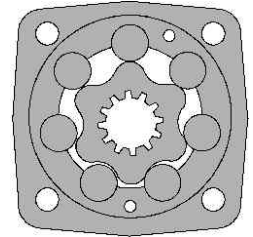




The gear set of the MAS(E) motor is consisted of rotor, stator and rollers which can increase motor performance and efficiency. Feature tapered roller bearing on the output shaft, which allows for the motors to sustain very high radial and axial loads. MAS(E) motor incorporate an advanced valving design that allows the high pressure flow to be better isolated from the low pressure flow within the motor.



Specifications

| TYPE | | MAS(E) 80 | MAS(E) 100 | MAS(E) 125 | MAS(E) 160 | MAS(E) 200 | MAS(E) 250 | MAS(E) 315 | MAS(E) 400 |
|---------------------------|---------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Displacement (c.c/rev) | | 80.8 | 99.8 | 125.2 | 159.5 | 200 | 252.3 | 315.1 | 397 |
| Max. speed (rpm) | Cont | 805 | 746 | 598 | 465 | 373 | 298 | 236 | 187 |
| | Int(3) | 1000 | 900 | 718 | 560 | 447 | 360 | 290 | 230 |
| Max. Torque (da Nm) | Cont | 19.8 | 24.4 | 30.7 | 34.0 | 39.5 | 45.0 | 54.1 | 58 |
| | Int(3) | 23.7 | 29.3 | 36.8 | 46.9 | 49.0 | 53.5 | 63 | 69 |
| | Peak(4) | 26.0 | 32.2 | 40.5 | 48.5 | 64.8 | 68.2 | 84 | 85 |
| Max. output (Kw) | Cont | 16.4 | 19.4 | 20 | 12 | 14 | 13.6 | 11.5 | 10 |
| | Int(3) | 22 | 26 | 24 | 21.8 | 21 | 21.2 | 13.5 | 13 |
| Max. pressure drop (bar) | Cont | 175 | 175 | 175 | 160 | 150 | 140 | 120 | 100 |
| | Int(3) | 210 | 210 | 210 | 210 | 180 | 175 | 140 | 120 |
| | Peak(4) | 225 | 225 | 225 | 225 | 225 | 200 | 185 | 140 |
| Max.oil flow (l/min) | Cont | 65 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| | Int(3) | 80 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Max. Inlet pressure (bar) | Cont | 210 | 210 | 210 | 210 | 210 | 210 | 210 | 210 |
| | Int(3) | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| | Peak(4) | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 |
| Weight (kg) | | 10 | 10.3 | 10.5 | 11 | 11.4 | 11.9 | 12.5 | 13.5 |

(3) Intermittent operation rating applies to 6 sec. of every minute

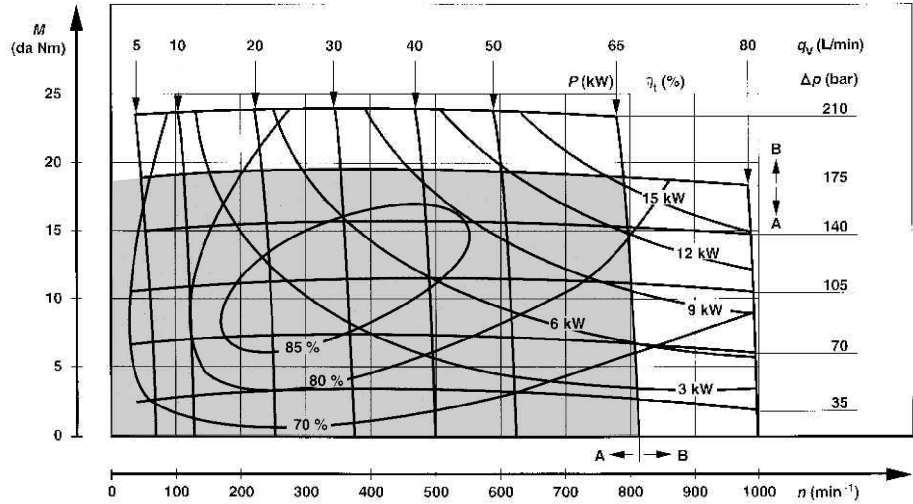
(4) Peak load rating applies to 0.6 sec of every minute

| TYPE | | MAS(E) 80 | MAS(E) 100 | MAS(E) 125 | MAS(E) 160 | MAS(E) 200 | MAS(E) 250 | MAS(E) 315 | MAS(E) 400 |
|---------------------------|---------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Displacement (in.3/r) | | 4.9 | 6.1 | 7.6 | 9.7 | 12.2 | 15.4 | 19.2 | 24.2 |
| Max. speed (rpm) | Cont | 805 | 746 | 598 | 465 | 373 | 298 | 236 | 187 |
| | Int(3) | 1000 | 900 | 718 | 560 | 447 | 360 | 290 | 230 |
| Max. Torque (lb-in) | Cont | 1751 | 2163 | 2713 | 3009 | 3496 | 3983 | 4788 | 5133 |
| | Int(3) | 2101 | 2595 | 3256 | 4148 | 4337 | 4735 | 5576 | 6107 |
| | Peak(4) | 2301 | 2850 | 3584 | 4292 | 5735 | 6035 | 7434 | 7523 |
| Max. output (hp) | Cont | 22 | 26 | 26.8 | 16.1 | 18.8 | 18.2 | 15.4 | 13.4 |
| | Int(3) | 29.5 | 34.9 | 32.2 | 29.2 | 28.2 | 28.4 | 18.1 | 17.4 |
| Max. pressure drop (psi) | Cont | 2540 | 2540 | 2540 | 2320 | 2175 | 2030 | 1740 | 1450 |
| | Int(3) | 3045 | 3045 | 3045 | 3045 | 2610 | 2540 | 2030 | 1740 |
| | Peak(4) | 3260 | 3265 | 3265 | 3265 | 3265 | 2900 | 2685 | 2030 |
| Max.oil flow (gpm) | Cont | 17.2 | 19.8 | 19.8 | 19.8 | 19.8 | 19.8 | 19.8 | 19.8 |
| | Int(3) | 21.2 | 23.8 | 23.8 | 23.8 | 23.8 | 23.8 | 23.8 | 23.8 |
| Max. Inlet pressure (psi) | Cont | 3045 | 3045 | 3045 | 3045 | 3045 | 3045 | 3045 | 3045 |
| | Int(3) | 3625 | 3625 | 3625 | 3625 | 3625 | 3625 | 3625 | 3625 |
| | Peak(4) | 4350 | 4350 | 4350 | 4350 | 4350 | 4350 | 4350 | 4350 |
| Weight (lbs) | | 22.2 | 22.9 | 23.3 | 24.4 | 25.3 | 26.4 | 27.8 | 30.0 |

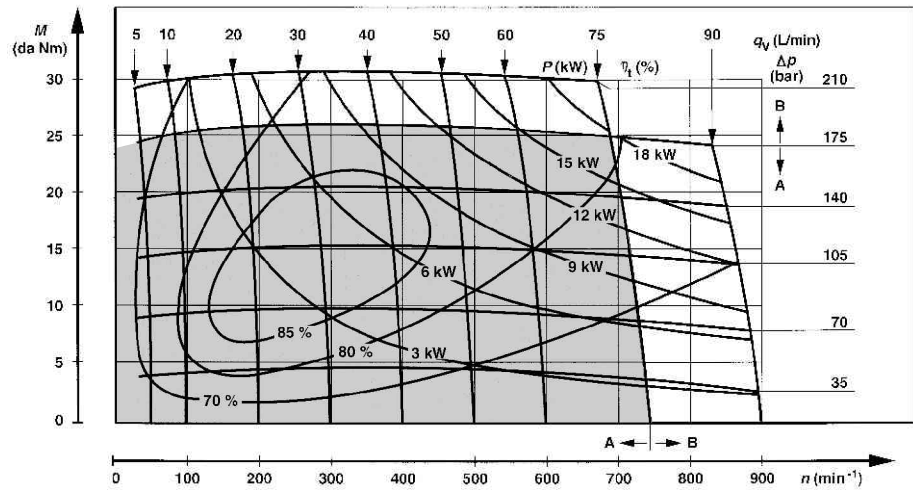
A : Continuous operation

B : Intermittent operation rating applies to 6 sec. of every minute.

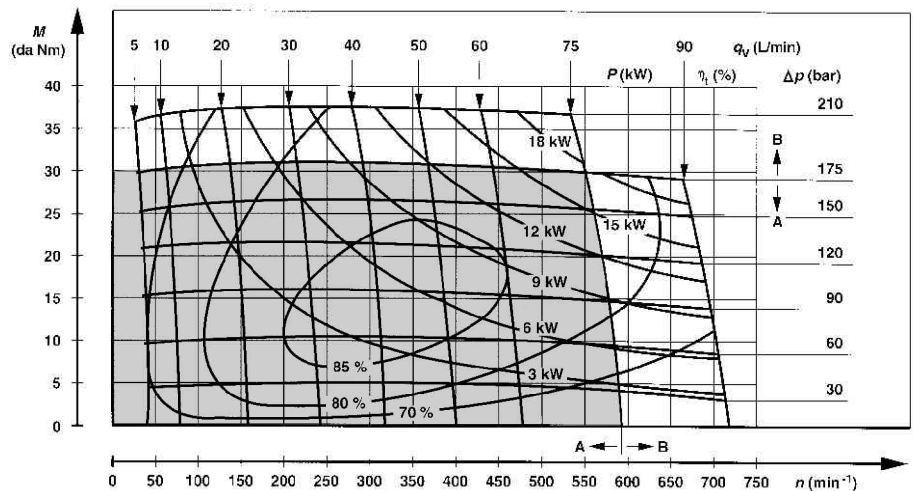
MAS(E)80



MAS(E)100



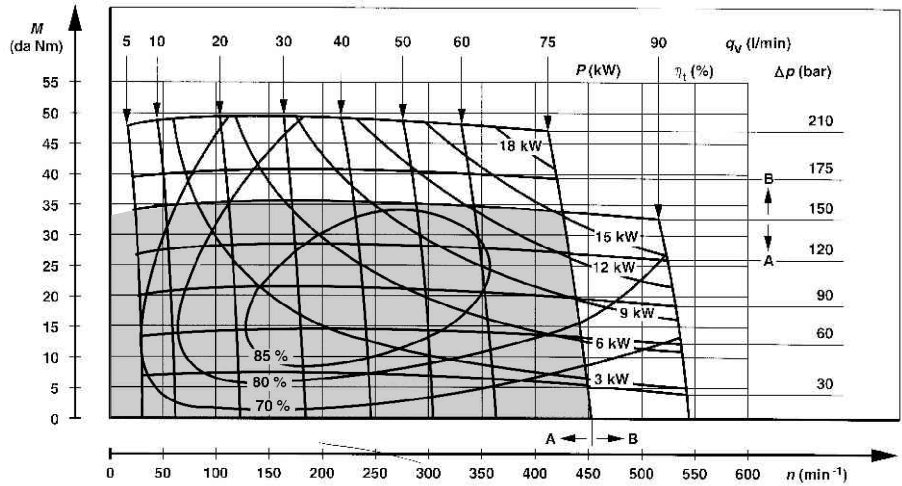
MAS(E)125



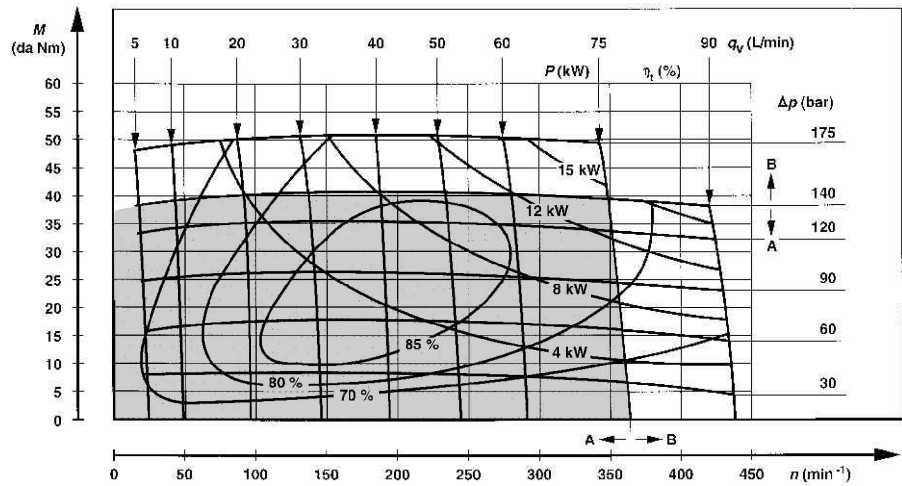
A : Continuous operation

B : Intermittent operation rating applies to 6 sec. of every minute.

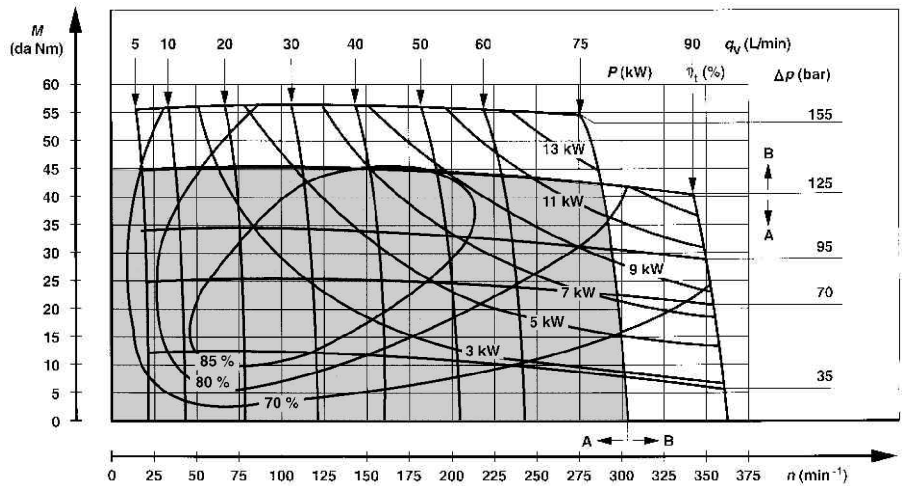
MAS(E)160



MAS(E)200



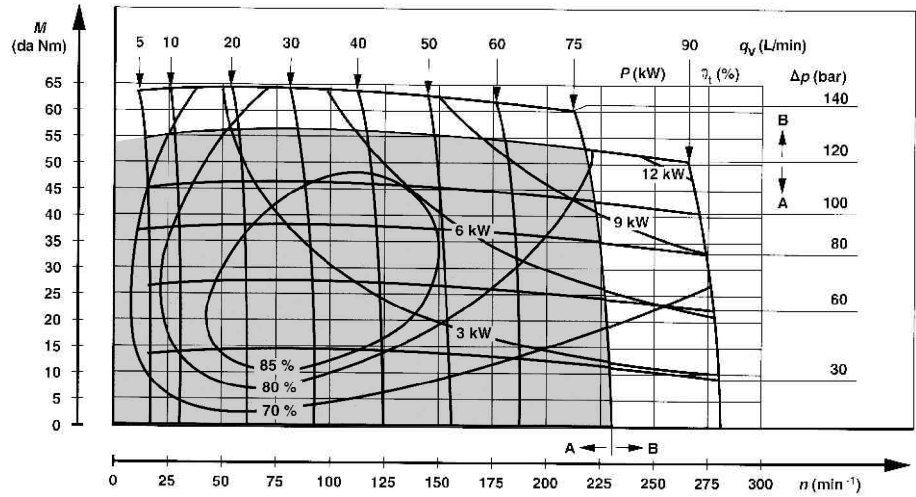
MAS(E)250



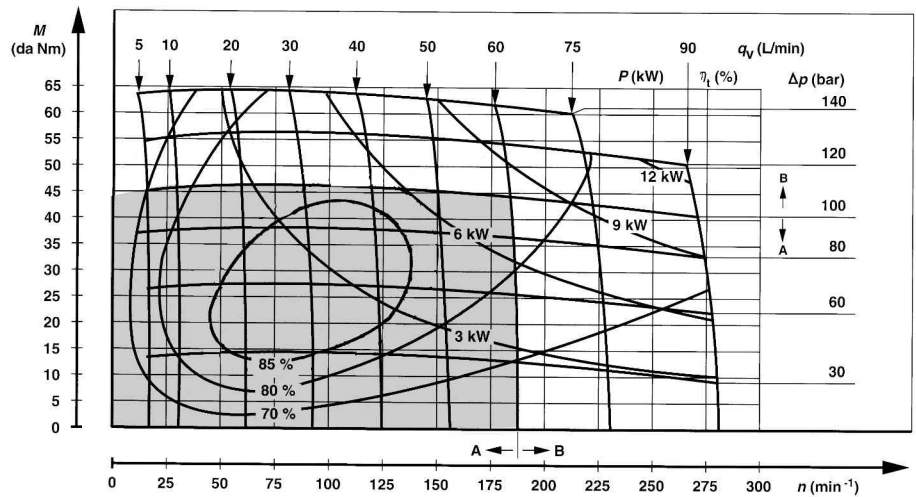
A : Continuous operation

B : Intermittent operation rating applies to 6 sec. of every minute.

MAS(E)315



MAS(E)400



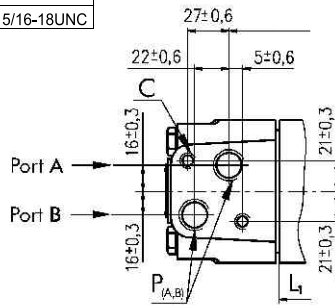
Dimensions and Mounting Data

| Code | Versions | | |
|--------|-----------|---------------|----------------|
| Port | Omit | M | U |
| P(A,B) | 2 x G 1/2 | 2 x M22 x 1.5 | 2 x 7/8-14UNF |
| T | G 1/4 | M14 x 1.5 | 7/16-20UNF |
| C | 2 x M10 | 2 x M10 | 4 x 5/16-18UNC |

Porting

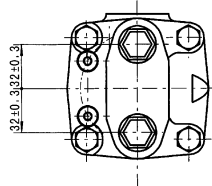
Side Ports

Versions **G M U**

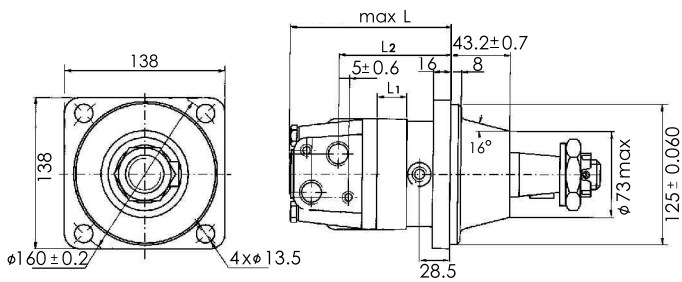


Rear Ports

Versions **G M U**

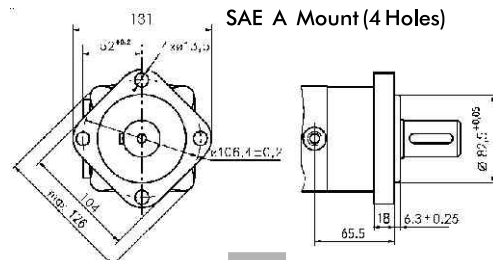


Wheel Mounting

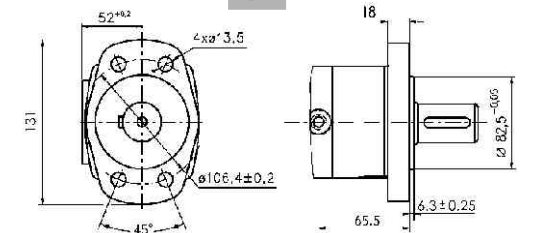


Mounting

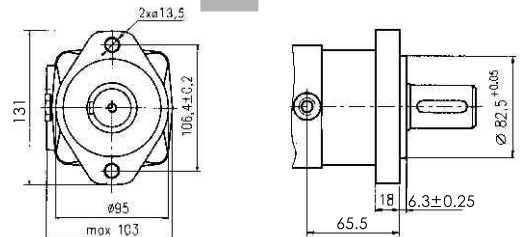
SAE A Mount (4 Holes)



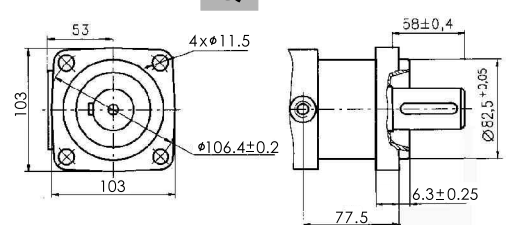
F Magneto Mount (4 Holes)



A SAE A- Mount (2 Holes)



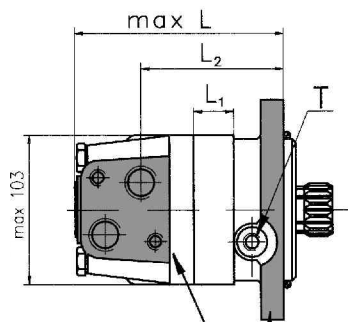
Q Square Mount (4 Holes)



| Type | L | L ₂ | Type | L | L ₂ | Type | L | L ₂ | Type | L | L ₁ |
|------------|-------|----------------|----------|-------|----------------|----------|-------|----------------|----------|-----|----------------|
| MAS(F) 80 | 167 | 123.2 | MASQ 80 | 179 | 135.2 | MASW 80 | 130 | 86 | MASE 80 | 177 | 13 |
| MAS(F) 100 | 171 | 127.2 | MASQ 100 | 183 | 139.2 | MASW 100 | 134 | 90 | MASE 100 | 181 | 17 |
| MAS(F) 125 | 176 | 132.2 | MASQ 125 | 188 | 144.2 | MASW 125 | 139 | 95 | MASE 125 | 186 | 22 |
| MAS(F) 160 | 181.5 | 137.7 | MASQ 160 | 193.5 | 149.7 | MASW 160 | 144.5 | 100.5 | MASE 160 | 192 | 27.5 |
| MAS(F) 200 | 189 | 145.2 | MASQ 200 | 201 | 157.2 | MASW 200 | 152 | 108 | MASE 200 | 201 | 35.1 |
| MAS(F) 250 | 201 | 157.2 | MASQ 250 | 213 | 169.2 | MASW 250 | 164 | 120 | MASE 250 | 211 | 47 |
| MAS(F) 315 | 213 | 169.2 | MASQ 315 | 225 | 181.2 | MASW 315 | 176 | 132 | MASE 315 | 223 | 59 |
| MAS(F) 400 | 225 | 181.2 | MASQ 400 | 237 | 193.2 | MASW 400 | 188 | 144 | MASE 400 | 235 | 71 |

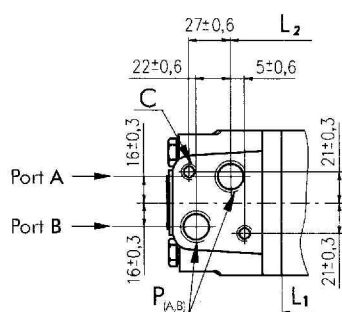
Dimensions and Mounting Data

| Type | L | L ₁ | L ₂ |
|----------|-------|----------------|----------------|
| MASS 80 | 130 | 13 | 86 |
| MASS 100 | 134 | 17 | 90 |
| MASS 125 | 139 | 22 | 95 |
| MASS 160 | 144.5 | 27.5 | 100.5 |
| MASS 200 | 152 | 35.1 | 108 |
| MASS 250 | 164 | 47 | 120 |
| MASS 315 | 176 | 59 | 132 |
| MASS 400 | 188 | 71 | 144 |



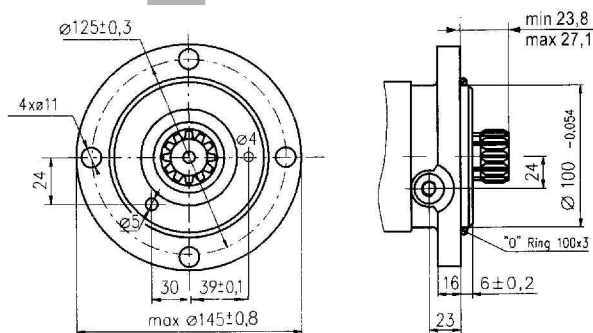
Porting

Side Ports



Mounting

S Short Mount



| Code | Versions | | |
|--------|-----------|---------------|----------------|
| | Omit | M | U |
| P(A,B) | 2 x G 1/2 | 2 x M22 x 1.5 | 2 x 7/8-14UNF |
| T | G 1/4 | M14 x 1.5 | 7/16-20UNF |
| C | 2 x M10 | 2 x M10 | 4 x 5/16-18UNC |

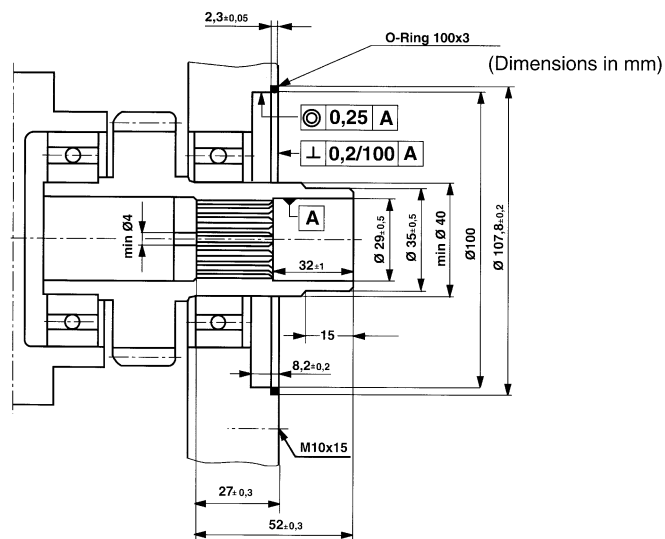
Technical

The short motor has no output shaft or bearings. It is designed for direct mounting onto a gearbox that already has its female input shaft in bearings.

The cardan shaft of the short motor describes a tumbling motion. Consequently, the motor itself cannot be fitted with a shaft seal. The add-on component (gearbox) must be fitted with a leakage oil from flowing into the add-on unit.

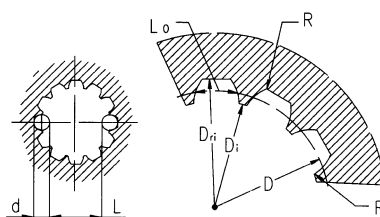
The maximum permissible back flow pressure (pressure in the motor leakage oil line) is dependent on the loading capacity of the shaft seal. We always recommended fitting a leakage oil line.

The gearbox input must be designed so the leakage oil from the motor lubricates the cardan shaft profile and the bearings.



Internal Spline Data for The Attached Component

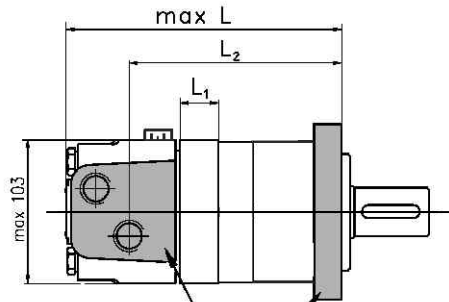
| Fillet Root Side Fit | mm | |
|------------------------|-----------------|------------------------|
| Number of Tech | z | 12 |
| Diametral Pitch | DP | 12/24 |
| Pressure Angle | | 30° |
| Pitch Dia. | D | 25.4 |
| Major Dia. | D _{ri} | 28.0 ^{-0,1} |
| Minor Dia. | D _i | 23.0 ^{+0,033} |
| Space Width [Circular] | L _o | 4.308 ± 0.020 |



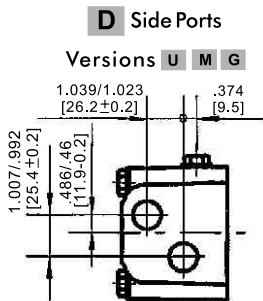
Hardening Specification:
HRC 60±2
Effective case depth (HRC 52) 0,7±0,2 mm

Dimensions and Mounting Data

(mm) show in brackets []

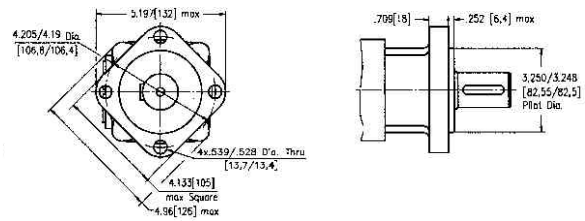


Porting

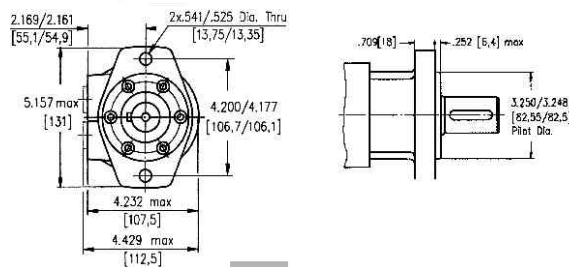


Mounting

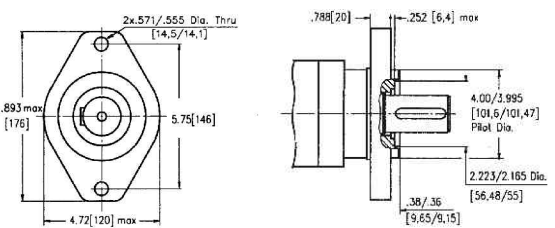
SAE.A Mount (4 Holes)



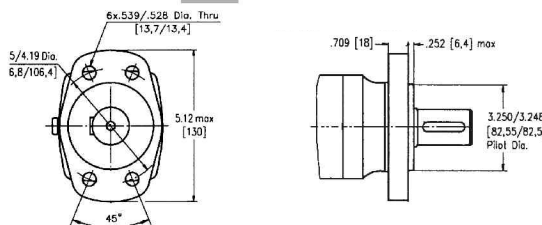
A SAE.A Mount (2 Holes)



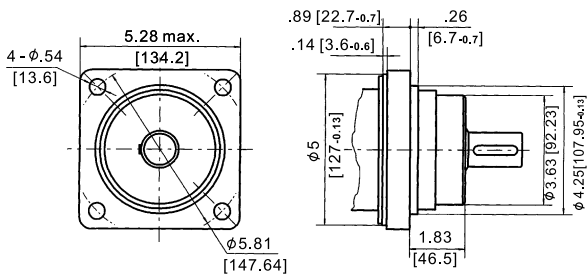
B SAE.B Mount (2 Holes)



F Magneto Mount (4 Holes)



W Wheel Mount (4 Holes)

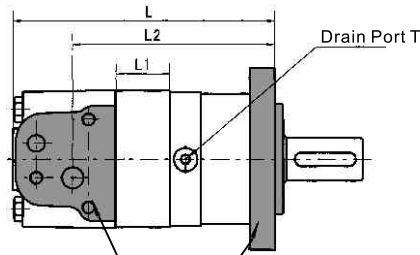


| Code | Versions | | |
|--------|---------------|---------------|-----------|
| Port | U | M | G |
| P(A,B) | 2 x 7/8-14UNF | 2 x M22 x 1.5 | 2 x G 1/2 |
| T | 7/16-20UNF | M14 x 1.5 | G 1/4 |

| Type | L | L ₂ | Type | L | L ₂ | L ₁ |
|-------------|--------------|----------------|-----------|--------------|----------------|----------------|
| MASE(F) 80 | 6.73 [171] | 4.85 [123.2] | MASEW 80 | 5.63 [143] | 3.74 [95] | .51 [13] |
| MASE(F) 100 | 6.89 [175] | 5.01 [127.2] | MASEW 100 | 5.79 [147] | 3.90 [99] | .67 [17] |
| MASE(F) 125 | 7.09 [180] | 5.21 [132.2] | MASEW 125 | 5.98 [152] | 4.09 [104] | .87 [22] |
| MASE(F) 160 | 7.26 [184.5] | 5.42 [137.7] | MASEW 160 | 6.20 [157.5] | 4.31 [109.5] | 1.08 [27.5] |
| MASE(F) 200 | 7.60 [193] | 5.72 [145.2] | MASEW 200 | 6.50 [165] | 4.61 [117] | 1.38 [35.1] |
| MASE(F) 250 | 8.07 [205] | 6.19 [157.2] | MASEW 250 | 6.97 [177] | 5.07 [129] | 1.85 [47] |
| MASE(F) 315 | 8.54 [217] | 6.66 [169.2] | MASEW 315 | 7.44 [189] | 5.55 [141] | 2.32 [59] |
| MASE(F) 400 | 9.02 [229] | 7.13 [181.2] | MASEW 400 | 7.91 [201] | 6.02 [153] | 2.80 [71] |

Dimensions and Mounting Data

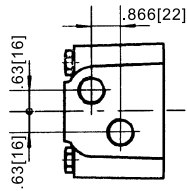
(mm) show in brackets []



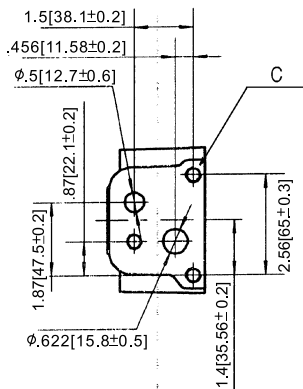
Porting

P Side Ports

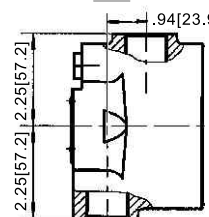
Versions **U M G**



**MU Side Ports
Maniflod**

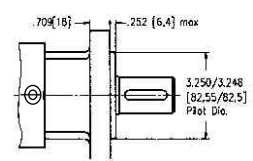
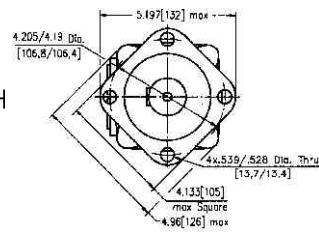


R Rear Ports

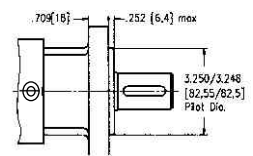
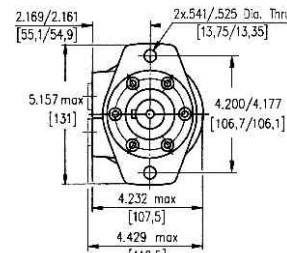


Mounting

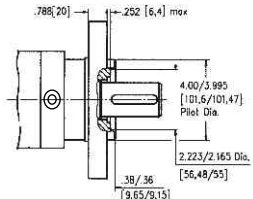
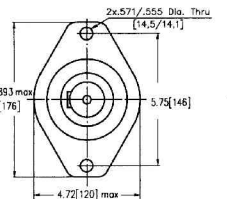
SAE.A Mount (4 Holes)



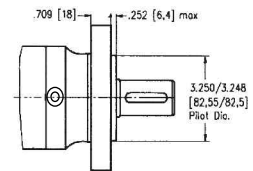
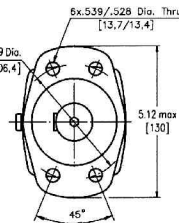
A SAE.A Mount (2 Holes)



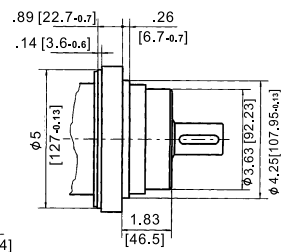
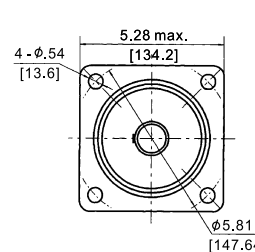
B SAE.B Mount (2 Holes)



F Magneto Mount (4 Holes)



W WheelMount (4 Holes)

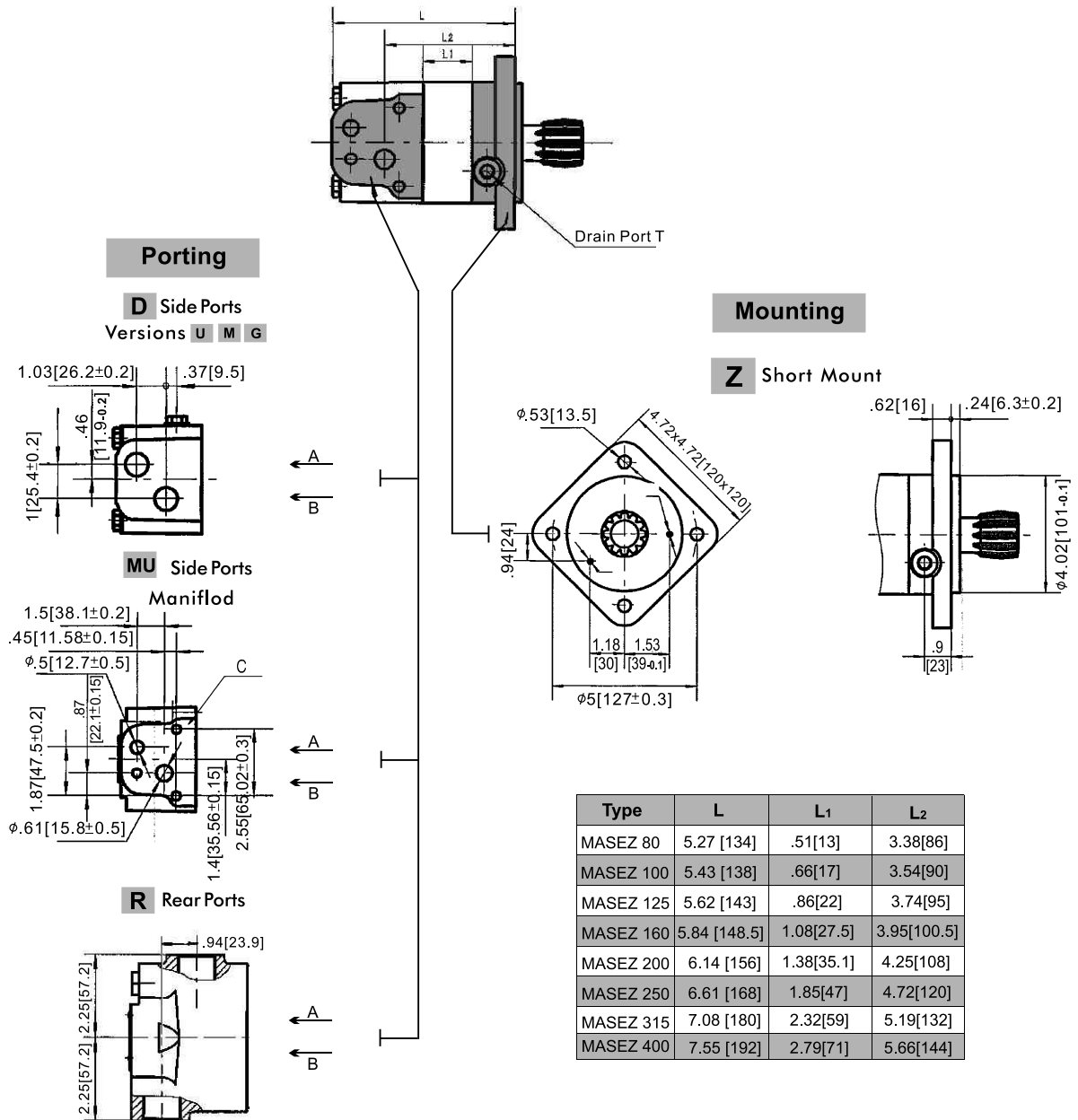


| Code | Versions | | | | |
|----------------|---------------|---------------|-----------|--------------|-------------|
| | U | M | G | MU | R |
| P (A,B) | 2 x 7/8-14UNF | 2 x M22 x 1.5 | 2 x G 1/2 | φ12.7, φ15.8 | 1-1/16-12UN |
| T | 7/16-20UNF | M14 x 1.5 | G 1/4 | 7/16-20UNF | 7/16-20UNF |
| C | - | - | - | 3x 3/8-16UNC | - |

| Type | L | L ₂ | Type | L | L ₂ | L ₁ |
|-------------|-------------|----------------|-------------|-------------|----------------|----------------|
| MASE(*) 80 | 6.57[167] | 4.79[121.7] | MASE(R) 80 | 6.81[173] | 4.95[125.7] | .51[13] |
| MASE(*) 100 | 6.73[171] | 4.95[125.7] | MASE(R) 100 | 6.97[177] | 5.11[129.7] | .67[17] |
| MASE(*) 125 | 6.93[176] | 5.15[130.7] | MASE(R) 125 | 7.17[182] | 5.30[134.7] | .87[22] |
| MASE(*) 160 | 7.15[181.5] | 5.36[136.2] | MASE(R) 160 | 7.38[187.5] | 5.52[140.2] | 1.08[27.5] |
| MASE(*) 200 | 7.44[189] | 5.66[143.7] | MASE(R) 200 | 7.68[195] | 5.81[147.7] | 1.38[35.1] |
| MASE(*) 250 | 7.91[201] | 6.13[155.7] | MASE(R) 250 | 8.15[207] | 6.29[159.7] | 1.85[47] |
| MASE(*) 315 | 8.39[213] | 6.60[167.7] | MASE(R) 315 | 8.62[219] | 6.76[171.7] | 2.32[59] |
| MASE(*) 400 | 8.86[225] | 7.07[179.7] | MASE(R) 400 | 9.09[231] | 7.23[183.7] | 2.80[71] |

Note: (*) for Side Port Code MU and P

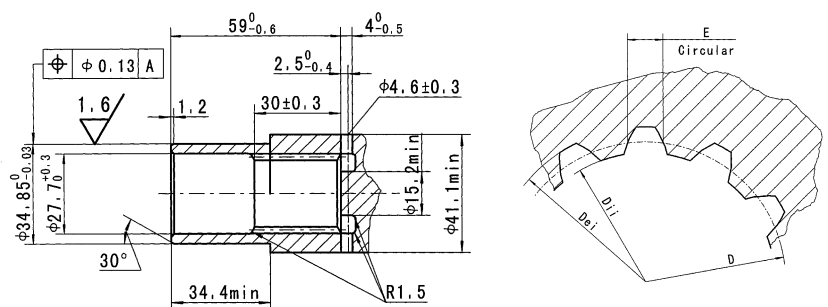
Dimensions and Mounting Data



| Code | Versions | | | | |
|---------------------------|---------------|---------------|-----------|--------------|-------------|
| Port | U | M | G | MU | R |
| P _(A,B) | 2 x 7/8-14UNF | 2 x M22 x 1.5 | 2 x G 1/2 | φ12.7, φ15.8 | 1-1/16-12UN |
| T | 7/16-20UNF | M14 x 1.5 | G 1/4 | 7/16-20UNF | 7/16-20UNF |
| C | - | - | - | 3x 3/8-16UNC | - |

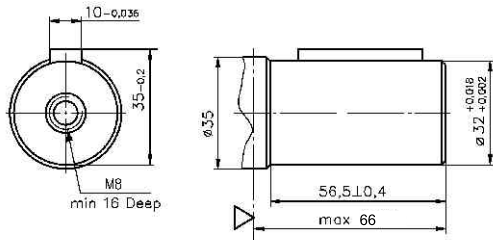
Internal Spline Data for The Attached Component

| Fillet Root Side Fit | mm |
|---------------------------------------|---------------------------|
| Number of Tech | z 12 |
| Diametral Pitch | DP 12/24 |
| Pressure Angle | 30° |
| Pitch Dia. | D 25.4 |
| Major Dia. | Dei 27.6 ^{+0.14} |
| Minor Dia. | Dii 23.1 ^{+0.12} |
| Space Width [Circular] | E 4.282 ± 0.036 |
| Dimension between two pins (φ3.38) Me | 26.929-27.84 |

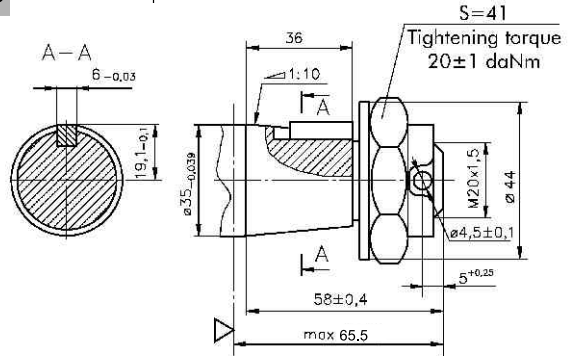


Shaft Extensions for MAS & MASE Motor

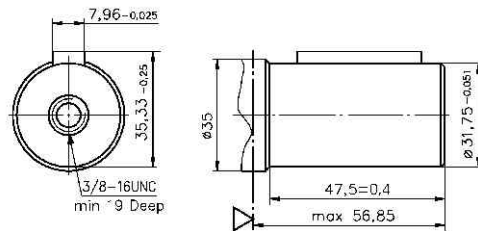
C $\phi 32$ straight, Parallel key A10x8x45
Max. Torque 77 daNm



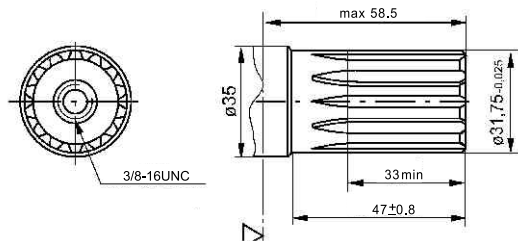
TB Tapered 1:10, Parallel key B6x6x20
Max. Torque 95 daNm



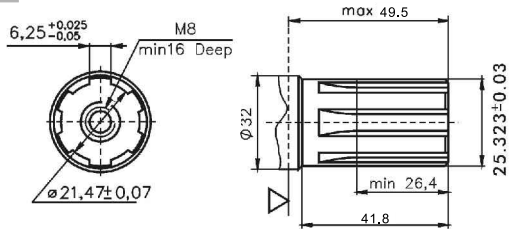
CO $\phi 1\ 1/4$ " straight, Parallel key 5/16" x 5/16" x 1 1/4" BS46
Max. Torque 77 daNm



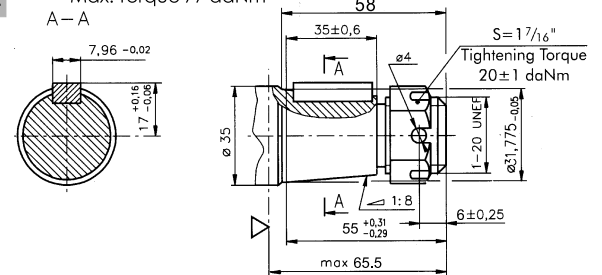
SB $\phi 1\ 1/4$ " Splined 14T, ANSI B92.1-1976 Norm
Max. Torque 77 daNm



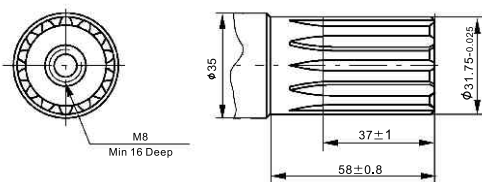
S Splined, (SAE 6B)
Max. Torque 34 daNm



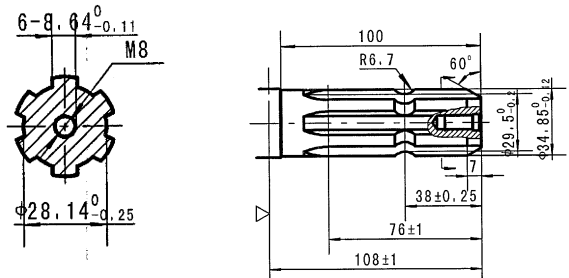
TA Tapered 1:8 SAEJ 501, Parallel key 5/16" x 5/16" x 1 1/4"
Max. Torque 77 daNm



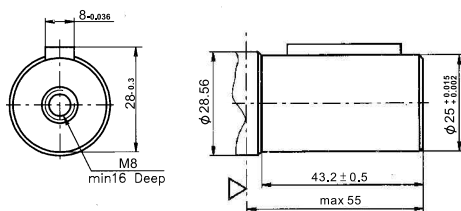
SH $\phi 31.75$ [1 1/4]" Splined 14T, DP 12/24
Max. Torque 95 daNm



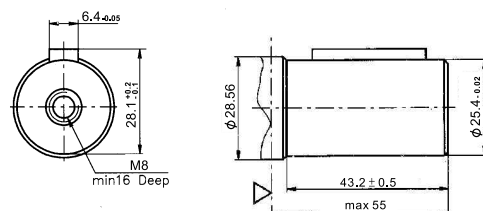
SL 6-34.85 P.T.O. Splined
Max. Torque 77 daNm

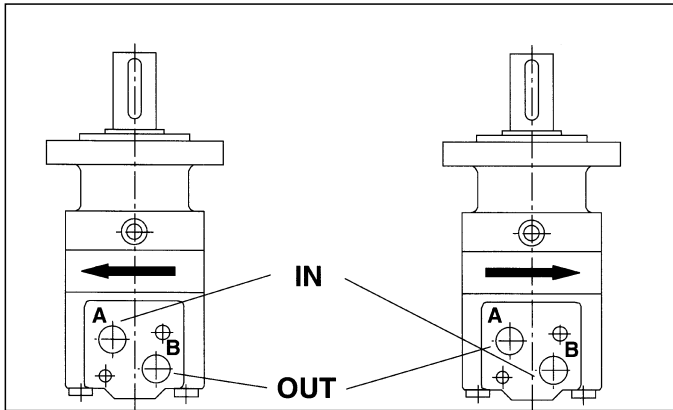


C1 $\phi 25$ Straight, Parallel key A8 x 7 x 32
Max. Torque 34 daNm



C2 $\phi 1$ " Straight, Parallel key 1/4" x 1/4" x 1 1/4"
Max. Torque 34 daNm





Rotation Selection

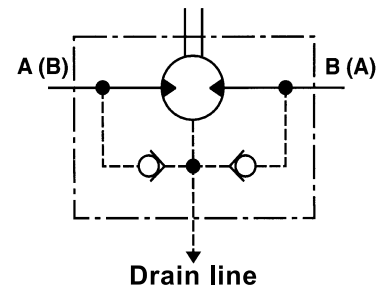
The MAS(E) has built-in check valves. The pressure on the shaft seal is never greater than back flow pressure because of the built-in check valves. In the short motor, pressure is determined based on the technical data of the add-on components.

Max. return pressure without drain line or/ Max. pressure in drain line

| rpm | Cont. (bar) |
|---------------|-------------|
| 0 - 100 rpm | 75 |
| 100 - 300 rpm | 50 |
| 300 - 810 rpm | 20 |

Max. return pressure with drain line

| | |
|--------------|---------|
| Continuous | 140 bar |
| Intermittent | 175 bar |

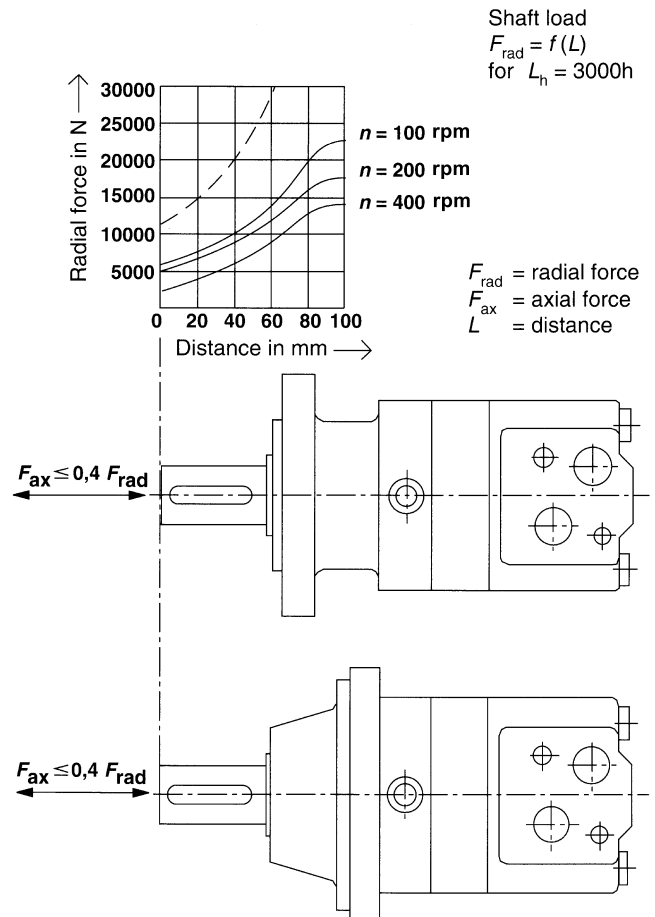


Shaft Load

The tapered roller bearings on the output shaft mean it can accept high levels of axial and radial shaft load.

The broken curve plots the maximum permissible radial load. Loads above and beyond this level can lead to breakage. The central solid curve plot the permissible radial loads for a theoretical service life (B 10) of 3000 hours at 200 rpm. The expected service life can be calculated for different speeds and/or radial loads.

This data assumes the use of hydraulic fluid with a sufficient anti-wear additive content.



| | | | | | | |
|------------|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| MAS | | | | | | |

Pos.1 Mounting Flange

Omit - SAE. A Mount, 4 holes

- F** - Magneto Mount, 4 holes
- A** - SAE. A Mount (2 holes)
- Q** - Square Mount
- W** - Wheel Mount
- S** - Short Mount

Pos.2 Port Type

Omit - Side Ports

- E** - Rear Ports

Pos.3 Displacement Code

- 80** - 80.8cc / 4.9 [in.3/r]
- 100** - 100.9cc / 6.2 [in.3/r]
- 125** - 125.2cc / 7.6 [in.3/r]
- 160** - 159.5cc / 9.7 [in.3/r]
- 200** - 201.2cc / 12.3 [in.3/r]
- 250** - 252.3cc / 15.4 [in.3/r]
- 315** - 315.1cc / 19.2 [in.3/r]
- 400** - 397.0cc / 24.2 [in.3/r]

Pos.4 Shaft Extensions

- C** - ϕ 32 Straight, Parallel key A10 x 8 x 45
- CO** - ϕ 1 1/4" Straight, Parallel key 5/16" x 5/16" x 1 1/4" BS46
- S** - ϕ 25,32 Splined (SAE 6B)
- SB** - ϕ 1 1/4" Splined 14T, DP 12/24
- TA** - Tapered 1:8 SAE. J501, Parallel key 5/16" x 5/16" x 1 1/4"
- TB** - Tapered 1:10, Parallel key B6 x 6 x 20
- SH** - ϕ 31.75[1 1/4]" Splined 14T, DP 12/24
- SL** - 6-34.85 P.T.O. Splined
- C1** - ϕ 25 Straight Parallel Key A8 x 7 x 32
- C2** - ϕ 1" Straight Parallel Key 1/4" x 1/4" x 1 1/4"

Pos.5 Porting

Omit - G1/2

- M** - 2 x M22 x 1.5, 15 depth
- U** - 2 x 7/8-14UNF

Pos.6 Painting

Omit - Grey

- B** - Black
- 00** - No Paint

| | | | | | | | |
|-------------|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| MASE | | | | | | | |

Pos 1 Mounting Flange

Omit - SAE. A Mount, 4 holes

- A** - Oval Mount, SAE. A (2 holes)
- F** - Magneto Mount, 4 holes
- B** - SAE. B Mount (2 holes)
- W** - Wheel Mount
- Z** - Short Mount

Pos.2 Port Type

- D** - Side Ports
- P** - Side Ports
- MU** - Omit
- R** - Omit

Pos.3 Displacement Code

- 80** - 80.8cc / 4.9 [in.3/r]
- 100** - 100.9cc / 6.2 [in.3/r]
- 125** - 125.2cc / 7.6 [in.3/r]
- 160** - 159.5cc / 9.7 [in.3/r]
- 200** - 201.2cc / 12.3 [in.3/r]
- 250** - 252.3cc / 15.4 [in.3/r]
- 315** - 315.1cc / 19.2 [in.3/r]
- 400** - 397.0cc / 24.2 [in.3/r]

Pos.4 Shaft Extensions

- CO** - ϕ 1 1/4" Straight, Parallel key 5/16" x 5/16" x 1 1/4" BS46
- C** - ϕ 32 Straight, Parallel key A10 x 8 x 45
- TB** - Tapered 1:10, Parallel key B6 x 6 x 20
- SB** - ϕ 1 1/4" Splined 14T, DP 12/24
- S** - ϕ 25,32 Splined (SAE. 6B)
- TA** - Tapered 1:8 SAE. J501, Parallel key 5/16" x 5/16" x 1 1/4"

Pos.5 Porting

- U** - 2 x 7/8-14UNF
- M** - 2 x M22 x1.5, 15 depth
- G** - 2 x G1/2
- MU** - Manifold
- R** - 2 x 1-1/16-12UN

Pos.6 Painting

Omit - Grey

- B** - Black
- 00** - No Paint

Pos.7 Rotation

Omit - Standard Rotation

- R** - Reverse Rotation