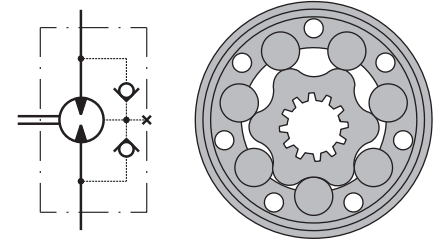


HYDRAULIC MOTORS SR

M+S Hydraulic introduces a new version of hydraulic motors, type SR with new housing, integrated output shaft to the spool valve, check valves, high pressure shaft seal. The SR motors are suitable for a wide range of applications where compact and high efficient motors are required.

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APPLICATION

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

OPTIONS

- » Model - Spool valve, geroller
- » Flange mount - 2 hole oval flange; 6 hole oval flange; square flange
- » Side BSPP ports
- » Shafts- straight, splined and tapered
- » Shaft seal for high and low pressure
- » Other special features

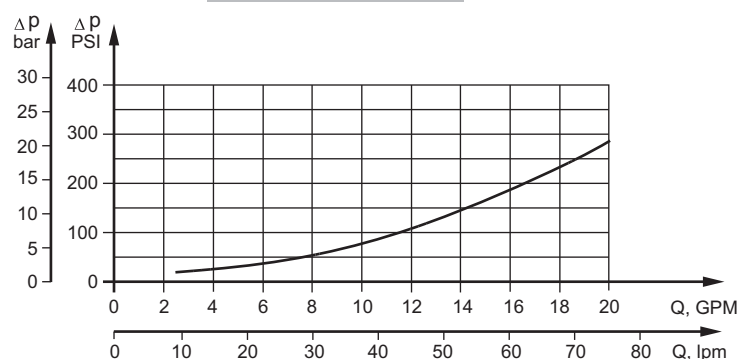
GENERAL

Max. Displacement, cm ³ /rev [in ³ /rev]	397 [24.4]
Max. Speed, [RPM]	970
Max. Torque, daNm [lb-in]	cont.: 60 [5310] int.: 69 [6107]
Max. Output, kW [HP]	15 [20.1]
Max. Pressure Drop, bar [PSI]	cont.: 175 [2540] int.: 200 [2900]
Max. Oil Flow, lpm [GPM]	75 [19.8]
Min. Speed, [RPM]	10
Pressure fluid	Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)
Temperature range, °C [°F]	-30÷90 [-22÷194]
Optimal Viscosity range, mm ² /s [SUS]	20÷75 [98÷347]
Filtration	ISO code 20/16 (Min. recommended fluid filtration of 25 micron)

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

Specification Data for SR... motors with **C** and **CO** shafts.

Type		SR 50	SR 80	SR 100	SR 125	SR 160	SR 200	SR 250	SR 315	SR 400
Displacement, cm³/rev [in³/rev]		51,5 [3.14]	80,3 [4.90]	99,8 [6.09]	125,7 [7.67]	159,6 [9.74]	199,8 [12.19]	250,1 [15.26]	315,7 [19.26]	397 [24.4]
Max. Speed, [RPM]	Cont.	775	750	600	475	375	300	240	190	150
	Int.*	970	940	750	600	470	375	300	240	190
Max. Torque daNm [lb-in]	Cont.	10 [900]	20 [1770]	24 [2125]	30 [2655]	29 [2566]	29 [2566]	30 [2655]	30 [2655]	30 [2655]
	Int.*	13 [1150]	22 [1947]	28 [2480]	34 [3010]	39 [3450]	39 [3450]	39 [3450]	42 [3717]	40 [3540]
	Peak**	17 [1505]	27 [2390]	32 [2832]	37 [3275]	46 [4070]	56 [4960]	60 [5310]	61 [5400]	61 [5400]
Max. Output kW [HP]	Cont.	7 [9,4]	12,5 [17]	13 [17.4]	12,5 [17]	9 [12]	7,5 [10]	6 [8.1]	5 [6.7]	3,8 [5.1]
	Int.*	8,5 [11,4]	15 [20.1]	15 [20.1]	14,5 [19.5]	12,5 [17]	10 [13.4]	8 [10.7]	6,5 [8.7]	6,1 [8.2]
Max. Pressure Drop bar [PSI]	Cont.	140 [2030]	175 [2540]	175 [2540]	175 [2540]	120 [1740]	105 [1520]	80 [1160]	70 [1015]	55 [798]
	Int.*	175 [2540]	200 [2900]	200 [2900]	200 [2900]	175 [2540]	140 [2030]	110 [1600]	100 [1450]	70 [1015]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	200 [2900]	150 [2175]	115 [1668]
Max. Oil Flow lpm [GPM]	Cont.	40 [10.5]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]
	Int.*	50 [13.2]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]
Max. Starting Pressure with Unloaded Shaft, bar [PSI]		10 [145]	10 [145]	10 [145]	9 [130]	7 [102]	5 [73]	4 [58]	3 [43.5]	3 [43.5]
Min. Starting Torque, daNm [lb-in]		8 [710]	15 [1330]	20 [1770]	24 [2124]	23 [2035]	23 [2035]	24 [2124]	26 [2300]	26 [2300]
Max. Inlet Pressure bar [PSI]	Cont.	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	Int.*	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]

* Intermittent operation: the permissible values may occur for max. 10% of every minute.

** Peak load: the permissible values may occur for max. 1% of every minute.

*** For speeds lower than given, consult factory or your regional manager.

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

Specification Data for SR... motors with **SH** shafts.

Type		SR 50	SR 80	SR 100	SR 125	SR 160	SR 200	SR 250	SR 315	SR 400
Displacement, cm³/rev [in³/rev]		51,5 [3.14]	80,3 [4.90]	99,8 [6.09]	125,7 [7.67]	159,6 [9.74]	199,8 [12.19]	250,1 [15.26]	315,7 [19.26]	397 [24.4]
Max. Speed, [RPM]	Cont.	775	750	600	475	375	300	240	190	150
	Int.*	970	940	750	600	470	375	300	240	190
Max. Torque daNm [lb-in]	Cont.	10 [900]	20 [1770]	24 [2125]	30 [2655]	39 [3450]	38,5 [3410]	38 [3360]	39 [3450]	38 [3360]
	Int.*	13 [1150]	22 [1947]	28 [2480]	34 [3010]	43 [3805]	46 [4070]	47 [4160]	48 [4248]	47 [4160]
	Peak**	17 [1505]	27 [2390]	32 [2832]	37 [3275]	46 [4070]	56 [4960]	60 [5310]	61 [5400]	61 [5400]
Max. Output kW [HP]	Cont.	7 [9.4]	12,5 [17]	13 [17.4]	12,5 [17]	11,5 [15.4]	9 [12]	8 [10.7]	5 [6.7]	4,8 [6.4]
	Int.*	8,5 [11.4]	15 [20.1]	15 [20.1]	14,5 [19.5]	14 [18.8]	12 [16.1]	9,5 [12.7]	8 [10.7]	6,8 [9.1]
Max. Pressure Drop bar [PSI]	Cont.	140 [2030]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	140 [2030]	110 [1600]	85 [1232]	70 [1015]
	Int.*	175 [2540]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	175 [2540]	140 [2030]	115 [1668]	90 [1305]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	200 [2900]	150 [2175]	115 [1668]
Max. Oil Flow lpm [GPM]	Cont.	40 [10.5]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]
	Int.*	50 [13.2]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]
Max. Starting Pressure with Unloaded Shaft, bar [PSI]		10 [145]	10 [145]	10 [145]	9 [130]	7 [102]	5 [73]	4 [58]	3 [43.5]	3 [43.5]
Min. Starting Torque, daNm [lb-in]		8 [710]	15 [1330]	20 [1770]	24 [2124]	32 [2832]	33 [2920]	31 [2740]	31,5 [2788]	31,5 [2788]
Max. Inlet Pressure bar [PSI]	Cont.	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	Int.*	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]

* Intermittent operation: the permissible values may occur for max. 10% of every minute.

** Peak load: the permissible values may occur for max. 1% of every minute.

*** For speeds lower than given, consult factory or your regional manager.

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

Specification Data for SR... motors with **K, CB, CA** shafts.

Type		SR 50	SR 80	SR 100	SR 125	SR 160	SR 200	SR 250	SR 315	SR 400
Displacement, cm³/rev [in³/rev]		51,5 [3.14]	80,3 [4.90]	99,8 [6.09]	125,7 [7.67]	159,6 [9.74]	199,8 [12.19]	250,1 [15.26]	315,7 [19.26]	397 [24.4]
Max. Speed, [RPM]	Cont.	775	750	600	475	375	300	240	190	150
	Int.*	970	940	750	600	470	375	300	240	190
Max. Torque daNm [lb-in]	Cont.	10 [900]	20 [1770]	24 [2125]	30 [2655]	39 [3450]	45 [3983]	57 [5045]	57 [5045]	60 [5310]
	Int.*	13 [1150]	22 [1947]	28 [2480]	34 [3010]	43 [3805]	50 [4425]	61 [5400]	69 [6107]	69 [6107]
	Peak**	17 [1505]	27 [2390]	32 [2832]	37 [3275]	46 [4070]	56 [4960]	71 [6284]	84 [7434]	87 [8700]
Max. Output kW [HP]	Cont.	7 [9,4]	12,5 [17]	13 [17.4]	12,5 [17]	11,5 [15.4]	11 [14.7]	10 [13.4]	9 [12]	7,8 [10.5]
	Int.*	8,5 [11,4]	15 [20.1]	15 [20.1]	14,5 [19.5]	14 [18.8]	13 [17.4]	12 [16.1]	10 [13.4]	10,6 [14.2]
Max. Pressure Drop bar [PSI]	Cont.	140 [2030]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	135 [1958]	110 [1600]
	Int.*	175 [2540]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	175 [2540]	140 [2030]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	210 [3045]	175 [2540]
Max. Oil Flow lpm [GPM]	Cont.	40 [10.5]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]
	Int.*	50 [13.2]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]
Max. Starting Pressure with Unloaded Shaft, bar [PSI]		10 [145]	10 [145]	10 [145]	9 [130]	7 [102]	5 [73]	4 [58]	3 [43.5]	3 [43.5]
Min. Starting Torque, daNm [lb-in]		8 [710]	15 [1330]	20 [1770]	24 [2124]	32 [2832]	41 [3630]	50 [4425]	50 [4425]	50 [4425]
Max. Inlet Pressure bar [PSI]	Cont.	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	Int.*	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]

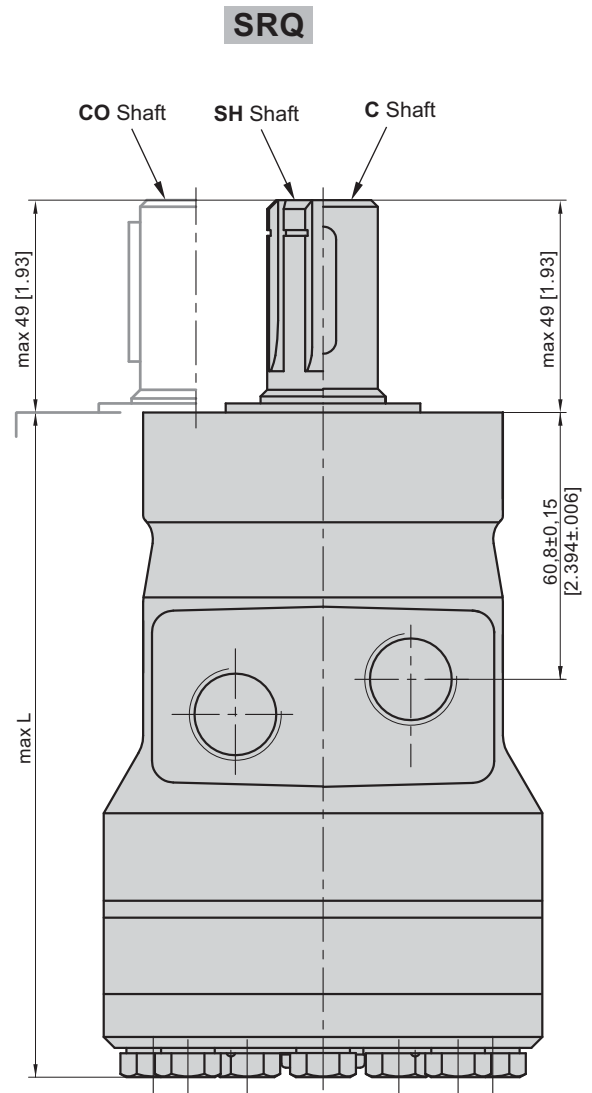
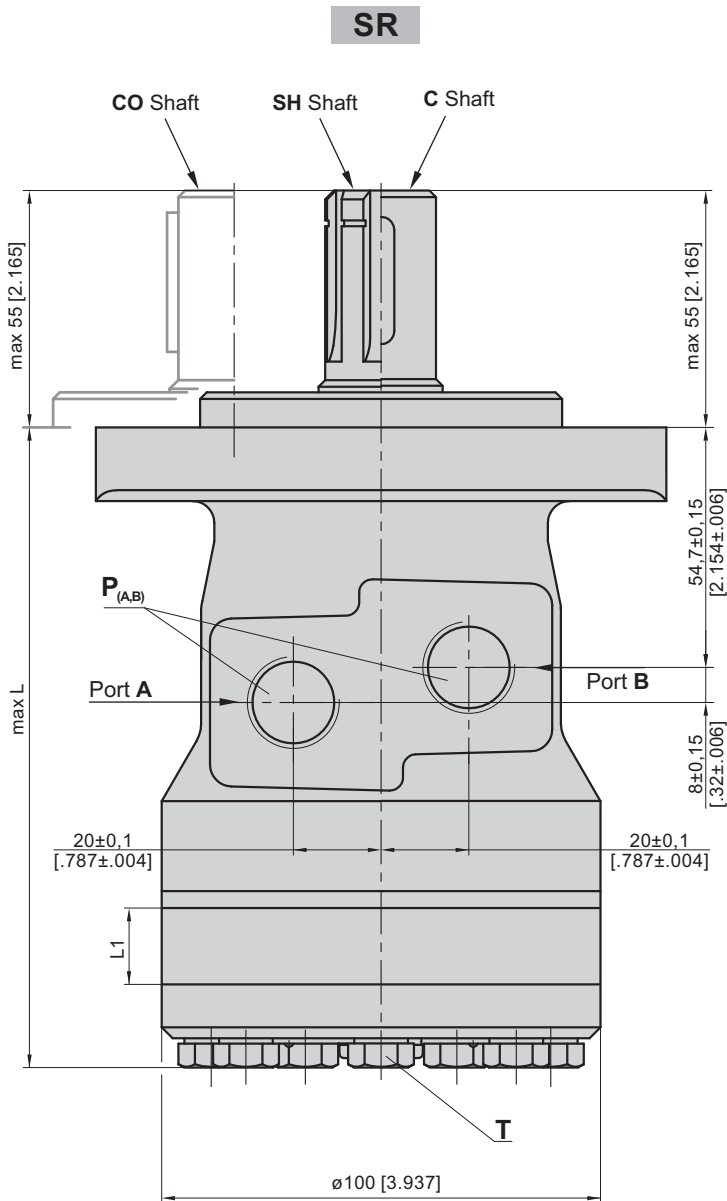
* Intermittent operation: the permissible values may occur for max. 10% of every minute.

** Peak load: the permissible values may occur for max. 1% of every minute.

*** For speeds lower than given, consult factory or your regional manager.

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.

DIMENSIONS AND MOUNTING DATA



P_(A,B): 2xG1/2 - 18 mm [.709 in] depth
 T : G1/4 - 12 mm [.47 in] depth

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

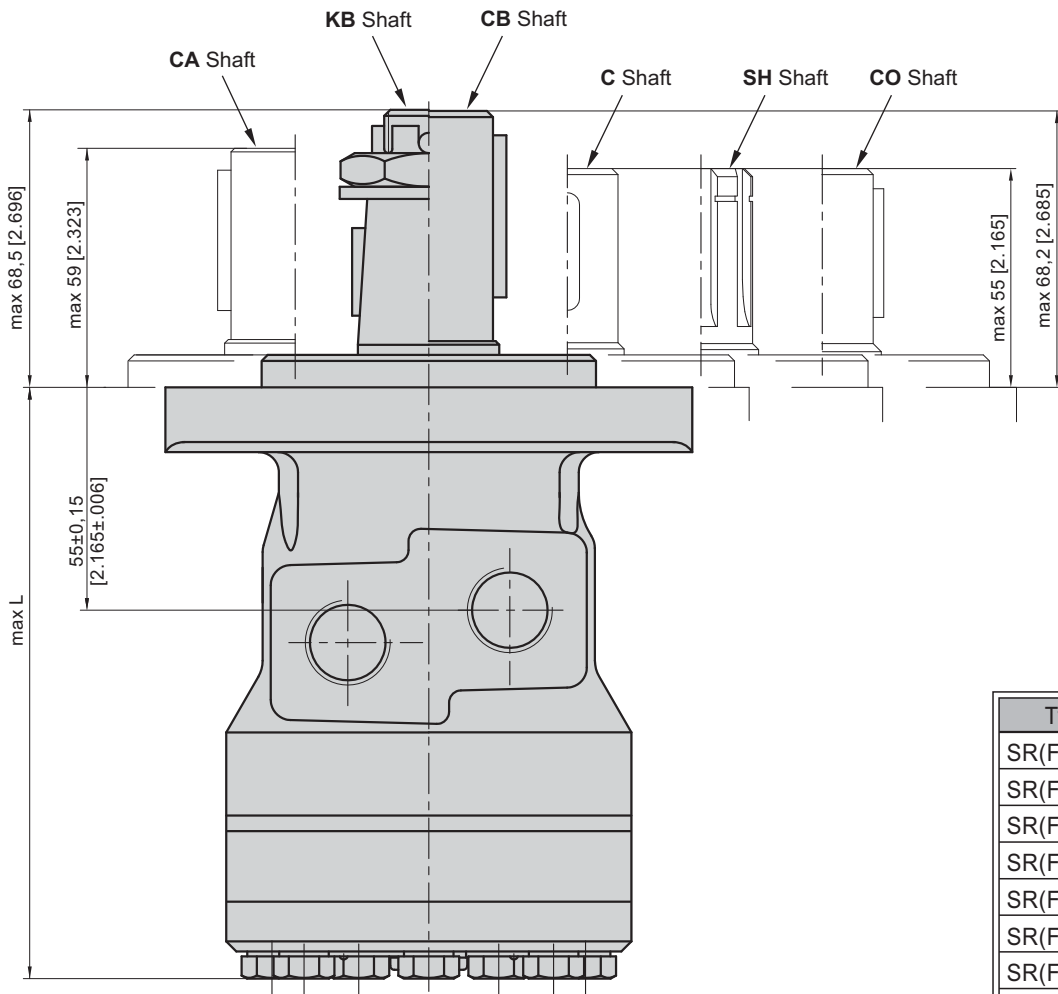
Reverse Rotation
 Viewed from Shaft End
 Port A Pressurized - CCW
 Port B Pressurized - CW

Type	L _{max} , mm [in]	Type	L _{max} , mm [in]	L ₁ , mm [in]
SR(F) 50	138 [5.43]	SRQ 50	144 [5.67]	9,0 [.35]
SR(F) 80	143 [5.63]	SRQ 80	149 [5.87]	14,0 [.55]
SR(F) 100	146,5 [5.77]	SRQ 100	152,6 [6.0]	17,4 [.69]
SR(F) 125	151 [5.94]	SRQ 125	157 [6.18]	21,8 [.89]
SR(F) 160	157 [6.18]	SRQ 160	163 [6.42]	27,8 [1.09]
SR(F) 200	164 [6.46]	SRQ 200	170 [6.69]	34,8 [1.37]
SR(F) 250	172,5 [6.79]	SRQ 250	178,5 [7.03]	43,5 [1.71]
SR(F) 315	184 [7.24]	SRQ 315	190 [7.48]	54,8 [2.16]
SR(F) 400	198,5 [7.81]	SRQ 400	205,5 [8.9]	69,4 [2.73]



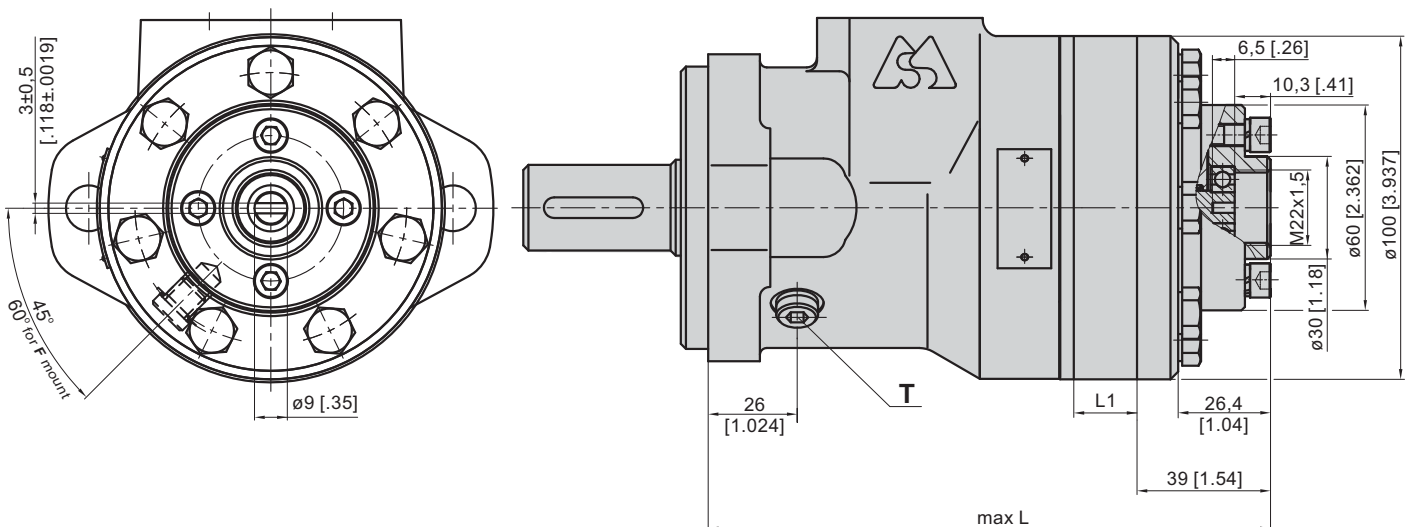
DIMENSIONS AND MOUNTING DATA

SRF...



Type	L _{max} , mm [in]	L ₁ , mm [in]
SR(F) 50 T	157 [6.18]	9,0 [.35]
SR(F) 80 T	162 [6.38]	14,0 [.55]
SR(F) 100 T	166 [6.53]	17,4 [.69]
SR(F) 125 T	170 [6.69]	21,8 [.89]
SR(F) 160 T	176 [6.93]	27,8 [1.09]
SR(F) 200 T	183 [7.20]	34,8 [1.37]
SR(F) 250 T	191 [7.52]	43,5 [1.71]
SR(F) 315 T	203 [7.99]	54,8 [2.16]
SR(F) 400 T	217 [8.54]	69,4 [2.73]

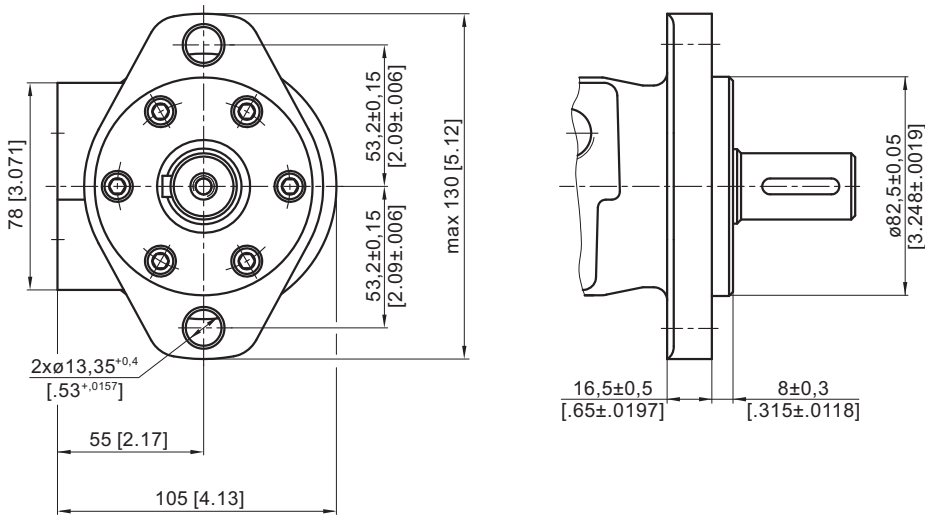
SR(F)...T



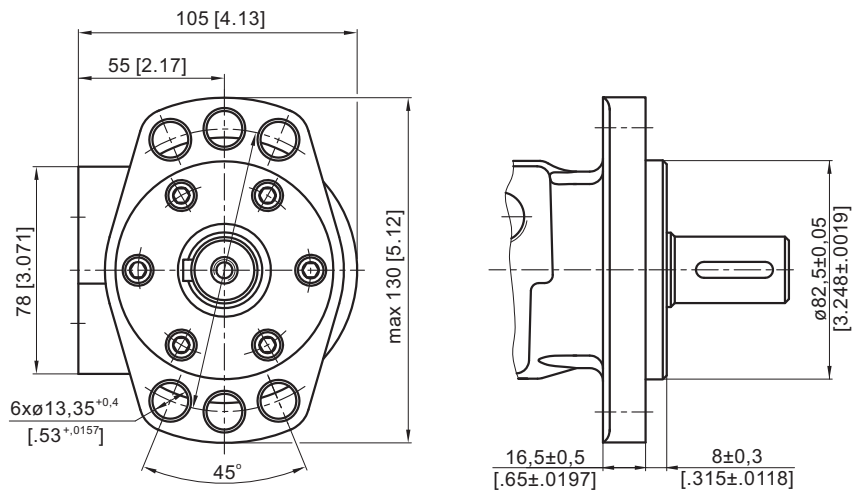
T : G1/8 - 10 mm [.39 in] depth for SR(F)...T

MOUNTING

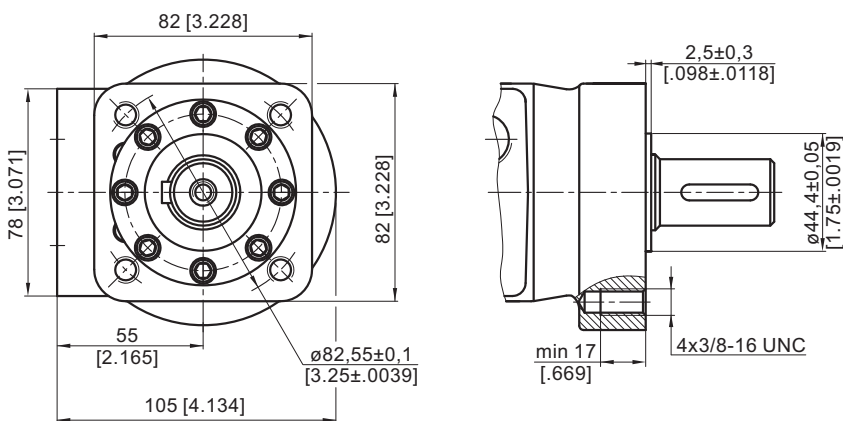
Oval Mount (2 Holes)



F Oval Mount (6 holes)



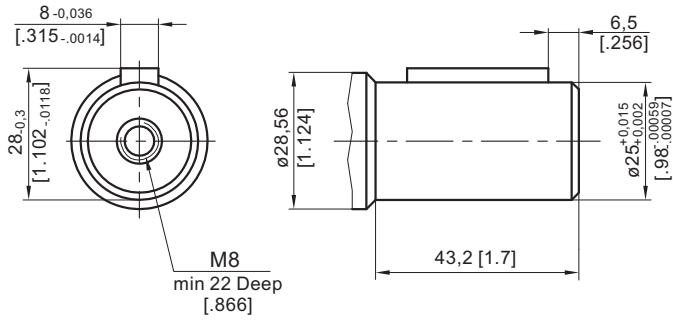
Q Square Mount (4 bolts)



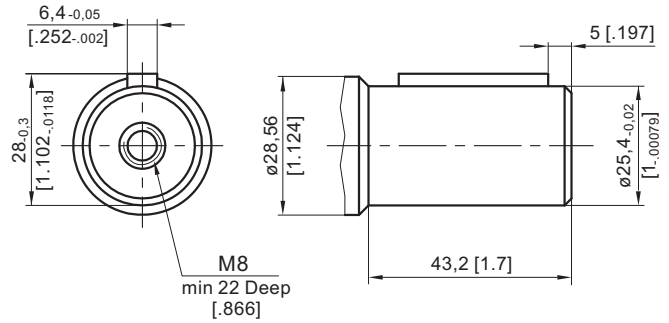
 mm [in]

SHAFT EXTENSIONS

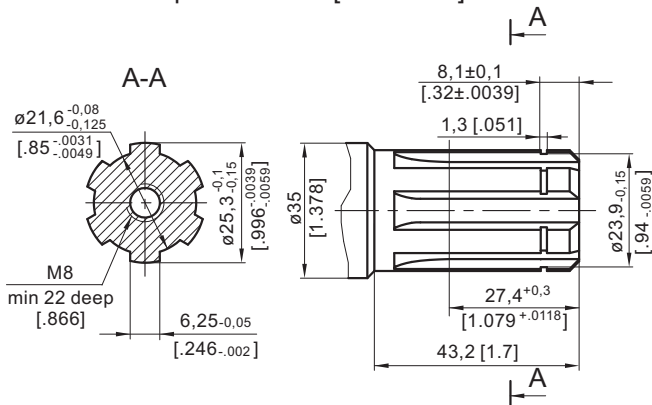
C - $\varnothing 25$ straight, Parallel key A8x7x30 DIN 6885
Max. Torque 34 daNm [3010 lb-in]



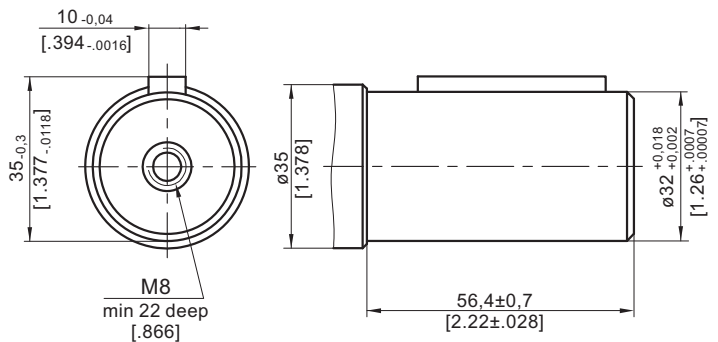
CO - $\varnothing 1"$ straight, Parallel key $\frac{1}{4} \times \frac{1}{4} \times 1\frac{1}{4}$ BS46
Max. Torque 34 daNm [3010 lb-in]



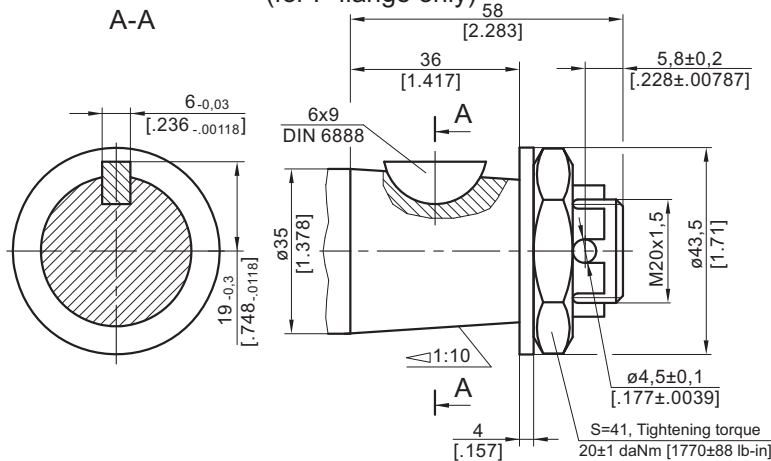
SH - splined, BS 2059 (SAE 6B)
Max. Torque 40 daNm [3540 lb-in]



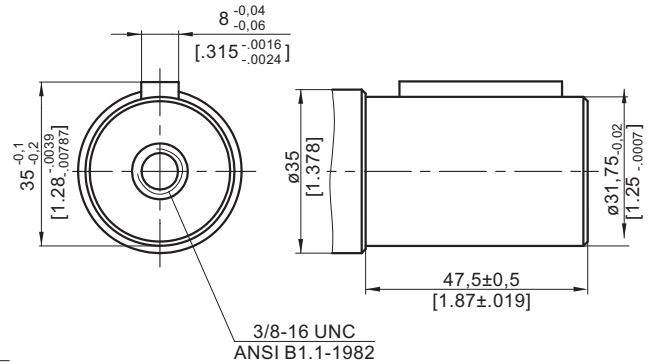
CB - $\varnothing 32$ straight, Parallel key 10x8x40 DIN 6885
Max. Torque 77 daNm [6815 lb-in]
(for F-flange only)



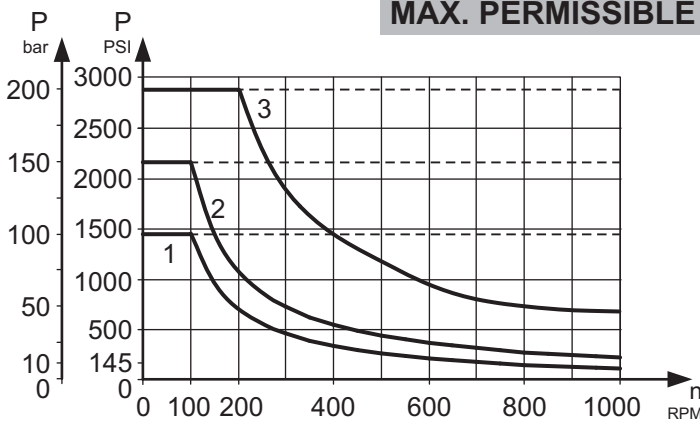
K - tapered 1:10, Woodruff key 6x9 DIN 6888
Max. Torque 95 daNm [8410 lb-in]
(for F-flange only)



CA - $\varnothing 1\frac{1}{4}''$ straight, Parallel key $\frac{5}{16} \times \frac{5}{16} \times 1\frac{1}{4}$ BS46
Max. Torque 77 daNm [6815 lb-in]
(for F-flange only)



MAX. PERMISSIBLE SHAFT SEAL PRESSURE



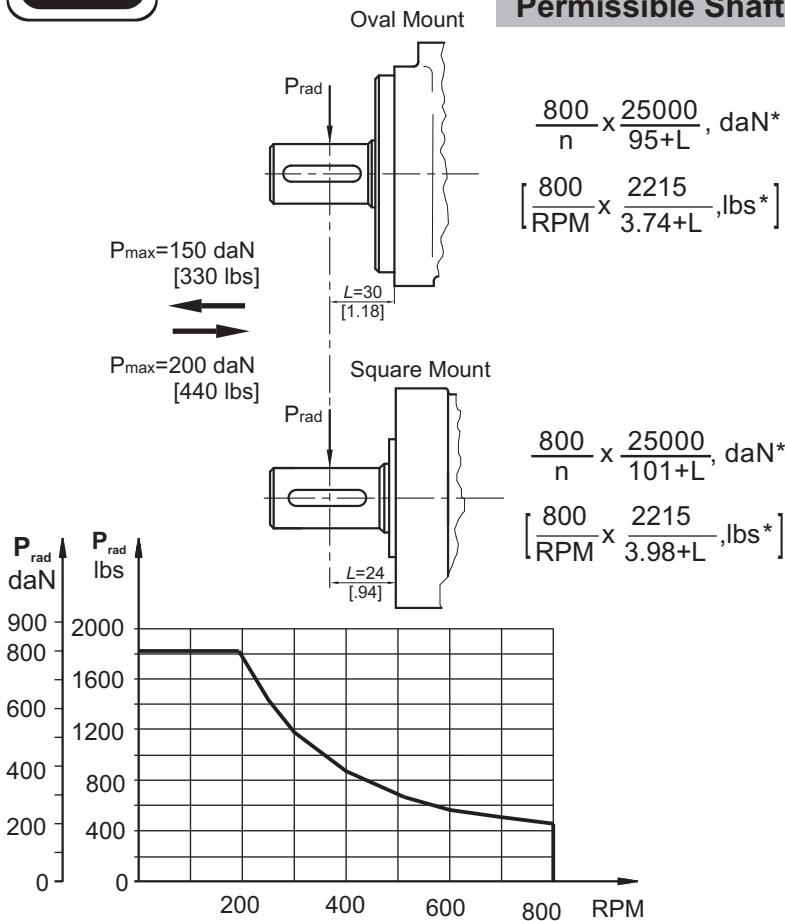
Max return pressure without drain line or max. pressure in drain line

— - continuous operations
- - - - intermittent operations

- 1: Curve for Standard Shaft Seal for **K**, **CA**, **CB** shafts
- 2: Curve for Standard Shaft Seal for **C**, **CO**, **SH** shafts
- 3: Curve for High Pressure Seal ("U" Seal) for **C**, **CO**, **SH** shafts. Not applicable for **K**, **CA** and **CB** shafts!



Permissible Shaft Loads SR



Radial Shaft Load P_{rad} for C, CO Shaft Extensions by $L=30 \text{ mm}$ [1.18 in] (24 mm [.94 in])

The permissible radial shaft load P_{rad} depends on the speed n , RPM, distance L from the point of load to the mounting flange and shaft version.

* $n \leq 200 \text{ RPM}$; max $P_{\text{rad}}=800 \text{ daN}$ [1800 lbs]
 $n \geq 200 \text{ RPM}$; $L < 55 \text{ mm}$ [2.2 in]

ORDER CODE

	1	2	3	4	5	6	7
SR							

Pos.1 - Mounting Flange

- omit - Oval mount, two holes
- F** - Oval mount, six holes
- Q** - Square mount, four bolts - 3/8-16 UNC

Pos.2 - Displacement code**

- 50** - 51,5 cm³/rev [3.14 in³/rev]
- 80** - 80,3 cm³/rev [4.90 in³/rev]
- 100** - 99,8 cm³/rev [6.09 in³/rev]
- 125** - 125,7 cm³/rev [7.67 in³/rev]
- 160** - 159,6 cm³/rev [9.74 in³/rev]
- 200** - 199,8 cm³/rev [12.19 in³/rev]
- 250** - 250,1 cm³/rev [15.26 in³/rev]
- 315** - 315,7 cm³/rev [19.26 in³/rev]
- 400** - 397,0 cm³/rev [24.40 in³/rev]

Pos.3 - Shaft Extensions**

- C** - $\phi 25$ straight, Parallel key A8x7x30 DIN6885
- CO** - $\phi 1$ " straight, Parallel key $1/4$ "x $1/4$ "x $1 1/4$ " BS46
- SH** - $\phi 25,3$ splined, BS 2059 (SAE 6B)
- K*** - tapered 1:10, Woodruff key 6x9 DIN 6888
- CA*** - $\phi 1 1/4$ " straight, Parallel key $5/16$ "x $5/16$ "x $1 1/4$ " Bs46
- CB*** - $\phi 32$ straight, Parallel key 10x8x40 DIN 6885

Pos.4 - Shaft Seal Version

- omit - Standard shaft seal
- U** - High pressure shaft seal (Not for **K, CA, CB** Shafts)

Pos.5 - Tacho Connection***

- omit - Without Tacho Connection
- T** - With Tacho Connection (Not for **Q** flange and **K, CA, CB** shafts)

Pos.6 - Special Features (see page 120)

Pos.7 - Design Series

- omit - Factory specified

NOTES:

- * For "F"-flange only!
- ** The permissible output torque for shafts must not be exceeded!
- *** Radial or axial load on tacho shaft must be avoided. Max. torque on tacho shaft 0,1 daNm [.885 lb-in]. Max. cont. return pressure without drain line 20 bar [290 PSI].

For the Function Diagrams data please look at "M+S Hydraulic" Catalogue for MR motors, pages 35÷39.

The hydraulic motors are manganese-phosphatized as standard.