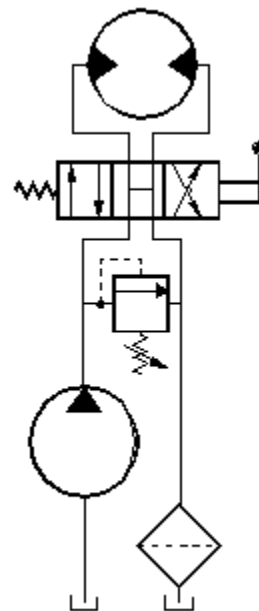
Torque (foot-lbs) = CID x PSI / 75.36

PSI = Torque (foot-lbs) x 75.36 / CID

Closed Center



Open Center



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