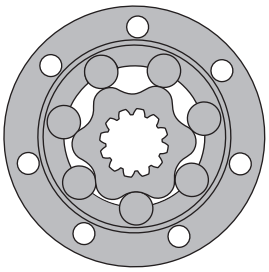
HYDRAULIC MOTORS HW



APPLICATION

» Conveyors
» Feeding mechanism of robots and manipulators
» Metal working machines
» Textile machines
» Agricultural machines
» Food industries
» Grass cutting machinery etc.



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Dimensions and mounting ..... 114÷119
Permissible shaft loads 120
Shaft extensions ..... 120÷122
Order code 123

OPTIONS

» Model - Spool valve, roll-gerotor
» Wheel and flange mount
» Shafts - straight, splined and tapered
» BSPP and SAE ports
» Other special features

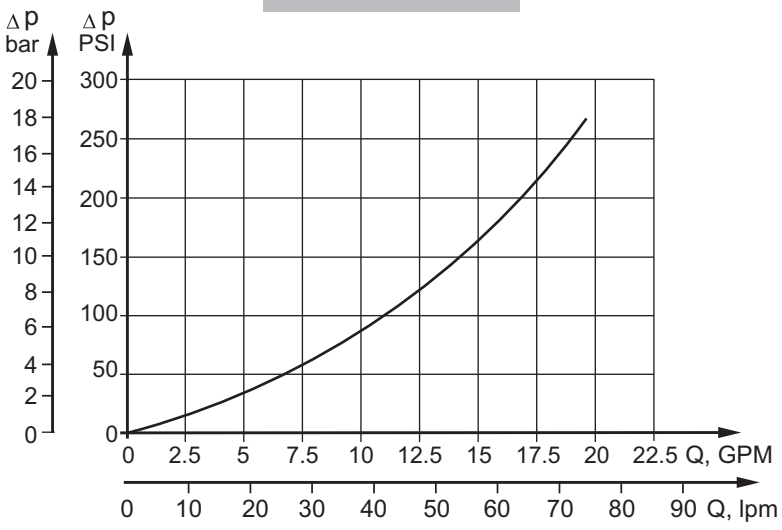
GENERAL

Max. Displacement, cm^3/rev [in^3/rev]	753,8 [45.99]
Max. Speed, [RPM]	750
Max. Torque, daNm [lb-in]	cont.: 96 [8500] int.: 106 [9382]
Max. Output, kW [HP]	23,1 [31]
Max. Pressure Drop, bar [PSI]	cont.: 205 [3000] int.: 225 [3260]
Max. Oil Flow, lpm [GPM]	115 [30.4]
Min. Speed, [RPM]	10
Pressure fluid	Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)
Temperature range, ^{O}C [^{O}F]	-40÷140 [-40÷284]
Optimal Viscosity range, mm^2/s [SUS]	20÷75 [98÷347]
Filtration	ISO code: 18/16/13 According to ISO 4406-1999

Oil flow in drain line

Pressure drop bar [PSI]	Viscosity mm^2/s [SUS]	Oil flow in drain line lpm [GPM]
100 [1450]	20 [98]	2,5 [.660]
	35 [164]	1,8 [.476]
140 [2030]	20 [98]	3,5 [.925]
	35 [164]	2,8 [.740]

Pressure Losses



SPECIFICATION DATA

Type		HW 80	HW 100	HW 125	HW 160	HW 200	HW 235
Displacement, cm^3/rev [in^3/rev]		79,7 [4.86]	101,4 [6.19]	126 [7.69]	157,8 [9.63]	201,3 [12.28]	235,3 [14.36]
Max. Speed,	Cont.	565	445	357	380	373	319
[RPM]	Int.*	750	590	476	475	497	425
Max. Torque,	Cont.	18,8 [1664]	24 [2124]	35 [3098]	44 [3894]	55 [4868]	64,5 [5710]
daNm [lb-in]	Int.*	22,1 [1956]	28,2 [2496]	38,5 [3408]	48 [4248]	60 [5310]	70 [6196]
Max. Output,	Cont.	15,4 [20.7]	15,8 [21.2]	16,2 [21.7]	17,6 [23.6]	18,6 [24.9]	18,2 [24.4]
kW [HP]	Int.*	17,4 [23.3]	18,1 [24.3]	19,8 [26.6]	21,6 [29]	23,1 [31]	22,6 [30.3]
Max. Pressure	Cont.	175 [2540]	175 [2540]	205 [2970]	205 [2970]	205 [2970]	205 [2970]
Drop, bar [PSI]	Int.*	205 [2970]	205 [2970]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
Max. Oil Flow,	Cont.	45 [12]	45 [12]	45 [12]	60 [16]	75 [20]	75 [20]
lpm [GPM]	Int.*	60 [16]	60 [16]	60 [16]	75 [20]	100 [26.4]	100 [26.4]
Max. Inlet	Cont.	200 [2900]	200 [2900]	210 [3050]	210 [3050]	210 [3050]	210 [3050]
Pressure, bar [PSI]	Int.*	225 [3260]	225 [3260]	250 [3625]	250 [3625]	250 [3625]	250 [3625]
Max. Starting Pressure with Unloaded Shaft, bar [PSI]		12 [174]	12 [174]	10 [145]	10 [145]	10 [145]	10 [145]
Min. Starting	At max. press. drop Cont.	15 [1328]	19,2 [1699]	28,7 [2540]	36 [3186]	45,1 [3991]	52,8 [4673]
Torque, daNm [lb-in]	At max. press. drop Int.*	17,6 [1558]	22,5 [1991]	31,5 [2788]	39,3 [3478]	49,2 [4355]	57,4 [5080]
Min. Speed***, [RPM]		12	12	10	10	10	10
Weight, kg [lb]	HW	14,1 [31.1]	14,2 [31.3]	14,3 [31.5]	14,6 [32.2]	15,1 [33.3]	15,5 [34.2]
	HWF	12,6 [27.8]	12,7 [28.0]	12,8 [28.2]	13,1 [28.9]	13,6 [30.0]	14,0 [30.9]
	HWFR	14,6 [32.2]	14,7 [32.4]	14,8 [32.6]	15,1 [33.3]	15,6 [34.4]	16,0 [35.3]
	HWFV	12,6 [27.8]	12,7 [28.0]	12,8 [28.2]	13,1 [28.9]	13,6 [30.0]	14,0 [30.9]
	HWS	13,8 [30.4]	13,9 [30.6]	14,0 [30.9]	14,3 [31.5]	14,8 [32.6]	15,2 [33.5]
	HWSW	13,5 [29.8]	13,6 [30.0]	13,7 [30.2]	14,0 [30.9]	14,5 [31.9]	14,9 [32.8]
	HWSR	15,8 [34.8]	15,9 [35.1]	16,0 [35.3]	16,3 [35.9]	16,8 [37.0]	17,2 [37.9]
	HWD	14,3 [31.5]	14,4 [31.8]	14,5 [31.9]	14,8 [32.6]	15,3 [33.7]	15,7 [34.6]
	HWV	13,8 [30.4]	13,9 [30.6]	14,0 [30.9]	14,3 [31.5]	14,8 [32.6]	15,2 [33.5]
	HWE	14,5 [31.9]	14,6 [32.2]	14,7 [32.4]	15,0 [33.1]	15,5 [34.2]	15,9 [35.1]
	HWSE	14,2 [31.3]	14,3 [31.5]	14,4 [31.8]	14,7 [32.4]	15,2 [33.5]	15,6 [34.4]
	HWFE	13,0 [28.7]	13,1 [28.9]	13,2 [29.1]	13,5 [29.8]	14,0 [30.9]	14,4 [31.8]
	HW(7,8,9,10)	16,0 [35.3]	16,1 [35.5]	16,2 [35.7]	16,5 [36.4]	17,0 [37.5]	17,4 [38.4]
	HWF(7,8,9,10)	14,5 [31.9]	14,6 [32.2]	14,7 [32.4]	15,0 [33.1]	15,5 [34.2]	15,9 [35.1]
	HWS(7,8,9,10)	15,7 [34.6]	15,8 [34.8]	15,9 [35.1]	16,2 [35.7]	16,7 [36.8]	17,1 [37.7]

* Intermittent operation: the permissible values may occur for max. 10% of every minute.
** For speeds lower than given, consult factory or your regional manager.
*** **For "E"-option and versions 7,8,9,10 it is not recommendable a flow bigger than 75% of the nominal flow rate.**

1. Intermittent speed and intermittent pressure must not occur simultaneously.
2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
3. Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4). If using synthetic fluids consult the factory for alternative seal materials.
4. Recommended minimum oil viscosity 13 mm²/s [70 SUS] at 50°C [122°F].
5. Recommended maximum system operating temperature is 82°C [180°F].
6. To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

SPECIFICATION DATA

Type		HW 250	HW 300	HW 315	HW 350	HW 370	HW 400
Displacement, cm^3/rev [in^3/rev]		252 [15.38]	300 [18.31]	314,9 [19.22]	347,8 [21.22]	369,2 [22.53]	396,8 [24.21]
Max. Speed,	Cont.	298	250	238	216	203	189
[RPM]	Int.*	397	333	318	288	271	252
Max. Torque,	Cont.	69 [6107]	81 [7170]	85 [7523]	94 [8320]	96 [8497]	96 [8497]
daNm [lb-in]	Int.*	75 [6638]	89 [7877]	93 [8230]	102 [9028]	105 [9293]	98 [8674]
Max. Output,	Cont.	16,8 [22.5]	16,5 [22]	16,4 [21.9]	16,5 [22]	13,2 [17.7]	12,5 [16.8]
kW [HP]	Int.*	20,8 [27.9]	20,8 [27.9]	20,8 [27.9]	20,8 [27.9]	19,2 [25.7]	18,5 [24.8]
Max. Pressure	Cont.	205 [2970]	205 [2970]	205 [2970]	205 [2970]	200 [2900]	185 [2680]
Drop, bar [PSI]	Int.*	225 [3260]	225 [3260]	225 [3260]	225 [3260]	220 [3200]	190 [2760]
Max. Oil Flow,	Cont.	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]
lpm [GPM]	Int.*	100 [26.4]	100 [26.4]	100 [26.4]	100 [26.4]	100 [26.4]	100 [26.4]
Max. Inlet	Cont.	210 [3050]	210 [3050]	210 [3050]	210 [3050]	210 [3050]	210 [3050]
Pressure, bar [PSI]	Int.*	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]
Max. Starting Pressure with Unloaded Shaft, bar [PSI]		10 [145]	10 [145]	10 [145]	10 [145]	10 [145]	10 [145]
Min. Starting	At max. press. drop Cont.	56,5 [5000]	66,4 [5877]	69,7 [6169]	77 [6815]	79,5 [7036]	78,7 [6966]
Torque, daNm [lb-in]	At max. press. drop Int.*	61,5 [5443]	72,9 [6452]	76,2 [6744]	83,6 [7400]	86 [7612]	80,3 [7107]
Min. Speed*, [RPM]**		10	10	10	8	8	8
Weight, kg [lb]	HW	15,7 [34.6]	16,1 [35.5]	16,3 [35.9]	16,7 [36.8]	16,9 [37.3]	17,3 [38.1]
	HWF	14,2 [31.3]	14,6 [32.2]	14,8 [32.6]	15,2 [33.5]	15,4 [34.0]	15,8 [34.8]
	HWFR	16,2 [35.7]	16,6 [36.6]	16,8 [37.0]	17,2 [37.9]	17,4 [38.4]	17,8 [39.2]
	HWFV	14,2 [31.3]	14,6 [32.2]	14,8 [32.6]	15,2 [33.5]	15,4 [34.0]	15,8 [34.8]
	HWS	15,4 [34.0]	15,8 [34.8]	16,0 [35.3]	16,4 [36.2]	16,6 [36.6]	17,0 [37.5]
	HWSW	15,1 [33.3]	15,5 [34.2]	15,7 [34.6]	16,1 [35.5]	16,3 [35.9]	16,7 [36.8]
	HWSR	17,4 [38.4]	17,8 [39.2]	18,0 [39.7]	18,4 [40.6]	18,6 [41.0]	19,0 [41.9]
	HWD	15,9 [35.1]	16,3 [35.9]	16,5 [36.4]	16,8 [37.0]	17,1 [37.7]	17,5 [38.6]
	HWV	15,4 [34.0]	15,8 [34.8]	16,0 [35.3]	16,4 [36.2]	16,6 [36.6]	17,0 [37.5]
	HWE	16,1 [35.5]	16,5 [36.4]	16,7 [36.8]	17,1 [37.7]	17,3 [38.1]	17,7 [39.0]
	HWSE	15,8 [34.8]	16,2 [35.7]	16,4 [36.2]	16,8 [37.0]	17,0 [37.5]	17,4 [38.4]
	HWFE	14,6 [32.2]	15,0 [33.1]	15,2 [33.5]	15,6 [34.4]	15,8 [34.8]	16,2 [35.7]
	HW(7,8,9,10)	17,6 [38.8]	18,0 [39.7]	18,2 [40.1]	18,6 [41.0]	18,8 [41.4]	19,2 [42.3]
	HWF(7,8,9,10)	16,1 [35.5]	16,5 [36.4]	16,7 [36.8]	17,1 [37.7]	17,3 [38.1]	17,7 [39.0]
	HWS(7,8,9,10)	17,3 [38.1]	17,7 [39.0]	17,9 [39.5]	18,3 [40.3]	18,5 [40.8]	18,9 [41.7]

* Intermittent operation: the permissible values may occur for max. 10% of every minute.
** For speeds lower than given, consult factory or your regional manager.
*** **For "E"-option and versions 7,8,9,10 it is not recommendable a flow bigger than 75% of the nominal flow rate.**

1. Intermittent speed and intermittent pressure must not occur simultaneously.
2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
3. Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4). If using synthetic fluids consult the factory for alternative seal materials.
4. Recommended minimum oil viscosity 13 mm^2/s [70 SUS] at 50°C [122°F].
5. Recommended maximum system operating temperature is 82°C [180°F].
6. To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

SPECIFICATION DATA

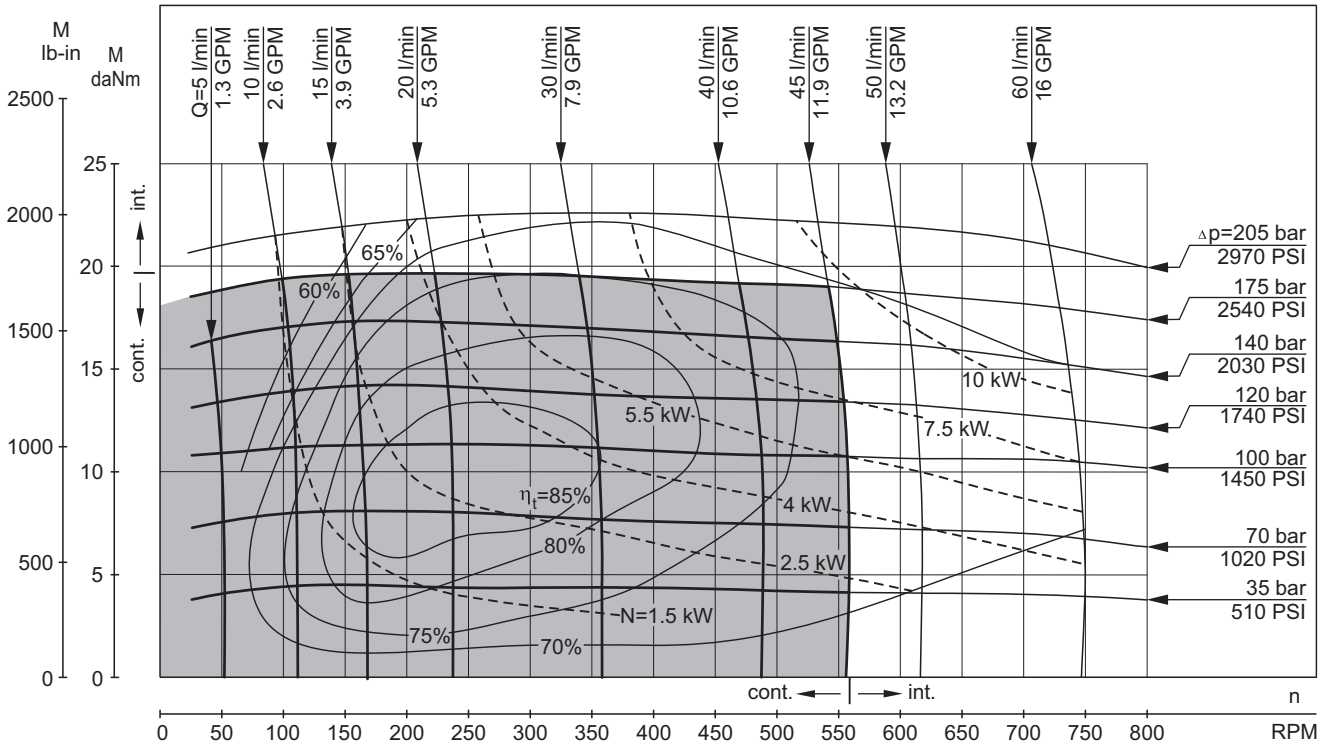
Type		HW 470	HW 500	HW 535	HW 550	HW 600	HW 750
Displacement, cm^3/rev [in^3/rev]		470,6 [28.72]	502,4 [30.66]	535 [32.65]	550 [33.56]	598,9 [36.55]	753,8 [45.99]
Max. Speed,	Cont.	159	149	140	136	125	99
[RPM]	Int.*	244	229	215	209	192	152
Max. Torque,	Cont.	92 [8143]	91 [8054]	90 [7966]	89 [7877]	91 [8054]	92 [8143]
daNm [lb-in]	Int.*	101 [8939]	101 [8939]	104 [9205]	105 [9293]	106 [9382]	106 [9382]
Max. Output,	Cont.	10,6 [14.2]	10,8 [14.5]	9,4 [12.6]	9 [12]	8,7 [11.7]	7,3 [9.8]
kW [HP]	Int.*	17,4 [23.3]	17,8 [23.9]	16,4 [22]	15,8 [21.2]	15,1 [20.2]	12,5 [16.8]
Max. Pressure	Cont.	150 [2180]	140 [2030]	130 [1885]	125 [1815]	115 [1670]	95 [1380]
Drop, bar [PSI]	Int.*	165 [2390]	155 [2250]	150 [2180]	145 [2105]	135 [1960]	105 [1520]
Max. Oil Flow,	Cont.	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]
lpm [GPM]	Int.*	115 [30.4]	115 [30.4]	115 [30.4]	115 [30.4]	115 [30.4]	115 [30.4]
Max. Inlet	Cont.	210 [3050]	210 [3050]	210 [3050]	210 [3050]	210 [3050]	210 [3050]
Pressure, bar [PSI]	Int.*	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]
Max. Starting Pressure with Unloaded Shaft, bar [PSI]		10 [145]	10 [145]	10 [145]	10 [145]	10 [145]	10 [145]
Min. Starting	At max. press. drop Cont.	75,4 [6674]	74,6 [6603]	73,8 [6532]	72,9 [6452]	72,0 [6373]	73,6 [6515]
Torque, daNm [lb-in]	At max. press. drop Int.*	82,8 [7328]	82,8 [7328]	85,2 [7540]	84,4 [7470]	83,8 [7417]	84,8 [7505]
Min. Speed*, [RPM]**		8	8	5	5	5	4
Weight, kg [lb]	HW	18,1 [39.9]	18,4 [40.6]	18,8 [41.5]	18,9 [41.7]	20,4 [44.9]	21,9 [48.3]
	HWF	16,6 [36.6]	16,9 [37.3]	17,3 [38.1]	17,4 [38.4]	18,8 [41.4]	20,3 [44.6]
	HWFR	18,6 [41.0]	18,9 [41.7]	19,3 [42.5]	19,4 [42.8]	21,0 [46.3]	22,5 [49.6]
	HWFV	16,6 [36.6]	16,9 [37.3]	17,3 [38.1]	17,4 [38.4]	18,8 [41.4]	20,3 [44.6]
	HWS	17,8 [39.2]	18,1 [39.9]	18,5 [40.8]	18,6 [41.0]	20,1 [44.3]	21,6 [47.6]
	HWSW	17,5 [38.6]	17,8 [39.2]	18,2 [40.1]	18,3 [40.3]	19,8 [43.7]	21,3 [46.9]
	HWSR	19,8 [43.7]	20,1 [44.3]	20,5 [45.2]	20,6 [45.4]	22,2 [48.9]	23,7 [52.2]
	HWD	18,3 [40.3]	18,6 [41.0]	19,0 [41.9]	19,1 [42.1]	20,6 [45.4]	22,1 [48.7]
	HWV	17,8 [39.2]	18,1 [39.9]	18,5 [40.8]	18,6 [41.0]	20,1 [44.3]	21,6 [47.6]
	HWE	18,5 [40.8]	18,9 [41.7]	19,2 [42.3]	19,3 [42.5]	20,8 [45.9]	22,3 [49.2]
	HWSE	18,2 [40.1]	18,5 [40.8]	18,9 [41.7]	19,0 [41.9]	20,5 [45.2]	22,0 [48.5]
	HWFE	17,0 [37.5]	17,3 [38.1]	17,7 [39.0]	17,8 [39.2]	19,2 [42.3]	20,7 [45.6]
	HW(7,8,9,10)	20,0 [44.1]	20,3 [44.6]	20,7 [45.6]	20,8 [45.9]	22,3 [49.2]	23,8 [52.5]
	HWF(7,8,9,10)	18,5 [40.8]	18,8 [41.4]	19,2 [42.3]	19,3 [42.5]	20,7 [45.6]	22,2 [48.9]
	HWS(7,8,9,10)	19,7 [43.4]	20,0 [44.1]	20,4 [44.9]	20,5 [45.2]	22,0 [48.5]	23,5 [51.8]

* Intermittent operation: the permissible values may occur for max. 10% of every minute.
** For speeds lower than given, consult factory or your regional manager.
*** **For "E"-option and versions 7,8,9,10 it is not recommendable a flow bigger than 75% of the nominal flow rate.**

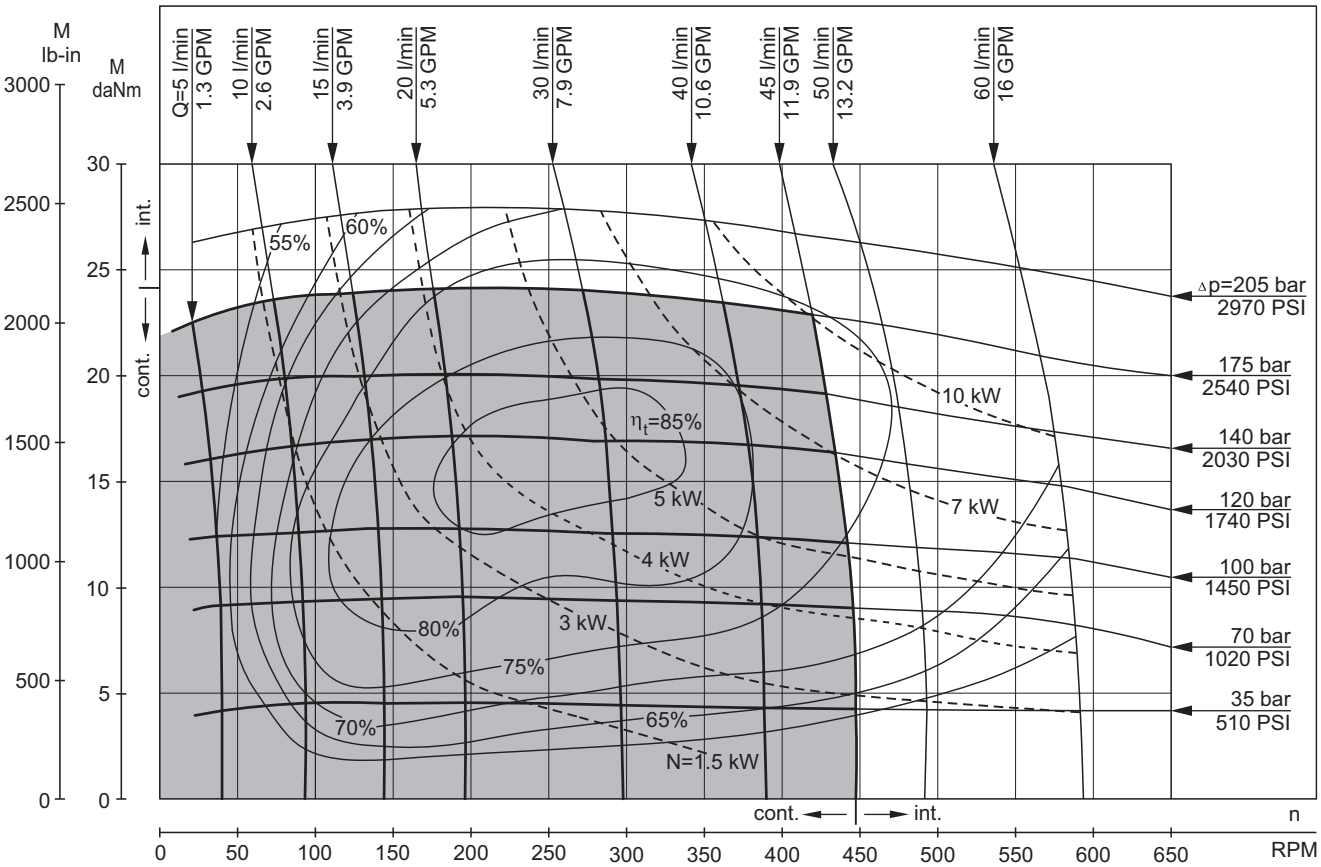
1. Intermittent speed and intermittent pressure must not occur simultaneously.
2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
3. Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4). If using synthetic fluids consult the factory for alternative seal materials.
4. Recommended minimum oil viscosity 13 mm^2/s [70 SUS] at 50°C [122°F].
5. Recommended maximum system operating temperature is 82°C [180°F].
6. To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

FUNCTION DIAGRAMS

HW 80



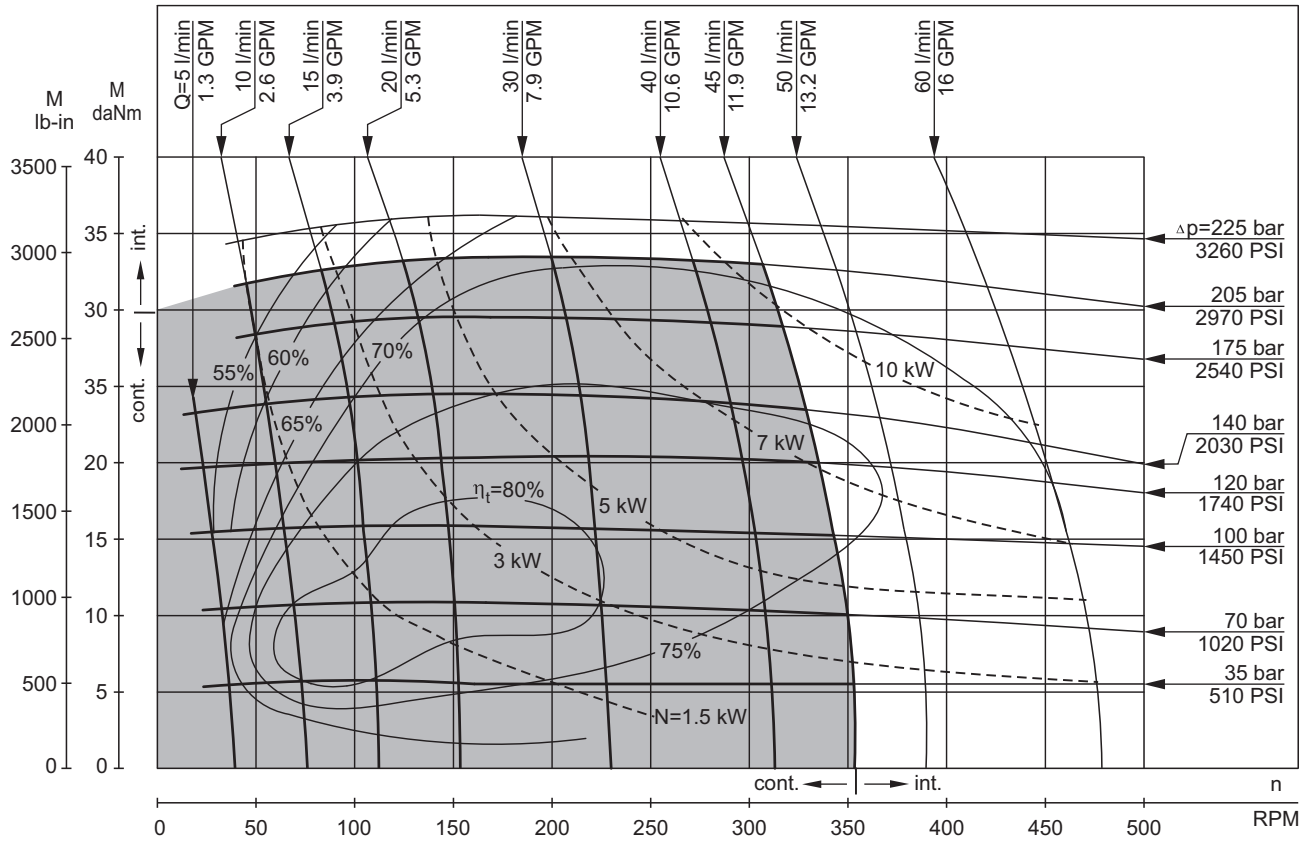
HW 100



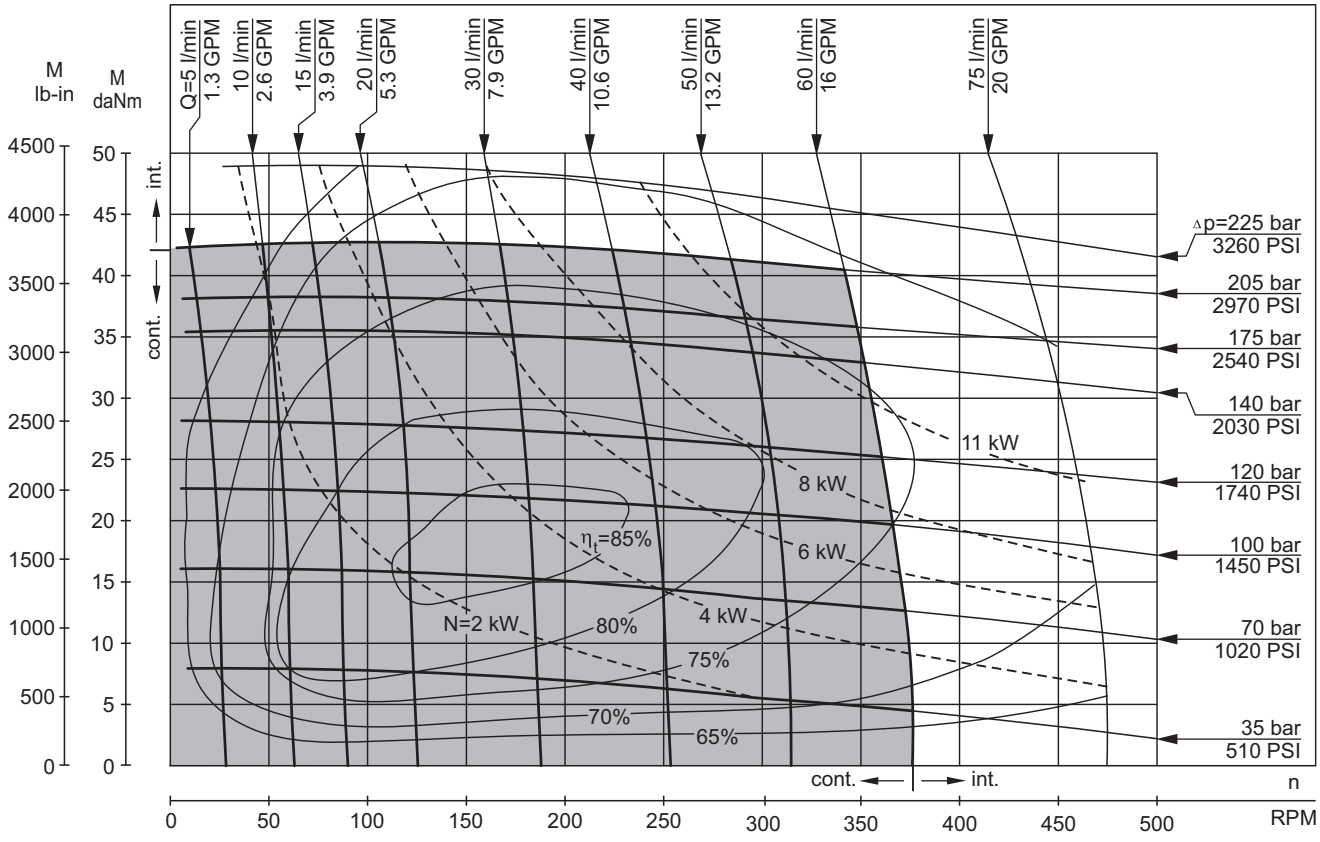
The function diagrams data is for average performance of randomly selected motors at back pressure 5÷10 bar [72.5 PSI÷145 PSI] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122°F].

FUNCTION DIAGRAMS

HW 125



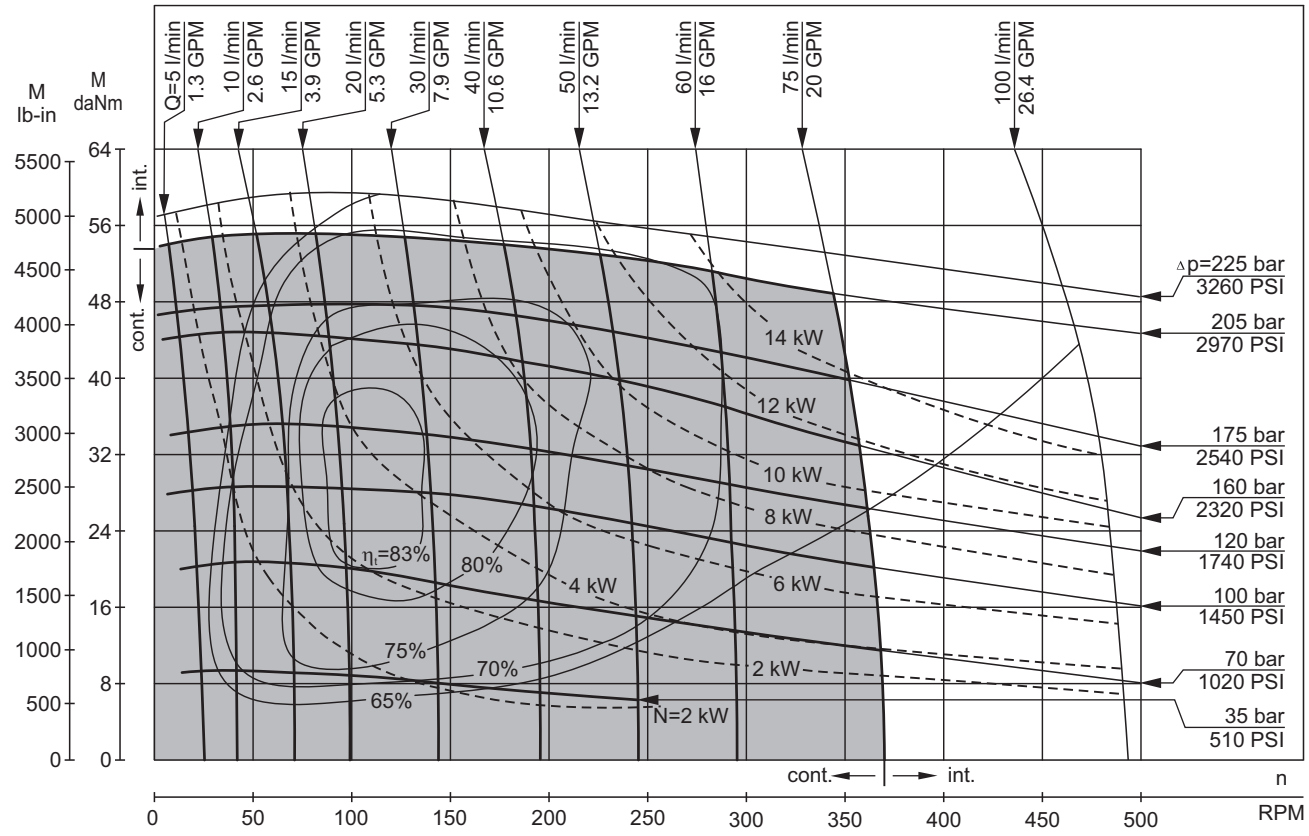
HW 160



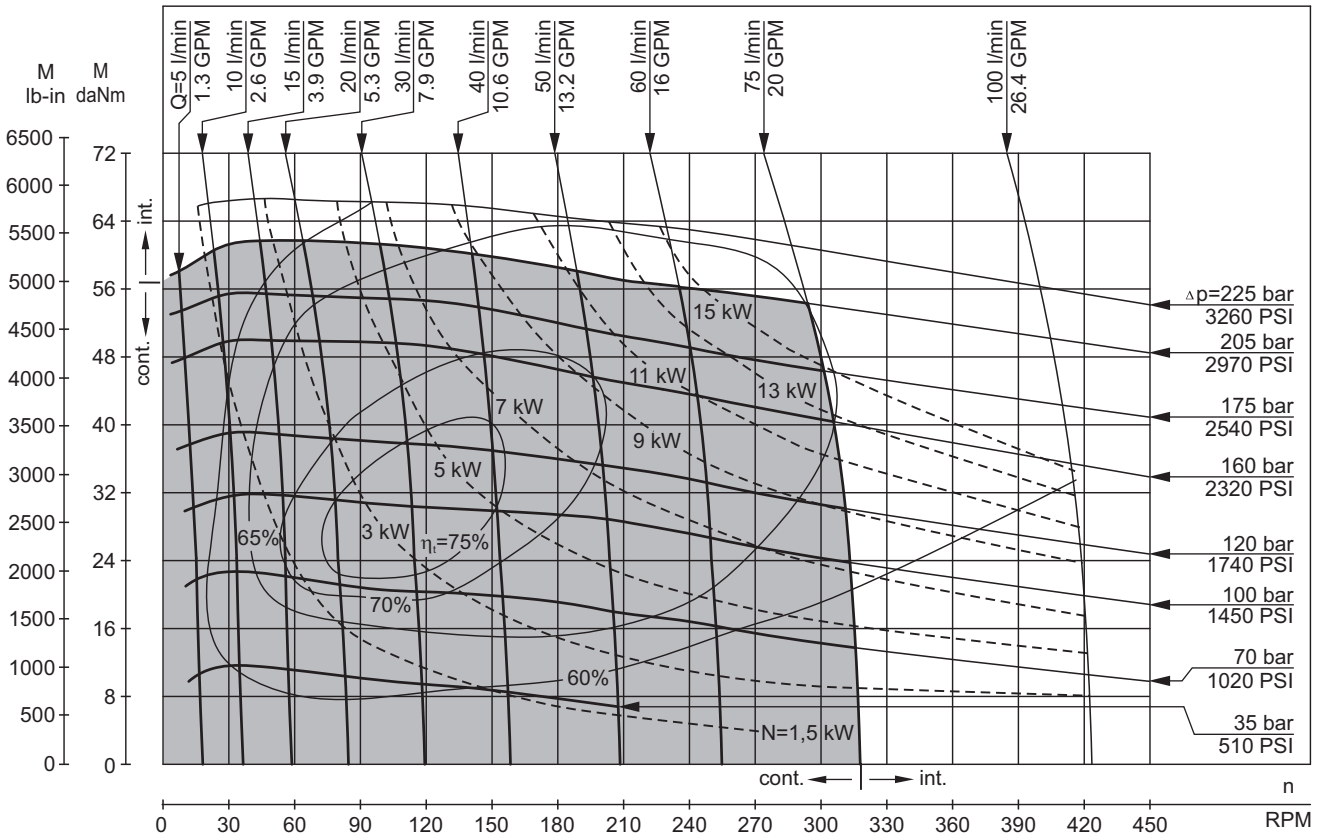
The function diagrams data is for average performance of randomly selected motors at back pressure 5÷10 bar [72.5 PSI÷145 PSI] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122°F].

FUNCTION DIAGRAMS

HW 200



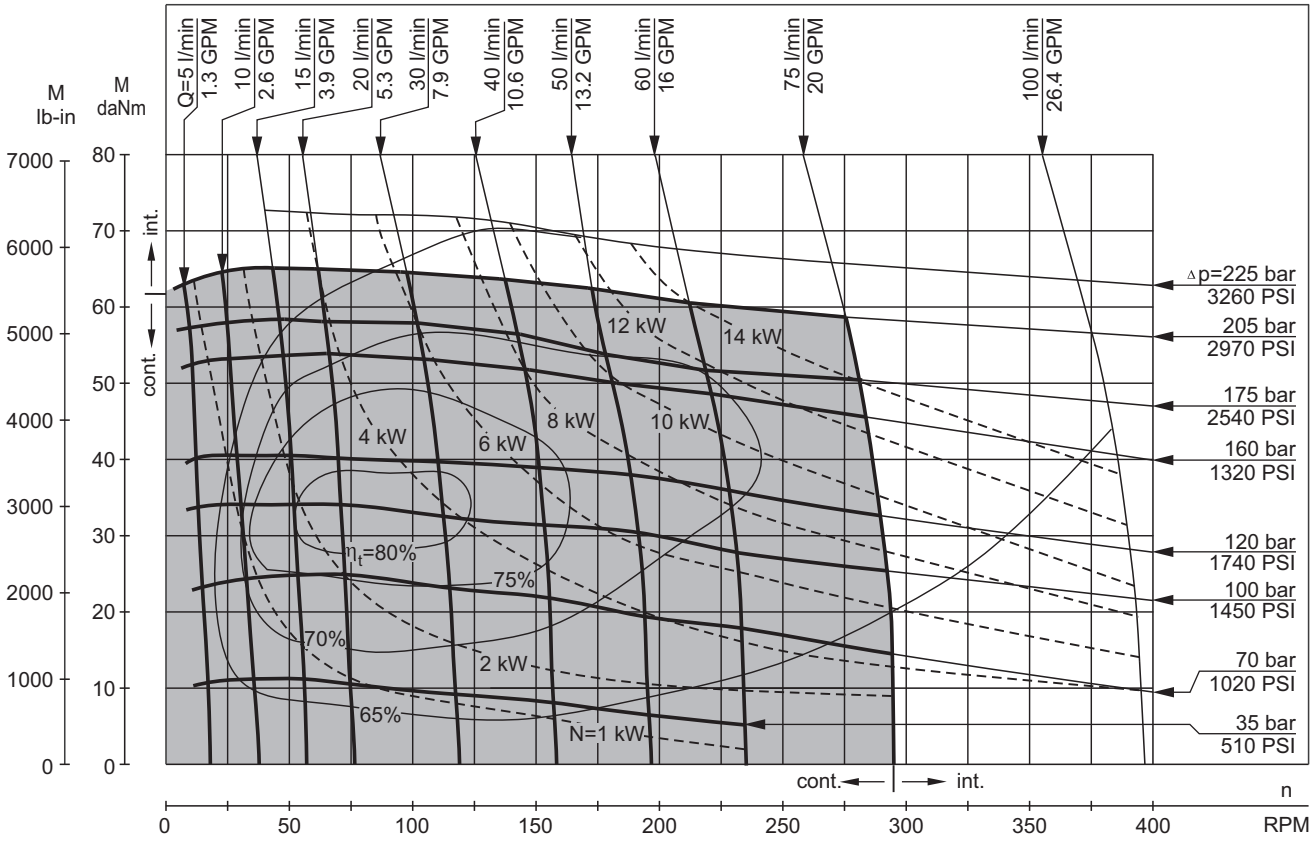
HW 235



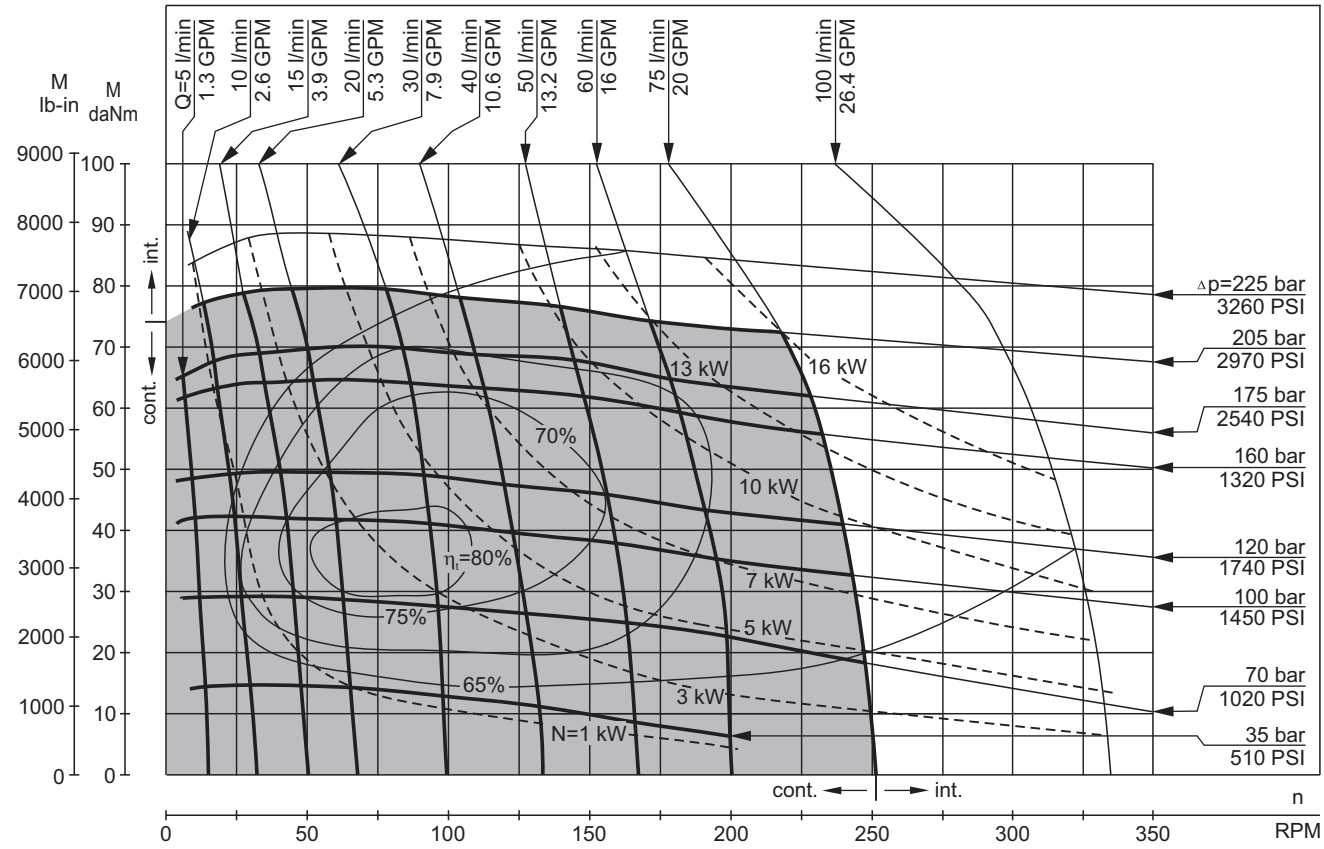
The function diagrams data is for average performance of randomly selected motors at back pressure 5÷10 bar [72.5 PSI÷145 PSI] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122°F].

FUNCTION DIAGRAMS

HW 250



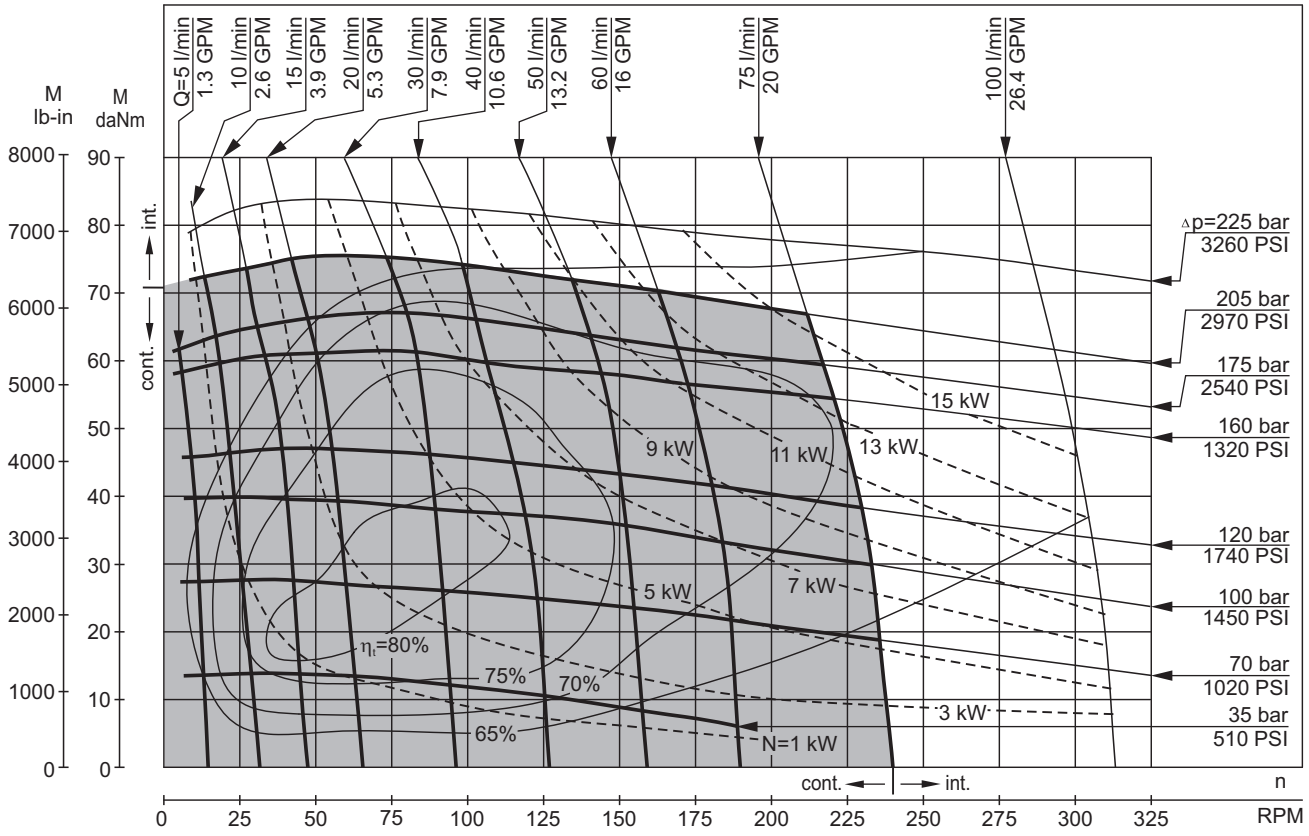
HW 300



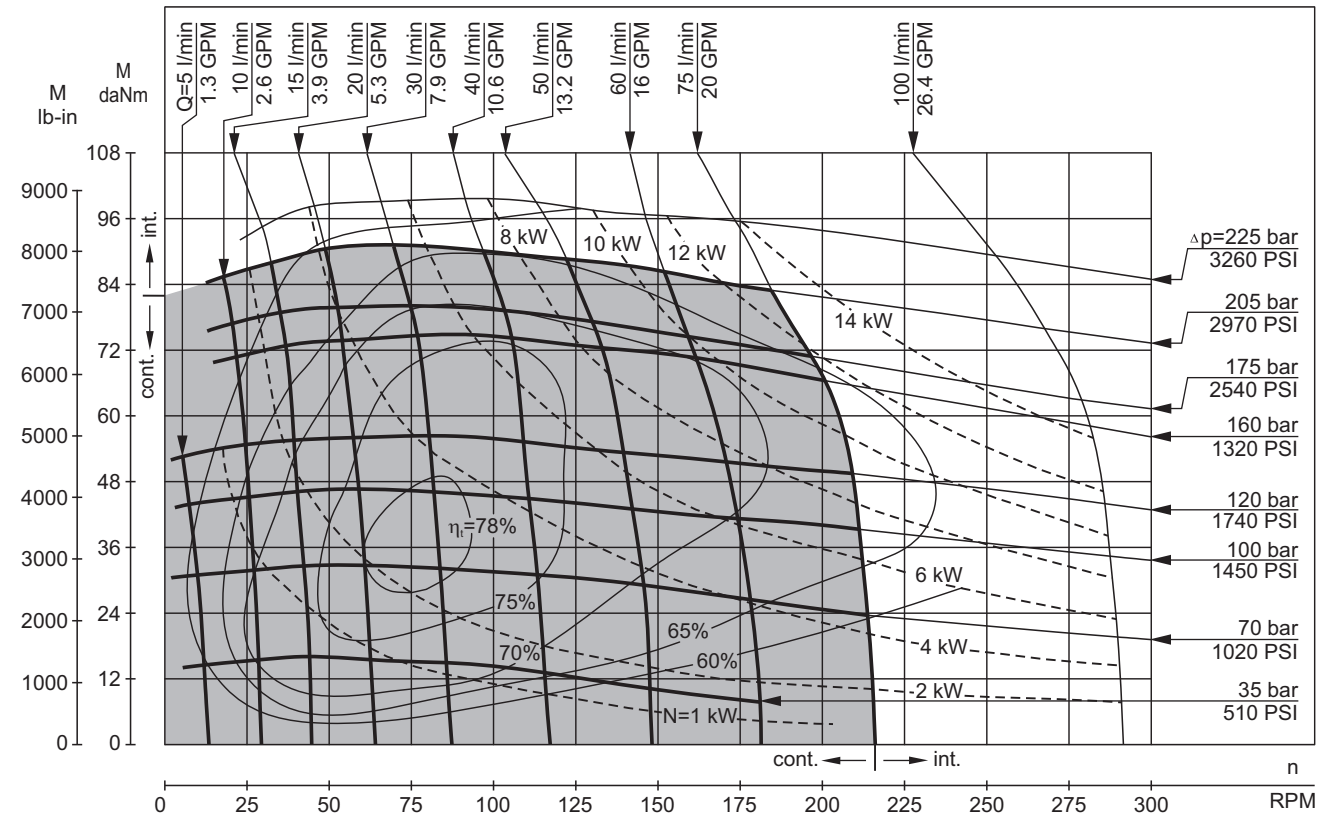
The function diagrams data is for average performance of randomly selected motors at back pressure 5÷10 bar [72.5 PSI÷145 PSI] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122°F].

FUNCTION DIAGRAMS

HW 315



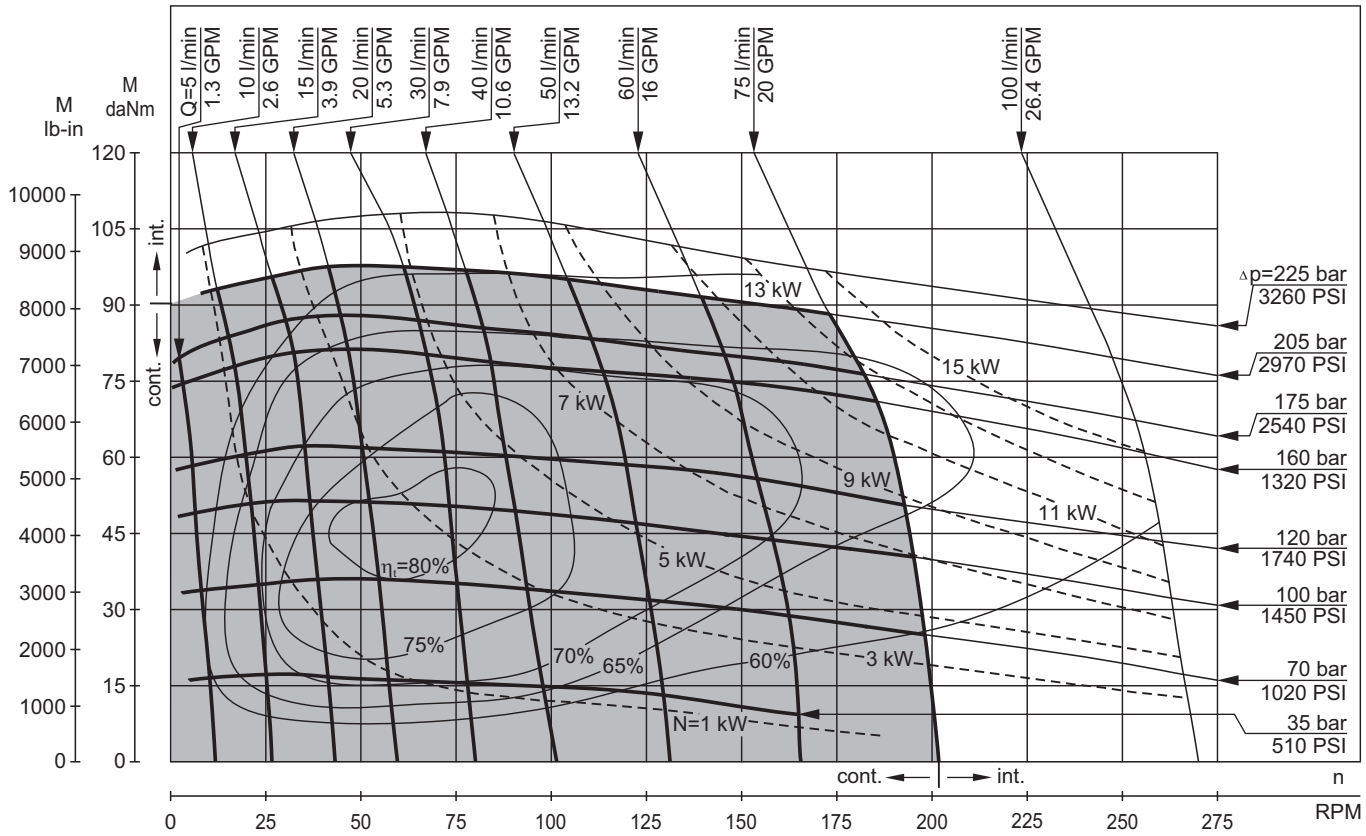
HW 350



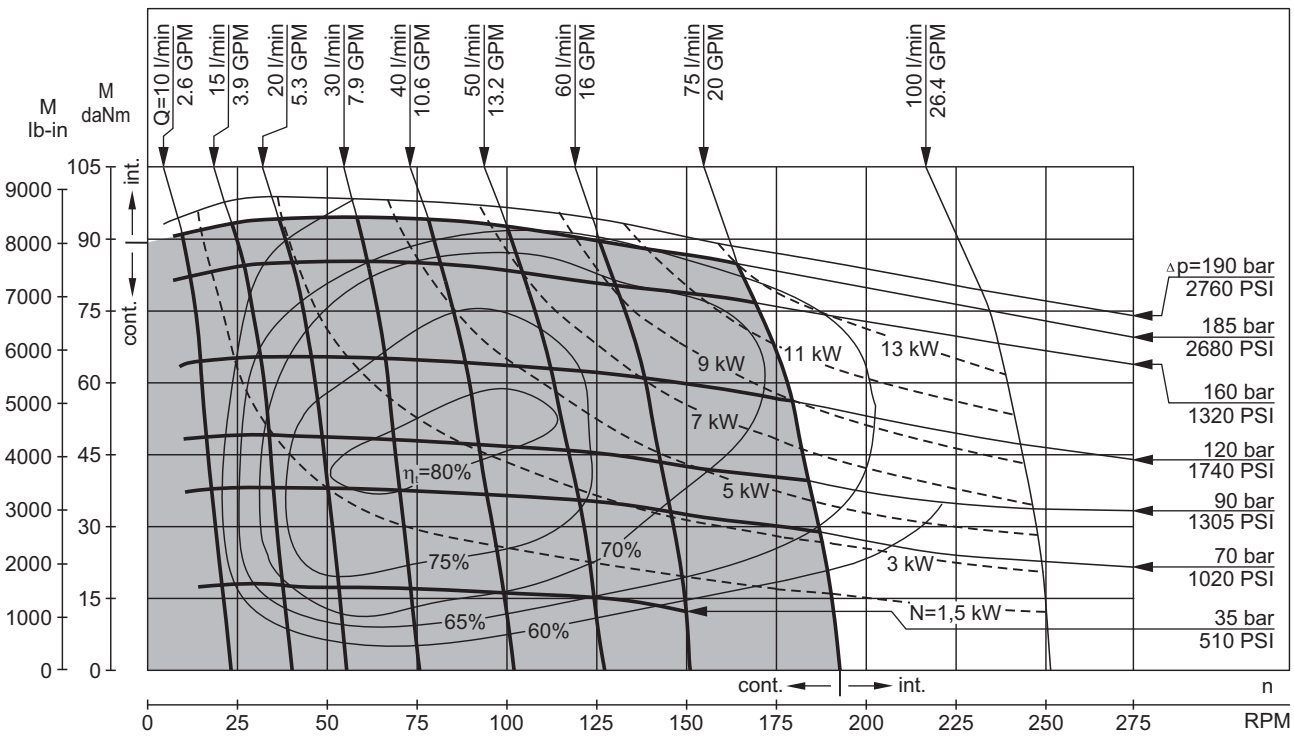
The function diagrams data is for average performance of randomly selected motors at back pressure 5÷10 bar [72.5 PSI÷145 PSI] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122°F].

FUNCTION DIAGRAMS

HW 370



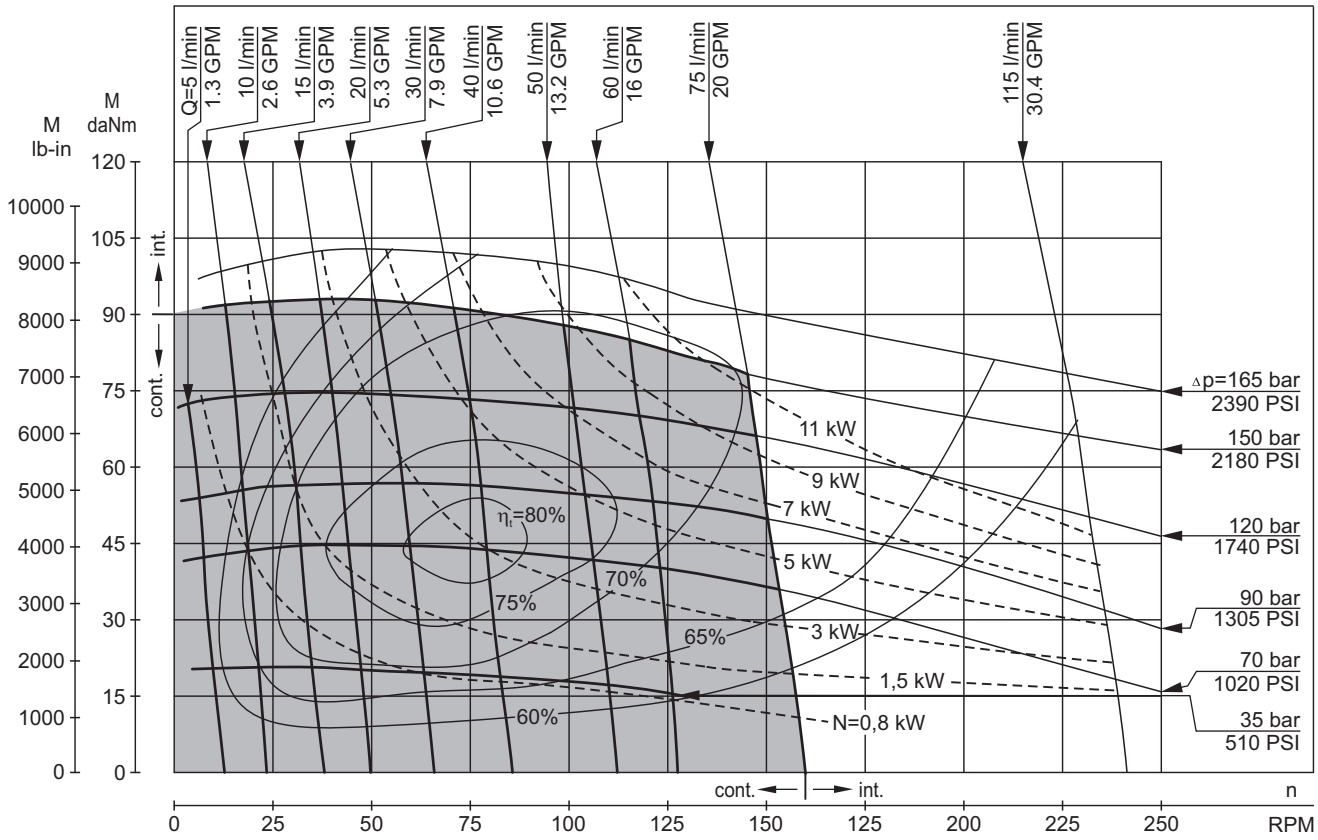
HW 400



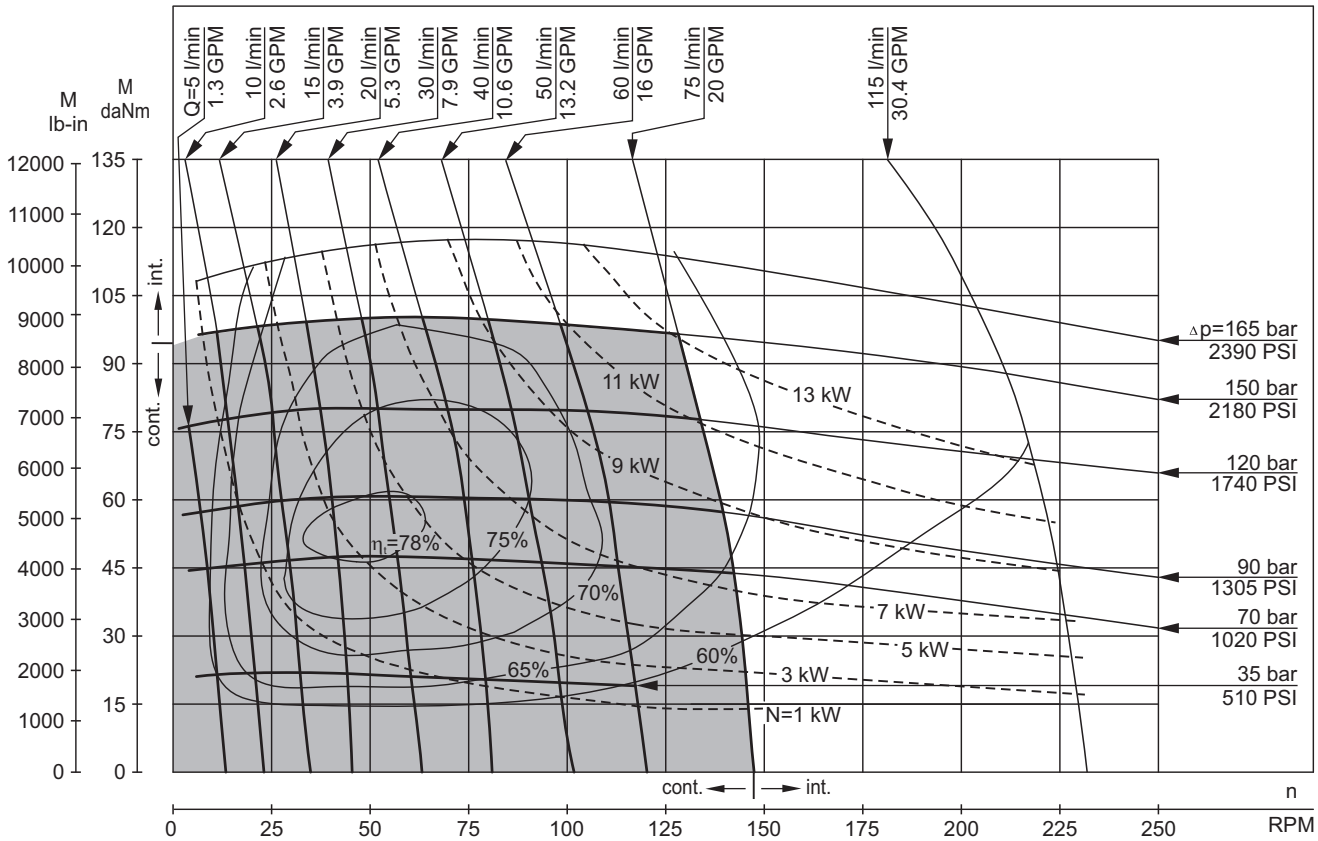
The function diagrams data is for average performance of randomly selected motors at back pressure 5÷10 bar [72.5 PSI÷145 PSI] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122°F].

FUNCTION DIAGRAMS

HW 470



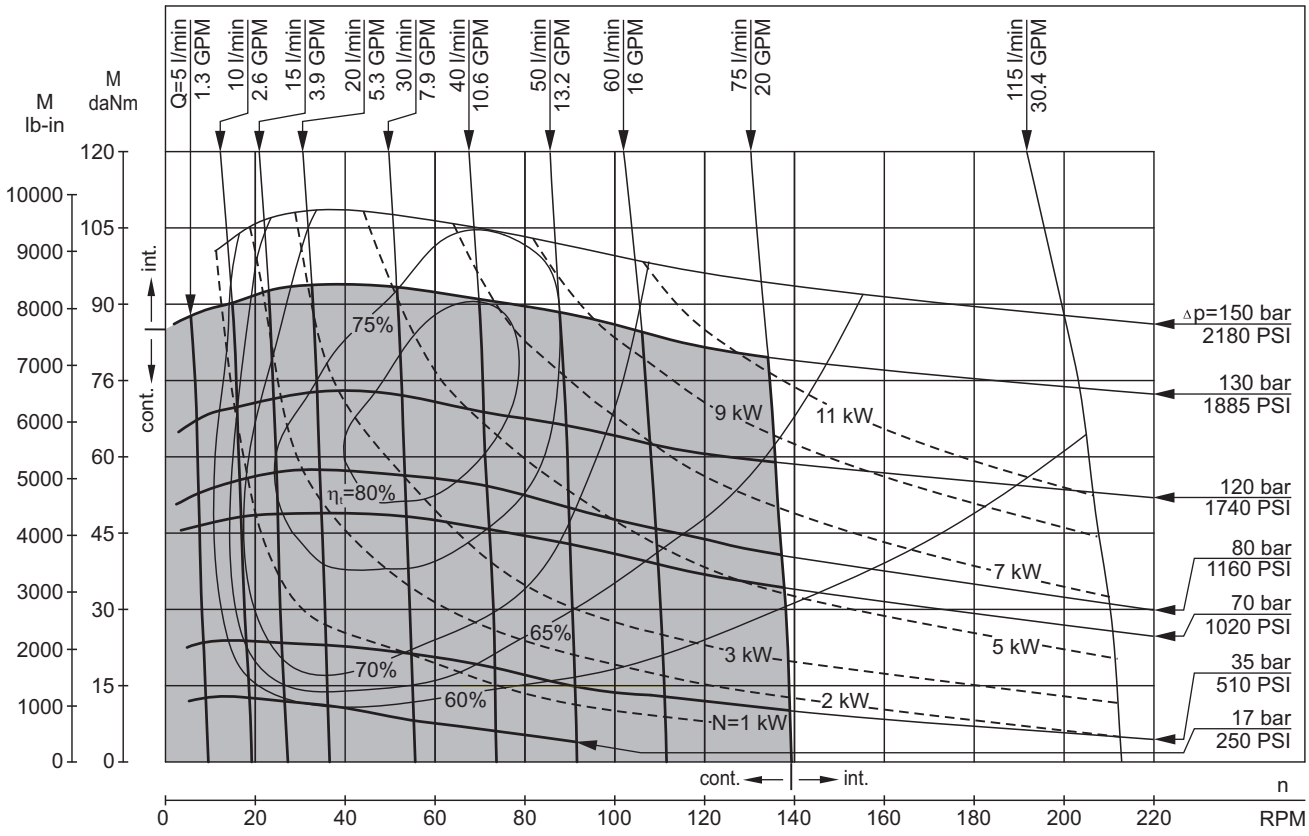
HW 500



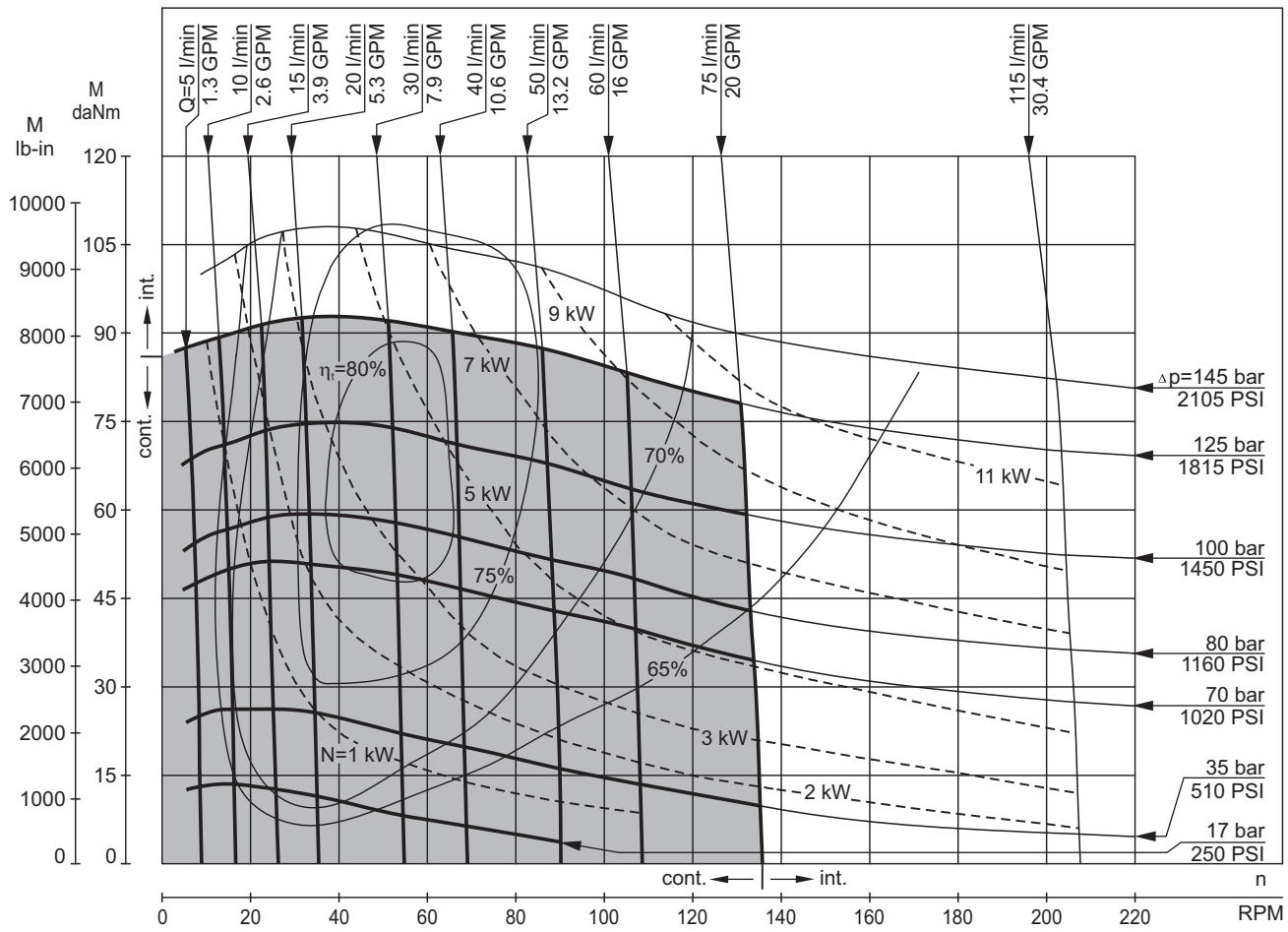
The function diagrams data is for average performance of randomly selected motors at back pressure 5÷10 bar [72.5 PSI÷145 PSI] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122°F].

FUNCTION DIAGRAMS

HW 535



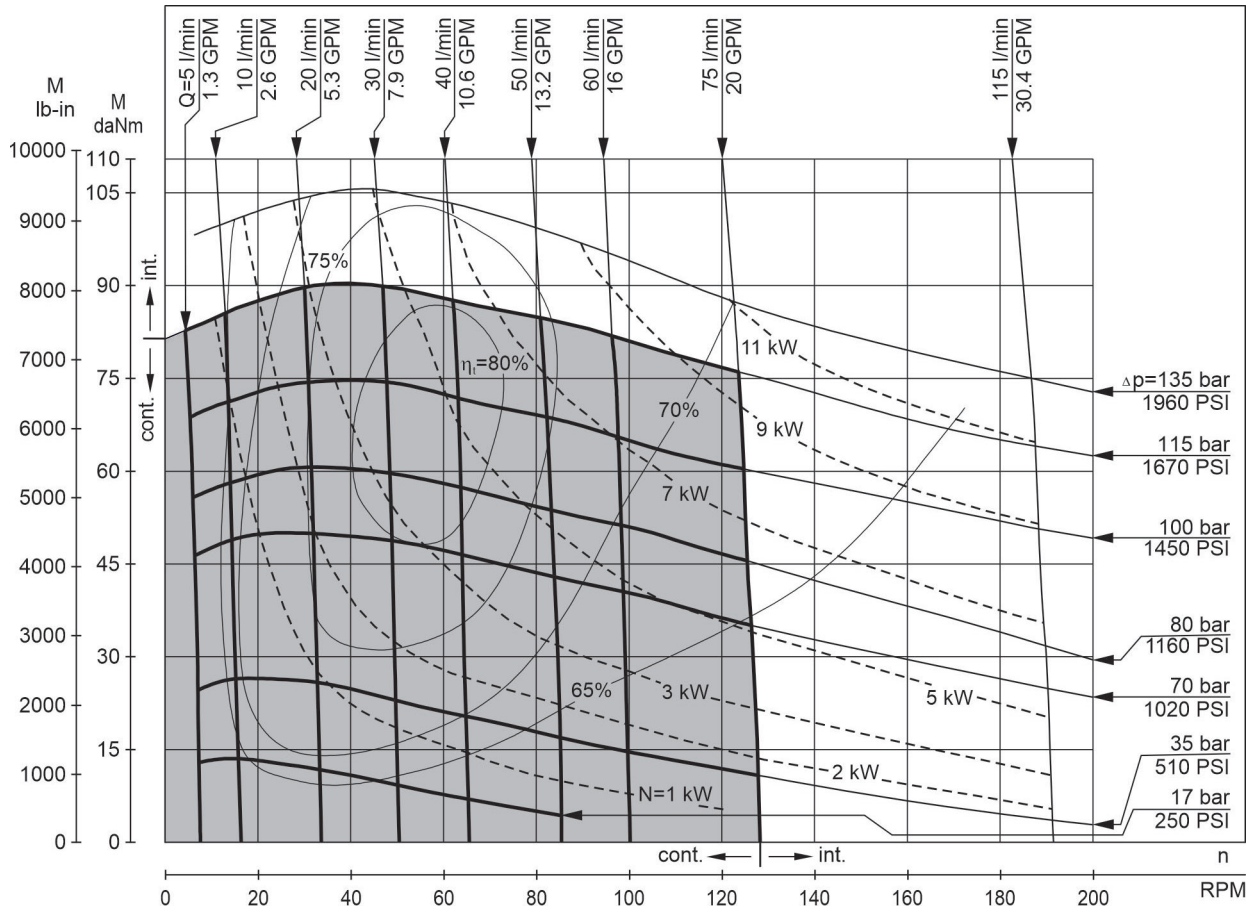
HW 550



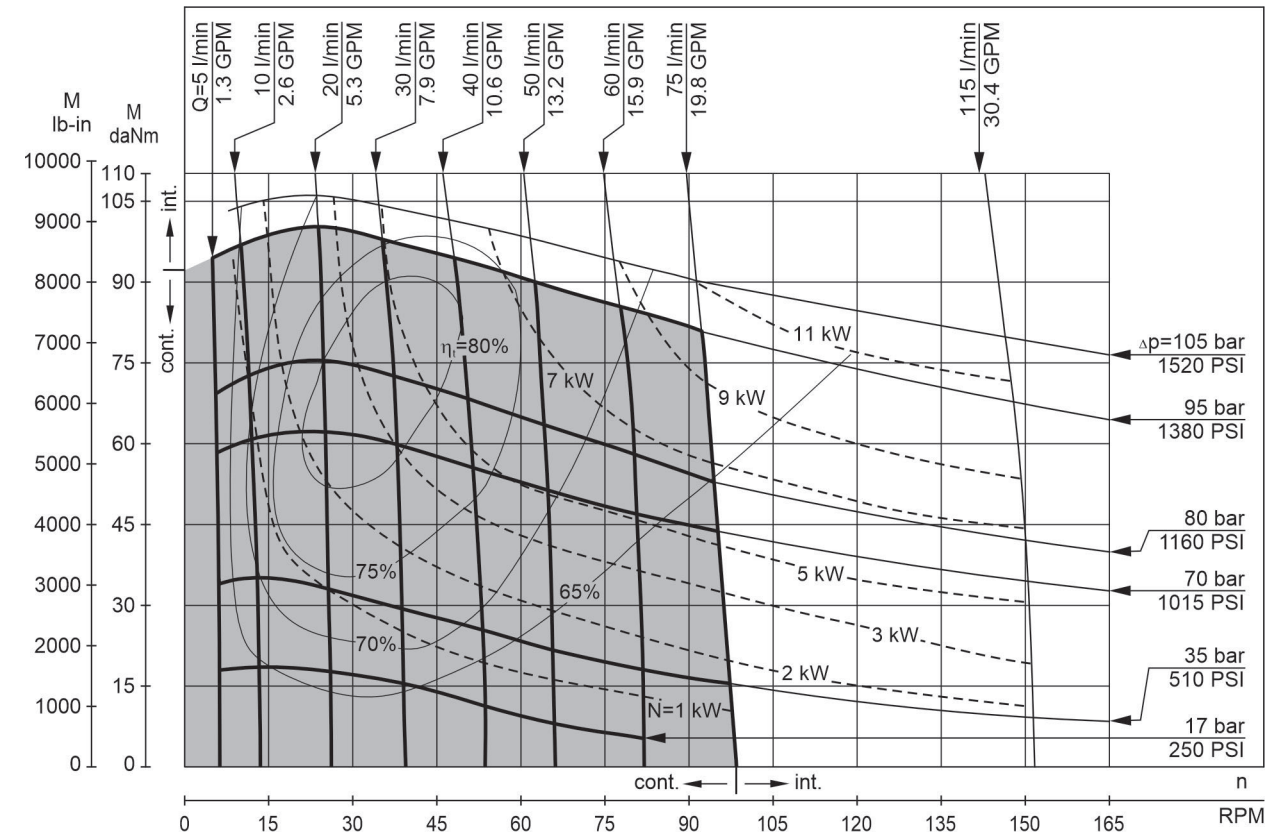
The function diagrams data is for average performance of randomly selected motors at back pressure 5÷10 bar [72.5 PSI÷145 PSI] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122°F].

FUNCTION DIAGRAMS

HW 600



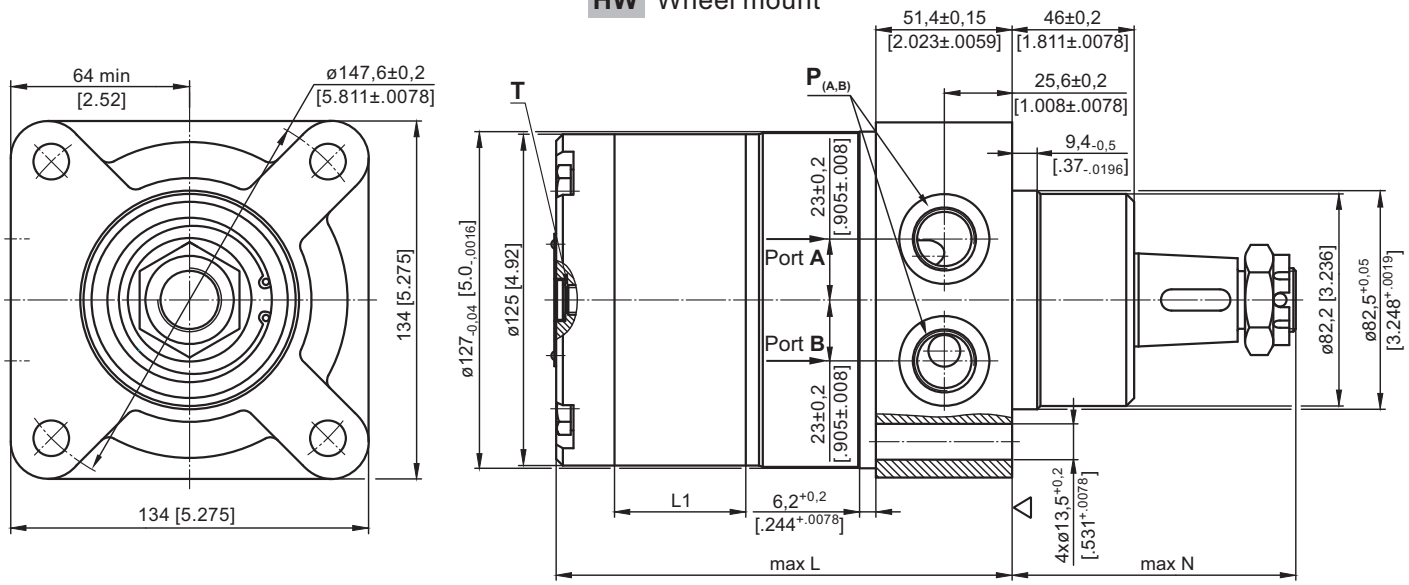
HW 750



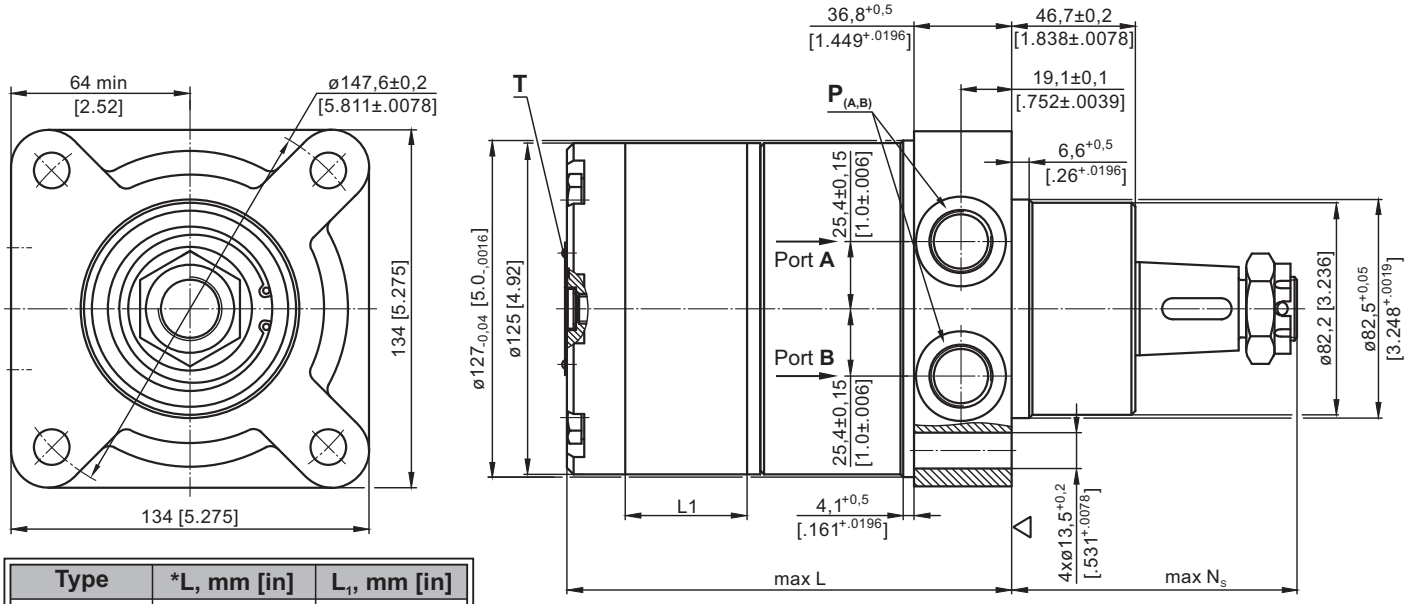
The function diagrams data is for average performance of randomly selected motors at back pressure 5÷10 bar [72.5 PSI÷145 PSI] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122°F].

DIMENSIONS and MOUNTING DATA

HW Wheel mount



HWS Wheel mount



Type	*L, mm [in]	L_1, mm [in]
HW(S) 80	134,0 [5.28]	11,0 [.43]
HW(S) 100	137,0 [5.39]	14,0 [.55]
HW(S) 125	140,5 [5.51]	17,4 [.68]
HW(S) 160	145,0 [5.71]	21,8 [.86]
HW(S) 200	151,0 [5.95]	27,8 [1.09]
HW(S) 235	155,5 [6.12]	32,5 [1.28]
HW(S) 250	158,0 [6.22]	34,8 [1.37]
HW(S) 300	164,5 [6.48]	41,4 [1.63]
HW(S) 315	166,5 [6.56]	43,5 [1.71]
HW(S) 350	171,0 [6.73]	48,0 [1.89]
HW(S) 370	174,0 [6.85]	51,0 [2.01]
HW(S) 400	178,0 [7.01]	54,8 [2.16]
HW(S) 470	188,0 [7.40]	65,0 [2.56]
HW(S) 500	192,5 [7.58]	69,4 [2.73]
HW(S) 535	197,0 [7.76]	74,1 [2.92]
HW(S) 550	199,0 [7.84]	76,0 [2.99]
HW(S) 600	206,0 [8.11]	82,6 [3.25]
HW(S) 750	227,5 [8.96]	104,0 [4.09]

* For **LSV** option the dimension **L** is 3 mm [.118 in] greater.

▽ - Motor Mounting Surface

Note: For N see pages 120,121 and 122.

	Versions	
	2	4
$P_{(A,B)}$	2xG½	2x⅞-14UNF, O-ring
T	G¼	7/16-20UNF, O-ring

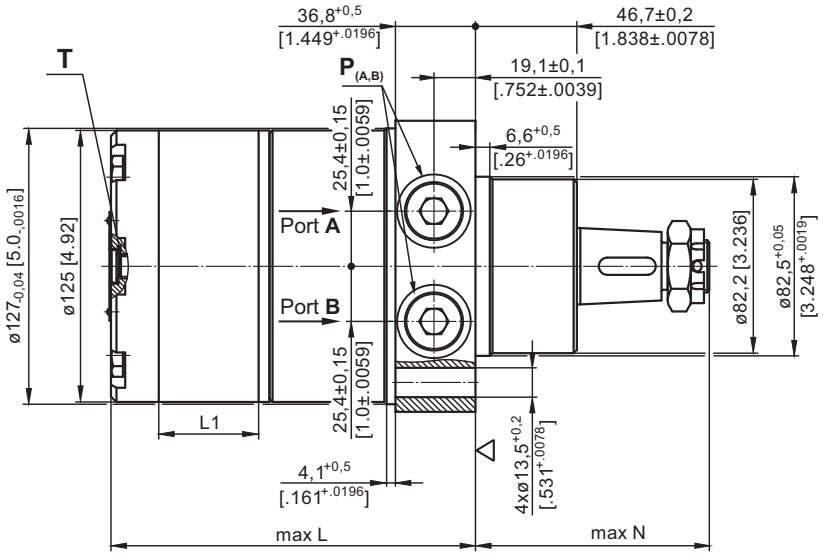
Standard Rotation
Viewed from Shaft End
Port **A** Pressurized - **CW**
Port **B** Pressurized - **CCW**

Reverse Rotation
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

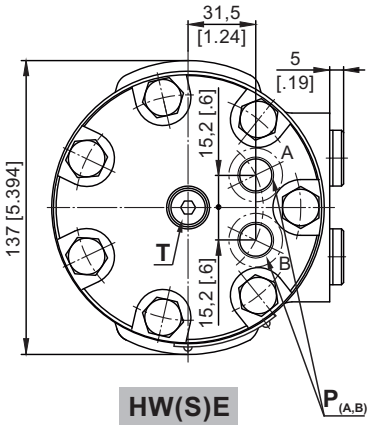
mm [in]

DIMENSIONS and MOUNTING DATA

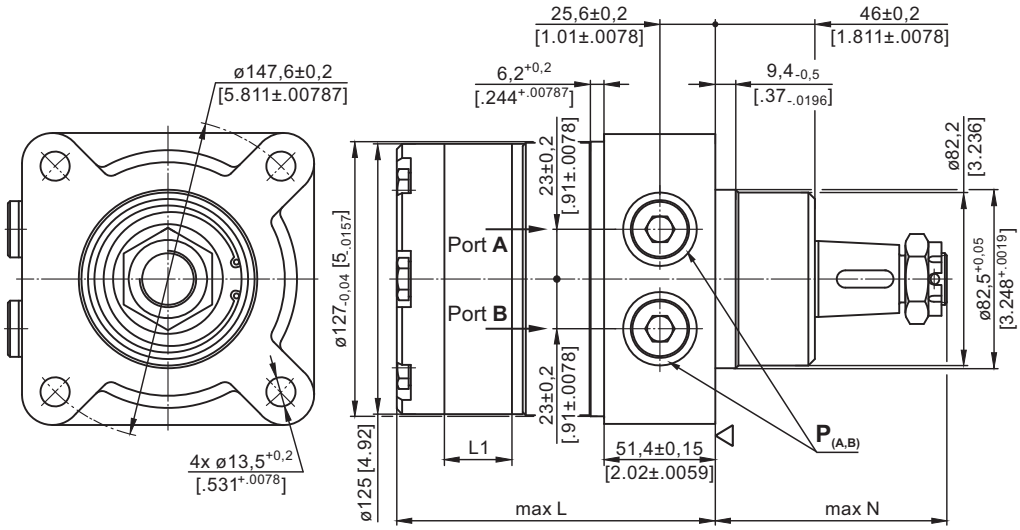
HWSE Wheel mount, rear ports



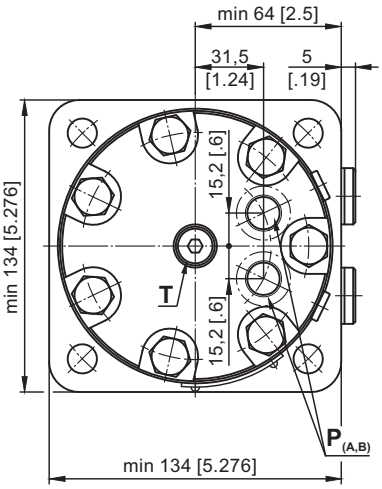
HWFE Magneto mount



HWE Wheel mount, rear ports



HW(S)E



Type	*L, mm [in]		L_1, mm [in]
	HWE, HWSE	HWFE	
HW... 80	139,0 [5.47]	182,5 [7.19]	11,0 [.43]
HW... 100	142,0 [5.59]	185,5 [7.30]	14,0 [.55]
HW... 125	145,5 [5.73]	189,0 [7.44]	17,4 [.68]
HW... 160	150,0 [5.91]	193,5 [7.62]	21,8 [.86]
HW... 200	156,0 [6.14]	199,5 [7.85]	27,8 [1.09]
HW... 235	160,5 [6.32]	204,0 [8.03]	32,5 [1.28]
HW... 250	163,0 [6.42]	206,5 [8.13]	34,8 [1.37]
HW... 300	169,5 [6.67]	213,0 [8.39]	41,4 [1.63]
HW... 315	171,5 [6.75]	215,0 [8.46]	43,5 [1.71]
HW... 350	176,0 [6.93]	219,5 [8.64]	48,0 [1.89]
HW... 370	179,0 [7.05]	222,5 [8.76]	51,0 [2.01]
HW... 400	183,0 [7.20]	226,5 [8.92]	54,8 [2.16]
HW... 470	193,0 [7.60]	236,5 [9.31]	65,0 [2.56]
HW... 500	197,5 [7.78]	241,0 [9.49]	69,4 [2.73]
HW... 535	202,0 [7.95]	245,5 [9.67]	74,1 [2.92]
HW... 550	204,0 [8.03]	247,5 [9.74]	76,0 [2.99]
HW... 600	210,6 [8.29]	254,1 [10.00]	82,6 [3.25]
HW... 750	232,5 [9.15]	275,5 [10.85]	104,0 [4.09]

* For **LSV** option the dimension **L** is 3 mm [.118 in] greater.

▽ - Motor mounting surface

Note: For N see pages 120,121 and 122.

	Versions	
	5	6
$P_{(A,B)}$	2xG⅜	2x9/16-18UNF, O-ring
T	G¼	7/16-20UNF, O-ring

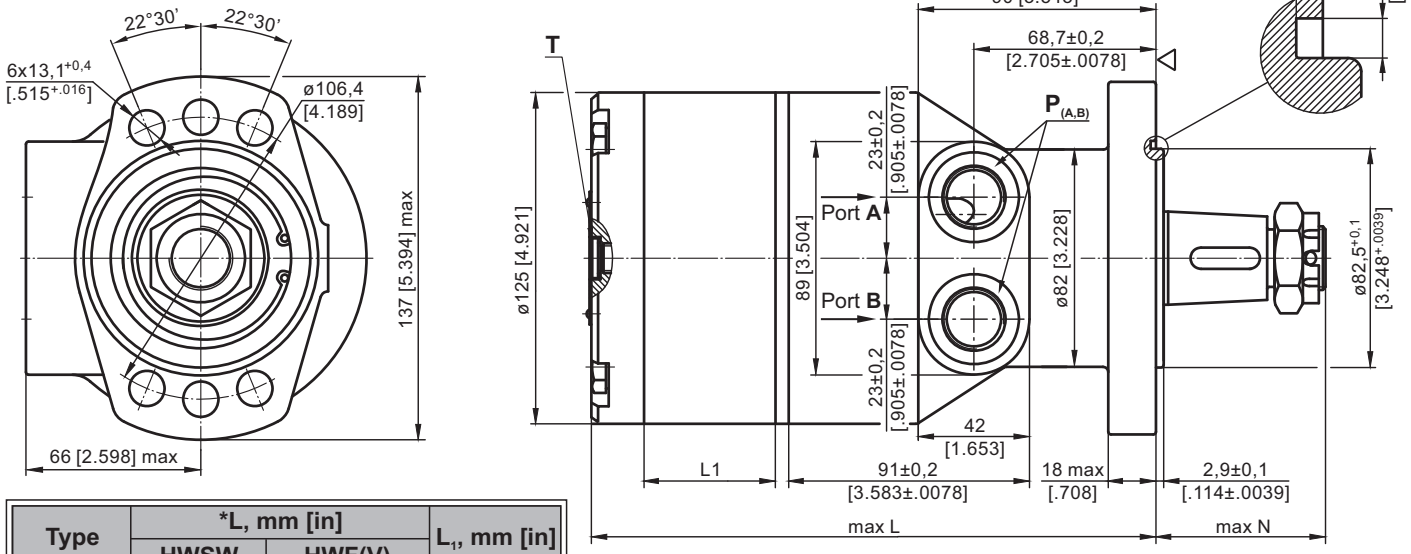
Standard Rotation
Viewed from Shaft End
Port **A** Pressurized - **CW**
Port **B** Pressurized - **CCW**

Reverse Rotation
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

mm [in]

DIMENSIONS and MOUNTING DATA

F Magneto mount, six holes

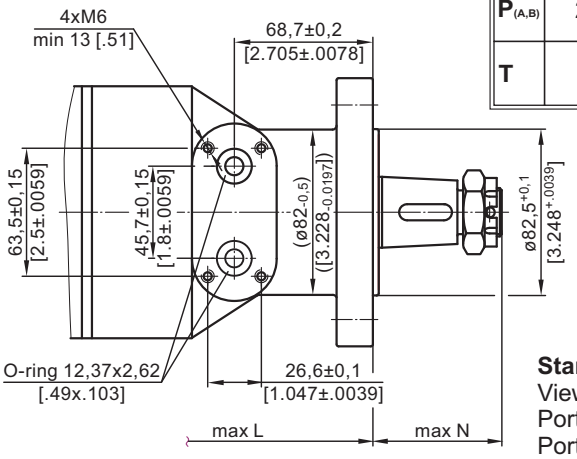


Type	*L, mm [in]		L_1, mm [in]
	HWSW	HWF(V)	
HW... 80	110,5 [4.35]	178,0 [7.01]	11,0 [.43]
HW... 100	113,5 [4.47]	180,5 [7.11]	14,0 [.55]
HW... 125	117,0 [4.61]	184,0 [7.24]	17,4 [.68]
HW... 160	121,5 [4.78]	188,5 [7.42]	21,8 [.86]
HW... 200	127,0 [5.00]	194,5 [7.66]	27,8 [1.09]
HW... 235	132,0 [5.20]	199,0 [7.84]	32,5 [1.28]
HW... 250	134,5 [5.30]	201,5 [7.93]	34,8 [1.37]
HW... 300	141,0 [5.55]	208,0 [8.20]	41,4 [1.63]
HW... 315	143,0 [5.63]	210,0 [8.27]	43,5 [1.71]
HW... 350	147,5 [5.81]	214,5 [8.45]	48,0 [1.89]
HW... 370	151,0 [5.94]	217,5 [8.56]	51,0 [2.01]
HW... 400	154,5 [6.08]	221,5 [8.72]	54,8 [2.16]
HW... 470	164,5 [6.48]	231,5 [9.11]	65,0 [2.56]
HW... 500	169,0 [6.65]	236,0 [9.29]	69,4 [2.73]
HW... 535	174,0 [6.85]	240,5 [9.47]	74,1 [2.92]
HW... 550	175,5 [6.91]	242,5 [9.55]	76,0 [2.99]
HW... 600	182,1 [7.16]	249,1 [9.81]	82,6 [3.25]
HW... 750	203,5 [8.01]	270,5 [10.65]	104,0 [4.09]

***** For **LSV** option the dimension **L** is 3 mm [.118 in] greater.

HWFV Magneto mount, six holes, relief valves

	Versions	
	2	4
$P_{(A,B)}$	2xG½	2x⅞-14UNF, O-ring
T	G¼	7/16-20UNF, O-ring

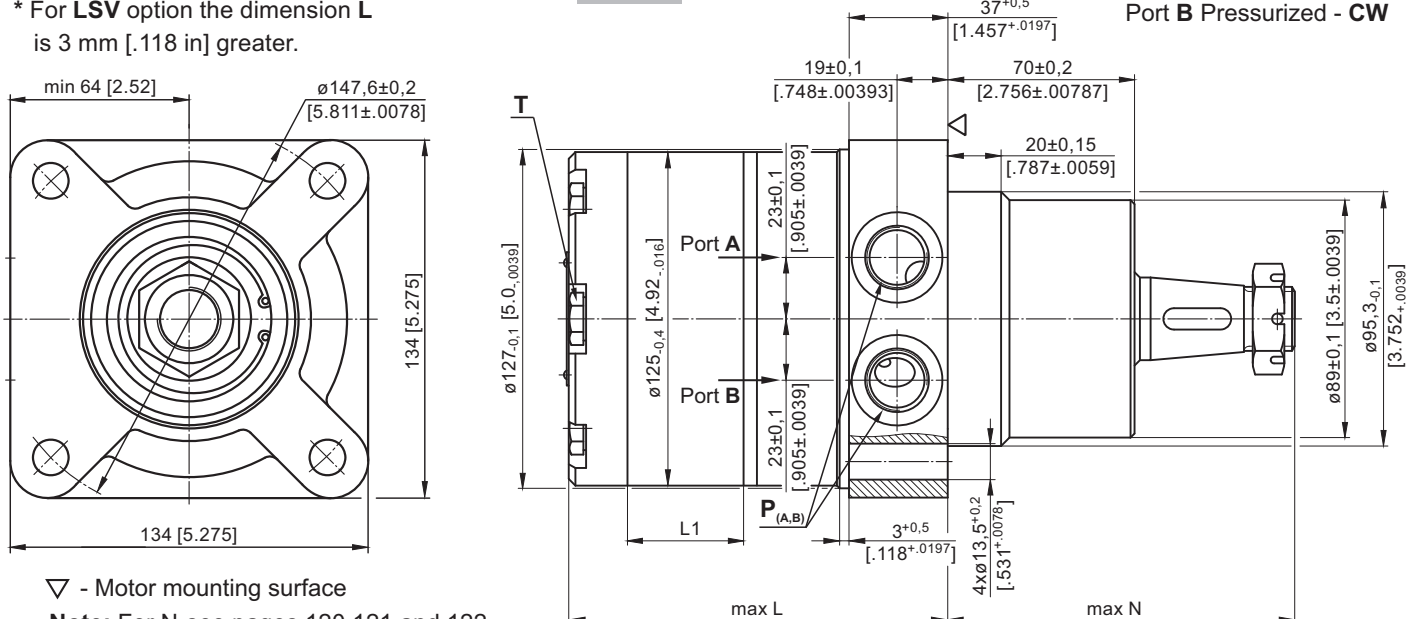


mm [in]

Standard Rotation
Viewed from Shaft End
Port **A** Pressurized - **CW**
Port **B** Pressurized - **CCW**

Reverse Rotation
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

HWSW Wheel mount

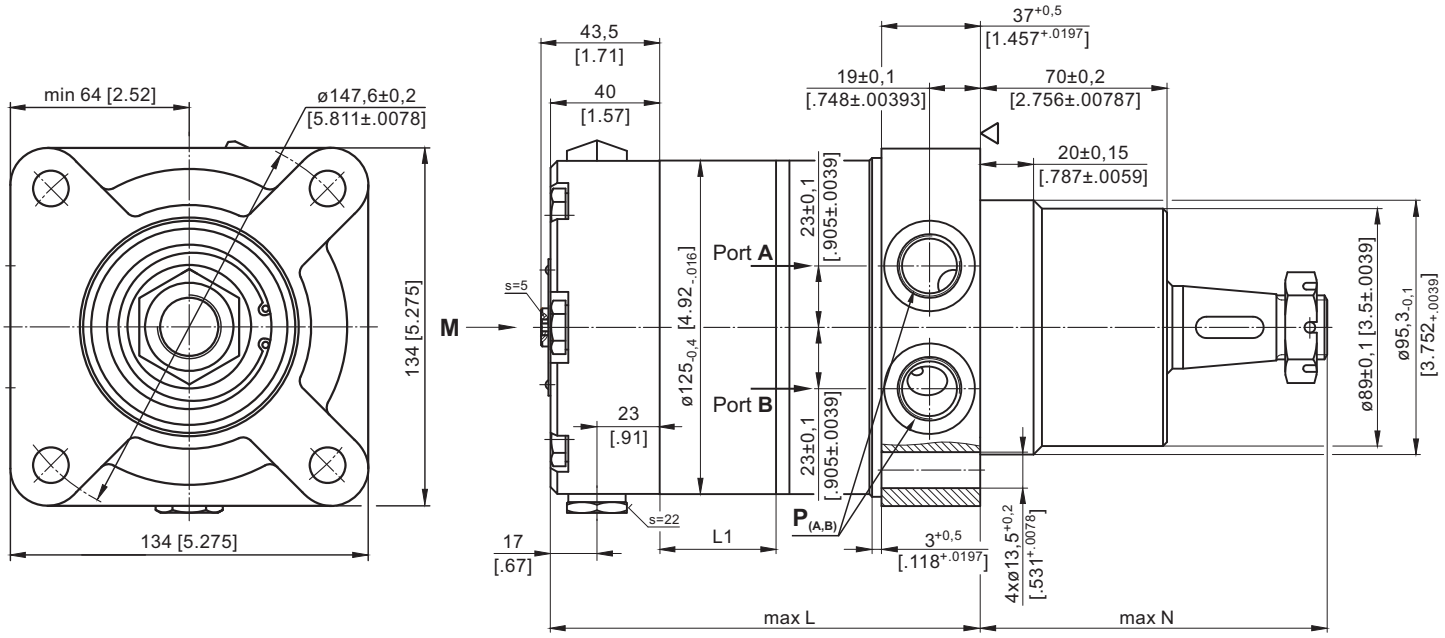


▽ - Motor mounting surface

Note: For N see pages 120,121 and 122.

DIMENSIONS and MOUNTING DATA

HWSWR Wheel mount, relief valves

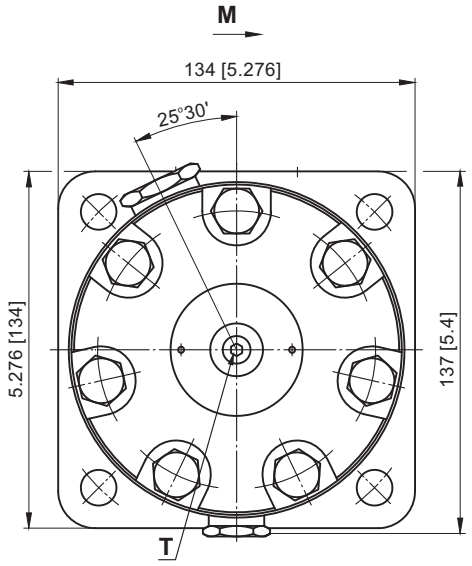


Note: For N see pages 120,121 and 122.

Type	*L, mm [in]	L_1, mm [in]
HWSWR 80	128,5 [5.28]	11,0 [.43]
HWSWR 100	131,5 [5.39]	14,0 [.55]
HWSWR 125	135 [5.51]	17,4 [.68]
HWSWR 160	139,5 [5.71]	21,8 [.86]
HWSWR 200	145,0 [5.95]	27,8 [1.09]
HWSWR 235	150,0 [6.12]	32,5 [1.28]
HWSWR 250	152,5 [6.22]	34,8 [1.37]
HWSWR 300	159,0 [6.48]	41,4 [1.63]
HWSWR 315	161,0 [6.56]	43,5 [1.71]
HWSWR 350	165,5 [6.73]	48,0 [1.89]
HWSWR 370	169,0 [6.85]	51,0 [2.01]
HWSWR 400	172,5 [7.01]	54,8 [2.16]
HWSWR 470	182,5 [7.40]	65,0 [2.56]
HWSWR 500	187,0 [7.58]	69,4 [2.73]
HWSWR 535	192,0 [7.76]	74,1 [2.92]
HWSWR 550	193,5 [7.84]	76,0 [2.99]
HWSWR 600	200,0 [8.09]	82,6 [3.25]
HWSWR 750	221,0 [8.70]	104,0 [4.09]

***** For **LSV** option the dimension **L** is 3 mm [.118 in] greater.

mm [in]

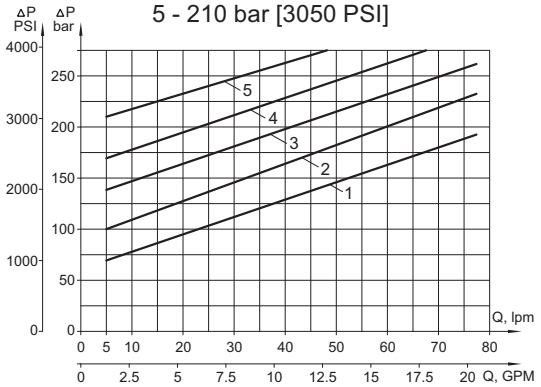


▽ - Motor mounting surface

	Versions	
	2	4
$P_{(A,B)}$	2xG½	2x⅞-14UNF, O-ring
T	G⅛	G⅛

Pressure Settings at Flow Q=5 lpm [1.32 GPM] 32 mm²/s [150 SUS]; 50°C [122°F]

1 - 70 bar [1015 PSI]
2 - 100 bar [1450 PSI]
3 - 140 bar [2030 PSI]
4 - 170 bar [2470 PSI]
5 - 210 bar [3050 PSI]

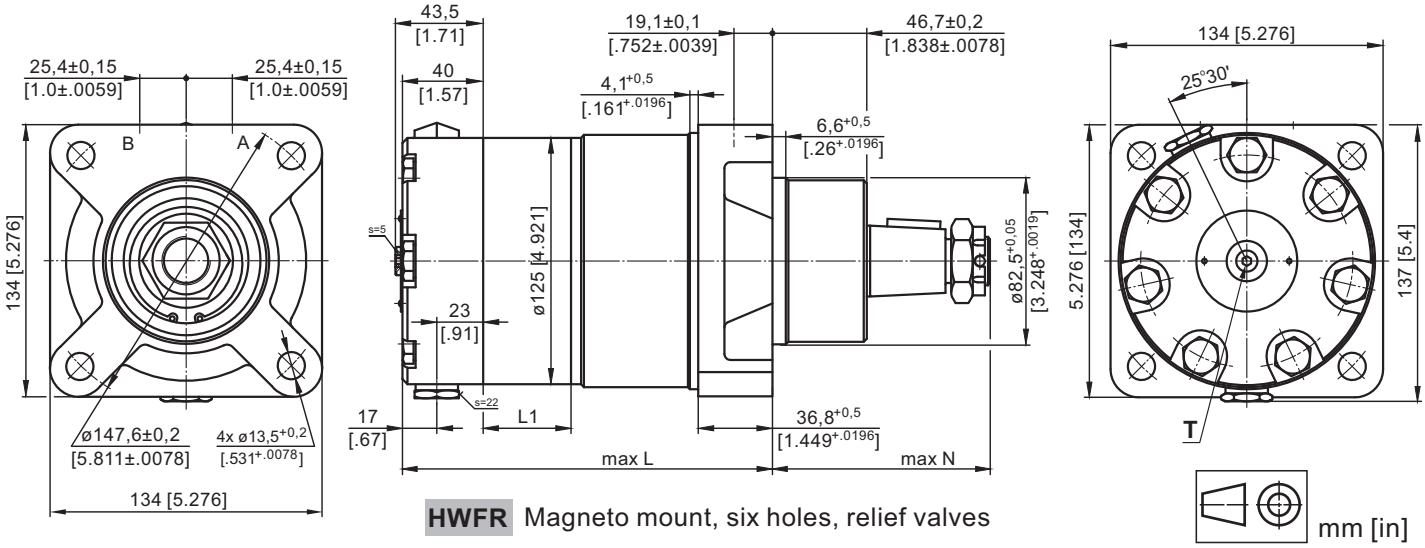


Standard Rotation
Viewed from Shaft End
Port **A** Pressurized - **CW**
Port **B** Pressurized - **CCW**

Reverse Rotation
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

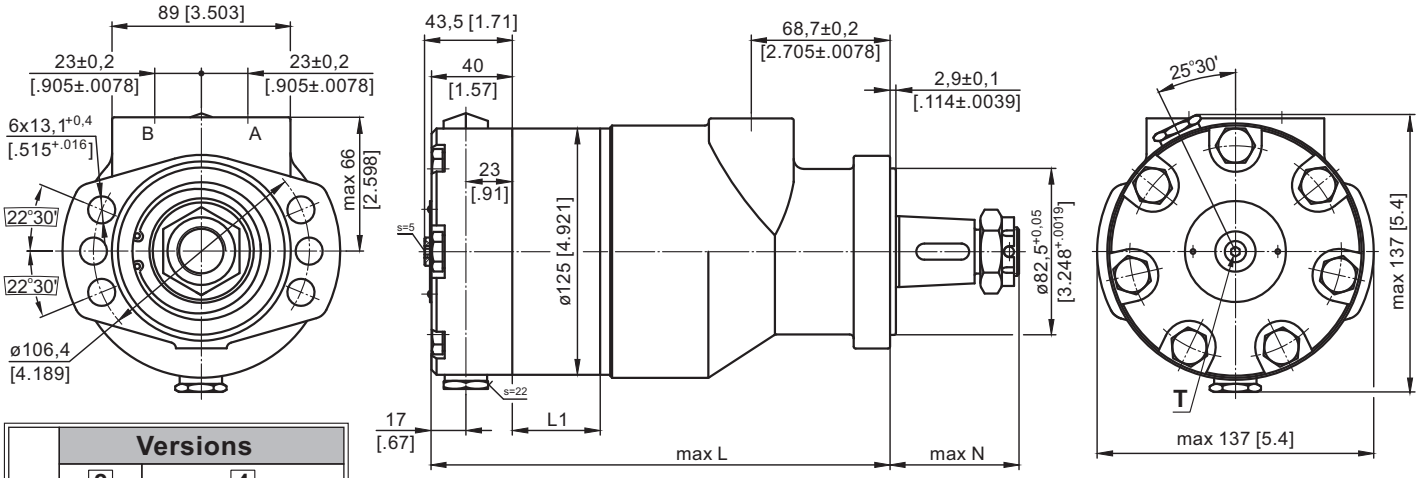
DIMENSIONS and MOUNTING DATA

HWSR Wheel mount, relief valves



mm [in]

HWFR Magneto mount, six holes, relief valves



	Versions	
	2	4
P(A,B)	2xG½	2x7/8-14UNF, O-ring
T	G⅛	G⅛

▽ - Motor mounting surface

Note: For N see pages 120,121 and 122.

Standard Rotation
Viewed from Shaft End
Port **A** Pressurized - **CW**
Port **B** Pressurized - **CCW**

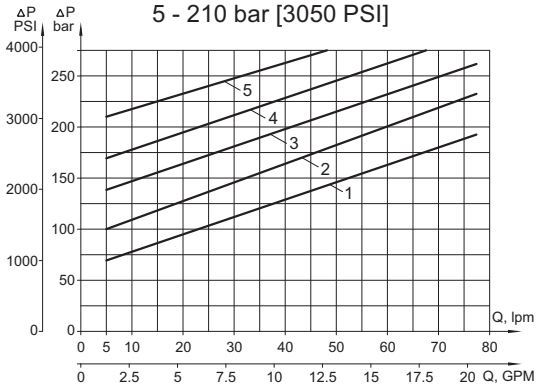
Reverse Rotation
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

Type	*L, mm [in]		L_1, mm [in]
	HWSR	HWFR	
HW... 80	152,0 [5.98]	195,5 [7.69]	11,0 [.43]
HW... 100	155,0 [6.10]	198,5 [7.81]	14,0 [.55]
HW... 125	158,5 [6.24]	202,0 [7.95]	17,4 [.68]
HW... 160	163,0 [6.42]	206,5 [8.13]	21,8 [.86]
HW... 200	169,0 [6.65]	212,5 [8.37]	27,8 [1.09]
HW... 235	173,5 [6.83]	217,0 [8.54]	32,5 [1.28]
HW... 250	176,0 [6.93]	219,5 [8.64]	34,8 [1.37]
HW... 300	182,5 [7.19]	226,0 [8.89]	41,4 [1.63]
HW... 315	184,5 [7.26]	228,0 [8.98]	43,5 [1.71]
HW... 350	189,0 [7.44]	232,5 [9.15]	48,0 [1.89]
HW... 370	192,0 [7.56]	235,5 [9.27]	51,0 [2.01]
HW... 400	196,0 [7.72]	239,5 [9.43]	54,8 [2.16]
HW... 470	206,0 [8.11]	249,5 [9.82]	65,0 [2.56]
HW... 500	210,5 [8.29]	254,0 [10.00]	69,4 [2.73]
HW... 535	215,0 [8.46]	258,8 [10.19]	74,1 [2.92]
HW... 550	217,0 [8.54]	260,5 [10.26]	76,0 [2.99]
HW... 600	226,6 [8.92]	267,1 [10.52]	82,6 [3.25]
HW... 750	244,5 [9.63]	288,0 [11.34]	104,0 [4.09]

*For **LSV** option the dimension **L** is 3 mm [.118 in] greater.

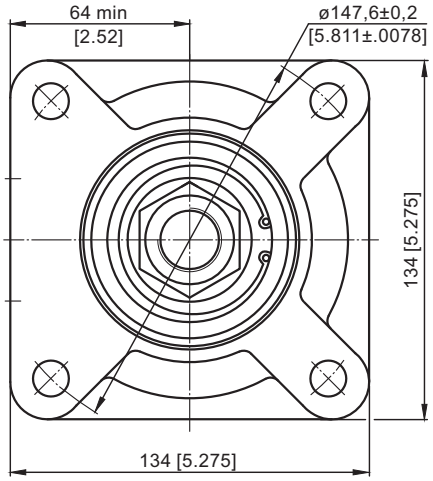
Pressure Settings at Flow Q=5 lpm [1.32 GPM] 32 mm²/s [150 SUS]; 50°C [122°F]

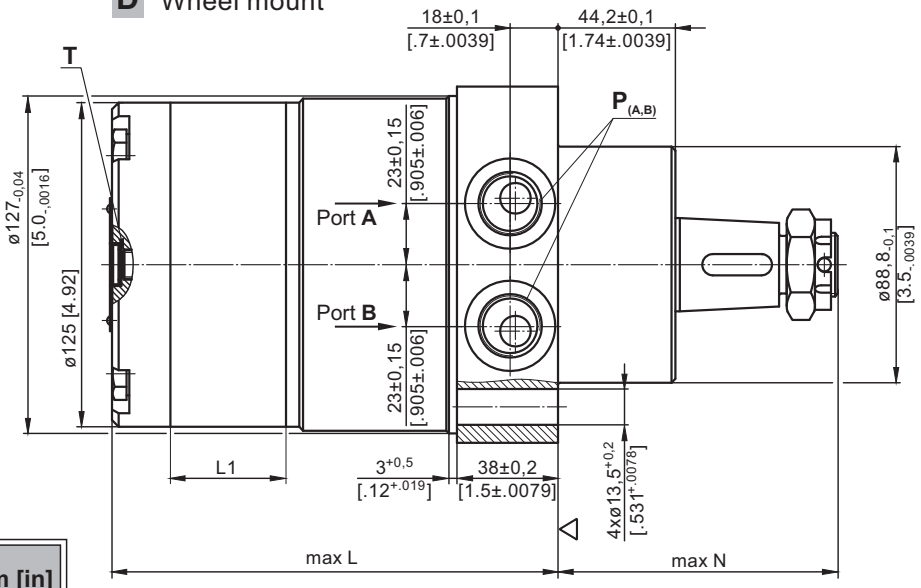
1 - 70 bar [1015 PSI]
2 - 100 bar [1450 PSI]
3 - 140 bar [2030 PSI]
4 - 170 bar [2470 PSI]
5 - 210 bar [3050 PSI]



DIMENSIONS and MOUNTING DATA

D Wheel mount





Type	*L, mm [in]		L_1, mm [in]
	HWD	HWV	
HW... 80	136,0 [5.35]	134,0 [5.28]	11,0 [.43]
HW... 100	139,0 [5.47]	137,0 [5.39]	14,0 [.55]
HW... 125	142,5 [5.61]	140,5 [5.53]	17,4 [.68]
HW... 160	147,0 [5.79]	145,0 [5.71]	21,8 [.86]
HW... 200	153,0 [6.02]	151,0 [5.94]	27,8 [1.09]
HW... 235	158,0 [6.22]	155,5 [6.12]	32,5 [1.28]
HW... 250	160,0 [6.30]	158,0 [6.22]	34,8 [1.37]
HW... 300	166,5 [6.56]	164,5 [6.46]	41,4 [1.63]
HW... 315	169,0 [6.65]	166,5 [6.56]	43,5 [1.71]
HW... 350	173,5 [6.83]	171,0 [6.73]	48,0 [1.89]
HW... 370	176,5 [6.95]	174,0 [6.85]	51,0 [2.01]
HW... 400	180,0 [7.09]	178,0 [7.01]	54,8 [2.16]
HW... 470	190,5 [7.50]	188,0 [7.40]	65,0 [2.56]
HW... 500	194,5 [7.66]	192,5 [7.58]	69,4 [2.73]
HW... 535	199,5 [7.85]	197,0 [7.76]	74,1 [2.92]
HW... 550	201,5 [7.93]	199,0 [7.83]	76,0 [2.99]
HW... 600	207,1 [8.15]	206,0 [8.11]	82,6 [3.25]
HW... 750	229,0 [9.02]	227,5 [8.96]	104,0 [4.09]

	Versions	
	2	4
$P_{(A,B)}$	2xG½	2x⅞-14UNF, O-ring
T	G¼	7/16-20UNF, O-ring

Note: For N see pages 120,121 and 122.

▽ - Motor mounting surface

Standard Rotation
Viewed from Shaft End
Port **A** Pressurized - **CW**
Port **B** Pressurized - **CCW**

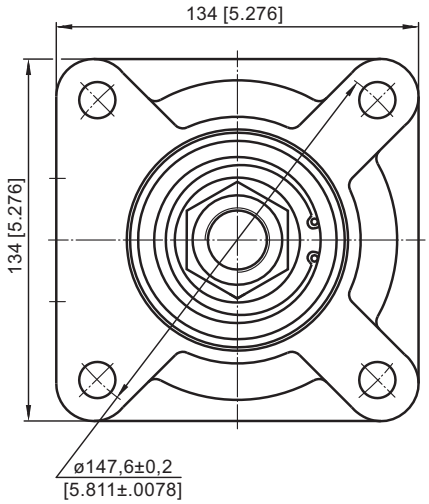
Reverse Rotation
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

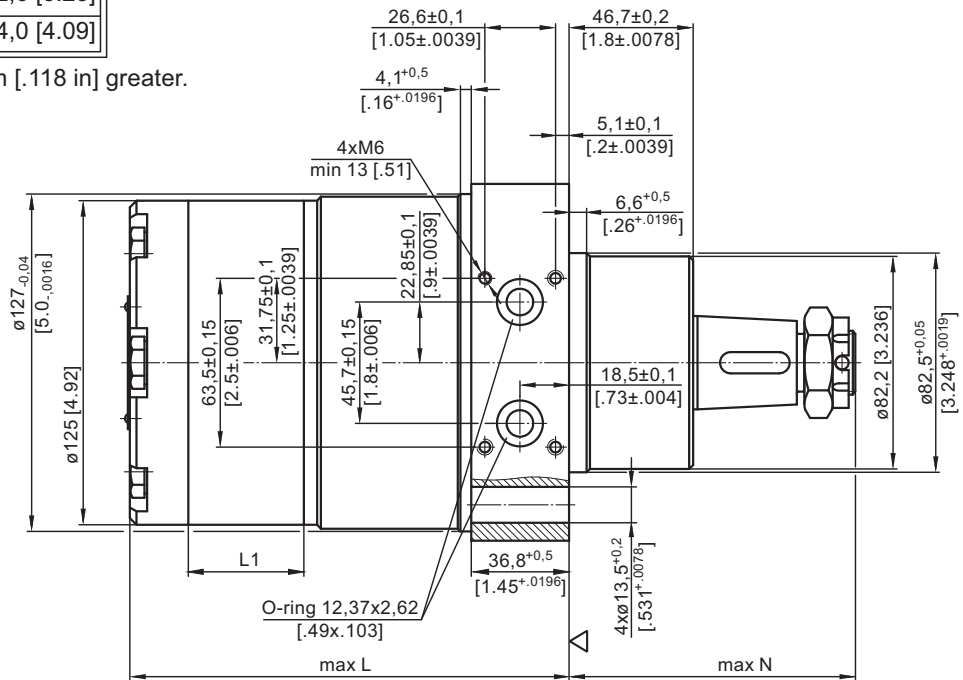
mm [in]

V Wheel mount, four holes, manifold 4xM6

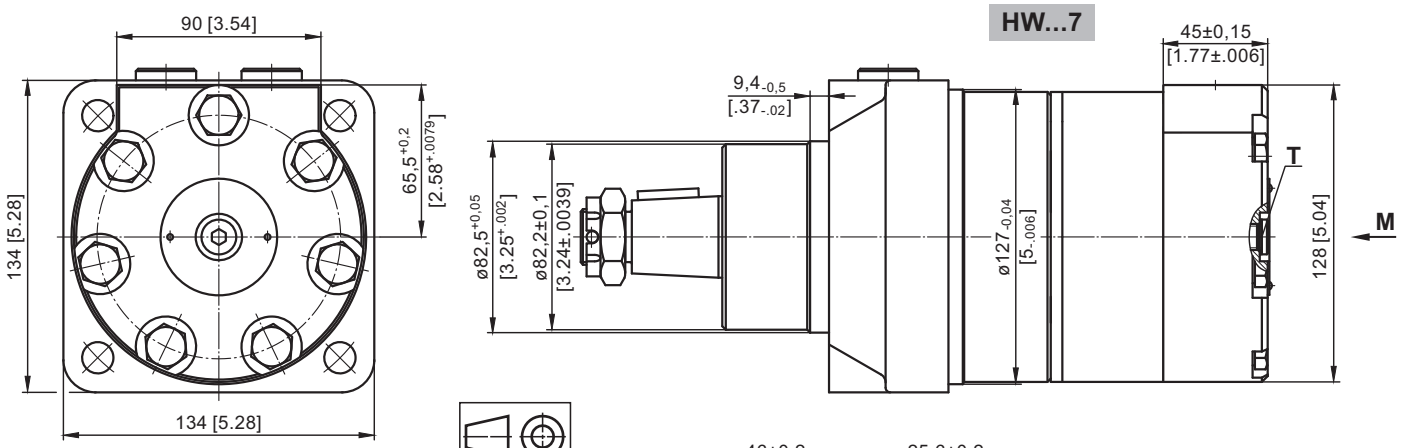
	Versions	
	2	4
T	G¼	7/16-20UNF, O-ring

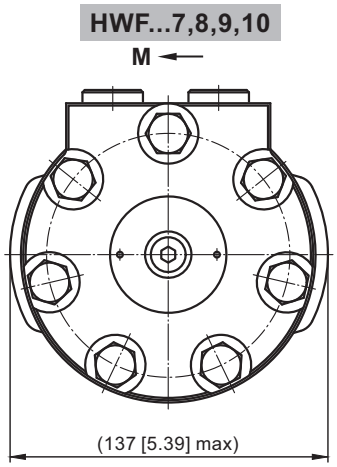
***** For **LSV** option the dimension **L** is 3 mm [.118 in] greater.

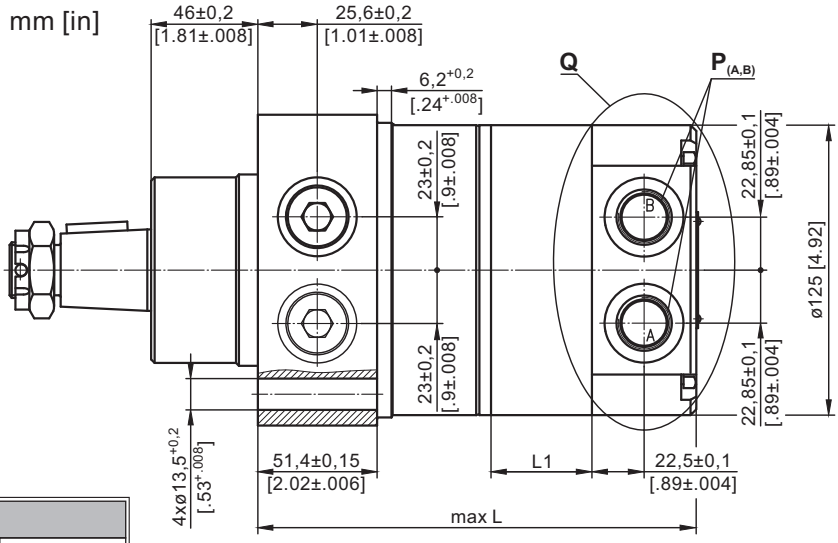




DIMENSIONS and MOUNTING DATA



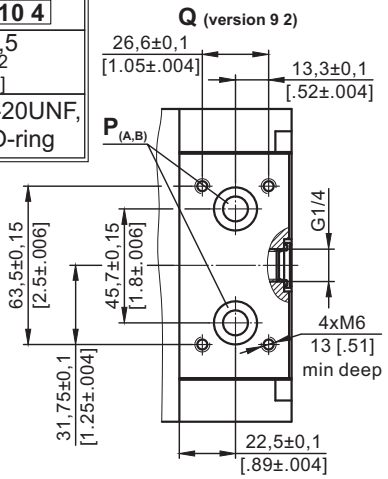


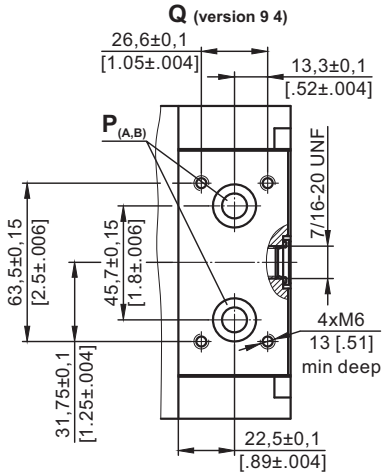


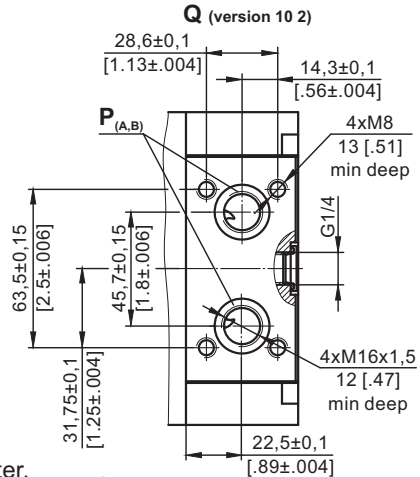
	Versions					
	7	8	9 2	9 4	10 2	10 4
P(A,B)	2xG½	2x⅞-14UNF, O-ring	2xø9 O-ring 12,37x2,62 [.49x.103]		2xM16x1,5 O-ring 18x2 [.709x.787]	
T	G¼	7/16-20UNF, O-ring	G¼	7/16-20UNF, O-ring	G¼	7/16-20UNF, O-ring

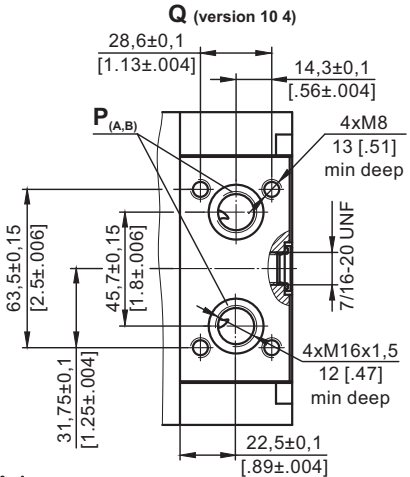
Type	*L, mm [in]		L1,mm [in]
	HW(S)...7,8,9,10	HWF...7,8,9,10	
HW... 80	157,5 [6.20]	200,5 [7.89]	11,0 [.43]
HW...100	160,5 [6.32]	203,5 [8.01]	14,0 [.55]
HW...125	164,0 [6.46]	207,0 [8.15]	17,4 [.68]
HW...160	168,0 [6.61]	211,0 [8.31]	21,8 [.86]
HW...200	174,0 [6.85]	217,0 [8.54]	27,8 [1.09]
HW...235	179,0 [7.05]	222,0 [8.74]	32,5 [1.28]
HW...250	181,0 [7.13]	224,0 [8.82]	34,8 [1.37]
HW...300	187,5 [7.38]	230,5 [9.07]	41,4 [1.63]
HW...315	190,0 [7.48]	233,0 [9.17]	43,5 [1.71]
HW...350	194,5 [7.66]	237,5 [9.35]	48,0 [1.89]
HW...370	197,5 [7.78]	240,5 [9.47]	51,0 [2.01]
HW...400	201,0 [7.91]	244,0 [9.61]	54,8 [2.16]
HW...470	211,5 [8.33]	254,5 [10.02]	65,0 [2.56]
HW...500	216,0 [8.50]	259,0 [10.20]	69,4 [2.73]
HW...535	220,5 [8.68]	263,5 [10.37]	74,1 [2.92]
HW...550	222,5 [8.76]	265,5 [10.45]	76,0 [2.99]
HW...600	229,0 [9.02]	272,0 [10.71]	82,6 [3.25]
HW...750	250,5 [9.86]	293,5 [11.56]	104 [4.09]

* For **LSV** option the dimension **L** is 3 mm [.118 in] greater.



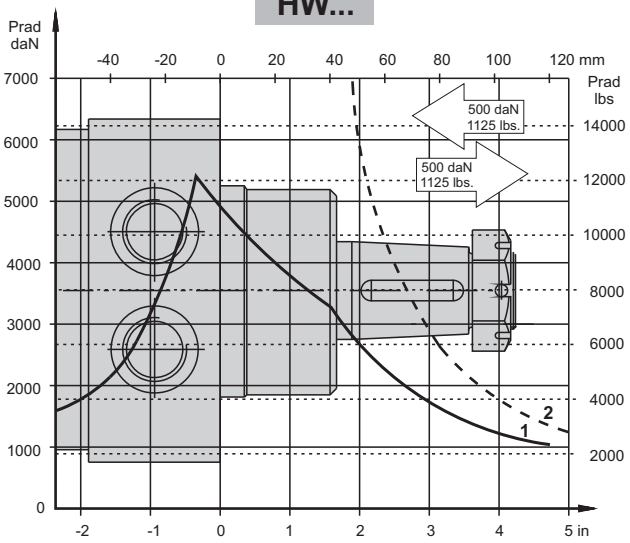




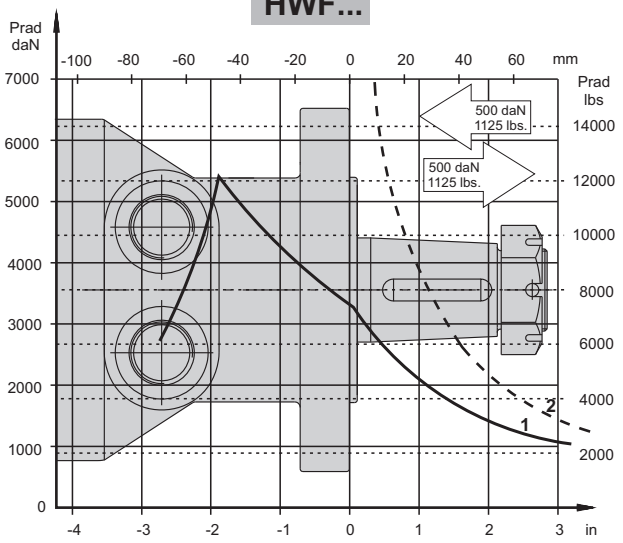


PERMISSIBLE SHAFT LOADS

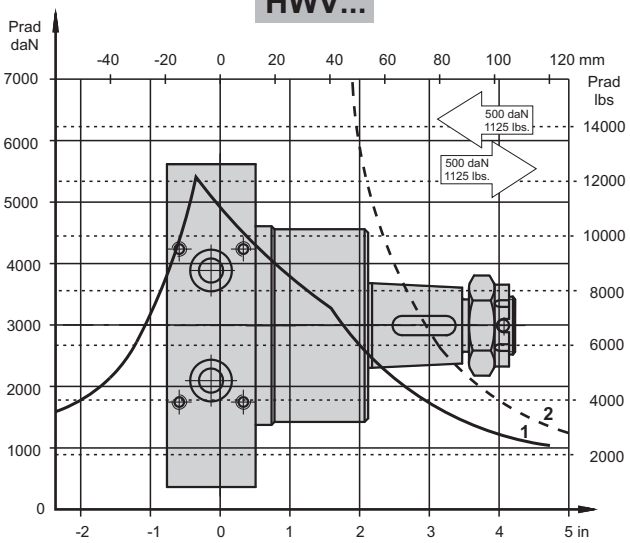
HW...



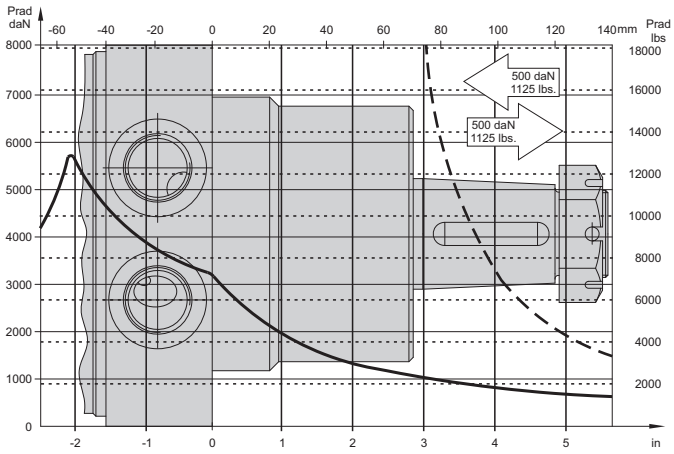
HWF...



HWV...



HWSW...

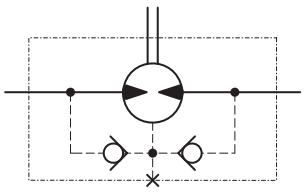


1 - Bearing curve: The curve applies to a B10 bearing life of 2000 hours at 100 RPM.

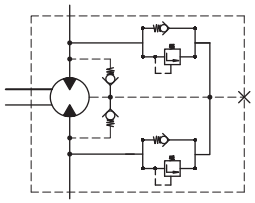
2 - Shaft curve: The curve represents Max. permissible radial shaft load with safety factor 3:1.

MAX. PERMISSIBLE SHAFT SEAL PRESSURE

HW, HWF, HWS, HWD,
HWV, HWSW,
HW(S)(F)...7,8,9,10



HWFR, HWSR, HWSWR

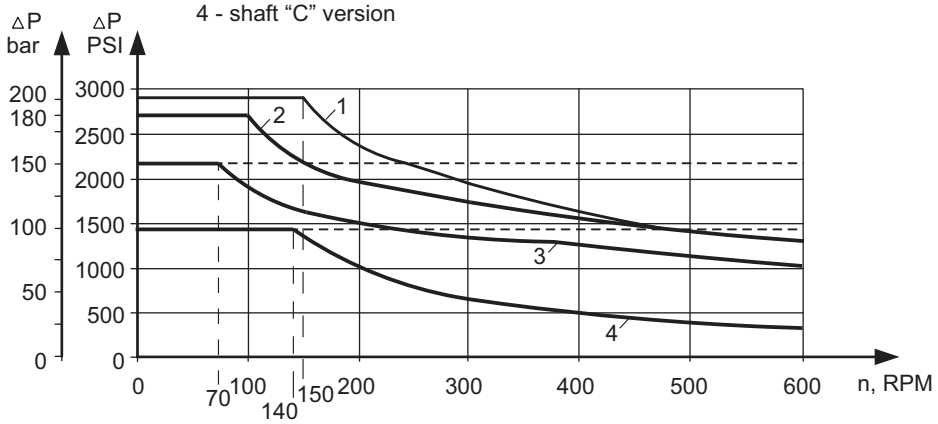


HW...U(Q) motors with drain connection:

The shaft seal pressure equals the pressure in the drain line.

1 - extreme high pressure “Q” version
2 - high pressure “U” version
3 - standard version
4 - shaft “C” version

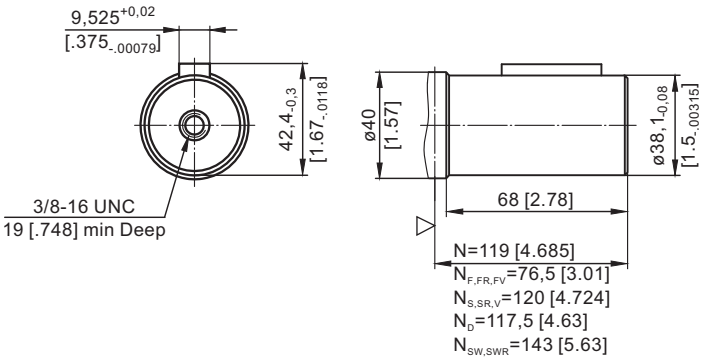
——— - continuous operations
– – – – – - intermittent operations



SHAFT EXTENSIONS

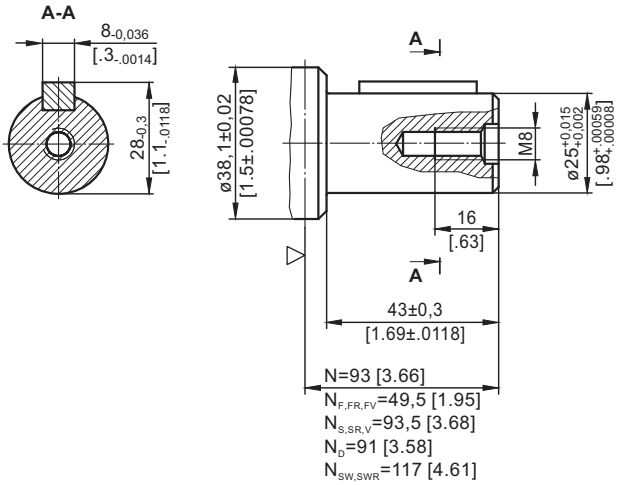
C - 1½" [38,1] straight, Parallel key ⅜"x ⅜"x1½" BS46

Max. Torque 120 daNm [10630 lb-in]



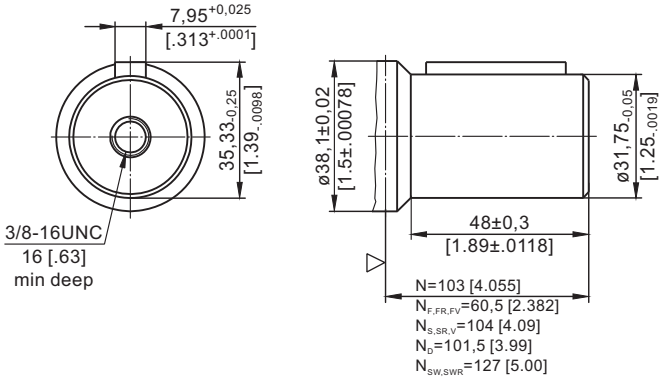
CO - ø25, straight, Parallel key A8x7x32 DIN 6885

Max. Torque 40 daNm [3540 lb-in]



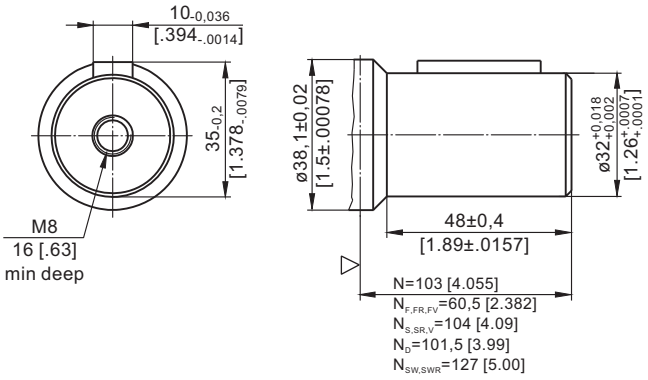
K - 1¼" [31,75] straight, Parallel key 5⁄16"x5⁄16"x1½" BS46

Max. Torque 77 daNm [6815 lb-in]



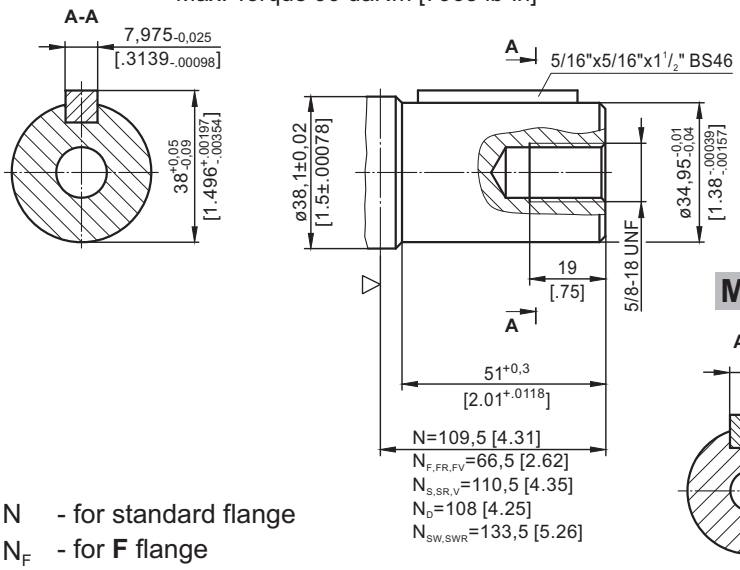
M - ø32 straight, Parallel key A10x8x32 DIN 6885

Max. Torque 77 daNm [6815 lb-in]



H - 1 3⁄8" [35] straight, Parallel key 5⁄16"x5⁄16"x1½" BS46

Max. Torque 90 daNm [7965 lb-in]

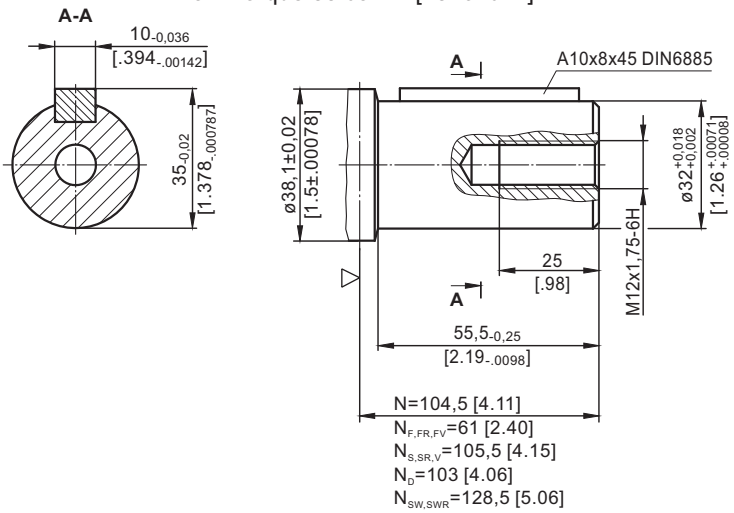


mm [in]

▽ - Motor Mounting Surface

MP - ø32 straight, Parallel key A10x8x45 DIN 6885

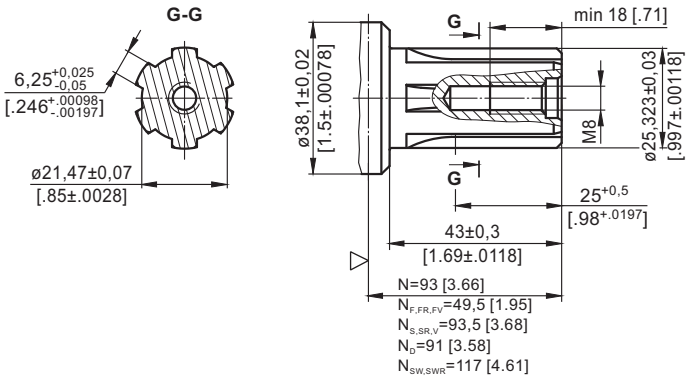
Max. Torque 85 daNm [7520 lb-in]



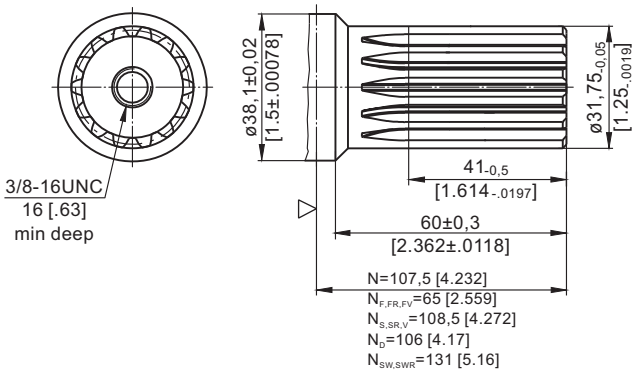
N - for standard flange
N_F - for **F** flange
N_{FR} - for **FR** flange
N_{FV} - for **FV** flange
N_S - for **S** flange
N_{SR} - for **SR** flange
N_D - for **D** flange
N_V - for **V** flange
N_{SW} - for **SW** flange
N_{SWR} - for **SWR** flange

SHAFT EXTENSIONS [continued]

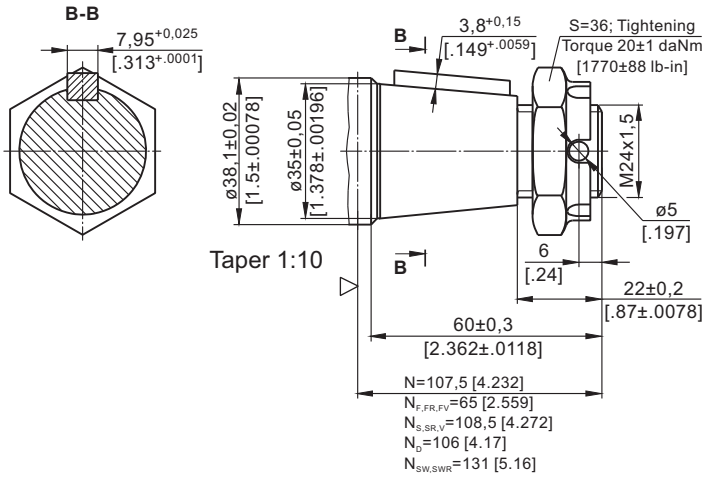
SH - ø1" splined BS 2059, SAE 6B
Max. Torque 40 daNm [3540 lb-in]



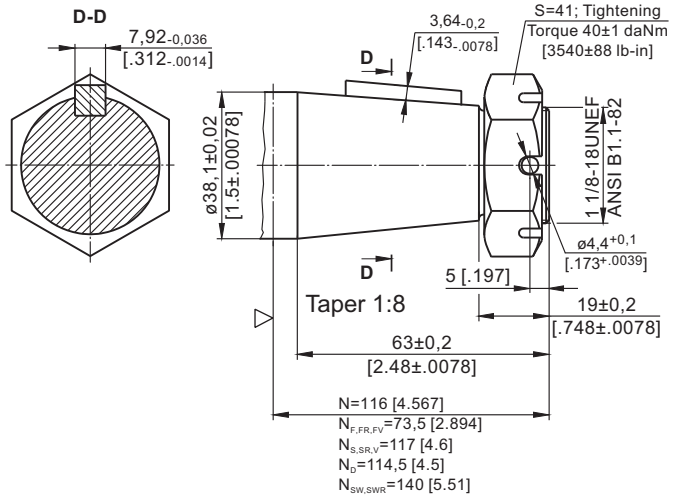
L - ø1¼" [31,75] splined 14T, DP12/24 ANSI B92.1-1976
Max. Torque 95 daNm [8410 lb-in]



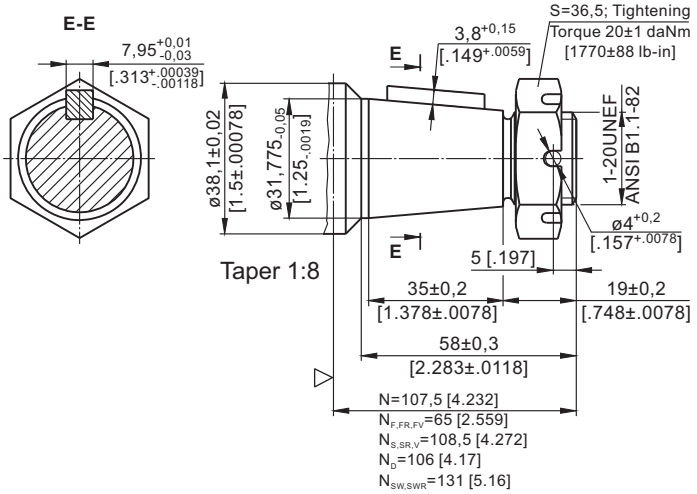
KB - ø35 tapered 1:10, Parallel key 5/16"x5/16"x1¼" BS46
Max. Torque 95 daNm [8410 lb-in]



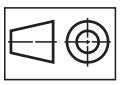
T - 1½" [38,1] tapered 1:8, Parallel key 5/16"x5/16"x1¼" BS46
Max. Torque 120 daNm [10620 lb-in]



R - 1¼" [31,75] tapered 1:8, Parallel key 5/16"x5/16"x1" BS46
Max. Torque 95 daNm [8410 lb-in]



N - for standard flange
N_F - for **F** flange
N_{FR} - for **FR** flange
N_{FV} - for **FV** flange
N_S - for **S** flange
N_{SR} - for **SR** flange
N_D - for **D** flange
N_V - for **V** flange
N_{SW} - for **SW** flange
N_{SWR} - for **SWR** flange



mm [in]

▽ - Motor Mounting Surface

ORDER CODE

	1	2	3	4	5	6	7	8	9
HW								/	

Pos.1 - Mounting Flange

omit	- Wheel mount, four holes
E	- Wheel mount, four holes, rear ports
F	- Magneto mount, six holes
FR	- Magneto mount, six holes, relief valves
FV[1)*]	- Magneto mount, six holes, manifold 4xM6
FE	- Magneto mount, six holes, rear ports
S	- Wheel mount, four holes
SR	- Wheel mount, four holes, relief valves
SW	- Wheel mount, four holes; mounting on ø95,3 [3.75]
SWR	- Wheel mount, four holes; mounting on ø95,3 [3.75], relief valves
SE	- Wheel mount, four holes, rear ports
D	- Wheel mount, four holes; mounting on ø88,8 [3.5]
V[1)*]	- Wheel mount, four holes, manifold 4xM6

Pos.2 - Displacement code

80	- 79,7 cm^3/rev [4.86 in^3/rev]
100	- 101,4 cm^3/rev [6.19 in^3/rev]
125	- 126,0 cm^3/rev [7.69 in^3/rev]
160	- 157,8 cm^3/rev [9.63 in^3/rev]
200	- 201,3 cm^3/rev [12.28 in^3/rev]
235	- 235,3 cm^3/rev [14.36 in^3/rev]
250	- 252,0 cm^3/rev [15.38 in^3/rev]
300	- 300,0 cm^3/rev [18.31 in^3/rev]
315	- 314,9 cm^3/rev [19.22 in^3/rev]
350	- 347,8 cm^3/rev [21.22 in^3/rev]
370	- 369,0 cm^3/rev [22.52 in^3/rev]
400	- 396,8 cm^3/rev [24.21 in^3/rev]
470	- 470,6 cm^3/rev [28.72 in^3/rev]
500	- 502,4 cm^3/rev [30.66 in^3/rev]
535	- 535,0 cm^3/rev [32.65 in^3/rev]
550	- 550,0 cm^3/rev [33.56 in^3/rev]
600	- 598,9 cm^3/rev [36.55 in^3/rev]
750	- 753,8 cm^3/rev [45.99 in^3/rev]

Pos.3 - Shaft Extensions[2)*]

K	- 1¼" [ø31,75] straight, Parallel key $^5/_{16}$"x$^5/_{16}$"x1$^1/_2$" BS46
KB	- ø35 tapered 1:10, Parallel key $^5/_{16}$"x$^5/_{16}$"x1$^1/_4$" BS46
L	- 1$^1/_4$" [ø31,75] splined 14T, DP12/24 ANSI B92.1-1976
M	- ø32 straight, Parallel key A10x8x32 DIN 6885
MP	- ø32 straight, Parallel key A10x8x45 DIN 6885
R	- 1$^1/_4$" [ø31,75] tapered 1:8, Parallel key $^5/_{16}$"x$^5/_{16}$"x1" BS46
T	- 1$^1/_2$" [ø38,1] tapered 1:8, Parallel key $^5/_{16}$"x$^5/_{16}$"x1$^1/_4$" BS46
C	- 1$^1/_2$" [ø38,1] straight, Parallel key $^3/_8$"x$^3/_8$"x1$^1/_2$" BS46
CO	- ø25, straight, Parallel key A8x7x32 DIN 6885
H	- 1$^3/_8$" [ø35] straight, Parallel key $^5/_{16}$"x$^5/_{16}$"x1$^1/_2$" BS46
SH	- 1" [ø25,32] splined BS 2059, SAE 6B

Pos.4 - Ports

2	- side ports, 2xG1/2, G1/4, BSP thread, ISO 228
4	- side ports, 2x7/8-14 UNF, O-ring, 7/16-20 UNF
5[3)*]	- rear ports, 2xG3/8, G1/4, BSP thread, ISO 228
6[3)*]	- rear ports, 2x9/16-18 UNF, O-ring, 7/16-20 UNF
7[8)*]	- side ports, 2xG1/2 thread in the cover
8[8)*]	- side ports, 2x7/8-14 UNF, O-ring thread in the cover
9[8)*]	- side ports, for valve mounting in the cover
10[8)*]	- side ports, for valve mounting and 2xM16 in the cover

Pos.5 - Drain line

omit	- For versions 2,4,5,6,7 and 8
2	- G1/4, BSP thread, ISO 228
4	- 7/16-20 UNF

Pos.6 - Shaft Seal Version

omit	- Standard shaft seal up to 150 bar [2175 PSI]
U	- High pressure shaft seal up to 180 bar [2610 PSI]
Q	- Extreme high pressure shaft seal up to 200 bar [2900 PSI]

Pos.7 - Additional Options[4)*,5)*,6)*] [see page 125]

Pos.8 - Valves Pressure Range, bar[7)*]

/	- 70, 100, 140, 170, 210

Pos.9 - Design Series

omit	- Factory specified

NOTES:
[1)*] Flanges **V** and **FV** are for versions 2 and 4 - drainage only!
[2)*] The permissible output torque for shafts must not be exceeded!
[3)*] For **E**-version only!
[4)*] If the code on pos.7 is not specified in the order, it will be considered as LL-option.
[5)*] Colour at customer's request.
[6)*] Non painted feeding surfaces, colour at customer's request.
[7)*] For **SR** and **FR** only!
[8)*] Port versions 7,8,9 and 10 are available with HW(S)(F) flanges only!

E-version and 7,8,9 and 10 are not available with **SR**, **SWR** and **FR!!!**
HW...R-version is not available with **"RS"!**

The hydraulic motors are mangano-phosphatized as standard.