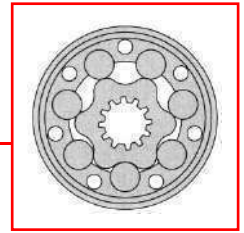




Model PHDM4



The PHDM4 hydraulic orbital motor is a type of hydraulic motor commonly used in various industrial and mobile applications such as excavators, cranes, and other heavy machinery. It is designed to convert hydraulic energy into mechanical energy, which can be used to drive a load through a shaft.

The motor consists of a housing, an internal gear set, a rotor, and a set of vanes. The hydraulic fluid is fed into the inlet port, where it is then pressurized by the pump and directed into the vane chambers. The pressure of the fluid causes the vanes to extend and compress against the rotor, generating torque. The internal gear set converts the rotary motion of the vanes into orbital motion, which drives the shaft attached to the motor.

The PHDM4 hydraulic orbital motor is also highly customizable, with a variety of options available for controlling its speed, direction, and torque. This allows it to be adapted to a wide range of applications, from simple machinery to complex industrial systems.

Overall, the PHDM4 hydraulic orbital motor is a versatile and reliable solution for converting hydraulic energy into mechanical energy in a range of applications. Its compact design, high power density, and efficiency make it an excellent choice for demanding industrial and mobile applications.

MAIN SPECIFICATIONS

		PHDM4-160 PHDM4S-160 PHDM4W-160	PHDM4-200 PHDM4S-200 PHDM4W-200	PHDM4-250 PHDM4S-250 PHDM4W-250	PHDM4-320 PHDM4S-320 PHDM4W-320	PHDM4-400 PHDM4S-400 PHDM4W-400	PHDM4-500 PHDM4S-500 PHDM4W-500
Displacement	ml/r cc [in ³ /rev.]	158.8 [9.69]	200.8 [12.25]	252.2 [15.39]	317.5 [19.37]	401.6 [24.51]	535.3 [32.67]
Max.Pressure.Drop	cont. bar [psi]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	180 [2610]	160 [2320]
	int. bar [psi]	240 [3480]	240 [3480]	240 [3480]	240 [3480]	210 [3045]	180 [2610]
	peak. bar [psi]	280 [4061]	280 [4061]	280 [4061]	280 [4061]	240 [3480]	210 [3045]
Max.Torque	cont. n.m [Lb.in]	450 [3982]	561 [4965]	710 [6284]	902 [7983]	1008 [8921]	1121 [9921]
	int. n.m [Lb.in]	559 [4947]	714 [6319]	883 [7815]	1143 [10116]	1255 [11107]	1377 [12187]
	peak. n.m [Lb.in]	663 [5868]	818 [7239]	1021 [9036]	1322 [11700]	1431 [12665]	1598 [14143]
Max.Speed	cont. r/min	625	495	395	310	245	185
Max.Flow	cont. L/min [G/min]	100 [26.4]	100 [26.4]	100 [26.4]	100 [26.4]	100 [26.4]	100 [26.4]
Max.Output.Power	cont. kw [hp]	20.1 [26.9]	25.2 [33.8]	25.2 [33.8]	25.2 [33.8]	22 [29.5]	21 [28.2]
Weight	kg [lbs]	20.3 [44.7]	20.8 [45.8]	21.4 [47.2]	22.4 [49.4]	23 [50.7]	24 [52.9]



MAIN SPECIFICATIONS

		PHDM4Y-160	PHDM4Y-200	PHDM4Y-250	PHDM4Y-320	PHD4Y-400	PHD4Y-500
Displacement	ml/r cc [in ³ ./rev.]	158.8 [9.69]	200.8 [12.25]	252.2 [15.39]	317.5 [19.37]	401.6 [24.51]	535.3 [32.67]
Max.Pressure.Drop	cont. bar [psi]	240 [3480]	240 [3480]	240 [3480]	230 [3335]	210 [3045]	180 [2610]
	int. bar [psi]	270 [3916]	270 [3916]	270 [3916]	260 [3770]	230 [3335]	200 [2900]
	peak. bar [psi]	300 [4351]	300 [4351]	300 [4351]	290 [4206]	250 [3625]	230 [3335]
Max.Torque	cont. n.m [Lb.in]	559 [4947]	714 [6319]	883 [7815]	1095 [9691]	1255 [11107]	1377 [12187]
	int. n.m [Lb.in]	639 [5655]	789 [6983]	985 [8717]	1227 [10859]	1371 [12134]	1521 [13461]
	peak. n.m [Lb.in]	710 [6284]	876 [7753]	1093 [9673]	1369 [12116]	1490 [13187]	1750 [15488]
Max.Speed	cont. r/min	625	495	395	310	245	185
Max.Flow	cont. L/min [G/min]	100 [26.4]	100 [26.4]	100 [26.4]	100 [26.4]	100 [26.4]	100 [26.4]
Max.Output.Power	cont. kw [hp]	24.1 [32.3]	30 [40.2]	30 [40.2]	28.8 [38.6]	25.3 [33.9]	24.1 [32.3]
Weight	kg [lbs]	20.3 [44.7]	20.8 [45.8]	21.4 [47.2]	22.4 [49.4]	23 [50.7]	24 [52.9]

PERFORMANCE DATA

PHDM4 160(158.8cc)										PHDM4 200(200.8cc)														
								Max cont.	Max int.									Max cont.	Max int.					
								[PSI]	BAR									[PSI]	BAR					
[GPM]	[2.64]	[752]	[1495]	[1938]	[2336]	[3071]	[3796]	[4549]	[580]	[1160]	[1450]	[1740]	[2320]	[2900]	[3480]	[580]	[1160]	[1450]	[1740]	[2320]	[2900]	[3480]		
L/min	10	85	169	219	264	347	429	514	40	80	100	120	160	200	240	48	96	120	144	184	228	288	344	
	[5.28]	[761]	[1540]	[1991]	[2354]	[3159]	[3903]	[4735]	TORQUE [LB-IN]		TORQUE [LB-IN]		TORQUE [LB-IN]		TORQUE [LB-IN]		TORQUE [LB-IN]		TORQUE [LB-IN]		TORQUE [LB-IN]		TORQUE [LB-IN]	
	20	86	174	225	266	357	441	535	TORQUE N·M		TORQUE N·M		TORQUE N·M		TORQUE N·M		TORQUE N·M		TORQUE N·M		TORQUE N·M		TORQUE N·M	
	[10.57]	[770]	[1531]	[2000]	[2354]	[3239]	[4000]	[4867]	SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM	
Flow	40	87	173	226	266	366	452	550	97	194	248	312	384	472	576	194	388	496	624	792	996	1248	1584	1992
	[15.85]	[669]	[1513]	[2000]	[2354]	[3239]	[3982]	[4859]	SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM	
	60	79	171	226	266	366	450	549	306	612	792	996	1248	1584	1992	306	612	792	996	1248	1584	1992	2496	3096
	[21.13]	[663]	[1469]	[1947]	[2345]	[3221]	[3956]	[4814]	SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM	
	80	75	166	220	265	364	447	544	403	806	1041	1388	1856	2352	2944	403	806	1041	1388	1856	2352	2944	3680	4576
Max cont.	[26.42]	[593]	[1363]	[1849]	[2283]	[3142]	[3867]	[4744]	SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM	
	100	67	154	209	258	355	437	536	503	1006	1341	1788	2316	2912	3592	503	1006	1341	1788	2316	2912	3592	4496	5592
Max int.	[33.02]	[495]	[1256]	[1867]	[2221]	[3053]	[3805]	[4690]	SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM		SPEED RPM	
	125	56	142	211	251	345	430	530	758	1516	1992	2656	3376	4240	5200	758	1516	1992	2656	3376	4240	5200	6500	8000



PERFORMANCE DATA

PHDM4 250(252.2cc)

		[580]	[1160]	[1450]	[1740]	[2320]	[2900]	[3480]	[PSI]
		40	80	100	120	160	200	240	BAR
[GPM]	[2.64]	[1186]	[2451]	[3044]	[3593]	[4797]	[6098]	[7080]	TORQUE [LB-IN] TORQUE N•M SPEED RPM
	L/min	10	134 39	277 39	344 38	406 37	542 35	689 33	
[5.28]	20	[1230]	[2540]	[3124]	[3708]	[4982]	[6266]	[7328]	
	20	139 78	287 77	353 76	419 74	563 72	708 69	828 64	
[10.57]	40	[1194]	[2584]	[3195]	[3779]	[5089]	[6399]	[7593]	
	40	135 159	292 157	361 155	427 152	575 149	723 145	858 137	
[15.85]	60	[1132]	[2522]	[3195]	[3788]	[5080]	[6239]	[7620]	
	60	128 242	285 241	361 238	428 234	574 228	705 223	861 211	
[21.13]	80	[1106]	[2433]	[3124]	[3717]	[5036]	[6186]	[7611]	
	80	125 323	275 322	353 320	420 314	569 309	699 305	860 290	
Max cont.	100	[1088]	[2425]	[3044]	[3664]	[5000]	[6151]	[7549]	
	100	123 404	274 402	344 399	414 395	565 389	695 380	853 366	
Max int.	125	[1000]	[2230]	[2920]	[3558]	[4876]	[6036]	[7416]	
	125	113 505	252 502	330 498	402 492	551 485	682 478	838 463	
Max int.	150	[752]	[2079]	[2743]	[3407]	[4735]	[5894]	[7275]	
	150	85 603	235 600	310 596	385 591	535 583	666 576	822 558	

PHDM4 320(317.5cc)

		[580]	[1160]	[1450]	[1740]	[2320]	[2900]	[3480]	[PSI]
		40	80	100	120	160	200	240	BAR
[GPM]	[2.64]	[1548]	[3053]	[3805]	[4584]	[6168]	[7496]	[8948]	TORQUE [LB-IN] TORQUE N•M SPEED RPM
	L/min	10	175 31	345 30	430 29	518 28	697 27	847 26	
[5.28]	20	[1593]	[3195]	[3973]	[4726]	[6363]	[7709]	[9328]	
	20	180 62	361 61	449 60	534 58	719 56	871 54	1054 52	
[10.57]	40	[1610]	[3203]	[4071]	[4797]	[6505]	[8018]	[9665]	
	40	182 126	362 125	460 123	542 120	735 117	906 114	1092 109	
[15.85]	60	[1593]	[3195]	[4186]	[4814]	[6487]	[8089]	[9700]	
	60	180 189	361 187	473 185	544 181	733 178	914 176	1096 166	
[21.13]	80	[1504]	[3133]	[4062]	[4779]	[6461]	[8018]	[9691]	
	80	170 251	354 249	459 248	540 243	730 238	906 234	1095 224	
Max cont.	100	[1424]	[3026]	[3956]	[4752]	[6372]	[7921]	[9611]	
	100	161 314	342 313	447 310	537 307	720 303	895 297	1086 284	
Max int.	125	[1239]	[2841]	[3779]	[4593]	[6266]	[7735]	[9479]	
	125	140 391	321 389	427 386	519 382	708 378	874 374	1071 360	
Max int.	150	[1000]	[2681]	[3646]	[4434]	[5991]	[7514]	[9222]	
	150	113 471	303 469	412 466	501 462	677 457	849 444	1042 438	

PHDM4 400(401.6cc)

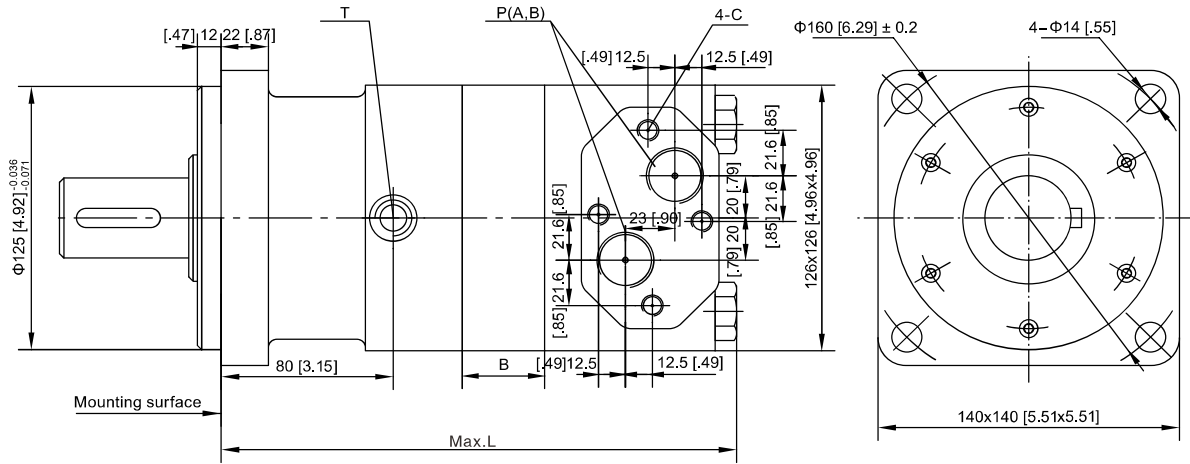
		[435]	[870]	[1305]	[1740]	[2175]	[2610]	[3045]	[PSI]
		30	60	90	120	150	180	210	BAR
[GPM]	[2.64]	[1460]	[3035]	[4637]	[5921]	[7319]	[8691]	[10001]	TORQUE [LB-IN] TORQUE N•M SPEED RPM
	L/min	10	165 25	343 24	524 23	669 22	827 21	982 20	
[5.28]	20	[1478]	[3062]	[4673]	[6009]	[7443]	[8859]	[10231]	
	20	167 51	346 50	528 49	679 46	841 44	1001 42	1156 40	
[10.57]	40	[1460]	[3062]	[4690]	[6062]	[7602]	[9027]	[10452]	
	40	165 99	346 98	530 96	685 93	859 90	1020 86	1181 82	
[15.85]	60	[1442]	[2991]	[4655]	[6036]	[7611]	[9063]	[10505]	
	60	163 149	338 147	526 143	682 139	860 135	1024 131	1187 125	
[21.13]	80	[1371]	[2920]	[4575]	[5947]	[7549]	[8974]	[10452]	
	80	155 199	330 197	517 194	672 190	853 186	1014 182	1181 176	
Max cont.	100	[1239]	[2805]	[4451]	[5859]	[7416]	[8833]	[10364]	
	100	140 249	317 247	503 245	662 241	838 235	998 231	1171 225	
Max int.	125	[1115]	[2557]	[4336]	[5691]	[7222]	[8647]	[10107]	
	125	126 311	289 309	490 307	643 303	816 298	977 294	1142 287	
Max int.	150	[1044]	[2416]	[4204]	[5514]	[7054]	[8443]	[9903]	
	150	118 375	273 373	475 369	623 365	797 361	954 357	1119 350	

PHDM4 500(535.3cc)

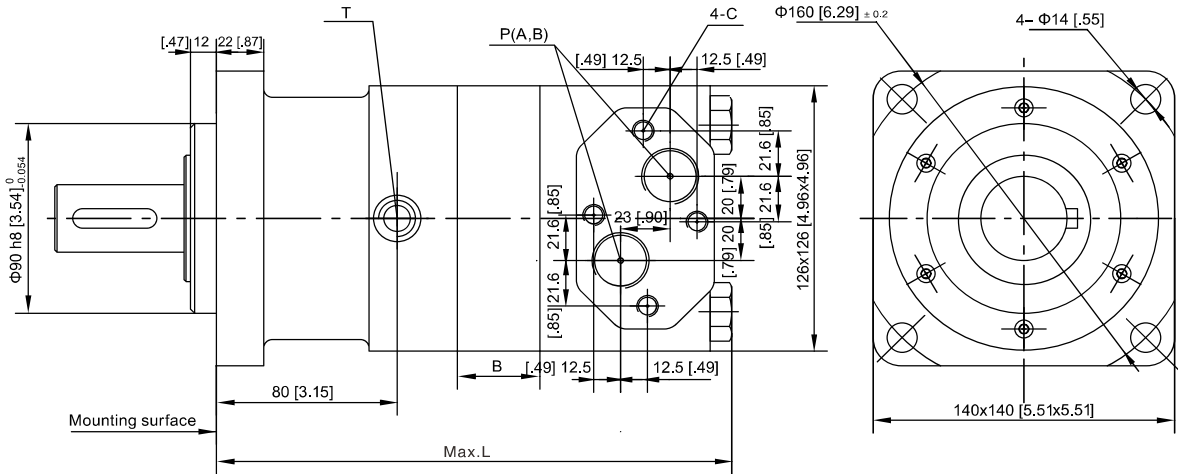
		[435]	[870]	[1305]	[1740]	[2030]	[2320]	[2610]	[PSI]
		30	60	90	120	140	160	180	BAR
[GPM]	[2.64]	[1805]	[3673]	[5637]	[7266]	[8549]	[9718]	[10912]	TORQUE [LB-IN] TORQUE N•M SPEED RPM
	L/min	10	204 18	415 18	637 18	821 17	966 16	1098 15	
[5.28]	20	[1885]	[3779]	[5806]	[7478]	[8709]	[9930]	[11213]	
	20	213 37	427 36	656 35	845 34	984 33	1122 32	1267 30	
[10.57]	40	[1876]	[3796]	[5921]	[7664]	[8912]	[10134]	[11576]	
	40	212 75	429 74	669 73	866 72	1007 70	1145 68	1308 64	
[15.85]	60	[1832]	[3726]	[5814]	[7664]	[8859]	[10142]	[11470]	
	60	207 113	421 112	657 111	866 109	1001 107	1146 105	1296 101	
[21.13]	80	[1734]	[3513]	[5664]	[7549]	[8762]	[10134]	[11408]	
	80	196 151	397 150	640 149	853 147	990 145	1145 143	1289 138	
Max cont.	100	[1584]	[3425]	[5540]	[7337]	[8656]	[9965]	[11258]	
	100	179 189	387 188	626 187	829 185	978 183	1126 181	1272 177	
Max int.	125	[1486]	[3239]	[5221]	[7142]	[8337]	[9762]	[11010]	
	125	168 237	366 236	590 235	807 233	942 231	1103 229	1244 225	
Max int.	150	[1194]	[3000]	[5036]	[6947]	[8178]	[9505]	[10789]	
	150	135 284	339 283	569 282	785 280	924 278	1074 276	1219 272	

DIMENSIONS AND MOUNTING

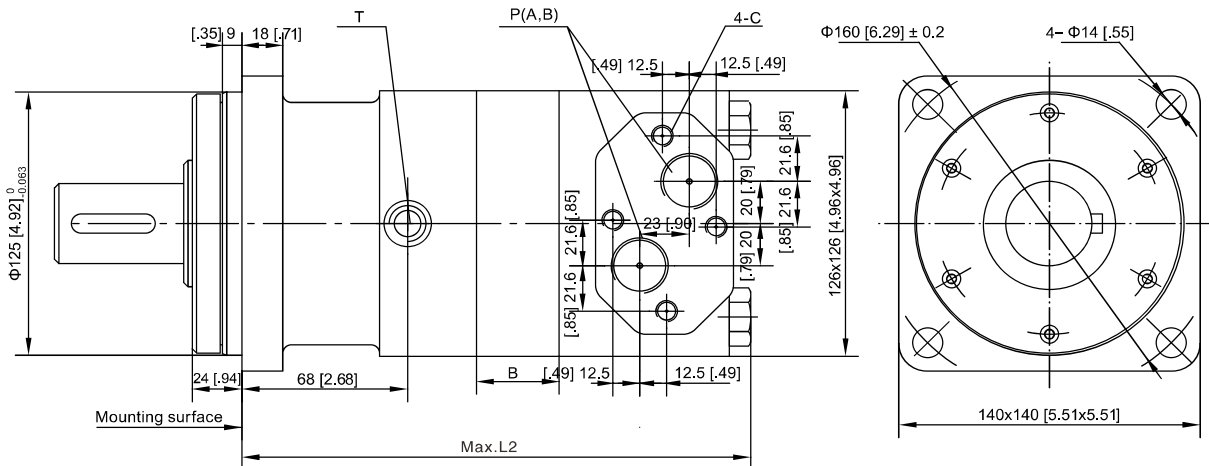
Square flange A



Square flange A1

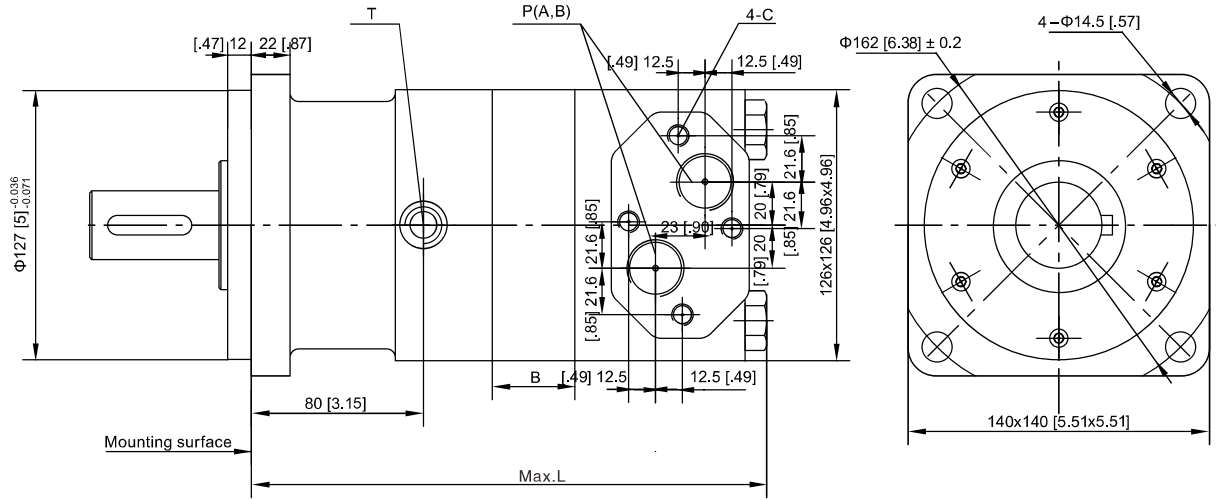


Square flange A4



PHDM4

Square flange A7



PHDM4

	PHDM4-160	PHDM4-200	PHDM4-250	PHDM4-320	PHDM4-400	PHDM4-500
L	217.5 [8.56]	222 [8.74]	227.5 [8.96]	234.5 [9.23]	243.5 [9.58]	262 [10.31]
B	12 [.47]	16.5 [.65]	22 [.87]	29 [1.14]	38 [1.49]	56.5 [2.22]
L2	205.5 [8.09]	210 [8.27]	215.5 [8.48]	222.5 [8.76]	231.5 [9.11]	250 [9.84]

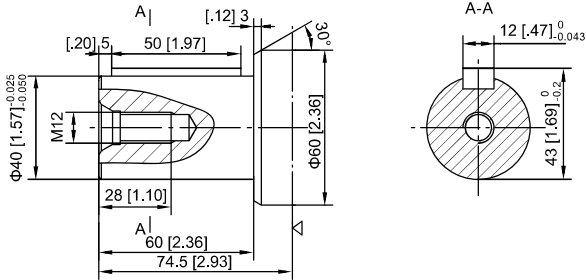
Port Codes	Ports (A,B)	Mounting Thread (C)	Drain Connection (T)
Y	G3/4 (15)	M10 (12)	G1/4(12)
Y3	M27 × 2(15)	M10 (12)	M14 × 1.5(12)
Y4	M22 × 1.5(15)	M10 (12)	M14 × 1.5(12)
Y8	7/8-14UNF(15)	—	7/16-20UNF(12)
Y10	1 1/16-12UN(15)	—	9/16-18UNF(12)

P(A, B)—Ports, C—Mounting Thread (—Indicates no this thread), T—Drain connection

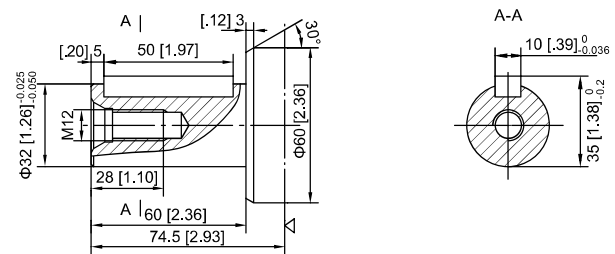
DIMENSIONS AND MOUNTING

Only match A, A1, A7 flange

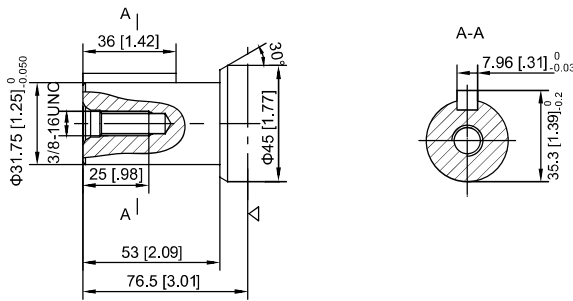
P: Φ [1.57] Cylindrical shaft, parallel key [.47] x [.31] x [1.97]
 Φ 40 Cylindrical shaft, parallel key 12 x 8 x 50



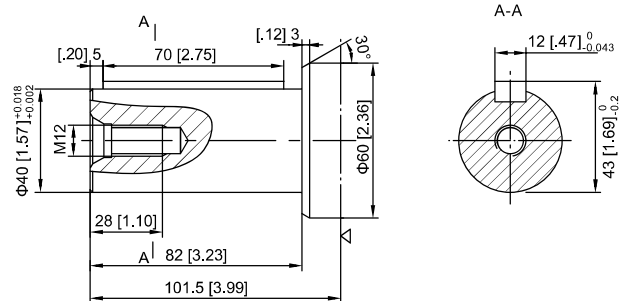
P1 : Φ [1.26] Cylindrical shaft, parallel key [.39] x [.31] x [1.97]
 Φ 32 Cylindrical shaft, parallel key 10 x 8 x 50



P13: Φ [1.25] Cylindrical shaft, parallel key [.31] x [.31] x [1.42]
 Φ 31.75 Cylindrical shaft, parallel key 7.96 x 7.96 x 36



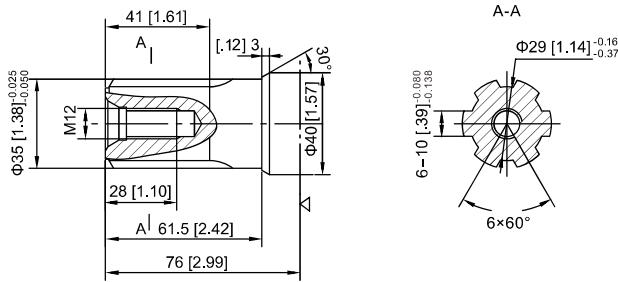
P33: Φ [1.57] Cylindrical shaft, parallel key [.47] x [.31] x [2.75]
 Φ 40 Cylindrical shaft, parallel key 12 x 8 x 70



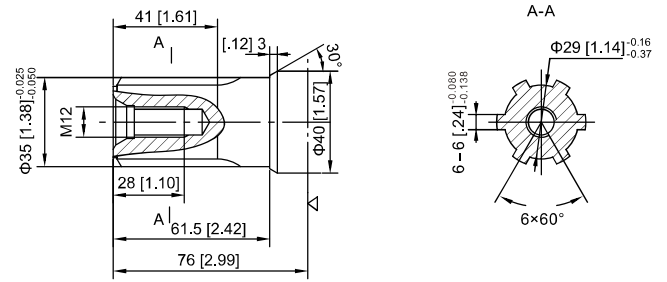
PHDM4

Only match A, A1, A7 flange

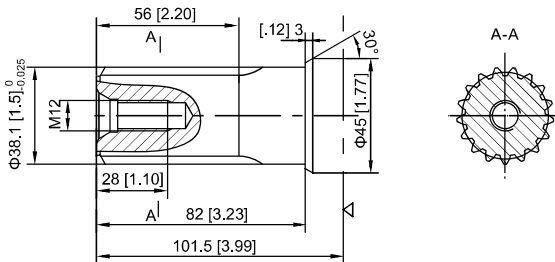
H4: Φ [1.38] Splined shaft, 6- [1.38] x [1.14] x [.39]
 Φ 35 Splined shaft, 6-35 x 29 x 10



H5: Φ [1.38] Splined shaft, 6- [1.38] x [1.14] x [.24]
 Φ 35 Splined shaft, 6-35 x 29 x 6

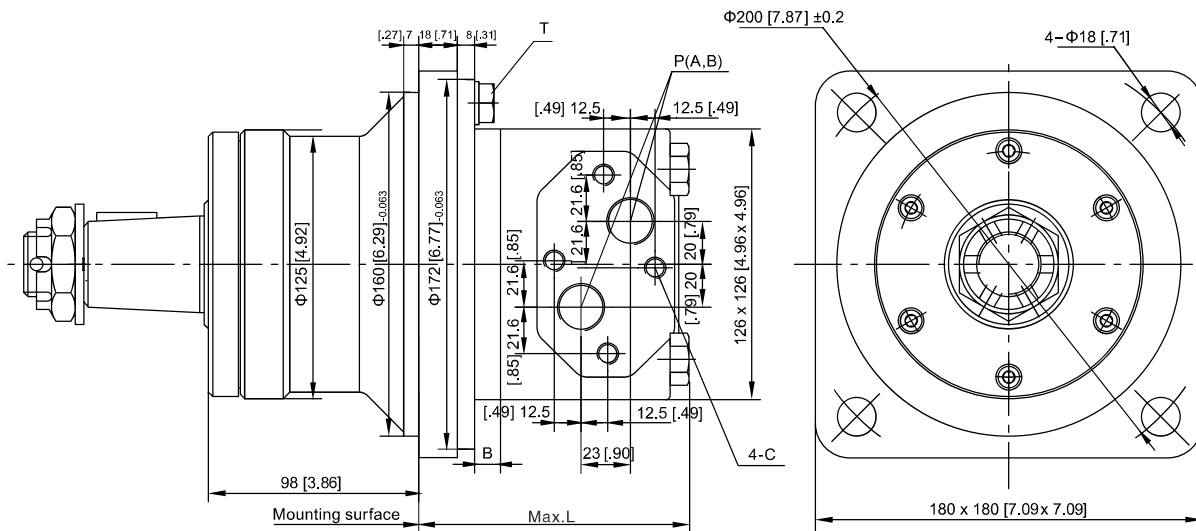


K3: Φ [1.5] Involute splined shaft 17-DP12/24 a=30°
 Φ 38.1 involute splined shaft 17-DP12/24 a=30°



Note: Flange with A4 type, hydraulic motor shaft from the mounting surface to increase 12mm.

DIMENSIONS AND MOUNTING



PHDM4W

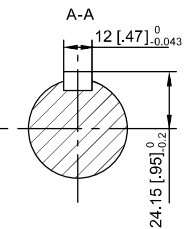
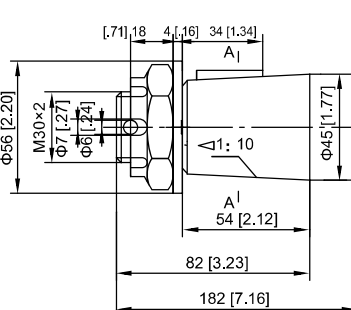
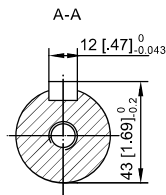
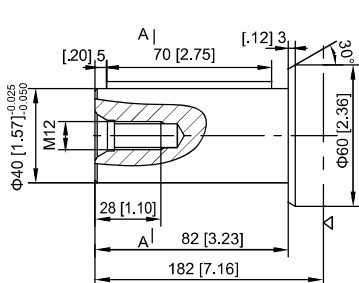
	PHD4W-160	PHD4W-200	PHD4W-250	PHD4W-320	PHD4W-400	PHD4W-500
L	131.5 [5.18]	136 [5.35]	142.5 [5.61]	149.5 [5.88]	158.5 [6.24]	177 [6.96]
B	12 [.47]	16.5 [.65]	22 [.87]	29 [1.14]	38 [1.49]	56.5 [2.22]

Port Codes	Ports (A,B)	Mounting Thread (C)	Drain Connection (T)
Y	G3/4 (15)	M10 (12)	G1/4(12)

P(A, B)--Ports, C--Mounting Thread (—Indicates no this thread) , T--Drain connettion

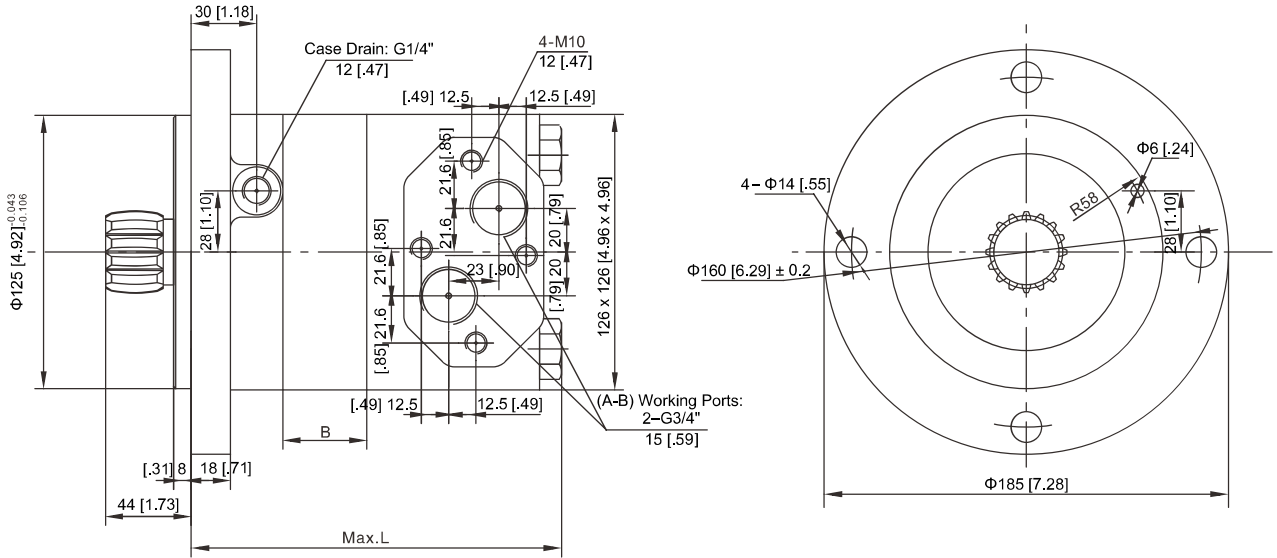
P31 : Φ [1.57] Cylindrical shaft, parallel key [.47] x [.31] x [2.75]
 Φ 40 Cylindrical shaft, parallel key 12 x 8 x 70

Z2 : Φ [1.77] Tapered shaft, taper 1:10, parallel key [.47] x [.31] x [1.10]
 Φ 45 Tapered shaft, taper 1:10, parallel key 12 x 8 x 28

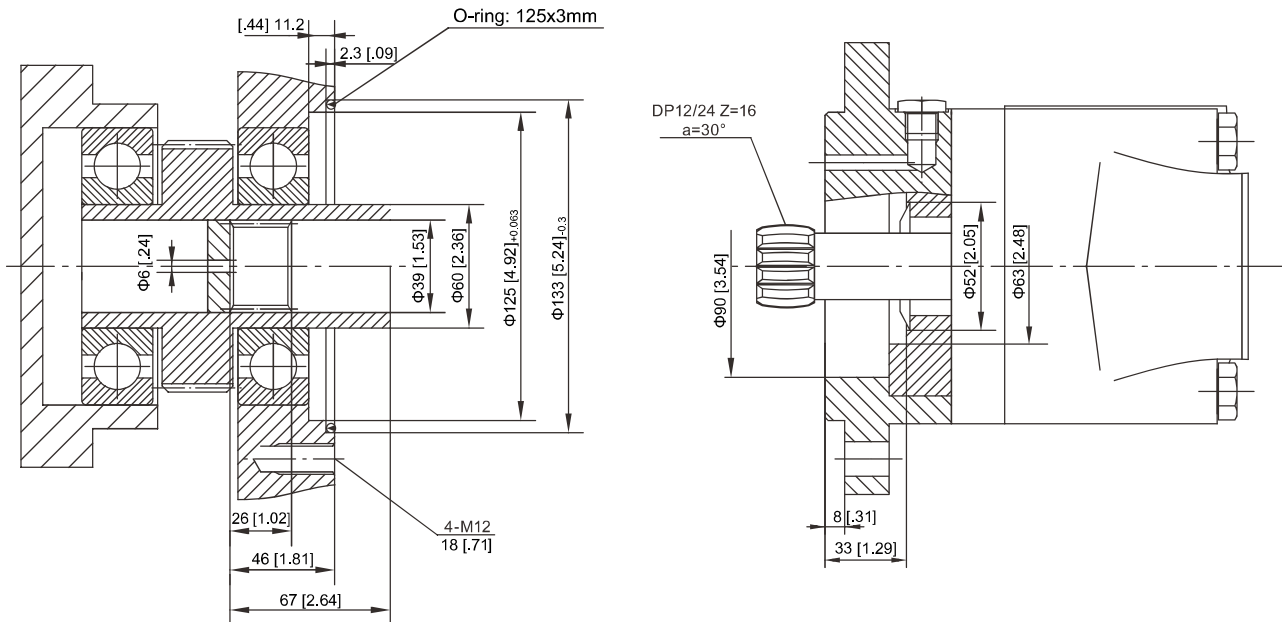


DIMENSIONS AND MOUNTING

PHDM4S



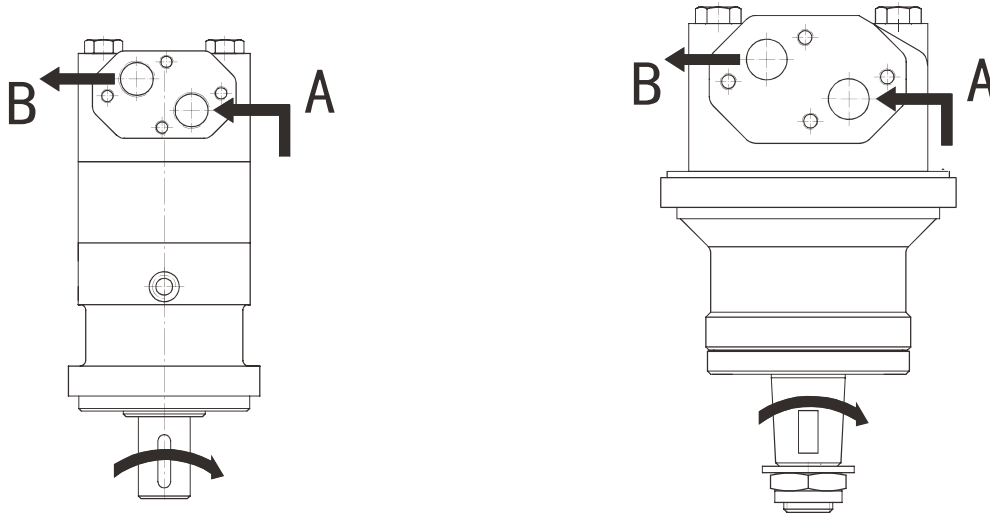
	PHD4S-160	PHD4S-200	PHD4S-250	PHD4S-320	PHD4S-400	PHD4S-500
L	148.5 [5.85]	153 [6.02]	158.5 [6.24]	165.5 [6.51]	174.5 [6.87]	193 [7.59]
B	12 [4.7]	16.5 [6.5]	22 [8.7]	29 [1.14]	38 [1.49]	56.5 [2.22]



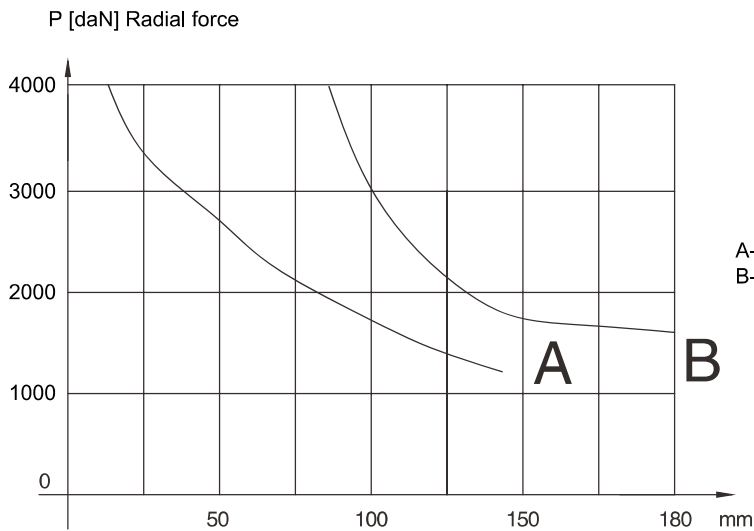
PHDM4 SERIES MOTOR

Direction of shaft rotation: Standard

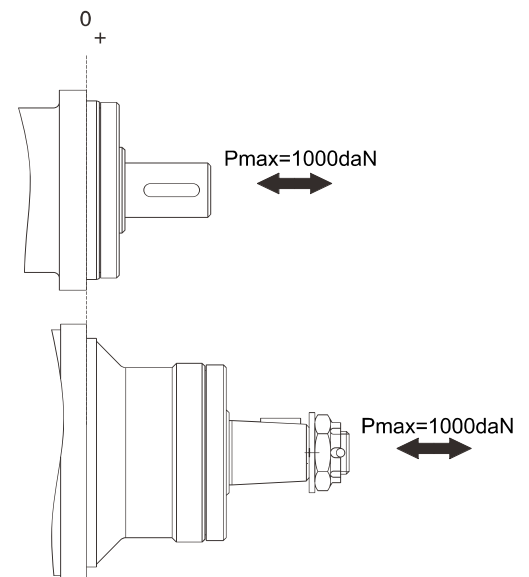
When facing shaft end of motor, shaft to rotate:
 Clockwise when port "A" is pressurized.
 Counter-clockwise port "B" is pressurized.



PERMISSIBLE SHAFT LOADS



A--PHDM4
 B--PHDM4W





ORDERING INFORMATION

1	2	3	4	5	6	7
PHDM4	—				—	—

Pos.1	2	3		4		5		6		7			
Series	Disp	Output		Flange		Ports		Special features		Rotation direction			
						Code	Ports(A,B)(deep)					Drain port T(deep)	
PHDM4	160	P33	Φ[1.57] Cylindrical shaft, parallel key [.47] x [.31] x [2.75] Φ40 Cylindrical shaft, parallel key 12 x 8 x 70		A	4 – Φ[.55] Oval flange, pilot Φ[4.92] 4– Φ 14 Oval flange, pilot Φ 125		Y	G3/4(15)	G1/4(12)	Omit T7	Standard With dustproof ring L	Omit Opposite
	200	P	Φ[1.57] Cylindrical shaft, parallel key [.47] x [.31] x [1.97] Φ40 Cylindrical shaft, parallel key 12 x 8 x 50			4 – Φ[.55] Oval flange, pilot Φ[3.54] 4– Φ 14 Oval flange, pilot Φ90		Y3	M27 x 2(15)	M14 x 1.5(12)			
	250	P1	Φ[1.26] Cylindrical shaft, parallel key [.39] x [.31] x [1.97] Φ32 Cylindrical shaft, parallel key 10 x 8 x 50		A1	4 – Φ[.55] Oval flange, pilot Φ[4.92] 4– Φ 14 Oval flange, pilot Φ 125		Y4	M22 x 1.5(15)	M14 x 1.5(12)			
	320	P13	Φ[1.25] Cylindrical shaft, parallel key [.31] x [.31] x [1.42] Φ31.75 Cylindrical shaft, parallel key 7.96 x 7.96 x 36		A4	4 – Φ[.57] Oval flange, pilot Φ[5] 4– Φ 14.5 Oval flange, pilot Φ 127		Y8	7/8–14UNF(15)	7/16–20UNF(12)			
	400	H4	Φ[1.38] Splined shaft, [.24] – [1.38] x [1.14] x [.39] Φ35 Splined shaft, 6–35 x 29 x 10			4 – Φ[.55] Oval flange, pilot Φ[4.92] 4– Φ 14 Oval flange, pilot Φ 125		Y10	1 1/16–12UN(15)	9/16–18UNF(12)			
	400	H5	Φ[1.38] Splined shaft, [.24] – [1.38] x [1.14] x [.24] Φ35 Splined shaft, 6–35 x 29 x 6		A7	4 – Φ[.55] Oval flange, pilot Φ[4.92] 4– Φ 14 Oval flange, pilot Φ 125		Y8	7/8–14UNF(15)	7/16–20UNF(12)			
	500	K3	Φ[1.5] Involute splined shaft, 17–DP12/24 a=30° Φ38.1 involute splined shaft, 17–DP12/24 a=30°			4 – Φ[.57] Oval flange, pilot Φ[5] 4– Φ 14.5 Oval flange, pilot Φ 127		Y10	1 1/16–12UN(15)	9/16–18UNF(12)			



ORDERING INFORMATION

1	2	3	4	5	6	7
PHDM4W	—				—	—

Pos.1	2	3		4		5		6		7		
Series	Disp	Output		Flange		Ports		Special features		Rotation direction		
						Code	Ports(A,B)(deep)					Drain port T(deep)
PHDM4W	160 200 250 320 400 500	P31	Φ[1.57] Cylindrical shaft, parallel key [.47] x [.31] x [2.75] Φ40 Cylindrical shaft, parallel key 12 x 8 x 70	A	4 – Φ[.71] Oval flange, pilot Φ[6.29] 4 – Φ18 Oval flange, pilot Φ160	Y	G3/4(15)	G1/4(12)	Omit	Standard	Omit	Standard
	Z2	Φ[1.77] Tapered shaft, taper 1:10, parallel key B12 x 8 x 28 Φ45 Tapered shaft, taper 1:10, parallel key B12 x 8 x 28	L								Opposite	

1	2	3
PHDM4S	—	/

Pos.1	2	3	
Series	Disp	Special features	
PHDM4S	160	Omit	Standard
	200		
	250		
	320		
	400		
	500		