BMSY SERIES HYDRAULIC MOTOR

BMSY new series motor adapt the advanced Geroler gear set designed with disc distribution flow and high pressure.The unit can be supplied the individual variant in operating multifunction in accordance with requirement of applications.

Characteristic featutres:

* Advanced manufacturing devices for the Geroler gear set, which use low pressure of start-up, provide smooth and reliable operation and high efficiency.
* The output shaft adapts in tapered roller bearings that permit high axial and radial forces. The case can offers capacities of high pressure and high torque in the wide of applications.
* Advanced design in disc distribution flow, which can automatically compensate in operating with high volume efficiency and long life , provide smooth and reliable operation.
* The new series motor is suitable for vehicles with greater loads and pressure drop.

Main Specification

Type		BMSY BMSYS 80	BMSY BMSYS 100	BMSY BMSYS 125	BMSY BMSYS 160	BMSY BMSYS 200	BMSY BMSYS 250	BMSY BMSYS 315	BMSY BMSYS 400	BMSY BMSYS 475
Geometric displacement (cm^3/rev.)		80.6	100.8	125	154	194	243	311	394	475
Max. speed (rpm)	cont.	800	748	600	470	375	300	240	185	155
	int.	988	900	720	560	450	360	280	225	185
Max. torque (N•m)	cont.	225	290	365	485	586	708	880	880	910
	int.	305	390	480	590	705	860	1000	980	990
Max. output (kW)	cont.	16	18	18	18.1	18.1	18	17	11	9
	int.	20	22	23	25	24	23.8	20.2	12	11
Max. pressure drop (MPa)	cont.	20.5	20.5	20.5	21	21	20	20	16	14
	int.	27.5	27.5	27.5	26	25	25	24	19	15
	peak	29.5	29.5	29.5	28	27	27	26	21	17.5
Max. flow (L/min)	cont.	65	75	75	75	75	75	75	75	75
	int.	80	90	90	90	90	90	90	90	90
Max. inlet pressure (MPa)	cont.	25	25	25	25	25	25	25	25	25
	int.	30	30	30	30	30	30	30	30	30
Weight (kg)		9.8	10	10.3	10.7	11.1	11.6	12.3	13.2	14.3

* Continuous pressure:Max. value of operating motor continuously.
* Intermittent pressure:Max. value of operating motor in 6 seconds per minute.
* Peak pressure:Max. value of operating motor in 0.6 second per minute.

Performance Data

BMSY80 [80.6cm³/rev.]

Pressure (MPa)

Flow (L/min)	3.5	7	10.5	14	17.5	20.5 (Max.cont.)	22.5 (Max.int.)
15	35	80	120	158	195	228	249
	180	**174**	**168**	**164**	**158**	**151**	**143**
30	35	80	120	158	195	232	260
	362	**352**	**346**	**338**	**330**	**322**	**310**
40	35	79	119	155	193	227	250
	487	**480**	**468**	**457**	**446**	**438**	**425**
50	30	77	117	153	192	224	248
	612	**603**	**592**	**581**	**572**	**558**	**542**
60	28	77	117	153	192	224	243
	735	**726**	**718**	**703**	**687**	**673**	**646**
65 (Max.cont.)	26	75	116	151	188	217	236
	794	**786**	**773**	**760**	**744**	**722**	**706**
80 (Max.int.)	24	72	109	142	176	206	227
	981	**968**	**955**	**925**	**893**	**870**	**832**

BMSY100 [100.8cm³/rev.]

Pressure (MPa)

Flow (L/min)	3.5	7	10.5	14	17.5	20.5 (Max.cont.)	22.5 (Max.int.)
15	48	95	150	200	250	282	310
	146	**144**	**139**	**135**	**130**	**120**	**105**
30	45	94	146	198	250	290	317
	291	**289**	**278**	**274**	**269**	**258**	**242**
40	43	89	142	196	248	288	316
	387	**384**	**374**	**359**	**350**	**335**	**320**
50	40	88	135	194	247	286	315
	486	**483**	**473**	**462**	**450**	**430**	**420**
60	37	88	132	185	244	283	312
	588	**584**	**574**	**562**	**550**	**538**	**520**
75 (Max.cont.)	35	80	130	180	240	279	310
	740	**735**	**720**	**705**	**696**	**676**	**653**
90 (Max.int.)	30	75	124	170	236	271	303
	850	**840**	**810**	**787**	**770**	**750**	**747**

BMSY125 [125cm³/rev.]

Pressure (MPa)

Flow (L/min)	3.5	7	10.5	14	17.5	20.5 (Max.cont.)	22.5 (Max.int.)
15	55	120	176	245	309	345	375
	115	**113**	**110**	**104**	**98**	**90**	**84**
30	55	120	175	250	315	364	404
	231	**228**	**223**	**214**	**202**	**188**	**172**
40	53	118	178	250	315	364	403
	312	**309**	**290**	**289**	**278**	**262**	**235**
50	50	115	176	248	315	362	397
	391	**386**	**378**	**365**	**352**	**339**	**308**
60	45	113	171	241	308	358	397
	469	**461**	**450**	**437**	**425**	**400**	**372**
75 (Max.cont.)	45	110	167	240	306	352	389
	588	**574**	**560**	**544**	**526**	**505**	**481**
90 (Max.int.)	40	105	162	237	301	343	378
	710	**696**	**680**	**661**	**646**	**628**	**610**

TORQUE(N•m) 301
SPEED (r/min) **646**

BMSY160 [154cm³/rev.]

Pressure (MPa)

Flow (L/min)	3.5	7	10.5	14	17.5	21 (Max.cont.)	22.5 (Max.int.)
15	70	142	215	298	372	435	476
	93	**91**	**89**	**85**	**80**	**76**	**58**
30	73	151	225	312	382	456	492
	189	**187**	**181**	**176**	**170**	**162**	**153**
40	75	152	228	314	383	454	488
	252	**250**	**246**	**239**	**234**	**228**	**212**
50	70	148	225	305	372	445	480
	313	**310**	**306**	**298**	**293**	**285**	**272**
60	68	143	218	296	370	442	480
	378	**376**	**370**	**362**	**353**	**346**	**332**
75 (Max.cont.)	62	140	211	291	365	439	475
	475	**469**	**461**	**450**	**441**	**432**	**414**
90 (Max.int.)	59	131	202	286	357	425	460
	567	**561**	**554**	**543**	**532**	**520**	**509**

cont.
int.

Performance Data

BMSY200 [194cm³/rev.]

Pressure (MPa)

Flow (L/min)	3.5	7	10.5	14	17.5	21 (Max.cont.)	22.5 (Max.int.)
15	87	179	273	371	471	562	610
	74	**73**	**71**	**68**	**64**	**60**	**48**
30	91	190	288	386	489	572	618
	150	**148**	**143**	**140**	**134**	**128**	**119**
40	94	193	296	394	498	584	645
	198	**195**	**192**	**188**	**183**	**178**	**167**
50	90	191	292	389	493	580	634
	248	**246**	**241**	**236**	**230**	**223**	**212**
60	85	185	279	382	483	575	622
	300	**295**	**288**	**281**	**273**	**263**	**251**
75 (Max.cont.)	78	176	271	370	472	561	610
	374	**370**	**364**	**360**	**352**	**340**	**331**
90 (Max.int.)	68	163	265	361	456	545	599
	443	**440**	**435**	**428**	**424**	**413**	**400**

BMSY250 [243cm³/rev.]

Pressure (MPa)

Flow (L/min)	3.5	7	10.5	14	17.5	20 (Max.cont.)	22.5 (Max.int.)
15	110	231	351	462	585	681	778
	59	**58**	**56**	**53**	**50**	**46**	**35**
30	116	236	359	475	597	700	790
	119	**117**	**114**	**108**	**102**	**92**	**80**
40	118	241	363	480	599	706	796
	162	**159**	**156**	**150**	**143**	**134**	**121**
50	111	234	352	472	591	693	788
	203	**201**	**197**	**191**	**182**	**173**	**158**
60	106	224	345	462	582	685	772
	244	**242**	**237**	**230**	**220**	**208**	**194**
75 (Max.cont.)	101	214	340	454	570	670	760
	303	**299**	**294**	**285**	**272**	**260**	**244**
90 (Max.int.)	93	209	335	447	559	657	749
	363	**359**	**354**	**348**	**340**	**328**	**303**

BMSY315 [311cm³/rev.]

Pressure (MPa)

Flow (L/min)	3.5	7	10.5	14	17.5	20 (Max.cont.)	22.5 (Max.int.)
15	148	304	456	613	762	879	978
	48	**47**	**45**	**43**	**41**	**39**	**27**
30	155	314	465	635	778	884	988
	95	**93**	**91**	**89**	**86**	**82**	**67**
40	160	321	479	650	796	906	997
	127	**125**	**121**	**117**	**115**	**109**	**91**
50	155	314	465	638	780	886	988
	159	**157**	**153**	**149**	**145**	**142**	**128**
60	151	306	453	620	765	886	976
	187	**185**	**181**	**176**	**169**	**157**	**143**
75 (Max.cont.)	146	300	445	613	755	875	966
	238	**236**	**232**	**227**	**224**	**220**	**196**
90 (Max.int.)	135	284	436	601	740	863	952
	286	**283**	**278**	**272**	**265**	**257**	**232**

BMSY400 [394cm³/rev.]

Pressure (MPa)

Flow (L/min)	3.5	7	10.5	14	16 (Max.cont.)	17.5 (Max.int.)
15	186	379	578	779	896	986
	37	**36**	**35**	**33**	**31**	**29**
30	190	388	590	791	905	991
	75	**73**	**71**	**68**	**65**	**61**
40	195	394	596	797	912	998
	99	**97**	**95**	**93**	**90**	**85**
50	191	388	587	785	904	983
	125	**123**	**118**	**114**	**109**	**102**
60	186	388	587	785	904	983
	149	**146**	**142**	**137**	**131**	**122**
75 (Max.cont.)	181	372	576	770	891	973
	187	**183**	**177**	**171**	**164**	**153**
90 (Max.int.)	176	367	571	766	883	965
	226	**221**	**214**	**208**	**199**	**183**

TORQUE (N•m) 766
SPEED (rpm) **208**

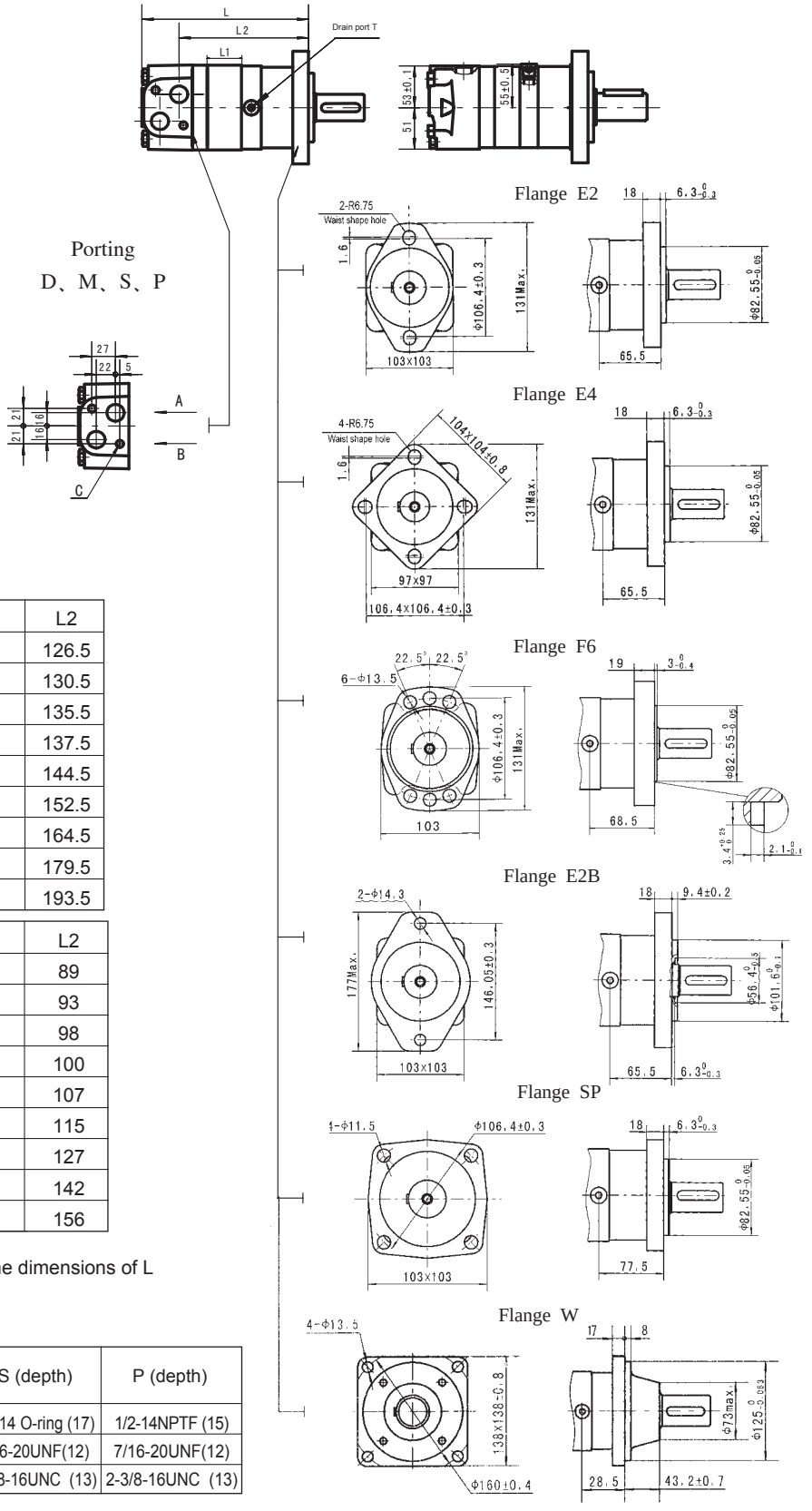
BMSY475 [475cm³/rev.]

Pressure (MPa)

Flow (L/min)	3.5	7	10.5	14	15 (Max.cont.)	Max.int.
15	218	439	661	892	995	
	30	**29**	**28**	**27**	**25**	
30	223	450	676	910	1002	
	61	**60**	**58**	**56**	**53**	
40	228	461	689	927	1017	
	82	**80**	**77**	**74**	**68**	
50	224	456	682	920	1008	
	103	**101**	**97**	**92**	**86**	
60	220	451	677	913	998	
	123	**121**	**118**	**112**	**105**	
75 (Max.cont.)	212	443	664	901	980	
	155	**153**	**147**	**140**	**132**	
90 (Max.int.)	196	421	643	877	959	
	186	**184**	**178**	**170**	**157**	

cont.
int.

BMSY DIMENSIONS AND MOUNTING DATA



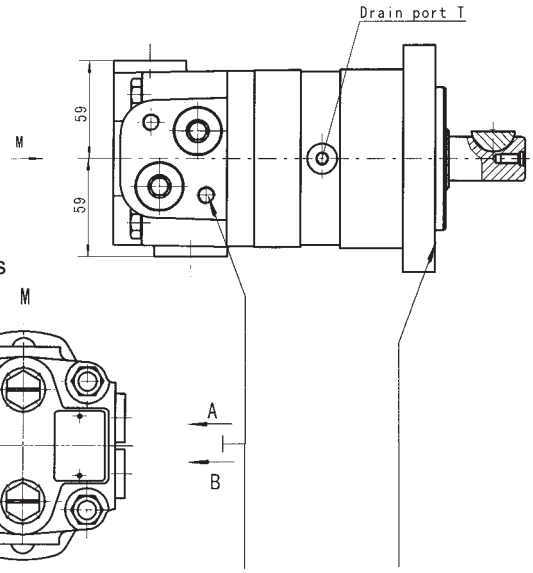
Model	L	L1	L2
BMSY-80	170	16	126.5
BMSY-100	174	20	130.5
BMSY-125	179	25	135.5
BMSY-160	181	27	137.5
BMSY-200	188	34	144.5
BMSY-250	196	42	152.5
BMSY-315	208	54	164.5
BMSY-400	223	69	179.5
BMSY-475	237	83	193.5

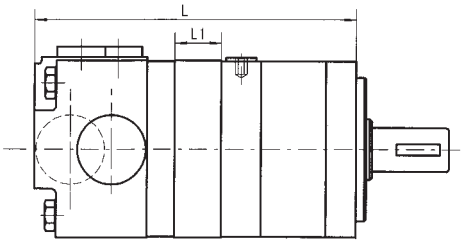
Model	L	L1	L2
BMSY-80-W	132.5	16	89
BMSY-100-W	136.5	20	93
BMSY-125-W	141.5	25	98
BMSY-160-W	143.5	27	100
BMSY-200-W	150.5	34	107
BMSY-250-W	158.5	42	115
BMSY-315-W	170.5	54	127
BMSY-400-W	185.5	69	142
BMSY-475-W	199.5	83	156

Note:If the mounting SP is used,the dimensions of L and L2 should plus 12mm.

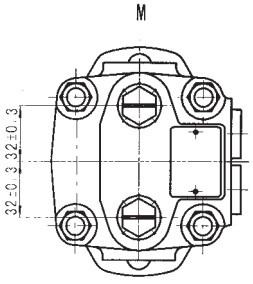
Code / Mounting	D (depth)	M (depth)	S (depth)	P (depth)
P(A,B)	G1/2(15)	M22x1.5(15)	7/8-14 O-ring (17)	1/2-14NPTF (15)
T	G1/4(12)	M14x1.5(12)	7/16-20UNF(12)	7/16-20UNF(12)
C	2-M10(13)	2-M10 (13)	2-3/8-16UNC (13)	2-3/8-16UNC (13)

BMSY DIMENSIONS AND MOUNTING DATA





Porting
End Ports



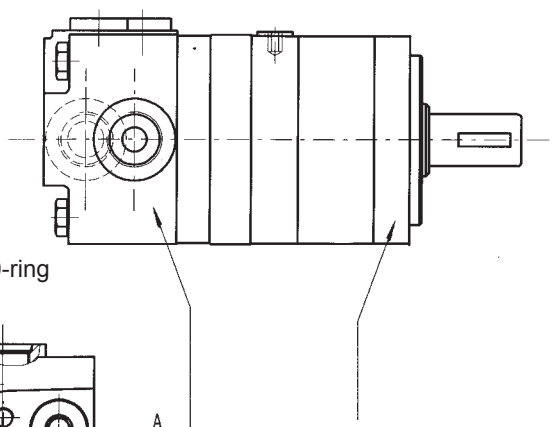
Mounting \ Code	EE-D (depth)	EE-M2 (depth)	EE-S2 (depth)
P(A,B)	G1/2 (15)	M22 x 1.5 (15)	7/8-14 O-ring (17)
T	G1/4 (12)	M14 x 1.5 (12)	7/16-20UNF(12)

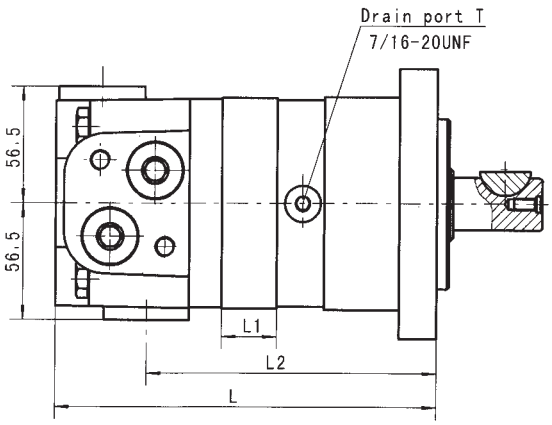
End Ports P(A\ B)

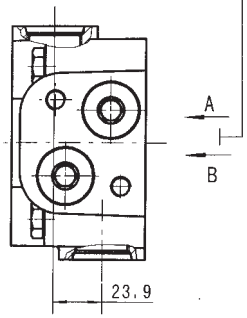
Model	L	L1
BMSY-80	176	16
BMSY-100	180	20
BMSY-125	185	25
BMSY-160	187	27
BMSY-200	194	34
BMSY-250	202	42
BMSY-315	214	54
BMSY-400	229	69
BMSY-475	243	83

Model	L	L1
BMSY-80-WE	148	16
BMSY-100-WE	152	20
BMSY-125-WE	157	25
BMSY-160-WE	159	27
BMSY-200-WE	166	34
BMSY-250-WE	174	42
BMSY-315-WE	186	54
BMSY-400-WE	201	69
BMSY-475-WE	215	83

Porting
ED 1-1/16-12UN 0-ring
180°Apart ports





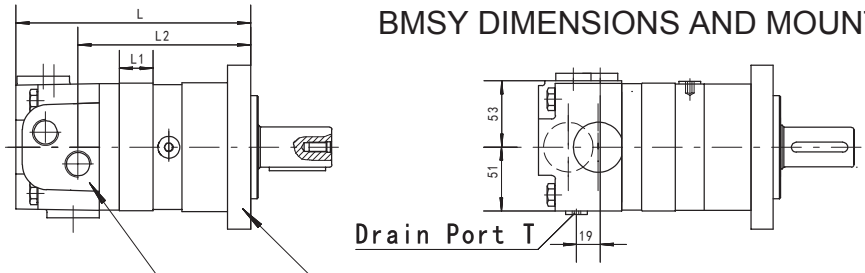


Mounting \ Code	ED (depth)
P(A,B)	1-1/16-12UN (18)
T	7/16-20UNF (12)

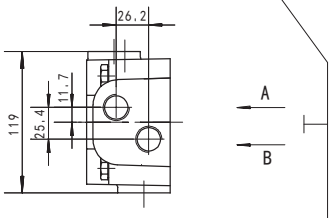
Model	L	L1	L2
BMSY-80	176	16	130
BMSY-100	180	20	134
BMSY-125	185	25	139
BMSY-160	187	27	141
BMSY-200	194	34	148
BMSY-250	202	42	156
BMSY-315	214	54	168
BMSY-400	229	69	183
BMSY-475	243	83	197

Model	L	L1	L2
BMSY-80-WE	148	16	102
BMSY-100-WE	152	20	106
BMSY-125-WE	157	25	111
BMSY-160-WE	159	27	113
BMSY-200-WE	166	34	119
BMSY-250-WE	178	42	127
BMSY-315-WE	190	54	139
BMSY-400-WE	205	69	154
BMSY-475-WE	219	83	168

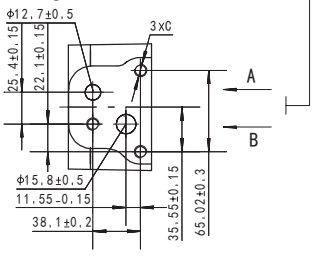
BMSY DIMENSIONS AND MOUNTING DATA



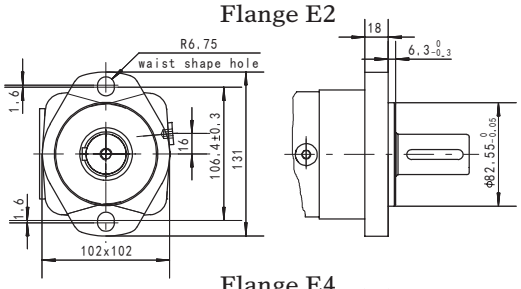
Porting
DB、DU、SU、SB、M4



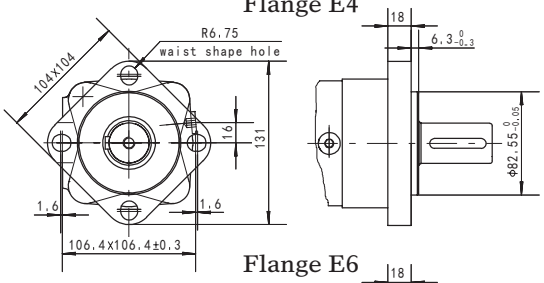
Porting MU、MM



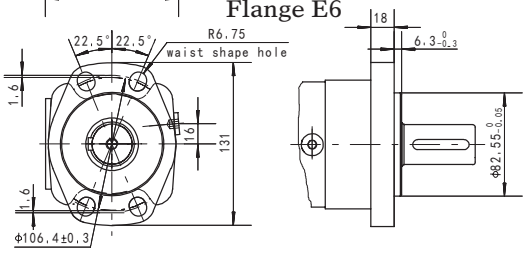
Flange E2



Flange E4

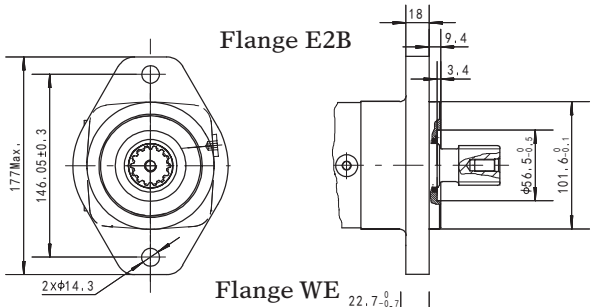


Flange E6



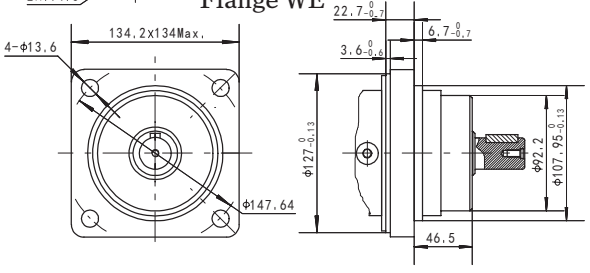
Model	L	L1	L2
BMSY-80	177	16	126.5
BMSY-100	181	20	130.5
BMSY-125	186	25	135.5
BMSY-160	188	27	137.5
BMSY-200	195	34	144.5
BMSY-250	203	42	152.5
BMSY-315	215	54	164.5
BMSY-400	230	69	179.5
BMSY-475	244	83	193.5

Flange E2B



Model	L	L1	L2
BMSY-80-WE	148.5	16	98
BMSY-100-WE	152.5	20	102
BMSY-125-WE	157.5	25	107
BMSY-160-WE	159.5	27	109
BMSY-200-WE	166.5	34	116
BMSY-250-WE	174.5	42	124
BMSY-315-WE	186.5	54	136
BMSY-400-WE	201.5	69	151
BMSY-475-WE	215.5	83	165

Flange WE

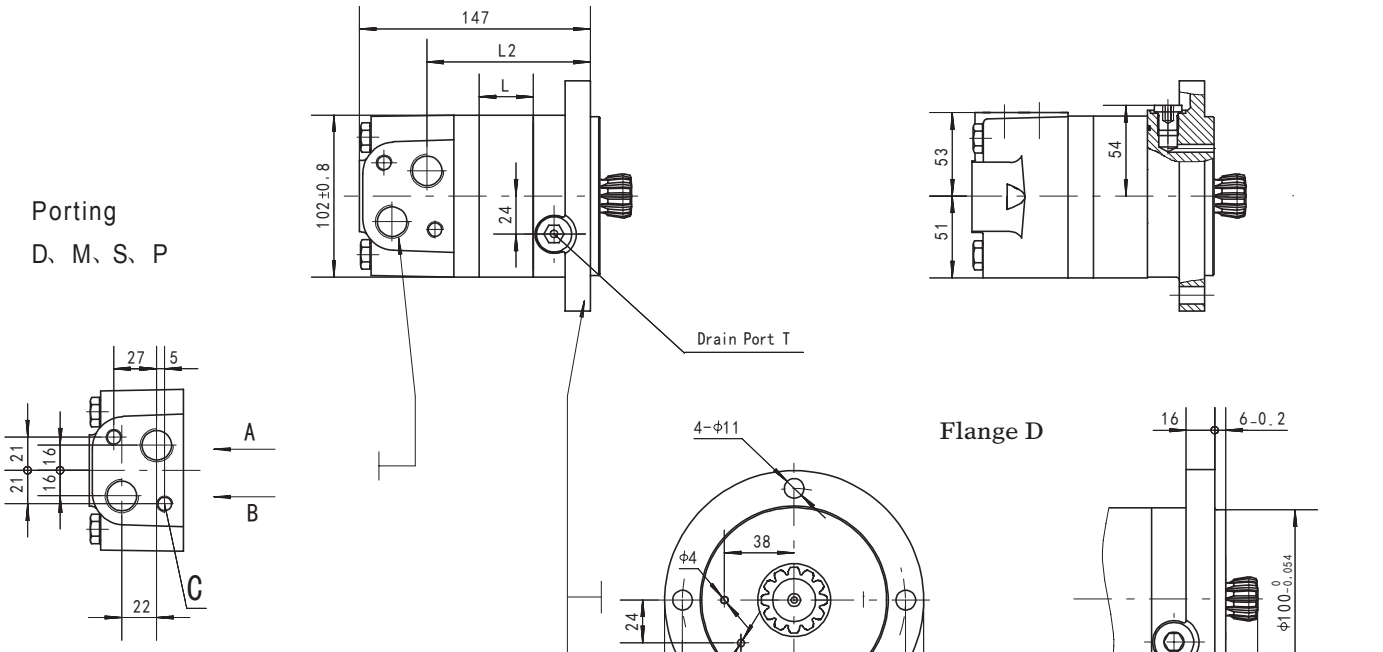


Mounting \ Code	DB(depth)	DU (depth)	SU (depth)	SB (depth)	M4 (depth)	MU	MM
P(A,B)	G1/2(15)	G1/2(15)	7/8-14O-ring(17)	7/8-14O-ring(17)	M22x1.5(15)	Φ12.7,Φ15.8	Φ12.7,Φ15.8
T	G1/4(12)	7/16-20UNF(12)	7/16-20UNF(12)	G1/4(12)	M14x1.5(12)	7/16-20UNF(12)	G1/4(12)
C	-					3/8-16UNC	M10

BMSYS DIMENSIONS AND MOUNTING DATA

Porting

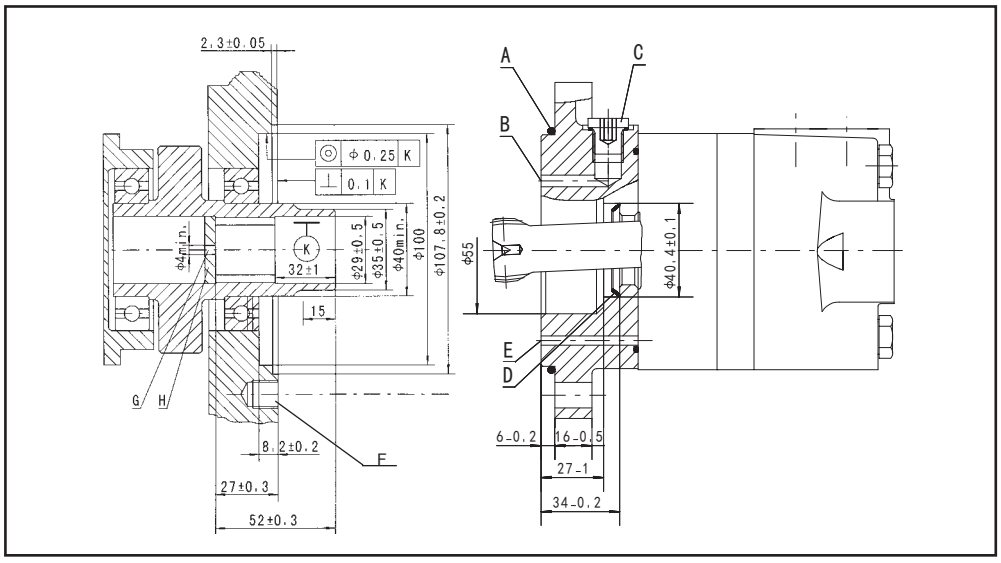
D、M、S、P



Model	L	L1	L2
BMSYS-80	129	16	85
BMSYS-100	133	20	89
BMSYS-125	138	25	94
BMSYS-160	140	27	96
BMSYS-200	147	34	103
BMSYS-250	155	42	111
BMSYS-315	167	54	123
BMSYS-400	182	69	138
BMSYS-475	196	83	152

Code / Mounting	D (depth)	M (depth)	S (depth)	P (depth)
P(A,B)	G1/2(15)	M22x1.5(15)	7/8-14O-ring(17)	1/2-14NPTF(15)
T	G1/4(12)	M14x1.5(12)	7/16-20UNF(12)	7/16-20UNF(12)
C	2-M10(13)	2-M10(13)	2-3/8-16UNC(13)	2-3/8-16UNC(13)

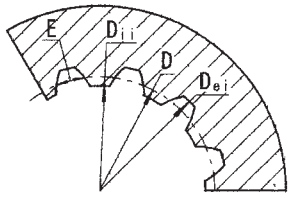
BMSYS DIMENSIONS AND MOUNTING DATA



A: O-ring:100x3
B: External drain channel
C: Drain connection G 1/4;12 mm deep
D: Conical seal ring
E: Internal drain channal
F: M10;min. 15mm deep
G: Oil circulation hole
H: Hardened stop plate

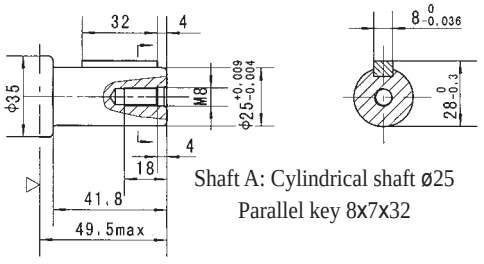
INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

Fillet Root Side Fit		mm
Number of Teeth	Z	12
Diametral Pitch	DP	12/24
Pressure Angle	α_D	30°
Pitch Dia.	D	ø25.4
Major Dia.	D_{ei}	$ø28^{0}_{-0.1}$
Minor Dia.	D_{ii}	$ø23^{+0.033}_{0}$
Space Width [Circular]	E	4.308±0.02

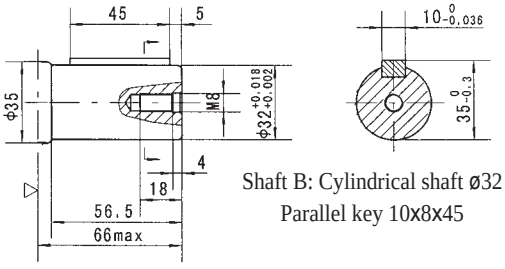


Hardering Specification: HRC 62±2
Effective case depth 0.7±0.2

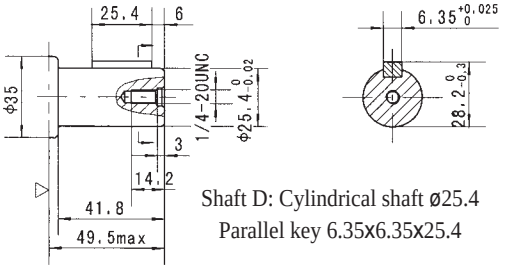
SHAFT EXTENSIONS FOR BMSY MOTORS



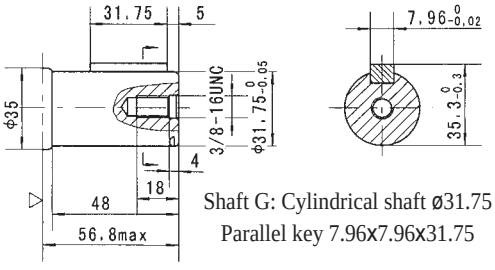
Shaft A: Cylindrical shaft ø25
Parallel key 8x7x32



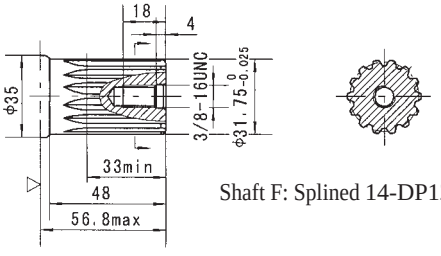
Shaft B: Cylindrical shaft ø32
Parallel key 10x8x45



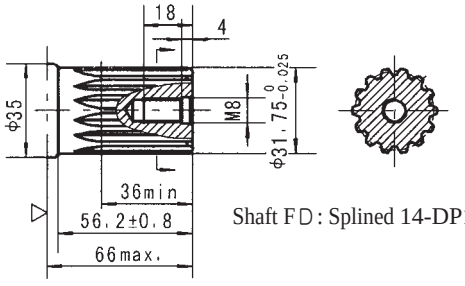
Shaft D: Cylindrical shaft ø25.4
Parallel key 6.35x6.35x25.4



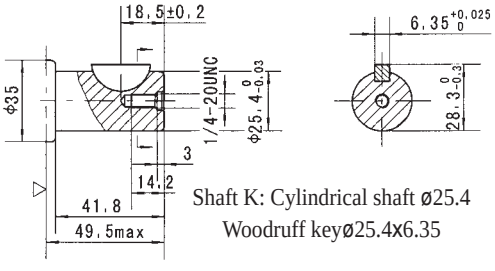
Shaft G: Cylindrical shaft ø31.75
Parallel key 7.96x7.96x31.75



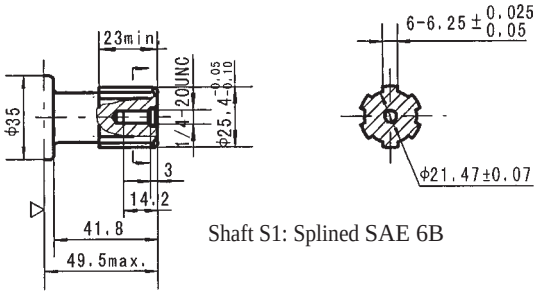
Shaft F: Splined 14-DP12/24



Shaft FD: Splined 14-DP12/24



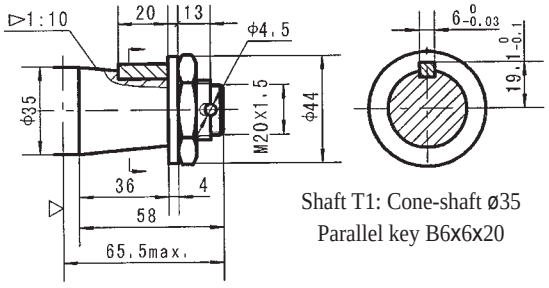
Shaft K: Cylindrical shaft ø25.4
Woodruff keyø25.4x6.35



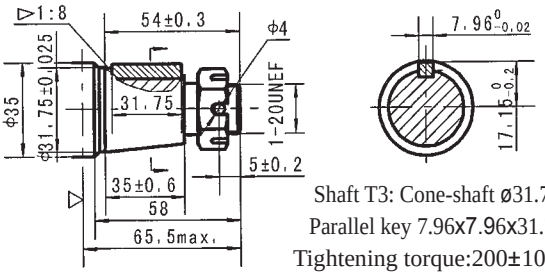
Shaft S1: Splined SAE 6B

▷ Motor Mounting Surface(Dimension corresponding mounting E2, by analogy with others)

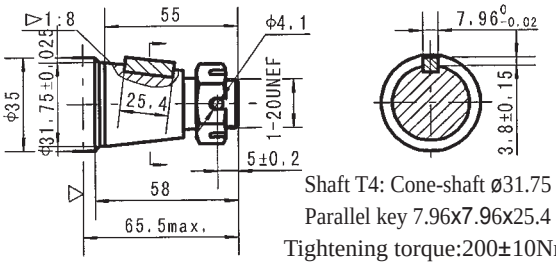
SHAFT EXTENSIONS FOR BMSY MOTORS



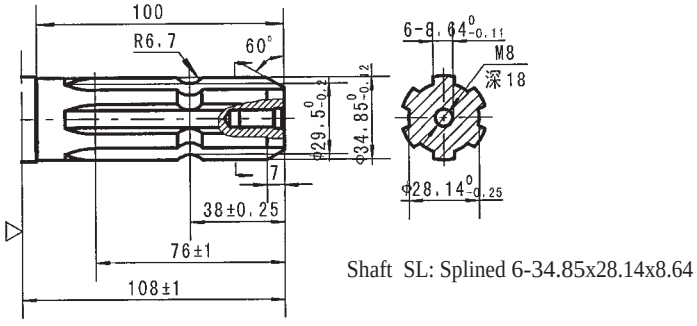
Shaft T1: Cone-shaft ø35
Parallel key B6x6x20



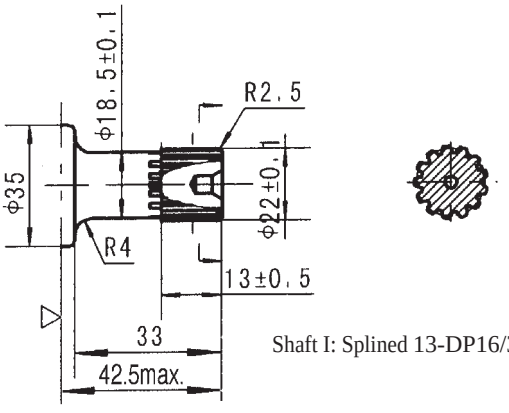
Shaft T3: Cone-shaft ø31.75
Parallel key 7.96x7.96x31.75
Tightening torque:200±10Nm



Shaft T4: Cone-shaft ø31.75
Parallel key 7.96x7.96x25.4
Tightening torque:200±10Nm



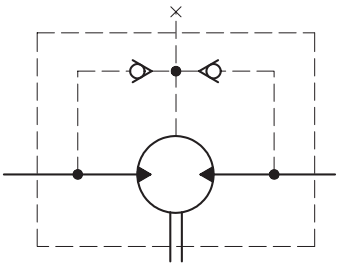
Shaft SL: Splined 6-34.85x28.14x8.64

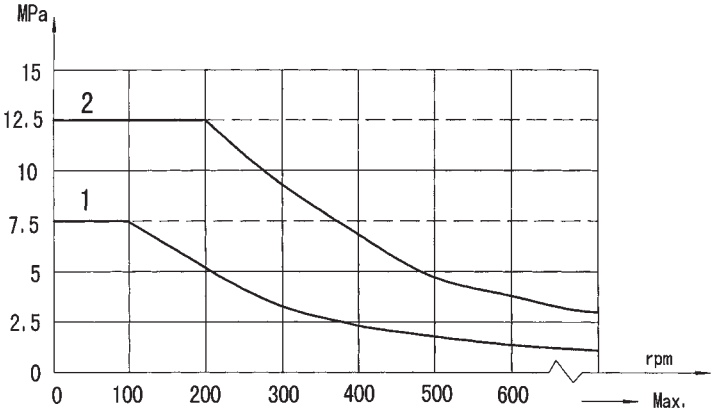


Shaft I: Splined 13-DP16/32

▷ Motor Mounting Surface(Dimension corresponding mounting E2, by analogy with others)
Note:Mounting SP is the same with shaft modle T1、D、B、F and G.

Permissible shaft seal pressure

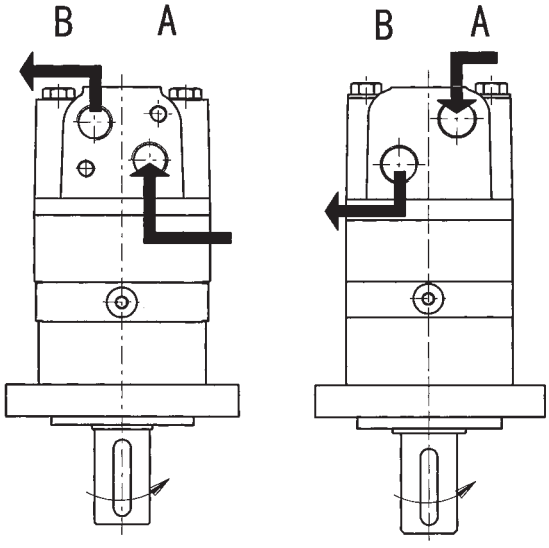




Note:1.Chart for standard shaft seal;
2.Chart for high pressure shaft seal.

Standard direction of shaft rotation: Standard

When facing shaft end of motor,shaft to rotate:
Clockwise when port "A" is pressurized.
Counter-clockwise port "B" is pressurized.



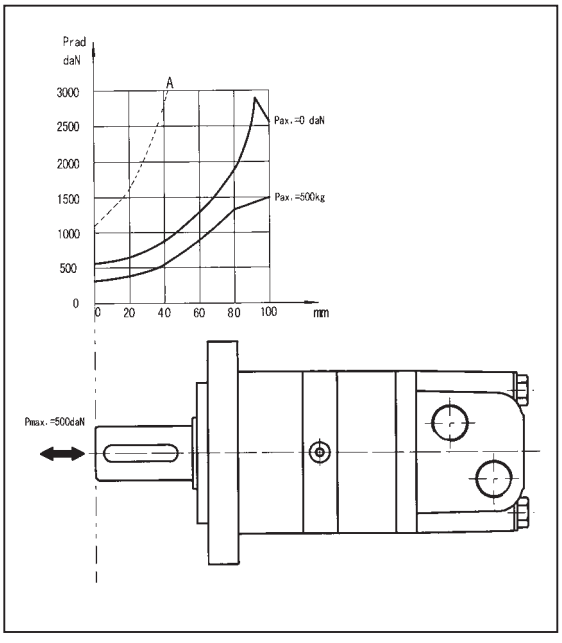
In applications without drain line, output shaft seal exceeds a bit of the pressure in the return line. When applications use the drain line, the pressure of output shaft seal equals the pressure in drain line.

Oil flow in drain line

The table shows the Max. oil flow in the drain line at a return pressure less than 0.5-1MPa.

Pressure drop （MPa）	Viscosity (mm^2/s)	Oil flow in the drain line (L/min.)
14	20	1.5
	35	1
21	20	3
	35	2

Axial and Radial forces



The output shaft runs in tapered bearings that permit high axial and radial forces, Curve "A" shows max radial shaft load, Any shaft loads exceeding the values quoted in the curve will involve a risk of breakage, The two other curves apply to a B10 bearing life of 3000 hours at 200 RPM.

Order Information

BMSY 1 – 2 – – – – – – – 8

Pos.1	2	3	4	5	6	7	8
Code	Disp.	Flange	Output Shaft	Paint			
Omit	80 100 125 160 200 250 315 400 475	E2 2-Ø13.5 Rhomb-flange Ø106.4, pilot Ø82.5×6.3 E4 4-Ø13.5 Rhomb-flange Ø106.4, pilot Ø82.5×6.3 E6 4-Ø 13.5 Rhomb-flangeØ 106.4, pilot Ø82.5×6.3 F6 6-Ø13.5 Rhomb-flange Ø106.4, W 4-Ø13.5 Wheel-flange Ø160 , pilot Ø125×8 E2B 2-Ø14.3 Rhomb-flange Ø146.05, pilot Ø101.6×9.4 SP 4- Ø11.5 Square-flange Ø106.4 pilot Ø82.5×6.3 WE 4Ø 13.6Wheel-flangeØ 147.6, pilot Ø107.95×6.4	A Shaft Ø25 , parllel key 8×7×32 B Shaft Ø32 , parllel key 10×8×45 D Shaft Ø25.4 , parllel key6.35×6.35×25.4 F Shaft Ø31.75 , splined key 14-DP12/24 FD Long Shaft Ø31.75 , splined key 14-DP12/24 FE Shaft Ø31.75 , splined key 14-DP12/24 G Shaft Ø31.75 , parllel key 7.96×7.96×31.75 K Shaft Ø25.4 , Woodruff key Ø25.4×6.35 T4 Cone-shaft Ø31.75 , parllel key 7.96×7.96×25.4 SL shaft Ø34.85,Splined key 6-34.85×28.14×8.64 T1 Cone-shaft Ø35 ,parllel key B6×6×20 T3 Cone-shaft Ø31.75 , parllel key 7.96×7.96×31.75 S1 Shaft Ø25.4 ,splined key SAE 6B I Sub-shaftØ22 , splined key 13-DP16/32	EE-D G1/2, G1/4 EE-M 2M22×1.5, M14×1.5 EE-S2 7/8-14UNF O-ring, 7/16-20 UNF D G1/2 Manifold Mount 2-M10 , G1/4 ED 1-1/16-12UN O-ring, 7/16-20 UNF DB G1/2, G1/4 DU G1/2, 7/16-20 UNF SB 7/8-14UNF O-ring, G1/4 SU 7/8-14UNF O-ring, 7/16-20 UNF M4 M22×1.5, M14×1.5 MU 1/2",5/8"Crosshole Manifold 3×3/8-16UNC,7/16-20UNF M M22×1.5 Manifold Mount 2-M10 , M14×1.5 S 7/8-14UNF O-ring manifold 2-3/8-16 , 7/16-20UNF P 1/2-14NPTF manifold 2-3/8-16UNC , 7/16-20UNF G G1/2, G1/4 M2 M22×1.5, M14×1.5 S2 7/8-14UNF O-ring, 7/16-20 UNF	Omit Standard R Opposite	00 No paint Omit Blue B Black S Silver gray	Omit Standard F Free Running LS Low Speed
S		D 4-Ø11 Circle-flangeØ125 , pilot Ø100×6 E 4-Ø13.5Circle-flange Ø127, pilot Ø101.6×6.3	Omit Short shaft 12-DP12/24				

Note:When the table is used, please fill the code of left rows in the table and give us, which the code information is consists of construction, displacement, mounting flange, output shaft and ports.The informations of mounting flange,output shaft and frorts are the same as BMS serier.The SP flange afflies to shafts of T1、D、B、F、G. If the specification is not in the table or you have specific requirements, please contact us.