

POMPE A PISTONI AD ASSE INCLINATO BENT AXIS PISTON PUMPS

CODICE FAMIGLIA
FAMILY CODE

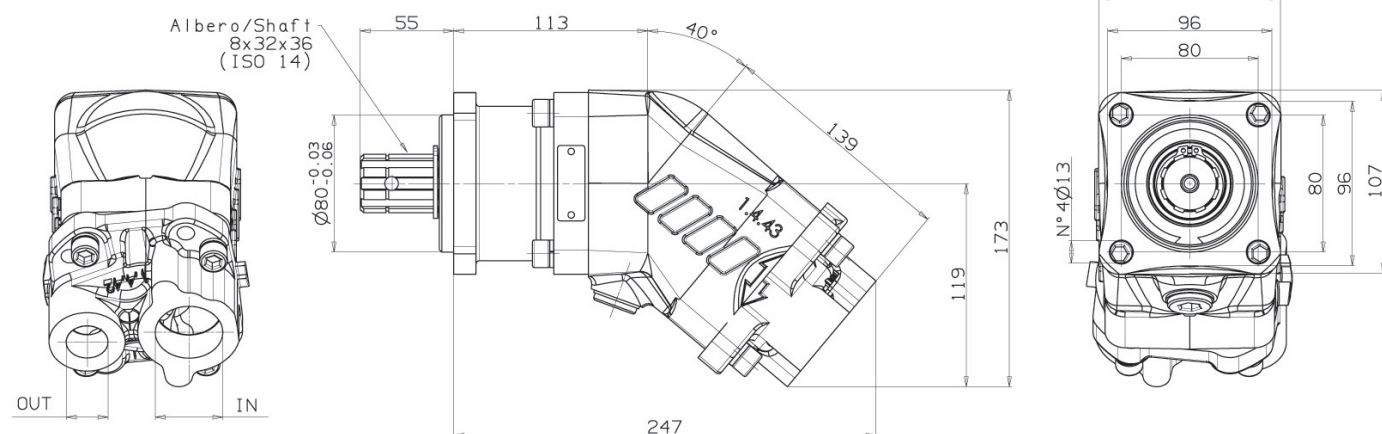
108-015/915
108-016/916
108-907

"HDS" 47-55-64
"MDS" 80



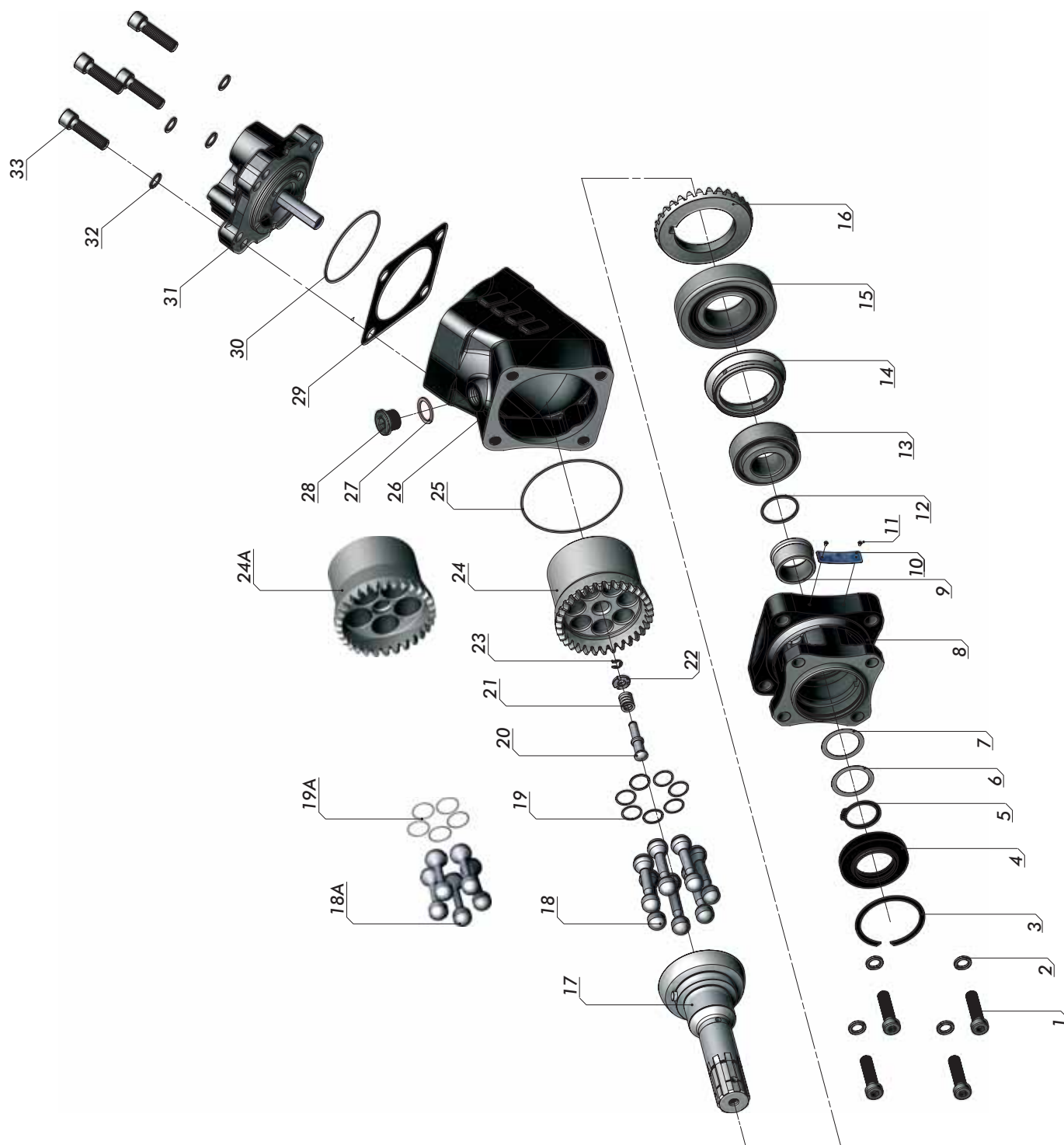
Fluido idraulico Fluid	Minerale o sintetico compatibile con guarnizioni: Mineral or synthetic compatible with the following seals: FKM, FPM, HNBR				
Viscosità cinematica consigliata Kinematic viscosity suggested	T media ambiente (°C) Average ambient temp. (°C)	< -40	-40 ÷ 10	10 ÷ 35	> 35
	VG (cSt = mm²/s)	16	22	32	46
Viscosità cinematica ottimale di esercizio Optimale kinematic viscosity			VG= 10 cSt ÷ 100 cSt		
Viscosità cinematica max consentita all'avviamento Max kinematic viscosity suggested at the start-up			VG= 750 cSt		
Indice di viscosità consigliato Viscosity index suggested			VI > 100		
Grado di filtrazione Oil filtering			> 200 bar: 10 µm < 200 bar: 25 µm		
Pres. di aspirazione Inlet pressure			0,85 ÷ 2 bar assoluti/absolut		
Senso di rotazione Pump rotation			Unidirezionale (Dx o Sx) Unidirectional (Right or Left)		
Verificare che la pompa sia posizionata almeno 100 mm sotto il livello mini- mo del serbatoio olio. Prima di avviare la pompa effettuare spurgo aria. Verify that pump is, at least, 100 mm under the minimum level of the tank. Before starting the pump bleed the air.					

Dimensions in mm



Tipo pompa Pump type	Rotazione Rotation		IN	OUT	IN	OUT	Temp. di funzionamento Working temperature	
	Destra Right	Sinistra Left					min	max
HDS-47	108-015-04733	108-015-04742	G 1 1/4	G 3/4			-15°	200°
	108-915-04734	108-915-04743					-40°	140°
HDS-55	108-015-05536	108-015-05545					-15°	200°
	108-915-05537	108-915-05546					-40°	140°
HDS-64	108-015-06035	108-015-06044			1 5/8-12	1 1/16-12	-15°	200°
	108-915-06036	108-915-06045					-40°	140°
	108-907-00649	108-907-00658					-15°	200°
MDS-80	108-016-00807	108-016-00816	G 1 1/4	G 3/4			-15°	200°
	108-916-00808	108-916-00817					-40°	140°
	108-907-00809	108-907-00818					-15°	200°

pag.15



Rev:AE

Codice foglio:997-108-01515

Rev:AI

Codice fascicolo:997-400-10810

Data: Lunedì 21 novembre 2005

N°	HDS 47	HDS 55	HDS 64	MDS 80	Codice	Descrizione	Quantità
N°	GAS SAE -40°C	GAS SAE -40°C	GAS SAE -40°C	GAS SAE -40°C	P. Number	Description	Quantity
1	•	•	•	•	502-004-00574	Vite TCE M 10x40	4
2	•	•	•	•	501-008-00054	Rosetta elastica	4
3	•	•	•	•	501-000-02729	Anello elastico	1
4	•	•	•	•	506-021-42726	Paraolio	1
5	•	•	•	•	506-000-24272	Anello seeger rinforzato	1
6	•	•	•	•	501-000-01355	Rondella	1
7	•	•	•	•	529-007-00217	Rondella	1
8	•	•	•	•	529-007-00226	Corpo anteriore	1
9	•	•	•	•	517-002-00637	Bussola	1
10	•	•	•	•	511-002-00200	Targhetta completa	1
11	•	•	•	•	513	Chiodino fissaggio targhetta	2
12	•	•	•	•	513-000-00011	Guarnizione OR	1
13	•	•	•	•	506-006-03137	Cuscinetto	1
14	•	•	•	•	506-000-13137	Anello distanziale cuscinetti	1
15	•	•	•	•	510-002-00220	Cuscinetto	1
16	•	•	•	•	530-004-00191	Corona dentata	1
17	•	•	•	•	510-002-00275	Albero	1
18	•	•	•	•	525-011-00139	Pistone sferico	7
18a	•	•	•	•	522-005-00231	Fasce elastiche	5
19	•	•	•	•	522-005-00204	Perno sferico con guida albero	21
19a	•	•	•	•	532-005-00025	Molla di carico corpo cilindri	15
20	•	•	•	•	532-005-00114	Anello guida molla	1
21	•	•	•	•	532-005-00016	Anello seeger	1
22	•	•	•	•	501-023-00046	Corpo cilindri sede pistoni	1
23	•	•	•	•	501-023-00019	Guarnizione	1
24	•	•	•	•	501-023-00126	Corpo intermedio	1
24a	•	•	•	•	501-023-00082	Rondella rame	1
25	•	•	•	•	542-001-00162	Tappo cieco	1
26	•	•	•	•	512-005-00812	Guarnizione compensazione gioco	1
27	•	•	•	•	542-001-00171	Guarnizione OR	1
28	•	•	•	•	501-015-00028	Rear cover	1
29	•	•	•	•	517-003-00109	Rosetta elastica	4
30	•	•	•	•	517-003-00181	Vite TCE M10x35	4
31	•	•	•	•	517-003-00074		
32	•	•	•	•	517-003-00118		
33	•	•	•	•	506-006-03350		
	•	•	•	•	506-000-13350		
	•	•	•	•	517-002-00771		
	•	•	•	•	116-009-01200		
	•	•	•	•	115-006-00135		
	•	•	•	•	507-000-00265		
	•	•	•	•	506-006-03275		
	•	•	•	•	506-000-13275		
	•	•	•	•	517-002-00753		
	•	•	•	•	517-002-01001		
	•	•	•	•	517-002-00762		
	•	•	•	•	517-002-00833		
	•	•	•	•	517-002-00815		
	•	•	•	•	517-002-00860		
	•	•	•	•	501-008-00054		
	•	•	•	•	502-004-00565		

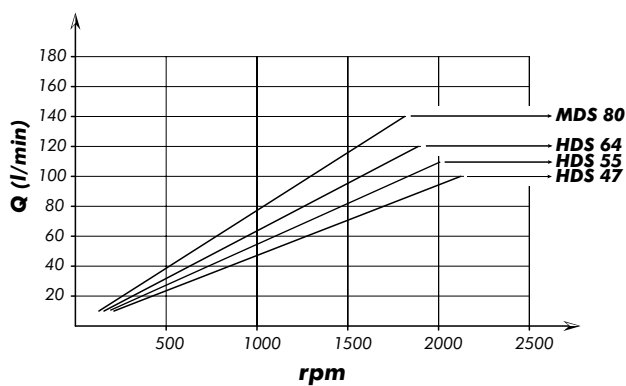
CARATTERISTICHE TECNICHE DI FUNZIONAMENTO

TECHNICAL FEATURES

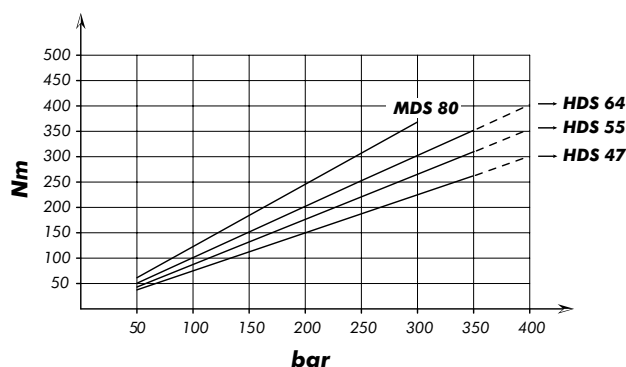
Tipo pompa Pump type	Cilindrata Displacement cm ³ /rev	Pressione Pressure			Velocità max. continua Max. continuous speed rpm	Velocità max. intermittente Max. intermittent speed rpm	Velocità min. Min. speed rpm	Peso Weight kg
		P1 bar	P2 bar	P3 bar				
HDS-47	47,13	350	370	400	1900	2500	300	12,6
HDS-55	56,7							
HDS-64	63,56							
MDS-80	77,25	300	300	300	1900	2500	300	

P1=Pressione max.continua Max. continuous pressure (100%)
P2=Pressione max. intermittente Max. Intermittent pressure (20 sec.max.)
P3=Pressione max. di punta Max. peak pressure (6 sec.max.)

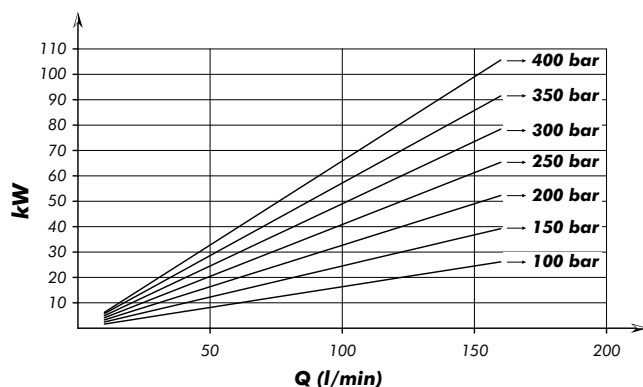
PORTATA FLOW



COPPIA ASSORBITA DRIVE TORQUE



POTENZA ASSORBITA POWER INPUT



SCELTA DEL TUBO DI ASPIRAZIONE HOW TO CHOOSE THE SUCTION PIPE SIZE

Q	Ø interno min. tubo Min pipe diam.		Velocità flusso Flow speed (m/s)
	mm	inch	
30	32	1" 1/4	0,62
40			0,83
50	38	1" 1/2	0,74
60			0,88
70	40	1" 9/16	0,93
80	45	1" 3/4	0,84
90			0,94
100	50	2"	0,85
110			0,93
120	60	2" 3/8	0,71
130			0,77
140			0,83
150			0,88
160	63	2" 1/2	0,86
170			0,91
180			0,96

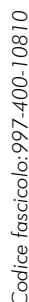
Per garantire corrette condizioni di aspirazione la velocità del flusso non deve superare 1 m/sec.
To ensure the proper suction pipe size the flow speed should not exceed 1mt/sec.

Kit guarnizioni Seal Kit

GAS	108-903-47648
SAE	
GAS -40°	108-903-47657

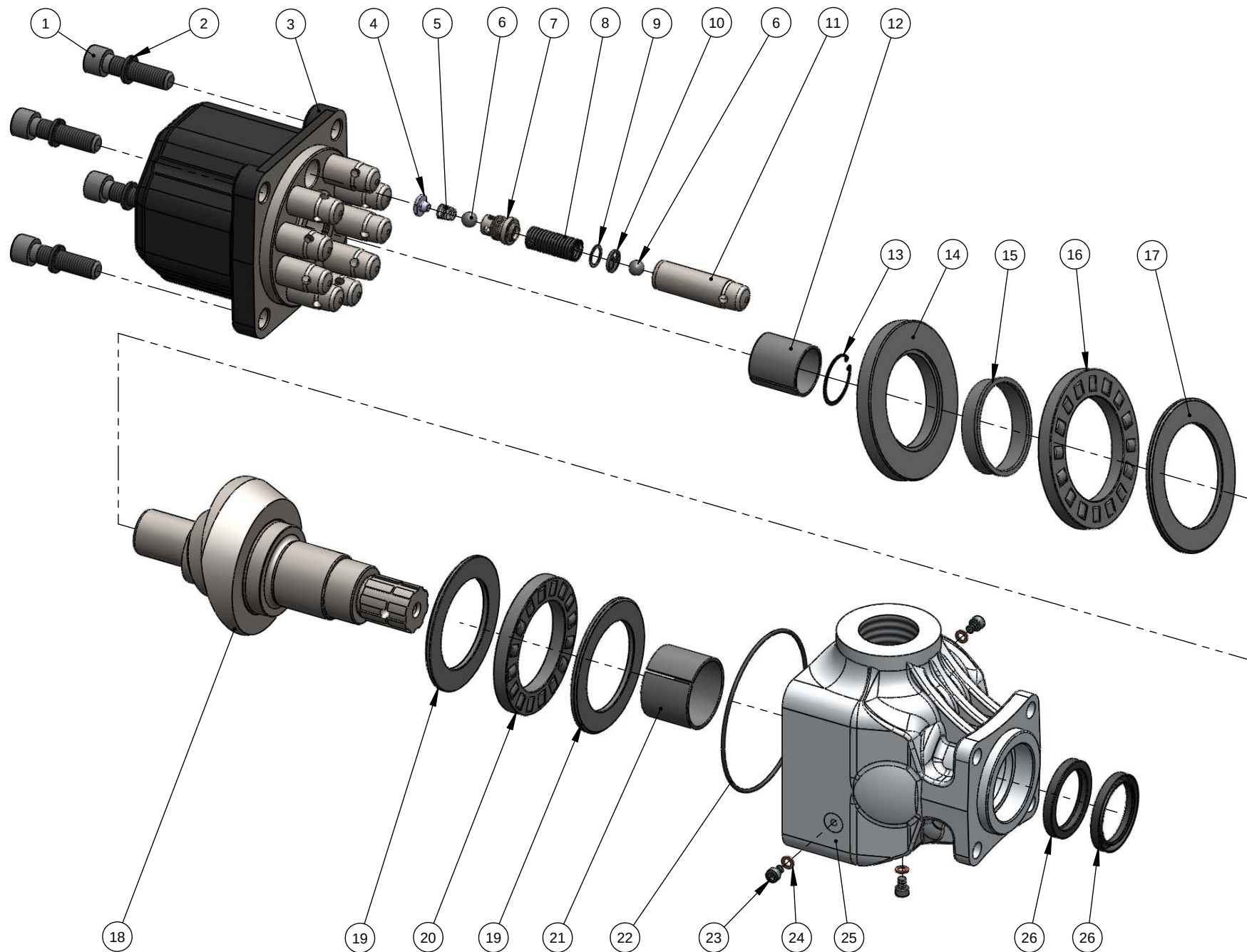
108-005

"2PAK"



Data: Lunedì 22 novembre 2010







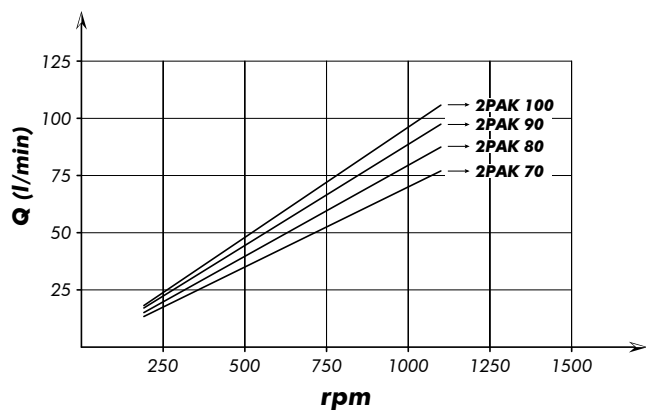
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pag.15

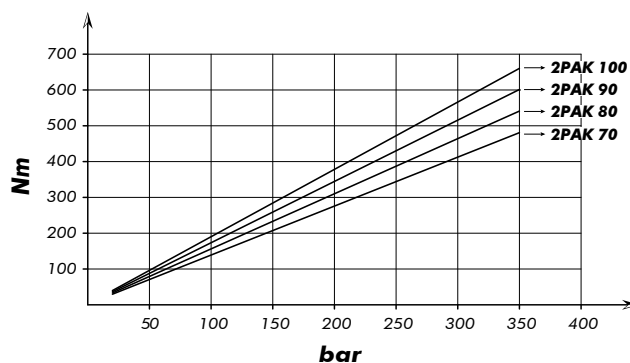
COMPANY
 WITH QUALITY SYSTEM
 CERTIFIED BY DNV
 ISO 9001/2000

N° N°	70	80	90	100	Codice P. Number	Descrizione Description		Quantità Quantity
1	•	•	•	•	502-006-00581	Vite TCE M14x55	Socket head capscrew	4
2	•	•	•	•	501-008-00072	Rondella elastica	Washer	4
3	•				517-002-00093	Corpo posteriore	Rear body	1
		•			517-002-00155			
			•		517-002-00173			
				•	517-002-00119			
4	• x8	• x9	• x10	• x10	542-001-00135	Corpo guida molla	Spring guide body	
5	• x8	• x9	• x10	• x10	512-004-00153	Molla conica	Tapped spring	
6	• x16	• x18	• x20	• x20	510-009-00116	Sfera grano 7/16"	Ball 7/16"	
7	• x8	• x9	• x10	• x10	540-000-00149	Tappo valvola mandata	Plug delivery valve	
8	• x8	• x9	• x10	• x10	512-005-00607	Molla ritorno pistone	Back piston spring	
9	• x8	• x9	• x10	• x10	530-000-00159	Distanziale	Spacer	
10	• x8	• x9	• x10	• x10	550-001-00209	Part. arresto sfera pompanti	Spacer sprine guide	
11	• x8	• x9	• x10		532-004-00044	Pistone pompante ø21	Pump piston ø21	
				• x10	532-004-00053	Pistone pompante ø22	Pump piston ø22	
12	•	•	•	•	533-004-00140	Boccola 35x39x40	Bushing 35x39x40	1
13	•	•	•	•	501-000-00196	Anello elastico	Circlip	1
14	•	•	•	•	510-006-00404	Ralla 70x119x12.5	Bearing 70x119x12.5	1
15	•	•	•	•	533-004-00257	Boccola 65x70x15	Bushing 65x70x15	1
16	•	•	•	•	510-006-80122	Gabbia assiale rulli 78x119x11	Axial roller cage 78x119x11	1
17	•	•	•	•	510-006-00397	Ralla 78x115x4.5	Bearing 78x115x14.5	1
18	•	•	•	•	522-005-00133	Albero	Shaft	1
19	•	•	•	•	510-006-00440	Ralla 70x104x4.5	Bearing 70x104x4.5	2
20	•	•	•	•	510-006-70106	Gabbia assiale rulli 70x106x11	Axial roller cage 70x106x11	1
21	•	•	•	•	533-004-00177	Boccola 50x55x40	Bushing 50x55x40	1
22	•	•	•	•	506-002-00676	Guarnizione OR	O-Ring	1
23	•	•	•	•	502-002-00405	Vite TCE M 6x10	Socket head capscrew	3
24	•	•	•	•	116-009-01022	Rondella in rame	Washer	3
25	•	•	•	•	517-002-00299	Corpo anteriore	Front housing	1
26	•	•	•	•	506-007-00706	Paraolio	Oil seal	2

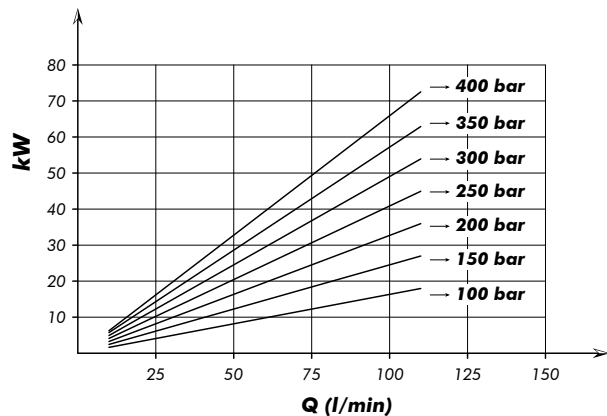
PORTATA FLOW



COPPIA ASSORBITA DRIVE TORQUE



POTENZA ASSORBITA POWER INPUT



Kit guarnizioni
Seal Kit

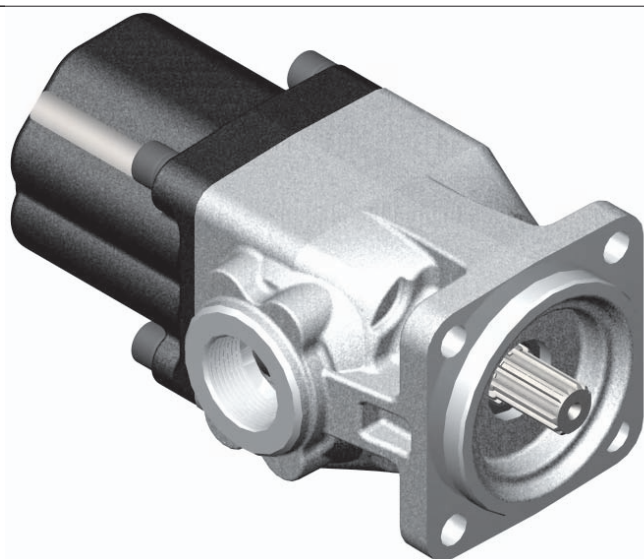
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Codice fascicolo: 997-400-10810

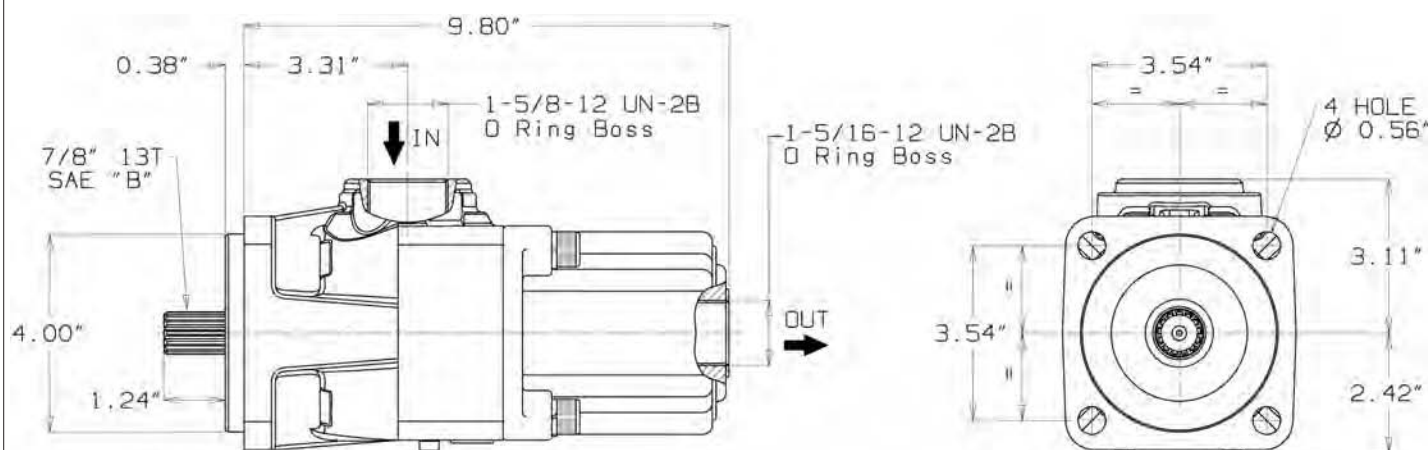
Data: Lunedì 22 novembre 2010

Rev: AB

Codice foglio: 997-108-00530



Fluid	Mineral oil based hydraulic fluid
Oil temperature	5°F ÷ 176°F
Oil viscosity	12 up to 100 cSt max.750 cSt
Oil filtering	> 2900 PSI: 0.393 mils < 2900 PSI: 0.984 mils
Inlet pressure	10.15 ÷ 43.5 PSI (Absolute)
Pump rotation	Reversible



TECHNICAL FEATURES

PUMP TYPE	Dis.	Gpm@1000rpm	Pressure Max./Peak	Maximum speed
	inch ³		PSI	rpm
1-PAK 21 108-7-219	0.81	5.54	5075	1800
1-PAK 28 108-7-282	1.08	7.39		
1-PAK 35 108-7-353	1.32	9.24		
1-PAK 42 108-7-424	1.62	11.09		
1-PAK 48 108-7-488	1.89	12.68		
1-PAK 52 108-7-522	2.07	13.73	4350	1500
1-PAK 55 108-7-559	2.16	14.52		
1-PAK 60 108-7-602	2.37	15.85	3770	

POMPE A PISTONI AD ASSE INCLINATO BENT AXIS PISTON PUMPS

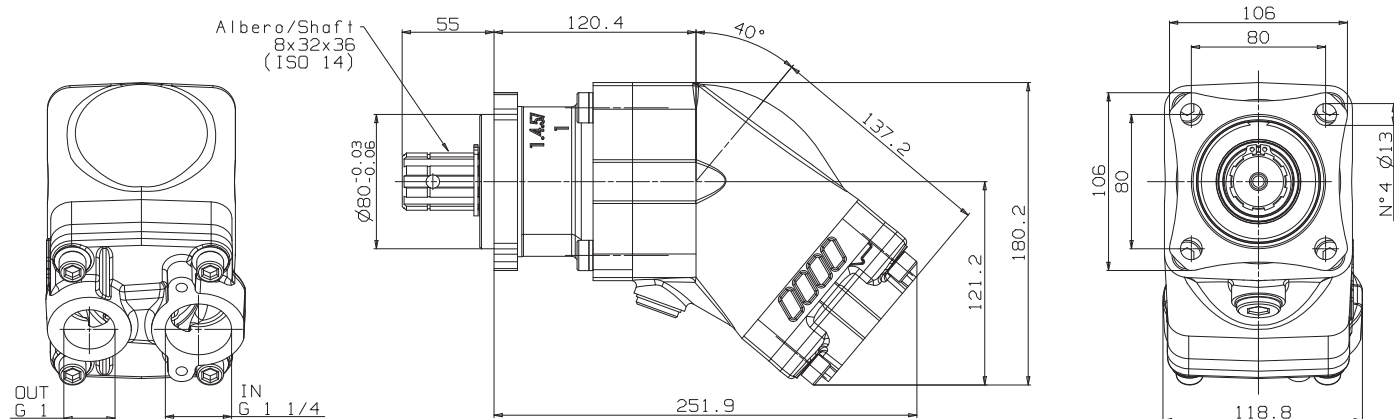
CODICE FAMIGLIA
FAMILY CODE

108-013

HDT 84-96-108



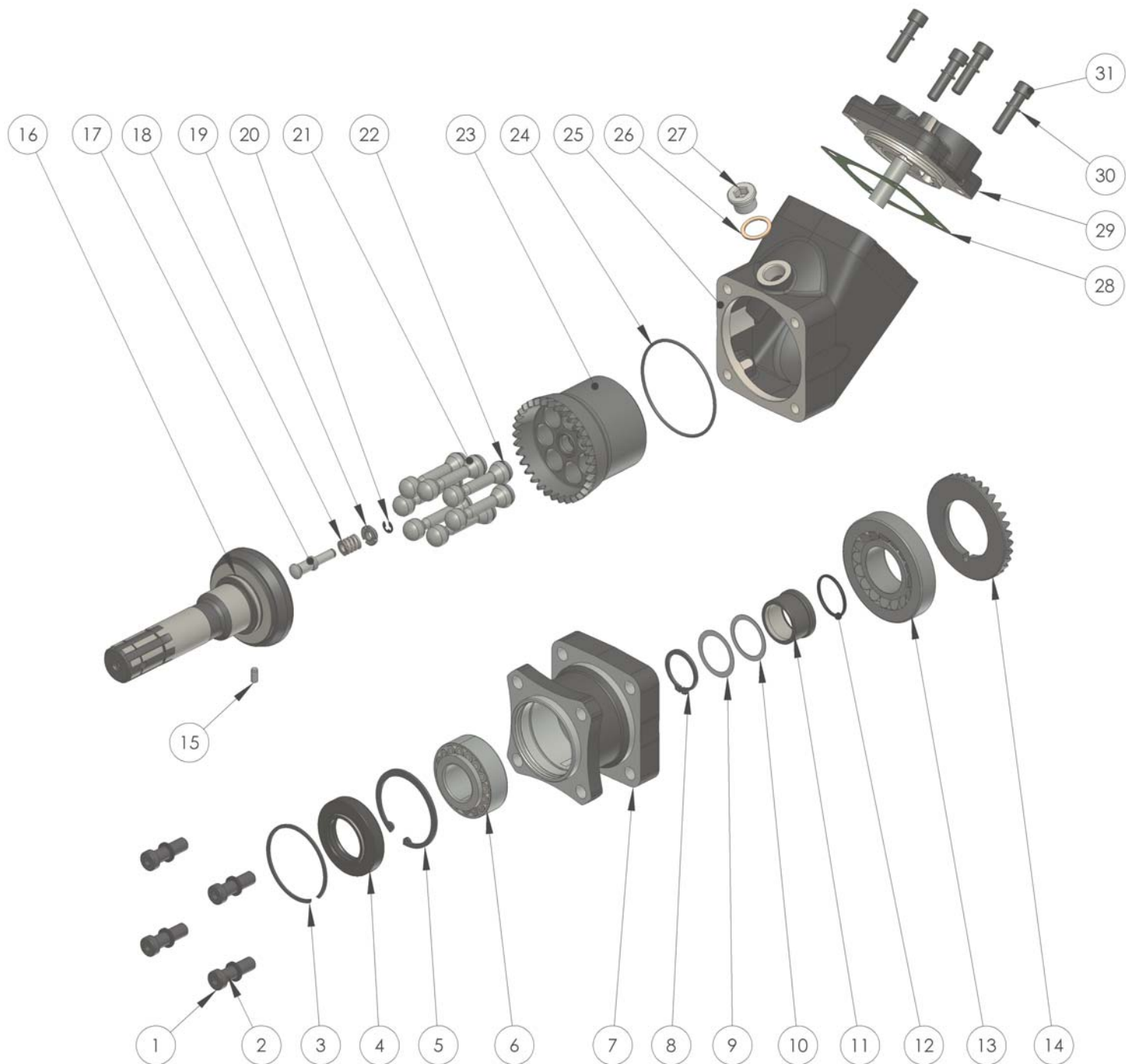
Fluido idraulico Fluid	Minerale o sintetico compatibile con guarnizioni: Mineral or synthetic compatible with the following seals: HNBR				
Temp. consentita Allowed temperature	-40 +140 °C				
Viscosità cinematica consigliata Kinematic viscosity suggested	T media ambiente (°C) Average ambient temp. (°C)	< -40	-40÷10	10÷35	> 35
	VG (cSt = mm²/s)	16	22	32	46
Viscosità cinematica ottimale di esercizio Optimale kinematic viscosity			VG= 10 cSt ÷ 100 cSt		
Viscosità cinematica max consentita all'avviamento Max kinematic viscosity suggested at the start-up			VG= 750 cSt		
Indice di viscosità consigliato Viscosity index suggested			VI > 100		
Grado di filtrazione Oil filtering			> 200 bar: 10 µm < 200 bar: 25 µm		
Pres. di aspirazione Inlet pressure			0,85 ÷ 2 bar assoluti/absolut		
Senso di rotazione Pump rotation			Unidirezionale (Dx o Sx) Unidirectional (Right or Left)		
Verificare che la pompa sia posizionata almeno 100 mm sotto il livello mini- mo del serbatoio olio. Prima di avviare la pompa effettuare spurgo aria. Verify that pump is, at least, 100 mm under the minimum level of the tank. Before starting the pump bleed the air.					



Dimensions in mm

Tipo pompa Pump type	Rotazione Rotation		IN	OUT	IN	OUT
	Destra Right	Sinistra Left				
HDT-84	108-013-08400	108-013-08419	ISO 228 G 1 1/4	ISO 228 G 1	SAE 24	SAE 16
					1 5/8-12 UN-28	1 5/16-12UN-28
HDT-96	108-013-09605	108-013-09614	G 1 1/4	G 1		
					1 5/8-12 UN-28	1 5/16-12UN-28
HDT-108	108-013-10808	108-013-10817	G 1 1/4	G 1		
					1 5/8-12 UN-28	1 5/16-12UN-28

pag.39



pag.40

COMPANY WITH QUALITY MANAGEMENT
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HYDRAULIC COMPONENTS

N° N°	HDT 84		HDT 96		HDT 108		Codice P. Number	Descrizione Description		Quantità Quantity
	GAS	SAE	GAS	SAE	GAS	SAE				
1	•	•	•	•	•	•	502-000-01022	Vite TCE M 12x40	Socket head capscrew	4
2	•	•	•	•	•	•	501-008-00063	Rosetta elastica	Washer	4
3	•	•	•	•	•	•	501-000-02729	Anello elastico	Circlip	1
4	•	•	•	•	•	•	506-000-24272	Paraolio	Oil seal	1
5	•	•	•	•	•	•	501-001-00677	Anello elastico	Circlip	1
6	•	•	•	•	•	•	510-002-00220	Cuscinetto a rulli conici	Tapered roller bearing	1
7	•	•	•	•	•	•	517-002-01707	Corpo anteriore	Front housing	1
8	•	•	•	•	•	•	501-000-01355	Anello seeger	Retaining ring	1
9	•	•	•	•	•	•	529-007-00226	Rondella	Washer	1
10	•	•	•	•	•	•	529-007-01127	Rondella	Washer	1
11	•	•	•	•	•	•	511-002-00200	Bussola	Bushing	1
12	•	•	•	•	•	•	506-000-13137	Guarnizione OR	O-ring	1
13	•	•	•	•	•	•	510-002-00293	Cuscinetto a rulli conici	Tapered roller bearing	1
14	•	•	•	•	•	•	525-011-00193	Corona dentata	Crown	1
15	•	•	•	•	•	•	501-003-06142	Spina UNI 6364-A	Pin UNI 6364-A	1
16	•	•	•	•	•	•	522-005-00375	Albero	Shaft	1
17	•	•	•	•	•	•	542-001-00162	Perno sferico con guida albero	Shaft guide pin	1
18	•	•	•	•	•	•	512-005-00812	Molla di carico corpo cilindri	Spring	1
19	•	•	•	•	•	•	542-001-00171	Anello guida molla	Spring guide ring	1
20	•	•	•	•	•	•	501-015-00028	Anello seeger	Retaining ring	1
21	•	•					532-005-00034	Pistone sferico	Piston	7
			•	•			532-005-00276			
					•	•	532-005-00070			
22	•	•					501-023-00037	Fasce elastiche	Spring rings	21
			•	•			501-023-00091			
					•	•	501-023-00055			
23	•	•					500-029-15086	Gruppo corpo cilindri sede pistoni	Piston barrel assembly	1
			•	•			500-029-15097			
					•	•	500-029-15110			
24	•	•	•	•	•	•	506-000-12387	Guarnizione OR	O-Ring	1
25	•	•	•	•	•	•	517-002-01458	Corpo intermedio	Int. housing	1
26	•	•	•	•	•	•	116-009-10129	Rondella acciaio-gomma	Copper washer	1
27	•	•	•	•	•	•	115-006-00135	Tappo cieco	Blank plug	1
28	•	•	•	•	•	•	507-000-00381	Guarnizione	Gasket	1
29	•						500-029-80859	Gruppo corpo posteriore	Rear cover assembly	1
		•					500-029-80868			
			•				500-029-80966			
				•			500-029-80975			
					•		500-029-81107			
						•	500-029-81116			
30	•	•	•	•	•	•	501-020-00101	Rosetta SCHNORR	SCHNORR Washer	4
31	•	•	•	•	•	•	502-004-00574	Vite TCE M10x45	Socket head capscrew	4

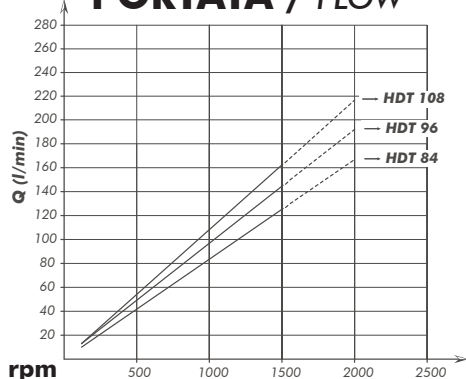
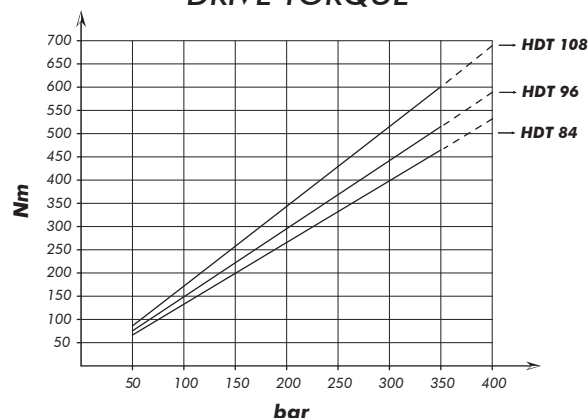
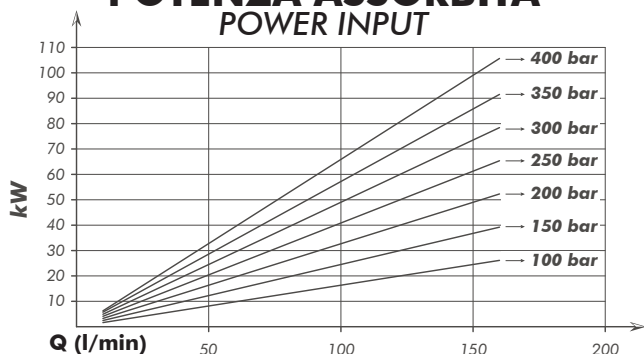
CARATTERISTICHE TECNICHE DI FUNZIONAMENTO / TECHNICAL FEATURES

Tipo pompa Pump type	Cilindrata Displacement cm ³ /rev	Pressione Pressure		Velocità / Speed			Velocità min. Min. speed rpm	Peso Weight kg
		P1 bar	P3 bar	V0 rpm	V1 rpm	V2 rpm		
HDT-84	84,2	350	370	2300	1500	2000	300	15
HDT-96	95,5							
HDT-108	107							

P1=Pressione massima continua Max. continuous pressure (100%)
P3=Pressione massima di punta Max. peak pressure (6 sec.max)

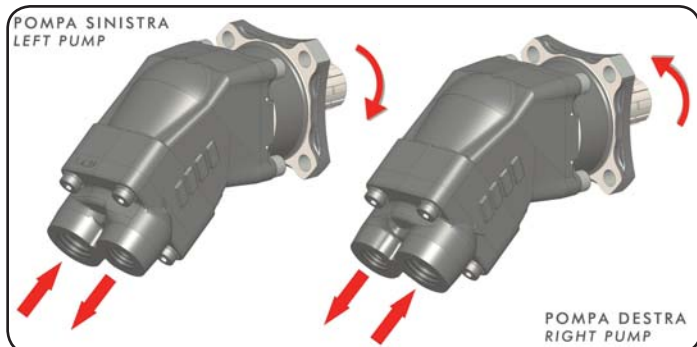
V0=Massima continua vuoto Max. continuous speed without load
V1=Massima continua Max. continuous speed
V2=Massima intermittente Max. intermittent speed

PORTATA / FLOW

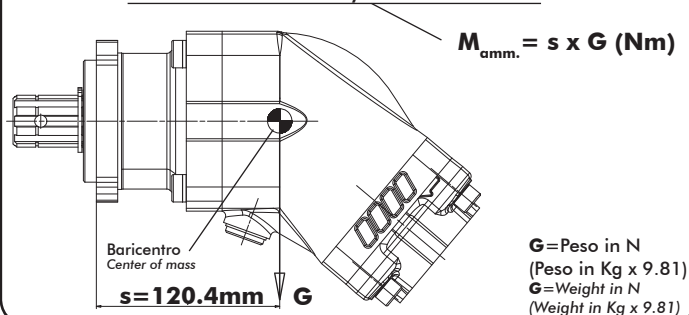
COPPIA ASSORBITA
DRIVE TORQUEPOTENZA ASSORBITA
POWER INPUTKit guarnizioni / Seal Kit
108-903-85008SCELTA DEL TUBO DI ASPIRAZIONE
HOW TO CHOOSE THE SUCTION PIPE SIZE

Q Portata Flow l/min	Ø interno min. tubo Min pipe diam. mm inch		Velocità flusso Flow speed (m/s)
20	25	1"	0,68
30	32	1" 1/4	0,62
40	32		0,83
50	38	1" 1/2	0,74
60	38		0,88
70	40	1" 9/16	0,93
80	45	1" 3/4	0,84
90	45		0,94
100	50	2"	0,85
110	50		0,93
120	60	2" 3/8	0,71
130	60		0,77
140	60		0,83
150	60	2" 1/2	0,88
160	63		0,86
170	63		0,91
180	63		0,96

Per garantire corrette condizioni di aspirazione la velocità del flusso non deve superare 1 m/sec.
To ensure the proper suction pipe size the flow speed should not exceed 1 m/sec.



MOMENTO PESO / MASS MOMENT



HA10VSO Series Variable Displacement Pump



Product show and brief introduction

Open Circuit

Size 28...140
Series 31
Nominal Pressure 28 MPa
Peak pressure 35 MPa



Features

- Variable displacement axial piston pump of swashplate design for hydraulic open circuit systems
- Flow is proportional to drive speed and displacement. It can be infinitely varied by adjustment of the swashplate
- ISO mounting flange
- Flange connections to SAE metric
- 2 case drain ports
- Good suction characteristics
- Permissible continuous pressure 28 MPa
- Low noise level
- Long service life
- Axial and radial loading of drive shaft possible
- High power-weight ratio
- Wide range of controls
- Short response times
- Through drive option for multi-circuit system

Model Code

HA10VS	O	71	DR	/31	R	-P	P	A	12	N00
Axial piston unit	Type of operation	Size (mL/r)	Control device	Series	Direction of rotation	Seals	Shaft end	Mounting flange	Service line connections	Through drives
HA10VS: Variable swashplate design, for industrial applications Nominal pressure 28MPa, peak pressure 35MPa	O: Pump in open circuits	28	DR: Pressure control	31	(Viewed on shaft end) R: Clockwise L: Anti clockwise	P: NBR nitril~ caoutchouc to DIN ISO 1629 (shaft seal in FKM) V: FKM fluor~ caoutchouc to DIN ISO 1629	See below	A: ISO 2-hole	12: Pressure port B, Suction port S (SAE ports at opposite sides Metric fixing thread)	See below
		45	DRG: Pressure control, remotely controlled							
		71	DFR: Pressure /flow control							
		100	DFR1: Pressure /flow control, without orifice in X-line							
		140						B: ISO 4-hole		

Shaft end

Size		28	45	71	100	140
Parallel with key DIN6885	P	✓	✓	✓	✓	✓
Splined shaft SAE	S	7/8 "	1 "	1 1/4 "	1 1/2 "	1 3/4 "
Splined shaft SAE (higher through drive torque)	R	7/8 "	1 "	1 1/4 "	/	/

Through drives

Size		28	45	71	100	140
Without through drive	N00	✓	✓	✓	✓	✓
ISO 100,2-hole splined shaft 7/8 " 22-4 (SAE B) HA10VSO28(shaft S or R)	KB3	✓	/	✓	✓	✓
ISO 100,2-hole splined shaft 1 " 25-4 (SAE B-B) HA10VSO45(shaft S or R)	KB4	/	✓	✓	✓	✓
ISO 125,2-hole splined shaft 1 1/4 " 32-4 (SAE C) HA10VSO71(shaft S or R)	KB5	/	/	✓	✓	✓
ISO 125,2-hole splined shaft 1 1/2 " 38-4 (SAE C-C) HA10VSO100(shaft S)	KB6	/	/	/	✓	✓

✓ = available / = not available

- If a second Brueninghaus pump is to be fitted at factory then the two model codes must be linked with a "+" sign.
Model code 1st pump + Model code 2nd pump.
Ordering example: HA10VSO 100DR/31R-PPA12KB5 + HA10VSO 71DFR/31R-PSA12N00
- If a gear or radial piston pump is to be fitted at factory please consult us.

Fluid, Mechanical Displacement Limiter

● Hydraulic fluid

The HA10VSO variable displacement pump is suitable for use with mineral oil.

● Operating viscosity range

In order to obtain optimum efficiency and service life, we recommend that the operating viscosity (at operating temperature) be selected from within the range

$$\nu_{opt} = \text{operating viscosity } 16 \dots 36 \text{ mm}^2/\text{s}$$

Referred to the reservoir temperature (open circuit).

● Viscosity limits

The limiting values for viscosity are as follows:

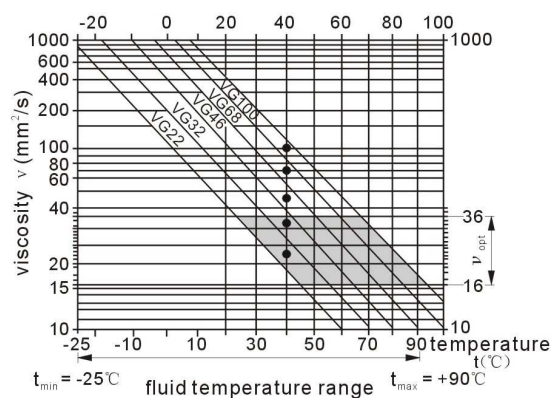
$\nu_{min} = 10 \text{ mm}^2/\text{s}$
short term at a max. permissible case temp. of 90°C .

$\nu_{max} = 1000 \text{ mm}^2/\text{s}$
short term on cold start

● Temperature range (see selection diagram)

$t_{min} = -25^\circ\text{C}$
 $t_{max} = 90^\circ\text{C}$

● Selection diagram



● Notes on the selection of the hydraulic fluid

In order to select the correct fluid, it is necessary to know the operating temperature in the tank (open loop) in relation to the ambient temperature.

The hydraulic fluid should be selected so that within the operating temperature range, the operating viscosity lies within the optimum range (ν_{opt}) (see shaded section of the selection diagram). We recommend that the higher viscosity range should be chosen in each case.

Example: At an ambient temperature of $x^\circ\text{C}$ the operating temperature is 60°C . Within the operating viscosity range (ν_{opt} ; shaded area), this corresponds to viscosity ranges VG46 or VG68; VG68 should be selected.

Important: The leakage oil (case drain oil) temperature is influenced by pressure and pump speed and is always higher than the tank temperature. However, at one point in the circuit the temperature may exceed 90°C .

If it is not possible to comply with the above conditions because of extreme operating parameters or high ambient temperatures please consult us.

● Filtration

The finer the filtration the better the cleanliness of the pressure fluid and the longer the life of the axial piston unit. To ensure the functioning of the axial piston unit a minimum cleanliness level of:

9 to NAS 1638
18/15 to ISO/DIS 4406 is necessary

if above mentioned grades cannot be maintained please consult supplier.

● High-speed-version

The size 140 is available in an optional high speed version. This version allows higher drive speeds at max. displacement (higher output flow) without affecting outside dimensions, see table on page 80.

● Mechanical displacement limiter

Mechanical displacement limiter is possible on the nonthru-drive model, N00 series but not for the model with thru-drive.

V_{gmax} : for sizes 28 to 140
setting range V_{gmax} to 50% V_{gmax} stepless

V_{gmin} : for sizes 100 and 140
setting range V_{gmin} to 50% V_{gmin} stepless

Technical Data

● Operating pressure range-inlet

Absolute pressure at port S

$P_{abs \min}$ _____ 0.08 MPa
 $P_{abs \max}$ _____ 3 MPa

● Operating pressure range-outlet

Pressure at port B

Nominal pressure P_N _____ 28 MPa
 Peak pressure $P_{\max}$ _____ 35 MPa

(Pressure data to DIN 24312)

Applications with intermittent operating pressures up to 31.5 MPa at 10% duty are permissible.

Limitation of pump output pressure spikes is possible with relief valve blocks mounted directly on flange connection.

● Case drain pressure

Maximum permissible pressure of leakage fluid (at port L, L₁);
 Maximum 0.05 MPa higher than the inlet pressure at port S,
 but no higher than 0.2 MPa absolute.

● Direction of through flow

S to B

● Table of values (theoretical values, without taking into account η_{mh} and η_v ; values rounded off)

Size		28	45	71	100	140
Displacement	$V_g \max$ mL/r	28	45	71	100	140
Max. speed ¹⁾	at $V_g \max$ $n_o \max$ rpm	3000	2600	2200	2000	1800
Max. permitted speed (limit speed) with increased input pressure P_{abs} bzw. $V_g < V_g \max$	$n_o \max$ rpm	3600	3100	2600	2400	2100
Max. flow	at $n_o \max$ $q_{vo \max}$ L/min	84	117	156	200	252
	at $n_E = 1500 \min^{-1}$ L/min	42	68	107	150	210
Max. power	at $n_o \max$ $P_o \max$ kW	39	55	73	93	118
($\Delta P = 28$ MPa)	at $n_E = 1500 \min^{-1}$ kW	20	32	50	70	98
Max. torque ($\Delta P = 28$ MPa)	at $V_g \max$ $T_{\max}$ Nm	125	200	316	445	623
Torque ($\Delta P = 10$ MPa)	at $V_g \max$ T Nm	45	72	113	159	223
Moment of inertia about drive axis	J kgm ²	0.0017	0.0033	0.0083	0.0167	0.0242
Case volume	L	0.7	1.0	1.6	2.2	3.0
Weight (without fluid)	m kg	15	12	33	45	60
Permissible loading of drive shaft: max. axial force	$F_{ax \max}$ N	1000	1500	2400	4000	4800
Max. permissible radial force ²⁾	$F_{q \max}$ N	1200	1500	1900	2300	2800

1) These values are valid for an absolute pressure of 0.1 MPa at the suction port S. By reducing the displacement or increasing the input pressure the speed can be increased as shown in the diagram.

2) Please consult us for higher radial forces.

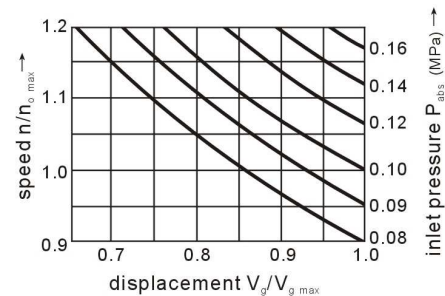
● Determination of displacement

$$\text{Flow} \quad q_v = \frac{V_g \cdot n \cdot \eta_v}{1000} \quad [\text{L/min}]$$

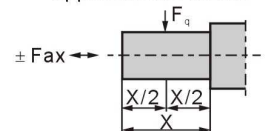
$$\text{Torque} \quad T = \frac{1.59 \cdot V_g \cdot \Delta P}{1000 \cdot \eta_{mh}} = \frac{V_g \cdot \Delta P}{20 \cdot \pi \cdot \eta_{mh}} \quad [\text{Nm}]$$

$$\text{Power} \quad P = \frac{T \cdot n}{9549} = \frac{2 \pi \cdot T \cdot n}{60000} = \frac{q_v \cdot \Delta P}{600 \cdot \eta_t} \quad [\text{kW}]$$

Determination of inlet pressure P_{abs} at suction port S or reduction of displacement for increasing speed.



application of forces



V_g = displacement (mL/r) per revolution
 ΔP = pressure differential (MPa)
 n = speed (rpm)
 η_v = volumetric efficiency
 η_{mh} = mechanical-hydraulic efficiency
 η_t = overall efficiency ($\eta_t = \eta_v \cdot \eta_{mh}$)

Installation Notes

Optional installation position. The pump housing must be filled with fluid during commissioning and remain full when operating. In order to attain the lowest noise level, all connections (suction, pressure, case drain ports) must be linked by flexible couplings to tank.

Avoid placing a check valve in the case drain line.

This may, however, be permissible in individual cases, after consultation with us.

1. Vertical installation (shaft end upwards)

The following installation conditions must be taken into account:

1.1. Arrangement in the reservoir

Before installation fill pump housing, keeping it in a horizontal position.

a) If the minimum fluid level is equal to or above the pump mounting face close port "L" plugged, leave ports "L₁" and "S" open; L₁ piped and recommendation S piped (see Fig.1).

b) If the minimum fluid level is below the pump mounting face pipe port "L₁" and "S" according to Fig.2.

Close port "L" with respect taking into consideration conditions in 1.2.1.

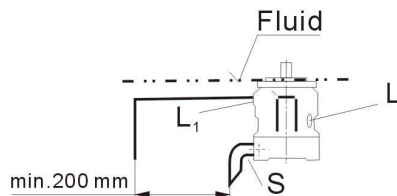


Fig.1

1.2. Arrangement outside the reservoir

Before installation fill the pump housing, keeping it in a horizontal position. For mounting above reservoir see Fig.2.

Limiting condition:

1.2.1. Minimum pump inlet pressure $P_{abs\ min} = 0.08\ MPa$ under both static and dynamic conditions.

Note: Avoid mounting above reservoir wherever possible in order to achieve a low noise level.

The permissible suction height h comes from the overall pressure loss, but may not be bigger than $h_{max} = 800\ mm$ (immersion depth $h_{t\ min} = 200\ mm$).

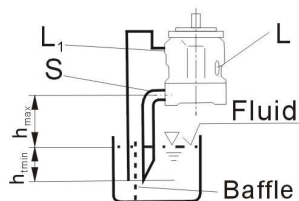


Fig.2

Overall pressure loss $\Delta P_{tot} = \Delta P_1 + \Delta P_2 + \Delta P_3 \leq (1 - P_{abs\ min}) = 0.02\ MPa$

ΔP_1 : Pressure loss in pipe due to accelerating column of fluid

$$\Delta P_1 = \frac{\rho \cdot l \cdot dv}{dt} \cdot 10^{-6} \text{ (MPa)}$$

ΔP_2 : Pressure loss due to static head

$$\Delta P_2 = h \cdot \rho \cdot g \cdot 10^{-6} \text{ (MPa)}$$

ΔP_3 : Line losses (elbows etc.)

ρ = density (kg/m³)

l = pipe length (m)

dv/dt = rate of change in fluid velocity (m/s²)

h = height (m)

ρ = density (kg/m³)

g = gravity = 9.81 m/s²

2. Horizontal installation

The pump must be installed, so that "L" or "L₁" is at the top.

2.1. Arrangement in the reservoir

a) If the minimum fluid level is above the top of the pump, port "L₁" closed, "L" and "S" should remain open, L piped and recommendation S piped (see Fig.3)

b) If the minimum fluid level is equal to or below the top of the pump, pipe ports "L" and possibly "S" as Fig.4.; close port "L₁".

The conditions according to item 1.2.1.

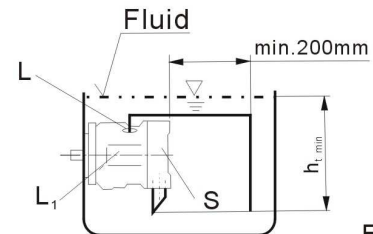


Fig.3

2.2. Installation outside the reservoir

Fill the pump housing before commissioning. Pipe ports "S" and the higher port "L" or "L₁".

a) When mounting above the reservoir, see fig.4. Conditions according to 1.2.1.

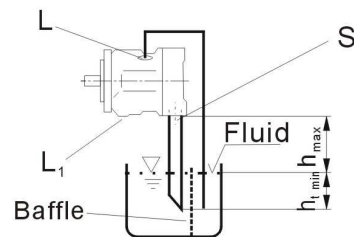


Fig.4

b) Mounting below the reservoir
Pipe ports "L₁" and "S" according to Fig.5, close port "L".

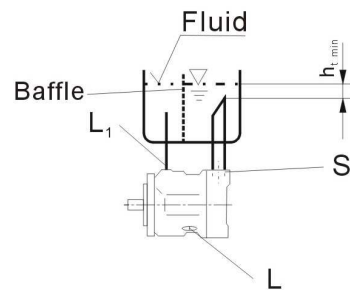
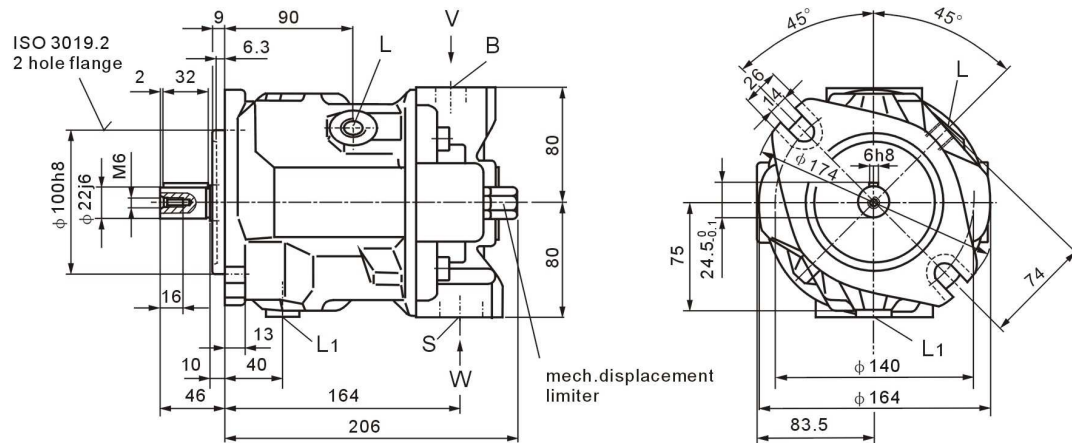


Fig.5

Installation Dimensions

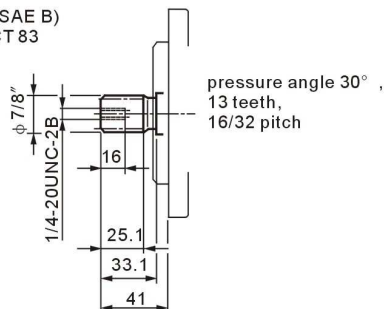
HA10VSO28*/31*/-*/A12N00(without control valves)

Shaft P

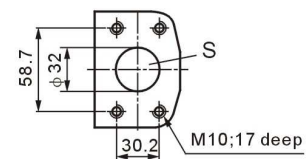


Shaft S

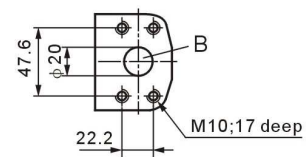
Shaft 22-4; (SAE B)
SAE J744 OCT 83



View W

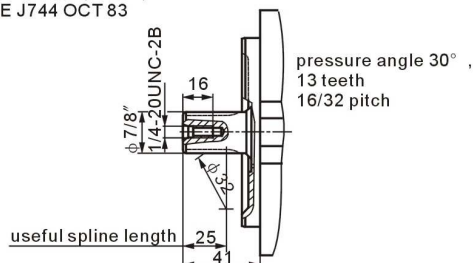


View V



Shaft R

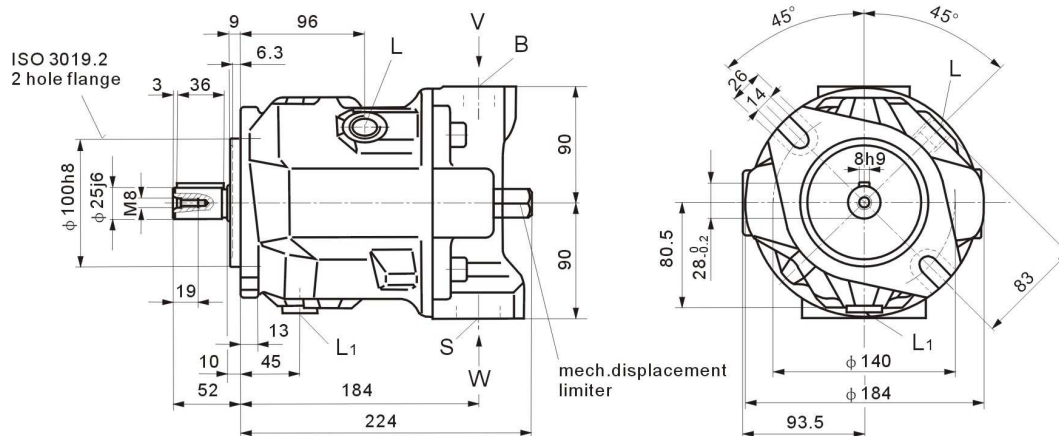
Shaft 22-4; (SAE B)
SAE J744 OCT 83



B	Pressure port	SAE 3/4"	(Standard pressure range)
S	Suction port	SAE 1 1/4"	(Standard pressure range)
L/L ₁	Case drain ports	M18 × 1.5	(L ₁ plugged at factory)

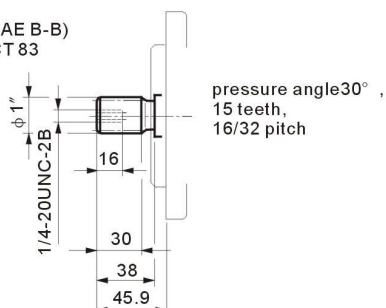
HA10VSO45※/31※-※A12N00(without control valves)

Shaft P

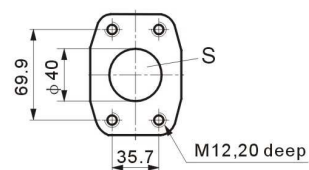


Shaft S

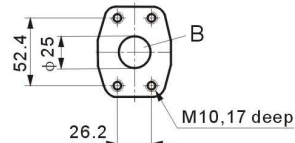
Shaft 25-4;(SAE B-B)
SAE J744 OCT 83



View W

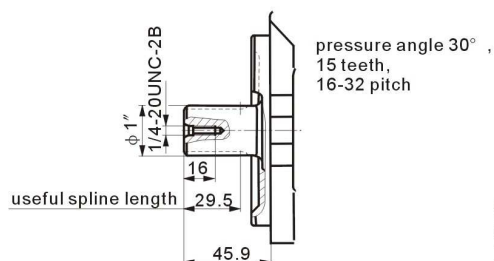


View V



Shaft R

Shaft 25-4;(SAE B-B)
SAE J744 OCT 83



B	Pressure port	SAE 1"	(Standard pressure range)
S	Suction port	SAE 11/2"	(Standard pressure range)
L/L ₁	Case drain ports	M22 × 1.5	(L ₁ plugged factory)

HA10VSO...

84

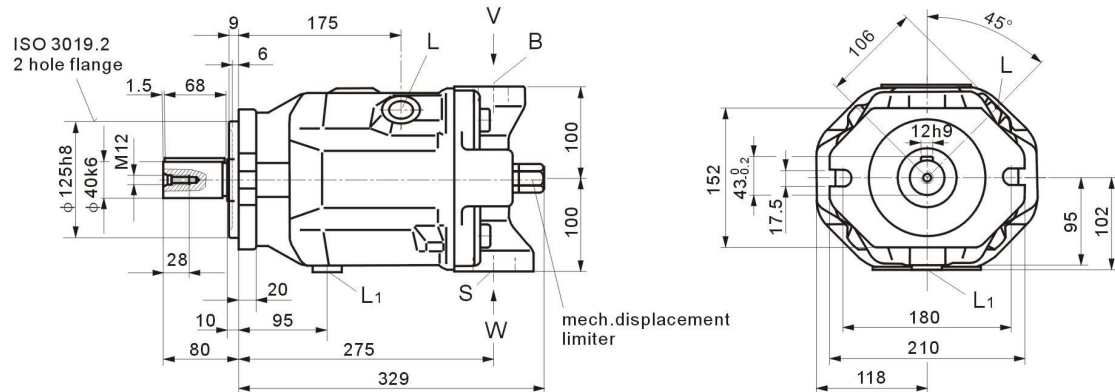
Shaft S

Shaft R

B	Pressure port	SAE 1"	(Standard pressure range)
S	Suction port	SAE 2"	(Standard pressure range)
L/L ₁	Case drain ports	M22 × 1.5	(L ₁ plugged at factory)

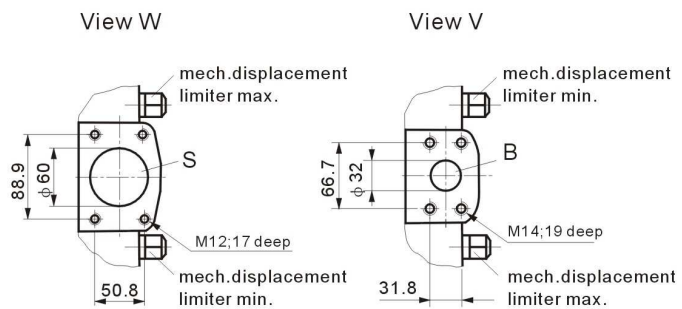
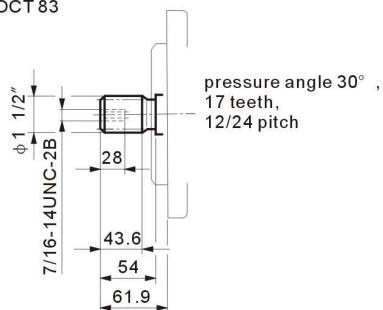
HA10VSO100※/31※-※A12N00(without control valves)

Shaft P



Shaft S

Shaft 38-4; (SAE C-C)
SAE J744 OCT 83

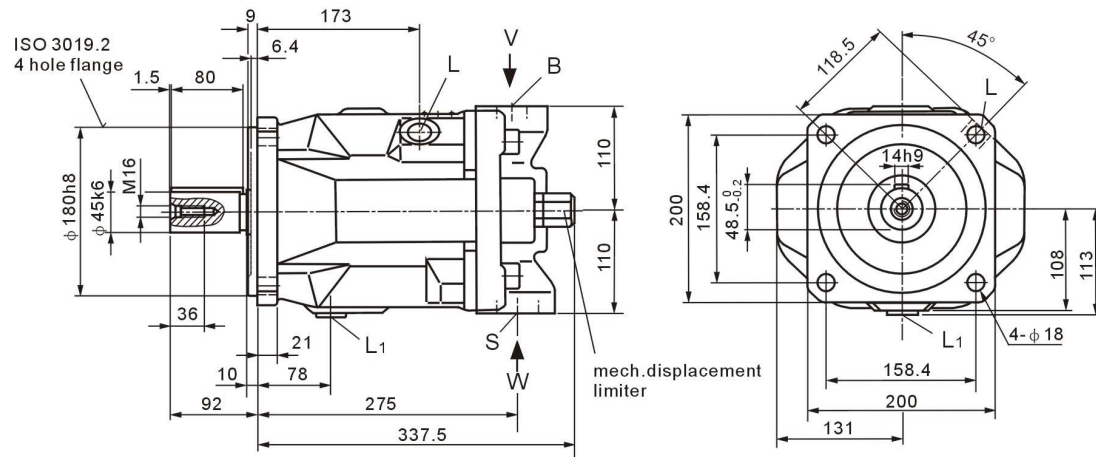


B	Pressure port	SAE 1 1/4"	(High pressure range)
S	Suction port	SAE 2 1/2"	(Standard pressure range)
L/L ₁	Case drain ports	M27 × 2	(L ₁ plugged at factory)

Installation Dimensions

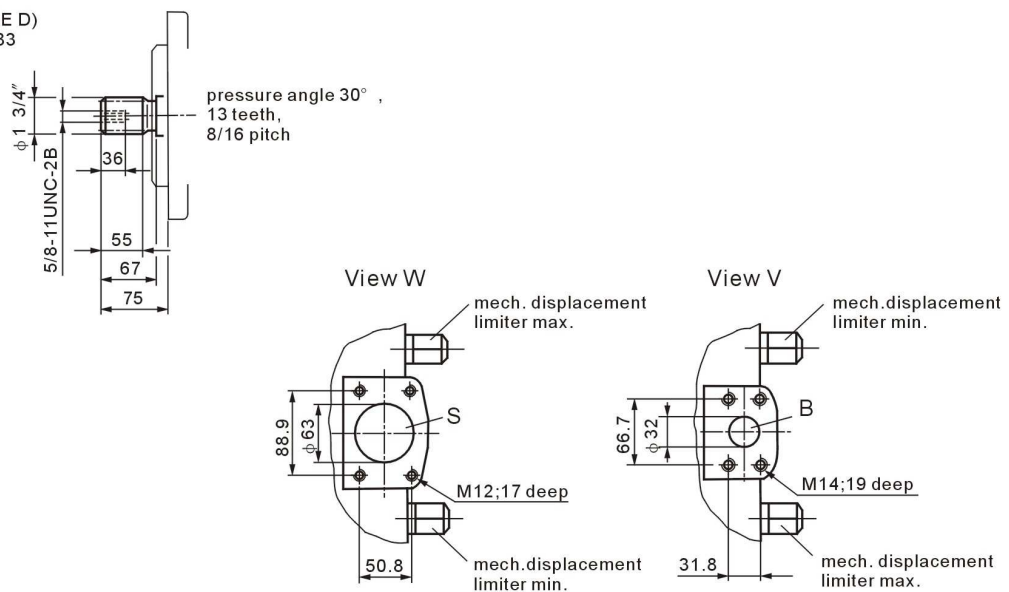
HA10VSO140※/31※-※A12N00(without control valves)

Shaft P



Shaft S

Shaft 44-4; (SAE D)
SAE J744 OCT 83



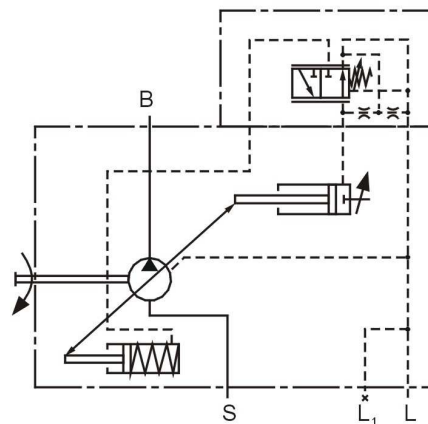
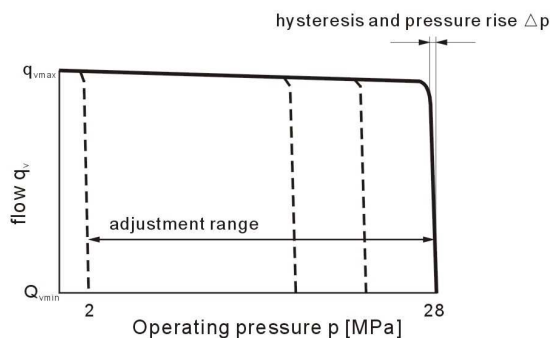
B	Pressure port	SAE 1 1/4"	(High pressure range)
S	Suction port	SAE 2 1/2"	(Standard pressure range)
L/L ₁	Case drain port	M27 × 2	(L ₁ plugged at factory)

DR Pressure Contorl

The pressure controller serves to maintain a constant pressure in a hydraulic system within the control range of the pump. The pump therefore supplies only the amount of hydraulic fluid required by the system. Pressure may be steplessly set at the contorl valves.

● Static operating curve

(at $n_1 = 1500 \text{ rpm}$; $t_{oil} = 50^\circ\text{C}$)



Ports

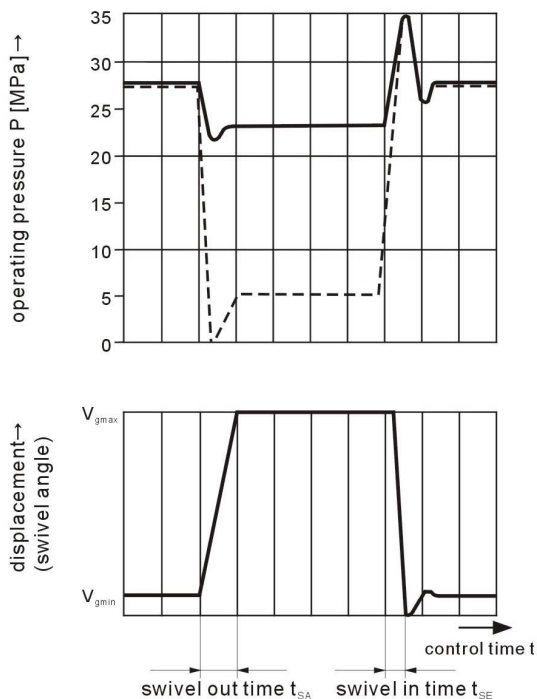
- B Pressure port
- S Suction port
- L, L₁ Case drain ports (L₁ plugged)

● Dyanmic operating curves

The operating curves are mean values measured under test conditions with the unit mounted inside the tank.

Conditions: $n = 1500 \text{ rpm}$
 $t_{oil} = 50^\circ\text{C}$
 Main relief set at 35 MPa

Load steps were obtained by suddenly opening and closing the pressure line with a pressure relief valve as load valve 1 m from the output flange of the pump.



● Contorller Data

Hysteresis and repetitive accuracy ΔP ____ max. 0.3 MPa

Max. pressure rise

Size	28	45	71	100	140
ΔP MPa	0.4	0.6	0.8	1.0	1.2

Polit oil requirement ____ Max. approx 3 L/min

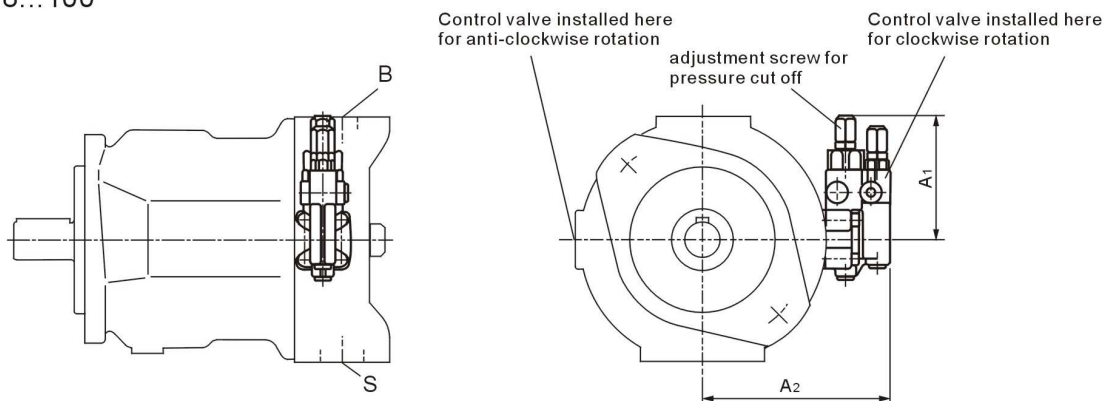
● Control Times

Size	t_{SA} (ms) again 5 MPa	t_{SA} (ms) again 22 MPa	t_{SA} (ms) again 28 MPa
28	60	30	20
45	80	40	20
71	100	50	25
100	125	90	30
140	130	110	30

Installation Dimensions

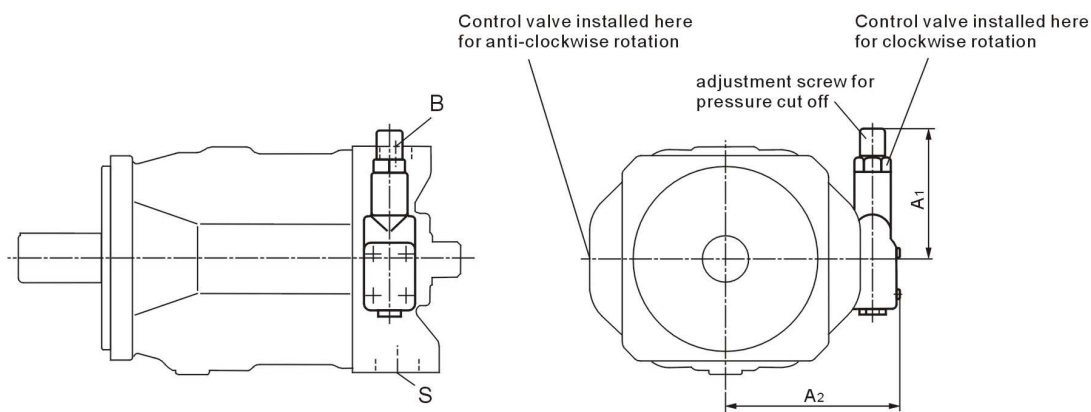
HA10VSO※DR/31R-※12N00

Sizes 28...100



On sizes 28 to 100 the DFR valve used has the flow control spool blocked in the factory and is not tested.

Size 140



Size	A ₁	A ₂
28	109	136
45	106	146
71	106	160
100	106	165
140	127	169

DRG Pressure Controller, Remote Control

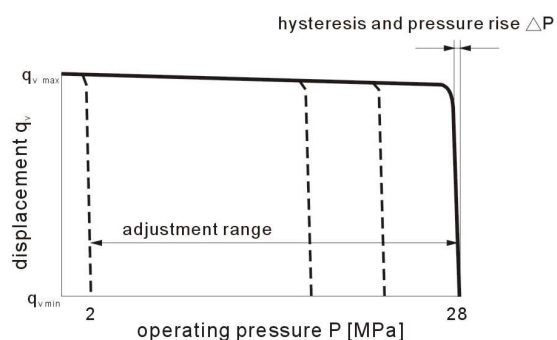
Function and equipment as for DR.

A pressure relief valve can be connected to port X for remote control applications; this is not included in the items supplied with the DRG control.

The standard pressure differential setting at the control valve is 2 MPa. A pilot oil flow of approx. 1.5 L/min is then used. If an other setting (range 1-2.2 Mpa) is required please indicate in clear text.

● Static Operating Curve

(at $n_1=1500$ rpm; $t_{oil}=50$ °C)



● Controller Data

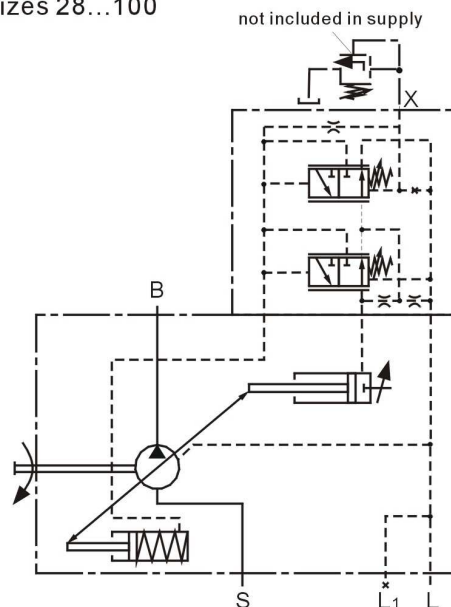
Hysteresis ΔP _____ max. 0.3 MPa

Max. pressure rise

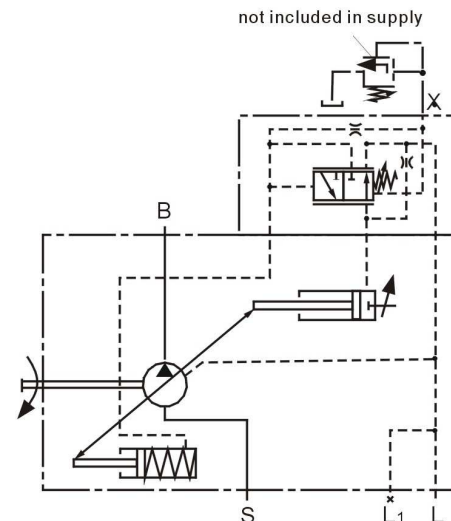
Size	28	45	71	100	140
ΔP MPa	0.4	0.6	0.8	1.0	1.2

Pilot oil requirement _____ approx. 4.5 L/min

Sizes 28...100



Size 140



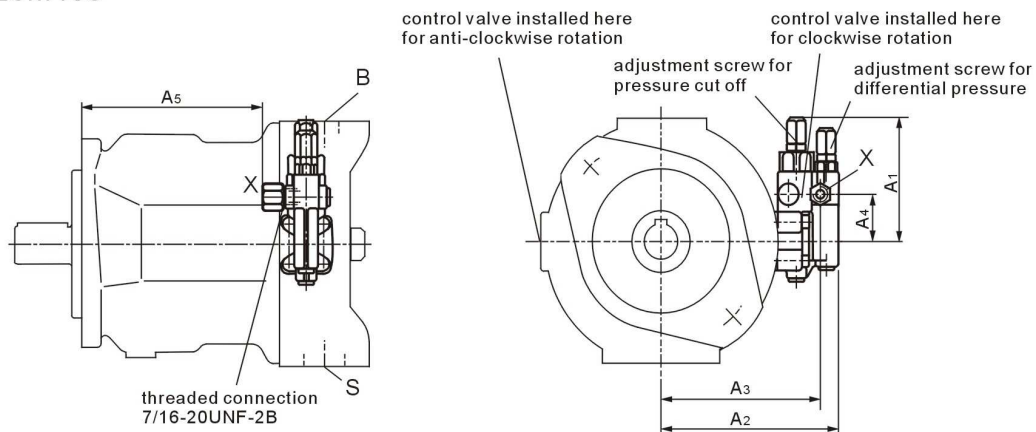
Ports

B	Pressure port
S	Suction port
L, L ₁	Case drain ports (L ₁ plugged)
X	Pilot pressure port

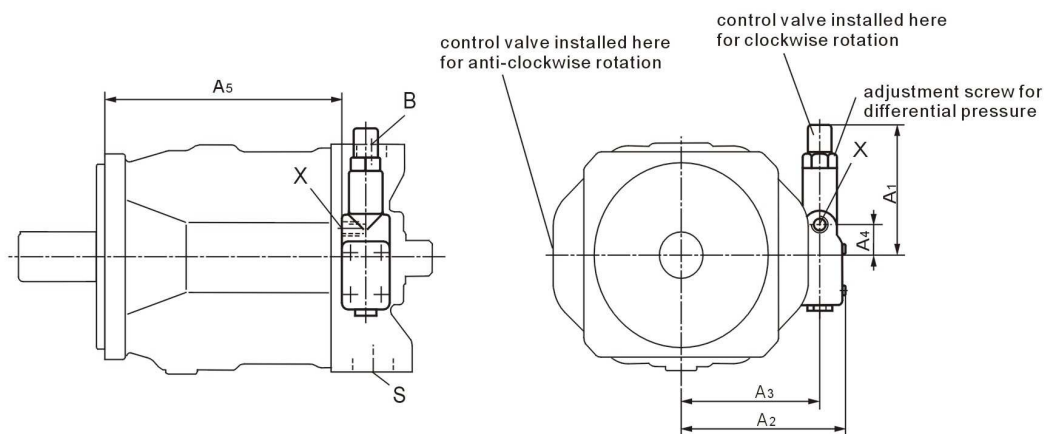
Installation Dimensions

HA10VSO※DRG/31R-※12N00

Sizes 28...100



Size 140



Size	A1	A2	A3	A4	A5	Port X	
28	109	136	119	40	119	M14 × 1.5; 12 deep	} with adaptor
45	106	146	129	40	134	M14 × 1.5; 12 deep	
71	106	160	143	40	162	M14 × 1.5; 12 deep	
100	106	165	148	40	229	M14 × 1.5; 12 deep	
140	127	169	143	27	244	M14 × 1.5; 12 deep	without adaptor

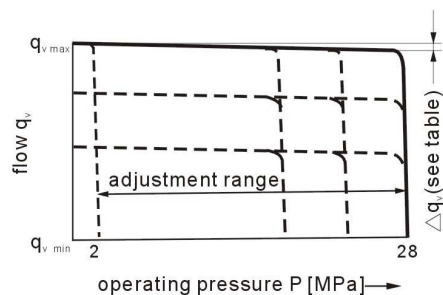
DFR/DFR1 Pressure / Flow Control

In addition to the pressure control function, the pump flow may be varied by means of a differential pressure over an orifice or valvespool, installed in the service line. The pump flow is equal to the actual required flow by the actuator.

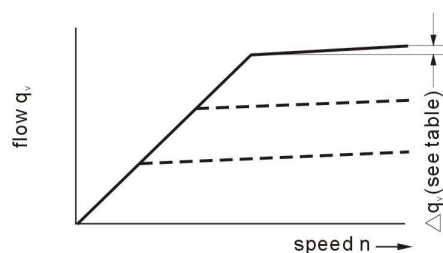
The DFR1-valve has no connection between X and the tank. For function of pressure control see pages 87/88.

● Static operating curve

(at $n_1=1500$ rpm; $t_{oil}=50^\circ\text{C}$)

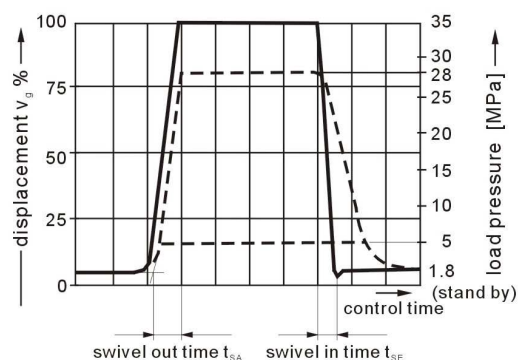


● Static operating curve at variable speed

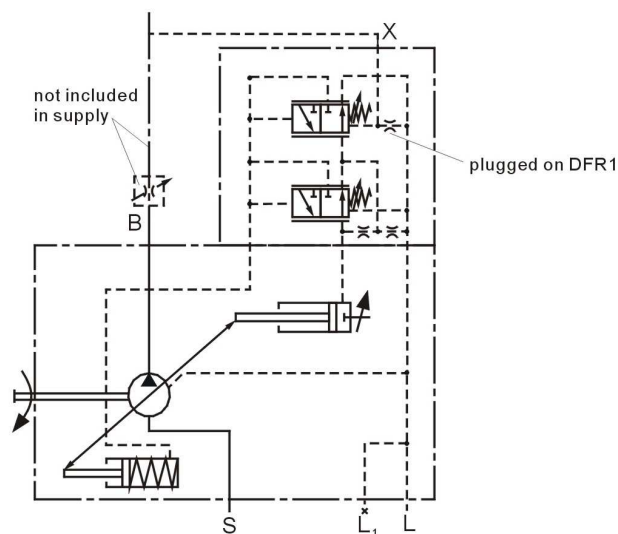


● Dynamic flow control operating curve

The operating curves are average values measured under test conditions with the unit mounted inside the tank.



Size	t_{SA} (ms) stand by-28 MPa	t_{SE} (ms) 28 MPa-stand by 5 MPa	t_{SE} (ms) 5 MPa-stand by
28	40	20	40
45	50	25	50
71	60	30	60
100	120	60	120
140	130	60	130



Ports

- B Pressure port
- S Suction port
- L, L₁ Case drain ports (L₁ plugged)
- X Pilot pressure port

● Differential Pressure ΔP

Adjustable between 1 and 2.2 MPa (higher valves on request).
Standard setting: 1.4 MPa. If a different setting is required please indicate in clear text.
When port X is unloaded to tank a "zerostroke pressure" of $P=1.8 \pm 0.2$ MPa (stand by) results (dependent on ΔP).

● Controller Data

Data pressure controller see page 87.
Max. Flow variation (hysteresis and increase) measured at drive speed $n=1500$ rpm

Size		28	45	71	100	140
Δq_{vmax}	L/min	1.0	1.8	2.8	4.0	6.0

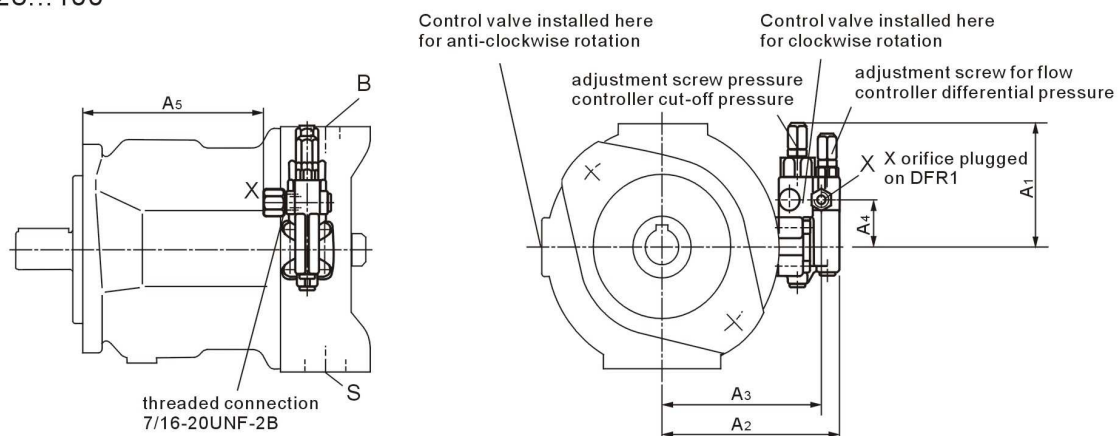
DFR pilot oil consumption____max.approx. 3...4.5 L/min

DFR1 pilot oil consumption____max.approx. 3 L/min

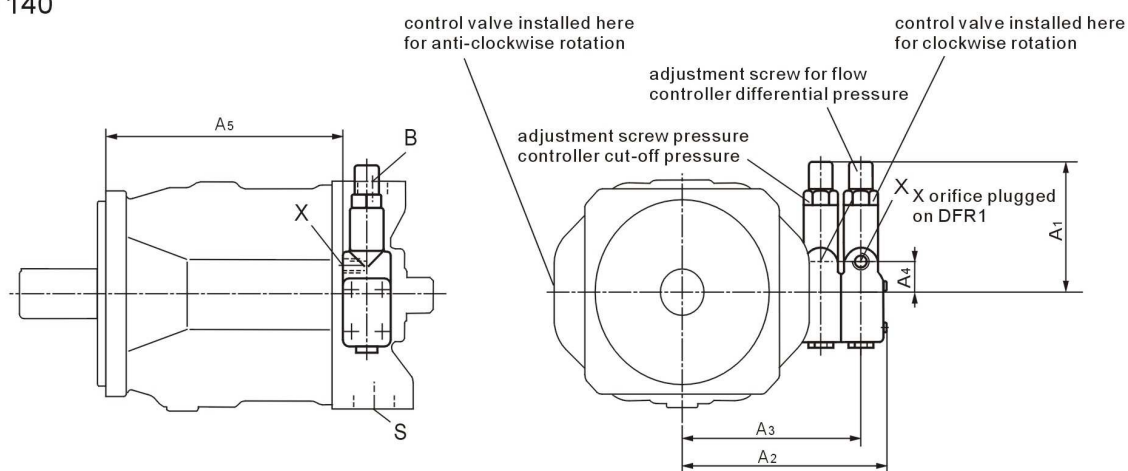
Installation Dimensions

HA10VSO※DFR/31R-※12N00
HA10VSO※DFR1/31R-※12N00

Sizes 28...100



Size 140



Size	A1	A2	A3	A4	A5	Port X
28	109	136	119	40	119	M14 × 1.5; 12 deep
45	106	146	129	40	134	M14 × 1.5; 12 deep
71	106	160	143	40	162	M14 × 1.5; 12 deep
100	106	165	148	40	229	M14 × 1.5; 12 deep
140	127	209	183	27	244	M14 × 1.5; 12 deep

with adaptor

without adaptor

Through Drive

The HA10VSO pump can be supplied with through drive in accordance with the type code on page 78.

The through drive version is designated by the code numbers (KB3-KB6).

If on other pumps are fitted by the manufacturer, the simple type designation is sufficient.

In this case, the delivery package comprises:

Hub fixing screws, seal and, if necessary, an adaptor flange.

● Combination Pump

By building on further pumps it is possible to obtain independent circuits:

1. If the combination pump consists of 2 HA10VSO and if these are to be supplied assembled then the two order codes should be linked by means of a "+" sign.

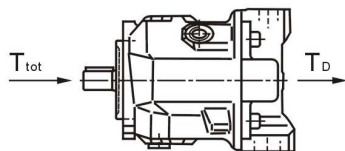
Ordering example:

HA10VSO 71 DR/31 L -PPA12KB3+

HA10VSO 28 DR/31 L -PSA12N00

2. If a gear or radial piston pump is to be built on at the factory, please consult us.

● Maximum permissible input and through drive torque



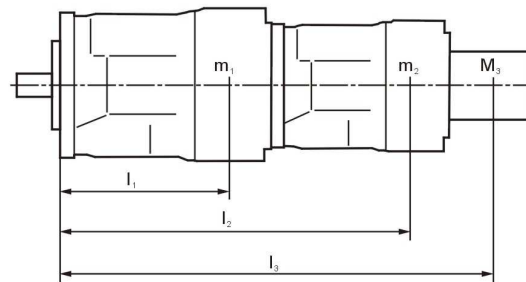
The split in torque between pump 1 and 2 is optional. The max. permissible input torque T_{tot} as well as the max. permissible through drive torque T_D may not be exceeded.

Size	28	45	71	100	140
Max. permissible input torque at pump 1 with shaft "P"					
T_{tot}	Nm 137	200	439	857	1206
Max. permissible T_D	Nm 137	200	439	778	1206
through-drive torque $T_{D \text{ keyed shaft}}$	Nm 112	179	283	398	557

Size	28	45	71	100	140
Max. permissible input torque at pump 1 with shaft "S"					
T_{tot}	Nm 137	319	626	1104	1620
Max. permissible T_D	Nm 160	319	492	778	1266
through-drive torque $T_{D \text{ keyed shaft}}$	Nm 112	179	283	398	557

Size	28	45	71	100	140
Max. Permissible input torque at pump 1 with shaft "R"					
T_{tot}	Nm 225	400	644	-	-
Max. permissible T_D	Nm 176	365	548	-	-
through-drive torque $T_{D \text{ keyed shaft}}$	Nm 112	179	283	-	-

Permissible moment of inertia



m_1, m_2, m_3 [kg] Pump mass

l_1, l_2, l_3 [mm] distance to center of gravity

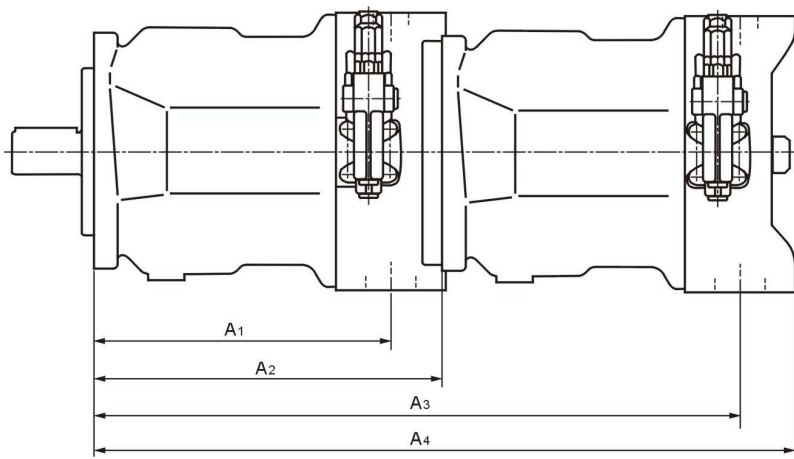
$$T_m = (m_1 \cdot l_1 + m_2 \cdot l_2 + m_3 \cdot l_3) \cdot \frac{1}{102} \text{ [Nm]}$$

Size		28	45	71	100	140
Permissible moment of inertia	T_m	Nm 880	1370	2160	3000	4500
Permissible moment of inertia at dynamic mass acceleration $10g \hat{=} 98.1 \text{ m/s}^2$	T_m	Nm 88	137	216	300	450
Mass	m_1	kg 15	21	33	45	60
To center of gravity	l_1	mm 110	130	150	160	160

T_{tot} = Max. permissible input torque at pump 1
 T_D = Max. permissible through-drive torque at through-drive to splined shaft
 $T_{D \text{ keyed shaft}}$ = Max. permissible through-drive torque at through-drive to keyed shaft

Installation Dimensions

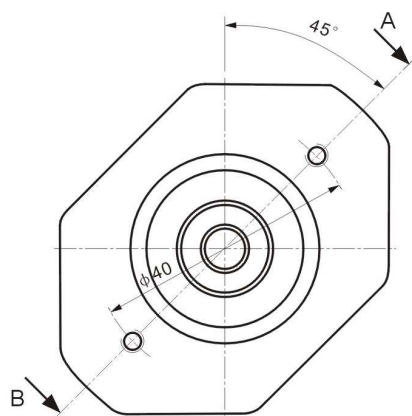
HA10VSO+HA10VSO



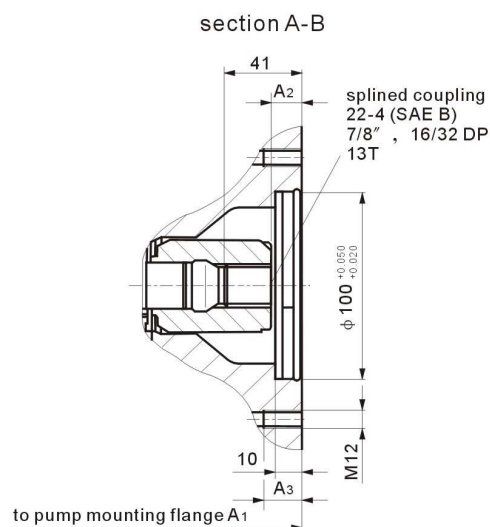
main p. built-on p.	HA10VSO 28				HA10VSO 45				HA10VSO 71				HA10VSO 100				HA10VSO 140			
	A1	A2	A3	A4	A1	A2	A3	A4	A1	A2	A3	A4	A1	A2	A3	A4	A1	A2	A3	A4
HA10VSO28	164	204	368.5	410	-	-	-	-	217	267	431.5	473	275	338	502.5	544	275	350	514	556
HA10VSO45	-	-	-	-	184	229	413	453	217	267	451	491	275	338	522	562	275	350	534	574
HA10VSO71	-	-	-	-	-	-	-	-	217	267	484	524	275	338	555	595	275	350	567	609
HA10VSO100	-	-	-	-	-	-	-	-	-	-	-	-	275	337	613	664	275	350	625	679

Flange ISO 100, 2-hole for built-on HA10VSO 28 (splined shaft S or R)

Order code KB3

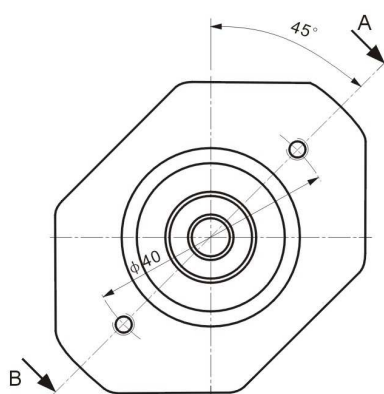


Size main pump	A ₁	A ₂	A ₃
28	204	19.2	14
71	267	16.5	18
100	338	17.6	18
140	350	18.2	24

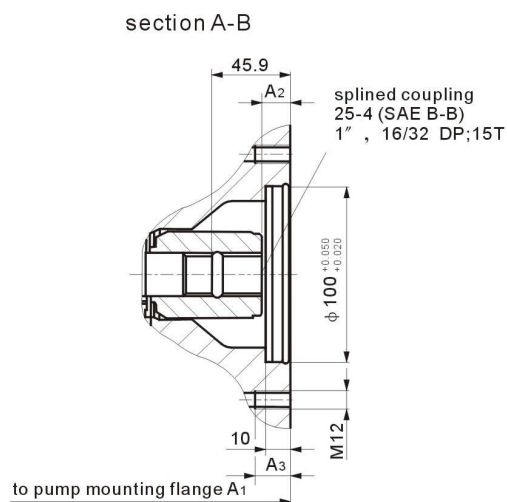


Flange ISO 100, 2-hole for built-on HA10VSO 45 (splined S or R)

Order code KB4

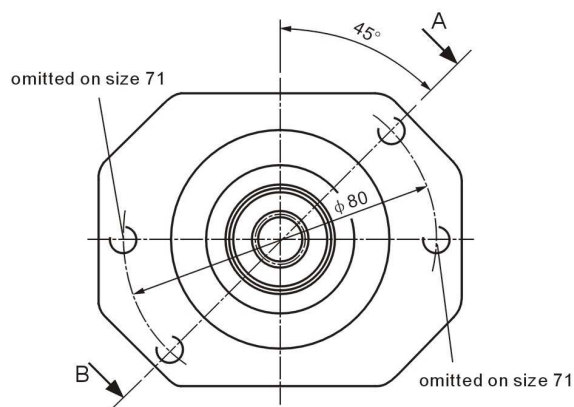


Size main pump	A ₁	A ₂	A ₃
45	229	17.2	14
71	267	17.2	18
100	338	18.2	20
140	350	18.2	24

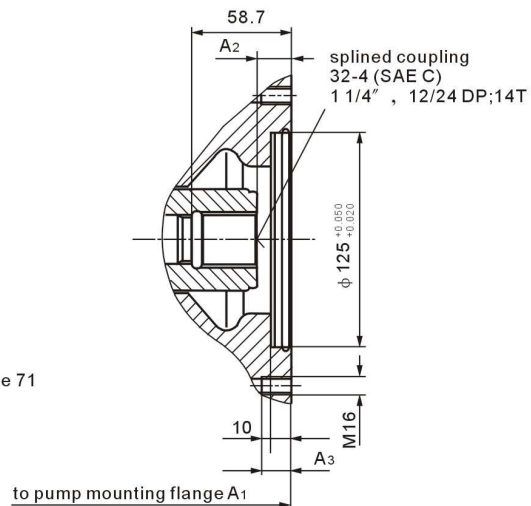


Installation Dimensions Through Drives KB5 And KB6

Flange ISO 125, 2-hole for built-on HAVSO 71 (splined S or R)
Order code KB5

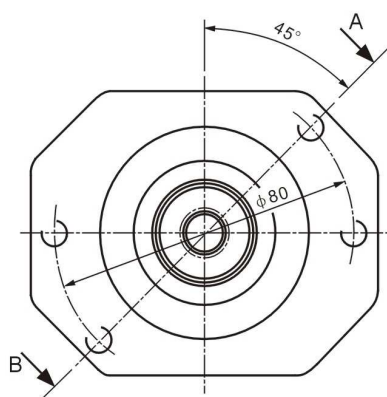


section A-B

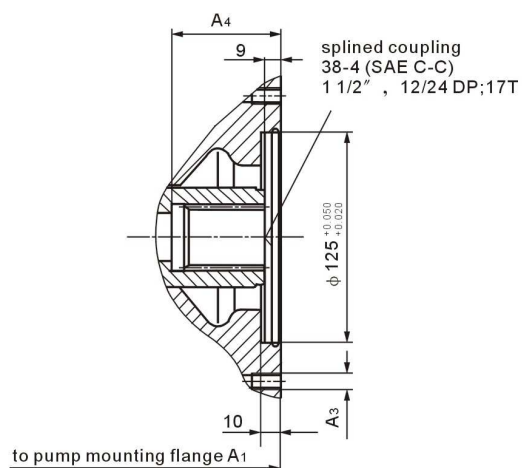


Size main pump	A ₁	A ₂	A ₃
71	267	20	18.5
100	338	20	25
140	350	21	32

Flange ISO 125, 2-hole for built-on HA10VSO 100 (splined shaft S)
Order code KB6

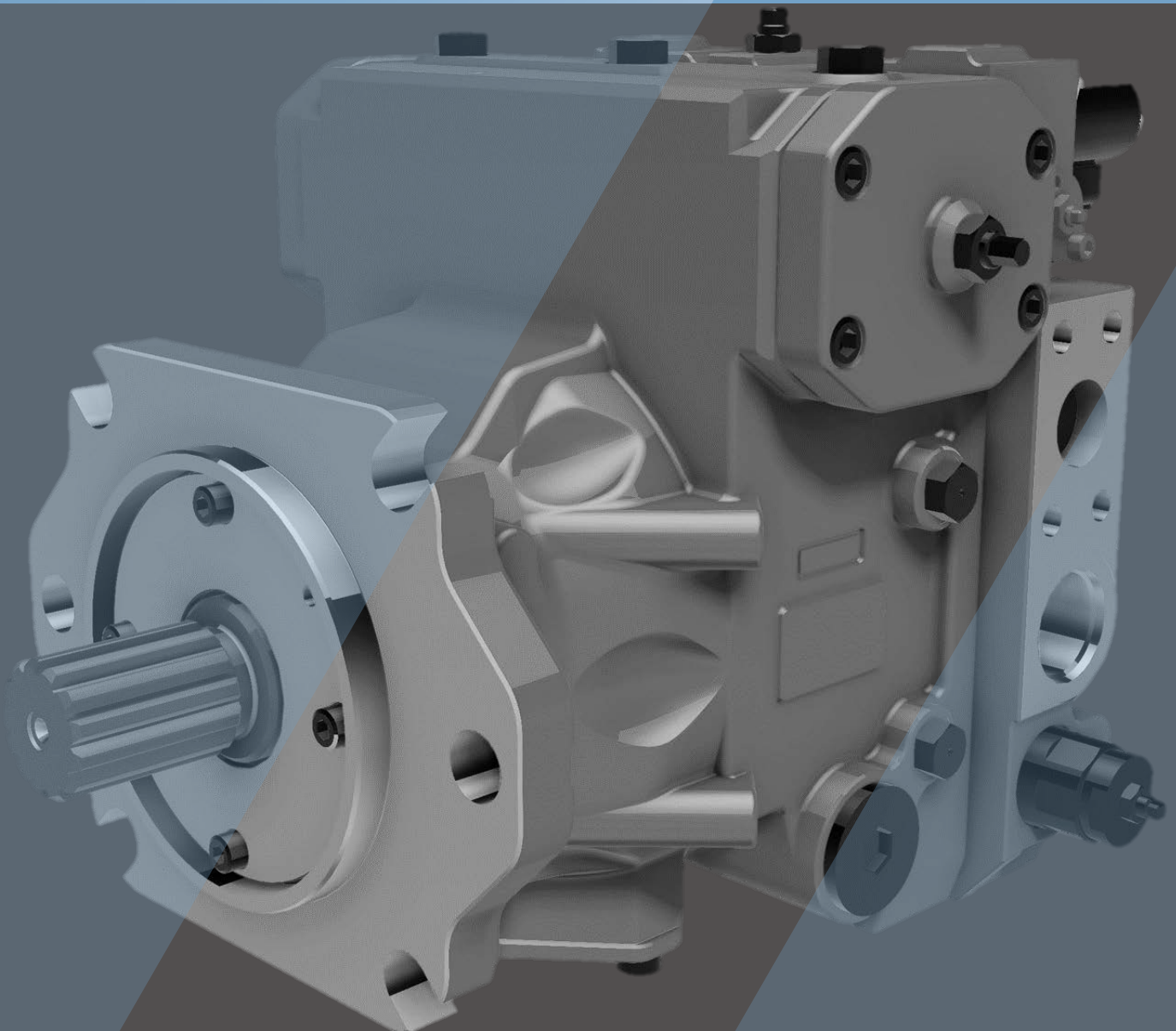


section A-B



Size main pump	A ₁	A ₃	A ₄
100	338	M16; 25 deep	65
140	350	M16; 32 deep	77.3

Closed Loop Swash Plate Type Axial Piston Pump **K8V series**



CONTENTS

I . Applications / Product Usage	2
II . Safety Precautions	3
III . Handling Precautions	
1. Operating Fluid and Temperature Range	4
1) Operating Fluid	
2) Viscosity and Temperature Range	
2. Filtration and Contamination Control	
1) Filtration of Working Oil	
2) Suggested Acceptable Contamination Level	
3. Drive Shaft Coupling	5
4. Oil Filling and Air Bleeding	
1) Pump Case Filling	
2) Air Bleeding	
3) Long Term Out of Usage	
5. Drain Piping	6
1) Installation of Drain Line	
2) Size of Drain Hose · Drain Pipe	7
6. Shaft Loading and Bearing Life	
IV . Conversion Factors, Formula and Definition	8
 ●K8V Series Closed-Loop Variable Displacement Type Axial Piston Pump	
Specifications, General Descriptions, and Features	10
1. Ordering Code	
1-1. Pump Options	11
1-2. Regulator Options	12
2. Technical Information	
2-1. Specifications	13
◆Relief Valve	14
◆Pressure Cut-off	
◆Charge Pump	15
2-2. Functional Description of Regulator	
◆Electric Proportional Control	17
◆Hydraulic Pilot Displacement Control	18
◆Mechanical Stroke Limiter	19
◆Stroking Speed Control Orifice	
3. Dimensions	
3-1. Installation Dimensions	
◆K8V90	20
◆K8V90 Port Details	21
◆K8V90 Through Drive Options	22
◆K8V125	25
◆K8V125 Port Details	27
◆K8V125 Through Drive Options	28
3-2. Installation of Auxiliary Pumps	31
K8V Series Inquiry Form	32

I . Applications / Product Usage

The following must be taken into consideration before use.

1. The operating condition of the products shown in this catalog varies depending upon each application. Therefore, the product suitability must be judged by the designer of the hydraulic system and/or the person who finalizes the technical specifications of the machine after analysis and testing. The product specification shall be determined based on the latest catalog and technical documents. The system must be designed taking into account the possibility of machine failure to ensure that all safety, warning, and application requirements are met.
2. For the proper use of the products, descriptions given in the SAFETY PRECAUTIONS must be observed.
3. The technical information in this catalog represents typical characteristics and performance of the products as of the published date.
4. If the products are intended to use in the following, please consult with Kawasaki in advance.
 - (1) Use the product under the operating conditions or environments other than those described in the technical documents.
 - (2) Use the product in the nuclear sector, aviation sector, medical sector, and/or food sector.
 - (3) Use the product in applications which may cause substantial harm to others and their property, and especially in applications where ensuring safety is a requirement.
5. The information described in this catalog is subject to change without notice. For the latest information, please contact Kawasaki.

II. Safety Precautions

Before using the product, you **MUST** read this catalog and **MUST** fully understand how to use the product. To use the product safely, you **MUST** carefully read all Warnings and Cautions in this catalog.

1. Cautions related to operation



- Use the personal protective equipment to prevent injury when the product is in operation.



- Some components are heavy. Handle the product carefully not to hurt your hands and lower back.



- Do not step on, hit or drop, or apply strong force to the product, as these actions may cause operation failure, product damage, or oil leakage.



- Wipe off any oil on the product or the floor completely, as oil can create slippery conditions that may cause drop of the product and personal injury.

2. Warnings and Cautions related to installation and removal of the product



- Installation, removal, piping, and wiring must be done by a qualified technician.



- Make sure that the hydraulic power unit is turned off and that the electric motor or engine has completely stopped before starting installation or removal. You must also check that the system pressure has dropped to zero.



- Make sure that the power source is turned off before installing electric components to reduce the risk of electric shock.



- Clean the threads and the mounting surface to prevent damage or oil leakage. Inadequate cleaning may cause insufficient torque and broken seals.



- Use the designated bolts and fasten them with prescribed torque when installing the product. Use of undesignated bolts, and excessive or insufficient tightening torque may induce operation failure, damage, or oil leakage.

3. Warnings and Cautions for operation



- Always equip the product with explosion or ignition protection if it is used in potentially explosive or combustible atmospheres.



- Shield rotary parts, such as the motor and pump shaft, to avoid injury.



- Stop operation immediately, and take proper measures when the abnormality such as unusual noise, oil leakage, and smoke is found. Continuing operation under such condition may bring about damage, a fire hazard, or injury.



- Make sure that all pipes, hoses, and connecting points with pipes or hoses, are correctly connected and tightened before starting operation.



- Use the product under the operating conditions and limitations described in the catalog, drawings, and specification sheets.



- Do not touch the product in operation, to reduce the risk of skin burn.



- Use the proper hydraulic oil and maintain the filtration at the recommended level to prevent premature wear and damage.

4. Cautions related to maintenance



- Never modify the product without approval from Kawasaki.



- Disassembly of the product may void the warranty.



- Keep the product clean and dry when storing or transporting.



- The seals may need to be replaced if the product has been stored for an extended period of time.

III. Handling Precautions

1. Operating Fluid and Temperature Range

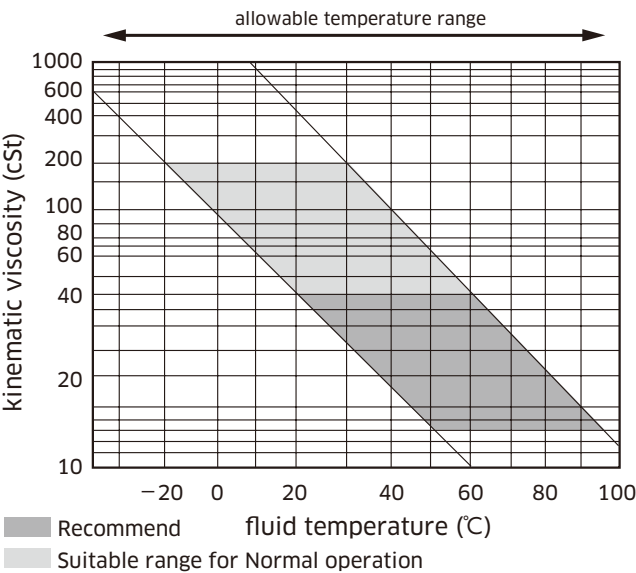
1) Operating Fluid

Values shown in this catalog are based upon using mineral oil based anti-wear hydraulic fluid. To ensure optimal performance use of mineral oil based anti-wear hydraulic fluid is recommended.

2) Viscosity and Temperature Range

To minimize both oil and seal deterioration, a maximum operating temperature of 60°C should be considered. Additionally it must be noted that when operating at low temperatures in winter (15 ~20°C) some delay in response of the regulator may occur. At such low temperatures it is strongly suggested that a warm up cycle is introduced until an operating temperature of 20°C is achieved.

	Suitable range for Normal operation	Allowable range
Viscosity [mm ² /s(cSt)]	10 ~ 200	10 ~ 1,000
Fluid Temperature [°C (°F)]	-20 ~ +95 (-4 ~ +203)	



2. Filtration and Contamination Control

1) Filtration of Working Oil

The most important means to prevent premature damage to the pump and associated equipment and to extend its working life, is to ensure that hydraulic fluid contamination control of the system is working effectively.

This begins by ensuring that at the time of installation that all piping, tanks etc. are rigorously cleaned in a sanitary way. Flushing should be provided using an off line filtration system and after flushing the filter elements should be replaced.

2) Suggested Acceptable Contamination Level

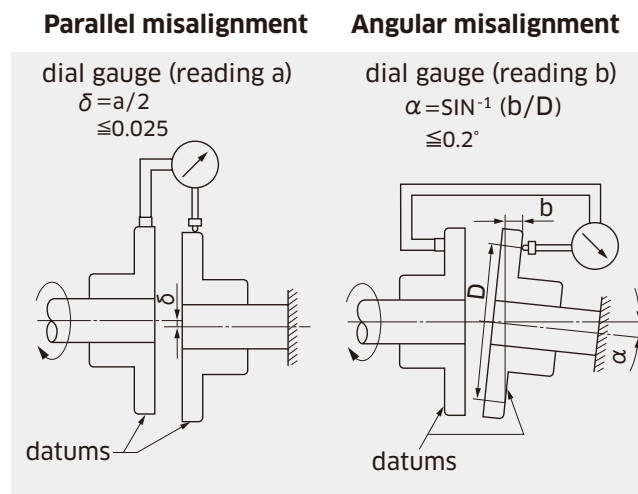
The relationship between contamination level and pump life is very difficult to predict as it depends on the type and nature of the contaminant present in the system. Sand or Silica in particular, due to its abrasive nature, does significantly reduce the expected life of a pump. Based on the precondition that there is no significant presence of Silica type substances then a minimum Cleanliness level of -/18/15 ISO 4406 or SAE AS 4059E Table 1 Class 9 (NAS 1638 Class 9).

III. Handling Precautions

3. Drive Shaft Coupling

Alignment between the prime mover and the pump shaft should be within a tolerated margin, that is, parallel misalignment within 0.05mm TIR* and angular misalignment within 0.2° TIR*. In case the pump is directly coupled to the engine flywheel, use a flexible coupling.

*TIR = Total Indicator Reading



4. Oil Filling and Air Bleeding

1) Pump Case Filling

Be sure to fill the pump casing with oil through the drain port, filling only the suction line with oil is totally insufficient. The pump contains bearings and high-speed sliding parts including pistons with shoes and a spherical bush that need to be continuously lubricated. Part seizure or total premature failure will occur very quickly if this procedure is not rigidly followed.

2) Air Bleeding

Run the pump unloaded for a period to ensure that all residual air within the system is released.

3) Long Term Out of Usage

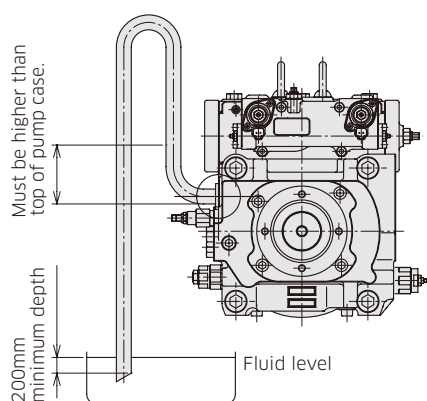
It is undesirable to leave the pump out of use for a long period e.g. a year or more. In such a situation it is recommended that the pump is run for a short period on a more frequent basis even if it is just unloaded. With regard to a pump held in storage then rotating the shaft on a frequent basis is sufficient. If the pump is left out for more than the suggested time it will require a service inspection.

III. Handling Precautions

5. Drain Piping

1) Installation of Drain Line

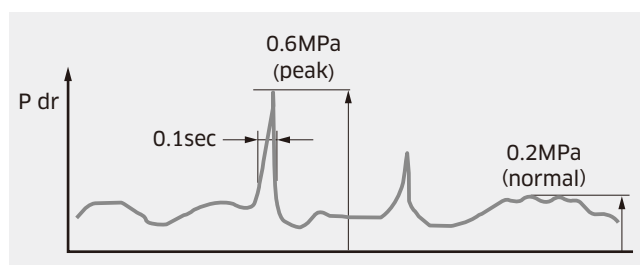
It is the preferred option to mount the pump with the case drain piping initially rising above the pump before continuing to the tank. Do not connect the drain line to the inlet line.



Cautions

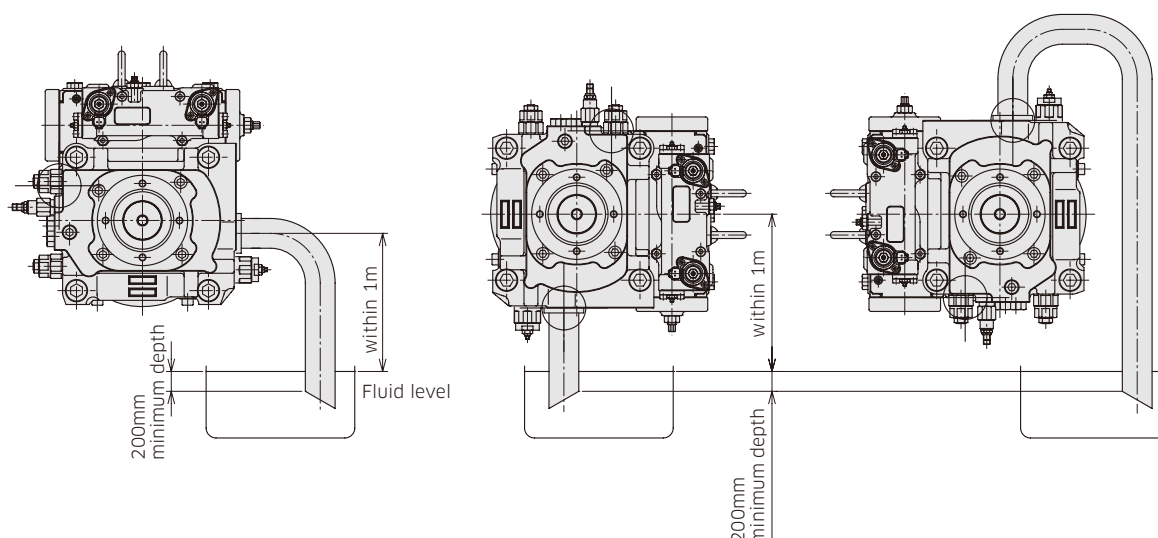
- A) Inlet and drain pipes must be immersed by 200 mm minimum from the lowest level under operating conditions.
- B) Height from the oil level to the centre of the shaft must be within 1 meter maximum.
- C) The oil in the pump case must be refilled when the pump has not been operated for one month or longer.

The uppermost drain port should be used and the drain piping must be larger in size than the drain port to minimize pressure in the pump case. The pump case pressure must not exceed 0.2 MPa as shown in the illustration below. (Peak pressure must never exceed 0.6 MPa.)



Mounting the Pump Above the Tank

Suction line



III. Handling Precautions

2) Size of Drain Hose or Drain Pipe

The internal bore size of the drain hose or drain pipe must be larger than that of the drain port. Arrange the drain line as short as possible.

6. Shaft Loading and Bearing Life

Although K8V pumps are equipped with bearings that can accept some external radial forces, exertion of external radial loads will affect bearing life. Depending on the load magnitude, the load position, and the load orientation, bearing life may be influenced and reduced.

Consult with Kawasaki for further details.

IV. Conversion Factors, Formula and Definition

◆ Conversion Factors

	Formula	Note
Displacement	$1 \text{ cm}^3 = 0.061 \text{ in}^3$	
Pressure	$1 \text{ MPa} = 145 \text{ psi}$	
Flow	$1 \text{ L/min} = 0.264 \text{ gpm}$	US gallon
Torque	$1 \text{ Nm} = 0.74 \text{ lb ft}$	
Power	$1 \text{ kW} = 1.341 \text{ hp}$	
Weight	$1 \text{ kg} = 2.205 \text{ lbs}$	

◆ Formula

	Metric system		Imperial system	
Output flow	$Q = q \times N \times \eta_v / 1000$	L/min	$Q = q \times N \times \eta_v / 231$	gal/min
Input torque	$T = q \times \Delta P / 2\pi / \eta_m$	Nm	$T = q \times \Delta P / 24\pi / \eta_m$	lbf-ft
Input power	$L = T \times N / 9550 = Q \times \Delta P / 60 / \eta_t$	kW	$L = T \times N / 5252 = Q \times \Delta P / 1714 / \eta_t$	hp

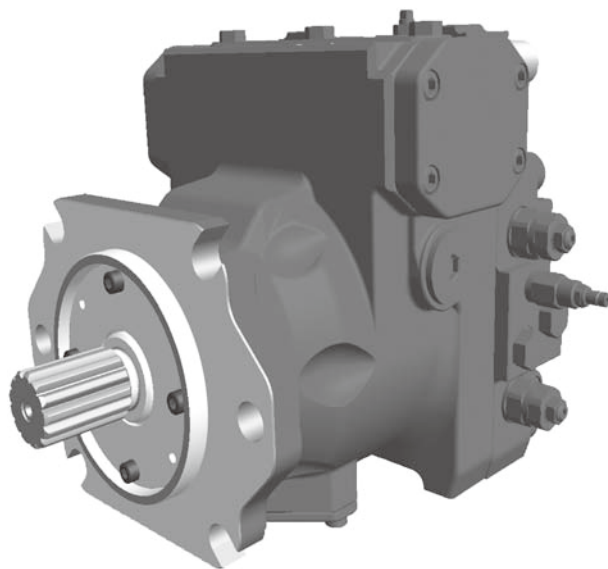
◆ Definition

q	=	Pump displacement / rev.	cm ³ (in ³)
L	=	Input power	kW (hp)
N	=	Speed	min ⁻¹ (rpm)
N _{max}	=	Maximum speed at maximum displacement	min ⁻¹ (rpm)
ΔP	=	P _{high} – P _{low} (Differential pressure)	MPa (psi)
P _{high}	=	High pressure	MPa (psi)
P _{low}	=	Low pressure	MPa (psi)
P _{rated}	=	Rated pressure	MPa (psi)
P _{peak}	=	Peak pressure	MPa (psi)
P _c	=	charge pressure	MPa (psi)
T	=	Input torque	Nm (lbf-ft)
T _{max}	=	Maximum input torque	Nm (lbf-ft)
η _v	=	Pump volumetric efficiency	
η _m	=	Pump mechanical efficiency	
η _t	=	Pump total efficiency	

MEMO

K8V Series

Closed-Loop Variable Displacement Type Axial Piston Pump



■ Specifications

Size: 71*, 90, 125
Rated Pressure: 40 MPa
Peak Pressure: 45 MPa

■ General Descriptions

The K8V series are variable displacement axial piston pumps for closed loop systems, with superior overall efficiency, stability, and control characteristics.

The K8V pumps are applicable for a wide range of applications, including industrial vehicles such as construction machinery, agricultural equipment with hydrostatic drive systems, and other closed loop applications. Also, this pump can be used in combination with M7V series motors for high pressure closed loop applications.

The K8V series with a range in pump size from 71 to 125 are equipped with electric or hydraulic pilot displacement control. The K8V series pumps, having the integrated components required for a closed system, such as a charge pump, high and low pressure relief valves, and a cut-off valve, enable a compact closed loop system.

■ Features

- Swash plate type, variable displacement axial piston pump for closed loop system
- High overall efficiency
- Suitable for wide range of applications
- Precise flow control
- High stability
- Excellent reliability
- Various integrated valves
- Bypass function for emergency towing

(*) means under development

1

Ordering Code

1-1 Pump Options

Please fill the Inquiry Form on page 32 and 33 in order to specify the requirement.

Model Code **K8V 125 A R D1 A1 A B B X X X X - P1 D C B - 01**

1. K8V Series Pump

K8V Series, Variable Displacement,
Axial Piston, Closed Loop Pump

2. Size

Pump Size	cm ³	90	125
		●	●

3. Model Code

A	Series A	90	125
		●	●

4. Direction of rotation

R	Clockwise	90	125
		●	●
L	Counterclockwise	90	125
		●	○

5. Mounting Flange and Shaft

D1	SAE D Mount & SAE D Shaft (13T, 8/16 DP)	90	125
		●	●
D2	SAE D Mount & SAE F Shaft (15T, 8/16 DP)	90	125
		—	●

6. Through Drive

A1	SAE A, 2 bolt, Through Drive (9T, 16/32 DP)	90	125
		●	●
B1	SAE B, 2 bolt, Through Drive (13T, 16/32 DP)	90	125
		●	●
B2	SAE BB, 2 bolt, Through Drive (15T, 16/32 DP)	90	125
		●	●
C1	SAE C, 2/4 bolt, Through Drive (14T, 12/24 DP)	90	125
		●	●
C2	SAE CC, 2/4 bolt, Through Drive (17T, 12/24 DP)	90	125
		●	●
D1	SAE D, 2/4 bolt, Through Drive (13T, 8/16 DP)	90	125
		●	●
X	Without Through Drive	90	125
		●	●

7. Thread Type (Suction/Delivery)

	Type of Threaded Port	Thread Type for Flange Port	90	125
A	UNF	Metric	●	●
B	Metric	Metric	○	○
C	UNF	UNF	●	●

8. Charge Pump

A	20 cm ³	90	125
		●	—
B	28 cm ³	90	125
		—	●
X	Without Integrated Charge Pump	90	125
		●	●

9. Stroking Speed Control Orifice

A	Φ0.8	90	125
		—	●
B	Φ1.0	90	125
		●	●
C	Φ1.2	90	125
		●	●
D	Φ1.4	90	125
		●	—
X	Without Orifice Available Only with Code X of Pressure Cut-off Valve [16]	90	125
		●	●

10. Mechanical Stroke Limiter

A	With Mechanical Stroke Limiter	90	125
		○	○
X	Without Mechanical Stroke Limiter	90	125
		●	●

● : Available
○ : Under development
— : Not available

1. Ordering Code

1-2 Regulator Options

Please fill the Inquiry Form on page 32 and 33 in order to specify the requirement.

Model Code **K8V 125 A R D1 A1 A B B X X X X - P1 D C B - 01**

11. Filtration System

		90	125
A	Integral Filtration System	○	○
B	Remote Filtration System	●	●
X	External Filtration System / External Supply	●	●

12. Swivel Angle Sensor

		90	125
A	With Swivel Angle Sensor	○	○
X	Without Swivel Angle Sensor	●	●

13. Special Features

		90	125
A	A ~ Code Corresponding to the Feature will Be Set Up When Necessary	○	○
X	Without Any Special Feature	●	●

14. Control Option

		90	125
P1	Electronic Proportional Displacement Control (24V)	●	●
P2	Electronic Proportional Displacement Control (12V)	●	●
P3	Hydraulic Proportional Displacement Control	●	●

15. High Pressure Relief Valve

		90	125
A	30 MPa	●	●
B	35 MPa	●	●
C	40 MPa	●	●
D	45 MPa	●	●
S	Customized Pressure Setting for Special Case	●	●

16. Pressure Cut-Off Valve

		90	125
A	30 MPa	●	●
B	35 MPa	●	●
C	40 MPa	●	●
S	Customized Pressure Setting for Special Case	●	●
X	Without Pressure Cut-Off Valve	●	●

Note: The pressure setting of cut-off valve must be at least 5MPa lower than the pressure setting of high pressure relief valve.

17. Low Pressure Relief Valve

		90	125
B	2.5 MPa	●	●
S	Customized Pressure Setting for Special Case	●	●
X	Without Low Pressure Relief Valve	●	●

18. Design Code

**	01 ~
----	------

● : Available
○ : Under development
— : Not available

2

Technical Information

2-1 Specifications

Size			90	125
Displacement	Main pump	cm ³	90	130
	Charge pump	cm ³	20	28
Pressure, main	Rated	MPa	40	
	Peak	MPa	45	
Pressure, charge	Rated	MPa	2.5	
	Peak	MPa	4.0	
Allowable case pressure			0.2 continuous / 0.6 peak	
Speed	Rated* ¹	min ⁻¹	3,050	2,850
	Maximum* ² (intermittent)	min ⁻¹	3,800	3,450
	Minimum	min ⁻¹	500	500
Case volume			3.0	4.0
Temperature range			-20 ~ +95 (case drain: 115 maximum, intermittent)	
Viscosity range			10 ~ 1,000	
Maximum contamination level			ISO 4406 -/18/15	
Allowable through drive torque	SAE A	Nm	123	123
	SAE B	Nm	395	395
	SAE BB	Nm	575	640
	SAE C	Nm	575	725
	SAE CC	Nm	575	830
	SAE D	Nm	575	830
Mass			72	95

* 1 : maximum allowable speed for continuous operation.

* 2 : maximum allowable speed for limited operating period and duty. Exceeding this value will result in a reduced service life or the destruction of the pump.

Note:

Operation above the maximum values or below the minimum values may result in a loss of function, a reduced service life or the destruction of the pump.

■ Allowable Maximum Input Torque

	SAE D (Spline type D1)	SAE F (Spline type D2)
Spline Specification	13T DP=8/16	15T DP=8/16
Allowable Maximum Input Torque (Nm)	1,470	2,255
Pump Size	K8V90/125	K8V125 (Combination pump)

Input spline specification is based on SAE J744.

Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit.

Two options of mounting flange and shaft, D1 and D2, are available for K8V125 pumps.

In case of a combination pump of K8V125 which requires higher input torque than 1470 Nm, D2 option must be used. The shaft surface will have a finite life due to wear unless adequate lubrication is provided.

2. Technical Information

2-1 Specifications

◆ Relief Valve

1. High pressure relief valve

High pressure relief valves (two valves) are equipped to protect the pump from being overloaded.

The high pressure relief valves act to protect the pump from pressure spikes in dynamic control situations and are not equipped for continuous operation.

The settings of the high pressure relief valves are shown in the table below.

Pressure Settings

Code[5]	Pressure Setting (MPa)
A	30
B	35
C	40
D	45
S	Customized pressure setting for a special case Please contact Kawasaki.

Note:

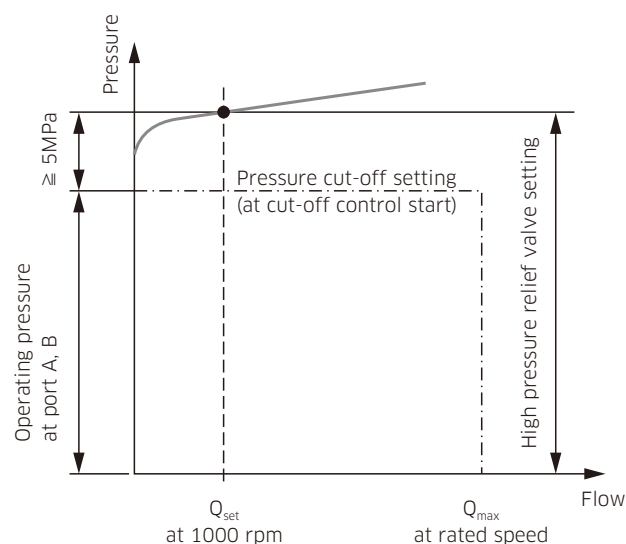
The allowable setting range of the high pressure relief valve is from 30 MPa to 45 MPa, and the customized pressure must be set within this range. For the customized pressure setting contact Kawasaki with the required pressure setting value. The pressure of the high pressure relief valve is factory preset at 40 MPa, if not specified.

2. Low pressure relief valve

Low pressure relief valve is equipped to control the pressure for charge line and servo line.

The pressure setting of an integrated low pressure relief valve is preset at 2.5MPa at the factory.

Do not adjust the pressure of the low pressure relief valve, as it may reduce the controllability of the pump.



High Pressure Relief Valve Setting Diagram

◆ Pressure Cut-off

Pressure cut-off is the function which adjusts the pump displacement to the neutral position when the pressure reaches its pressure setting.

The pressure cut-off is set lower than high pressure relief valve setting, so that the maximum pump pressure is controlled by the pressure cut-off valve, whereas the high pressure relief valve acts to the pressure spike.

The cut-off pressure must be set at least 5 MPa lower than the setting of the high pressure relief valves.

The allowable setting range of the cut-off pressure is from 30 MPa to 40 MPa.

2. Technical Information

2-1 Specifications

◆ Charge Pump

Charge flow is required on all K8V pumps applied in closed circuit systems. The charge pump supplies flow to replenish, cool and filter oil, provide charge pressure and servo pressure, and flow for system control and auxiliary functions.

The integrated charge pump is available. The available charge pump sizes are as follows;

K8V90: 20 cm³/rev

K8V125: 28 cm³/rev

Pressure and flow for charge circuit can be supplied by an external auxiliary pump.

An auxiliary pump for charge circuit can also be mounted on the back of main pump using through drive mounting.

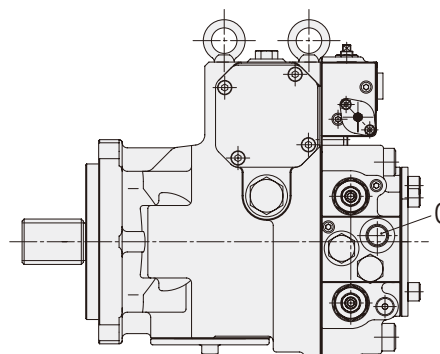
In case the auxiliary pump is used for charge circuit, connect the charge pump delivery line to port C so that the flow is provided to the low pressure line and servo line. The integrated low pressure relief valve can be used in this case. If the integrated low pressure relief valve is not used, provide an appropriate relief valve in the system.

2-1 Specifications

Filtration of the hydraulic fluid reduces premature wear, and enhances the reliability and productivity of the products. To ensure the cleanliness of the working fluid is essential to optimize function of the machine, and extend the service life.

1) External Filtration System/External Supply

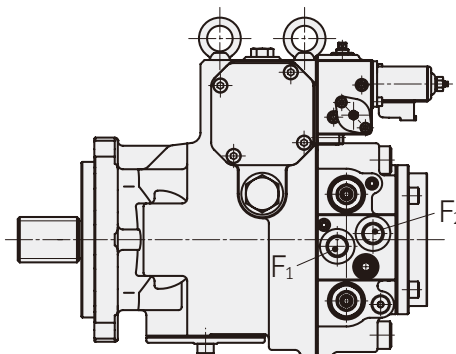
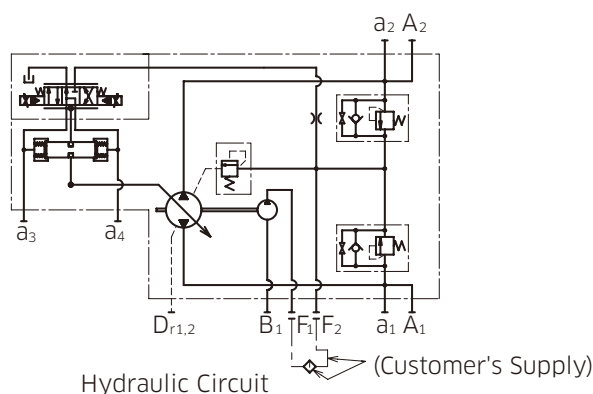
External charge pump supply comes from port C.



This is for a pump equipped with an integrated charge pump and ports for external charge circuit filter. The filter will be located in the discharge (pressure) line of the charge pump, as shown in the hydraulic circuit below.

Filter arrangement should be made separately, as the filter is not included in the delivery contents.

Charge pressure inlet: Port F₂



2. Technical Information

2-2 Functional Description of Regulator

◆ Electric Proportional Control (Code: P1, P2)

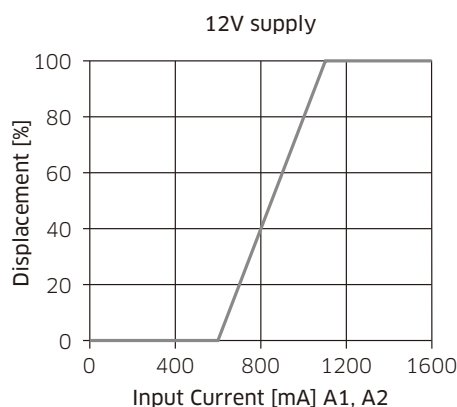
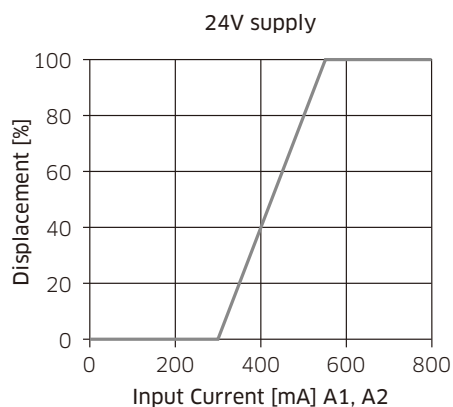
Pump delivery flow can be proportionally controlled by the input current to the electric proportional reducing valve equipped on the regulator.

The input current of the electric proportional reducing valve signals the control spool in a regulator to stroke, and to supply pressure to the servo piston. The pump displacement varies with the stroke of the servo piston.

The feedback lever, connected with the servo piston at the one end, moves with the stroke of the servo piston. This movement causes the sleeve of the control spool which is connected to the other end of the feedback lever to stroke, and closes the flow passage to the servo piston.

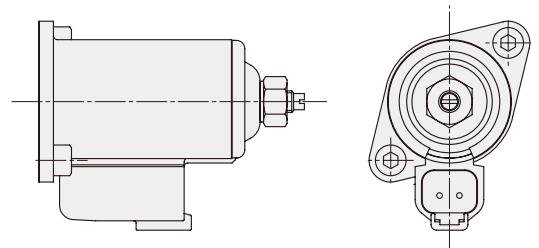
Consequently, the stroke of the servo piston stops, and the pump displacement becomes proportional to the input current.

Control Characteristics



The above figures is the control characteristics of electric proportional control.
The control characteristics of electric proportional control is not adjustable.

● Electrical Specifications



Connector Type

Deutsch, DT04-2P

Rated Current and Coil Resistance

For 24 V supply: 0.7 A, 15 Ω (at 20°C)

For 12 V supply: 1.6 A, 33 Ω (at 20°C)

Recommended dither condition

85 Hz, 200 mAp-p for 24 V

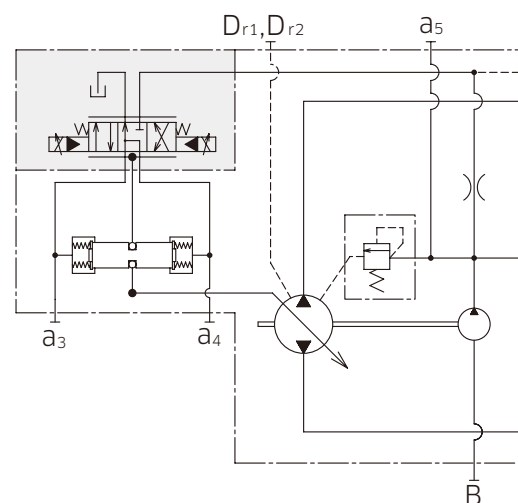
85 Hz, 600 mAp-p for 12 V

(Note)

Electric displacement control regulator requires the minimum servo pressure as follows.

For K8V125: 2.0 MPa

For K8V90: 2.5 MPa



Hydraulic Circuit

2. Technical Information

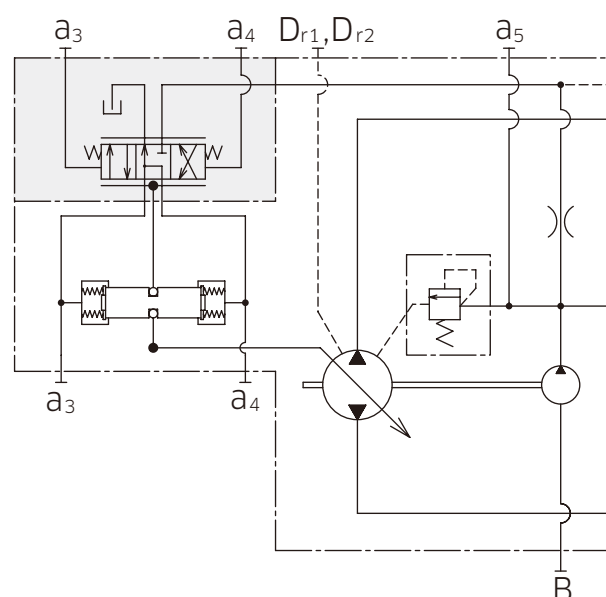
2-2 Functional Description of Regulator

◆ Hydraulic Pilot Displacement Control (Code: P3)

Pump delivery flow can be proportionally controlled by the external pilot pressure supply. The external pilot pressure signals the control spool in a regulator to stroke, and to supply pressure to the servo piston. The pump displacement varies with the stroke of the servo piston.

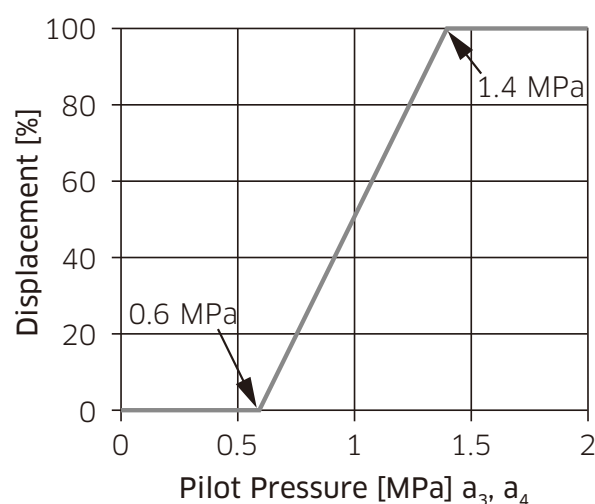
The feedback lever, connected with the servo piston at the one end, moves with the stroke of the servo piston. This movement causes the sleeve of the control spool which is connected with the other end of the feedback lever to stroke, and closes the flow passage to the servo piston.

Consequently, the stroke of the servo piston stops, and the pump displacement becomes proportional to the external pilot pressure.



Hydraulic Circuit

Control Characteristics



The above figure is the standard control characteristic of hydraulic pilot displacement control. If non standard control characteristics is required, please contact Kawasaki.

2. Technical Information

2-2 Functional Description of Regulator

◆ Mechanical Stroke Limiter

Mechanical stroke limiter is available for option. By an adjusting screw the maximum displacement can be adjusted infinitely to the required displacement setting.

This option is under development. For details contact Kawasaki.

◆ Stroking Speed Control Orifice

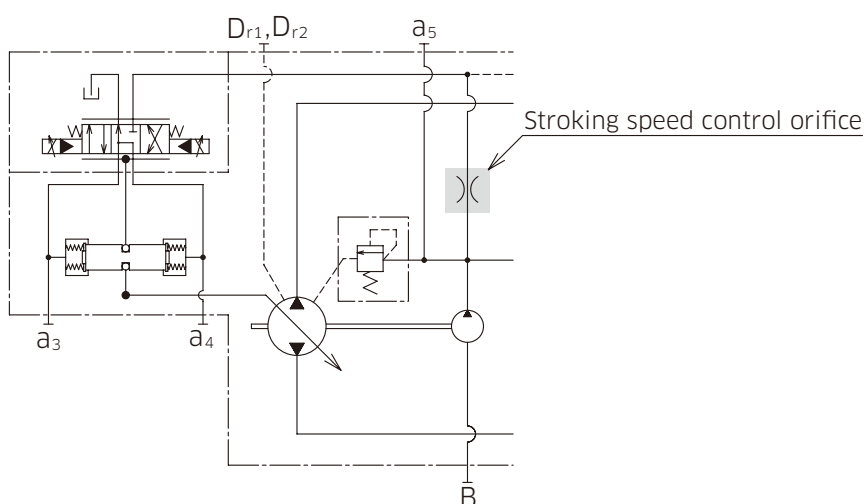
Pump stroking speed (response) can be adjusted by changing the control orifice which is integrated in the servo line. The available control orifices and those response (for reference) are shown in the table below.

The typical orifice size used is as below;

K8V90: $\Phi 1.2$

K8V125: $\Phi 1.0$

	Code [9]	Orifice Size	Stroking Time	
			Neutral to Max.	Max. to Neutral
K8V90	B	$\Phi 1.0$	2.0 ~ 2.5 sec	0.5 ~ 1.5 sec
	C	$\Phi 1.2$	1.5 ~ 2.0 sec	
	D	$\Phi 1.4$	1.0 ~ 1.5 sec	
K8V125	A	$\Phi 0.8$	4.0 ~ 5.0 sec	0.5 ~ 1.5 sec
	B	$\Phi 1.0$	3.0 ~ 4.0 sec	
	C	$\Phi 1.2$	2.0 ~ 3.0 sec	

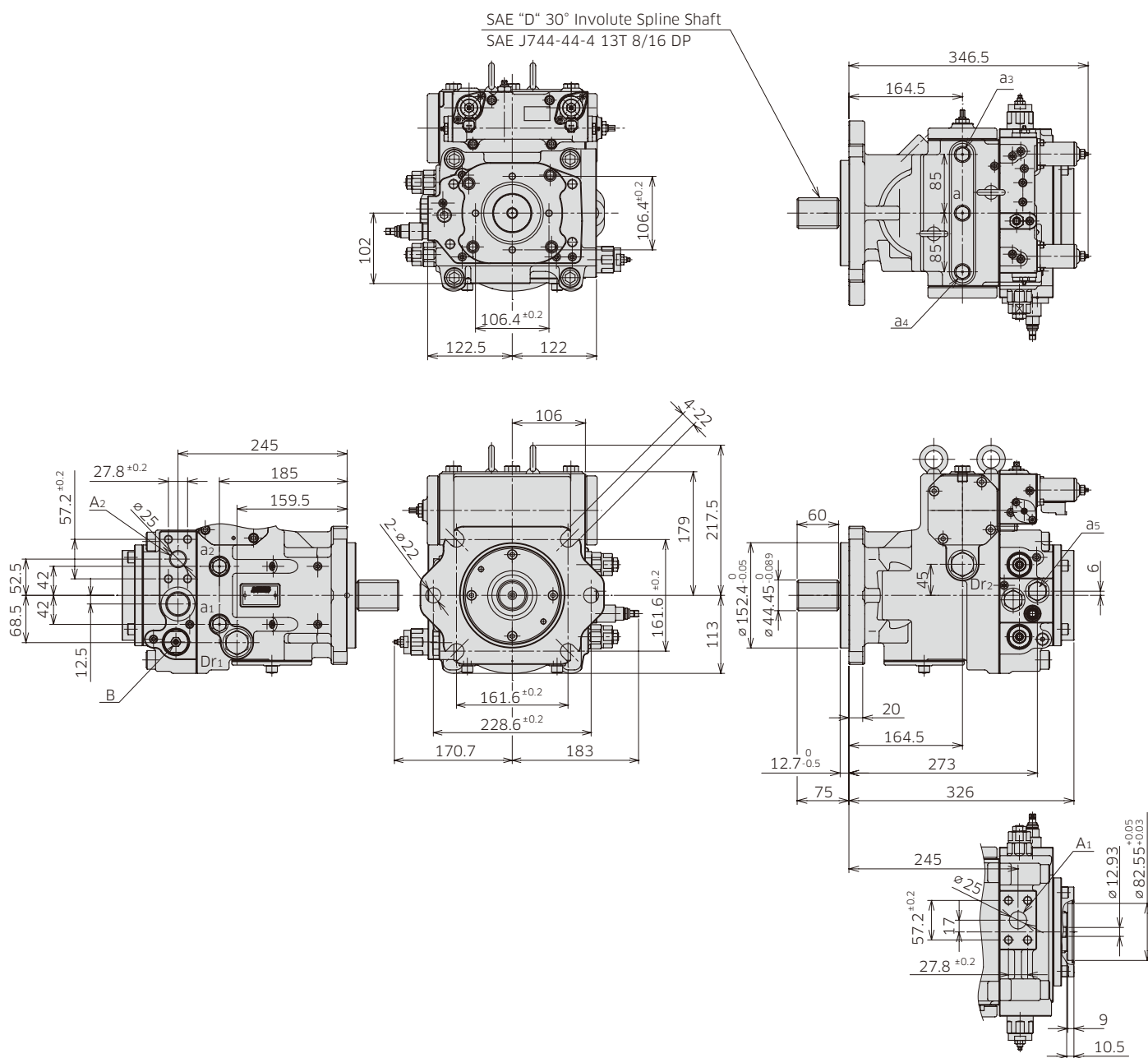


3 Dimensions

3-1 Installation Dimensions

*Dimensions in mm.

◆ K8V90



(Note) See port details for thread size on port A1 and A2.

3. Dimensions

3-1 Installation Dimensions

◆ K8V90 Port Details

Main Flanged Ports

Des	Port Name	Port Size	Flange Thread
-----	-----------	-----------	---------------

Unified Thread Version

A ₁ , A ₂	Pressure Port	SAE J518C high pressure (code 62) 1"	7/16-14UNC-2B-17-21.5
---------------------------------	---------------	--------------------------------------	-----------------------

Metric Thread Version

A ₁ , A ₂	Pressure Port	SAE J518C high pressure (code 62) 1"	M12-17
---------------------------------	---------------	--------------------------------------	--------

Auxiliary Ports

Des	Port name	Port size
Dr ₁ , Dr ₂	Case Drain	1-1/16-2 UN-2B-19 (ISO 11926-1)
a ₁ , a ₂ , a ₃ , a ₄	Gauge Port	9/16-18 UNF-2B-12.7 (ISO 11926-1)
B	Inlet Port	1-5/16-12 UN-2B-19 (ISO 11926-1)
a ₅	Gauge Port	7/8-14 UNF-2B-16.7
a	Air Vent Port	9/16-18 UNF-2B-12.7
F ₁	External Filter Port (OUT)	7/8-14 UNF-2B-16.7
F ₂	External Filter Port (IN)	7/8-14 UNF-2B-16.7
C	External Charge Pressure Supply Port	7/8-14 UNF-2B-16.7

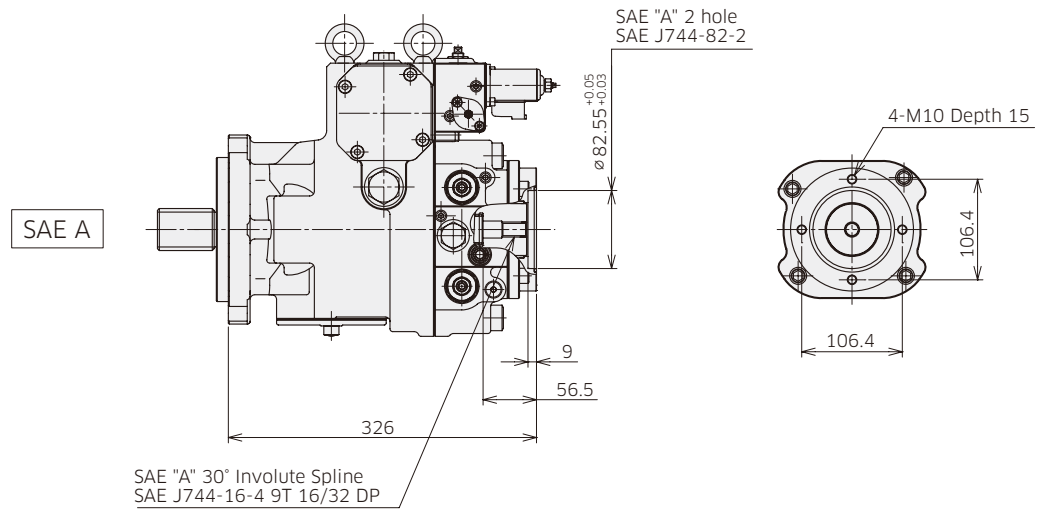
3. Dimensions

3-1 Installation Dimensions

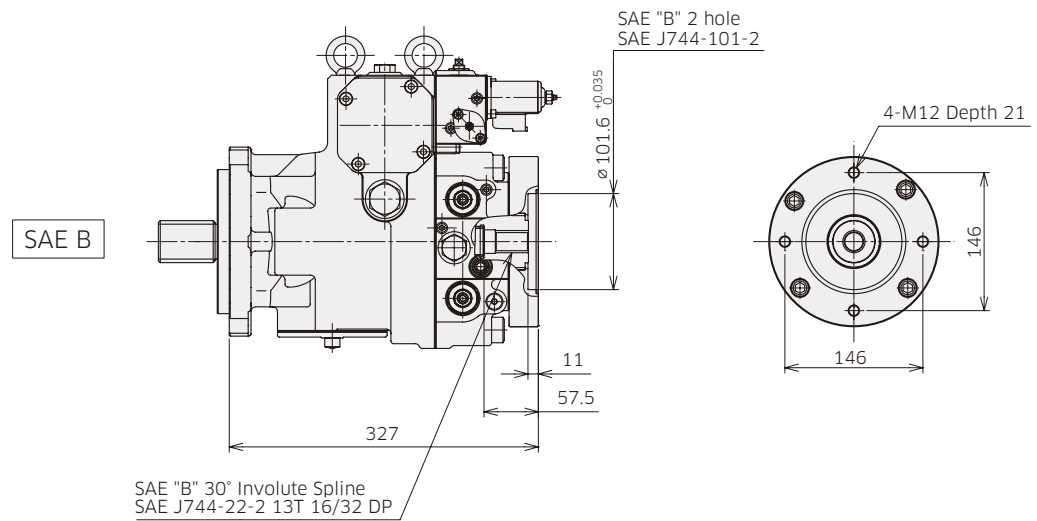
*Dimensions in mm.

◆ K8V90 Through Drive Options

Through Drive 'A'



Through Drive 'B'



Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit

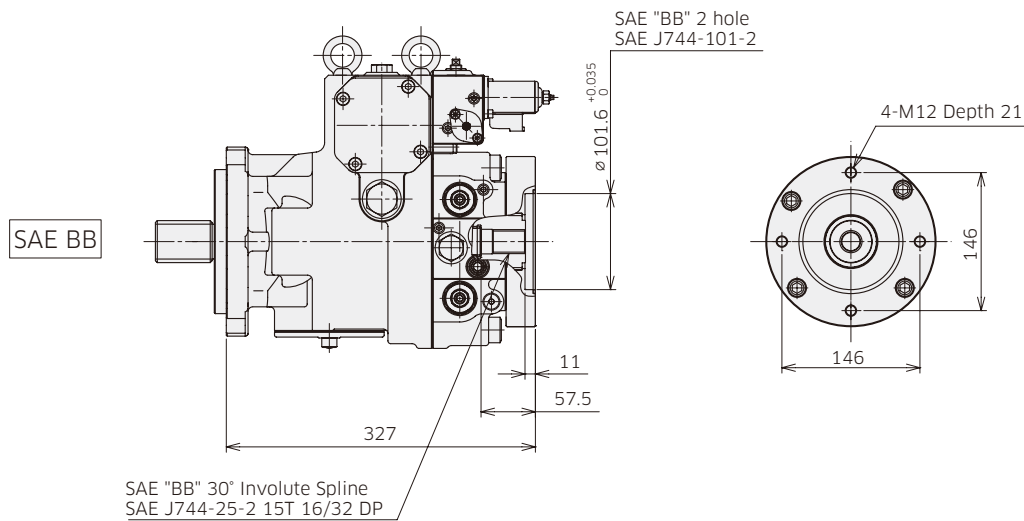
3. Dimensions

3-1 Installation Dimensions

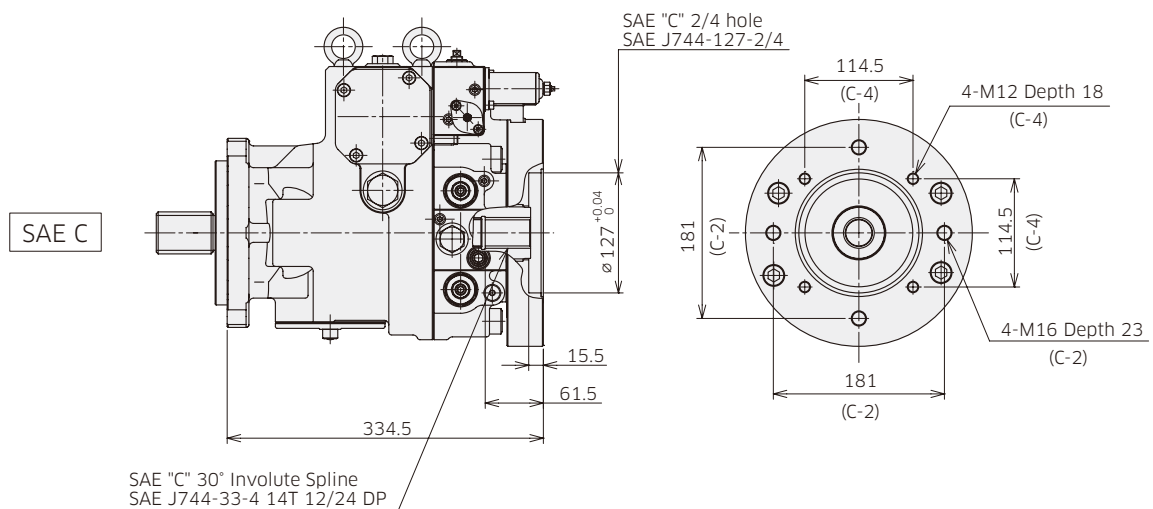
*Dimensions in mm.

◆ K8V90 Through Drive Options

Through Drive 'BB'



Through Drive 'C'



Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit

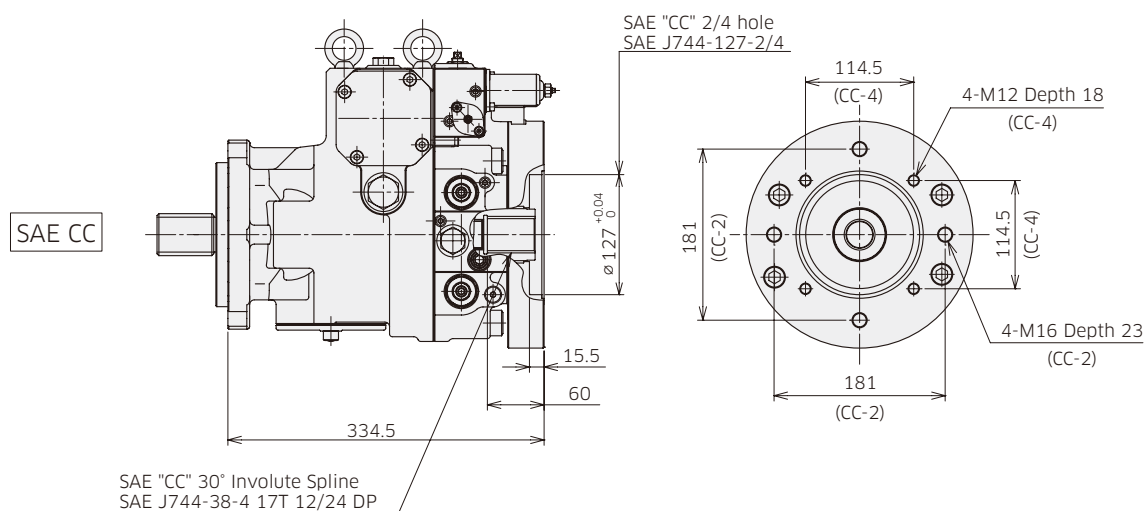
3. Dimensions

3-1 Installation Dimensions

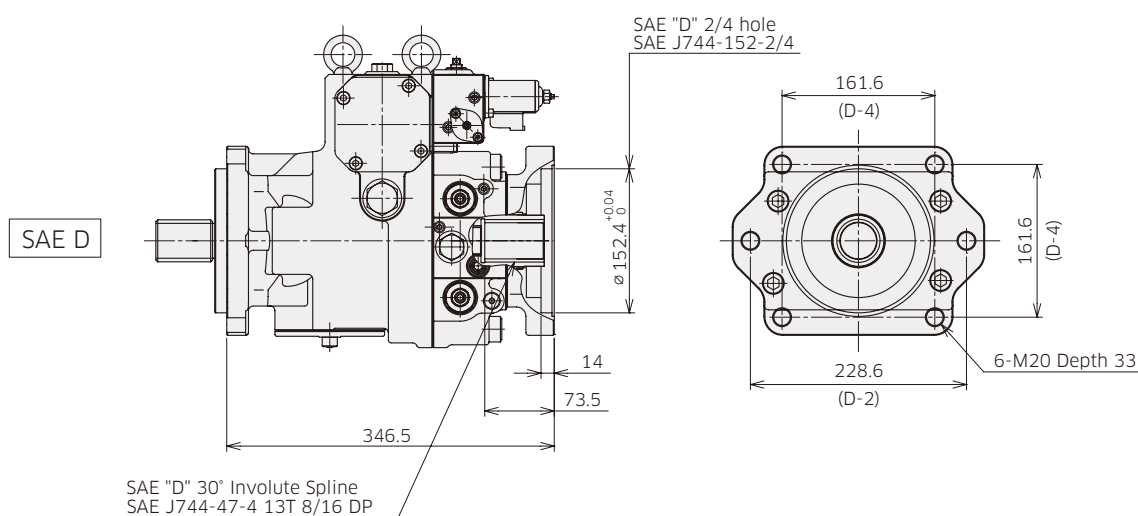
*Dimensions in mm.

◆ K8V90 Through Drive Options

Through Drive 'CC'



Through Drive 'D'



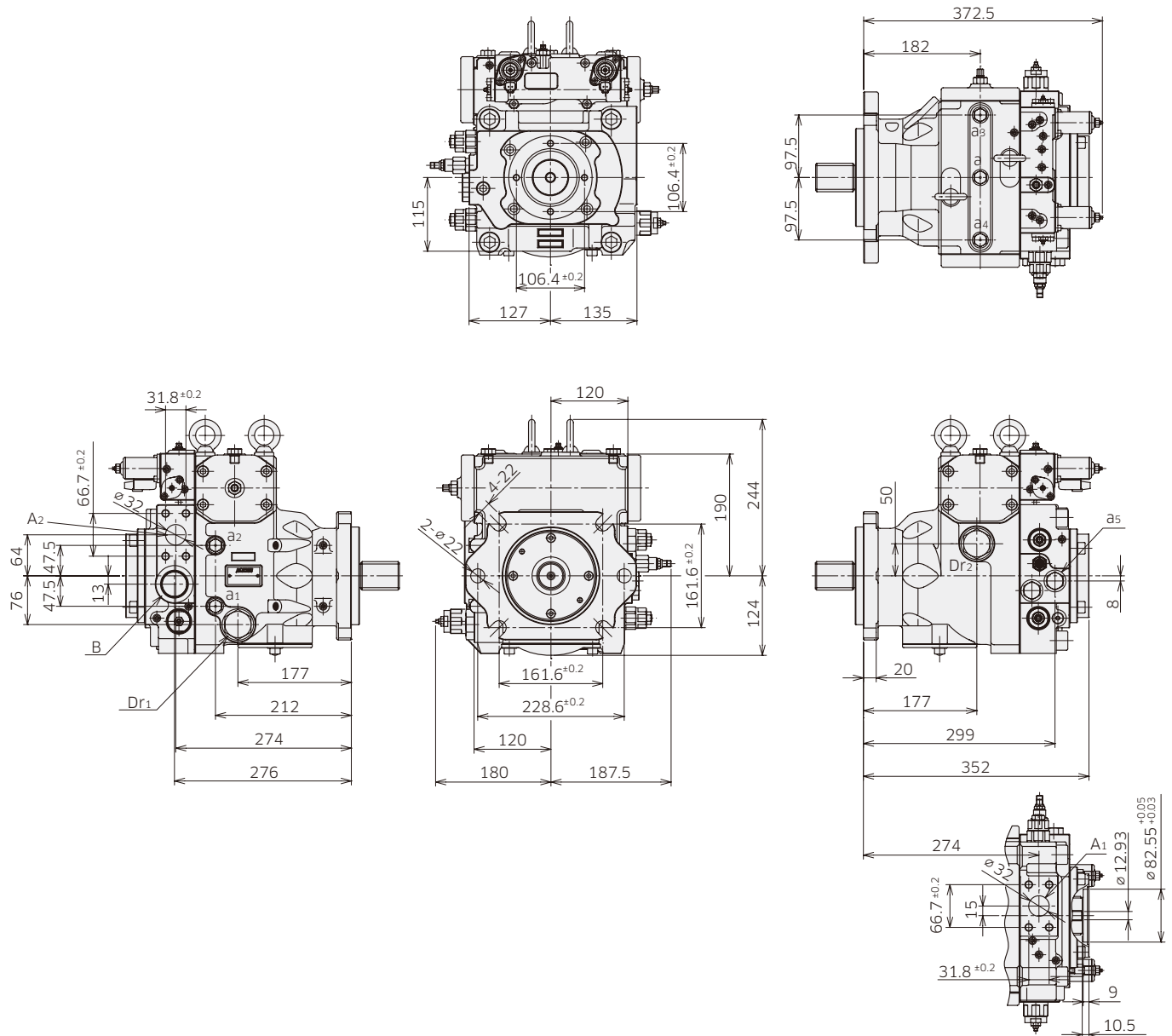
Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit

3. Dimensions

3-1 Installation Dimensions

* Dimensions in mm.

◆ K8V125



(Note) See port details for thread size on port A1 and A2.

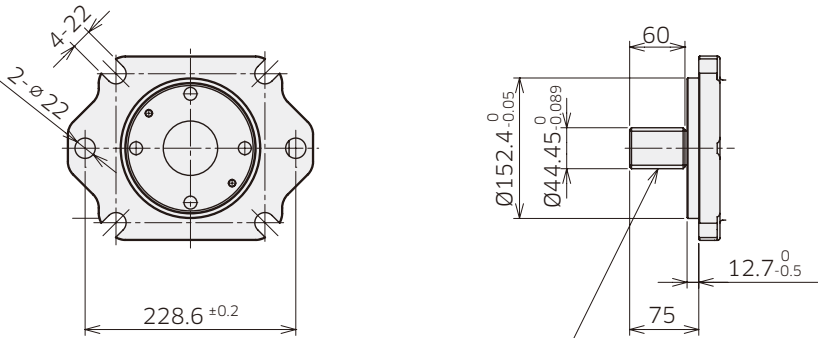
3. Dimensions

3-1 Installation Dimensions

*Dimensions in mm.

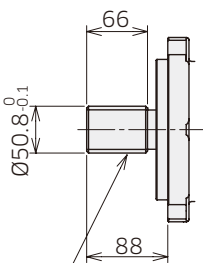
◆ K8V125

SAE D Spline shaft



SAE "D" 30° Involute Spline Shaft
SAE J744-44-4
13T 8/16 DP

SAE F Spline shaft



SAE "F" 30° Involute Spline Shaft
SAE J744-50-4
15T 8/16 DP

3. Dimensions

3-1 Installation Dimensions

*Dimensions in mm.

◆ K8V125 Port Details

Main Flanged Ports

Des	Port Name	Port Size	Flange Thread
-----	-----------	-----------	---------------

Unified Thread Version

A ₁ , A ₂	Pressure Port	SAE J518C high pressure (code 62) 1-1/4"	1/2-13UNC-2B-19/24
---------------------------------	---------------	--	--------------------

Metric Thread Version

A ₁ , A ₂	Pressure Port	SAE J518C high pressure (code 62) 1-1/4"	M14-19
---------------------------------	---------------	--	--------

Auxiliary Ports

Des	Port name	Port size
Dr ₁ , Dr ₂	Case Drain	1-1/16-2 UN-2B-19 (ISO 11926-1)
a ₁ , a ₂ , a ₃ , a ₄	Gauge Port	9/16-18 UNF-2B-12.7 (ISO 11926-1)
B	Inlet Port	1-5/8-12 UN-2B-24 (ISO 11926-1)
a ₅	Gauge Port	7/8-14 UNF-2B-16.7
a	Air Vent Port	9/16-18 UNF-2B-12.7
F ₁	External Filter Port (OUT)	7/8-14 UNF-2B-16.7
F ₂	External Filter Port (IN)	7/8-14 UNF-2B-16.7
C	External Charge Pressure Supply Port	7/8-14 UNF-2B-16.7

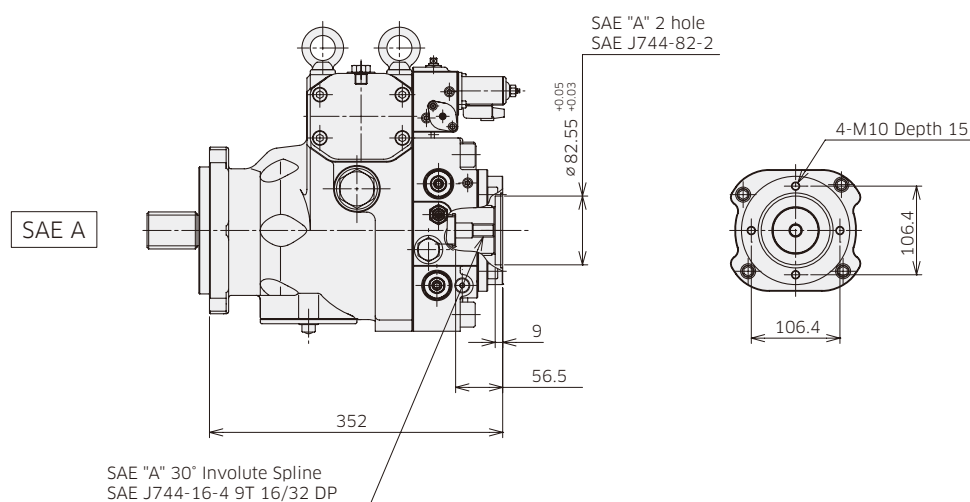
3. Dimensions

3-1 Installation Dimensions

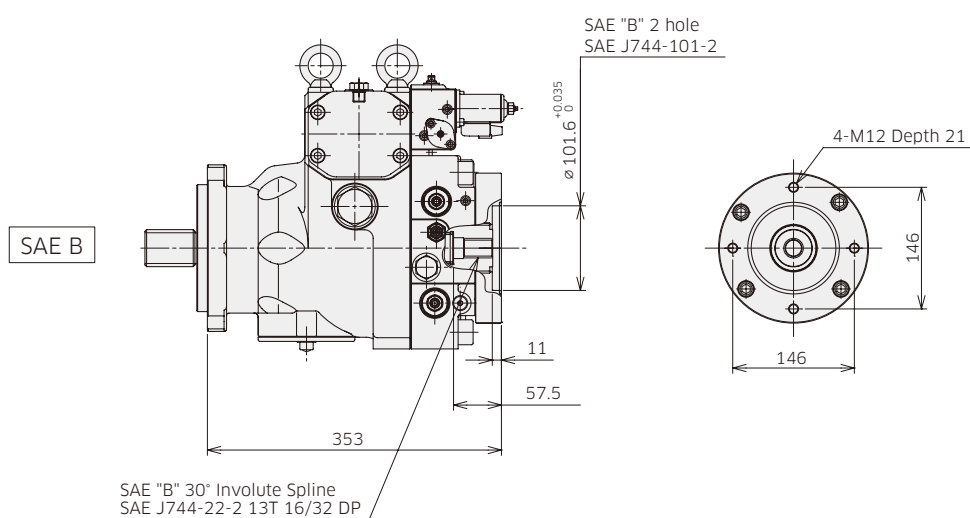
*Dimensions in mm.

◆ K8V125 Through Drive Options

Through Drive 'A'



Through Drive 'B'



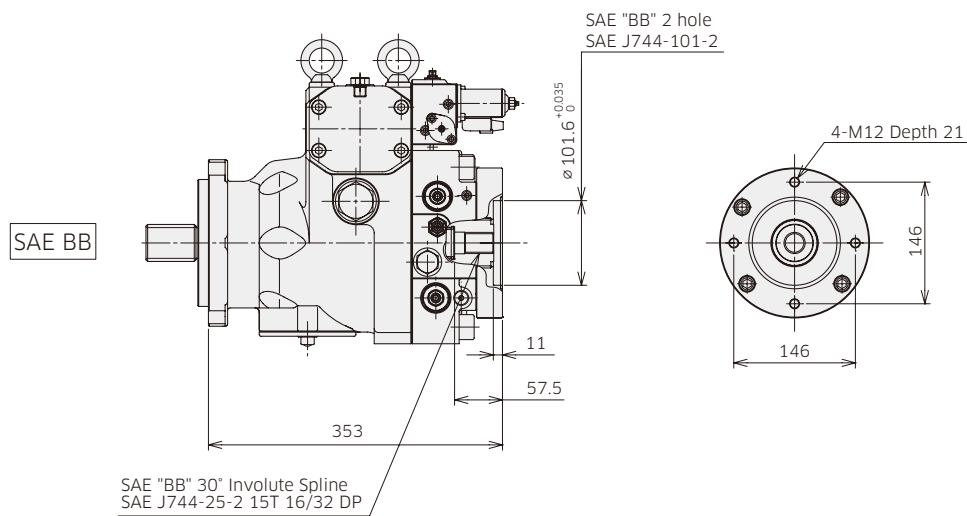
Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit

3. Dimensions

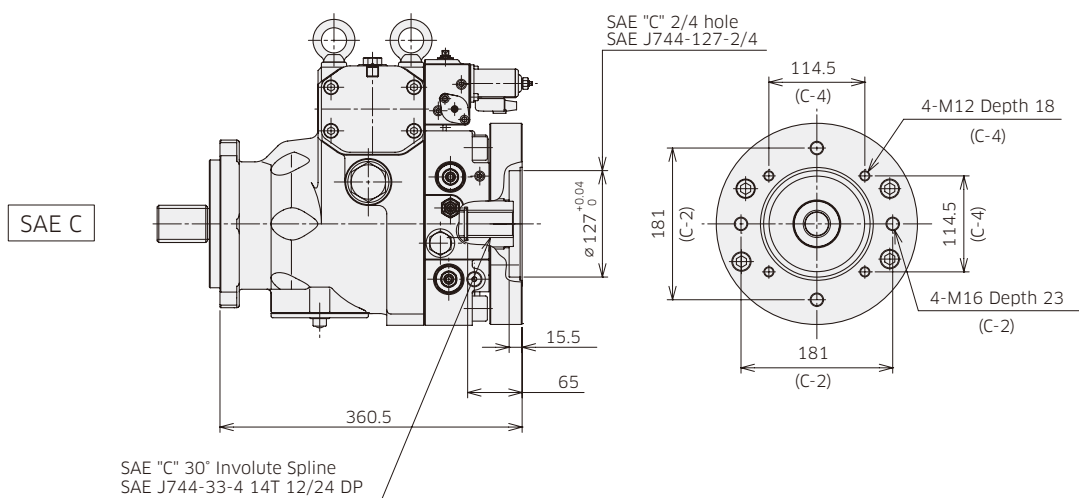
3-1 Installation Dimensions

◆ K8V125 Through Drive Options

Through Drive 'BB'



Through Drive 'C'



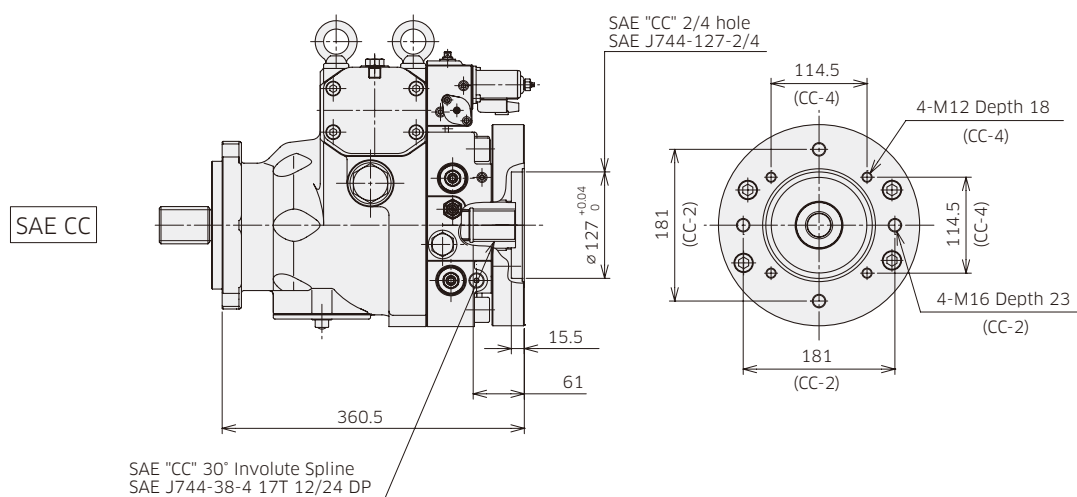
3. Dimensions

3-1 Installation Dimensions

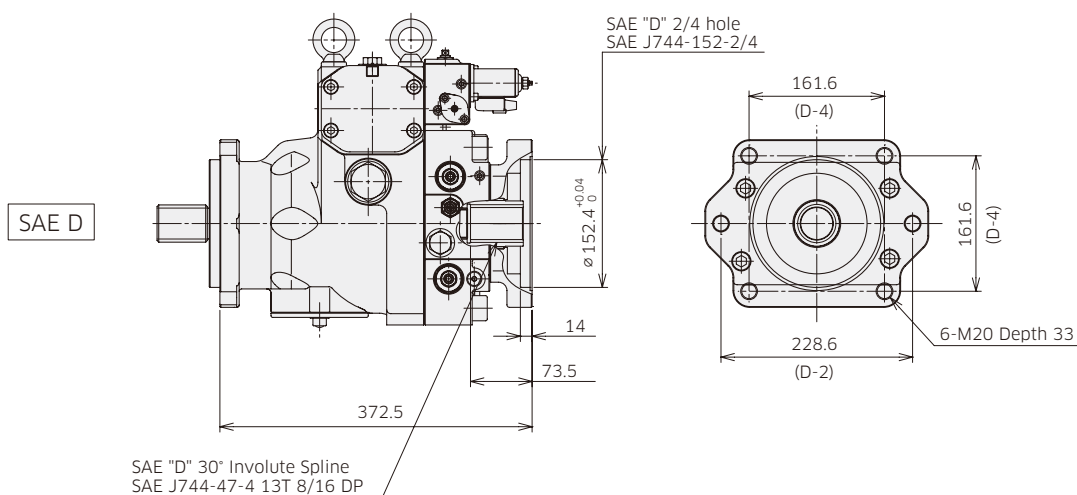
* Dimensions in mm.

◆ K8V125 Through Drive Options

Through Drive 'CC'



Through Drive 'D'



Involute spline according to ANSI B92.1a, 30° pressure angle, flat root, side fit

3. Dimensions

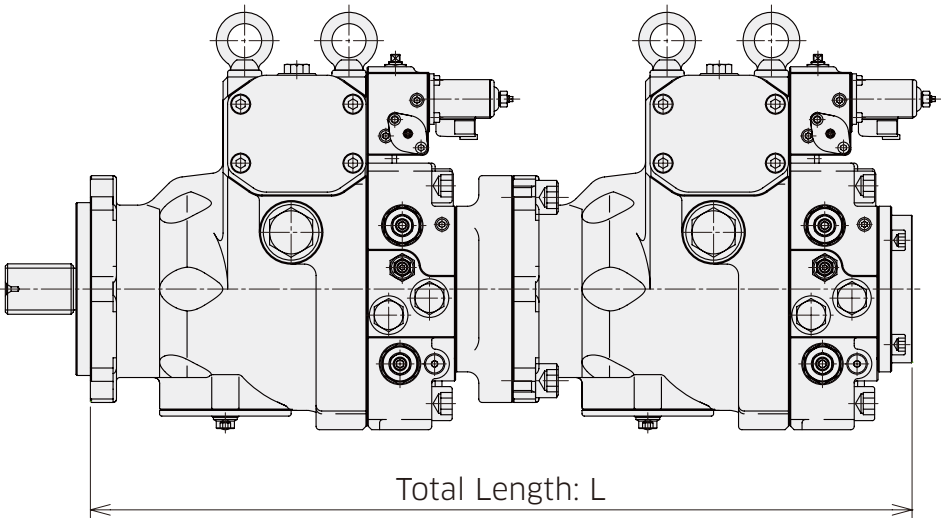
3-2 Installation of Auxiliary Pumps

■ Allowable Mass Moment for Combination Pump

K8V series allows combination of multiple pumps using through drive mounting. The second pump can be attached up to the same size of the first pump. In case of tandem configuration with the same pump size the allowable maximum dynamic acceleration to the pump is 10G. No additional mounting support is necessary up to this condition. 4-bolt mounting is required in case of tandem pump. If the third pump has to be mounted on the back of the second pump, the pump mass moment at the mounting flange shall be within the rated mass moment. Please contact Kawasaki for details.

■ Total Length of Tandem unit (Unit: mm)

First Pump	Second Pump	
	K8V90	K8V125
K8V90	672.5	-
K8V125	698.5	724.5



Please complete the table to specify the requirements.
Please contact Kawasaki for any questions.

K8V series Inquiry Form



Please tick the box for options.
Options with ★ are under development.

Date:	Machine Model:
Application:	
Customer Name:	Pump Model:

Swash Plate Type Axial Piston Pump

Model Code	1	2	3	4	5	6	7	8		9	10	11	12	13	14	15	16	17	18
	K8V		A						-										

Items	Model Code No.	Requirements	Kawasaki feed back
Pump Size (cm ³)	2	90 ☐ 125 ☐	
Series Type Code	3	A : Series A	
Direction of Rotation	4	R : Clockwise (K8V90 / 125) ☐ L : Counterclockwise (K8V90) ☐	
Mounting Flange and Shaft	5	D1 : SAE - D Mount & SAE - D Shaft (13T-8/16DP) (for K8V90/125) ☐ D2 : SAE - D Mount & SAE - F Shaft (15T-8/16DP) (for K8V125) ☐	
Through Drive	6	A1 : SAE-A, 2 bolt, Through Drive (9T-16/32DP) ☐ B1 : SAE-B, 2 bolt, Through Drive (13T-16/32DP) ☐ B2 : SAE-BB, 2 bolt, Through Drive (15T-16/32DP) ☐ C1 : SAE-C, 2/4 bolt, Through Drive (14T-12/24DP) ☐ C2 : SAE-CC, 2/4 bolt, Through Drive (17T-12/24DP) ☐ D1 : SAE-D, 2/4 bolt, Through Drive (13T-8/16DP) ☐ R : Without Through Drive ☐	
Thread Type (Suction/Delivery)	7	A : Metric Flange, UNF Threaded ☐ B : Metric Flange, Metric Threaded ☐ ★ C : UNF Flange, UNF Threaded ☐	
Charge Pump	8	A : 20 cm ³ ☐ B : 28 cm ³ (for K8V125) ☐ X : Without Integrated Charge Pump ☐	
Stroking Speed Control Orifice	9	A : Φ0.8 ☐ B : Φ1.0 ☐ C : Φ1.2 ☐ D : Φ1.4 ☐ X : Without Orifice Available Only with Code X of Low Pressure Relief Valve [16] ☐	
Mechanical Stroke Limiter	10	A : With Mechanical Stroke Limiter ☐ ★ B : Without Mechanical Stroke Limiter ☐	

Comments (Other requirements)	Operating condition, Duty cycle etc. (Describe your detail)

Request Volume	Request Delivery Date	Note

Please complete the table to specify the requirements.
Please contact Kawasaki for any questions.



K8V series Inquiry Form

Please tick the box for options.
Options with ★ are under development.

Date:	Machine Model:
Application:	
Customer Name:	Pump Model:

Swash Plate Type Axial Piston Pump

Model Code	1	2	3	4	5	6	7	8		9	10	11	12	13	14	15	16	17	18
	K8V		A						-										

Items	Model Code No.	Requirements	Kawasaki feed back
Filtration Options	11	A : Integral Pressure Filtration ☐ ★	
		B : Remote Pressure Filtration With Ports For External Charge Circuit Filter ☐	
		C : Without Pressure Filtration ☐	
Swivel Angle Sensor	12	A : With Swivel Angle Sensor ☐ ★	
		B : Without Swivel Angle Sensor ☐	
Special Features	13	A : A ~ Code Corresponding to the Feature will be set up When Necessary ☐ ★	
		X : Without Any Special Feature ☐	
Control Options	14	A : Electronic Proportional Displacement Control (24V) ☐	
		B : Electronic Proportional Displacement Control (12V) ☐	
		C : Hydraulic Proportional Displacement Control ☐	
High Pressure Relief Valve	15	A : 30 MPa ☐	
		B : 35 MPa ☐	
		C : 40 MPa ☐	
		D : 45 MPa ☐	
		S : Customized Pressure Setting for Special Case ☐	
Pressure Cut-Off Valve	16	A : 30 MPa ☐	
		B : 35 MPa ☐	
		C : 40 MPa ☐	
		S : Customized Pressure Setting for Special Case ☐	
		X : Without Pressure Cut-Off Valve ☐	
Low Pressure Relief Valve	17	B : 2.5 MPa ☐	
		C : Customized Pressure Setting for Special Case ☐	
		X : Without Low Pressure Valve ☐	
Design Code	18	** : 0.1~ ☐	

Comments (Other requirements)	Operating condition, Duty cycle etc. (Describe your detail)

Request Volume	Request Delivery Date	Note

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