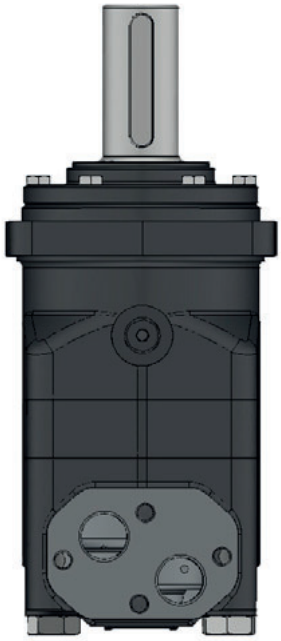
VNKT Series Hydraulic Motor

INTRODUCTION

VNKT 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.

SPECIFICATION Main Specification

Type		VNKT 160	VNKT 200	VNKT 230	VNKT 250	VNKT 315	VNKT 400	VNKT 500	VNKT 630	VNK T 800
Geometric displacement (cm3/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.

Performance Data

VNKT 160 [161.1 cm3/rev.]

Pressure (MPa)

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

VNKT 200 [201.4 cm3/rev.]

Pressure (MPa)

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

VNKT 250 [251.8 cm3/rev.]

Pressure (MPa)

Flow (L/min)	4	8	10	12	16 (Max. cont)	20	24 (Max. int)
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
125 (Max. cont)	116 495	260 492	340 488	414 483	568 476	703 469	864 454
150 (Max. int)	88 592	242 589	320 585	397 580	552 572	686 565	847 545

Torque (N•m) 552
Speed (rpm) 572

VNKT 315 [326.3 cm3/rev.]

Pressure (MPa)

Flow (L/min)	4	8	10	12	16 (Max. cont)	20	24 (Max. int)
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 (Max. cont)	147 380	336 378	447 375	544 371	745 367	920 362	1127 349
150 (Max. int)	119 458	318 456	432 453	526 449	713 444	894 431	1097 425

Int. Cont.

Performance Data

VNKT 400 [410.9 cm3/rev.]

Pressure (MPa)

Flow (L/min)	3	6	9	12	15 (Max. cont)	18	21 (Max. int)
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
125 (Max. cont)	135 302	309 300	524 298	688 294	873 289	1045 285	1221 278
150 (Max. int)	126 364	292 362	508 358	666 354	852 350	1020 346	1197 339

VNKT 500 [523.6 cm3/rev.]

Pressure (MPa)

Flow (L/min)	3	6	9	12	14 (Max. cont)	16	18 (Max. int)
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 (Max. cont)	182 237	398 236	641 235	877 233	1024 231	1199 229	1352 225
150 (Max. int)	147 284	369 283	618 282	853 280	1004 278	1167 276	1325 272

VNKT 630 [629.1 cm3/rev.]

Pressure (MPa)

Flow (L/min)	3	6	9	10.5	12 (Max. cont)	14	16 (Max. int)
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
125 (Max. cont)	201 196	499 196	810 194	931 192	1137 191	1292 187	1472 183
150 (Max. int)	174 233	492 232	785 231	921 230	1121 227	1277 223	1454 217

Torque (N•m) 1121
Speed (rpm) 227

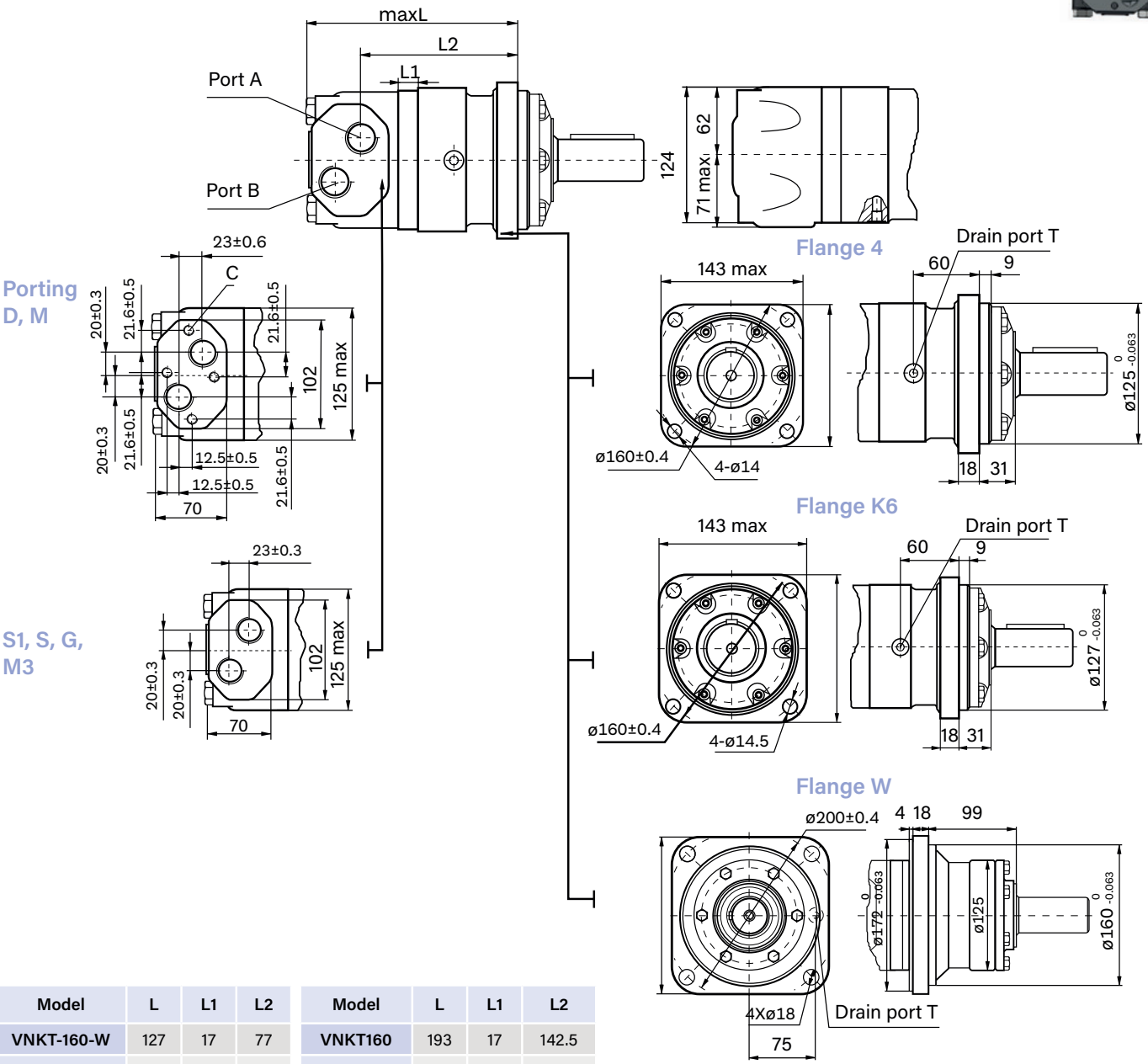
VNKT 800 [801.8 cm3/rev.]

Pressure (MPa)

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

Int. Cont.

VNKT Dimensions and Mounting Data



Model	L	L1	L2	Model	L	L1	L2
VNKT-160-W	127	17	77	VNKT160	193	17	142.5
VNKT-200-W	131	21	81	VNKT200	197	21	146.5
VNKT-250-W	136	14	86	VNKT250	204	14	152.5
VNKT-315-W	142	20	91	VNKT315	210	20	158.5
VNKT-400-W	148	27	98	VNKT400	217	27	165.5
VNKT-500-W	157	35	106	VNKT500	225	35	173.5
VNKT-630-W	169	47	118	VNKT630	237	47	185.5
VNKT-800-W	180	58	129	VNKT800	248	58	196.5

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.

Mounting Code	**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)	-	-	-	-

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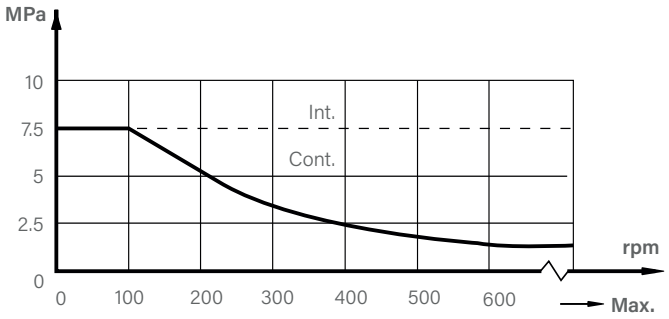
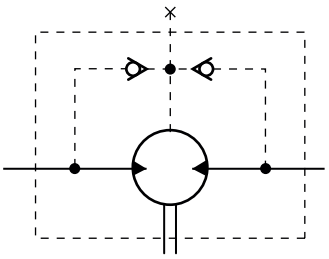
PERMISSIBLE SHAFT SEAL PRESSURE

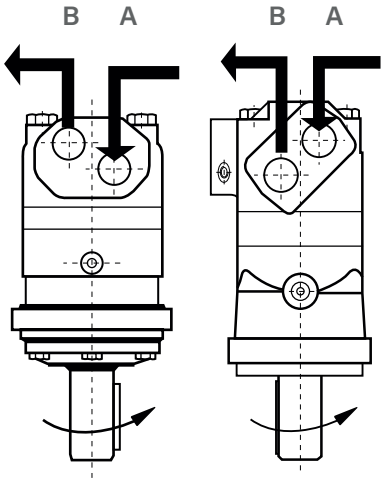




In applications without drain line, output shaft seal exceeds a bit of the pressure in the return line. When applications use the drain line, the pressure of output shaft seal equals the pressure in drain line.

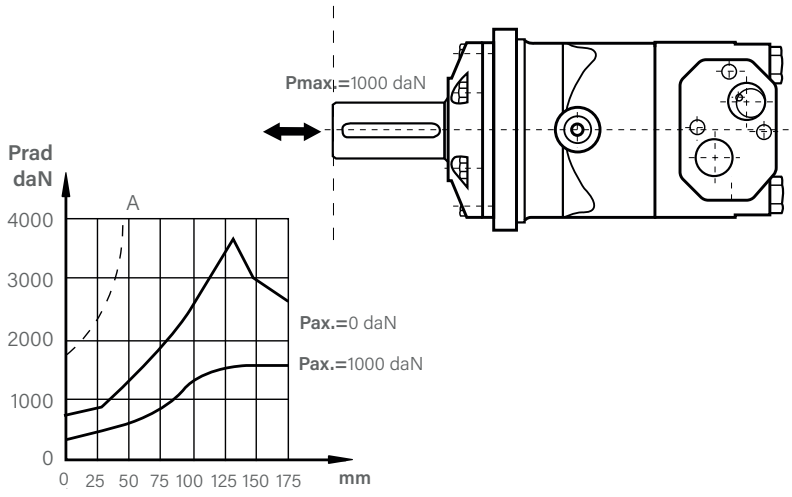
DIRECTION OF SHAFT ROTATION: Standard

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



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.



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

Order Information

1		3	4	5	6	7	8
VNKT	–	–	–	–	–	–	–

Pos.1	2	3		4		5		6		7		8	
Code	Disp.	Flange		Output shaft		Ports and drain port		Rotation Direction		Paint		Unusually Function	
VNKT	160 200 250 315 400 500 630 800	4	4-Ø14 Square-flange Ø160, pilot Ø125×9	M	Shaft Ø40 , parallel key 12×8×70	D	G3/4 Manifold Mount, 4-M10 , G1/4	Omit	Standard	00	No paint	Omit	Standard
		K6	4-Ø14.5Square-flange Ø162, pilot Ø127×9	G	Shaft Ø38.1 ,parallel key 9.52×9.52×57.15	M	M27×2 Manifold Mount, 4-M10, M14×1.5	R	Opposite	Omit	Blue	F	Free Running
		W	4-Ø18 Wheel-flange Ø200, pilot Ø160×7	F	Shaft Ø38.1 ,splined tooth 17-DP12/24	S	1-1/16-12UN O-ring, 9/16-18UNF			B	Black	LS	Low Speed
				FD	Shaft Ø38.1 ,splined tooth 17-DP12/24	S1	1-1/16-12UN O-ring, 7/16-20UNF			S	Silver grey	SD	Speed Sensor
				T	Cone-shaft 1:10 Ø45 ,parallel key B12×8×28	G	G3/4,G1/4						
				T1	Cone-shaft 1:8 Ø45 ,parallel key 11.13×11.13×31.75	M3	M27×2,M14×1.5						
				SL	shaft Ø34.85,Splined key Splined key 6-34.85×28.14×8.64								
				G1	shaftØ31.75 , parallel key 7.96×7.96×40								
				F1	Shaft Ø31.75,splined tooth 14 DP12/24								
VNKTS		D	4-Ø14 Circle-flange Ø160, pilot Ø125×8	Omit	Short shaft 16-DP12/24								
		E	4-Ø14.5 Square -flange Ø162, pilot Ø127×10