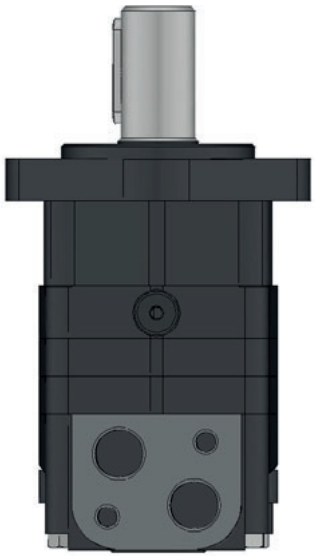
VNKS Series Hydraulic Motor

INTRODUCTION

VNKS 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 FEATURES

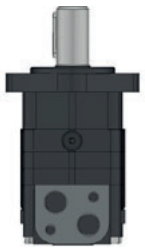
* **Advanced manufacturing** devices for the Geroler gear set, which use low pressure of start-up, provide smooth and reliable operation and high efficiency.
* **The output shaft** adapts in tapered roller bearings that permit high axial and radial forces. The case can offers capacities of high pressure 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.

SPECIFICATION Main Specification

Type		VNKS 80	VNKS 100	VNKS 125	VNKS 160	VNKS 200	VNKS 250	VNKS 315	VNKS 400	VNKS 475
Geometric displacement (cm3/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



VNKS 80 [80.6 cm3/rev.]

Pressure (MPa)

Flow (L/min)	3.5	7	10.5	14	17.5	20.5	22.5
						Max. cont	Max. int
15	35 180	80 174	120 168	158 164	195 158	228 151	249 143
30	35 362	80 352	120 346	158 338	195 330	232 322	260 310
40	35 487	79 480	119 468	155 457	193 446	227 438	250 425
50	30 612	77 603	117 592	153 581	192 572	224 558	248 542
60	28 735	77 726	117 718	153 703	192 687	224 673	243 649
65 (Max. cont)	26 794	75 786	116 773	151 760	188 744	217 722	236 706
80 (Max. int)	24 981	72 968	109 955	142 925	176 893	206 870	227 832

VNKS 100 [100.8 cm3/rev.]

Pressure (MPa)

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

VNKS 125 [125 cm3/rev.]

Pressure (MPa)

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

Torque (N•m) 301
Speed (rpm) 646

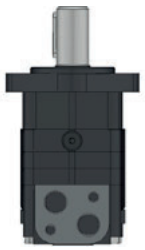
VNKS 160 [154 cm3/rev.]

Pressure (MPa)

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

Int. Cont.

Performance Data



VNKS 200 [194 cm3/rev.]

Pressure (MPa)

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

VNKS 250 [243 cm3/rev.]

Pressure (MPa)

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

VNKS 315 [311 cm3/rev.]

Pressure (MPa)

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

VNKS 400 [394 cm3/rev.]

Pressure (MPa)

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

Torque (N▪m) 766
Speed (rpm) 208

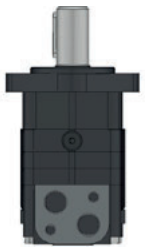
VNKS 475 [475 cm3/rev.]

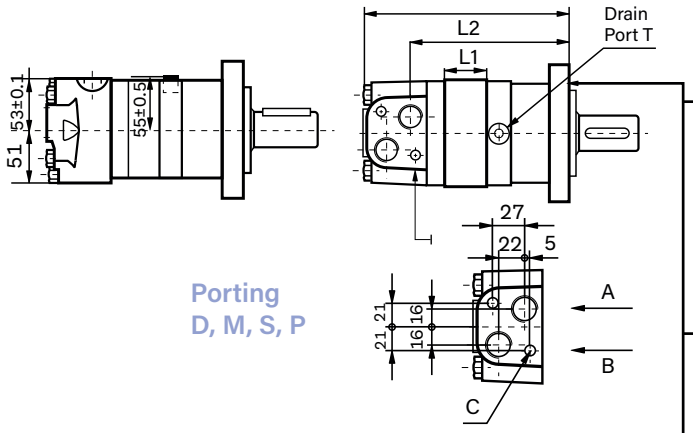
Pressure (MPa)

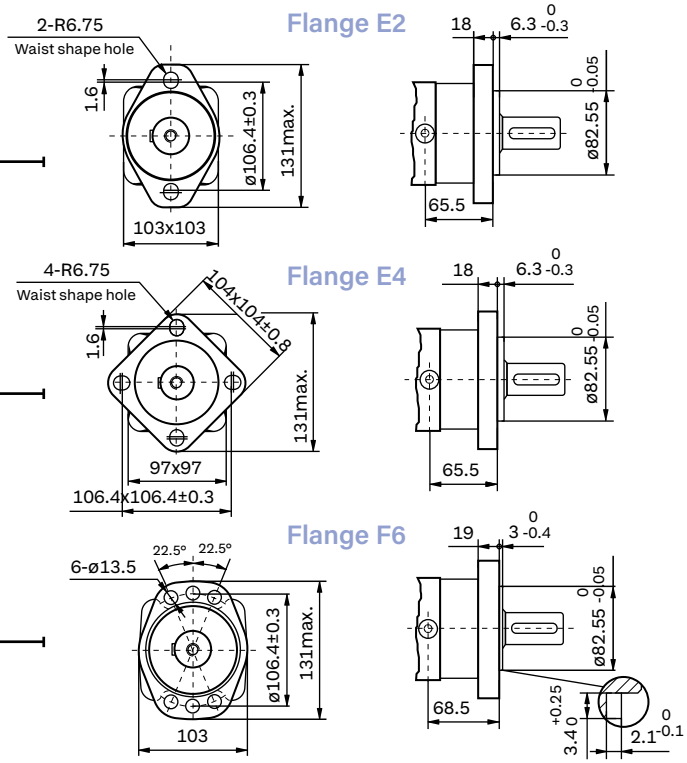
Flow (L/min)	3.5	7	10.5	14	15
	Max. cont				Max. int
15	218 30	439 29	661 28	892 27	995 25
30	223 61	450 60	676 58	910 56	1002 53
40	228 82	461 80	689 77	927 74	1017 68
50	224 103	456 101	682 97	920 92	1008 86
60	220 123	451 121	677 118	913 112	998 105
75	212 155	443 153	664 147	901 140	980 132
90	196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

Int. Cont.

VNKS Dimensions and Munting Data







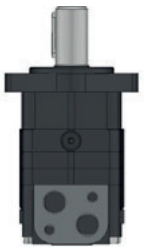
Model	L	L	L2
VNKS-80	170	16	126.5
VNKS-100	174	20	130.5
VNKS-125	179	25	135.5
VNKS-160	181	27	137.5
VNKS-200	188	34	144.5
VNKS-250	196	42	152.5
VNKS-315	208	54	164.5
VNKS-400	223	69	179.5
VNKS-475	237	83	193.5

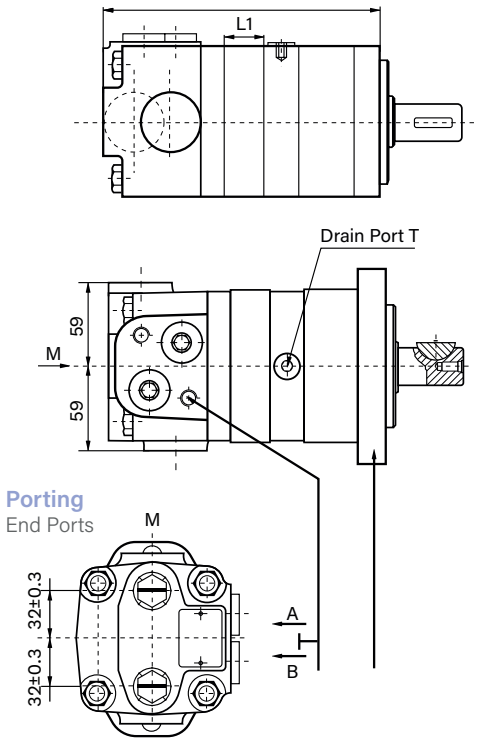
Model	L	L	L2
VNKS-80-W	132.5	16	89
VNKS-100-W	136.5	20	93
VNKS-125-W	141.5	25	98
VNKS-160-W	143.5	27	100
VNKS-200-W	150.5	34	107
VNKS-250-W	158.5	42	115
VNKS-315-W	170.5	54	127
VNKS-400-W	185.5	69	142
VNKS-475-W	199.5	83	156

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

Mounting Code	**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)

VNKS Dimensions and Munting Data

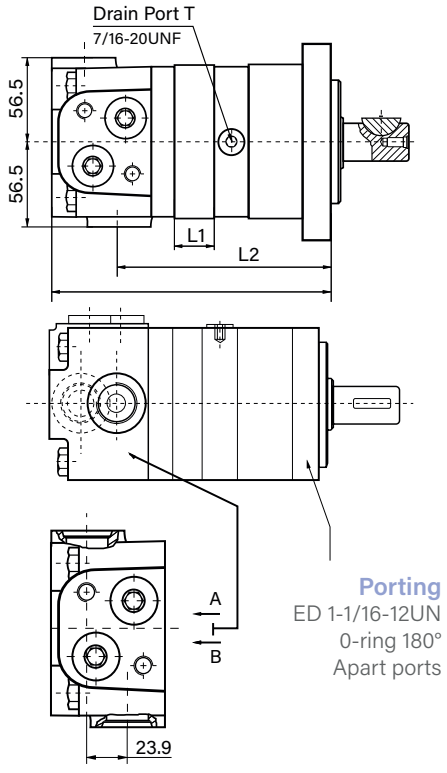




End Ports P(A/B)

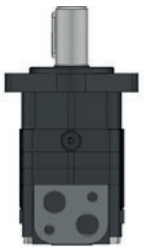
Mounting Code	EE-D (depth)	EE-M2 (depth)	EE-S2 (depth)
P(A,B)	G1/2 (15)	M22 x 1.5 (15)	7/8-14 O-ring (17)
T	G1/4 (12)	M14 x 1.5 (12)	7/16-20UNF(12)

Model	L	L1	Model	L	L1
VNKS-80	176	16	VNKS-80-WE	148	16
VNKS-100	180	20	VNKS-100-WE	152	20
VNKS-125	185	25	VNKS-125-WE	157	25
VNKS-160	187	27	VNKS-160-WE	159	27
VNKS-200	194	34	VNKS-200-WE	166	34
VNKS-250	202	42	VNKS-250-WE	174	42
VNKS-315	214	54	VNKS-315-WE	186	54
VNKS-400	229	69	VNKS-400-WE	201	69
VNKS-475	243	83	VNKS-475-WE	215	83

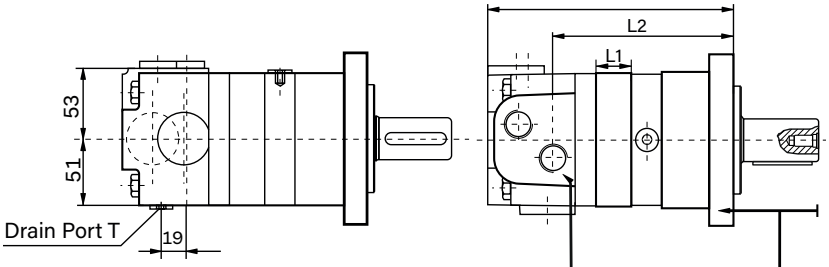


Mounting Code	ED (depth)
P(A,B)	1-1/16-12UN (18)
T	7/16-20UNF (12)

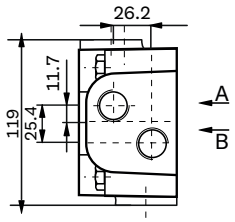
Model	L	L1	L3	Model	L	L1	L2
VNKS-80	176	16	130	VNKS-80-WE	148	16	102
VNKS-100	180	20	134	VNKS-100-WE	152	20	106
VNKS-125	185	25	139	VNKS-125-WE	157	25	111
VNKS-160	187	27	141	VNKS-160-WE	159	27	113
VNKS-200	194	34	148	VNKS-200-WE	166	34	119
VNKS-250	202	42	156	VNKS-250-WE	174	42	127
VNKS-315	214	54	168	VNKS-315-WE	186	54	139
VNKS-400	229	69	183	VNKS-400-WE	201	69	154
VNKS-475	243	83	197	VNKS-475-WE	215	83	168



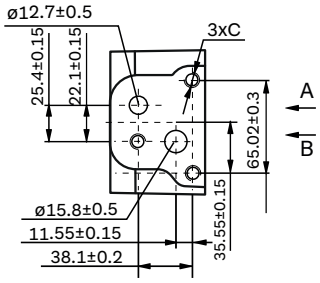
VNKS Dimensions and Munting Data



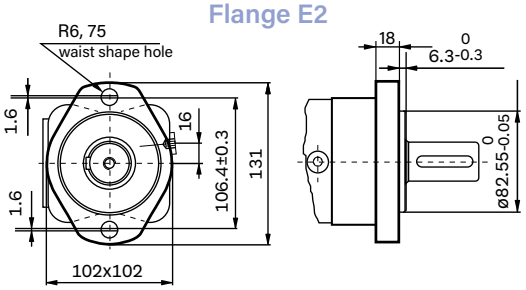
Porting DB, DU, SU, SB, M4



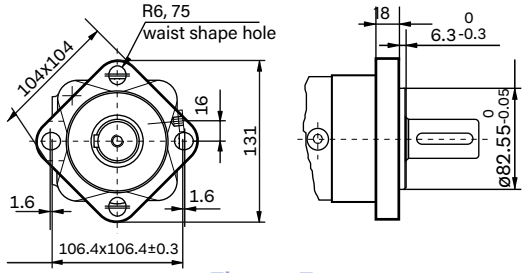
Porting MU, MM



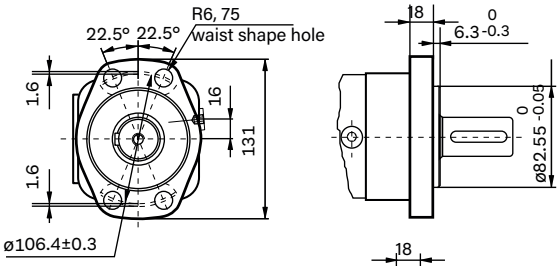
Flange E2



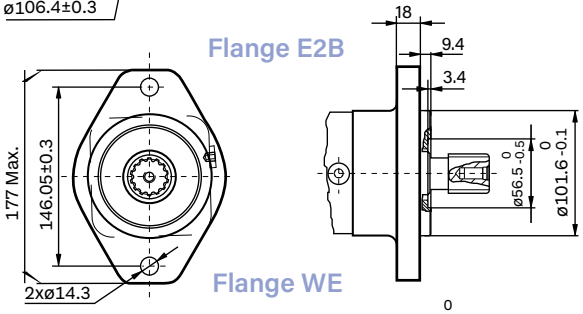
Flange E4



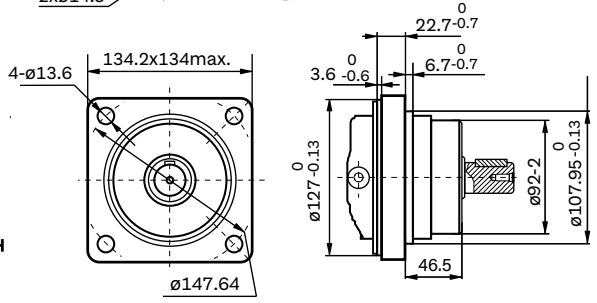
Flange E6



Flange E2B



Flange WE

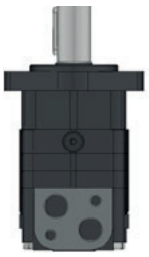


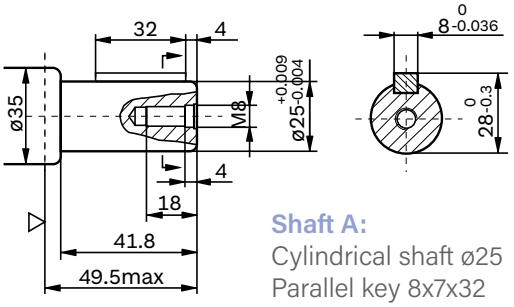
Model	L	L	L2
VNKS-80-WE	126.5	16	98
VNKS-100-WE	130.5	20	102
VNKS-125-WE	135.5	25	107
VNKS-160-WE	137.5	27	109
VNKS-200-WE	144.5	34	116
VNKS-250-WE	152.5	42	124
VNKS-315-WE	164.5	54	136
VNKS-400-WE	179.5	69	151
VNKS-475-WE	193.5	83	165

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

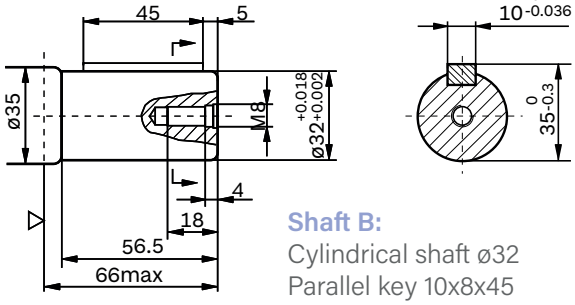
Mounting Code	**DB** (depth)	**DU** (depth)	**SU** (depth)	**SB** (depth)	**M4** (depth)	**MU** (depth)	**MM** (depth)
P(A,B)	G1/2 (15)	G1/2(15)	7/8-14O-ring(17)	7/8-14O-ring(17)	M22x1.5(15)	ø12.7,ø15.8	ø12.7,ø15.8
T	G1/4 (12)	7/16-20UNF(12)	7/16-20UNF(12)	G1/4(12)	M14x1.5(12)	7/16-20UNF(12)	G1/4(12)
C	-					3/8-16UNC	M10

VNKS Shaft Extensions

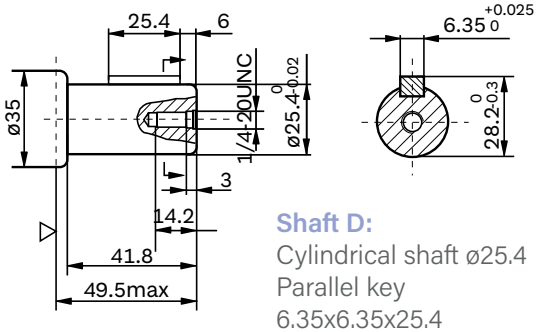




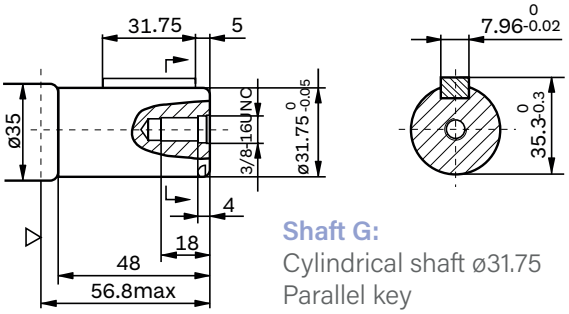
Shaft A:
Cylindrical shaft ø25
Parallel key 8x7x32



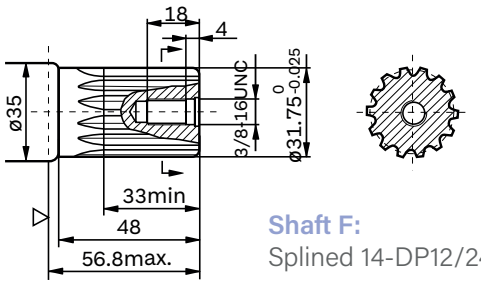
Shaft B:
Cylindrical shaft ø32
Parallel key 10x8x45



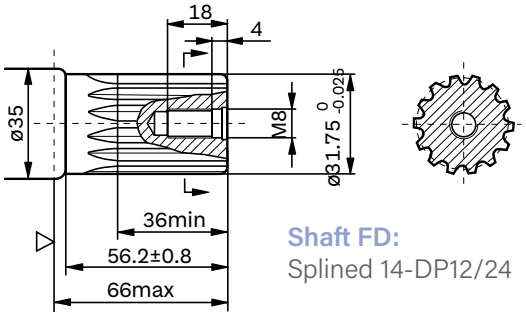
Shaft D:
Cylindrical shaft ø25.4
Parallel key
6.35x6.35x25.4



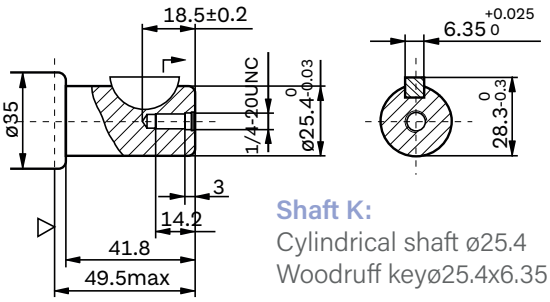
Shaft G:
Cylindrical shaft ø31.75
Parallel key
7.96x7.96x31.75



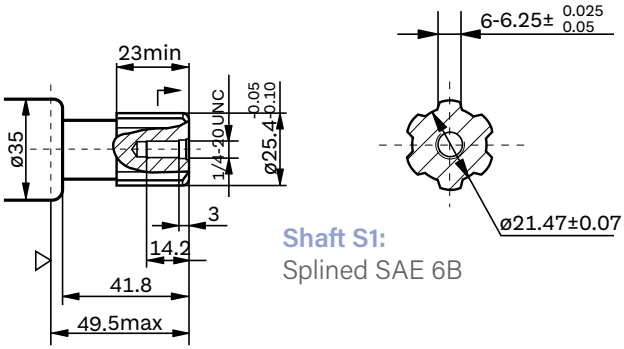
Shaft F:
Splined 14-DP12/24



Shaft FD:
Splined 14-DP12/24



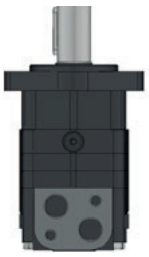
Shaft K:
Cylindrical shaft ø25.4
Woodruff keyø25.4x6.35

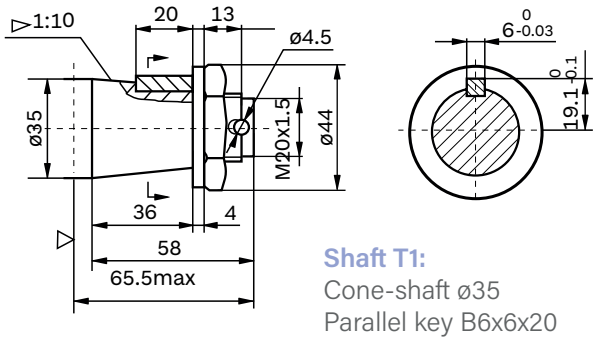


Shaft S1:
Splined SAE 6B

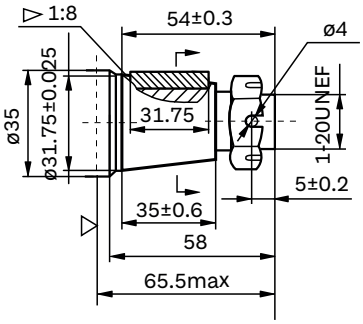
▷ Motor Mounting Surface (Dimension corresponding mounting E2, by analogy with others)

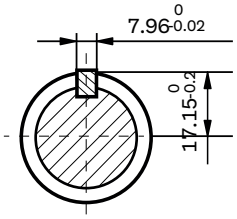
VNKS Shaft Extensions



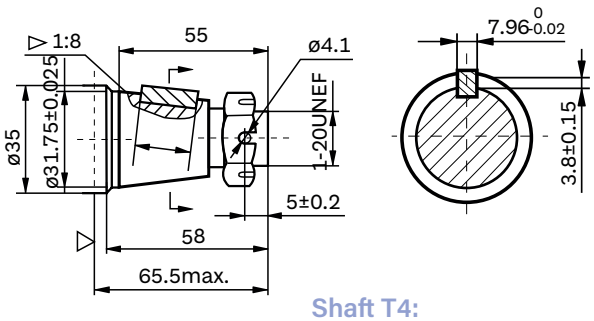


Shaft T1:
Cone-shaft ø35
Parallel key B6x6x20

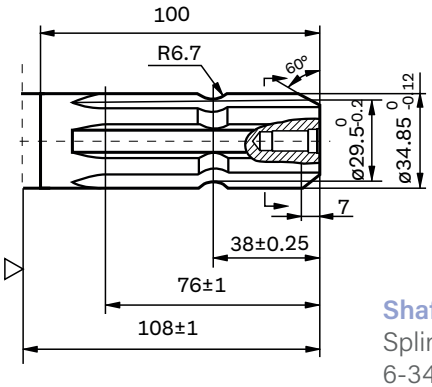


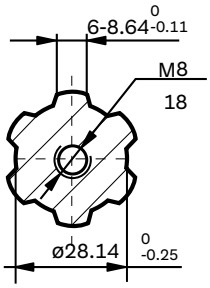


Shaft T3:
Cone-shaft ø31.75
Parallel key 7.96x7.96x31.75
Tightening torque:
200±10Nm

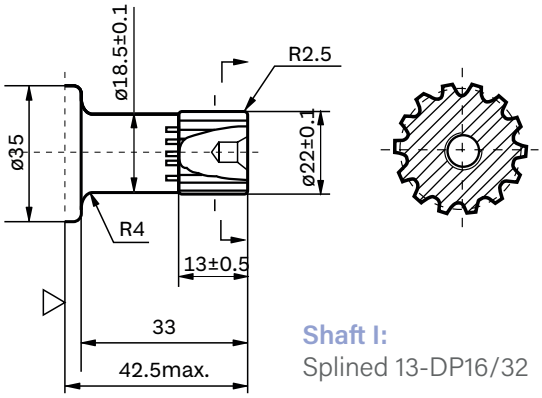


Shaft T4:
Cone-shaft ø31.75
Parallel key 7.96x7.96x25.4
Tightening torque:200±10Nm



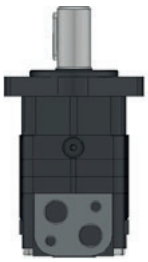


Shaft SL:
Splined
6-34.85x28.14x8.64



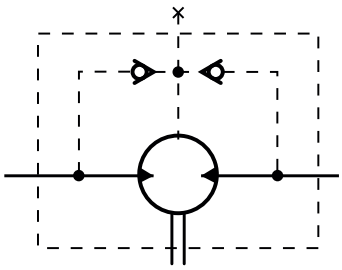
Shaft I:
Splined 13-DP16/32

▷ 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.



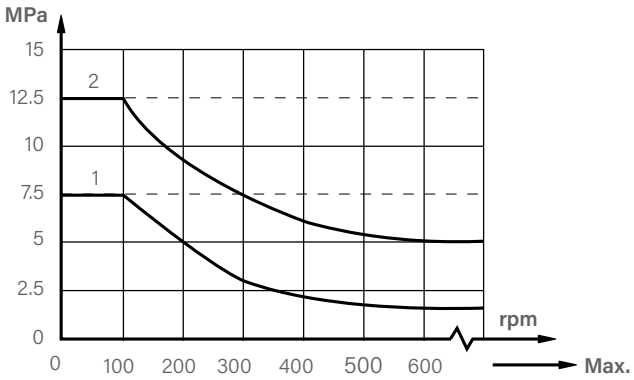
VNKS Series Hydraulic Motor

PERMISSIBLE SHAFT SEAL PRESSURE



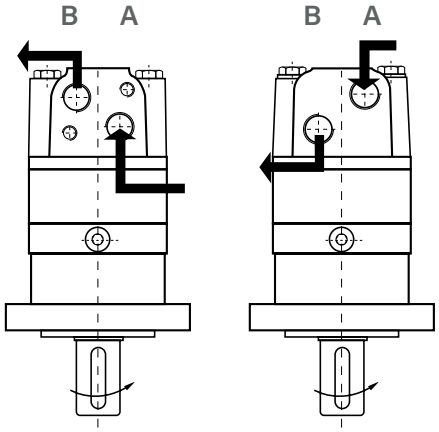
Note 1: Chart for standard shaft seal;

Note 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.



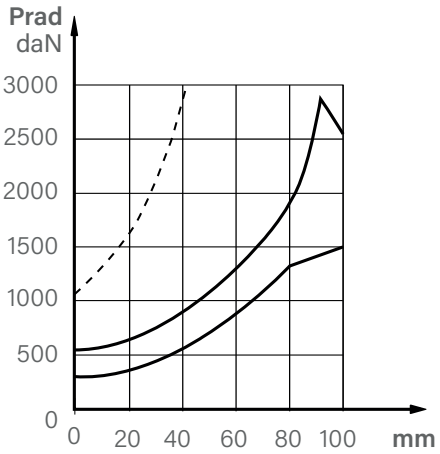
In applications without drain line, output shaft seal exceeds a bit of the pressure in the return line.
When applications use the drain line, the pressure of output shaft seal equals the pressure in drain line.

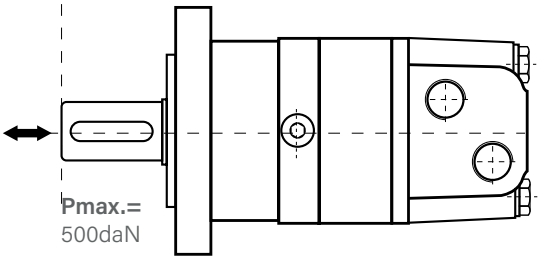
OIL FLOW in drain line

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

Pressure drop (PmPa)	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

	2	3	4	5	6	7	8
VNKS	–	–	–	–	–	–	–

Pos.1	2	3		4		5		6		7		8	
Code	Disp	Flange		Output shaft		Ports and drain port		Rotation Direction		Paint		Unusually Function	
Omit	80 100 125 160 200 250 315 400 475	E2	2-ø13.5 Rhomb-flange ø106.4, pilot ø82.5x6.3	A	Shaft ø25, parllel key 8x7x32	EE-D	G1/2, G1/4	Omit	Standard	00	No paint	Omit	Standard
		E4	4-ø13.5 Rhomb-flange ø106.4, pilot ø82.5x6.3	B	Shaft ø32, parllel key 10x8x45	EE-M	2M22x1.5, M14x1.5			Omit	Blue	F	Free Running
		E6	6-ø13.5 Rhomb-flange 106.4, pilot ø82.5x6.3	K	Shaft ø25.4, Woodruff key ø25.4x6.35	EE-S2	7/8-14UNF O-ring, 7/16-20 UNF			B	Black	LS	Low Speed
		E2B	2-ø14.3 Rhomb-flange ø146.05, pilot ø101.6x9.4	G	Shaft ø31.75, parllel 7.96x31.75	ED	1-1/16-12UN O-ring, 7/16-20 UNF			S	Silver gray	SD	Speed Sensor
		WE	4-ø13.6 Wheel-flange ø147.6, pilot ø107.95x6.4	F	Shaft ø31.75, splined key 14-DP12/24	DB	G1/2, G1/4						
				FE	Shaft ø31.75, splined key 14-DP12/24	DU	G1/2, 7/16-20 UNF						
				T4	Cone-shaft ø31.75, parllel key 7.96x7.96x25.4	SB	7/8-14UNF O-ring, G1/4						
				S1	Shaft ø25.4, splined key SAE 6B	SU	7/8-14UNF O-ring, 7/16-20 UNF						
				I	Sub-shaft ø21.74, splined key 13-DP16/32	M4	M22x1.5, M14x1.5						
						MU	1/2",5/8" Crosshole Manifold 3x3/816UNC, 7/16-20UNF						
						MM	1/2", 5/8" Crosshole Manifold 3xM10, G1/4						
						G	G1/2, G1/4						
						M2	M22x1.5, M14x1.5						
						S2	7/8-14UNF O-ring, 7/16-20 UNF						
								R	Opposite				

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 informa-tions 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.