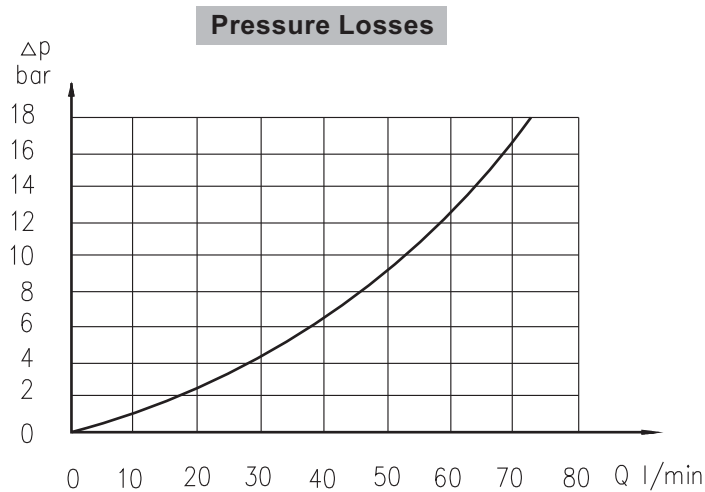


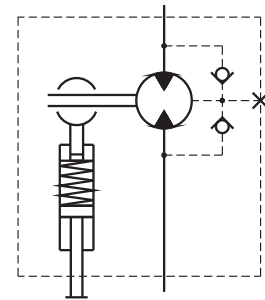
## Hydraulic motor-brake type B/HW...

### INTRODUCTION

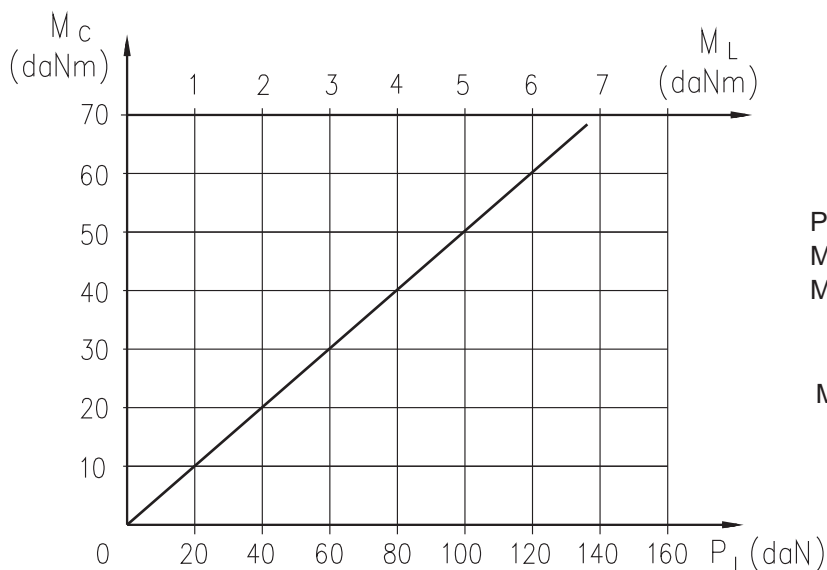
To meet a new market demands, "M+S Hydraulic" developed a new series of motor-brake type B/HW with build-in drum brake, mechanically activated. B/HW is based on HW series motor and has a drum brake activated by a mechanical operating lever. The compact size, reliable holding capability and easy installation makes this new motor-brake the perfect choice for many agricultural applications and vehicles using hydraulics for wheel motors. To accommodate the wide variety of wheel rims 4 and 5 bolt wheel hubs are available.



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



### BRAKE HOLDING TORQUE



$P_L$  - Brake Lever Load  
 $M_C$  - Brake Torque  
 $M_L$  - Brake Lever Torque

$M_C \text{ max} = 68 \text{ daNm (6020 lb-in)}$

## SPECIFICATION DATA

Type		B/HW 125	B/HW 160	B/HW 200	B/HW 235	B/HW 250	B/HW 300	B/HW 315
<b>Displacement, cm<sup>3</sup>/rev [in<sup>3</sup>/rev]</b>		126 [7.69]	157,8 [9.63]	201,3 [12.28]	235,3 [14.36]	252 [15.38]	300 [18.31]	314,9 [19.22]
<b>Max. Speed, [RPM]</b>	Cont.	357	380	348	298	298	250	238
	Int.*	476	475	422	361	357	300	286
<b>Max. Torque, daNm [lb-in]</b>	Cont.	35 [3100]	44 [3900]	55 [4900]	64,5 [5700]	69 [6100]	81 [7000]	85 [7500]
	Int.*	38,5 [3400]	48 [4200]	60 [5300]	70 [6200]	75 [6600]	89 [7800]	93 [8200]
<b>Max. Output, kW [HP]</b>	Cont.	16,2 [21.7]	17,6 [23.6]	17,4 [23.3]	17 [22.8]	16,8 [22.5]	16,5 [22.1]	16,4 [21.9]
	Int.*	19,8 [26.6]	21,6 [28.9]	19,6 [26.3]	19,2 [25.7]	18,7 [25.1]	18,7 [25.1]	18,7 [25.1]
<b>Max. Pressure Drop, bar [PSI]</b>	Cont.	205 [2970]	205 [2970]	205 [2970]	205 [2970]	205 [2970]	205 [2970]	205 [2970]
	Int.*	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
<b>Max. Inlet Pressure, bar [PSI]</b>	Cont.	210 [3040]	210 [3040]	210 [3040]	210 [3040]	210 [3040]	210 [3040]	210 [3040]
	Int.*	250 [3600]	250 [3600]	250 [3600]	250 [3600]	250 [3600]	250 [3600]	250 [3600]
<b>Max. Oil Flow, lpm [GPM]</b>	Cont.	45 [11.9]	60 [15.9]	70 [18.5]	70 [18.5]	75 [19.8]	75 [19.8]	75 [19.8]
	Int.*	60 [15.9]	75 [19.8]	85 [22.5]	85 [22.5]	90 [23.8]	90 [23.8]	90 [23.8]
<b>Max. Starting Pressure with Unloaded Shaft, bar [PSI]</b>		10 [145]	10 [145]	10 [145]	10 [145]	10 [145]	10 [145]	10 [145]
<b>Min. Starting Torque, daNm [lb-in]</b>	at max. pressure drop cont.	28,7 [2540]	36 [3200]	41,5 [3700]	52,8 [4700]	56,5 [5000]	66,4 [5900]	69,7 [6200]
	at max. pressure drop int.*	31,5 [2180]	39,3 [3500]	49,2 [4350]	57,4 [5080]	61,5 [5440]	72,9 [6500]	76,2 [6700]
<b>Min. Speed**, RPM</b>		10	10	10	10	10	10	10

\* 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.

- Intermittent speed and intermittent pressure drop must not occur simultaneously.
- Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
- 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.
- Recommended minimum oil viscosity 70 SUS [13 mm<sup>2</sup>/s] at 122°F [50°C].
- Recommended maximum system operating temperature is 180°F [82°C].
- 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		B/HW 350	B/HW 370	B/HW 400	B/HW 470	B/HW 500	B/HW 535	B/HW 550
Displacement, cm <sup>3</sup> /rev [in <sup>3</sup> /rev]		347,8 [21.22]	369,2 [22.59]	396,8 [24.21]	470,6 [28.72]	502,4 [30.66]	535 [32.65]	550 [33.56]
Max. Speed, [RPM]	Cont.	216	203	189	159	149	140	136
	Int.*	259	244	227	191	179	168	164
Max. Torque, daNm [lb-in]	Cont.	94 [8300]	96 [8500]	96 [8500]	92 [8100]	91 [8000]	90 [7900]	89 [7800]
	Int.*	102 [9000]	105 [9300]	98 [8600]	101 [8900]	101 [8900]	104 [9200]	103 [9100]
Max. Output, kW [HP]	Cont.	16,5 [22.1]	13,2 [17.7]	12,5 [16.8]	10,6 [14.2]	10,8 [14.5]	9,4 [12.6]	9,0 [12.1]
	Int.*	18,7 [21.1]	17,3 [23.2]	16,7 [22.4]	13,6 [18.2]	13,9 [18.6]	12,8 [17.3]	12,4 [16.6]
Max. Pressure Drop, bar [PSI]	Cont.	205 [1970]	200 [2900]	185 [2680]	150 [2200]	140 [2030]	130 [1880]	125 [1800]
	Int.*	225 [3260]	225 [3260]	190 [2700]	165 [2400]	155 [2250]	150 [2200]	145 [2100]
Max. Inlet Pressure, bar [PSI]	Cont.	210 [3040]	210 [3040]	210 [3040]	210 [3040]	210 [3040]	210 [3040]	210 [3040]
	Int.*	250 [3600]	250 [3600]	250 [3600]	250 [3600]	250 [3600]	250 [3600]	250 [3600]
Max. Oil Flow, lpm [GPM]	Cont.	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]
	Int.*	90 [23.8]	90 [23.8]	90 [23.8]	90 [23.8]	90 [23.8]	90 [23.8]	90 [23.8]
Max. Starting Pressure with Unloaded Shaft, bar [PSI]		10 [145]	10 [145]	10 [145]	10 [145]	10 [145]	10 [145]	10 [145]
Min. Starting Torque, daNm [lb-in]	at max. pressure drop cont.	77 [6800]	79,5 [7030]	78,7 [6900]	75,4 [6700]	74,6 [6600]	73,8 [6500]	72,9 [6450]
	at max. pressure drop int.*	83,6 [7400]	86 [7600]	80,3 [7100]	82,8 [7300]	82,8 [7300]	85,2 [7500]	84,4 [7470]
Min. Speed**, RPM		8	8	8	8	8	5	5

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

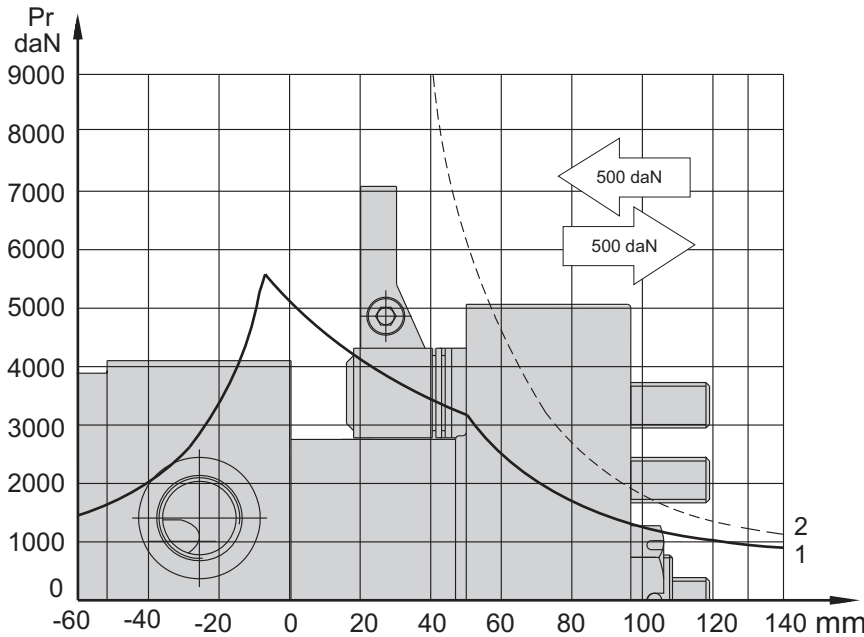
\*\* Peak load: the permissible values may occur for max. 1% of every minute.

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

- Intermittent speed and intermittent pressure drop must not occur simultaneously.
- Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
- 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.
- Recommended minimum oil viscosity 70 SUS [13 mm<sup>2</sup>/s] at 122°F [50°C].
- Recommended maximum system operating temperature is 180°F [82°C].
- To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

1 - Bearing curve: The curve represents allowable bearing loads based on ISO 281 bearing capacity for an  $L_{10}$  bearing life of 2000 hours at 100 RPM. Radial loads for speeds other than 100 RPM may be calculated using the multiplication factor in table.

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

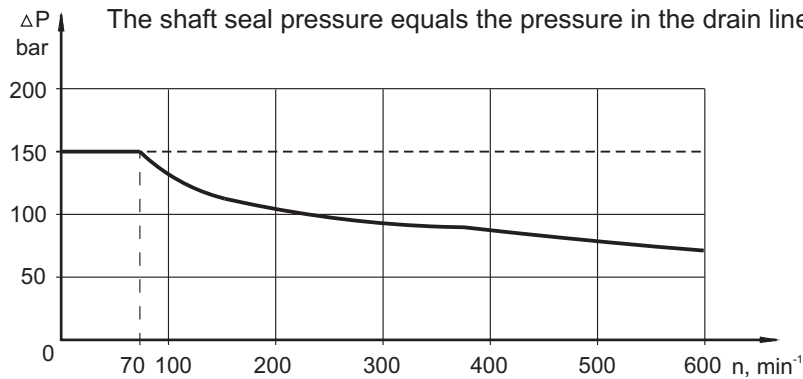


n, RPM	Multiplication factor
50	1,23
100	1,00
200	0,81
300	0,72
400	0,66
500	0,62

**MAX. PERMISSIBLE SHAFT SEAL PRESSURE**

**B/HW... motors with drain connection:**

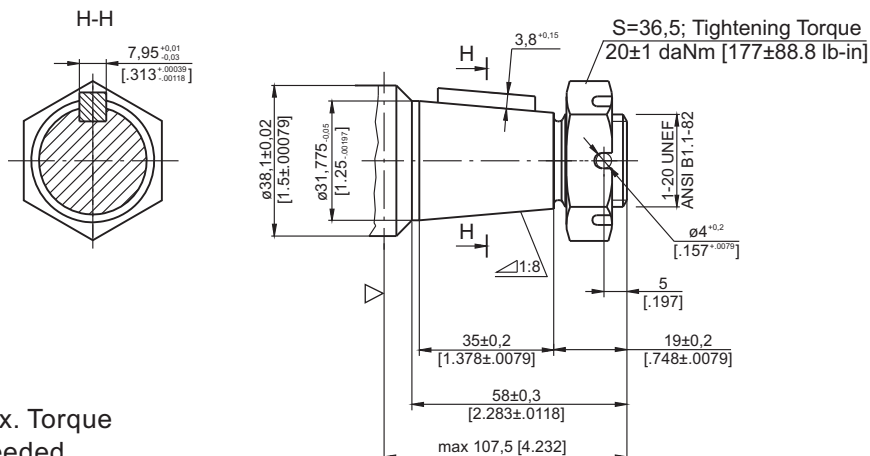
The shaft seal pressure equals the pressure in the drain line.



— - continuous operations  
 - - - - intermittent operations

**SHAFT**

1 ¼ " tapered 1:8 , Parallel key 5/16"x5/16"x1" BS46  
 Max. Torque 77 daNm



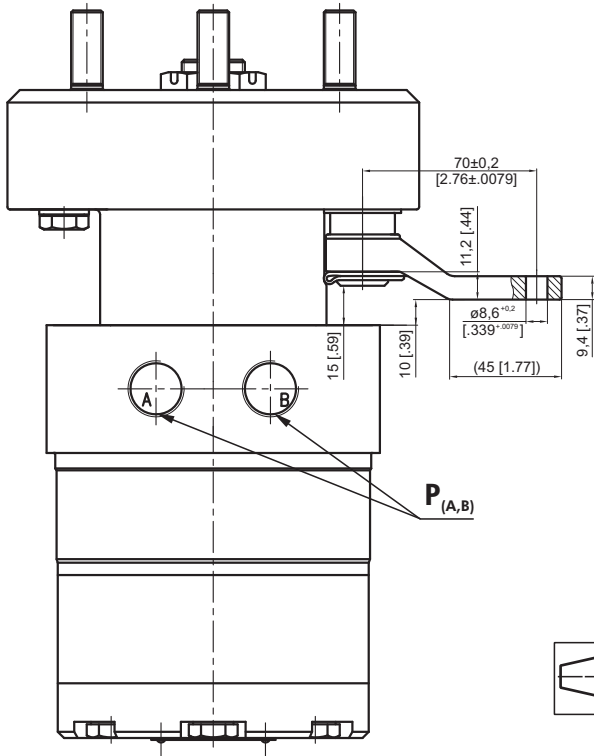
Requirement max. Torque must not be exceeded.

Versions		
	2	4
P(A,B)	2xG1/2	2x7/8-14 UNF, O-ring
T	G1/4	7/16-20 UNF, O-ring

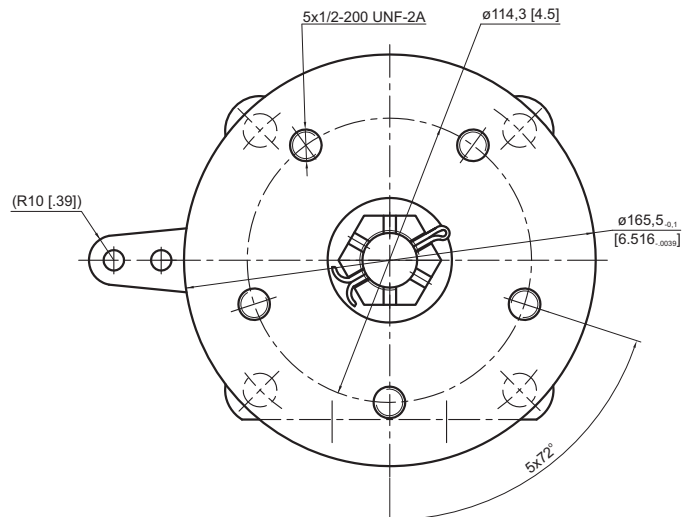
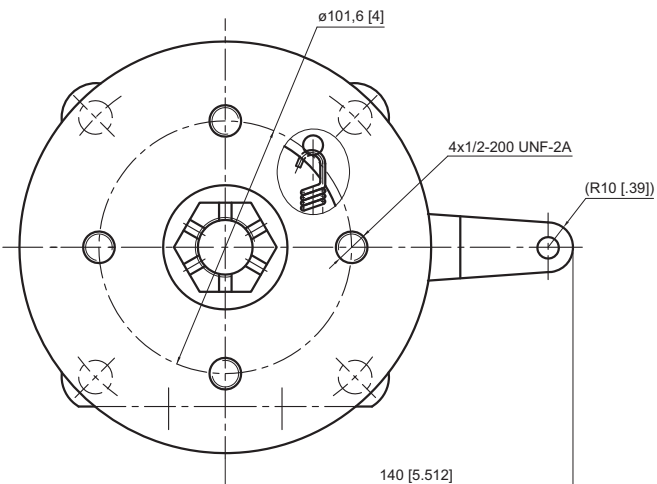
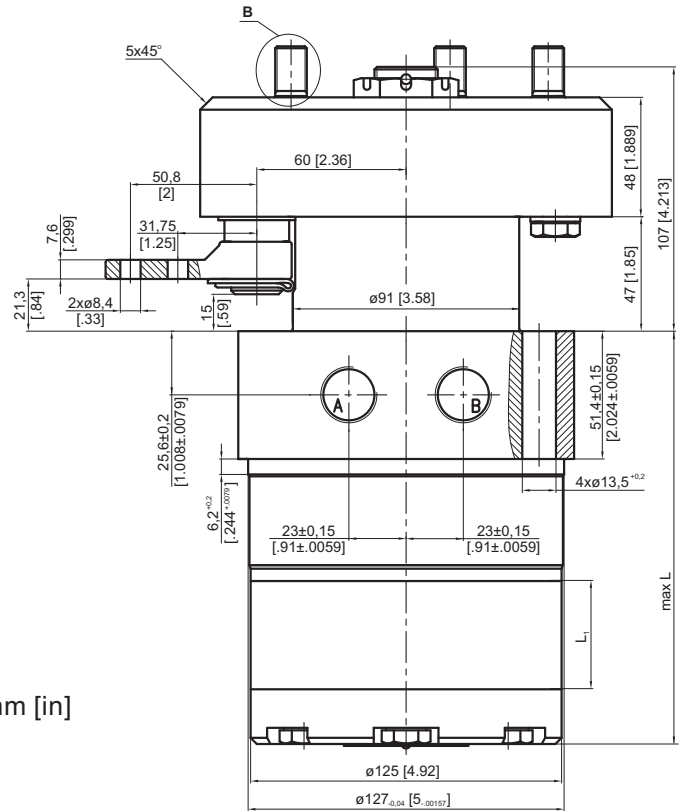
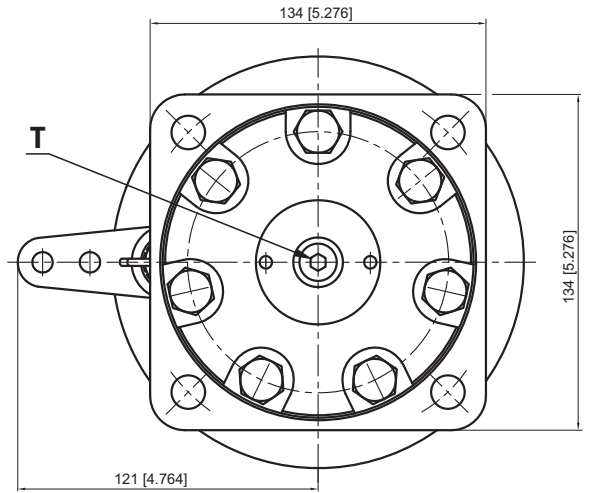
**Standard Rotation**  
Viewed from Shaft End  
Port A Pressurized - CW  
Port B Pressurized - CCW

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

**A** 4 Bolt Brake Drum  
B/HW...A...V-2L...

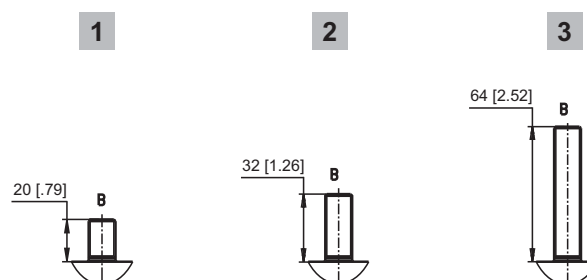


**B** 5 Bolt Brake Drum  
B/HW..B...V-1R...



Type	L, mm [in]	L <sub>1</sub> , mm [in]
B/HW 125	140,5 [5.53]	17,4 [.69]
B/HW 160	145,0 [5.71]	21,8 [.86]
B/HW 200	151,0 [5.94]	27,8 [1.09]
B/HW 235	155,5 [6.12]	32,5 [1.28]
B/HW 250	158,0 [6.22]	34,8 [1.37]
B/HW 300	164,5 [6.02]	41,4 [1.63]
B/HW 315	166,5 [6.56]	43,5 [1.71]
B/HW 350	171,0 [6.73]	48,0 [1.89]
B/HW 370	174,0 [6.85]	51,0 [2.01]
B/HW 400	178,0 [7.01]	54,8 [2.16]
B/HW 470	188,0 [7.40]	65,0 [2.56]
B/HW 500	192,5 [7.58]	69,4 [2.73]
B/HW 535	197,0 [7.76]	74,1 [2.93]
B/HW 550	199,0 [7.83]	76,0 [2.99]

## Wheel Bolts Type



## ORDER CODE

	1	2	3	4	5	6	7	8	9	10
<b>B/HW</b>										

## Pos.1 - Displacement code

<b>125</b>	- 126,0 cm <sup>3</sup> /rev [ 7.69 in <sup>3</sup> /rev]
<b>160</b>	- 157,8 cm <sup>3</sup> /rev [ 9.63 in <sup>3</sup> /rev]
<b>200</b>	- 201,3 cm <sup>3</sup> /rev [12.28 in <sup>3</sup> /rev]
<b>235</b>	- 235,3 cm <sup>3</sup> /rev [14.36 in <sup>3</sup> /rev]
<b>250</b>	- 252,0 cm <sup>3</sup> /rev [15.38 in <sup>3</sup> /rev]
<b>300</b>	- 300,0 cm <sup>3</sup> /rev [18.31 in <sup>3</sup> /rev]
<b>315</b>	- 314,9 cm <sup>3</sup> /rev [19.22 in <sup>3</sup> /rev]
<b>350</b>	- 347,8 cm <sup>3</sup> /rev [21.22 in <sup>3</sup> /rev]
<b>370</b>	- 369,2 cm <sup>3</sup> /rev [22.59 in <sup>3</sup> /rev]
<b>400</b>	- 396,8 cm <sup>3</sup> /rev [24.21 in <sup>3</sup> /rev]
<b>470</b>	- 470,6 cm <sup>3</sup> /rev [28.72 in <sup>3</sup> /rev]
<b>500</b>	- 502,4 cm <sup>3</sup> /rev [30.66 in <sup>3</sup> /rev]
<b>535</b>	- 535,0 cm <sup>3</sup> /rev [32.65 in <sup>3</sup> /rev]
<b>550</b>	- 550,0 cm <sup>3</sup> /rev [33.56 in <sup>3</sup> /rev]

## Pos.2 - Port Size/Type [standard manifold to each]

<b>2</b>	- side ports, 2xG1/2, G1/4, BSP thread, ISO 228
<b>4</b>	- side ports, 2x7/8-14 UNF, O-ring, 7/16-20 UNF

## Pos.3 - Special Features

<b>LL</b>	- Low Leakage*
<b>LSV</b>	- Low Speed Valve

## Pos.4 - Rotation

omit	- Standard Rotation
<b>R</b>	- Reverse Rotation

## Pos.5 - Drum type

<b>A</b>	- Drum brake with bolts 4x1/2-20 UNF on ø101,6 [4.0]
<b>B</b>	- Drum brake with bolts 5x1/2-20 UNF on ø114,3 [4.5]

## Pos.6 - Drum Bolt type

<b>1</b>	- 1/2-20 UNF-2A L=20 mm [.787 in]
<b>2</b>	- 1/2-20 UNF-2A L=32 mm [1.259 in]
<b>3</b>	- 1/2-20 UNF-2A L=64 mm [2.519 in]

## Pos.7 - Lever type

<b>V-1</b>	- Vertical Brake Lever 2xø8,4 [.331] - 50,8 mm [2.0 in]
<b>V-2</b>	- Vertical Brake Lever 2xø8,6 [.338] - 70,0 mm [2.8 in]

## Pos.8 - Lever Position

<b>R</b>	- Right (standard)
<b>L</b>	- Left

## Pos.9 - Option (Paint)\*\*

omit	- no Paint
<b>P</b>	- Painted
<b>PC</b>	- Corrosion Protected Paint
<b>PS</b>	- Special Paint***
<b>PCS</b>	- Special Paint***

## Pos.10 - Design Series

omit	- Factory specified
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The hydraulic motor-brakes are manganophosphatized as standard.

## Notes:

- \* The permissible values may occur for max. 10% of every minute.
- \*\* Colour at customer's request.
- \*\*\* Non painted feeding surfaces, colour at customer's request.