

Hydraulic Orbital Motors

BK2 /BMER

BMH/ BMM/BMR/BMSY/BMT/BMV

BMK2/BMK4/BMK6/BMK10



BMT Series Hydraulic Motor

■ Introduction



BMT series motor adapt the advanced Geroler gear set design 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 features:

- * 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. Can offer 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.

■ Main Specification

Type		BMT 160	BMT 200	BMT 230	BMT 250	BMT 315	BMT 400	BMT 500	BMT 630	BMT 800
Geometric displacement (cm ³ /rev.)		161.1	201.4	232.5	251.8	326.3	410.9	523.6	629.1	801.8
Max. speed (rpm)	cont.	625	625	536	500	380	305	240	196	154
	int.	780	750	643	600	460	365	285	233	185
Max. torque (N·m)	cont.	470	590	670	730	950	1080	1220	1318	1464
	int.	560	710	821	880	1140	1260	1370	1498	1520
	peak	669	838	958	1036	1346.3	1450.3	1643.8	1618.8	1665
Max. output (kW)	cont.	27.7	34.9	34.7	34.5	34.9	31.2	28.8	25.3	22.2
	int.	32	40	40	40	40	35	35	27.5	26.8
Max. pressure drop (MPa)	cont.	20	20	20	20	20	18	16	14	12.5
	int.	24	24	24	24	24	21	18	16	13
	peak	28	28	28	28	28	24	21	19	16
Max. flow (L/min)	cont.	100	125	125	125	125	125	125	125	125
	int.	125	150	150	150	150	150	150	150	150
Max. inlet pressure (MPa)	cont.	21	21	21	21	21	21	21	21	21
	int.	25	25	25	25	25	25	25	25	25
	peak	30	30	30	30	30	30	30	30	30
Weight (kg)		19.5	20	20.4	20.5	21	22	23	24	25

* 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.

BMT Series Hydraulic Motor

■ Performance Data

BMT 160 [161.1cm³/rev.]

Pressure (MPa)

		Pressure (MPa)				Max.cont.		Max.int.	
		4	8	10	12	16	20	24	
Flow (L/min)	10	88	176	228	275	361	447	535	
		60	59	58	56	54	50	44	
	20	89	181	234	277	372	459	557	
		121	120	117	114	109	103	95	
	40	91	180	235	277	381	471	573	
		249	246	243	236	230	223	212	
	60	82	178	235	277	381	470	572	
		371	367	362	356	349	340	330	
	80	78	173	229	276	379	466	567	
		492	489	485	478	470	462	447	
Max.cont.	100	70	160	218	269	370	455	558	
		614	611	606	598	590	582	570	
Max.int.	125	58	148	211	261	359	448	552	
		770	764	758	750	741	731	715	

BMT 200 [201.4cm³/rev.]

Pressure (MPa)

		Pressure (MPa)				Max.cont.		Max.int.	
		4	8	10	12	16	20	24	
Flow (L/min)	10	124	233	289	340	454	560	669	
		47	46	45	42	39	37	33	
	20	125	239	298	347	468	576	696	
		95	94	92	90	87	84	75	
	40	120	241	296	352	475	589	716	
		195	193	191	187	183	178	167	
	60	116	237	295	352	478	589	718	
		297	295	292	287	282	276	263	
80	108	231	289	350	474	586	716		
	395	393	389	384	377	370	359		
100	99	227	286	344	471	580	712		
	493	490	486	482	475	467	460		
Max.cont.	125	84	208	276	333	459	566	697	
		615	611	607	602	595	588	572	
Max.int.	150	70	194	260	324	447	554	682	
		743	740	735	727	717	706	682	

BMT 250 [251.8cm³/rev.]

Pressure (MPa)

		Pressure (MPa)				Max.cont.		Max.int.	
		4	8	10	12	16	20	24	
Flow (L/min)	10	138 38	286 38	355 37	419 36	559 34	689 32	824 31	
	20	143 76	296 75	364 74	432 72	580 70	708 67	853 62	
	40	139 156	301 154	372 152	440 149	593 146	723 142	884 134	
	60	132 237	294 236	372 233	441 229	592 224	727 219	888 207	
	80	128 317	283 316	364 314	433 308	587 303	721 299	887 284	
	100	126 396	282 394	355 391	427 387	582 381	716 373	879 359	
	Max.cont. 125	116 495	260 492	340 488	414 483	568 476	703 469	864 454	
	Max.int. 150	88 592	242 589	320 585	397 580	552 572	686 565	847 545	

BMT 315 [326.3cm³/rev.]

Pressure (MPa)

		Pressure (MPa)				Max.cont.		Max.int.	
		4	8	10	12	16	20	24	
Flow (L/min)	10	184 30	363 29	453 28	545 27	734 26	891 25	1062 23	
	20	189 60	380 59	472 58	562 56	757 54	917 52	1109 50	
	40	191 121	381 120	484 118	570 115	774 112	954 109	1149 104	
	60	189 183	376 181	493 179	573 175	772 172	962 168	1154 158	
	80	179 244	369 242	479 239	565 236	768 231	954 227	1153 217	
	100	169 305	357 304	467 301	562 298	758 294	942 289	1143 276	
	125	147 380	336 378	447 375	544 371	745 367	920 362	1127 349	
	150	119 458	318 456	432 453	526 449	713 444	894 431	1097 425	
Max.cont.									
Max.int.									

Torque (N·m) 552
Speed (rpm) 572

BMT Series Hydraulic Motor

■ Performance Data

BMT 400 [410.9cm³/rev.]

Pressure (MPa)

		Pressure (mmHg)				Max.cont.		Max.int.	
		3	6	9	12	15	18	21	
Flow (L/min)	10	176 24	367 23	560 22	715 21	885 20	1050 19	1209 18	
	20	179 49	370 48	565 47	726 44	899 42	1071 40	1236 38	
	40	176 96	370 95	567 93	733 90	919 87	1091 83	1263 79	
	60	174 145	361 143	563 139	729 135	920 131	1095 127	1269 121	
	80	166 193	353 191	553 188	719 184	912 180	1084 176	1263 170	
	100	150 242	339 240	538 238	708 234	896 228	1067 224	1252 218	
	Max.cont. 125	135 302	309 300	524 298	688 294	873 289	1045 285	1221 278	
	Max.int. 150	126 364	292 362	508 358	666 354	852 350	1020 346	1197 339	

BMT 500 [523.6cm³/rev.]

Pressure (MPa)

		Pressure (mPa)				Max.cont.		Max.int.
		3	6	9	12	14	16	18
Flow (L/min)	10	222 18	451 18	692 18	892 17	1050 16	1193 15	1340 13
	20	231 37	464 36	714 35	918 34	1070 33	1220 32	1377 30
	40	230 75	466 74	727 73	941 72	1094 70	1244 68	1422 64
	60	225 113	457 112	714 111	941 109	1088 107	1245 105	1409 101
	80	213 151	431 150	696 149	927 147	1076 145	1244 143	1401 138
	100	194 189	420 188	680 187	901 185	1063 183	1224 181	1383 177
	125	182 237	398 236	641 235	877 233	1024 231	1199 229	1352 225
	150	147 284	369 283	618 282	853 280	1004 278	1167 276	1325 272
Max.cont.								
Max.int.								

BMT 630 [629.1cm³/rev.]

Pressure (MPa)

		Pressure (mPa)				Max.cont.		Max.int.	
		3	6	9	10.5	12	14	16	
Flow (L/min)	10	233 14	520 14	795 13	902 13	1074 13	1194 11	1363 11	
	20	237 28	554 27	837 27	953 26	1117 26	1239 24	1407 22	
	40	239 62	553 62	860 61	987 60	1171 59	1308 56	1483 54	
	60	223 94	544 94	863 92	978 91	1172 90	1318 86	1498 82	
	80	220 123	537 122	854 121	965 119	1172 118	1314 114	1497 110	
	100	208 156	522 155	832 153	945 152	1156 150	1303 147	1488 142	
	Max.cont. 125	201 196	499 196	810 194	931 192	1137 191	1292 187	1472 183	
	Max.int. 150	174 233	492 232	785 231	921 230	1121 227	1277 223	1454 217	

BMT 800 [801.8cm³/rev.]

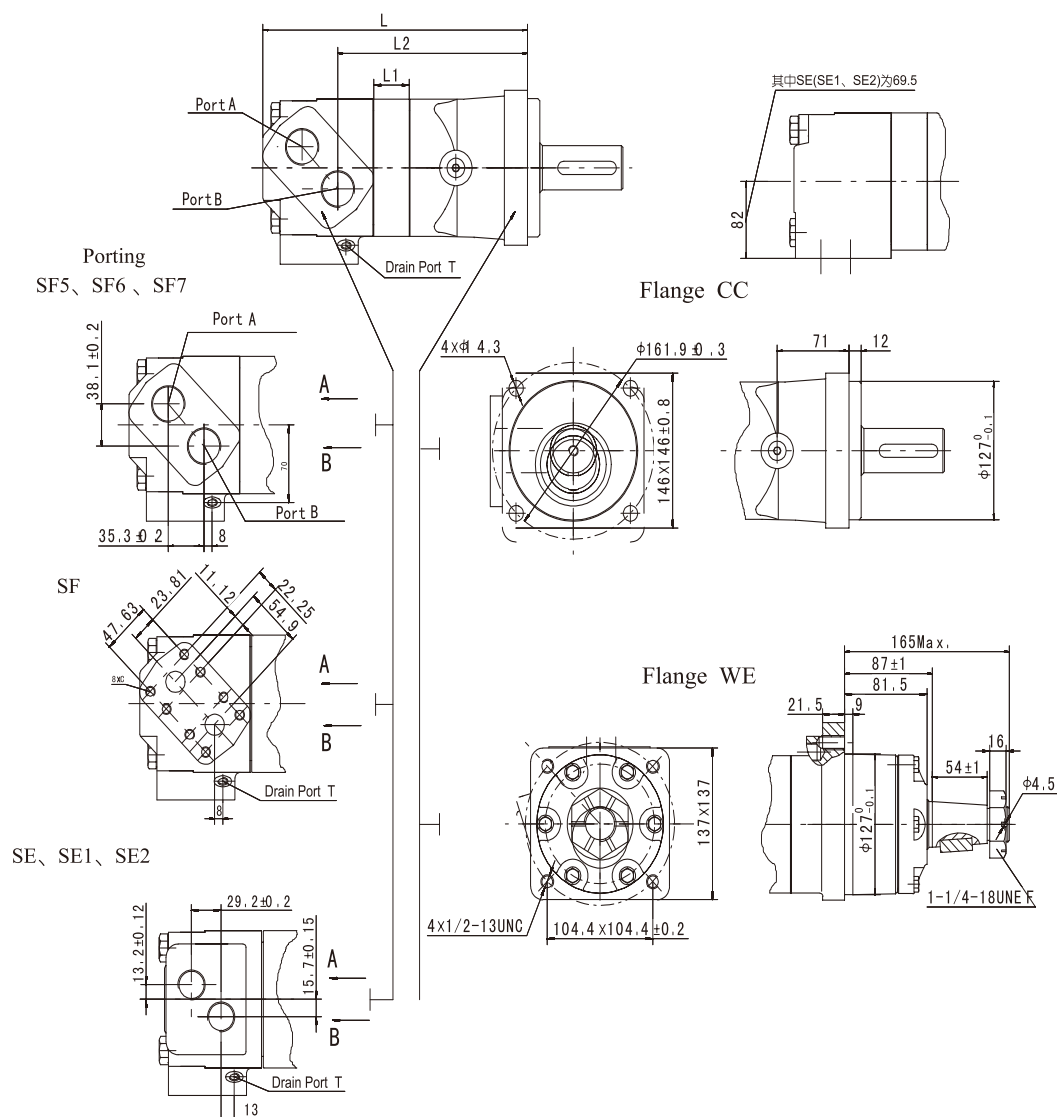
Pressure (MPa)

		Max.cont.				Max.int.	
		3	6	9	10.5	12.5	13
Flow (L/min)	10	346	677	1003	1159	1365	1390
		12	12	11	11	11	10
	20	356	692	1034	1183	1404	1458
		24	24	24	23	22	18
	40	365	703	1066	1236	1459	1516
		50	50	49	48	46	40
Max.cont.	60	354	703	1060	1237	1464	1520
		74	73	71	71	68	63
Max.int.	80	332	686	1050	1226	1464	1514
		99	98	98	96	93	86
Max.int.	100	305	654	1025	1207	1445	1506
		125	123	123	121	118	110
Max.int.	125	280	622	989	1181	1422	1487
		154	153	153	150	149	140
Max.int.	150	247	590	953	1156	1406	1476
		185	184	183	181	179	172

Torque (N·m) 1121
Speed (rpm) 227

BMTE Series Hydraulic Motor

■ BMTE Dimensions and Mounting Data



Model	L	L1	L2
BMTE230	238.5	12	164.5
BMTE250	240.5	14	166.5
BMTE315	246.5	20	172.5
BMTE400	253.5	27	179.5
BMTE500	261.5	35	187.5
BMTE630	273.5	47	199.5
BMTE800	284.5	58	210.5

Note:1)The data for the port of SF (SF5 and SF6and sf7)

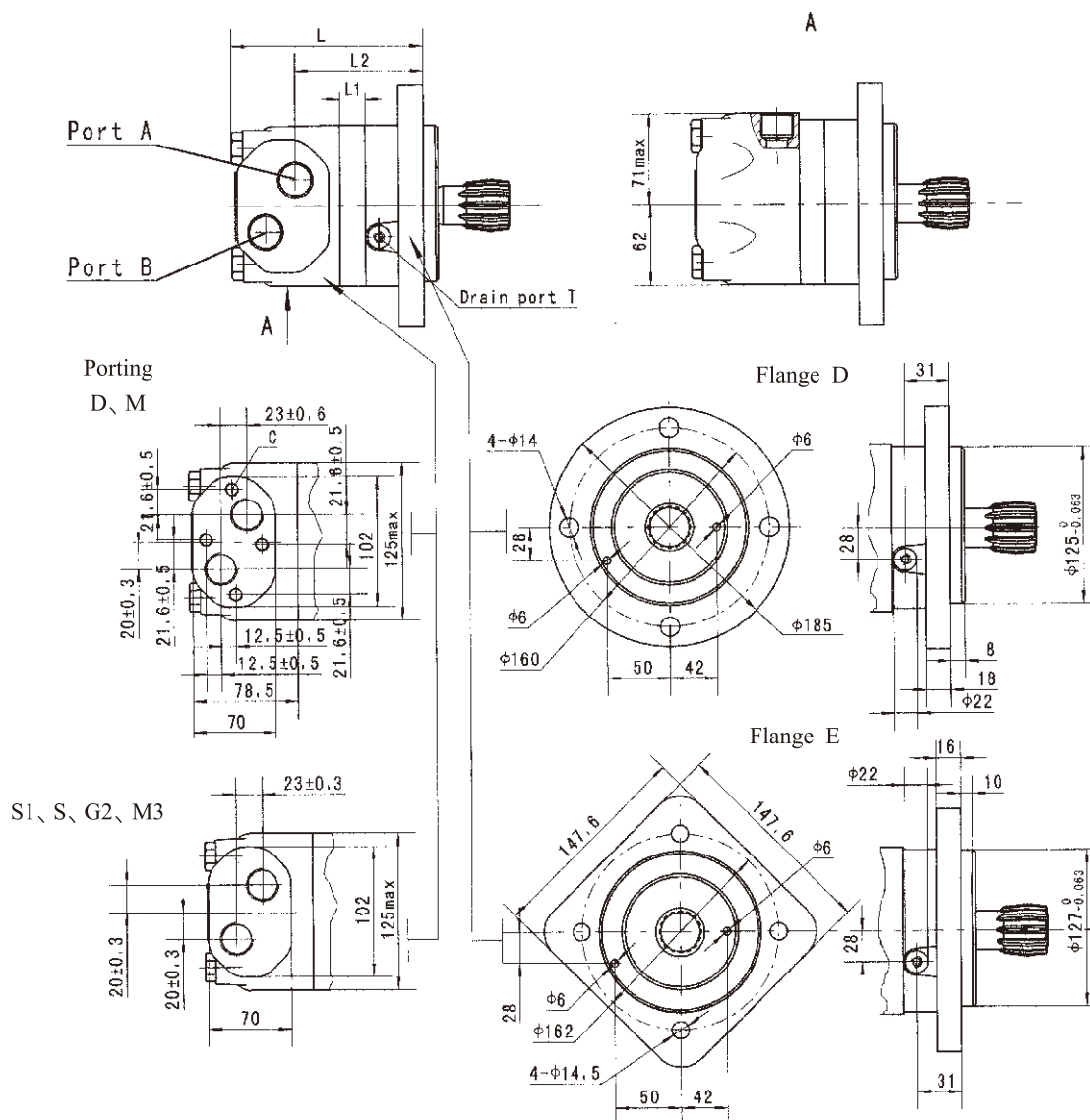
2)The data for the port of SE (SE1 and SE2) and flange WE:L-70 and L2-59.

3)The thickness of the stator and rotor for disp,from 315 to 800 is the dimension of L1 adding on 7mm.

Content	Code						
Mounting	SF5(depth)	SF6 (depth)	SF7 (depth)	SF (depth)	SE (depth)	SE1 (depth)	SE2(depth)
P(A,B)	1-5/16-12UN (18)	M33 x 2 (18)	G1 (18)	3/4" (18)	1-1/16-12UN (18)	1-1/16-12UN (18)	G3/4 (18)
T	7/16-20UNF (12)	M14 x 1.5 (12)	G1/4 (12)	7/16-20UNF (12)	9/16-18UNF (12)	7/16-20UNF (12)	G1/4 (12)
C	--	--	--	8 x 3/8-16UNC	--	--	--

BMTS Series Hydraulic Motor

■ BMTS Dimensions and Mounting Data

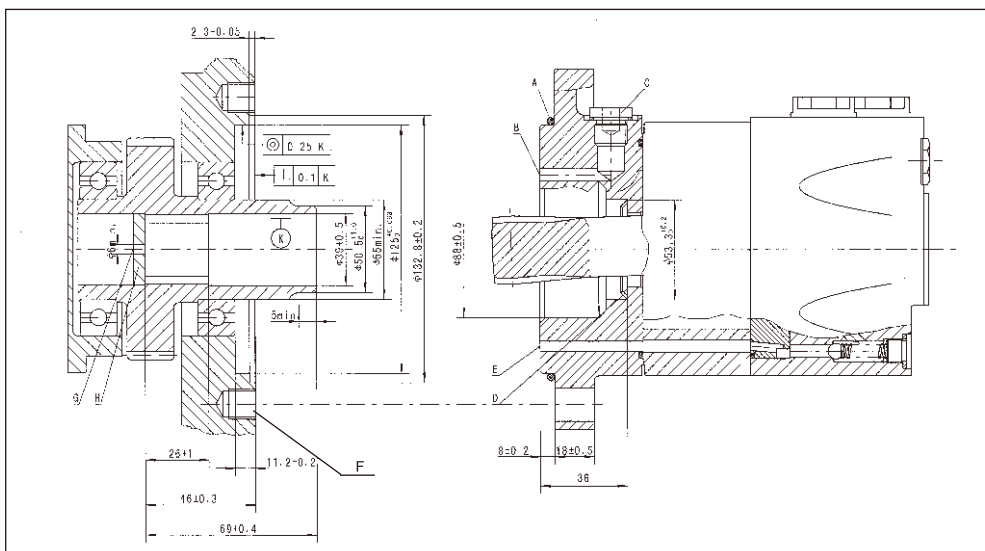


Model	L	L1	L2
BMT160	148	17	96.5
BMT200	152	21	100.5
BMT250	157	14	109
BMT315	163	20	115
BMT400	170	27	122
BMT500	178	35	130
BMT630	190	47	142
BMT800	201	58	153

Content	Code					
Mounting	D (depth)	M (depth)	S (depth)	G (depth)	M3 (depth)	S1 (depth)
P(A,B)	G3/4 (18)	M27 x 2 (18)	1-1/16-12UN (18)	G3/4 (18)	M27 x 2 (18)	1-1/16-12UN (18)
T	G1/4 (12)	M14 x 1.5 (12)	9/16-18UNF (12)	G1/4 (12)	M14 x 1.5 (12)	7/16-20UNF (12)
C	4-M10(10)	4-M10(10)	--	--	--	--

Note: 1) The thickness of the stator and rotor for disp. from 160 to 200 is the dimension of L1 adding on 3mm.
 2) The thickness of the stator and rotor for disp. from 250 to 800 is the dimension of L1 adding on 7mm.

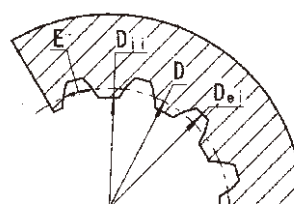
■ BMTS Mounting Data



- A: O-ring:125x3
- B: External drain channel
- C: Drain connection G 1/4;12 mm deep
- D: Conical seal ring
- E: Internal drain channel
- F: M12;min. 18mm deep
- G: Oil circulation hole
- H: Hardened stop plate

INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

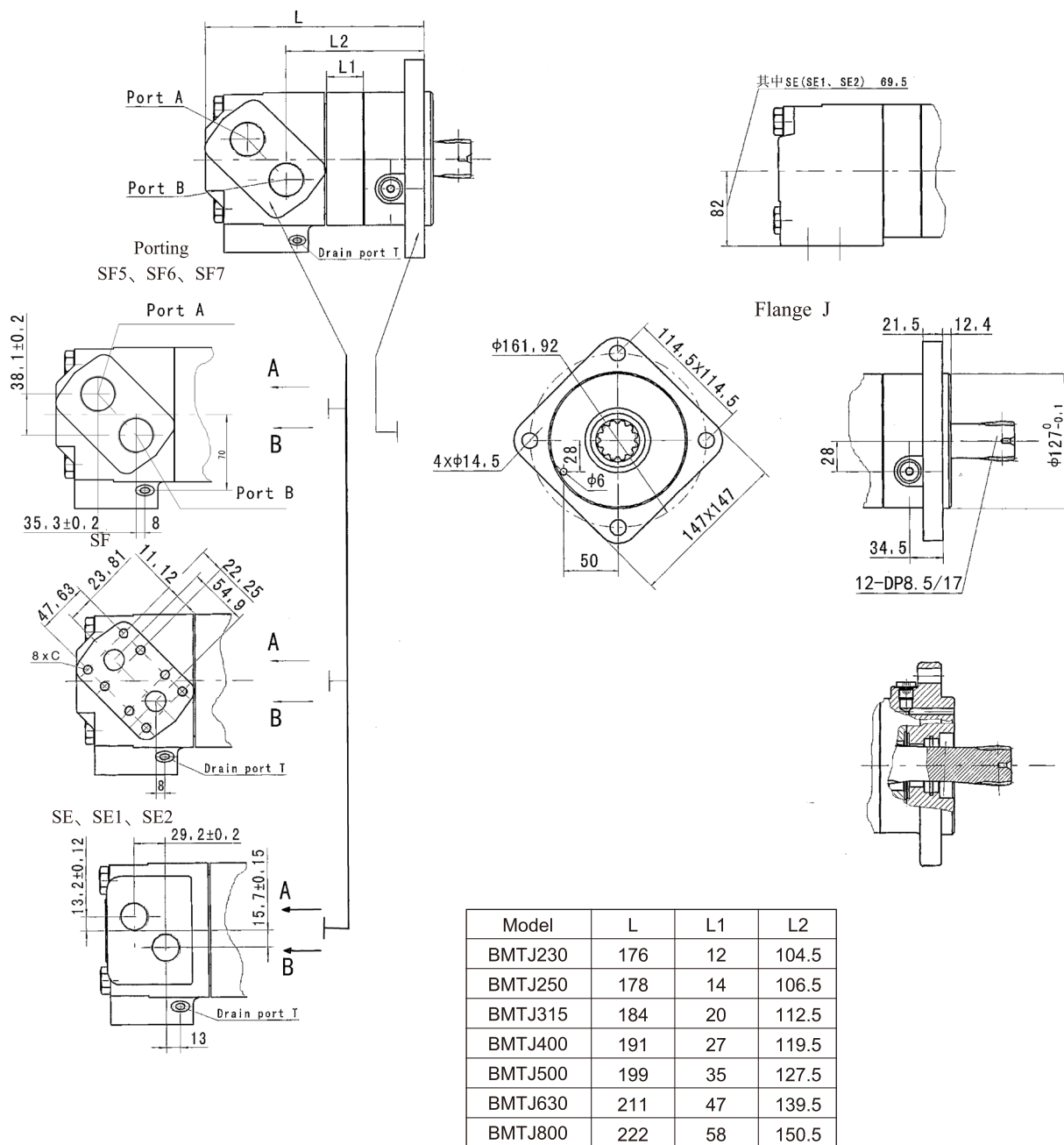
Fillet Root Side Fit		mm
Number of Teeth	Z	16
Diametral Pitch	DP	12/24
Pressure Angle	α_D	30°
Pitch Dia.	D	ø33.8656
Major Dia.	D_{ei}	ø38.4 ^{+0.25} ₀
Minor Dia.	D_{ii}	ø32.15 ^{+0.04} ₀
Space Width [Circular]	E	4.516±0.037



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

BMTJ Series Hydraulic Motor

■ BMTJ Dimensions and Mounting Data



Note:1)The data for the port of SF (SF5 and SF6 andSF7).

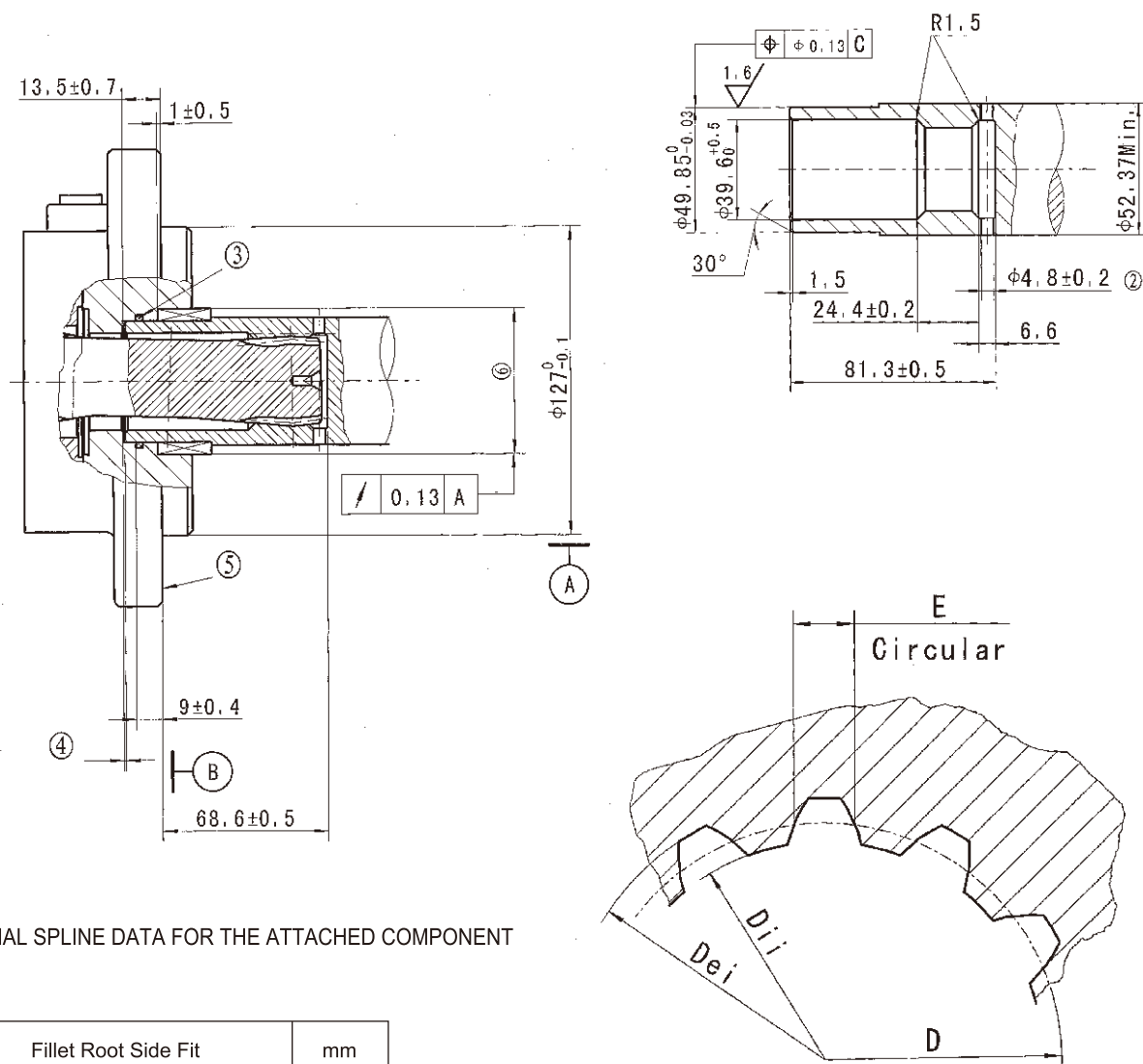
2)The data for the port of SE (SE1 and SE2) and flange WE:L-70 and L2-59.

3)The thickness of the stator and rotor is the dimension of L1 adding on 7mm.

Content	Code						
	SF5 (depth)	SF6 (depth)	SF7 (depth)	SF (depth)	SE (depth)	SE1 (depth)	SE2 (depth)
P(A,B)	1-5/16-12UN (18)	M33 x 2 (18)	G1 (18)	3/4" (18)	1-1/16-12UN (18)	1-1/16-12UN (18)	G3/4 (18)
T	7/16-20UNF (12)	M14 x 1.5 (12)	G1/4 (12)	7/16-20UNF (12)	9/16-18UNF (12)	7/16-20UNF (12)	G1/4 (12)
C	--	--	--	8 x 3/8-16UNC	--		

BMTJ Series Hydraulic Motor

■ BMTJ Dimensions and Mounting Data



INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

Fillet Root Side Fit		mm
Number of Teeth	Z	12
Diametral Pitch	DP	8.5/17
Pressure Angle	D	30°
Pitch Dia.	α_D	$\phi 35.858823$
Major Dia.	D_{ei}	$\phi 38.97^{+0.20}_0$
Minor Dia.	D_{ii}	$\phi 33.3^{+0.18}_0$
Space Width [Circular]	E	5.866 ± 0.032
Dimension between two pins($\phi 4$)	M_e	$26.929-27.084$

① Internal spline in mating part to be as follows: Material to be ASTM A304, 8620H. Carborize to a hardness of 60-64HRC with case depth (to 50HRC) of 0.75-1 [.030-.040] (dimensions apply after heat treat).

② Mating part to have critical dimensions as shown, Oil holes must be provided and open for proper oil circulation.

③ Some means of maintaining clearance between shaft and mounting flange must be provided.

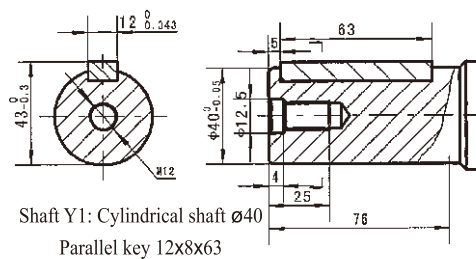
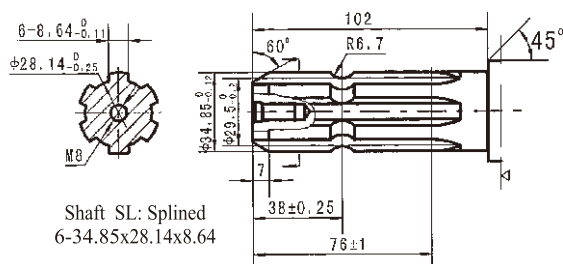
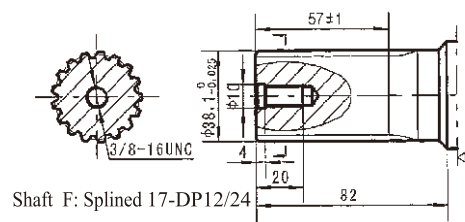
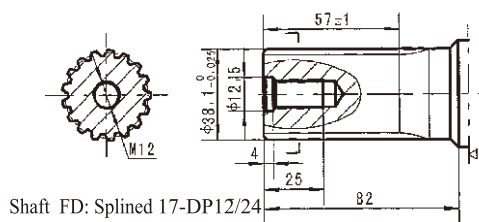
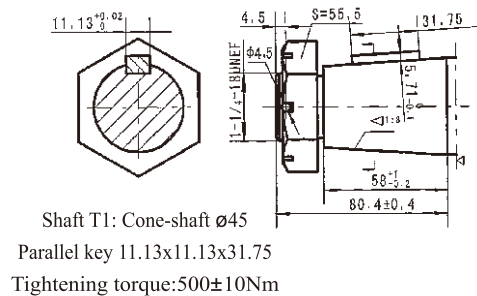
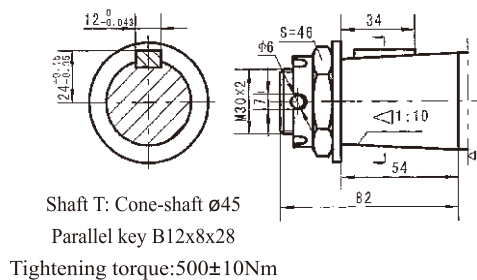
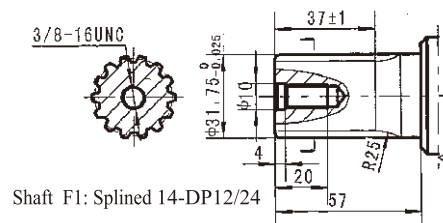
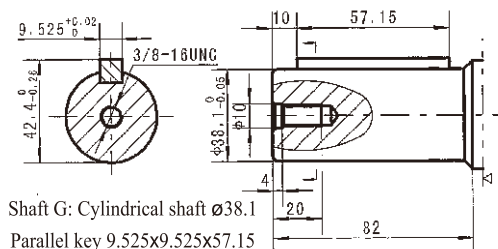
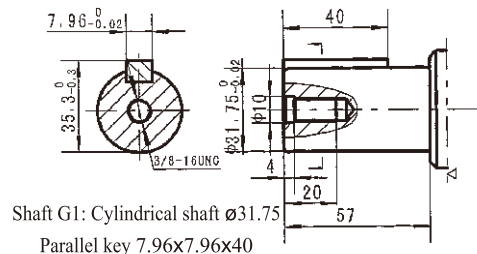
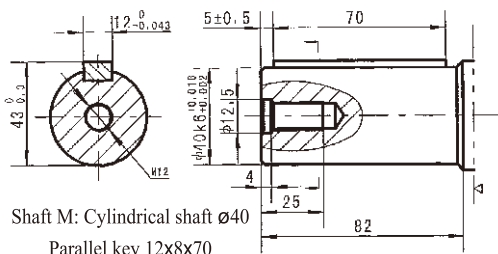
④ Seal to be furnished with motor for proper oil circulation thru splines.

⑤ Similar to SAE "C" Four Bolt Flange

⑥ Counterbore designed to adapt to a standard sleeve bearing 50.010-50.038 [1.9689-1.9700] ID by 60.51-60.079 [2.3642-2.3653] O.D. (Oilite bronze sleeve bearing).

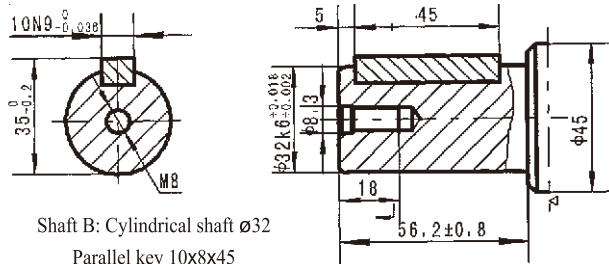
C This surface to be diameter of output shaft.

■ Shaft Extensions for BMT(E) Motors

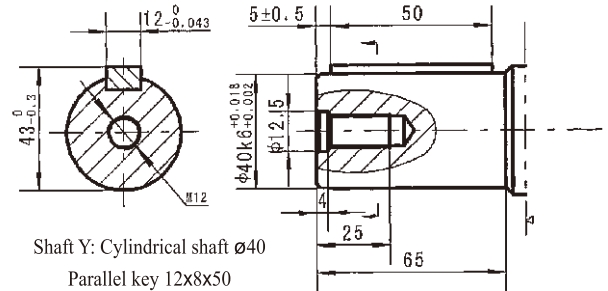


▷ Motor Mounting Surface

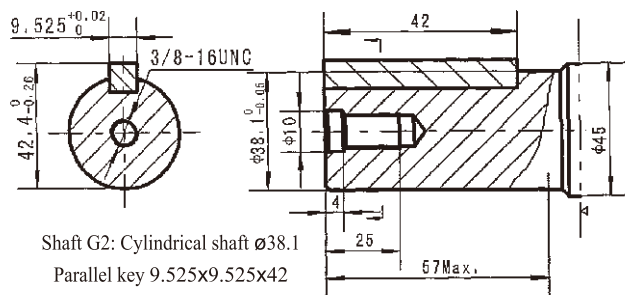
■ Shaft Extensions for BMT(E) Motors



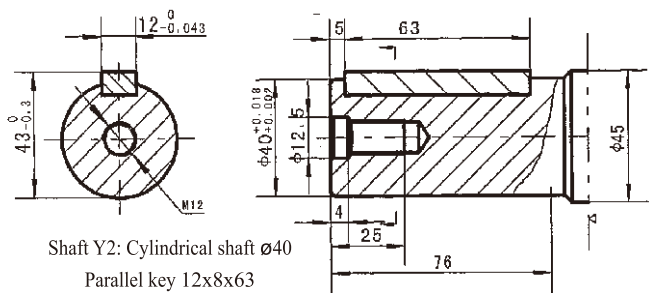
Shaft B: Cylindrical shaft $\varnothing 32$
Parallel key 10x8x45



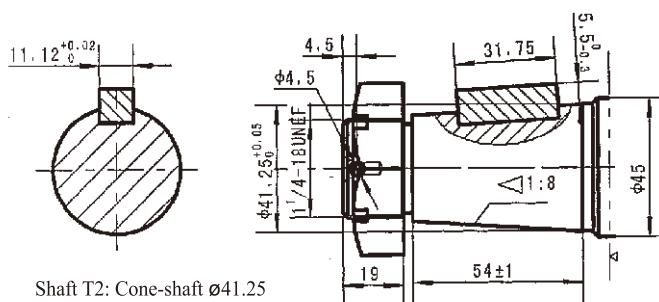
Shaft Y: Cylindrical shaft $\varnothing 40$
Parallel key 12x8x50



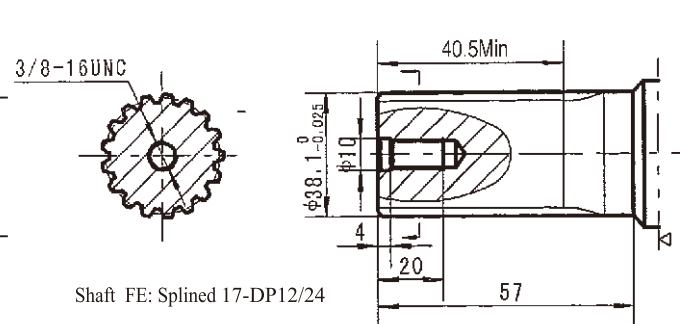
Shaft G2: Cylindrical shaft $\varnothing 38.1$
Parallel key 9.525x9.525x42



Shaft Y2: Cylindrical shaft $\varnothing 40$
Parallel key 12x8x63



Shaft T2: Cone-shaft $\varnothing 41.25$
Parallel key 11.13x11.13x31.75
Tightening torque: 500 ± 10 Nm

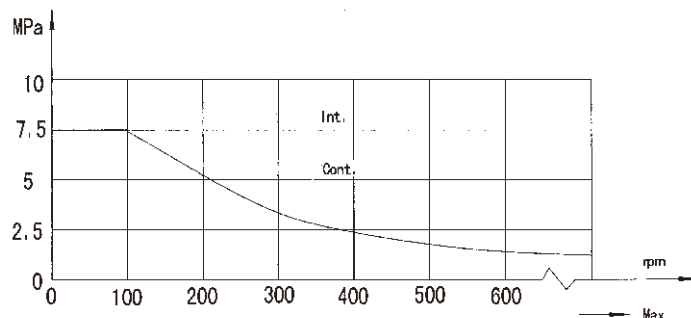
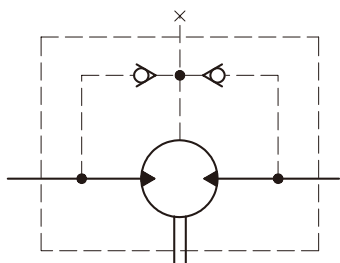


Shaft FE: Splined 17-DP12/24

▷ Motor Mounting Surface

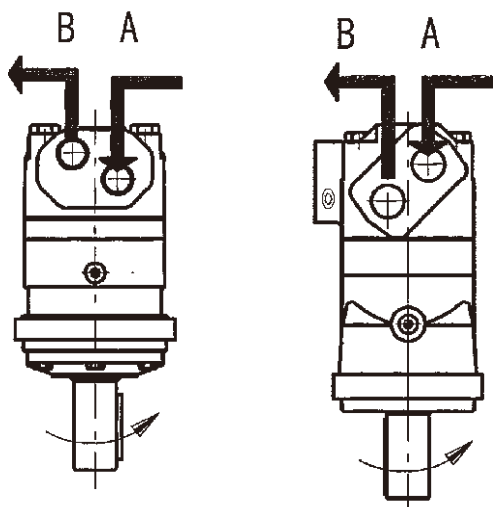
BMT Series Hydraulic Motor

■ Permissible shaft seal pressure



■ 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.

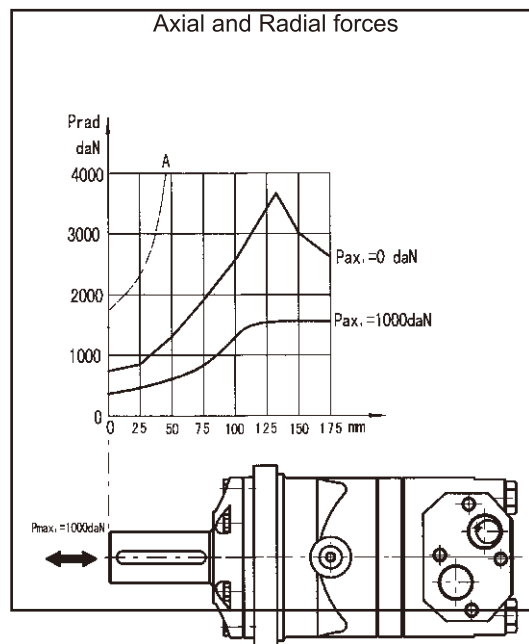


In applications without drain line, output shaft seal exceeds a bit of the pressure in the return line. When applications use the drain line, the pressure of output shaft seal equals the pressure in drain line.

■ 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	2.5
	35	1.5
21	20	5
	35	3



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.

BMT&BMTS Series Hydraulic Motor

Order Code

1	2	3	4	5	6	7	8
BMT							
1	2	3	4	5	6	7	8
BMTS							

Pos.1	2	3	4	5	6	7	8
Code	Disp.	Flange	Output Shaft	Ports and Drain Port	Rotation Direction	Paint	Unusually Function
BMT	160 200 250 315 400 500 630 800	4 4-Ø14 Square-flange Ø160, pilot Ø125 × 9	M	D G3/4 Manifold Mount, 4-M10, G1/4 M M27 × 2 Manifold Mount, 4-M10, M14 × 1.5 S 1-1/16-12UN O-ring, 9/16-18UNF S1 1-1/16-12UN O-ring, 7/16-20UNF G G3/4, G1/4 M3 M27 × 2, M14 × 1.5	Omit Standard R Opposite	00 Omit B S No paint Blue Black Silver grey	Standard Free Running Low Speed
			G				
			F				
			FD				
			T				
			T1				
			SL				
			G1				
BMTS		D 4-Ø14 Circle-flange Ø160, pilot Ø125 × 8 E 4-Ø14.5 Square-flange Ø162, pilot Ø127 × 10	Omit				

BMTE&BMTJ Series Hydraulic Motor

Order Code

1	2	3	4	5	6	7	8
BMTE							

1	2	3	4	5	6	7	8
BMTJ							

Pos.1	2	3	4	5	6	7	8
Code	Disp.	Flange	Output Shaft	Ports and Drain Port	Rotation Direction	Paint	Unusually Function
BMTE	230	CC 4-Ø14.3 Square-flange Ø161.9, pilot Ø127 × 12	G2 Shaft Ø38.1 ,parallel key 9.52×9.52×42	SF 3/4" , Manifold Mount, 8-3/8-16UNC, 7/16-20UNF SF5 1-5/16-12UN O-ring, 7/16-20 UNF SF6 M33×2, M14×1.5 SF7 G1, G1/4 SE 1-1/16-12UN O-ring, 9/16-18UNF SE1 1-1/16-12UN O-ring, 7/16-20 UNF SE2 G3/4, G1/4	Omit Standard Opposite R	00 Omit Blue Black Silver grey	Omit F LS Standard Free Running Low Speed
	250		FE Shaft Ø38.1 ,splined tooth 17-DP12/24				
	315		Y1 Shaft Ø40, parallel key 12×8×63				
	400		Y2 Shaft Ø40, parallel key 12×8×63				
	500		T2 Cone-shaft 1:8 Ø41.25, parallel key 11.13×11.13×31.75				
	630	WE 4-1/2-13UNC Wheel- flange Ø147.6, pilot Ø127 × 9	T3 Cone-shaft 1:8 Ø41.25, parallel key 11.13×11.13×31.75				
BMTJ	800	J 4-Ø14.5 Square-flange Ø161.9 pilot Ø127 × 12.4	Omit Short shaft 12-DP8.5/17				

Note: When the table is used, please fill the code of left rows in the table and give us, which the code information consists of construction, displacement, mounting flange, output shaft and ports. If the specification is not in the table or you have specific requirements, please contact us.