VNKP Series Hydraulic Motor

INTRODUCTION

VNKP series motor are small volume, economical type, which is designed with shaft distribution flow, which adapt the Gerotor gear set design and provide compact volume, high power and low weight.



CHARACTERISTIC FEATURES

* **Advanced manufacturing devices** for the Gerotor gear set, which provide small volume, high efficiency and long life.
* **Shaft seal** can bear high pressure of motor of which can be used in parallel or in series.
* **Advanced construction design**, high power and low weight.
* **HPS Shaft seal** can bear high pressure (200bar) of motor of which can be used in parallel or in series.
* **The output shaft** runs in needle bearing capable of absorbing static and dynamic axial and radial loads.

SPECIFICATION Main Specification

Technical data for VNKP with 25 and 1 in and 1 in splined and 28.56 tapered shaft

Type		VNKP VNKPH VNKPW 27	VNKP VNKPH VNKPW 36	VNKP VNKPH VNKPW 50	VNKP VNKPH VNKPW 80	VNKP VNKPH VNKPW 100	VNKP VNKPH VNKPW 125	VNKP VNKPH VNKPW 160	VNKP VNKPH VNKPW 200	VNKP VNKPH VNKPW 250	VNKP VNKPH VNKPW 315	VNKP VNKPH VNKPW 400	VNKP VNKPH VNKPW 500
Geometric displacement (cm3/rev.)		**26.6**	**36**	**51.7**	**77.7**	**96.2**	**120.2**	**157.2**	**194.5**	**240.3**	**314.5**	**389.5**	**486.5**
Max. speed (rpm)	cont.	1465	1500	1150	770	615	490	383	310	250	192	155	120
	int.	1655	1650	1450	960	770	615	475	385	310	240	190	150
Max. torque (N•m)	cont.	35	55	100	146	182	236	302	360	380	375	360	385
	int.	50	76	128	186	227	290	370	440	460	555	525	560
	peak	70	96	148	218	264	360	434	540	550	650	680	680
Max. output (kW)	cont.	6	8.0	10.0	10.0	11.0	10.0	10.0	10.0	8.5	7.0	6.0	5.0
	int.	8	11.5	12.0	12.0	13.0	12.0	12.0	12.0	10.5	8.5	7.0	6.0
Max. pressure drop (MPa)	cont.	10	12.5	14	14	14	14	14	14	11	9	7	6
	int.	14	16.5	17.5	17.5	17.5	17.5	17.5	17.5	14	14	10.5	9
	peak	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	18	16	14	12
Max. flow (L/min)	cont.	40	55	60	60	60	60	60	60	60	60	60	60
	int.	45	60	75	75	75	75	75	75	75	75	75	75
Weight (kg)		5.1	5.6	5.6	5.7	5.9	6.0	6.2	6.4	6.7	6.9	7.4	8

***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.

Main Specification



SPECIFICATION Main Specification

Technical data for VNKP with 31.75 and 32 shaft

Type		VNKP 36	VNKP 50	VNKP 80	VNKP 100	VNKP 125	VNKP 160	VNKP 200	VNKP 250	VNKP 315	VNKP 400	VNKP 500
Geometric displacement (cm3/rev.)		**36**	**51.7**	**77.7**	**96.2**	**120.2**	**157.2**	**194.5**	**240.3**	**314.5**	**389.5**	**486.5**
Max. speed (rpm)	cont.	1500	1150	770	615	490	383	310	250	192	155	120
	int.	1650	1450	960	770	615	475	385	310	240	190	150
Max. torque (N•m)	cont.	55	100	146	182	236	302	360	460	475	490	430
	int.	76	128	186	227	290	370	440	570	555	580	560
	peak	96	148	218	264	360	434	540	670	840	840	780
Max. output (kW)	cont.	8.0	10.0	10.0	11.0	10.0	10.0	10.0	8.5	7.0	6.0	6.0
	int.	11.5	12.0	12.0	13.0	12.0	12.0	12.0	10.5	8.5	7.0	7.0
Max. pressure drop (MPa)	cont.	12.5	14	14	14	14	14	14	14	12	9.5	7
	int.	16.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	14	11.5	9
	peak	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	18	13
Max. flow (L/min)	cont.	55	60	60	60	60	60	60	60	60	60	60
	int.	60	75	75	75	75	75	75	75	75	75	75
Weight (kg)		5.6	5.6	5.7	5.9	6.0	6.2	6.4	6.7	6.9	7.4	8.0

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

Performance Data



VNKP 27 [26,6 cm3/rev.]

Pressure (MPa)

Flow (L/min)	3	6	8	10	12	14
			Max. cont			Max. int
5	11 155	20 122	26 90			
10	12 340	22 315	29 285	35 240	42 180	48 140
15	12 530	23 500	30 465	35 420	43 375	50 320
20	11 720	22 670	30 640	35 595	44 545	51 490
25	11 900	21 875	29 840	35 800	43 755	51 700
35	10 1265	20 1235	27 1200	34 1170	42 1140	50 1100
40	8 1465	19 1430	26 1400	33 1370	41 1335	49 1280
45	8 1655	19 1610	26 1565	33 1510	41 1460	49 1405

Max. int Max. cont

Torque (N•m) 19
Speed (rpm) 1610

VNKP 36 [36 cm3/rev.]

Pressure (MPa)

Flow (L/min)	3	6	7	8	10	11	12,5	16,5
				Max. cont				Max. int
8	13 214	25 205	29 200	34 194	43 187	48 179		
15	13 406	25 398	29 391	34 383	43 374	48 366	56 353	75 324
20	13 541	24 534	29 528	34 521	43 513	48 500	56 486	76 458
30	12 814	24 804	29 792	34 778	43 763	48 749	56 726	76 701
35	12 952	23 944	28 930	34 913	43 897	48 879	56 858	76 833
40	12 1090	23 1078	28 1064	32 1048	41 1024	47 998	55 977	75 943
45	11 1232	22 1218	26 1196	32 1175	41 1149	46 1118	54 1080	74 1044
55	6 1505	15 1494	22 1480	28 1466	37 1438	44 1406	52 1367	71 1309
60	3 1650	11 1640	18 1626	20 1603	30 1571	38 1536	49 1502	67 1446

Max. int Max. cont

VNKP 50 [51.7 cm3/rev.]

Pressure (MPa)

Flow (L/min)	3	6	8	10	12.5	14	16	17,5
					Max. cont			Max. int
8	20 151	41 134	56 115	69 90	89 56	95 42		
15	19 286	40 274	56 261	71 243	91 204	100 182	112 139	120 102
20	18 382	39 373	55 361	71 348	92 318	101 309	117 287	128 251
30	17 573	38 568	55 558	71 535	91 503	98 488	116 462	124 440
35	17 670	38 661	54 652	69 640	89 606	98 589	117 562	124 548
45	14 863	36 858	53 849	67 837	88 807	98 788	114 764	123 746
55	12 1055	33 1042	50 1028	65 1010	85 979	96 963	111 947	121 920
60	10 1150	32 1143	47 1126	64 1111	83 1079	94 1065	108 1043	119 1015
75	6 1440	25 1430	42 1416	56 1395	76 1367	87 1351	101 1335	112 1312

Max. int Max. cont

VNKP 80 [77.7 cm3/rev.]

Pressure (MPa)

Flow (L/min)	3	6	8	10	12.5	14	16	17,5
					Max. cont			Max. int
8	32 97	62 87	85 74	104 55	129 33	144 22		
15	32 186	63 181	84 170	107 154	126 132	144 118	165 86	
20	31 251	63 243	84 236	107 225	132 207	146 196	168 178	185 155
30	31 381	62 379	83 368	106 355	131 332	146 316	168 285	186 263
35	30 443	59 435	81 426	102 415	130 397	144 383	167 361	185 342
45	25 570	58 564	79 554	100 543	126 526	142 509	165 483	182 458
55	23 696	57 685	78 672	97 656	124 643	140 630	161 602	179 579
60	20 761	53 753	75 744	94 736	120 720	137 706	160 681	177 660
75	14 948	44 940	67 931	87 920	112 906	151 890	169 871	169 854

Max. int Max. cont

Torque (N•m) 87
Speed (rpm) 920

Cont. Int.

Performance Data



VNKP 100 [96.2 cm3/rev.]

Pressure (MPa)

Flow (L/min)	3	6	8	10	12.5	14	16	17,5
						Max. cont		Max. int
8	40 81	77 75	105 69	130 57	161 36	180 24		
15	39 152	77 149	106 145	130 140	160 122	180 103	208 81	
20	36 204	74 200	104 195	128 190	161 177	179 166	205 148	227 133
30	33 308	72 304	103 298	125 290	160 280	177 268	203 255	225 231
35	30 360	70 352	98 343	122 331	159 320	176 306	202 294	224 275
45	29 462	67 458	95 451	118 443	155 433	174 419	200 402	220 383
55	25 566	64 558	93 549	116 540	152 529	170 515	198 498	217 478
60	22 618	60 611	91 601	114 589	149 580	167 570	194 558	213 540
75	15 771	54 763	83 755	106 744	141 735	160 724	186 708	205 693

Max. int Max. cont

VNKP 125 [120.2 cm3/rev.]

Pressure (MPa)

Flow (L/min)	3	6	8	10	12.5	14	16	17,5
						Max. cont		Max. int
8	51 63	98 60	137 55	168 47	208 28	236 15		
15	51 121	101 116	138 110	168 102	209 89	236 73	267 48	
20	48 162	98 158	135 153	167 148	211 137	237 128	269 109	290 94
30	46 243	96 239	132 234	164 227	209 216	232 202	264 189	287 176
35	42 284	92 279	130 274	160 269	206 259	229 247	260 231	284 222
45	37 370	89 362	125 355	157 348	201 340	224 327	261 310	281 296
55	33 452	84 446	122 438	152 431	196 420	218 412	252 402	275 384
60	29 490	78 482	117 475	146 468	191 459	215 448	248 439	272 427
75	18 615	66 606	107 598	133 586	179 575	202 563	236 549	260 528

Max. int Max. cont

VNKP 160 [157.2 cm3/rev.]

Pressure (MPa)

Flow (L/min)	3	6	8	10	12.5	14	16	17,5
						Max. cont		Max. int
8	62 49	120 48	170 46	212 42	263 26	290 14		
15	60 93	122 91	172 88	215 85	264 76	294 68	340 48	
20	57 125	120 123	170 120	214 117	262 110	290 106	340 92	371 81
30	53 187	115 184	164 181	206 178	259 175	288 168	335 155	368 139
35	49 220	110 216	160 213	202 209	255 205	284 202	328 192	362 176
45	44 283	102 280	154 276	196 272	248 267	278 260	321 250	358 238
55	40 345	99 342	148 340	191 336	243 331	272 328	316 320	351 303
60	33 377	94 374	144 371	188 367	236 363	267 359	308 353	345 342
75	19 473	80 469	124 465	170 459	216 453	252 447	296 440	325 424

Max. int Max. cont

VNKP 200 [194.5 cm3/rev.]

Pressure (MPa)

Flow (L/min)	3	6	8	10	12.5	14	16	17,5
						Max. cont		Max. int
8	79 40	164 39	207 38	250 35	320 28	360 22		
15	78 76	162 75	205 74	250 71	322 66	361 61	410 51	
20	76 100	158 98	203 97	247 95	320 92	358 89	403 73	422 57
30	70 151	153 149	200 147	245 145	315 142	350 139	398 131	417 120
35	66 177	149 175	194 173	232 171	297 168	343 166	386 160	415 149
45	63 228	146 226	190 224	230 221	294 218	340 215	383 210	410 198
55	54 280	140 278	181 276	224 274	286 271	334 269	371 263	400 250
60	38 304	127 302	164 300	212 297	270 294	325 291	356 286	395 272
75	22 382	96 378	145 374	192 371	235 368	293 364	321 360	367 350

Max. int Max. cont

Cont. Int.

Performance Data



VNKP 250 [240.3 cm3/rev.]

Pressure (MPa)

Max. cont / Max. int

Flow (L/min)	3	6	8	10	12.5	14	16	17,5
8	96 30	190 28	268 24	326 21	403 11			
15	98 60	194 58	270 54	327 50	405 40	450 30	510 12	
20	92 82	188 80	267 77	325 76	405 69	456 64	514 52	565 38
30	85 123	180 120	259 118	320 114	400 106	448 98	513 87	561 76
35	77 143	176 141	252 139	311 135	389 128	436 122	504 112	557 101
45	70 185	168 182	243 178	300 174	377 168	428 161	495 152	543 139
55	63 226	159 223	237 218	290 213	369 209	417 202	483 193	531 185
60 (Max. cont)	60 248	150 246	228 243	280 239	358 233	407 226	473 215	520 207
75 (Max. int)	34 309	128 306	202 302	264 297	342 292	387 286	448 278	488 264

Torque (N▪m) 128
Speed (rpm) 306

VNKP 315 [314.5 cm3/rev.]

Pressure (MPa)

Max. cont / Max. int

Flow (L/min)	3	5	7	9	10	12.5	14
8	123 25	215 23	292 21	368 17	405 11		
15	118 47	211 46	287 44	367 40	404 28	495 21	568 10
20	110 62	205 61	278 60	360 57	395 46	494 40	566 36
30	101 94	196 93	271 91	349 88	388 76	490 68	565 65
35	96 109	188 107	264 106	341 104	382 96	478 89	557 84
45	89 141	180 140	254 138	337 135	372 127	468 120	553 115
55	76 173	166 172	239 170	325 167	362 160	457 152	548 143
60 (Max. cont)	65 188	154 186	227 184	308 182	348 178	443 172	529 163
75 (Max. int)	40 236	120 234	201 232	279 228	323 226	418 223	497 214

VNKP 400 [389.5 cm3/rev.]

Pressure (MPa)

Max. cont / Max. int

Flow (L/min)	3	4.5	5.5	6.5	8	10	12.5
8	166 20	232 19	287 18	340 16	418 12		
15	165 38	228 36	277 35	337 33	417 31	496 27	612 21
20	162 50	223 49	273 49	331 48	413 45	495 41	608 35
30	154 76	216 75	266 74	318 73	405 71	486 67	600 60
35	146 88	210 87	256 87	312 86	395 83	480 80	588 75
45	132 114	197 113	243 112	300 110	383 108	464 106	576 99
55	117 139	184 137	227 136	283 135	363 135	450 132	552 123
60 (Max. cont)	102 153	163 152	215 150	272 148	347 146	436 143	532 138
75 (Max. int)	53 191	128 189	182 187	234 185	318 183	391 180	484 176

Torque (N▪m) 234
Speed (rpm) 185

VNKP 500 [486.5 cm3/rev.]

Pressure (MPa)

Max. cont / Max. int

Flow (L/min)	1.5	3	4.5	6	7	8	9
4	96 7	194 6	285 4				
8	98 15	201 15	304 14	391 14	443 12	512 9	574 7
15	96 30	192 30	284 29	380 28	421 26	496 23	550 22
20	96 40	191 40	280 40	372 39	418 37	493 33	546 31
30	91 61	185 60	272 60	360 58	412 56	486 53	541 50
40	86 81	172 80	261 80	343 79	408 76	480 73	538 70
50	78 102	160 101	241 100	332 98	391 96	466 93	528 90
60 (Max. cont)	66 122	134 121	213 120	305 119	371 117	438 114	496 110
70 (Max. int)	52 143	111 142	189 141	292 139	344 137	418 135	475 131
75	35 153	83 152	154 151	241 150	312 149	389 147	448 144

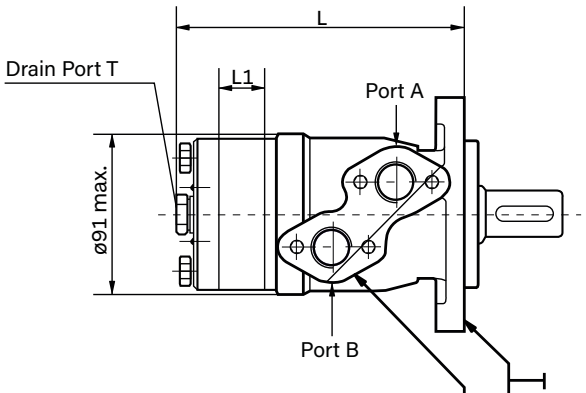
Torque (N▪m) 389
Speed (rpm) 147

Cont. Int.

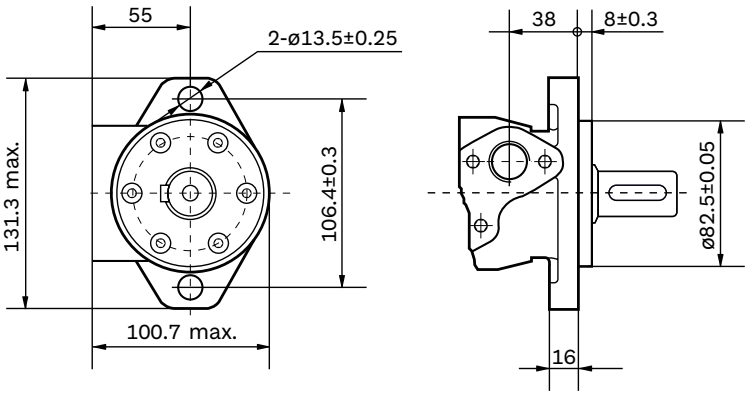


VNKP Dimensions and Mounting Data

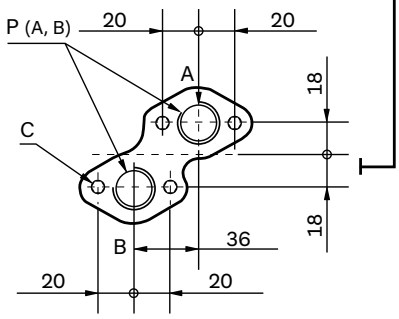
MOUNTING



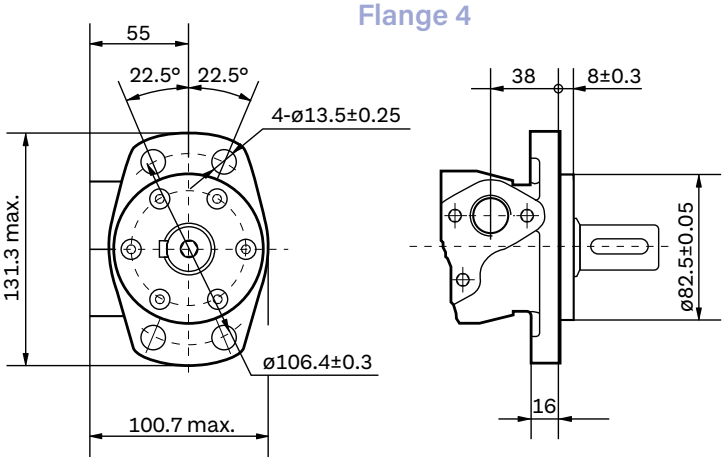
Flange 2



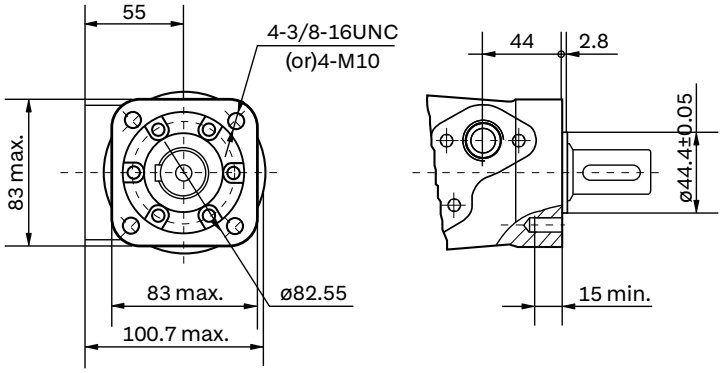
Port



Flange 4



Flange H4/H5

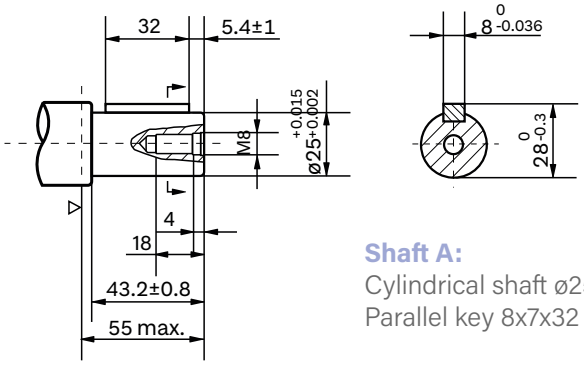


Model	L	L1
VNKP27	137	7
VNKP36	137	7
VNKP50	137	7
VNKP80	140.5	10.5
VNKP100	143	13
VNKP125	146	16
VNKP160	151	21
VNKP200	157	26
VNKP250	162	32
VNKP315	172	42
VNKP400	182	52
VNKP500	195	65

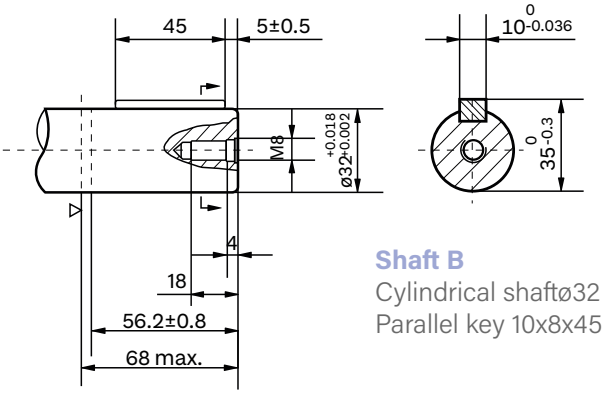
Mounting Code	**D** (depth)	**M** (depth)	**S** (depth)	**P** (depth)	**R** (depth)
P (A,B)	G1/2 (15)	M22 x 1.5 (15)	7/8-14 O-ring (17)	1/2-14NPTF (15)	PT(RC)1/2 (15)
C	4-M8 (13)	4-M8 (13)	4-5/16-18UNC(13)	4-5/16-18UNC(13)	4-M8 (13)
T	G1/4 (12)	M14 x 1.5 (12)	7/16-20UNF (12)	7/16-20UNF (12)	PT(RC)1/4 (9.7)



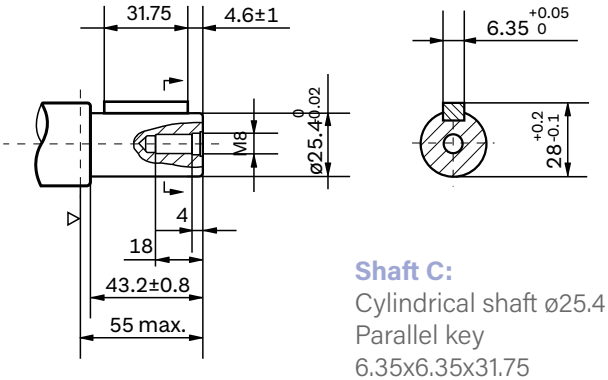
VNKP Shaft Extensions Dimensions Data



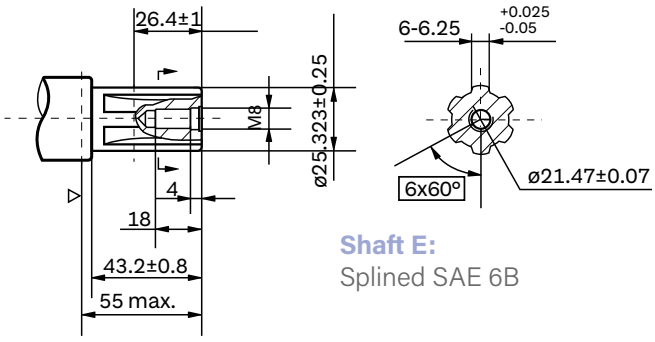
Shaft A:
Cylindrical shaft ø25
Parallel key 8x7x32



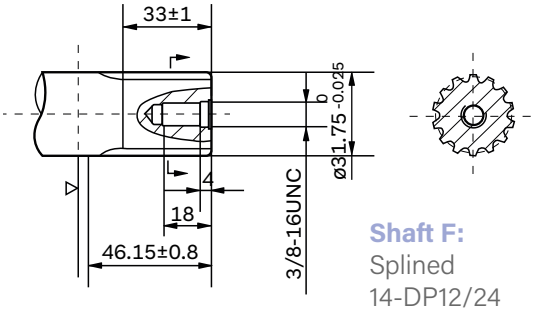
Shaft B
Cylindrical shaftø32
Parallel key 10x8x45



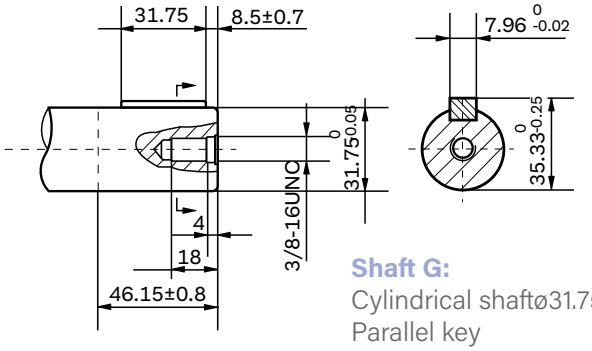
Shaft C:
Cylindrical shaft ø25.4
Parallel key
6.35x6.35x31.75



Shaft E:
Splined SAE 6B



Shaft F:
Splined
14-DP12/24

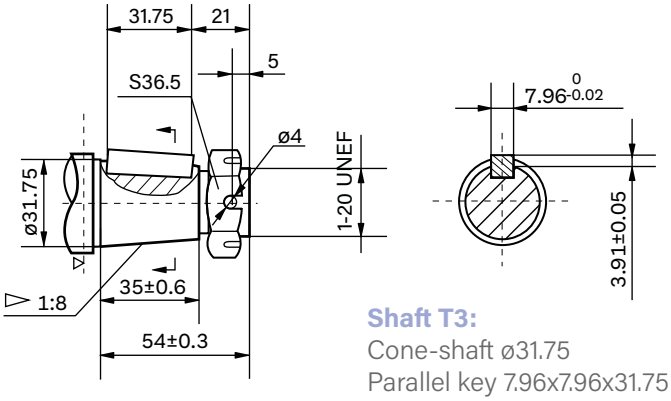


Shaft G:
Cylindrical shaftø31.75
Parallel key
7.96x7.96x31.75

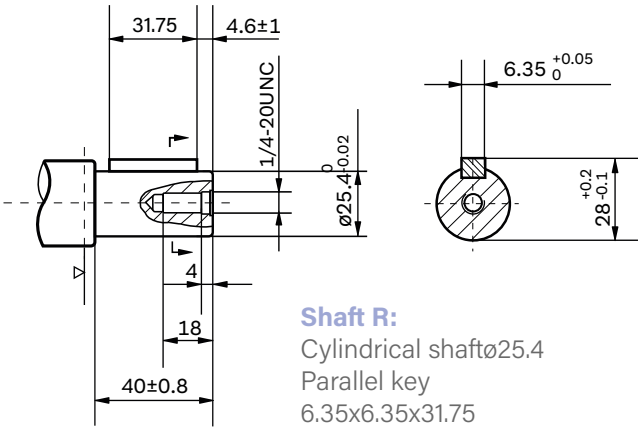
▷ Motor Mounting Surface

VNKP Shaft Extensions Dimensions Data

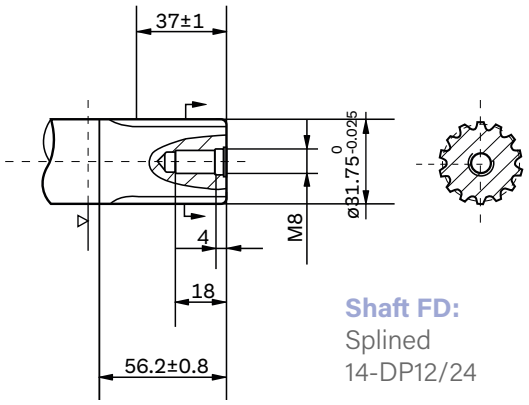




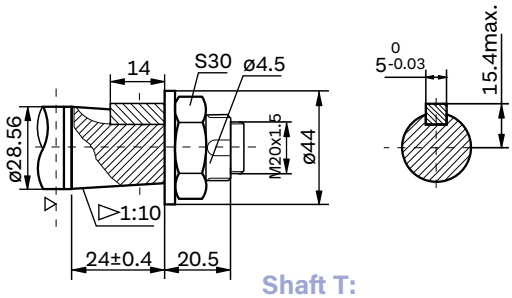
Shaft T3:
Cone-shaft ø31.75
Parallel key 7.96x7.96x31.75
Tightening torque:200±10Nm



Shaft R:
Cylindrical shaftø25.4
Parallel key
6.35x6.35x31.75



Shaft FD:
Splined
14-DP12/24

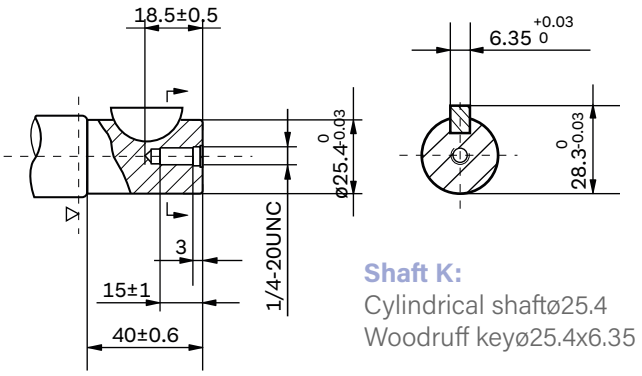


Shaft T:
Cone-shaft ø28.56
Parallel key B5x5x14
Tightening torque:100±10Nm

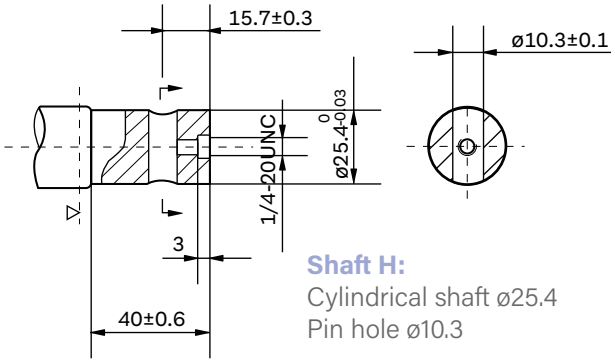
▷ Motor Mounting Surface

VNKP Shaft Extensions Dimensions Data

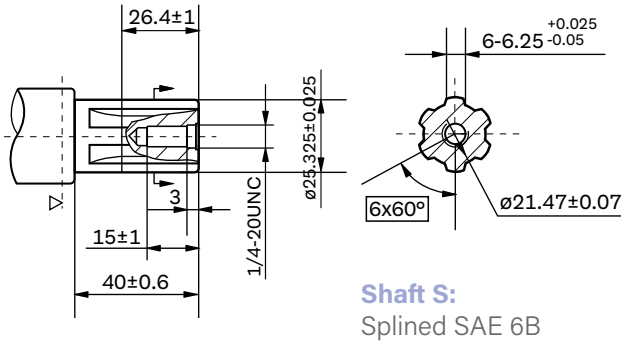




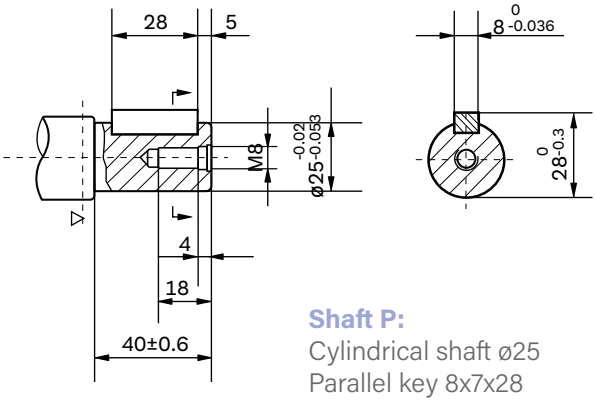
Shaft K:
Cylindrical shaftø25.4
Woodruff keyø25.4x6.35



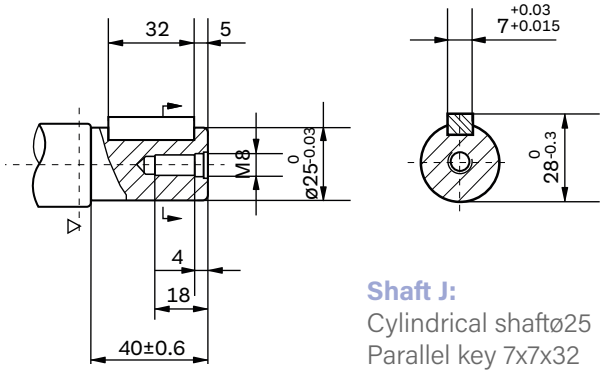
Shaft H:
Cylindrical shaft ø25.4
Pin hole ø10.3



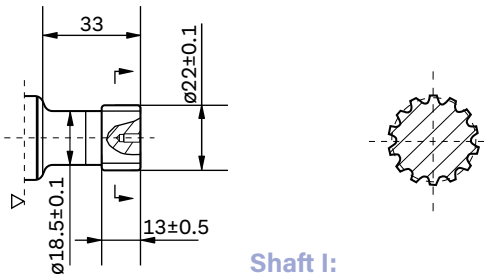
Shaft S:
Splined SAE 6B



Shaft P:
Cylindrical shaft ø25
Parallel key 8x7x28



Shaft J:
Cylindrical shaftø25
Parallel key 7x7x32



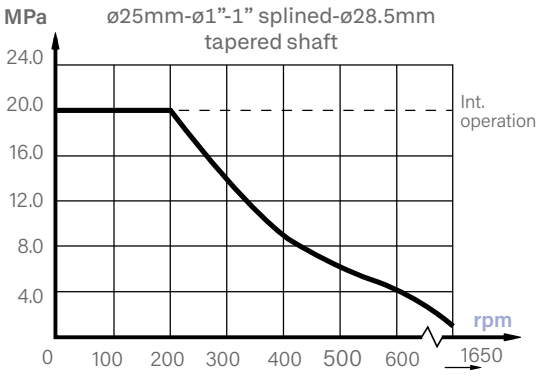
Shaft I:
Splined 13-DP16/32

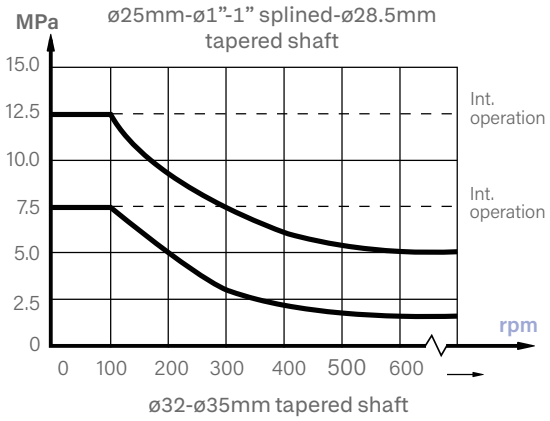
▷ Motor Mounting Surface

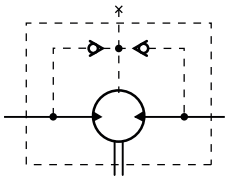
VNKP, VNKPH Series Hydraulic Motor



PERMISSIBLE SHAFT SEAL PRESSURE







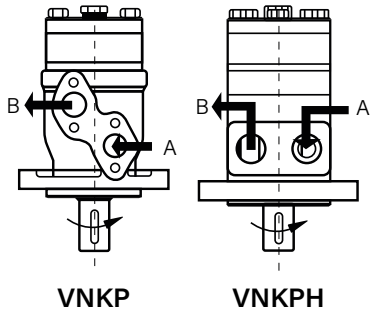
In applications without drain line, output shaft seal exceeds a bit of the pressure in the return line. When applications use the drain line, the pressure of output shaft seal equals the pressure in drain line.

DIRECTION OF SHAFT ROTATION: Standard

When facing shaft end of motor,shaft to rotate:

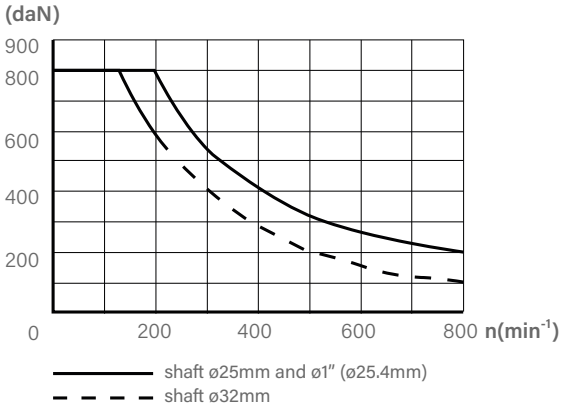
Clockwise when **port "A"** is pressurized.

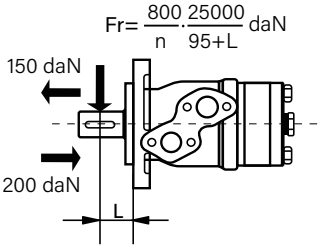
Counter-clockwise **port "B"** is pressurized.



VNKP **VNKPH**

STATUS OF THE SHAFT'S RADIAL FORCE





Fr= Radial Force (daN)
L= Distance (mm)
n= Speed (rpm)
Rhomb-flange L= 30mm
Square-flange L= 24mm

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 (PmPa)	Viscosity (mm^2/s)	Oil flow in the drain line (L/min)
10	20	2.5
	35	1.8
14	20	3.5
	35	2.8

Order Information

1	2	3	4	5	6	7	8
VNKP	—	—	—	—	—	—	—

Pos.1	2	3		4		5		6		7		8	
Code	Disp.	Flange		Output shaft		Ports and drain port		Rotation direction		Paint		Unusually Function	
VNKP	27 36 50 80 100 125 160 200 250 315 400 500	2	2-Ø13.5 Rhomb-flange, pilot Ø82.5×8	A	Shaft Ø25,parallel key 8x7x32	D	G1/2 Manifold Mount 4×M8, G1/4	Omit	Standard	00	No paint	Omit	Standard
		4	4-Ø13.5 Rhomb-flange, pilot Ø82.5×8	C	Shaft Ø25.4,parallel key 6.35x6.35x31.75	M	M22×1.5 Manifold Mount 4×M8, M14×1.5	R	Opposite	Omit	Blue	N1	Big radial force
		H4	4-3/8-16 Square-flange, pilot Ø44.4×2.8	E	Shaft Ø25.4,splined tooth SEA 6B	S	7/8-14 O-ring manifold 4x5/16-18UNC, 7/16-20UNF			B	Black	0	No case drain
		H5	4-M10 Square-flange, pilot Ø44.4×2.8	R	Short shaft Ø25.4,parallel key6.35x6.35x31.75	P	1/2-14 NPTF Manifold 4x5/16-18UNC, 7/16-20UNF			S	Silver grey	F	Free Running
				T	Cone shaft Ø28.56,parallel key B5x5x14	R	PT(Rc)1/2 Manifold 4xM8, PT(Rc)1/4					LS	Low Speed
				B	Shaft Ø32,parallel key 10x8x45							SD	Speed Sensor
				F	Shaft Ø31.75,splined tooth 14-DP12/24								
				FD	Long shaft Ø31.75,splined tooth14-DP12/24								
				G	Shaft Ø31.75, parallel key 7.96x7.96x31.75								
				T3	Cone shaft Ø31.75,parallel key 7.96x7.96x25.4								

Note: The shafts of B\F\FD\G\T1\T3 are only suitable for flanges of 2 and 4.

