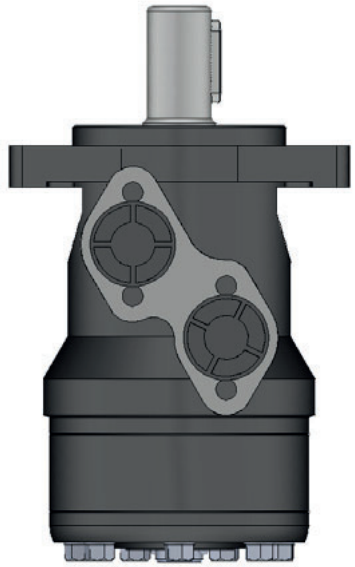
VNKR Series Hydraulic Motor

INTRODUCTION

VNKR series motor adapt the advanced Geroler gear set design with shaft distribution flow, which can automatically compensate in operating with high pressure, provide reliable and smooth operation, high efficiency and long life.



CHARACTERISTIC FEATURES

* **Advanced manufacturing devices** for the Gerolor gear set, which use low pressure of start-up, provide smooth, reliable operation and high efficiency.
* **Shaft seal** can bear high pressure of back and the motor can be used in parallel or in series.
* **Special design** in the driver-linker and prolong operating life.
* **Special design** for distribution system can meet the requirement of low noise of unit.
* **Compact volume** and easy installation.
* **HPS Shaft seal** can bear high pressure (150bar) 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 VNKR with 25 and 1 in and 1 in splined and 28.56 tapered shaft

Type		VNKR 36	VNKR 50	VNKR 80	VNKR 100	VNKR 125	VNKR 160	VNKR 200	VNKR 250	VNKR 315	VNKR 400
Geometric displacement (cm3/rev.)		36	51.7	81.5	102	127.2	157.2	194.5	253.3	317.5	381.4
Max. speed (rpm)	cont.	1085	960	750	600	475	378	310	240	190	155
	int.	1220	1150	940	750	600	475	385	300	240	190
Max. torque (N•m)	cont.	72	100	195	240	300	360	360	390	390	365
	int.	83	126	220	280	340	430	440	490	535	495
	peak	105	165	270	320	370	460	560	640	650	680
Max. output (kW)	cont.	8.5	9.5	12.5	13.0	12.5	12.5	10.0	7.0	6.0	5.0
	int.	9.8	11.2	15.0	15.0	14.5	14.0	13.0	9.5	9.0	8.0
Max. pressure drop (MPa)	cont.	14.0	14	17.5	17.5	17.5	16.5	13	11	9	7
	int.	16.5	17.5	20	20	20	20	17.5	15	13	10
	peak	22.5	22.5	22.5	22.5	22.5	22.5	22.5	20	17.5	15
Max. flow (L/min)	cont.	40	50	60	60	60	60	60	60	60	60
	int.	45	60	75	75	75	75	75	75	75	75
Weight (kg)		6.5	6.7	6.9	7	7.3	7.6	8.0	8.5	9.0	9.5

* **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 VNKR with 31.75 and 32 shaft

Type		VNKR 36	VNKR 50	VNKR 80	VNKR 100	VNKR 125	VNKR 160	VNKR 200	VNKR 250	VNKR 315	VNKR 400
Geometric displacement (cm3/rev.)		36	51.7	81.5	102	127.2	157.2	194.5	253.3	317.5	381.4
Max. speed (rpm)	cont.	1085	960	750	600	475	378	310	240	190	155
	int.	1220	1150	940	750	600	475	385	300	240	190
Max. torque (N•m)	cont.	72	100	195	240	300	360	360	390	390	365
	int.	83	126	220	280	340	430	440	490	535	495
	peak	105	165	270	320	370	460	560	640	650	680
Max. output (kW)	cont.	8.5	9.5	12.5	13.0	12.5	12.5	10.0	7.0	6.0	5.0
	int.	9.8	11.2	15.0	15.0	14.5	14.0	13.0	9.5	9.0	8.0
Max. pressure drop (MPa)	cont.	14.0	14	17.5	17.5	17.5	16.5	13	11	9	7
	int.	16.5	17.5	20	20	20	20	17.5	15	13	10
	peak	22.5	22.5	22.5	22.5	22.5	22.5	22.5	20	17.5	15
Max. flow (L/min)	cont.	40	50	60	60	60	60	60	60	60	60
	int.	45	60	75	75	75	75	75	75	75	75
Weight (kg)		6.5	6.7	6.9	7	7.3	7.6	8.0	8.5	9.0	9.5

* **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

VNKR 36 [36 cm3/rev.]

Pressure (MPa)

Flow (L/min)	2	3	5	7	9	10	12.5	14.0	16.5
							Max. cont		Max. int
4	10 105	16 100	25 92	37 80	46 71	50 58			
8	9 208	15 200	25 188	37 175	47 158	50 149	63 134	71 120	83 108
15	8 403	14 392	23 380	36 365	45 348	51 326	64 318	72 302	82 274
20	6 540	13 531	22 518	35 500	44 483	50 462	64 450	72 435	82 412
30	6 810	12 798	21 780	32 763	42 742	47 722	63 705	70 694	80 668
40	5 1092	11 1080	19 1069	30 1056	41 1042	45 1028	61 1011	68 984	79 957
45	4 1230	10 1215	17 1194	29 1170	40 1150	44 1128	59 1100	66 1070	77 1020

Max. int Max. cont

VNKR 50 [51.7 cm3/rev.]

Pressure (MPa)

Flow (L/min)	5	7	9	10	12	14	16	17,5
					Max. cont			Max. int
5	35 93	45 84	61 76	67 73	77 69	88 46		
10	36 186	46 178	62 166	69 162	80 153	95 136	108 118	120 97
15	35 283	49 277	63 269	73 261	88 250	100 230	109 211	123 185
20	34.5 377	47 375	61 365	69 361	83 346	96 330	109 302	126 270
30	33 576	44 569	60 561	67 554	80 542	95 531	108 500	126 465
40	30 760	41 758	58 753	66 750	79 738	92 724	106 700	122 670
45	29.5 856	40 853	57 849	65 845	78 835	90 815	105 796	121 770
50	26 950	37 940	53 925	60 906	73 880	85 852	99 832	114 801
60	20 1138	33 1124	48 1100	56 1075	69 1056	81 1028	95 1006	109 970

Max. int Max. cont

VNKR 80 [81.5 cm3/rev.]

Pressure (MPa)

Flow (L/min)	5	7	9	10	12	14	16	17.5	20
						Max. cont			Max. int
5	50 59	64 56	88 50	108 44	133 38				
10	54 118	77 113	99 106	108 97	129 86	150 79	173 56		
20	57 238	78.0 234	102 227	111 216	134 203	155 190	177 178	196 154	225 135
30	54 360	75 352	100 340	108 332	131 316	152 302	176 290	195 274	223 250
40	48 480	73 470	96 458	105 445	127 430	148 418	172 403	190 388	220 359
50	42 604	70 595	93 582	102 570	124 556	147 540	170 521	188 504	218 487
60	37 726	66 715	89 704	98 692	121 678	144 663	166 647	184 622	213 594
70	32 845	60 834	83 820	95 802	116 789	140 767	160 754	177 730	208 705
75	21 910	50 895	78 881	90 867	111 852	135 830	154 806	171 787	200 756

Max. int Max. cont

Torque (N▪m) 135
Speed (rpm) 830

VNKR 100 [102 cm3/rev.]

Pressure (MPa)

Flow (L/min)	5	7	9	10	12	14	16	17,5	20
						Max. cont			Max. int
5	66 45	92 42	120 38	135 34	156 27				
10	68 93	96 90	125 86	138 81	159 74	188 57	212 42		
20	65 189	94.0 185	123 180	137 173	155 165	186 158	210 150	238 139	274 118
30	63 286	92 281	120 275	133 266	153 257	185 246	209 237	235 225	270 207
40	57 385	88 378	117 365	130 355	152 345	185 332	208 320	233 314	267 297
50	48 482	79 477	110 470	123 460	150 448	183 435	204 420	228 405	260 389
60	38 580	70 572	105 560	120 548	144 535	178 523	200 510	220 500	252 478
70	32 678	65 670	100 660	118 648	141 638	176 626	197 615	215 606	246 580
75	23 728	59 720	93 710	111 695	136 681	170 667	192 650	210 634	240 618

Max. int Max. cont

Int. Cont.

Performance Data

VNKR 125 [127.2 cm3/rev.]

Pressure (MPa)

Flow (L/min)	5	7	9	10	12	14	16	17.5	20
						Max. cont		Max. int	
5	76 36	110 31	145 25	167 19	189 13				
10	84 73	118 70	155 60	176 48	202 36	228 25	253 19		
20	82 153	117 151	153 148	174 144	200 138	230 128	259 117	294 104	332 73
30	79 231	116 228	151 224	171 218	198 210	228 201	257 183	292 168	329 137
40	72 309	114 307	148 303	168 298	196 292	226 280	256 270	290 252	327 218
50	62 389	105 386	143 382	165 378	195 370	223 360	254 344	287 328	323 292
60	52 467	98 463	136 459	160 456	191 448	220 427	250 410	282 399	319 352
70	41 545	90 542	130 538	156 534	187 529	215 520	242 508	278 486	313 430
75	32 586	79 583	126 578	148 570	180 560	208 546	234 532	262 520	300 480

VNKR 160 [157.2 cm3/rev.]

Pressure (MPa)

Flow (L/min)	5	7	9	10	12	14	16	17.5	20
						Max. cont		Max. int	
5	104 26	146 23	190 20	210 16	245 10				
10	107 59	150 56	195 50	216 45	250 37	290 30	335 22		
20	102 121	151 118	198 115	220 113	257 108	298 102	342 97	370 90	420 78
30	97 184	146 178	190 173	217 170	256 164	295 155	340 143	368 128	416 103
40	89 246	140 241	185 235	210 228	252 220	290 210	335 194	363 177	412 150
50	72 310	128 307	179 300	202 295	244 287	284 278	327 262	358 247	409 210
60	60 374	116 367	170 359	198 354	240 346	279 338	321 323	352 306	400 265
70	49 437	107 430	164 421	193 415	233 403	271 393	309 381	344 365	390 318
75	36 472	98 463	152 450	185 441	226 431	265 420	300 405	334 389	379 365

VNKR 200 [194.5 cm3/rev.]

Pressure (MPa)

Flow (L/min)	5	7	9	10	12	14	16	17.5	20
						Max. cont		Max. int	
5	132 24	181 22	238 18	262 13	310 10				
10	135 49	186 47	240 45	264 43	315 38	356 33	403 24		
20	131 99	183 97	238 94	260 92	314 88	358 83	404 74	438 64	498 56
30	126 149	178 147	233 144	254 141	311 135	355 126	402 113	431 105	486 91
40	112 200	169 197	228 194	250 191	307 185	352 174	400 160	426 151	477 127
50	95 252	156 249	221 246	246 243	300 238	350 228	398 212	421 194	470 161
60	78 304	145 301	213 298	238 294	289 286	342 276	386 262	412 243	459 218
70	67 355	135 353	206 349	228 340	277 329	336 316	375 300	408 288	453 257
75	58 382	125 379	197 373	220 362	270 350	321 337	360 322	398 312	442 278

VNKR 250 [253.5 cm3/rev.]

Pressure (MPa)

Flow (L/min)	5	7	9	10	12	14	16	17.5	20
						Max. cont		Max. int	
5	175 17	243 16	304 14	342 12	407 10				
10	178 37	246 35	310 31	344 28	409 23	465 18	525 11		
20	175 75	244 73	308 72	340 70	408 66	463 58	520 53	558 50	636 42
30	162 114	235 111	304 108	332 106	400 100	455 92	516 83	550 77	621 65
40	143 154	223 152	300 150	329 147	396 143	447 132	512 120	546 110	617 90
50	124 193	208 190	289 187	323 174	384 168	440 160	503 149	535 140	600 116
60	103 233	192 230	280 227	314 224	371 218	426 205	489 190	514 181	578 155
70	88 273	178 270	264 267	301 263	356 252	418 242	479 226	498 209	560 173
75	62 294	165 291	256 287	288 283	347 274	412 263	474 249	486 236	542 211

Torque (N•m) 256
Speed (rpm) 287

Int. Cont.

Performance Data

VNKR 315 [317.5 cm3/rev.]

Pressure (MPa)

Flow (L/min)	5	7	9	10	12	14 (Max. cont)	16	17,5 (Max. int)
5	215 13	302 11						
10	218 28	305 27	383 25	422 24	488 21	551 18	622 13	
20	215 60	303 59	380 57	418 55	485 52	549 49	620 45	660 42
30	204 91	296 89	375 86	413 84	480 81	542 78	613 72	654 67
40	196 122	287 120	368 117	410 112	477 106	539 100	609 94	650 85
50 (Max. cont)	176 154	270 151	356 147	393 140	461 131	526 120	597 109	645 100
60	162 185	246 182	339 177	374 172	446 163	511 152	586 140	628 134
70 (Max. int)	143 217	235 213	324 208	358 201	430 190	493 178	562 166	614 158
75	125 232	212 228	303 222	339 216	417 208	481 200	543 183	582 171

Torque (N•m) 481
Speed (rpm) 200

VNKR 400 [381.4 cm3/rev.]

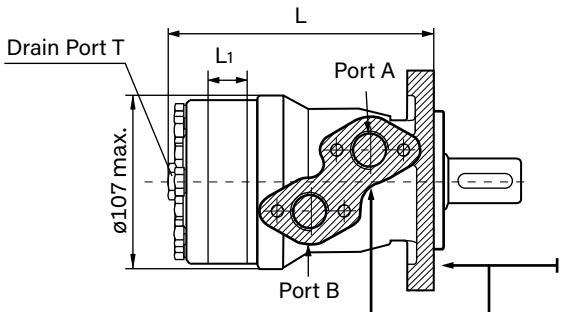
Pressure (MPa)

Flow (L/min)	3	4.5	5.5	6.5	8	10 (Max. cont)	12.5	14 (Max. int)
5	153 12	232 10						
10	157 24	236 23	284 22	337 21	406 19	497 17	612 15	668 12
20	150 49	232 48	280 47	332 46	401 44	490 41	606 38	660 32
30	142 76	215 75	274 74	327 73	398 71	483 67	603 63	652 50
40	126 103	212 101	268 99	320 97	393 95	477 92	593 88	635 70
50	105 128	187 126	242 124	302 121	376 118	455 115	583 111	608 96
60 (Max. cont)	90 154	167 152	229 150	281 148	362 145	444 138	566 130	600 121
70	90 180	149 179	200 178	258 176	341 173	425 168	546 160	580 148
75 (Max. int)	56 195	125 194	182 193	241 191	320 189	408 185	524 178	565 170

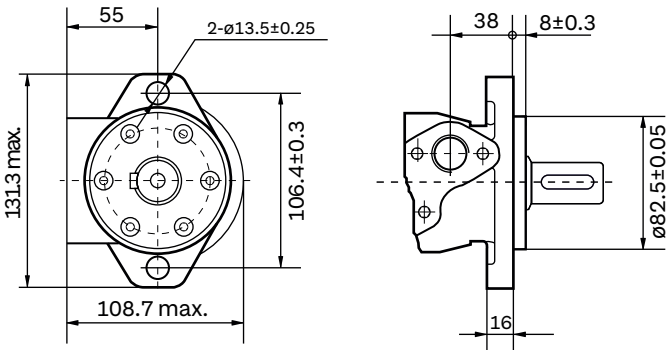
Int. Cont.

VNKR Dimensions and Mounting Data

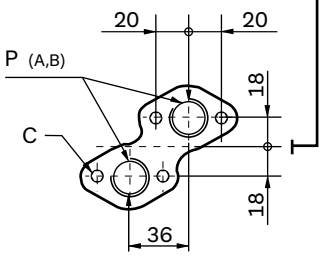
MOUNTING



Flange 2

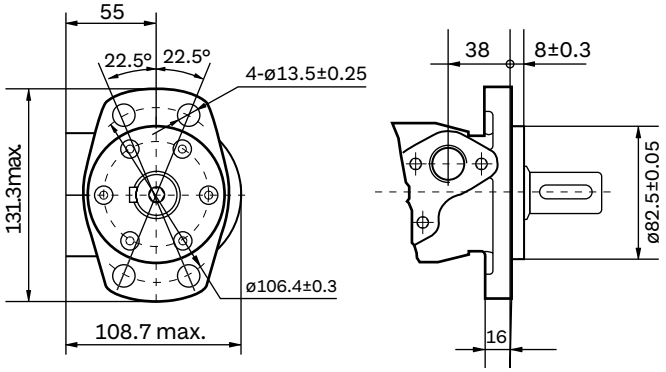


Port A



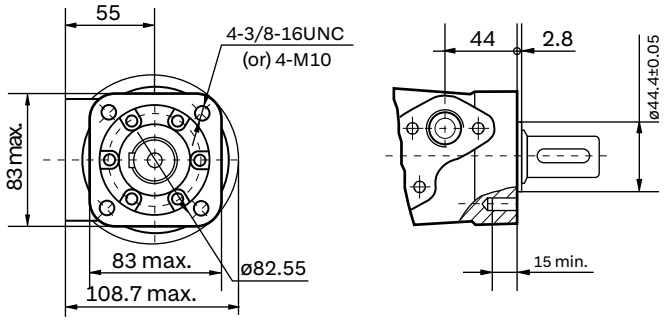
Port B

Flange 4



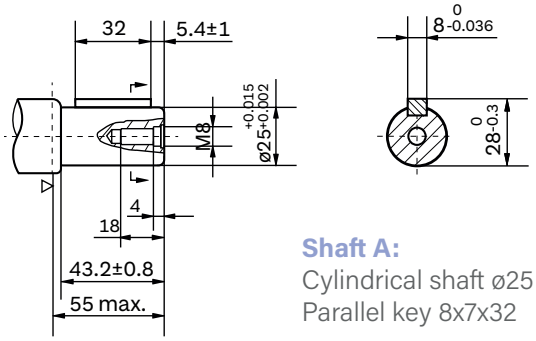
Model	L	L1
VNKR36	137	7
VNKR50	140	10
VNKR80	146	16
VNKR100	150	20
VNKR125	155	25
VNKR160	160.5	30.5
VNKR200	168	38.1
VNKR250	180	50
VNKR315	192	62
VNKR400	204	74

Flange H4/H5

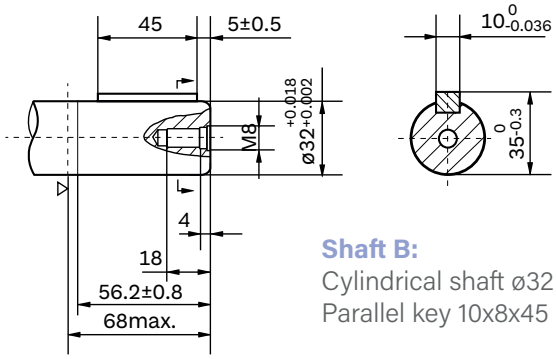


Mounting Code	**D** (depth)	**M** (depth)	**S** (depth)	**P** (depth)	**R** (depth)
P(A,B)	G1/2 (15)	M22 x 1.5 (15)	7/8-14 O-ring (17)	1/2-14NPTF (15)	PT(RC)1/2 (15)
C	4-M8 (13)	4-M8 (13)	4-5/16-18UNC(13)	4-5/16-18UNC(13)	4-M8 (13)
T	G1/4 (12)	M14 x 1.5 (12)	7/16-20UNF (12)	7/16-20UNF (12)	PT(RC)1/4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

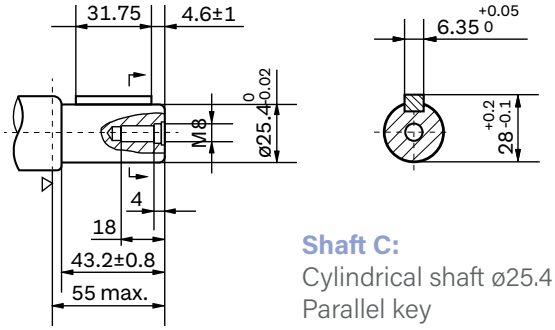
VNKR Shaft Extensions Dimensions Data



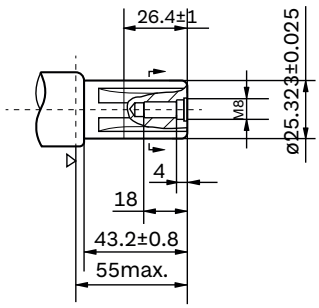
Shaft A:
Cylindrical shaft ø25
Parallel key 8x7x32

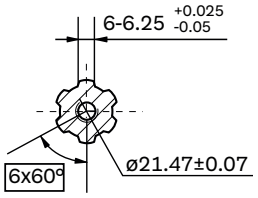


Shaft B:
Cylindrical shaft ø32
Parallel key 10x8x45

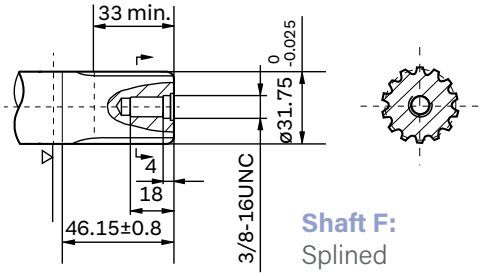


Shaft C:
Cylindrical shaft ø25.4
Parallel key
6.35x6.35x31.75

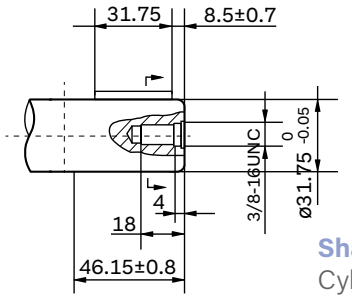


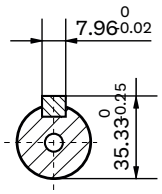


Shaft E:
Splined SAE 6B

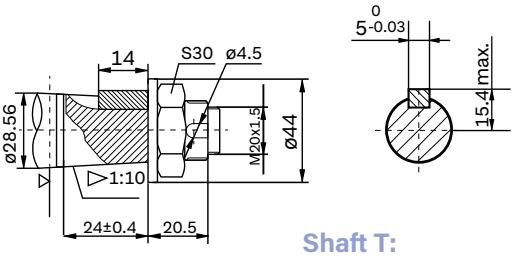


Shaft F:
Splined
14-DP12/24

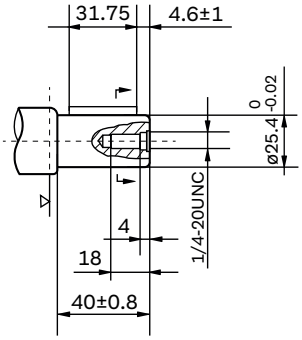


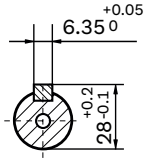


Shaft G:
Cylindrical shaft ø31.75
Parallel key
7.96x7.96x31.75



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



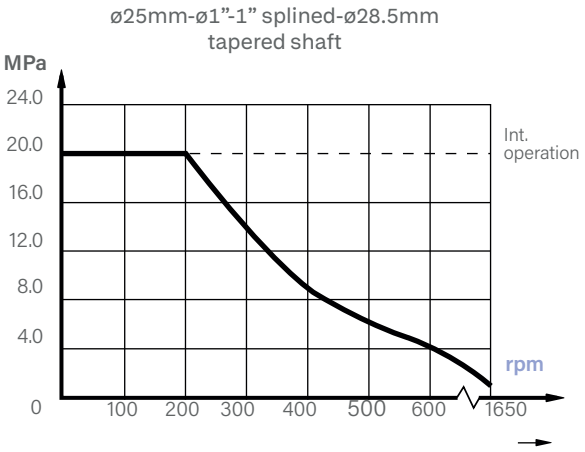


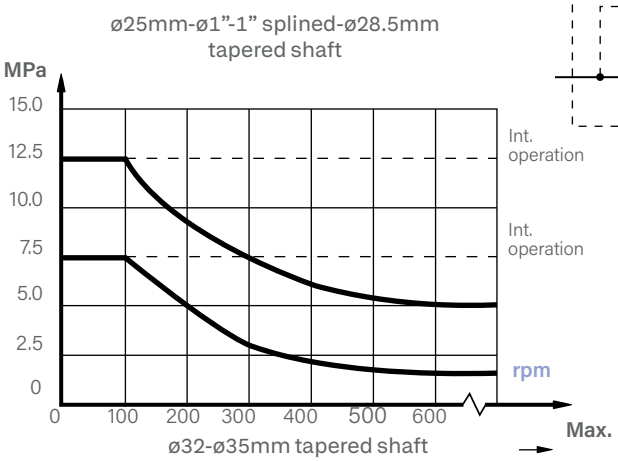
Shaft:
Cylindrical shaftø25.4
Parallel key
6.35x6.35x31.75

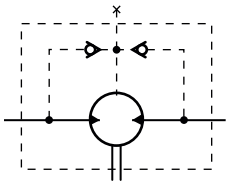
▷ Motor Mounting Surface

VNKR, VNKRS Series Hydraulic Motor

PERMISSIBLE SHAFT SEAL PRESSURE



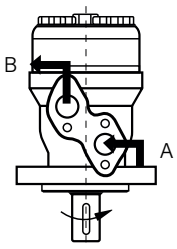




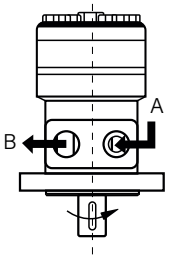
In applications without drain line, output shaft seal exceeds a bit of the pressure in the return line. When applications use the drain line, the pressure of output shaft seal equals the pressure in drain line.

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.

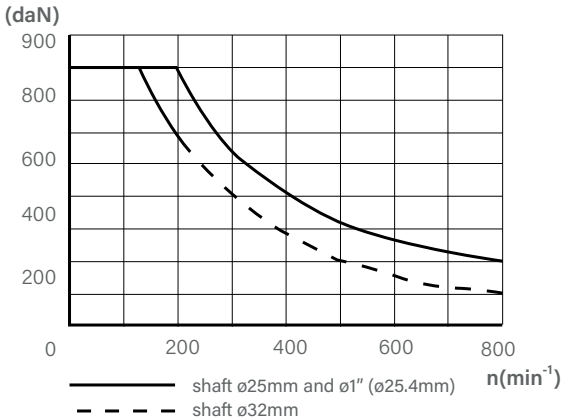


VNKR

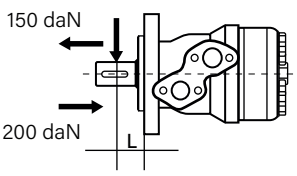


VNKRS

STATUS OF THE SHAFT'S RADIAL FORCE



$$Fr = \frac{800}{n} \cdot \frac{25000}{95+L} daN$$



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
VNKR	–	–	–	–	–	–	–

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

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