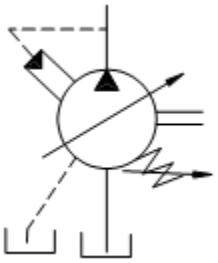
IFP A10VSO
VARIABLE AXIAL PISTON PUMPS

Available sizes:

18 — 1.10 in3/rev [18 cm3/rev]
28 — 1.71 in3/rev [28 cm3/rev]
45 — 2.75 in3/rev [45 cm3/rev]
71 — 4.33 in3/rev [71 cm3/rev]
100—6.10 in3/rev [100 cm3/rev]
140—8.45 in3/rev [140 cm3/rev]



NOMINAL PRESSURE

4000 psi [280 bar]

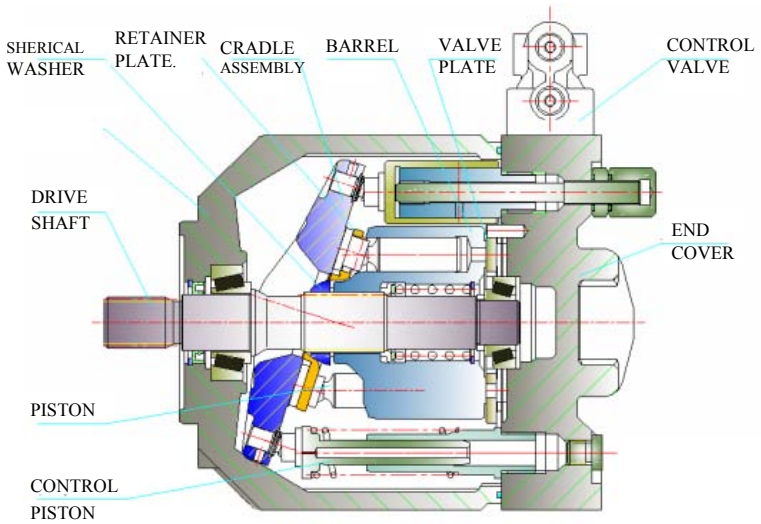
PEAK PRESSURE

5100 psi [350 bar]

FEATURES

- Variable volume piston pumps.
- Applied in open loop circuits
- Low noise level.
- Variety SAE & Metric mounting flanges.
- Good suction characteristics.
- Low noise level.
- High Power—Weight ratio
- Wide range of controls.
- Short Response time.
- Units can be piggybaked for multiple section assemblies
- Through drive available to adapt secondary pump.

SECTIONAL VIEW



IFP A10VSO PISTON PUMP ORDERING CODE

IFP A10VSO ORDERING CODE

SAMPLE CODE:	IFP	A10V	S	O	28	DR	/	31	R	P	S	C	62	NOO
Legend	(1)	(2)	(3)	(4)	(5)	(6)		(7)	(8)	(9)	(10)	(11)	(12)	(13)

(1)	**IFP** - *INTERNATIONAL FLUID POWER PRODUCTION*
(2)	**A10V** - *HIGH PRESSURE / VARIABLE VOLUME AXIAL PISTON PUMP*
(3)	**S** - *MAXIMUM VOLUME STOP*
(4)	**O** - *OPEN LOOP*
(5)	**FRAME SIZE - *18 / 28 / 45 / 71 / 100 / 140***
(6)	**PUMP CONTROL:** *(DR) PRESSURE CONTROL* *(DRG) REMOTE CONTROL* *(DG) TWO POINT, DIRECT CONTROL* *(DFR) PRESSURE & FLOW CONTROL* *(DFR1) PRESSURE AND FLOW CONTROL (ORIFICE X CHANNEL CLOSED* *(DFLR) PRESSURE, FLOW AND TORQUE CONTROL*
(7)	**31** - *DESIGN*
(8)	**ROTATION: (R) C.W./RIGHT HAND** **(L) C.C.W./LEFT HAND**
(9)	**SEALS:** *(P) Nitril / (V) Viton*
(10)	**SHAFTS:** *(P) - METRIC PARALLEL WITH KEY* *(S) - SAE-SPLINE* *(K) - SAE- PARALLEL WITH KEY* *(U) - SAE SPLINE / REDUCED DIAMETER*
(11)	**MOUNTING FLANGE:** *(C) - SAE 2 HOLE (size 18 - 100)* *(D) - SAE 4 HOLE (size 140)*
(12)	**PORTING:** *(61) - SAE FLANGE REAR CONNECTIONS / UNC BOLTS* *(62) - SAE FLANGE SIDE CONNECTIONS / UNC BOLTS* *(11) - SAE FLANGE REAR CONNECTIONS / METRIC BOLTS* *(12) - SAE FLANGE SIDE CONNECTIONS / METRIC BOLTS* *Note: Code 61/11 can only be used with NOO STANDARD COVER - Not with through drive*
(13)	**OPTIONAL THROUGH DRIVE:** (NOO) - STANDARD COVER/NO THROUGH DRIVE ** OPTIONAL THROUGH DRIVES ** (K01) - SAE-A MOUNT / SAE-A COUPLING (Sizes 18-140) (K52) - SAE-A MOUNT / SAE-B COUPLING (Sizes 18-140) (K68) - SAE-B MOUNT / SAE-B COUPLING (Sizes 28-140) (K04) - SAE-B MOUNT / SAE-BB COUPLING (Sizes 45-100) (K07) - SAE-C MOUNT / SAE-C COUPLING (Sizes 71-140) (K24) - SAE-C MOUNT / SAE-CC COUPLING (Sizes 100-140) (K17) - SAE-D MOUNT / SAE-D COUPLING (Sizes 140)

IFP A10VSO PISTON PUMPS OPERATING SPECIFICATIONS

Application Guidelines

SHAFT ALIGNMENT:
A10VSO units are designed for "inline drive" with a flexible coupling.
Side loading of shaft is possible contact factory for applications other than direct drive.

STARTING:
During initial starting it may be necessary to bleed air from outlet. IFP ABT20S air bleed valves are available for this purpose.

FILLING PUMP CASING:
Before operating fill pump casing with clean system fluid through upper most drain port. Drain line hose and piping must be installed in such a way as that the case is always full of oil during operation
(*Note: Maximum case pressure 5 PSI* /.5 BAR)

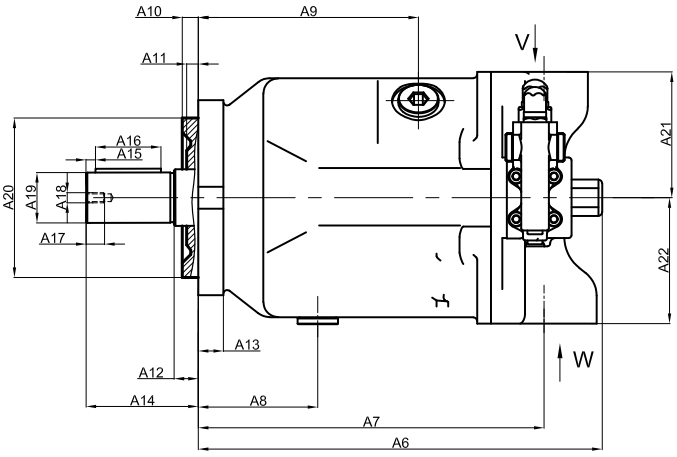
SYSTEM RELEF VALVE:
Although the A10VSO series of pumps have compensator controls to limit maximum pressure a system relief adjusted 200 PSI higher than the compensator pressure is recommended for safety considerations.

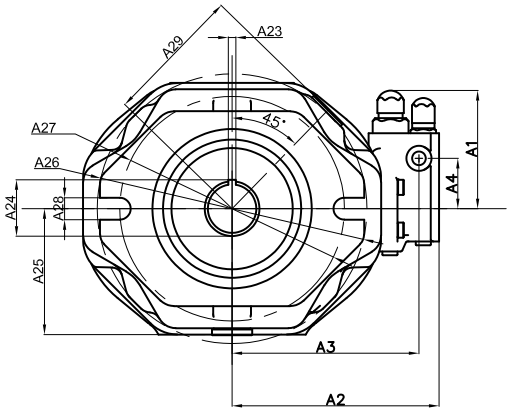
A10VSO OPERATING SPECIFICATIONS
Based on using oil at120 F (49 C) viscosity 150 SUS at 100 F (32 cSt at 38 C) and 0 psi inlet pressure

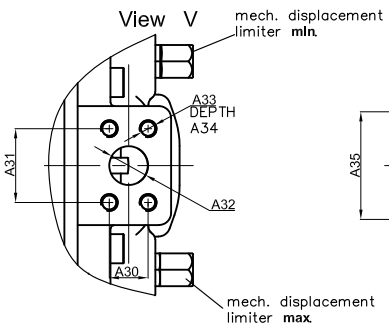
IFP MODEL SERIES	DISLACEMENT in3/rev (cm3/rev)	DELIVERY GPM (LPM)		MAX. SPEED RPM	MAXIMUM PRESSURE PSI (BAR)		WEIGHT LBS (KG)
		1800 RPM	MAX. SPEED		OPERATING	PEAK	
IFP A10VSO-18	1.10 (18)	8.4 (32)	15.5 (59)	3300	4000 (280)	4600 (350)	21 (12)
IFP A10VSO-28	1.71 (28)	13.2 (50)	22.2 (84)	3000	4000 (280)	4600 (350)	33 (15)
IFP A10VSO-45	2.75 (45)	21.1 (81)	30.9 (117)	2600	4000 (280)	4600 (350)	46 (21)
IFP A10VSO-71	4.33 (45)	33.5 (127)	41.2 (156)	2200	4000 (280)	4600 (350)	72 (33)
IFP A10VSO-100	8.10 (100)	47.5 (180)	52.8 (200)	2000	4000 (280)	4600 (350)	99 (45)
IFP A10VSO-140	8.54 (140)	66.5 (252)	66.5 (252)	1800	4000 (280)	4600 (350)	132 (60)

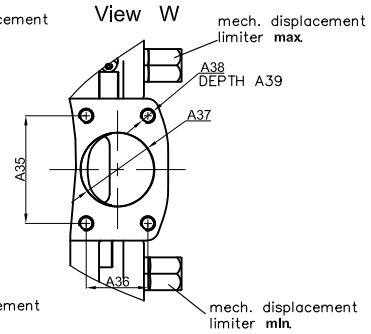
SOUND LEVEL PER ISO 4412			NOISE dB(A)	
MODEL	RPM	PSI	CUT-OFF	FULL DIPL.
IFP A10VSO-18	1800	2500	64 dB	65 dB
		4000		67 dB
IFP A10VSO-28	1800	2500	67 dB	69 dB
		4000		68 dB
IFP A10VSO-45	1800	2500	70 dB	72.5 dB
		4000		71.5 dB
IFP A10VSO-71	1800	2500	69 dB	74.5 dB
		4000		72.5 dB
IFP A10VSO-100	1800	2500	71 dB	75 dB
		4000		77 dB
IFP A10VSO-140	1800	2500	76 dB	82.5 dB
		4000		80.5 dB

IFP A10VSO PISTON PUMPS
DIMENSIONAL DRAWINGS
(SIDE PORTED UNITS)









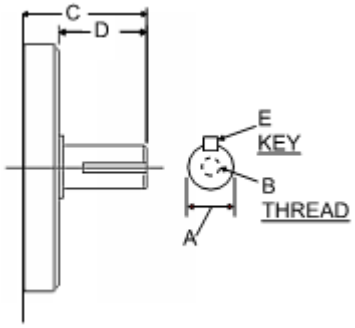
	INLET PORT - W	OUTLET PORT - V	CASE DRAIN PORT - L / L1
A10V18	1" SAE S. FLG	3/4" SAE S. FLG	9/16-18 SAE
A10V28	11/4" SAE S. FLG	3/4" SAE S. FLG	3/4-16 SAE
A10V45	11/2" SAE S. FLG	1" SAE S. FLG	7/8-14 SAE
A10V71	2" SAE S. FLG	1" SAE S. FLG	7/8-14 SAE
A10V100	21/2" SAE S. FLG	11/4" SAE S.FLG	11/16-12 SAE
A10V140	21/2" SAE S. FLG	11/4" SAE S. FLG	11/16-12 SAE

	18	28	45	71	100	140
A1	4.11 (104.5)	4.13 (105)	4.13 (105)	4.13 (105)	4.13 (105)	4.92 (125)
A2	4.94 (125.5)	5.33 (135.5)	5.72 (145.5)	6.27 (159.5)	6.46 (164.5)	8.22 (209)
A3	4.68 (119)	4.68 (119)	5.07 (129)	5.62 (143)	5.82 (148)	7.20 (183)
A4	1.57 (40)	1.57 (40)	1.57 (40)	1.57 (40)	1.57 (40)	1.02 (40)
A5	5.11 (130)	4.68 (119)	5.27 (162)	6.37 (162)	9.01 (229)	9.6 (244)
A6	7.67 (195)	8.11 (206)	8.81 (224)	10.11 (257)	12.83 (326)	13.26 (337)
A7	5.71 (145)	6.47 (164.5)	7.24 (184)	8.54 (2.17)	10.82 (275)	10.82 (275)
A8	1.69 (43)	1.57 (40)	1.77 (45)	2.08 (53)	3.74 (95)	3.07 (78)
A9	3.26 (83)	3.54 (90)	3.27 (96)	4.52 (115)	6.88 (175)	6.81 (173)
A10	.24 (6.3)	.35 (9)	.35 (9)	.35 (9)	.35 (9)	.35 (9)
A11	.24 (6.3)	.24 (6.3)	.24 (6.3)	.23 (6)	.23 (6)	.23 (6)
A12	.31 (8)	.39 (10)	.39 (10)	.39 (10)	.39 (10)	.39 (10)
A13	.45 (11.5)	.51 (13)	.51 (13)	.78 (20)	.67 (17)	.83 (21)
A14	1.02 (26)	1.81 (46)	2.05 (52)	2.36 (60)	3.15 (80)	3.62 (92)
A15	.08 (2)	.08 (2)	.12 (3)	.09 (2.5)	.06 (1.5)	.06 (1.5)
A16	.98 (25)	1.25 (32)	1.41 (36)	1.77 (45)	2.67 (68)	3.14 (80)
A17	.63 (16)	.63 (16)	.75 (19)	.87 (22)	1.1 (28)	1.41 (36)
A18	1/4-20UNC	1/4-20UNC	1/4-20UNC	1/4-20UNC	1/4-20UNC	1/4-20UNC
A19	.750 (19.05)	.875 (22.225)	1.00 (25.4)	1.25 (35)	1.50 (104.5)	1.75 (44.45)
A20	3.25 (82.5)	4.00 (101)	4.00 (101)	5.00 (127)	5.00 (127)	6.00 (152)

	18	28	45	71	100	140
A21	4.68 (119)	4.68 (119)	5.07 (129)	5.62 (143)	5.82 (148)	7.20 (183)
A22	2.48 (63)	3.15 (80)	3.54 (90)	4.09 (104)	3.94 (100)	4.33 (110)
A23	*	*	*	*	*	*
A24	*	*	*	*	*	*
A25	2.67 (68)	2.95 (75)	3.19 (81)	3.62 (92)	3.74 (95)	4.25 (108)
A26	4.11 (104.5)	6.85 (174)	6.96 (177)	8.27 (210)	8.27 (210)	*
A27	4.29 (109)	5.51 (140)	5.51 (140)	7.09 (180)	7.09 (180)	8.81 (224)
A28	.43 (11)	.55 (14)	.55 (14)	.71 (18)	.69 (17.5)	.71 (18)
A29	2.60 (66)	2.91 (74)	3.27 (83)	3.86 (98)	4.17 (106)	4.66 (118.5)
A30	.87 (22.2)	.87 (22.2)	1.03 (26.2)	1.19 (30.22)	1.25 (31.8)	1.25 (31.8)
A31	1.87 (47.6)	1.87 (47.6)	2.06 (52.4)	2.06 (52.4)	2.63 (66.7)	2.63 (66.7)
A32	.79 (20)	.79 (20)	.98 (25)	.98 (25)	1.33 (33)	1.26 (32)
A33	3/8-16UNC	3/8-16UNC	3/8-16UNC	3/8-16UNC	1/2-13UNC	1/2-13UNC
A34	.79 (20)	.67 (17)	.67 (17)	.79 (20)	.94 (24)	.79 (20)
A35	2.06 (52.4)	2.31 (58.47)	2.75 (69.9)	3.06 (77.8)	3.50 (88.9)	3.50 (88.9)
A36	1.03 (26.2)	1.16 (30.2)	1.41 (35.7)	1.69 (42.9)	2.00 (50.8)	2.00 (50.8)
A37	.98 (25)	1.26 (32)	1.57 (40)	1.97 (50)	2.40 (61)	2.48 (63)
A38	3/8-16UNC	7/16-16UNC	1/2-13UNC	1/2-13UNC	1/2-13UNC	1/2-13UNC
A39	.79 (20)	.67 (17)	.79 (20)	.79 (20)	.79 (20)	.79 (20)
A40						

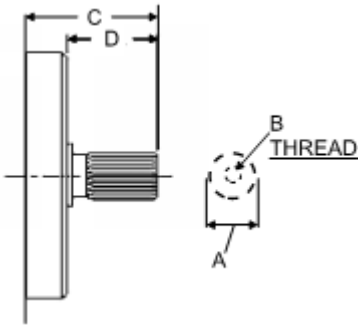
IFP A10VSO PISTON PUMPS
SHAFT SPECIFICATIONS

SHAFT CODE ** K ** PARALLEL WITH KEY



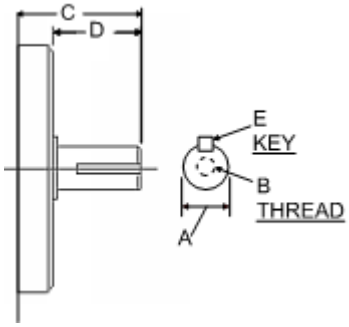
	A	B	C	D	E
SIZE: 18	DIA: 0.750 ~ 0.7492 [19.05 (-0.002)]	1/4"~20UNC.2B	1.61 (40)	1.36 (33.1)	.18 SQ X1.125 (4.76 X 28.6)
SIZE: 28	DIA: 0.875 ~ 0.874 [22.225 (-0.002)]	1/4"~20UNC.2B	1.63 (41)	1.26 (41)	.25 SQ X1.37 (6.38 X 35)
SIZE: 45	DIA: 1.00 ~ 0.9988 [25.4 (-0.002)]	1/4"~20UNC.2B	1.81 (45.9)	1.44 (41)	.25 SQ X1.37 (6.38 X 35)
SIZE: 71	DIA: 1.2500 ~ 1.2488 [31.75 (-0.003)]	5/16"~18UNC.2B	2.18 (55.4)	1.68 (41)	.312 SQ X1.62 (7.94 X 41.3)
SIZE: 100	DIA: 1.5000 ~ 1.4988 [38.1 (-0.003)]	7/16"~20UNC.2B	2.44 (61.9)	1.94 (51)	.375 SQ X1.96 (9.52 X 50)
SIZE: 140	DIA: 1.5000 ~ 1.4988 [38.1 (-0.003)]	7/16"~20UNC.2B	2.95 (75)	2.45 (62)	.4384 SQ 2.56 (11.11 X 65)

SHAFT CODE ** S ** SAE - SPLINE



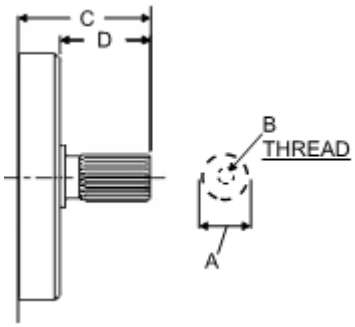
	A	B	C	D	E
SIZE: 18	3/4" DIA. 11 TOOTH 16/32 DP	1/4"~20UNC.2B	1.50 (38)	1.25 (22)	
SIZE: 28	7/8" DIA. 13 TOOTH 16/32 DP	1/4"~20UNC.2B	1.61 (41)	1.24 (25)	
SIZE: 45	1" DIA. 15 TOOTH 16/32 DP	1/4"~20UNC.2B	1.81 (45.9)	1.44 (30)	
SIZE: 71	11/4" DIA. 14 TOOTH 16/32 DP	5/16"~18UNC.2B	2.18 (55.4)	1.68 (39.5)	
SIZE: 100	11/2" DIA. 17 TOOTH 12/24 DP	7/16"~20UNC.2B	2.44 (61.9)	1.94 (43.6)	
SIZE: 140	13/4" DIA. 13 TOOTH 8/16 DP	5/8"~11UNC.2B	2.95 (75)	2.16 (55)	

SHAFT CODE ** P ** METRIC PARALLEL WITH KEY



	A	B	C	D	E
SIZE: 18	DIA: 18 mm		38	30	6mm SQ X 25
SIZE: 28	DIA: 22 mm		41	33.1	6mm SQ X 25
SIZE: 45	DIA: 25 mm		45.9	38	6mm SQ X 25
SIZE: 71	DIA: 32 mm		55.4	47.5	6mm SQ X 25
SIZE: 100	DIA: 40 mm		61.9	54	6mm SQ X 25
SIZE: 140	DIA: 45 mm		75	67	6mm SQ X 25

SHAFT CODE ** U ** SAE – SPLINE / REDUCED DIAMETER



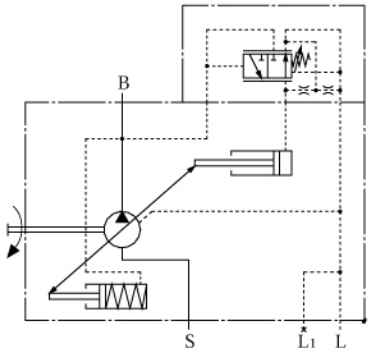
	A	B	C	D	E
SIZE: 18	5/8" DIA. 9 TOOTH 16/32 DP		1.25 (31.8)	1.00 (15.8)	
SIZE: 28					
SIZE: 45	7/8" DIA. 13 TOOTH 16/32 DP	1/4"~20UNC.2B	1.64 (41)	.98 (25)	
SIZE: 71					
SIZE: 100	11/4" DIA. 14 TOOTH 16/32 DP	5/16"~18UNC.2B	2.18 (55.4)	1.68 (39.5)	
SIZE: 140					

IFP A10VSO PISTON PUMPS
PRESSURE CONTROLS

DR - PRESSURE CONTROL

DR pressure control maintains a constant system pressure at the outlet of the pump. The pump supplies flow until the the preset adjustment pressure setting is reached. Pressure setting may be steplessly set at the pilot valve .

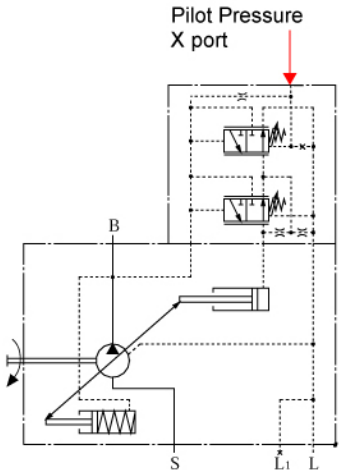
Setting range: 290 PSI (20 bar) ~ 4000 PSI (280 bar)



DRG - PRESSURE CONTROL REMOTE

DRG pressure control function and design are the same as DR control with the added feature of remote adjustment of the control pressure with the use of an external relief valve. External relief is connected to the X port on the pressure control and the differential pressure at the control spool is set as standard to 290 PSI (20 bar) pilot flow will be .4 gpm (1.5 L/min).

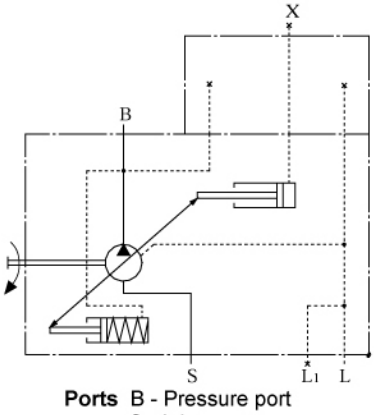
Setting range: 290 PSI (20 bar) ~ 4000 PSI (280 bar)



DG - TWO POINT, DIRECT CONTROL

DG pressure control allows pump flow to be switched from maximum flow to minumum flow by supplying an external pilot switching pressure at port X.

Pump can only be switched between maximum & minimum flow , a minimum pilot pressure of 725 PSI is required. The actual switching pilot pressure required will be dependent on the system operating pressure at the outlet of the pump

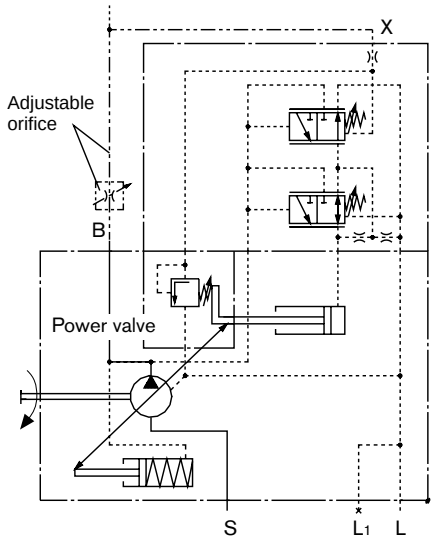


Ports B - Pressure port
S - Inlet port
L L_1 - Case drain ports
X - Pilot pressure port

IFP A10VSO PISTON PUMPS
PRESSURE CONTROLS

DFR / DFR1 —PRESSURE FLOW CONTROL

DFR pressure provides a pressure control function along with the means to control pump flow by varying a Differential pressure across an orifice (fixed orifice, adjustable flow control, directional control). The pump supplies only the amount of system flow as controlled by the adjustable orifice.
In the DFR1 control the orifice between the X port and tank is plugged
Setting range: 290 PSI (20 bar) ~ 4000 PSI (280 bar)



Ports B — Pressure port
S — Inlet port
L L1— Case drain ports
X—Pilot pressure port

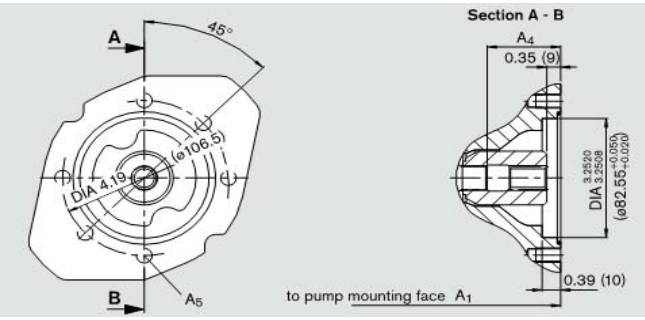
DFLR—PRESSURE / FLOW / POWER CONTROL

** CONTACT FACTORY FOR **DFLR** CONTROL **

IFP A10VSO PISTON PUMPS
THROUGH DRIVE SPECIFICATIONS

K01 FLANGE: SAE-A

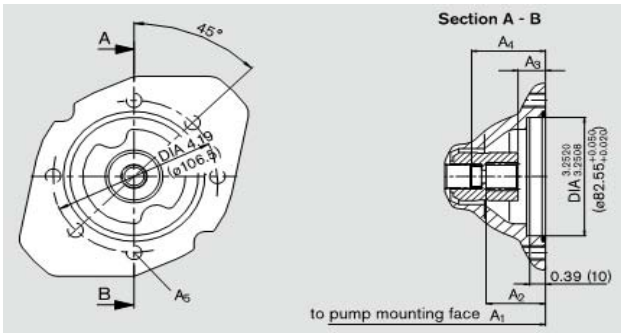
Coupling to adapt spline shaft = 5/8 - 9 teeth 16/32 DP (SAE-A)



	A1	A4	A5
A10VSO18	7.17 (182)	1.65 (42)	M10
A10VSO28	8.03 (204)	1.85 (47)	M10
A10VSO45	9.02 (229)	2.09 (53)	M10
A10VSO71	10.51(267)	2.09 (61)	M10
A10VSO100	13.31(338)	2.56 (65)	M10
A10VSO140	13.78(350)	3.03 (77)	M10

K52 FLANGE: SAE-A

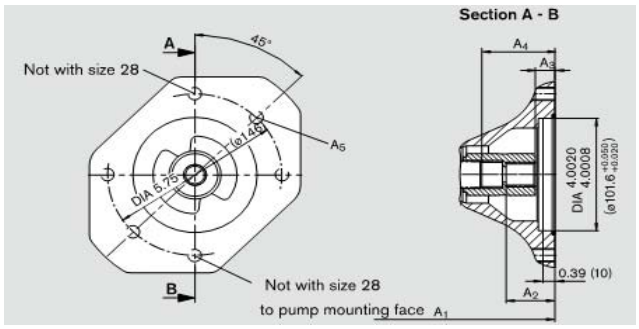
Coupling to adapt spline shaft = 3/4 - 11 teeth 16/32 DP



	A1	A2	A3	A4	A5
A10VSO18	7.17 (182)	1.57 (40)	.74 (18.8)	1.69 (43)	M10
A10VSO28	8.03 (204)	1.53 (39)	.74 (18.8)	1.85 (47)	M10
A10VSO45	9.02 (229)	1.57 (40)	.75 (18.9)	2.09 (53)	M10
A10VSO71	10.51(267)	1.57 (40)	.84 (21.3)	2.40 (61)	M10
A10VSO100	13.31(338)	1.57 (40)	.75 (18.9)	2.56 (65)	M10
A10VSO140	13.78(350)	1.61 (41)	.75 (18.9)	3.03 (77)	M10

K68 FLANGE: SAE-B

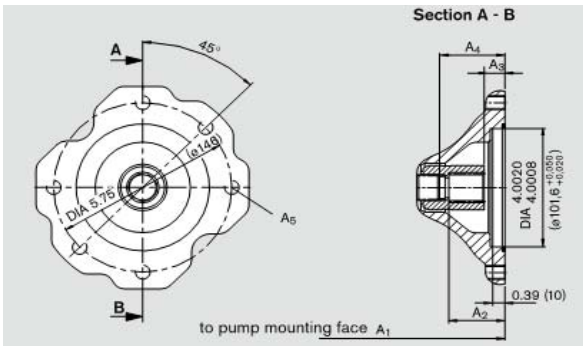
Coupling to adapt spline shaft = 7/8 - 13 teeth 16/32 DP (SAE-B)



	A1	A2	A3	A4	A5
A10VSO28	8.03 (204)	1.69 (43)	.74 (18.8)	1.85 (47)	M12
A10VSO45	9.02 (229)	1.65 (42)	.75 (18.9)	2.09 (53)	M12
A10VSO71	10.51(267)	1.69 (43)	.84 (21.3)	2.40 (61)	M12
A10VSO100	13.31(338)	1.61 (41)	.75 (18.9)	2.56 (65)	M12
A10VSO140	13.78(350)	1.73 (44)	.75 (18.9)	3.03 (77)	M12

K04 FLANGE: SAE-B

Coupling to adapt spline shaft = 1" - 15 teeth 16/32 DP (SAE-BB)

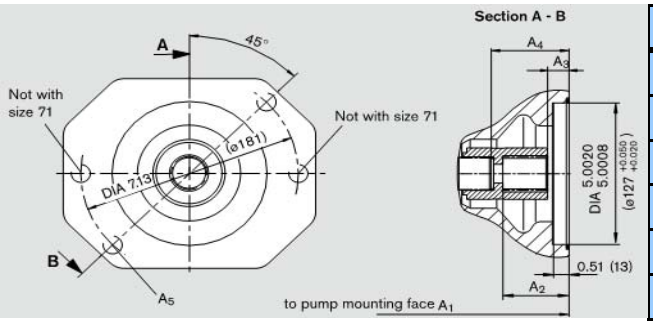


	A1	A2	A3	A4	A5
A10VSO45	9.02 (229)	1.87 (47.5)	.73 (18.4)	2.09 (53)	M10
A10VSO71	10.51(267)	1.87 (47.5)	.82 (20.8)	2.40 (61)	M10
A10VSO100	13.31(338)	1.87 (47.5)	.72 (18.2)	2.56 (65)	M10
A10VSO140	13.78(350)	1.87 (47.5)	.73 (18.4)	3.03 (77)	M10

IFP A10VSO PISTON PUMPS
THROUGH DRIVE SPECIFICATIONS

K07 FLANGE: SAE-C

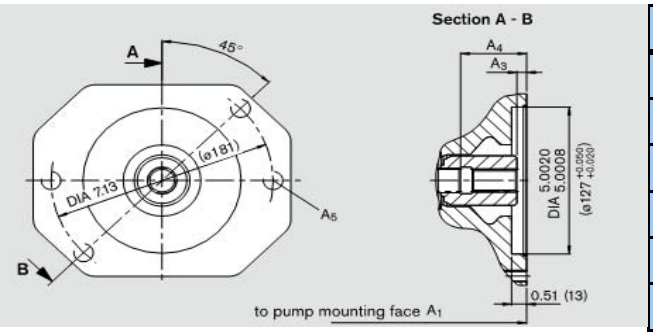
Coupling to adapt spline shaft = 11/4 - 14 teeth 12/24 DP (SAE-C)



	A1	A2	A3	A4	A5
A10VSO71	10.51(267)	2.18 (55.5)	.87 (22)	2.40 (61)	M16
A10VSO100	13.31(338)	2.24 (57)	.75 (18.9)	2.56 (65)	M16
A10VSO140	13.78(350)	2.36 (60)	.75 (18.9)	3.03 (77)	M16

K24 FLANGE: SAE-C

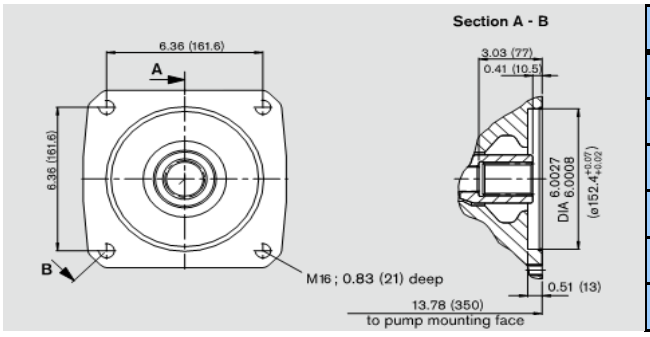
Coupling to adapt spline shaft = 11/2 - 17 teeth 12/24 DP(SAE-CC)



	A1	A2	A3	A4	A5
A10VSO100	13.31(338)		.31 (8)	2.56 (65)	M16
A10VSO140	13.78(350)		.35 (9)	3.03 (77)	M16

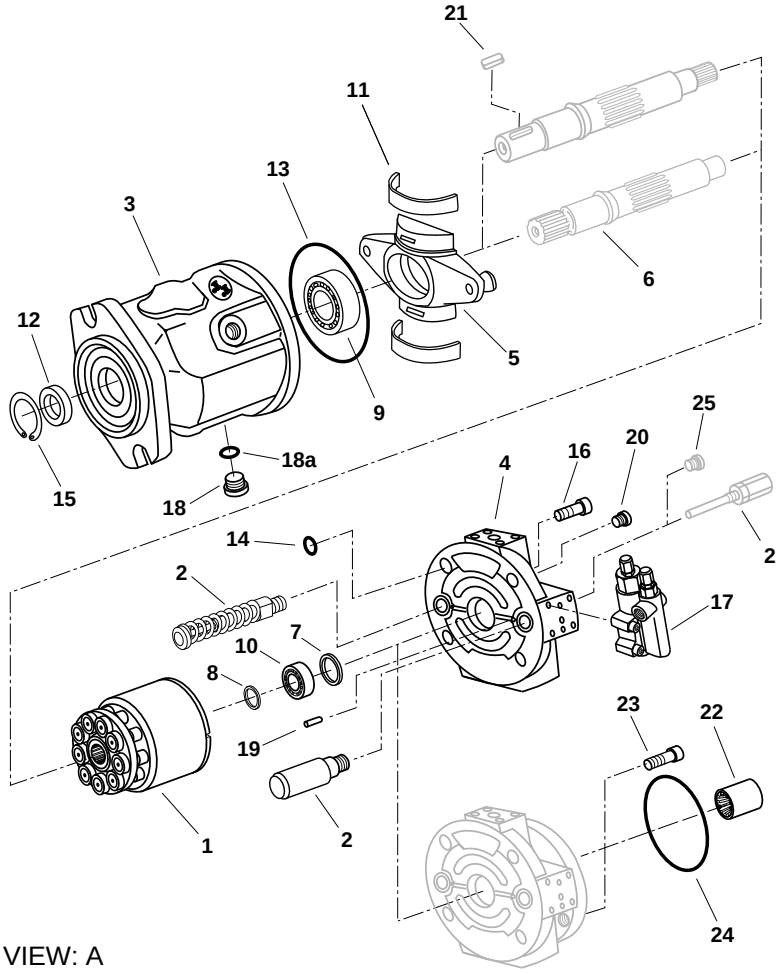
K17 FLANGE: SAE-D

Coupling to adapt spline shaft = 13/4 - 13 teeth 8/16 DP (SAE-D)

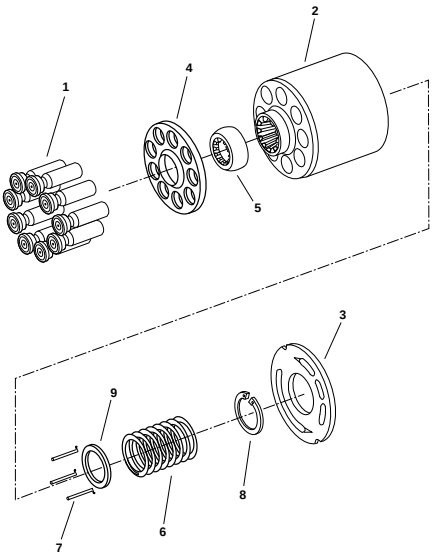


	A1	A2	A3	A4	A5
A10VSO140	NOTE: K17 USED A10VSO140 ONLY				

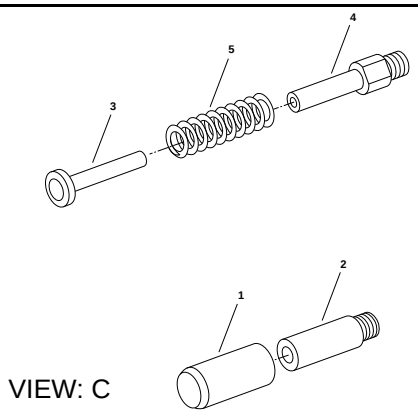
IFP A10VSO PISTON PUMPS PARTS DRAWINGS



VIEW: A



VIEW: B



VIEW: C

VIEW: A

ITEM # 1: ROTARY GROUP	ITEM # 2: CONTROL-ASS.	ITEM # 3: PUMP HOUSING	ITEM # 4: END COVER-PORTS
ITEM # 5: CRADEL ASS.	ITEM # 6: SHAFT - DRIVE	ITEM # 7: WASHER	ITEM # 8: ADJUSTING DISC
ITEM # 9: TAPPERED BRG	ITEM # 10: TAPPERED BRG	ITEM # 11: BEARING CRADLE	ITEM # 12: SEAL - SHAFT
ITEM # 13: O - RING	ITEM # 14: O - RING	ITEM # 15: SNAP RING	ITEM # 16: CAP SCREWS
ITEM # 17: CONTROL ASS.	ITEM # 18: PLUG	ITEM # 19: DOWEL PINS	ITEM # 20: PLUG
ITEM # 21: KEY	ITEM # 22: COUPLING	ITEM # 23: O - RING	ITEM # 24: O - RING
ITEM # 25: PLUG			

VIEW: B

ITEM # 1: PISTONS	ITEM # 2: BARREL	ITEM # 3: LENS PLATE	ITEM # 4: RETAINER PLATE
ITEM # 5: RETAINING BALL	ITEM # 6: SPRING	ITEM # 7: PRESSURE PINS	ITEM # 8: RETAINING RING
ITEM # 9: RETAING CLIP			

VIEW: C

ITEM # 1: CONTROL PISTON	ITEM # 2: PISTON GUIDE	ITEM # 3: COUNTER PISTON	ITEM # 4: PISTON GUIDE
ITEM # 5: SPRING	ITEM # 6: LOCK NUT	ITEM # 7: ACCORN NUT	ITEM # 8: SCREW MAX. ADJ.
ITEM # 9: O-RING			