HYDRAULIC DISC BRAKES LB, LBS, LBV- Wet

APPLICATION

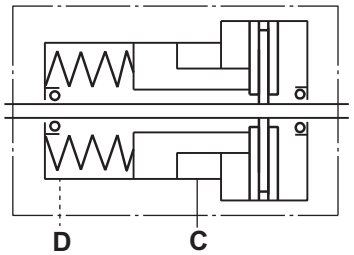
» Heavy Duty machinery
» Wheel drives
» Material handling
» Mining
» Agricultural machines
» Conveyors
» Door openers and swing drives etc.

GENERAL

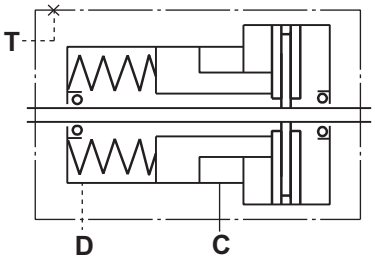
Fluid type	Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)
Temperature range, °C [°F]	-40÷140 [-40÷284]
Viscosity range, mm²/s	20÷75 [98÷347]
Filtration	ISO code 20/16 (nominal filtration of 25 microns)
Maintenance	Changed after the first 50-100 h, then after every 500-1500 h.

CONTENTS

LB, LBS



LBV

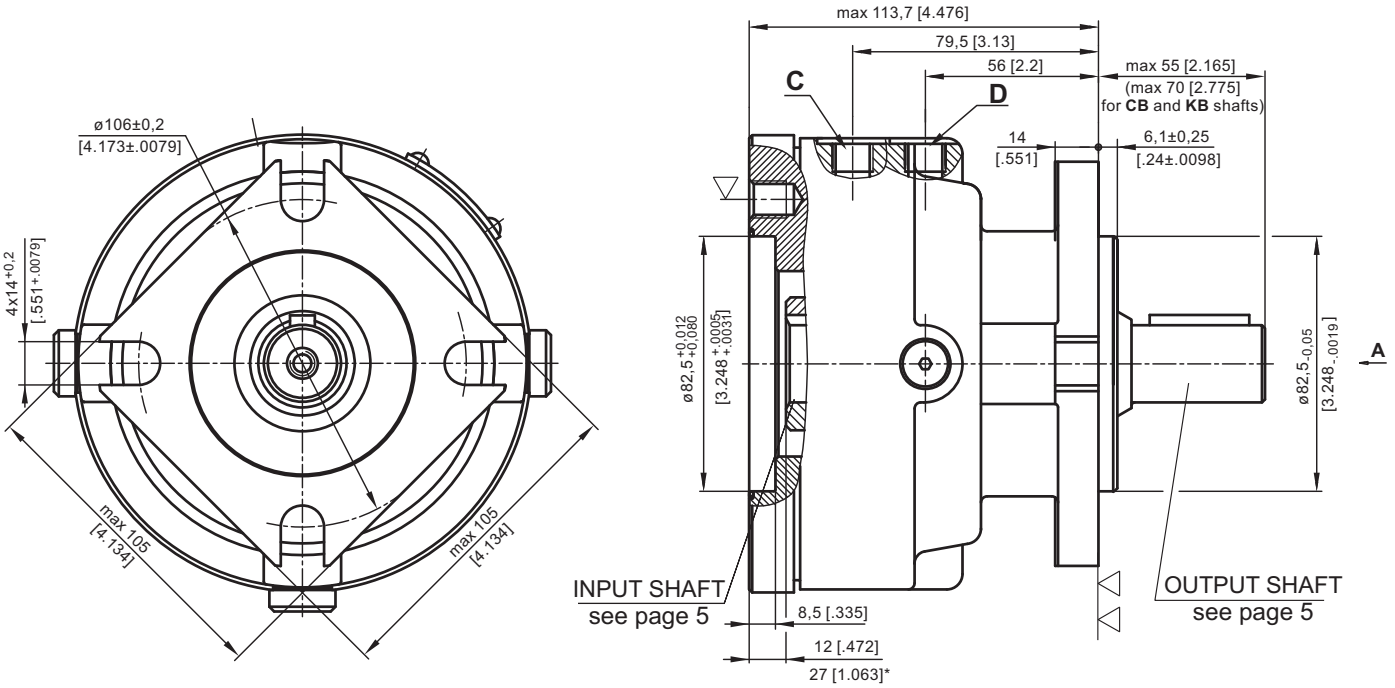


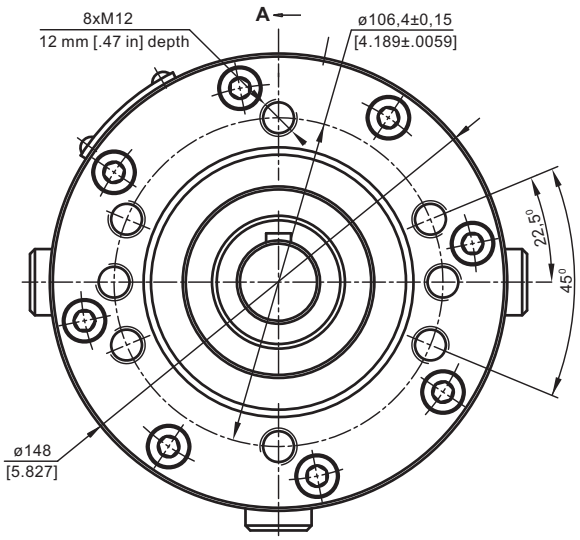
FEMA

LB
BRAKE

HYDRAULIC DISC BRAKE FOR FLANGE ATTACHMENT TO MP, MR AND MS HYDRAULIC MOTORS

TYPE LB/288





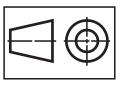
▽- Place for attachment (tightening torque for screw M12x30 - 8.8 DIN 912 - 7 daNm [620 lb-in])

▽▽- Place for attachment

C: Brake release Port - G¼, 9 mm [.35 in] depth

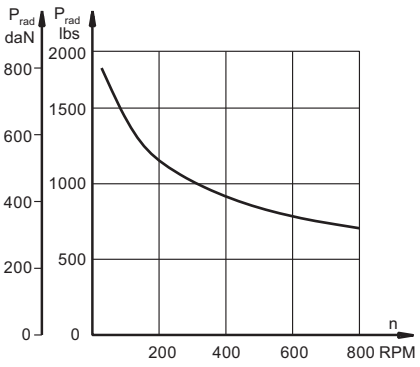
D: Drainage tap - G¼, 9 mm [.35 in] depth

* - For Input Shaft Hole Versions **SH** and **SB**.



mm [in]

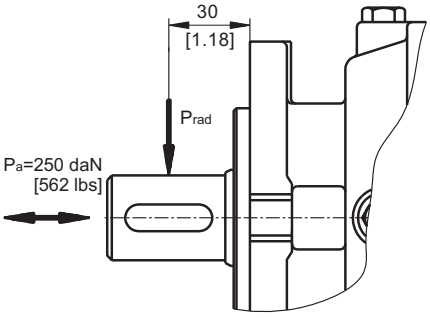
LOAD CURVE



SPECIFICATION DATA

Description **LB/288...**	7	14	21	32	43	63
*Min. Static Torque, daNm [lb-in]	6-8 [531-708]	13-15 [1150-1327]	20-22 [1770-1947]	31-34 [2743-3009]	41-45 [3628-3982]	61-64 [5399-5665]
Opening Pressure, min bar [PSI]	4-5 [58-73]	8-9 [116-130]	12-13 [174-188]	18-20 [260-290]	24-26 [348-377]	38-39 [550-565]
max	300 [4350]					
Min. oil quantity for brake releasing, cm^3 [in^3]	7 - 8 [.427 - .488]					
Oil volume cm^3 [in^3]	50 - 120 [3.5 - 7.35]					
Max. Pressure in drain space, bar [PSI]	0,5 [7.25]					
Weight, kg [lb]	9 [19.8]					

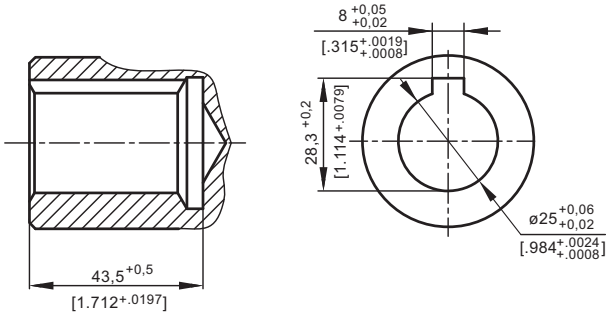
*Static torque is obtained at working pressure - 0 bar [0 PSI].



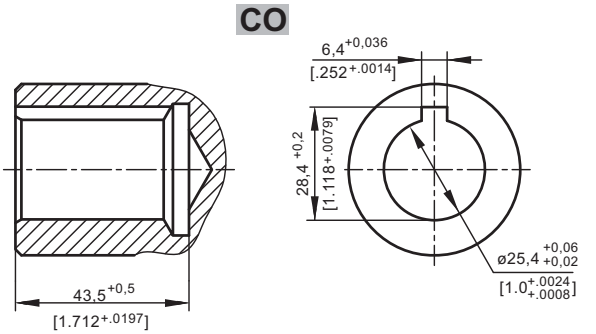
FEMA

INPUT SHAFT HOLES

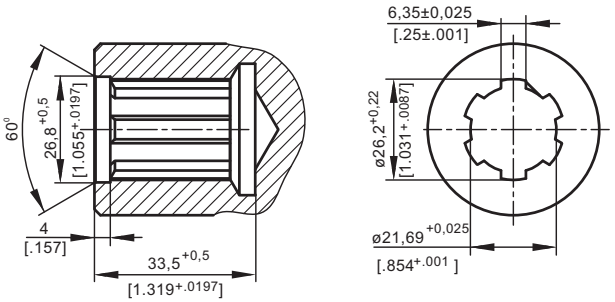
C



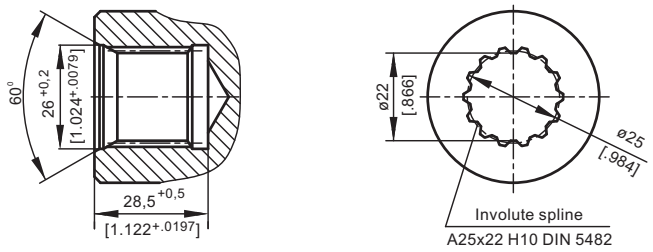
CO



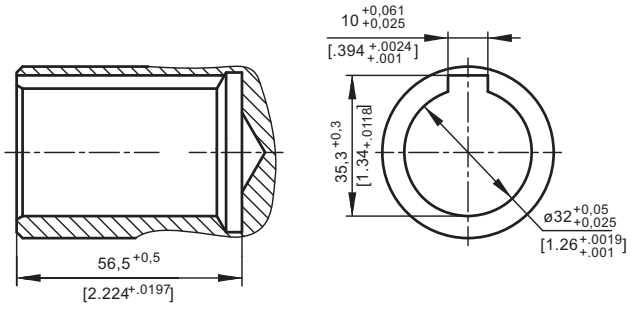
SH



SB



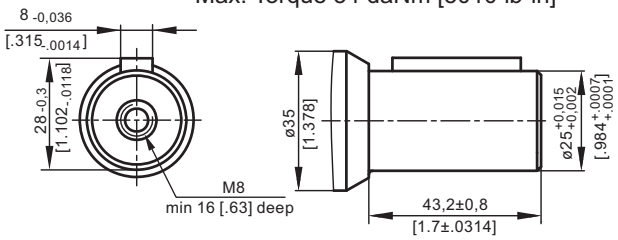
CB



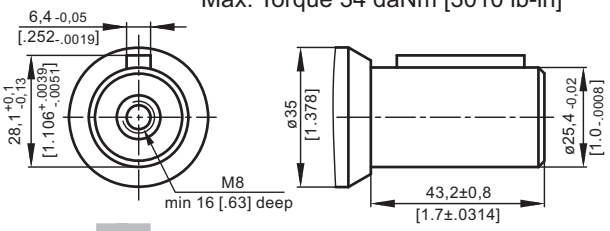
mm [in]

OUTPUT SHAFT EXTENSIONS

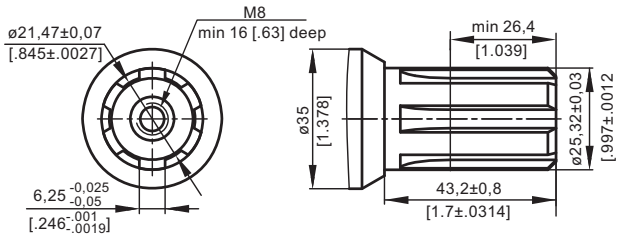
C - ø25 straight, Parallel key A8x7x32 DIN 6885
Max. Torque 34 daNm [3010 lb-in]



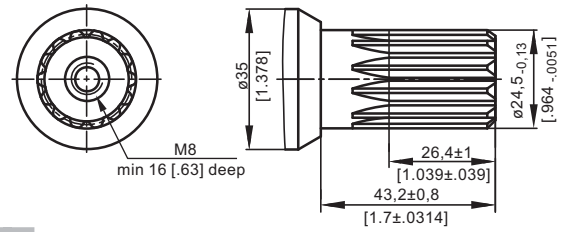
CO - ø1" straight, Parallel key ¼"x¼"x1¼" BS46
Max. Torque 34 daNm [3010 lb-in]



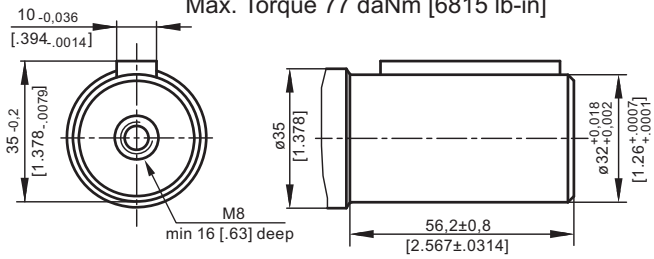
SH - splined, BS 2059 (SAE 6B)
Max. Torque 40 daNm [3540 lb-in]



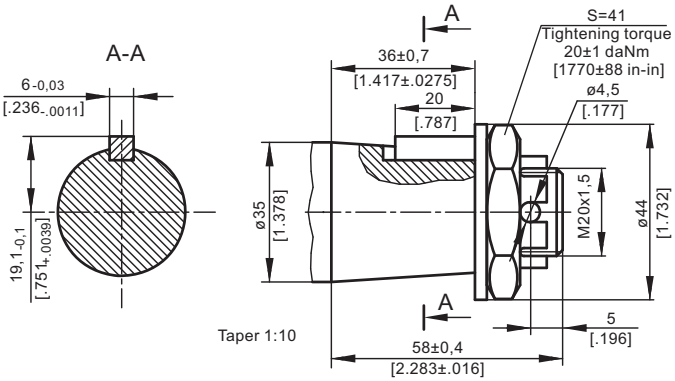
SA - splined, B25x22h9 DIN 5482
Max. Torque 40 daNm [3540 lb-in]



CB - ø32 straight, Parallel key A10x8x45 DIN 6885
Max. Torque 77 daNm [6815 lb-in]



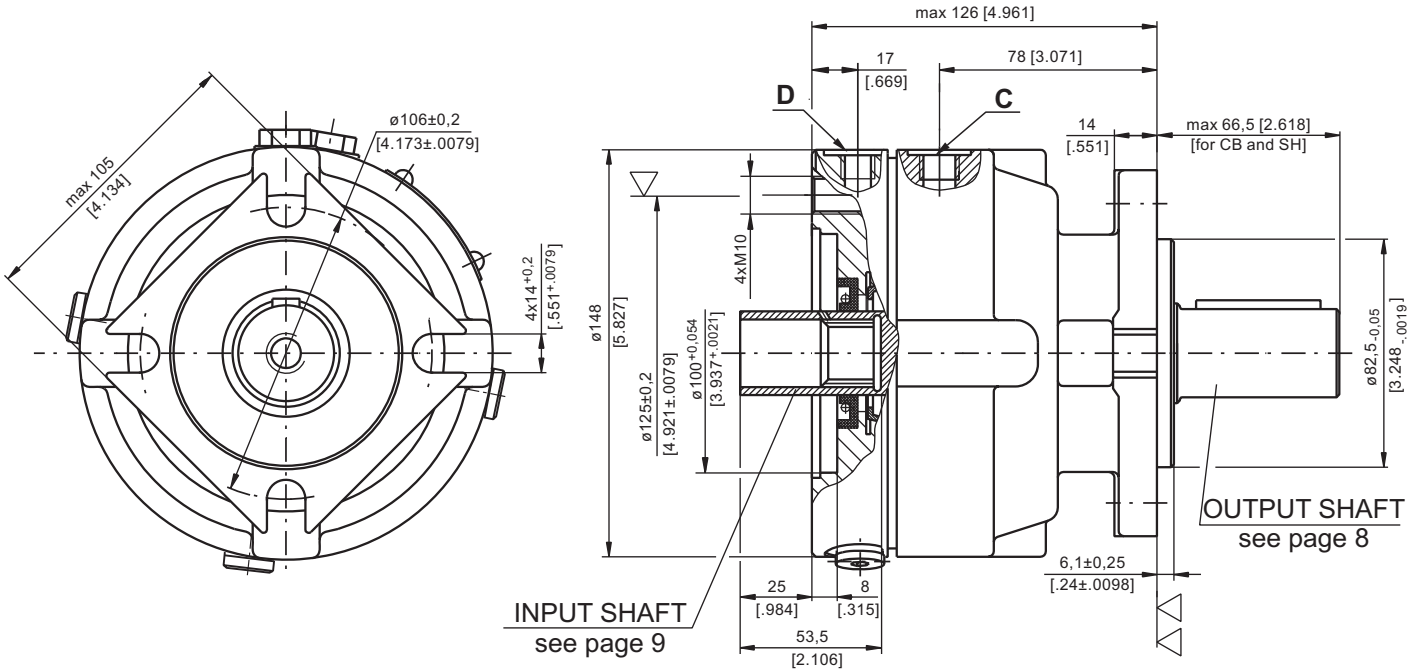
KB - tapered 1:10, Parallel key B6x6x20 DIN 6885
Max. Torque 95 daNm [8400 lb-in]



FEMA

HYDRAULIC DISC BRAKE FOR FLANGE ATTACHMENT TO MSS AND MSV HYDRAULIC MOTORS

TYPE LBS/289



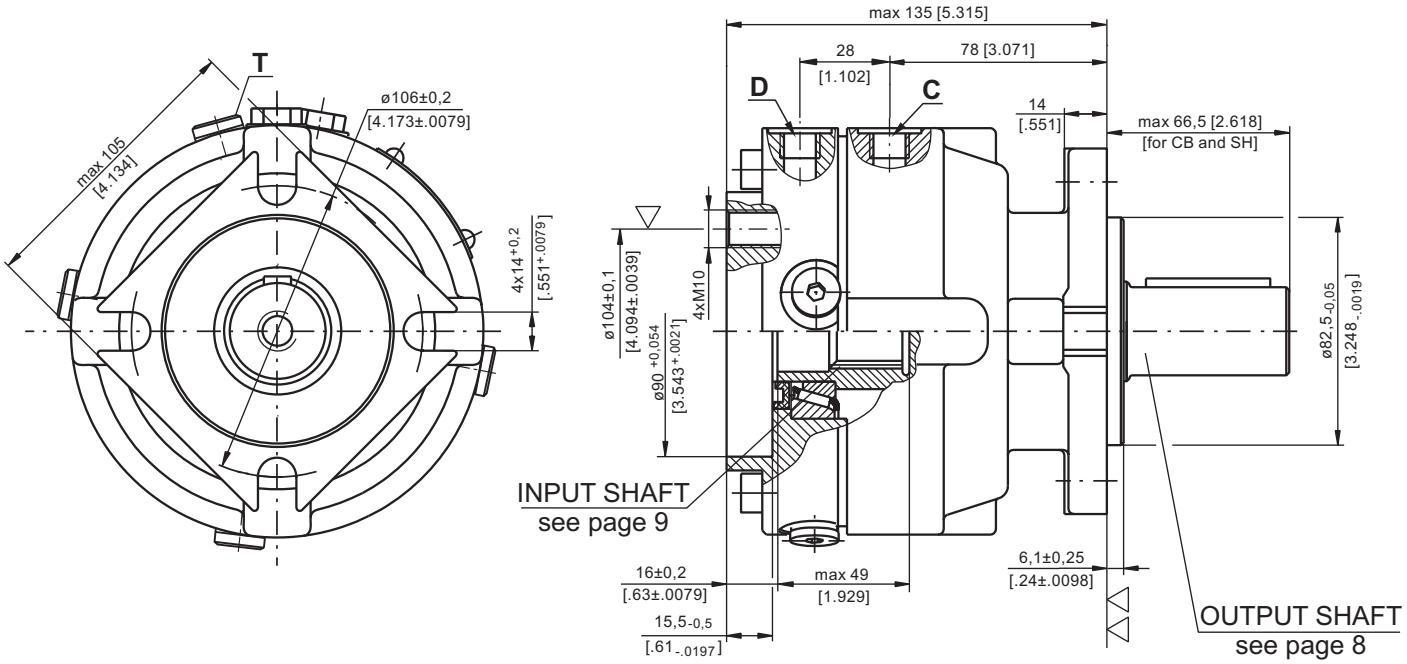
▽ - Place for attachment:
LBS - tightening torque for screw M10x35 - 8.8 DIN 912 - 5 daNm [440 lb-in]
LBV - tightening torque for screw M10xL - 12.9 DIN 931 - 6^{+1} daNm [530^{+90} lb-in]

▽▽ - Place for attachment

mm [in]

C: Brake release Port - G¼, 9 mm [.35 in] depth
D: Drain plug for the Brake - G¼, 9 mm [.35 in] depth
T: Drain plug for the Motor - G¼, 9 mm [.35 in] depth

TYPE LBV/289

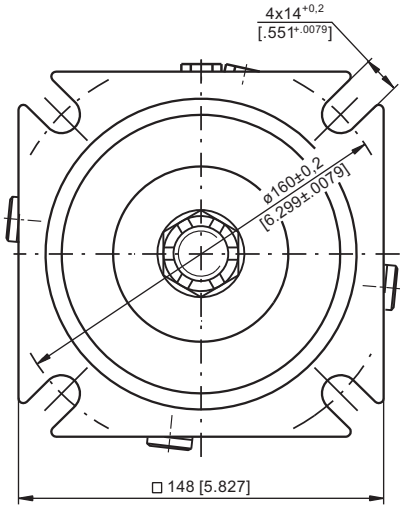


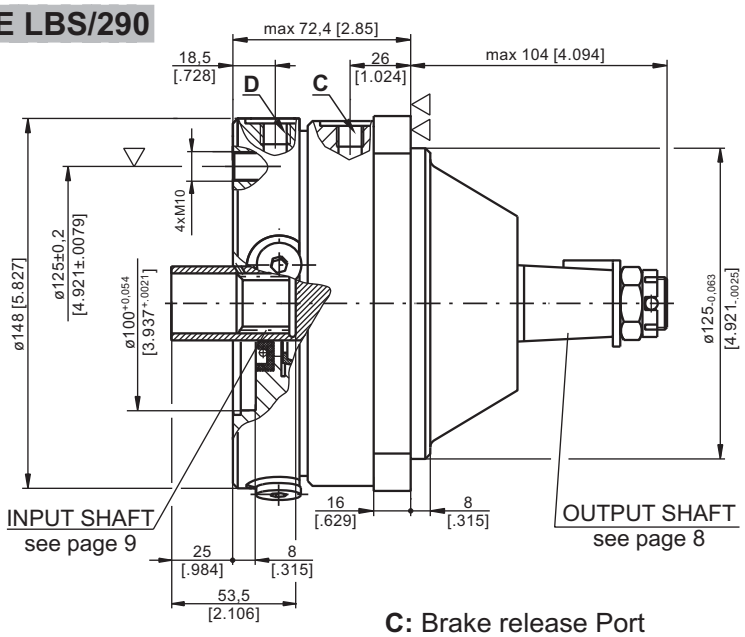
FEMA

LBS+LBV BRAKE

HYDRAULIC DISC BRAKE FOR FLANGE ATTACHMENT TO MSS AND MSV HYDRAULIC MOTORS

TYPE LBS/290





▽ - Place for attachment:
LBS - tightening torque for screw M10x35 - 8.8 DIN 912 - 5 daNm [440 lb-in]
LBV - tightening torque for screw M10xL - 12.9 DIN 931 - 6 +1 daNm [530 +90 lb-in]

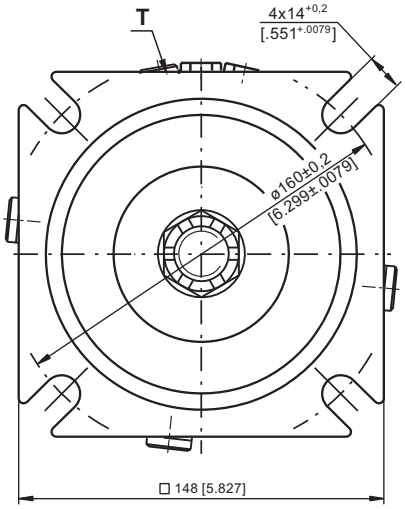
▽▽ - Place for attachment

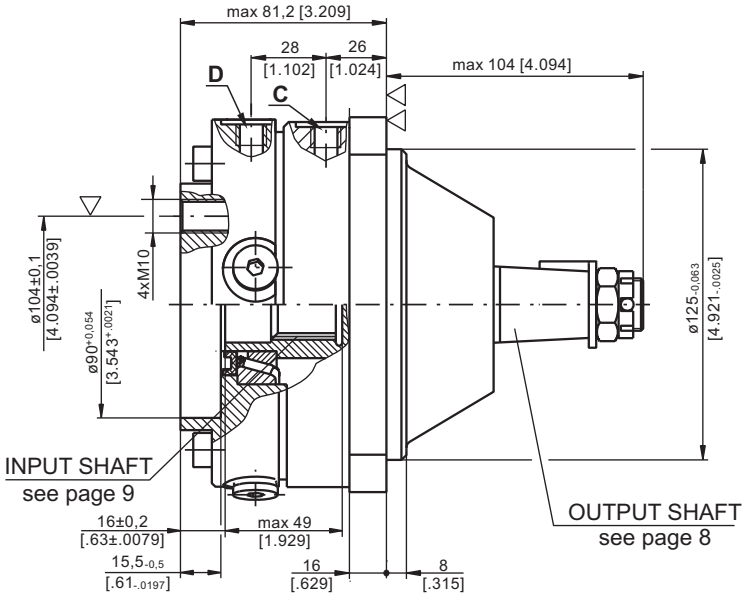
C: Brake release Port
- G¼, 9 mm [.35 in] depth

D: Drain plug for the Brake
- G¼, 9 mm [.35 in] depth

T: Drain plug for the Motor
- G¼, 9 mm [.35 in] depth

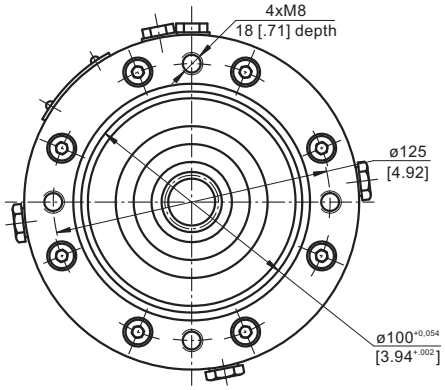
TYPE LBV/290



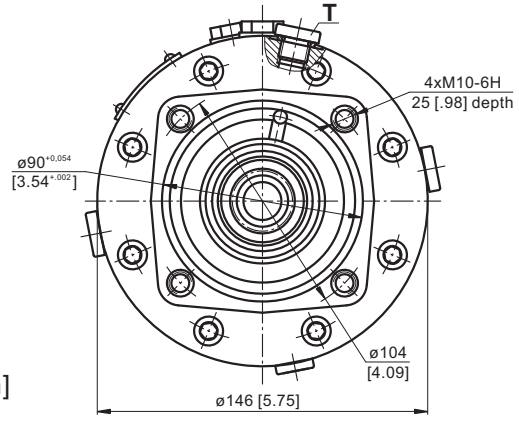


INPUT FACE For Versions 289 and 290

TYPE LBS/289(290)



TYPE LBV/289(290)

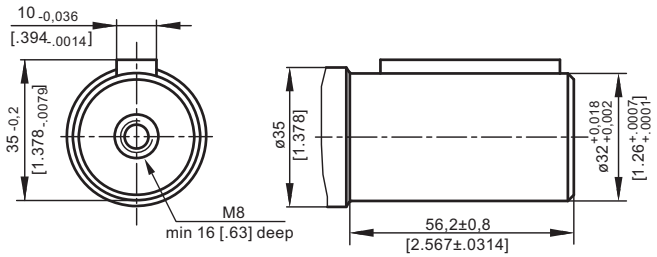


mm [in]

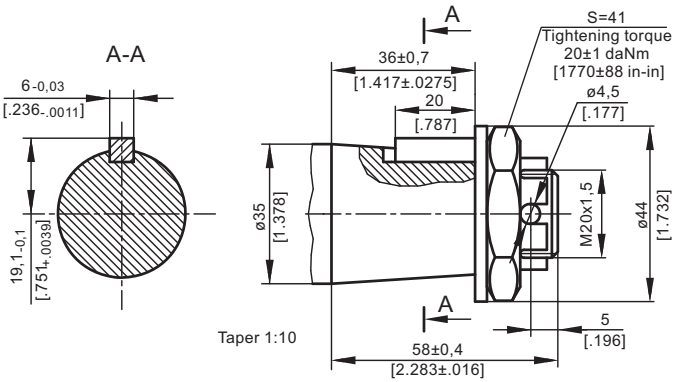
FEMA

OUTPUT SHAFT EXTENSIONS

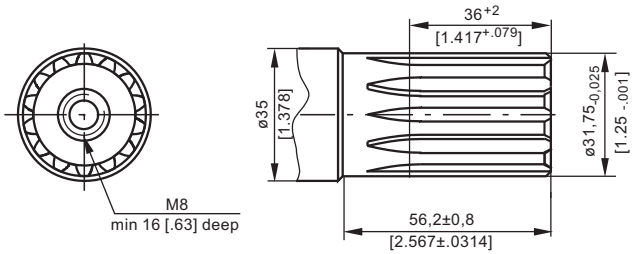
CB - ø32 straight, Parallel key A10x8x45 DIN 6885
Max. Torque 77 daNm [6815 lb-in]



KB - tapered 1:10, Parallel key B6x6x20 DIN 6885
Max. Torque 95 daNm [8400 lb-in]



SH - ø1¼" splined 14T, DP12/24 ANS B92.1-1970
Max. Torque 95 daNm [8400 lb-in]



mm [in]

SPECIFICATION DATA

Description **LBS/289(290) LBV/289(290)**		21	32	43	63
*Min. Static Torque, daNm [lb-in]		20-22 [1770-1947]	31-34 [2743-3009]	41-45 [3628-3982]	61-64 [5399-5665]
Opening Pressure, bar [PSI]	min	12-13 [174-188]	18-20 [260-290]	24-26 [348-377]	38-39 [550-565]
	max	300 [4350]			
Min. oil quantity for brake releasing	cm^3 [in^3]	7 - 8 [.427 - .488]			
Oil volume	cm^3 [in^3]	50 - 120 [3.05 - 7.35]			
Max. Pressure in drain space	bar [PSI]	5 [72]			
Weight	kg [lb]	9 [19.8]			

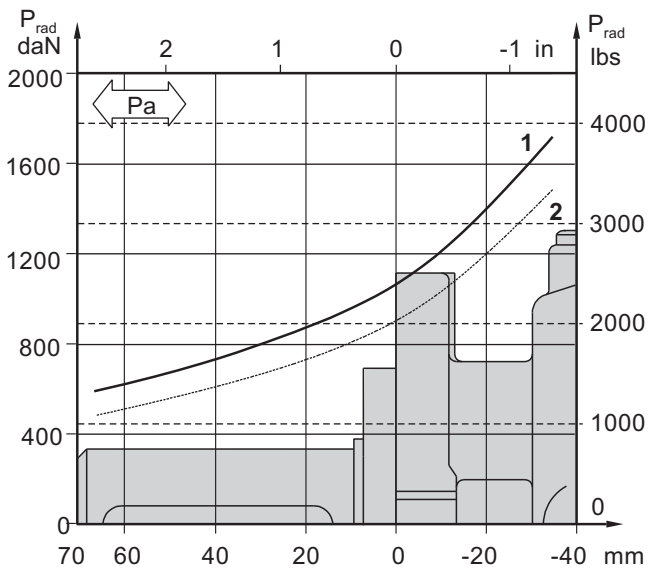
*Static torque is obtained at working pressure - 0 bar [0 PSI].

LOAD CURVE

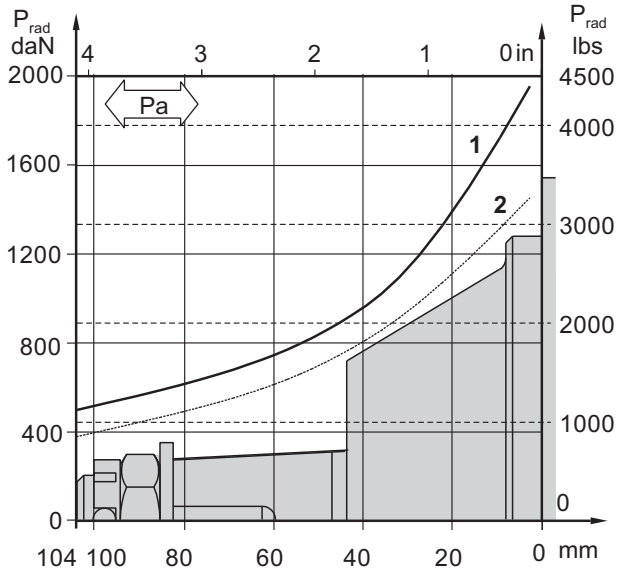
The curve applies to a B10 bearing life of 3000 hours at 200 RPM.

1: Pa<350 daN [787 lbs]
2: Pa=500 daN [1125 lbs]

LBS(V)/289



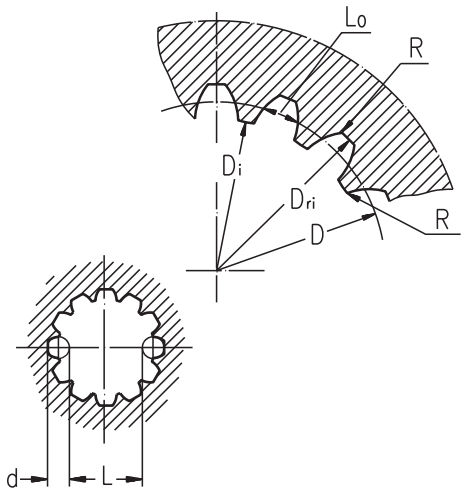
LBS(V)/290



INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

Standard ANS B92.1-1970, class 5
[m=2.1166]

Fillet Root Side Fit		LBS(V)/289 LBS(V)/290		LBS(V)/314 LBS(V)/315	
		mm	inch	mm	inch
Number of Teeth	z	12	12	16	16
Diametral Pitch	DP	12/24	12/24	12/24	12/24
Pressure Angle		30°	30°	30°	30°
Pitch Dia.	D	25,4	1	33,8656	1.3333
Major Dia.	Dri	$28{,}0_{-0{,}1}$	1.1 ÷ 1.098	$38{,}4^{+0{,}4}$	1.5118÷1.5275
Minor Dia.	Di	$23{,}0^{+0{,}033}$	.907 ÷ .905	$32{,}15^{+0{,}06}$	1.2657÷1.2673
Space Width [Circular]	Lo	4,308±0,020	.1704 ÷ .1688	4,516±0,037	.1763÷.1791
Fillet Radius	R	0,2	.008	0,5	.02
Max. Measurement between Pins	L	$17{,}62^{+0{,}15}$	.699 ÷ .694	$26{,}9^{+0{,}10}$	1.063÷1.059
Pin Dia.	d	4,835±0,001	.19039÷.19031	4,835±0,001	.19026÷.19034
Corrected	x.m	+0,8	+.031	+1,0	+.039



ORDER CODE - LB/288

	1		2	3	4	5
LB/288		-				

Pos.1 - Input Shaft Hole

C, CO, SH, CB, SB

Pos.2 - Static Torque code (See Specification data)

7, 14, 21, 32, 43, 63

Pos.3 - Output Shaft Extensions*

C	- ø25 straight, Parallel key A8x7x32 DIN 6885
CO	- ø1" straight, Parallel key ¼"x¼"x1¼" BS46
SH	- ø25,32 splined BS 2059 (SAE 6B)
SA	- ø24,5 splined B25x22 DIN 5482
CB	- ø32 straight, Parallel key A10x8x45 DIN 6885
KB	- ø35 tapered 1:10, Parallel key B6x6x20 DIN6885

Pos.4 - Option (Paint)**

omit - no Paint

P	- Painted
PC	- Corrosion Protected Paint

Pos.5 - Design Series

omit - Factory specified

ORDER CODE - LBS, LBV

	1		2		3	4	5	6
LB		/		-				

Pos.1 - Type

S	- Disc Brake for short motor S- MSS
V	- Disc Brake for very short motor V- MSV

Pos.2 - Design code

289	- for MSS and MSV Motors
290	- for MSS and MSV Motors (Wheel Mount)

Pos.3 - Static Torque code (See Specification data)

21, 32, 43, 63

Pos.4 - Output Shaft Extensions*

CB	- ø32 straight, Parallel key A10x8x45 DIN 6885
KB	- ø35 tapered 1:10, Parallel key B6x6x20 DIN6885
SH	- ø1¼" splined 14T ANS B92.1-1970

Pos.5 - Option (Paint)**

omit - no Paint

P	- Painted
PC	- Corrosion Protected Paint

Pos.6 - Design Series

omit - Factory specified

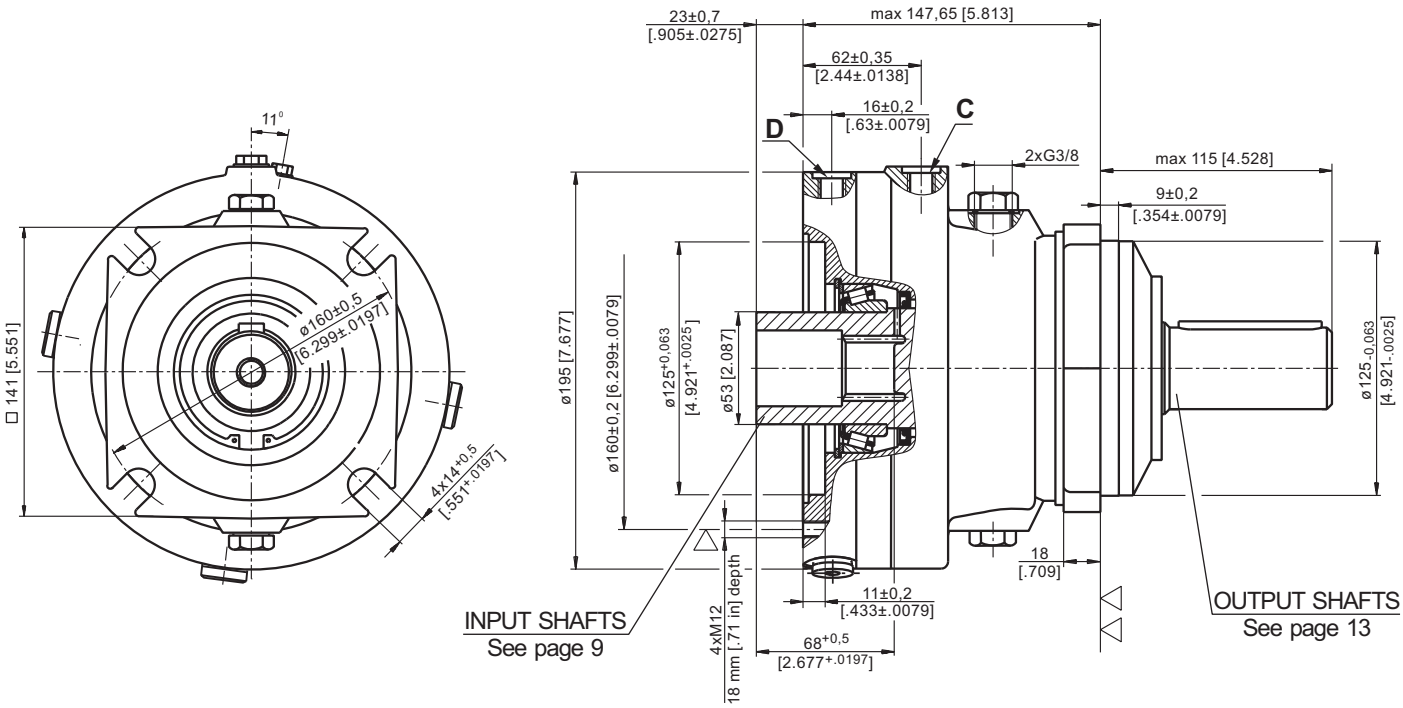
NOTES:

* The permissible output torque for shafts must not be exceeded! For Max. Torque values see data on page 5 and 8.
** The color is by customer's request.
The Disc Brakes are mangano-phosphatized as standard.

ATTENTION:
1. Hydraulic brake is delivered without oil (it is lubricated only).
2. Hydraulic brake is filled through the drain port **D**. Space is filled with 50 ÷ 120 cm^3 [3.05÷7.32 in^3] mineral oil HLP (DIN 51524) or HM (ISO 6743/4). For LB/288 fill oil after hydraulic motor assembly.
3. In all brakes, friction discs and separators should be lubricated.

HYDRAULIC DISC BRAKES
FOR FLANGE ATTACHMENT TO MTS AND MTV HYDRAULIC MOTORS

TYPE LBS/314



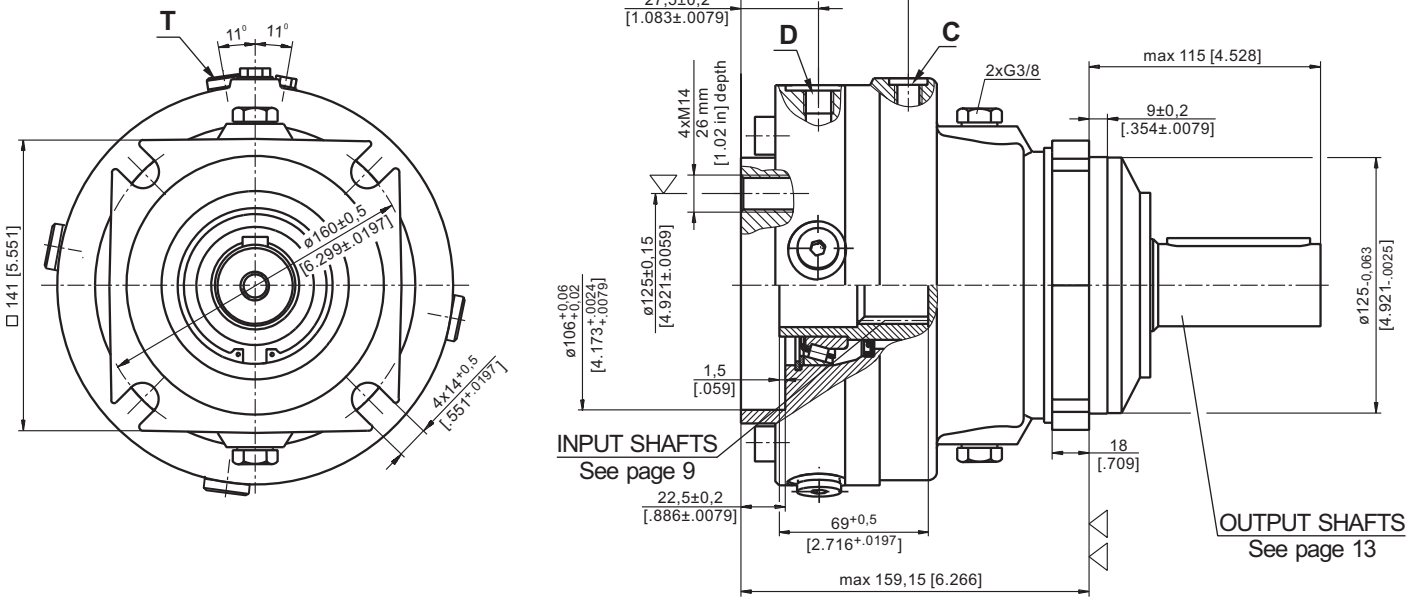
▽ - Place for attachment
(tightening torque for screw M12x30- 8.8 DIN 912, 7 daNm [620 lb-in])

▽▽- Place for attachment

C: Brake release Port - G¼, 12 mm [.47 in] depth
D: Drainage tap - G¼, 12 mm [.47 in] depth

TYPE LBV/314

mm [in]



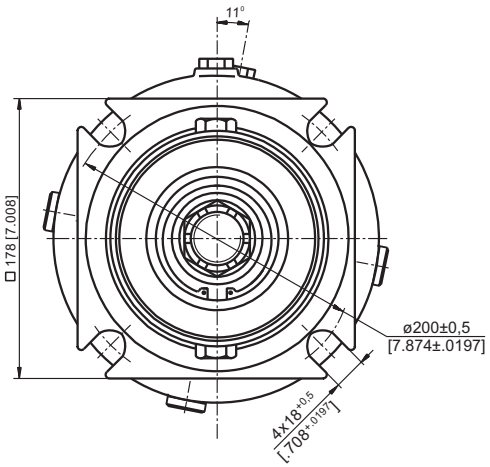
▽- Place for attachment
(tightening torque for screw M14xL - 8.8 DIN 912, 11,5 da Nm [1020 lb-in])

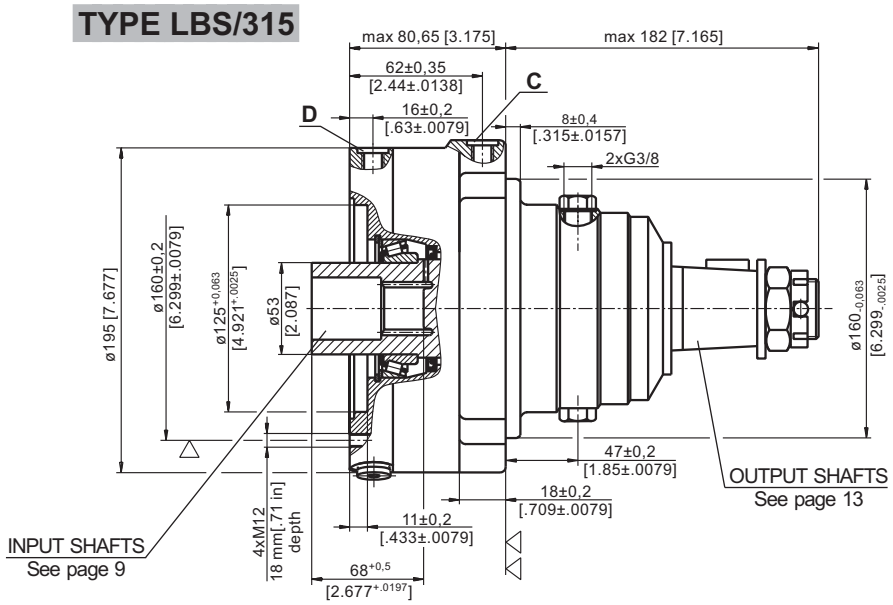
▽▽- Place for attachment

C: Brake release Port - G¼, 9 mm [.35 in] depth
D: Drain plug for the Brake - G¼, 9 mm [.35 in] depth
T: Drain plug for the Motor - G¼, 9 mm [.35 in] depth

HYDRAULIC DISC BRAKES
FOR FLANGE ATTACHMENT TO MTS AND MTV HYDRAULIC MOTORS

TYPE LBS/315





▽ - Place for attachment (tightening torque for screw M12x30- 8.8 DIN 912, 7 daNm [620 lb-in])

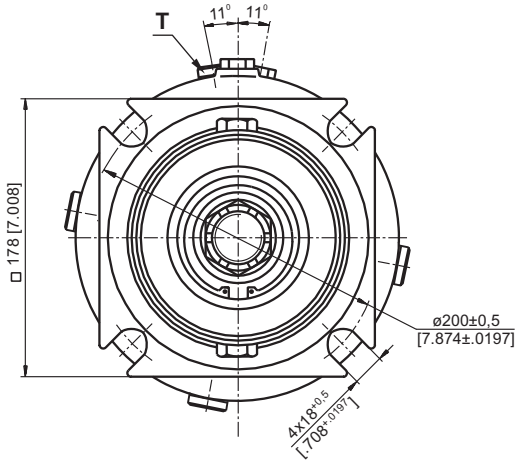
▽▽- Place for attachment

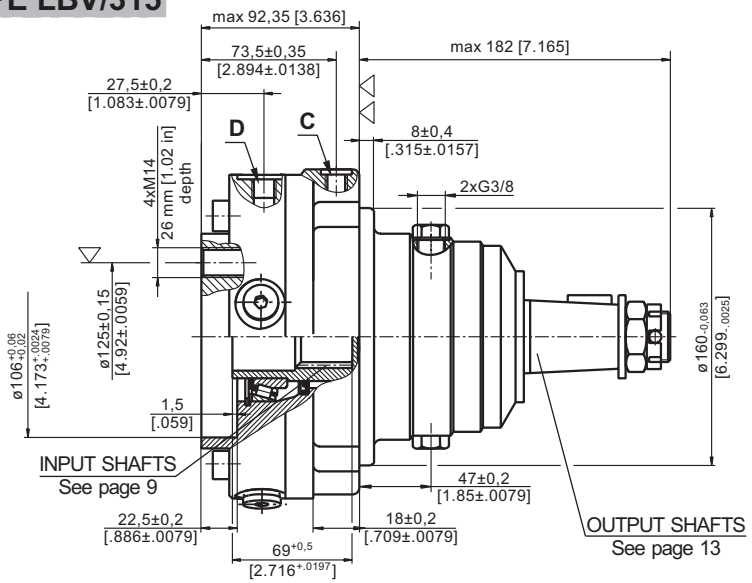
C: Brake release Port - G¼, 12 mm [.47 in] depth

D: Drainage tap - G¼, 12 mm [.47 in] depth

TYPE LBV/315

mm [in]





▽- Place for attachment (tightening torque for screw M14xL - 8.8 DIN 912, 11,5 daNm [1020 lb-in])

▽▽- Place for attachment

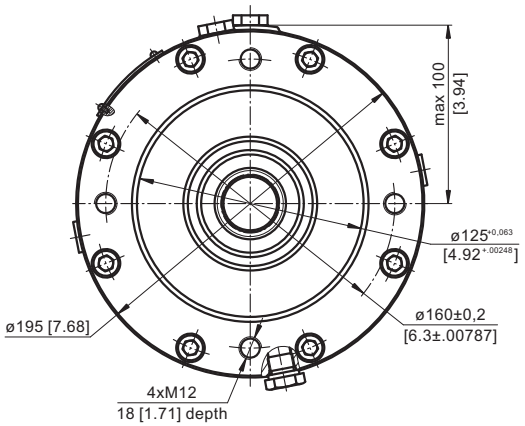
C: Brake release Port - G¼, 9 mm [.35 in] depth

D: Drain plug for the Brake - G¼, 9 mm [.35 in] depth

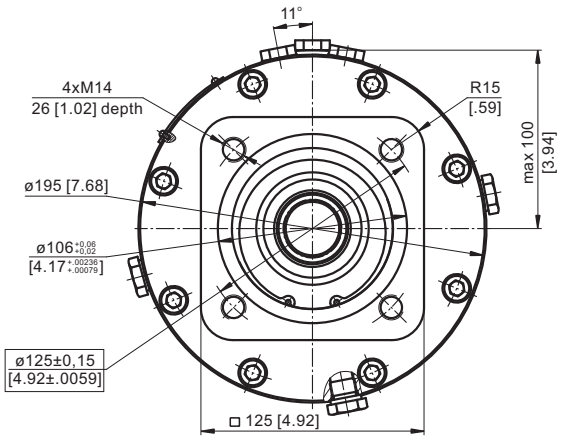
T: Drain plug for the Motor - G¼, 9 mm [.35 in] depth

INPUT FACE
For Versions 314 and 315

TYPE LBS/314(315)



TYPE LBV/314(315)



FEMA

SPECIFICATION DATA

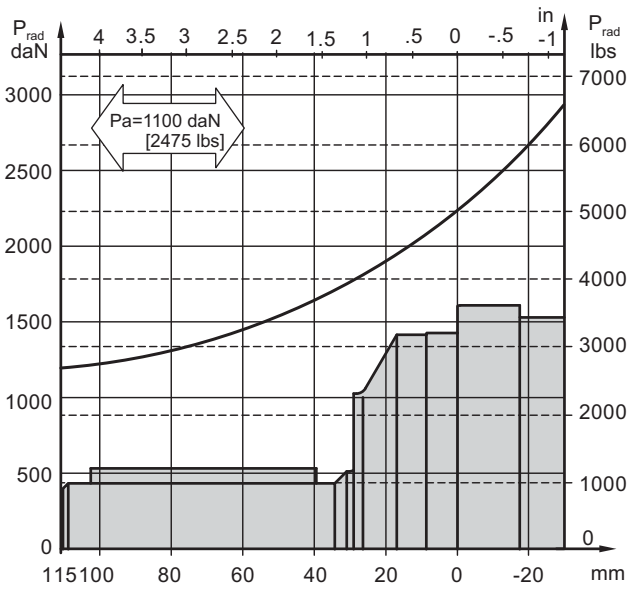
Description **LBS/314,315**	**21**	**29**	**43**	**65**	**85**	**110**	**130**
*Min. Static Torque, daNm [lb-in]	18-23 [1593-2036]	28-33 [2478-2921]	42-46 [3717-4071]	61-70 [5399-6196]	83-92 [7346-8143]	108-118 [9559-10444]	126-136 [11152-12037]
Opening Pressure min** bar [PSI]	4-5 [58-72]	6-7 [87-101]	9-10 [130-145]	13-15 [188-217]	18-20 [261-290]	23-25 [333-362]	27-29 [391-420]
max	300 [4350]						
Min. oil quantity for brake releasing cm³ [in³]	8- 9 [.488-.549]						
Oil volume cm³ [in³]	250						
Max. Pressure in drain space bar [PSI]	5 [72]						
Weight for .../314 kg [lb]	24 [52.9						
.../315	25 [55.1]						

*Static torque is obtained at working pressure - 0 bar.

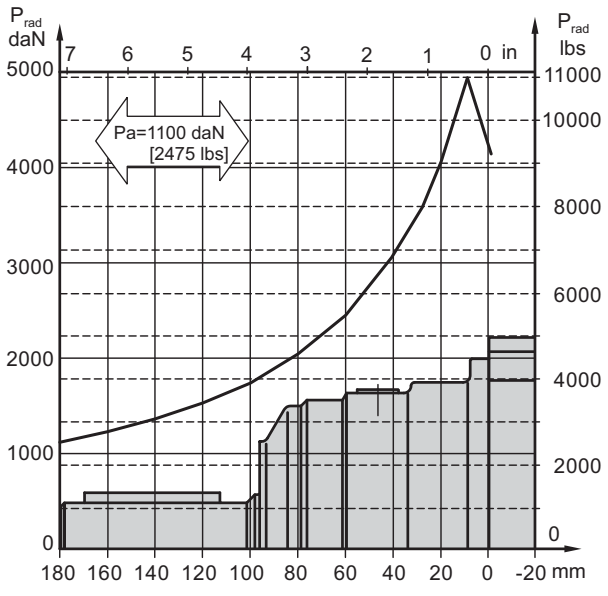
**The indicated value is a difference between the inlet pressure for driving of the brake and the drain pressure.
Brakes must always have a drain line

LOAD CURVE

LBS(V) ... /314

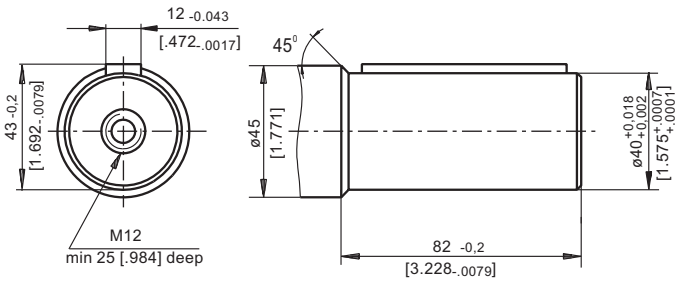


LBS(V) ... /315

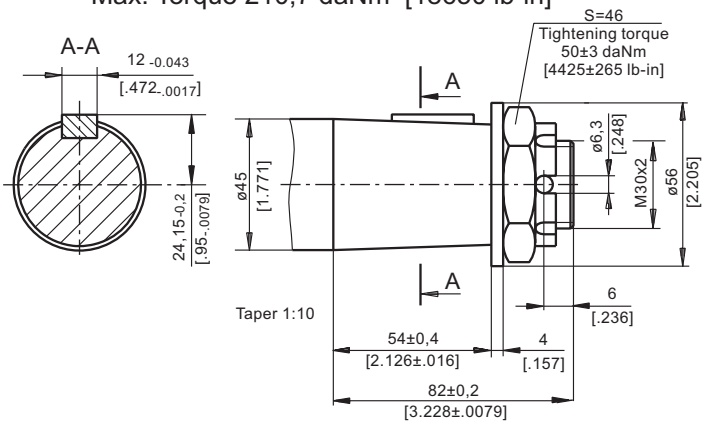


OUTPUT SHAFT EXTENSIONS

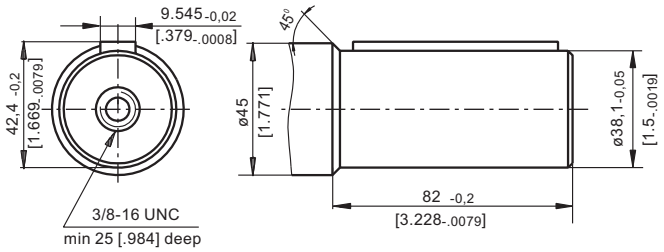
C -ø40 straight, Parallel key A12x8x70 DIN 6885
Max. Torque 132,8 daNm [11755 ln-in]



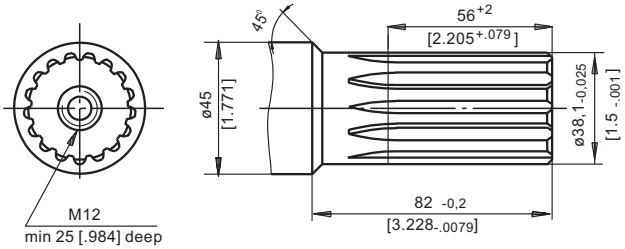
K -tapered 1:10, Parallel key B12x8x28 DIN 6885
Max. Torque 210,7 daNm [18650 lb-in]



CO-ø1½" straight, Parallel key ⅜"x ⅜"x 2¼" BS46
Max. Torque 132,8 daNm [11755 ln-in]



SH -ø1½" splined 17T, DP 12/24 ANSI B92.1-1976
Max. Torque 132,8 daNm [11755 ln-in]



mm [in]

ORDER CODE

1	2		3	4	5	6
LB		/		-				

Pos.1 - Type

S	- Disc Brake for short motor **S** - MTS
V	- Disc Brake for very short motor **V** - MTV

Pos.2 - Design code

314	- for MTS and MTV Motors
315	- for MTS and MTV Motors (Wheel Mount)

Pos.3 - Static Torque code (See Specification data)

21, 29, 43, 65, 85, 110, 130

Pos.4 - Output Shaft Extensions*

C	- ø40 straight, Parallel key A12x8x70 DIN 6885
CO	- ø1½" straight, Parallel key $^3/_8$"x$^3/_8$"x2$^1/_4$" BS46
SH	- ø1½" splined 17T, ANSI B92.1-1976
K	- ø45 tapered 1:10, Parallel key B12x8x28 DIN6885

Pos.5 - Option (Paint)**

omit	- no Paint
P	- Painted
PC	- Corrosion Protected Paint

Pos.6 - Design Series

omit - Factory specified

NOTES:

* The permissible output torque for shafts must not be exceeded!

** The color is by customer's request.

The Disc Brakes are mangano-phosphatized as standard.

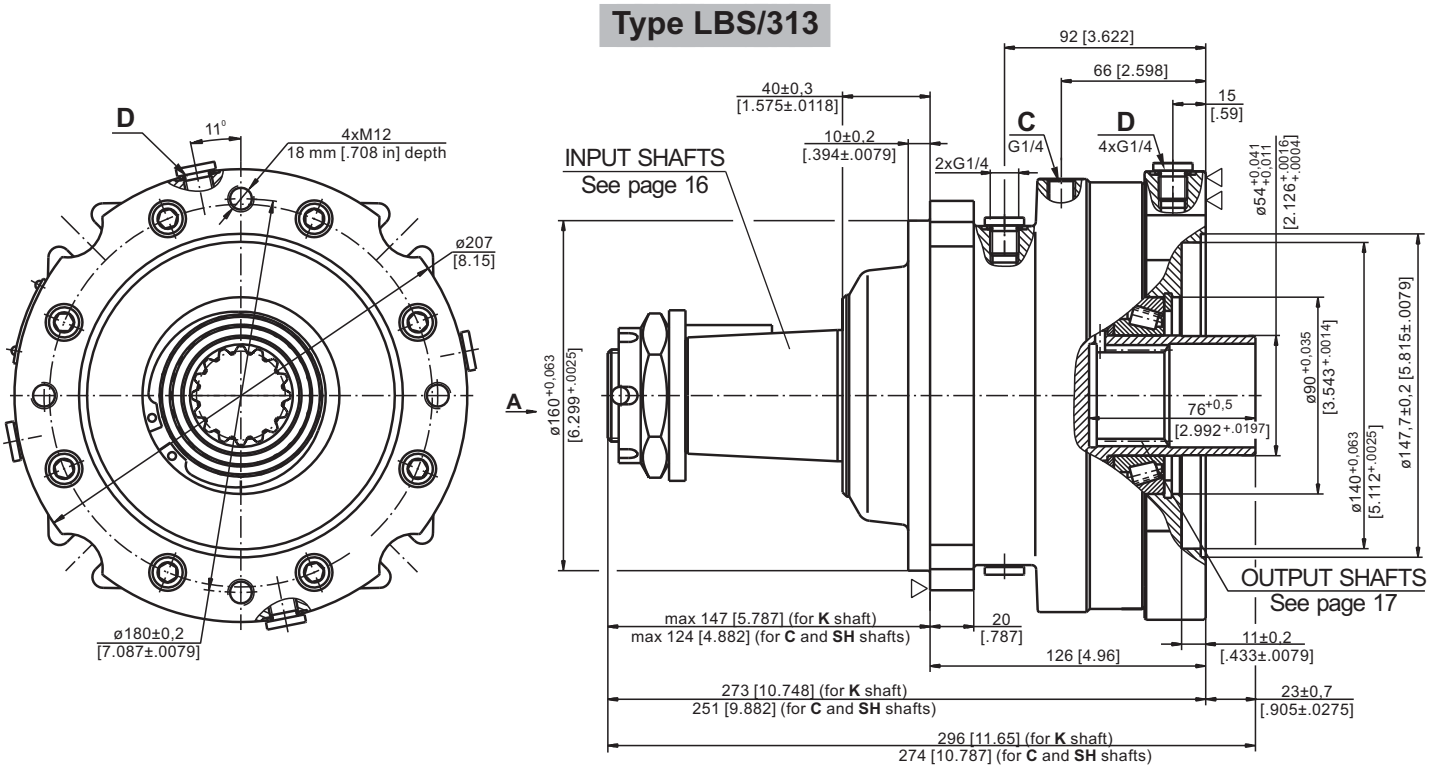
ATTENTION:

1. Hydraulic brake is delivered without oil (it is lubricated only).
2. Hydraulic brake is filled through the drain port **D**. Space is filled with 50 ÷ 120 cm^3 [3.05÷7.32 in^3] mineral oil HLP (DIN 51524) or HM (ISO 6743/4). For LB/288 fill oil after hydraulic motor assembly.
3. In all brakes, friction discs and separators should be lubricated.

LBS+LBV
BRAKE

HYDRAULIC DISC BRAKES
FOR FLANGE ATTACHMENT TO MVS HYDRAULIC MOTORS

Type LBS/313

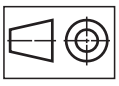


C: Brake release Port - G¼, 12 mm [.47 in] depth

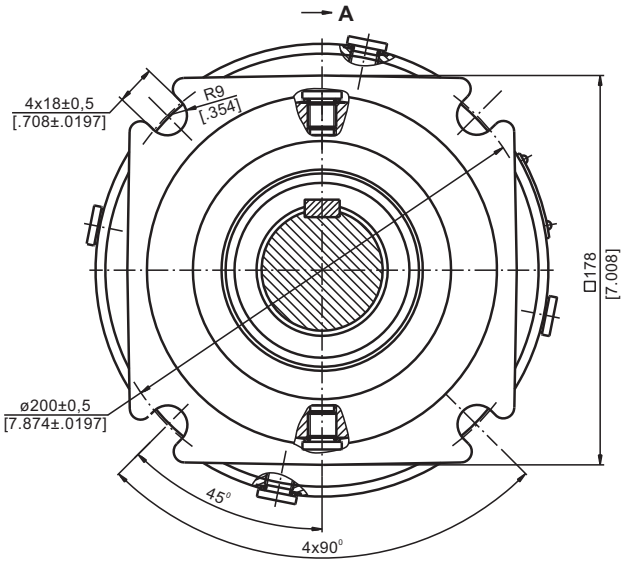
D: Drainage tap - G¼, 12 mm [.47 in] depth

▽- Place for attachment

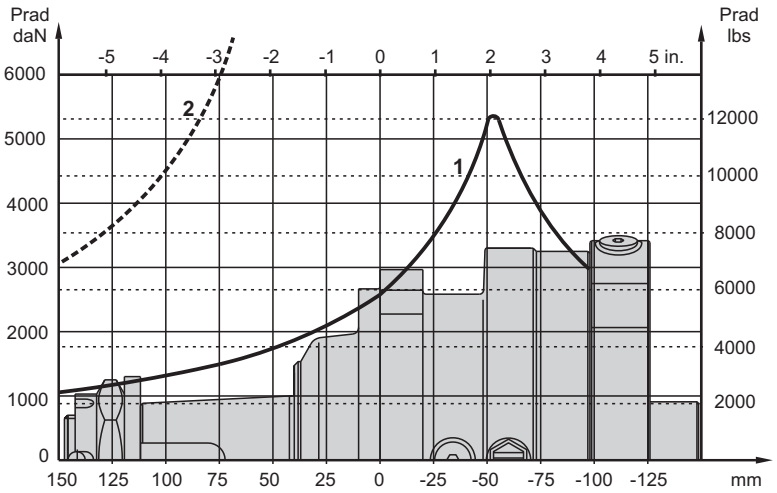
▽▽- Place for attachment
(tightening torque for screw M12x35 - 8.8 DIN 912,
7 daNm [620 lb-in])



mm [in]



PERMISSIBLE SHAFT LOADS



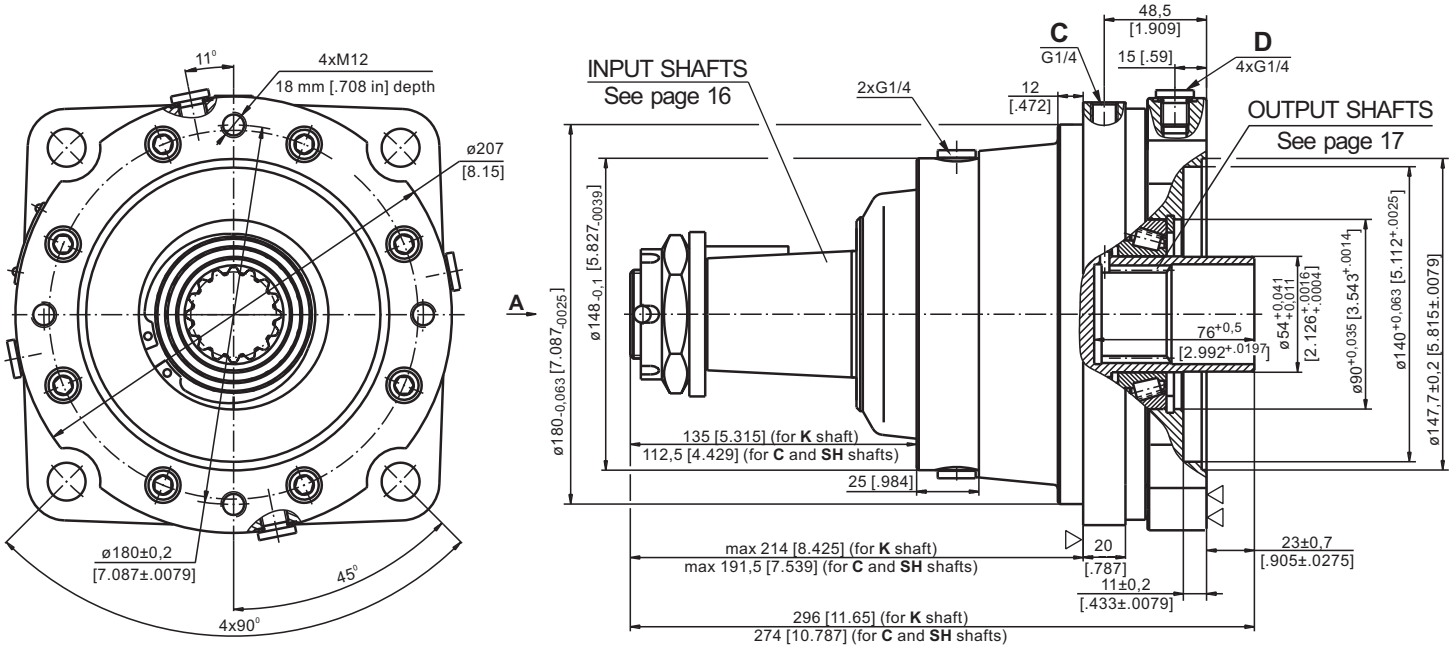
1 - Bearing curve: The curve applies to a B10 bearing life of 3000 hours at 200 RPM.

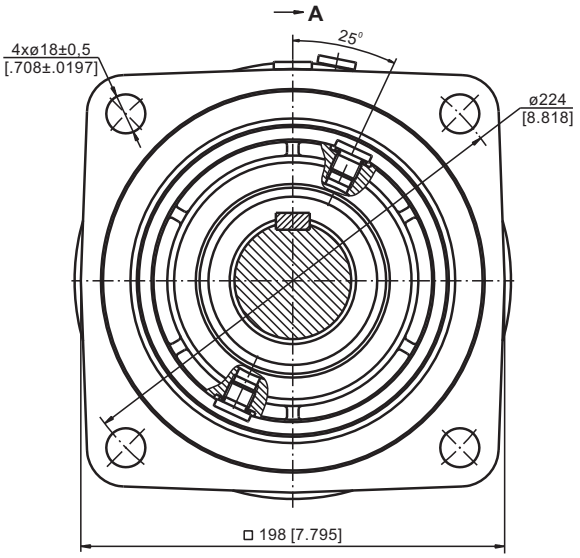
2 - Shaft curve: The curve represents Max. permissible radial shaft load with safety factor 3:1.

FEMA

HYDRAULIC DISC BRAKES
FOR FLANGE ATTACHMENT TO MVS HYDRAULIC MOTORS

Type LBS/316





C: Brake release Port - G¼, 12 mm [.47 in] depth

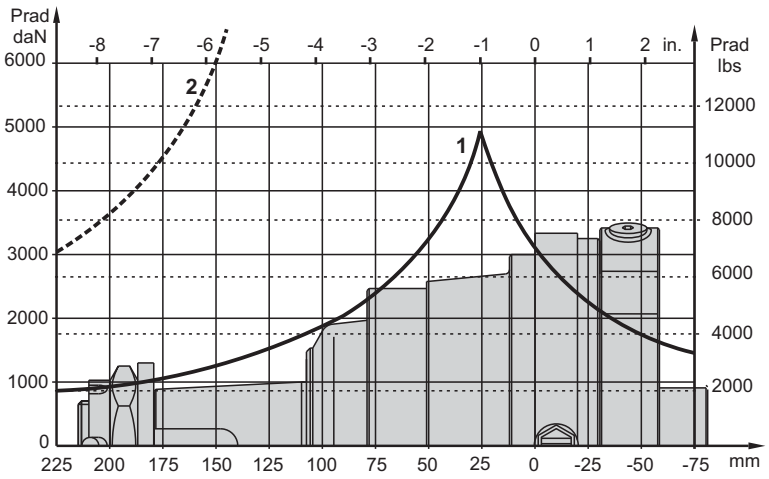
D: Drainage tap - G¼, 12 mm [.47 in] depth

▽- Place for attachment

▽▽- Place for attachment
(tightening torque for screw M12x35 - 8.8 DIN 912,
7 daNm [620 lb-in])

mm [in]

PERMISSIBLE SHAFT LOADS



1 - Bearing curve: The curve applies to a B10 bearing life of 3000 hours at 200 RPM.

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

FEMA

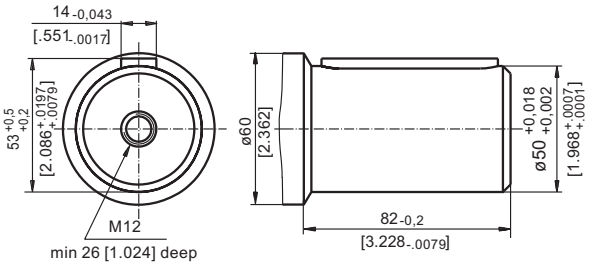
SPECIFICATION DATA

Description **LBS/313,316**	21	29	43	65	85	110	130
*Min. Static Torque, daNm [lb-in]	18-23 [1593-2036]	28-33 [2478-2921]	42-47 [3717-4160]	61-71 [5399-6285]	83-94 [7346-8320]	108-118 [9559-10444]	127-137 [11240-12125]
Opening Pressure min** bar [PSI]	4-5 [58-72]	6-7 [87-101]	9-10 [130-145]	13-15 [188-217]	18-20 [261-290]	23-25 [333-362]	27-29 [391-420]
max	300 [4350]						
Min. oil quantity for brake releasing cm³ [in³]	8 ÷ 9 [.488 ÷ .549]						
Oil volume cm³ [in³]	250 [15.25]						
Max. Pressure in drain space bar [PSI]	5 [72]						

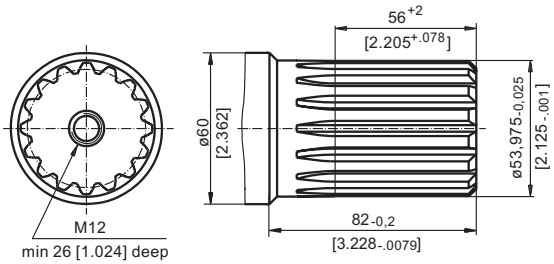
*Static torque is obtained at working pressure - 0 bar.
**The indicated value is a difference between the inlet pressure for driving of the brake and the drain pressure.
Brakes must always have a drain line

SHAFT EXTENSIONS

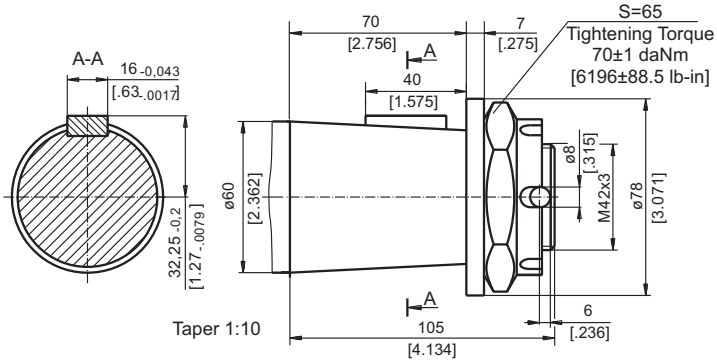
C - ø50 straight, Parallel key A14x9x70 DIN 6885



SH -ø2 1/8"splined, 16 DP 8/16 ANS B92.1-1976



K -tapered 1:10, Parallel key B16x10x32 DIN 6885



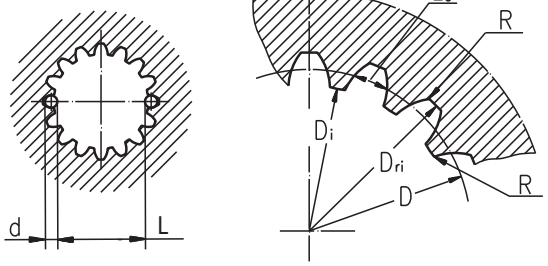
mm [in]

FEMA

INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

Standard ANS B92.1-1970, class 5
[m=2.54; corrected x.m=+1,0]

Fillet Root Side Fit		mm	inch
Number of Teeth	z	16	16
Diametral Pitch	DP	10/20	10/20
Pressure Angle		30^0	30^0
Pitch Dia.	D	40,640	1.6
Major Dia.	Dri	$45{,}2^{+0{,}4}$	1.796÷1.780
Minor Dia.	Di	$38{,}5^{+0{,}039}$	1.5175÷1.516
Space Width [Circular]	Lo	5,18±0,037	.2055÷.2025
Fillet Radius	R	0,4	.015
Max. Measurement between Pins	L	$32{,}47^{+0{,}15}$	1.284÷1.278
Pin Dia.	d	5,6±0,001	.22051÷.22043



Hardening Specification:
HV=750±50 on the surface.
HV=560 at 0,7±0,2 mm [.035±.019in] case depth
Material: 20 MoCr4 EN 10084 or better.

ORDER CODE

	1		2	3	4	5
LBS/		-				

Pos.1 - Designe code

313	- for MVS Motors
316	- for MVS Motors (Wheel mount)

Pos.2 - Static Torque code (See Specification data)

21, 29, 43, 65, 85, 110, 130

Pos.3 - Output Shaft Extensions*

C	- ø50 straight, Parallel key A14x9x70 DIN6885
SH	- ø2 1/8" splined, ANSI B92.1-1976
K	- ø60 tapered 1:10, Parallel key B16x10x32 DIN6885

Pos.4 - Option (Paint)**

omit	- no Paint
P	- Painted
PC	- Corrosion Protected Paint

Pos.5 - Design Series

omit - Factory specified

NOTES:

* The permissible output torque for shafts must be not exceeded!
** The color is by customer's request.
The Disc Brakes are mangano-phosphatized as standard.

ATTENTION:
1. Hydraulic brake is delivered without oil (it is lubricated only).
2. In all brakes, friction discs and separators should be lubricated. Space is filled with 150 ÷ 300 cm^3 [9.15 ÷ 18.3 in^3] mineral oil HLP (DIN 51524) or HM (ISO 6743/4).