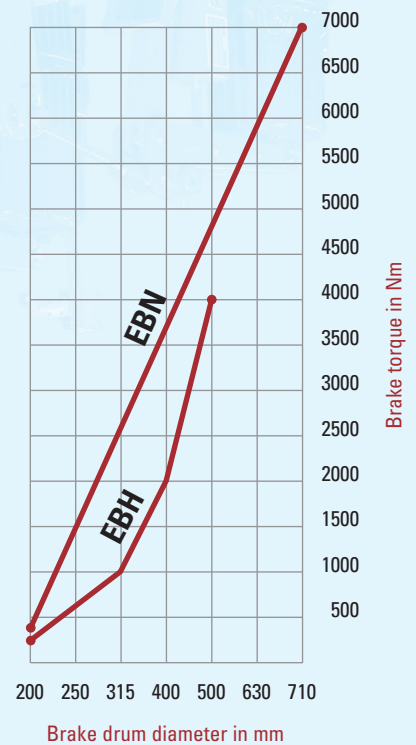


# Drum Brakes



**PINTSCH BUBENZER**  
is certified according to  
DIN EN ISO 9001:2000



Acc. to DIN 15435



Reliable



High Performance



Robust Design



Tried and Trusted

## Main Features

Adherence to DIN 15435 standard
Stepless adjustable brake spring enclosed in a square tube with directly readable torque scale
Self-lubricating bushings mean brakes are easy to service, no greasing necessary
Even brake shoe release by adjustable lever stops
Up to size 400: Levers and base plate of nodular cast iron
From size 500: Levers and base plate welded steel
Different actuators
Aluminum brake shoes acc. DIN 15435 Bl. 2 with non-asbestos, organic linings
Shoe clamping springs which prevent brake shoes from tilting when released
Pins and main spindle of stainless steel
Polished parts and screws galvanized and plated

## Options

Automatic wear compensator
Limit switch release control
Limit switch wear control
Limit switch manual release
Manual release lever with or w/o stop
Monitoring systems (e.g. VSR/CMB)
Brake drums with hubs or couplings

## Thrusters, Technical Data

Thruster Type	Power (W)	Curr. (A) at 400 V	Weight (kg)
Ed 23/5	165	0,5	10
Ed 30/5	200	0,5	14
Ed 50/6	210	0,5	23
Ed 80/6	330	1,2	24
Ed 121/6	330	1,2	39
Ed 201/6	450	1,3	39
Ed 301/6	550	1,4	40

Data supplied by thruster manufacturer, please take higher start current into consideration, fuses to be minimum 2A



### Please Note

We supply a detailed operating manual with every order. Nevertheless, we would point out that brakes are only as safe as the servicing and maintenance performed while they are in operation. The guarantee for the correct functioning of our brakes is therefore only valid if the user adheres to the German DIN standard 15434 part 2 (drum and disc brakes, servicing and maintenance in operation), or to comparable standards in his own country.



### PINTSCH BUBENZER Service

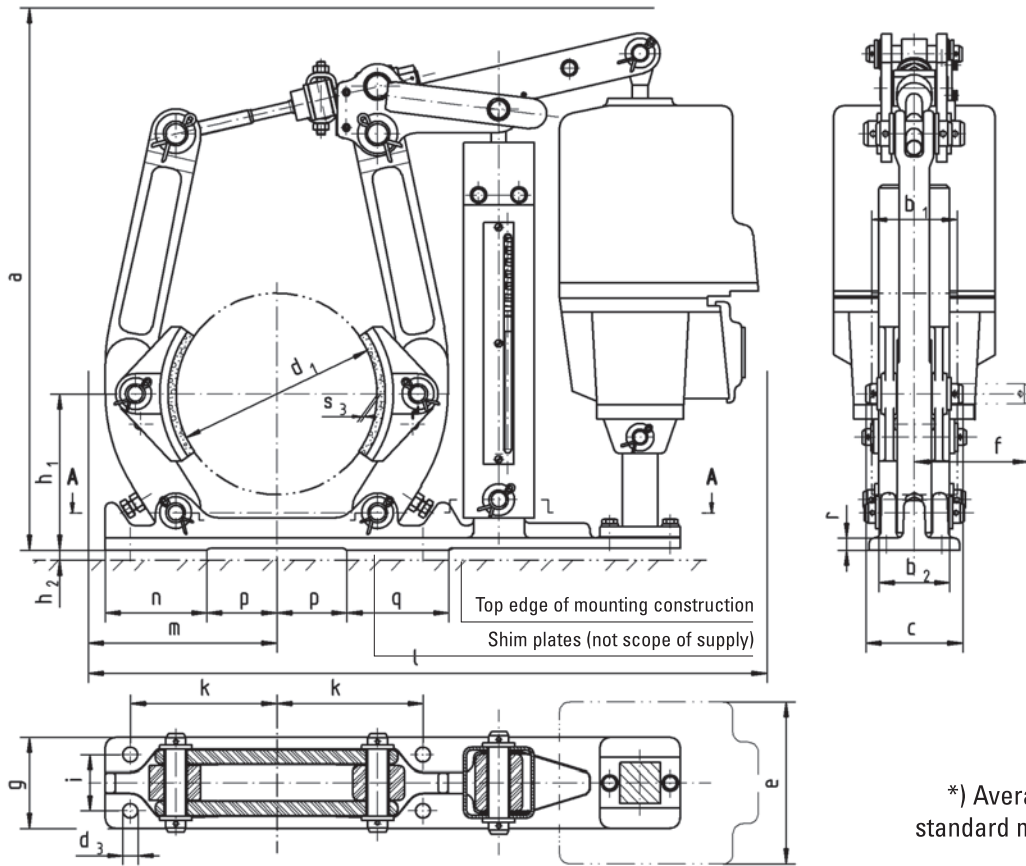
This includes the verification of the brake selection, if required. A detailed questionnaire is provided for this purpose. Installation and commissioning on site is possible by PINTSCH BUBENZER service engineers. Drawings as DWG/DXF files for your engineering department are available upon request.

# Drum Brake Type EBN

Dimensions (DIN 15435) and technical data



Rev. 12-06



f = required space for removing brake shoe pin

\*) Average friction factor of standard material combination

All dimensions in mm  
Alterations reserved without notice

Brake type	Thruster type	$M_{BR \max}$ (Nm) $\mu=0,4^*$	$a_{\max}$	$b_1$	$b_2$	c	$d_1$	$d_3$	e	f	g	$h_1$	$h_2$	i	k	$l_{\max}$	m	n	p	q	r	$s_3$	kg	
EBN 200-23/5	Ed 23/5	300	500						160							665	185	100	70	100	12	1	22	
EBN 200-30/5	Ed 30/5	380	563	75	70	96	200	14	160	115	90	155	5	55	145	665	185	100	70	100	12	1	22	
EBN 200-50/6	Ed 50/6	600								195						705								
EBN 250-23/5	Ed 23/5	320	500						160							770								
EBN 250-30/5	Ed 30/5	450	572						160							770								
EBN 250-50/6	Ed 50/6	750	582	95	90	115	250	18	160	135	100	185	5	65	180	770	205	105	95	105	13	1,2	28	
EBN 250-80/6	Ed 80/6	1200								195						810								
EBN 315-30/5	Ed 30/5	540	665						160							920								
EBN 315-50/6	Ed 50/6	1000								160						920								
EBN 315-80/6	Ed 80/6	1650	790	118	110	140	315	18	195	165	110	225	5	80	220	1000	300	110	133	240	13	1,2	68	
EBN 315-121/6	Ed 121/6	2500								240						990								
EBN 400-50/6	Ed 50/6	1100	680						195							1075								
EBN 400-80/6	Ed 80/6	1700								195						1075								
EBN 400-121/6	Ed 121/6	2650	790	150	140	167	400	22	195	195	140	270	10	100	270	1075	310	135	165	280	15	1,5	82	
EBN 400-201/6	Ed 201/6	4000								240						1065								
EBN 500-50/6	Ed 50/6	1090	830						195							1245								
EBN 500-80/6	Ed 80/6	1870								195						1245								
EBN 500-121/6	Ed 121/6	3010								240						1245								
EBN 500-201/6	Ed 201/6	5120								240						1245								
EBN 630-121/6	Ed 121/6	3040	990						195							1320								
EBN 630-201/6	Ed 201/6	4870								240						1320								
EBN 630-301/6	Ed 301/6	6210								240						1320								
EBN 710-121/6	Ed 121/6	3450	1120						195							1515								
EBN 710-201/6	Ed 201/6	5510								240						1515								
EBN 710-301/6	Ed 301/6	6920								240						1515								

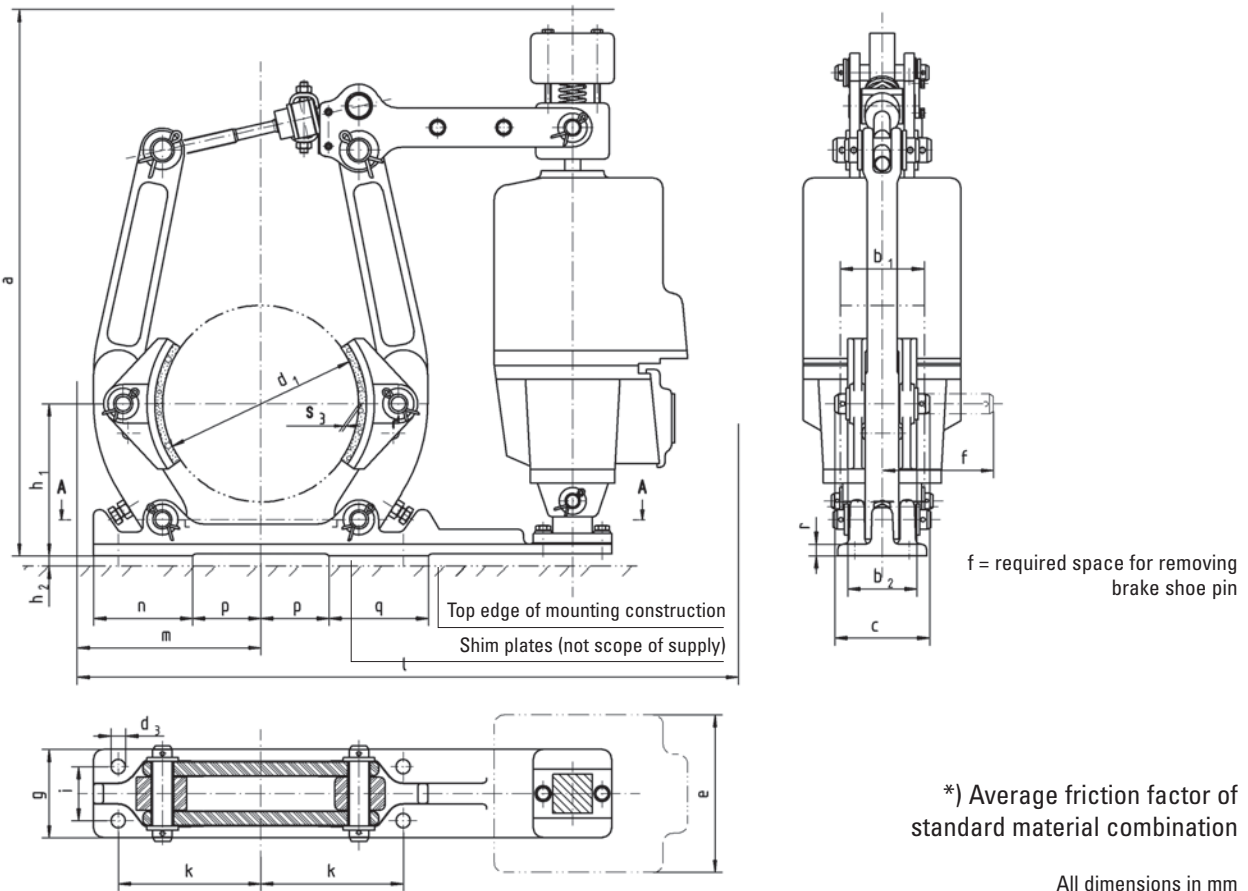


# Drum Brake Type EBNR

Dimensions (DIN 15435) and technical data



Rev. 09-02



\*) Average friction factor of standard material combination

All dimensions in mm  
Alterations reserved without notice

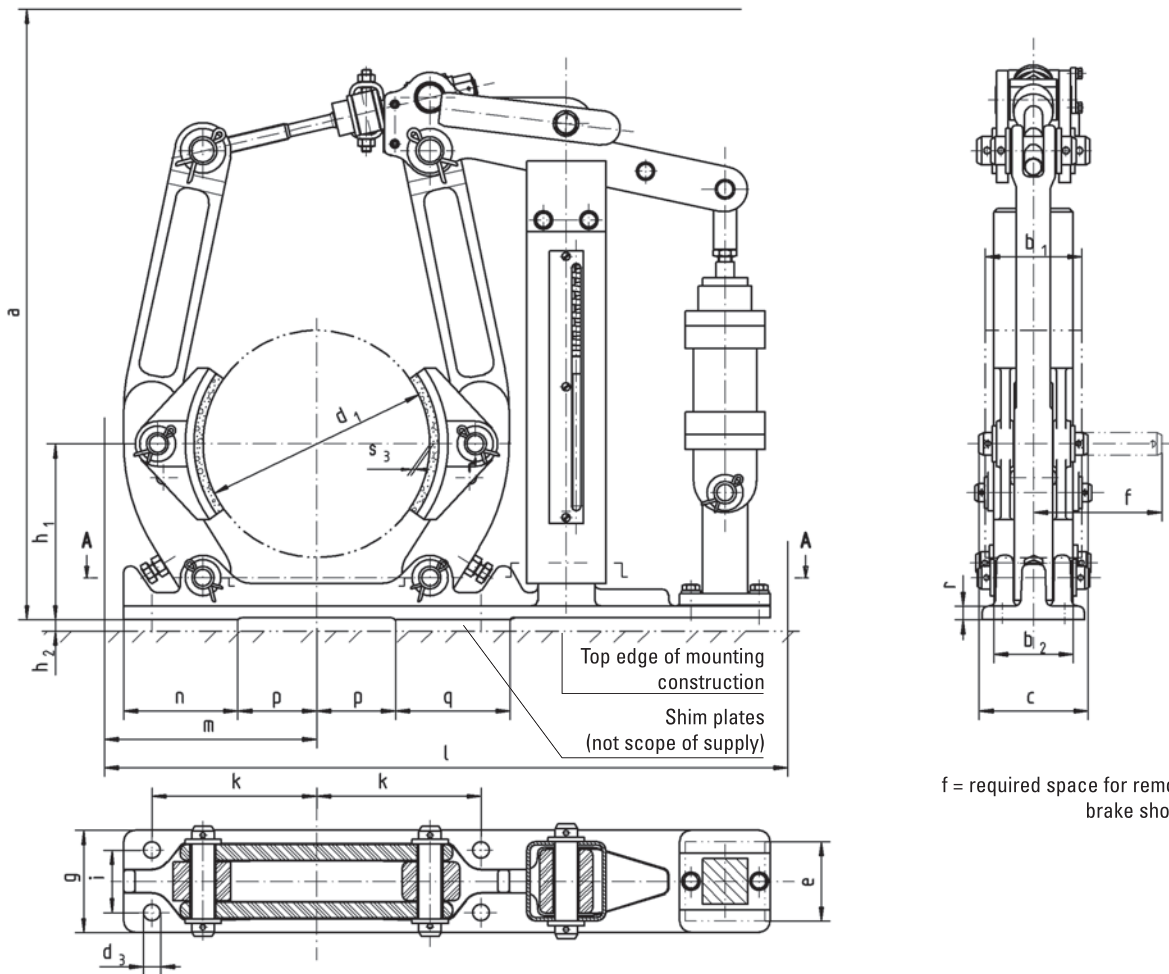
Brake type	Thruster type	$M_{BR \max}$ (Nm) $\mu=0,4^*$	$a_{\max}$	$b_1$	$b_2$	$c$	$d_1$	$d_3$	$e$	$f$	$g$	$h_1$	$h_2$	$i$	$k$	$l_{\max}$	$m$	$n$	$p$	$q$	$r$	$s_3$	kg
EBNR 200-23/5 cd	Ed 23/5 cd	110	590						160	115	90	155	5	55	145	665	185	100	70	100	12	1	22
EBNR 200-30/5 cd	Ed 30/5 cd	170	615	75	70	96	200	14	195														
EBNR 200-50/6 cd	Ed 50/6 cd	280	625																				
EBNR 250-23/5 cd	Ed 23/5 cd	130	590						160							770							
EBNR 250-30/5 cd	Ed 30/5 cd	200	615						195							810	205	105	95	105	13	1,2	26
EBNR 250-50/6 cd	Ed 50/6 cd	350	625	95	90	115	250	18	135	100	185	5	65	180									
EBNR 250-80/6 cd	Ed 80/6 cd	570																					
EBNR 315-30/5 cd	Ed 30/5 cd	250							160							920							
EBNR 315-50/6 cd	Ed 50/6 cd	440	785	118	110	140	315	18	195	165	110	225	5	80	220	1000	300	110	133	240	13	1,2	44
EBNR 315-80/6 cd	Ed 80/6 cd	700							240							990							
EBNR 315-121/6 cd	Ed 121/6 cd	1100	890																				
EBNR 400-50/6 cd	Ed 50/6 cd	550							195							1075							
EBNR 400-80/6 cd	Ed 80/6 cd	900	865	150	140	167	400	22	195	140	270	10	100	270			310	135	165	280	15	1,5	79
EBNR 400-121/6 cd	Ed 121/6 cd	1400	895						240							1065							
EBNR 400-201/6 cd	Ed 201/6 cd	2300																					
EBNR 500-50/6 cd	Ed 50/6 cd	660							195							1210							
EBNR 500-80/6 cd	Ed 80/6 cd	1080	910	190	180	210	500	22	245	170	330	10	130	325			370	155	210	315	20	1,5	122
EBNR 500-121/6 cd	Ed 121/6 cd	1730							240							1200							
EBNR 500-201/6 cd	Ed 201/6 cd	2740	960																				
EBNR 630-121/6 cd	Ed 121/6 cd	2170																					
EBNR 630-201/6 cd	Ed 201/6 cd	3440	1140	236	225	250	630	27	240	300	220	410	10	170	400	1320	450	150	280	170	25	2	195
EBNR 630-301/6 cd	Ed 301/6 cd	5070																					
EBNR 710-121/6 cd	Ed 121/6 cd	2460																					
EBNR 710-201/6 cd	Ed 201/6 cd	3890	1225	265	255	280	710	27	240	335	240	460	10	190	450	1515	520	150	335	175	25	2	266
EBNR 710-301/6 cd	Ed 301/6 cd	5740																					

# Drum Brake Type PBNi

Brake release by **pneumatic cylinder**  
 Dimensions (DIN 15435) and technical data



Rev. 09-02



f = required space for removing brake shoe pin

Brake is available also as "pneumatic applied" version (PBNd, upon request)

\*) Average friction factor of standard material combination

All dimensions in mm  
 Alterations reserved without notice

Brake type	Operating pressure, bar	$M_{BR \max} (Nm)$ $\mu=0,4^*$	$a_{\max}$	$b_1$	$b_2$	c	$d_1$	$d_3$	e	f	g	$h_1$	$h_2$	i	k	$l_{\max}$	m	n	p	q	r	$s_3$	kg
PBNi 200-30	6	365	500	75	70	96	200	14	50	115	90	155	5	55	145	590	185	100	70	100	12	1	22
PBNi 250-30	6	470	500	95	90	115	250	18	50	135	100	185	5	65	180	700	205	105	95	105	13	1,2	28
PBNi 250-40		65																					
PBNi 315-40	6	1150	665	118	110	140	315	18	65	165	110	225	5	80	220	900	300	110	133	240	13	1,2	47
PBNi 315-50		70																					
PBNi 400-50	6	2000	680	150	140	167	400	22	70	195	140	270	10	100	270	965	310	135	165	280	15	1,5	82
PBNi 400-60		80																					
PBNi 500-50	6	2950	830	190	180	210	500	22	70	245	170	330	10	130	325	1120	370	155	210	315	20	1,5	122
PBNi 500-60		80																					
PBNi 500-80		100																					
PBNi 500-100		1150																					
PBNi 630-60	6	4700	990	236	225	250	630	27	80	300	220	410	10	170	400	1230	450	150	280	170	25	2	196
PBNi 630-80		100																					
PBNi 630-100		124																					
PBNi 710-60		1275																					
PBNi 710-80	6	5300	1080	265	255	280	710	27	80	335	240	460	10	190	450	1445	520	150	335	175	25	2	266
PBNi 710-100		100																					
PBNi 710-100	6	9650							124						1470								

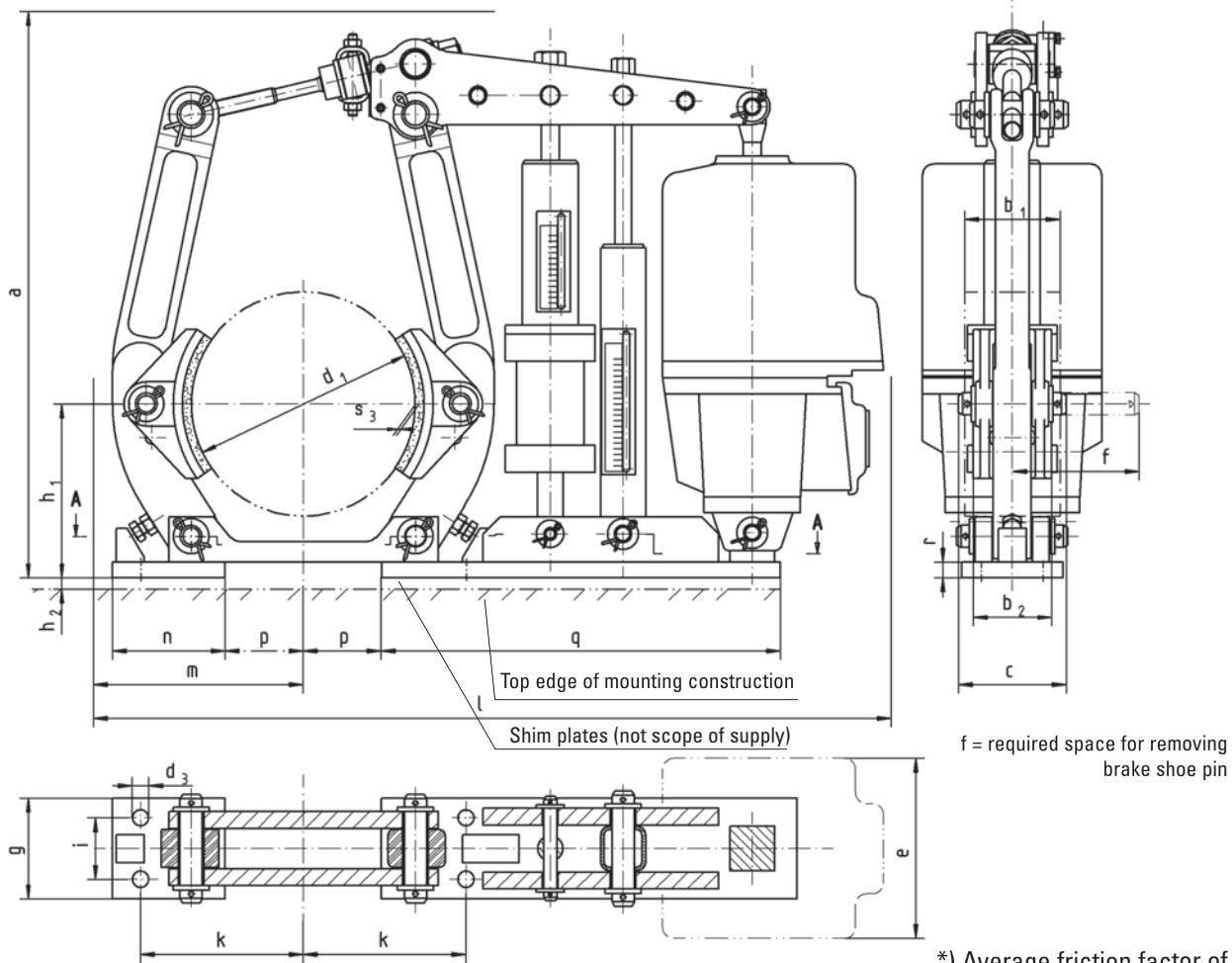
# Drum Brake Type EBN-2 St

2-step brake with hydraulic retarding device

Dimensions (DIN 15435) and technical data



Rev. 09-02



\*) Average friction factor of standard material combination

All dimensions in mm  
Alterations reserved without notice

Brake type	Thruster type	$M_{BR\ max} (Nm)$ $\mu=0,4^*$	$a_{max}$	$b_1$	$b_2$	c	$d_1$	$d_3$	e	f	g	$h_1$	$h_2$	i	k	$l_{max}$	m	n	p	q	r	$s_3$	kg
EBN-2St 200-23/5	Ed 23/5	140	520	75	70	96	200	14	160	115	90	155	5	55	145	720	185	100	70	350	12	1	25
EBN-2St 200-30/5	Ed 30/5	230							195							750							
EBN-2St 200-50/6	Ed 50/6	360	563	95	90	115	250	18	160	135	100	185	5	65	180	870	205	105	95	405	13	1,2	31
EBN-2St 250-23/5	Ed 23/5	180	195						910														
EBN-2St 250-30/5	Ed 30/5	290	582	118	110	140	315	18	160	165	110	225	5	80	220	1020	300	110	133	430	13	1,2	50
EBN-2St 250-50/6	Ed 50/6	530							195							1100							
EBN-2St 250-80/6	Ed 80/6	720	790	150	140	167	400	22	160	195	140	270	10	100	270	1090	310	135	165	500	15	1,5	88
EBN-2St 315-30/5	Ed 30/5	420							240							1180							
EBN-2St 315-50/6	Ed 50/6	650	680	190	180	210	500	22	160	245	170	330	10	130	325	1270	370	155	210	315	20	1,5	128
EBN-2St 315-80/6	Ed 80/6	1190							195							1270							
EBN-2St 315-121/6	Ed 121/6	1500	790	845	190	210	500	22	160	245	170	330	10	130	325	1270	370	155	210	315	20	1,5	128
EBN-2St 400-50/6	Ed 50/6	760	240						1270														
EBN-2St 400-80/6	Ed 80/6	1400	790	190	180	210	500	22	160	245	170	330	10	130	325	1270	370	155	210	315	20	1,5	128
EBN-2St 400-121/6	Ed 121/6	2120							240							1270							
EBN-2St 400-201/6	Ed 201/6	2500	845	190	180	210	500	22	160	245	170	330	10	130	325	1270	370	155	210	315	20	1,5	128
EBN-2St 500-50/6	Ed 50/6	960							240							1270							
EBN-2St 500-80/6	Ed 80/6	1770	790	190	180	210	500	22	160	245	170	330	10	130	325	1270	370	155	210	315	20	1,5	128
EBN-2St 500-121/6	Ed 121/6	2680							240							1270							
EBN-2St 500-201/6	Ed 201/6	4350	790	845	190	180	210	22	160	245	170	330	10	130	325	1270	370	155	210	315	20	1,5	128
EBN-2St 500-201/6	Ed 201/6	4350	240						1270														

# Drum Brake Type EBN-2 St

as 2-step brake – Functional description



Rev. 09-02

Two directions are becoming apparent today in the use of double shoe brakes - apart from lifting gear brakes:

First of all, the use as a straight stopping brake and secondly as a brake for markedly special applications.

The 2-step brake offers exceptional possibilities in this area of special tasks.

This type designation is to be understood as covering brakes which:

- a) act with an adjustable partial torque A immediately after the actuator is switched off and in which
- b) the remaining braking torque B takes effect in an adjustable manner and is delayed in time with regard to torque A.

Thus, the max. braking torque = torque A + torque B

To generate the braking torque, our 2-step brakes have two spring systems fitted with pressure springs which act separately.

The spring 1 generating torque A, is firmly connected to the actuator (release) lever and is tensioned during the release movement. It is adjustable from about 20-50% of the maximum brake torque and takes effect after the actuator is switched off during the normal engagement time.

The spring system 2 generating torque B, is also tensioned during the release movement, generates 30-70% of the maximum braking torque and is firmly connected to a small hydraulic system.

Spring 2 is not firmly connected to the actuator lever; the spring and piston rod moves between two stops in a guide bushing in a crosspiece connected to the actuator lever.

When the actuator is switched off, the brake engages through the action of spring 1. Spring 2 must first displace oil in the hydraulic system through a choke adjustable from the outside before the braking torque generated by it can take effect.

The delaying hydraulic system is the heart of the 2-step brake. It is a small, compact, self-contained system without an external bypass, without an expansion tank. The piston is carried on bearings at both ends, the seals are teflon elements of a new type which reduce friction and the slip-stick effect to a minimum in comparison with usual sleeves and allow a hydraulic system to be used also in brakes with small actuators. The adjustment screw for the throttle valve is easily accessible and protrudes only slightly beyond the housing. The delay can be adjusted from 1 to about 12 seconds.

Filling medium is a special oil.

The whole system is extremely simple and robust, without easily damaged valves. It is easy to fill and to bleed, and consequently meets the basic requirement, also for small maintenance enterprises without specialists, of being clearly arranged, adjustable and capable of repair.

The hydraulic system can be used in all positions, horizontally or vertically.

## Range of applications:

In particular, these concern belt drives and crane slewing gear. Also for braking operations in which the partial torque A is sufficient for normal soft braking but where the full braking torque A+B must be available later for stopping purposes as with certain crane travelling gear. Consideration must be given to effects of wind pressure.

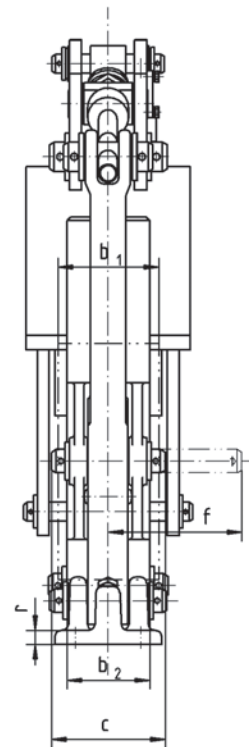
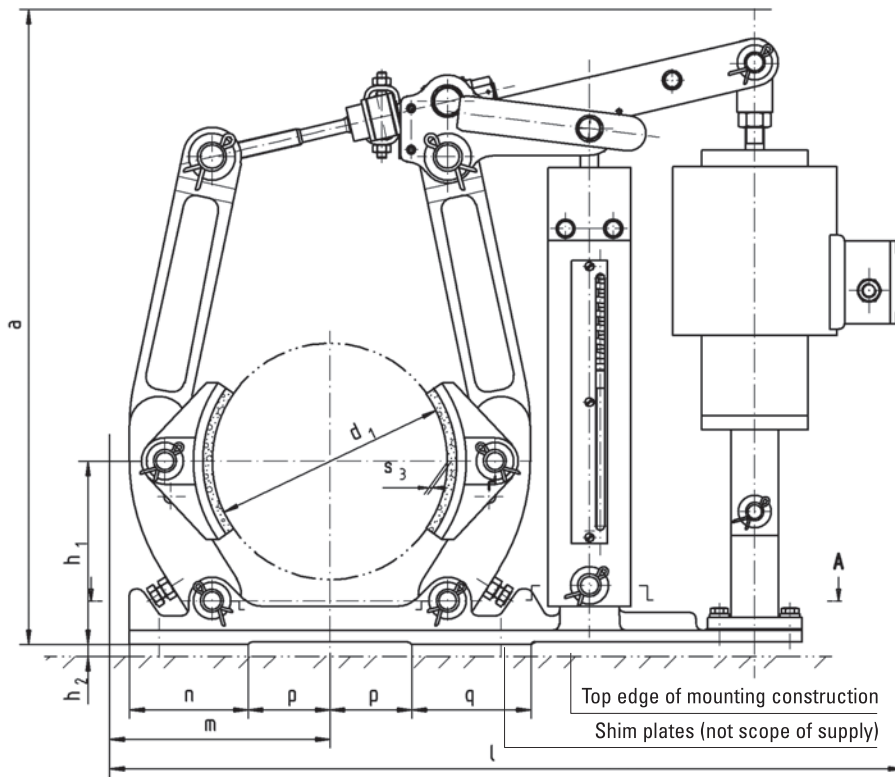
When the time factor in the delay is set appropriately, inching is also possible without the torque B being applied.

# Drum Brake Type MBN

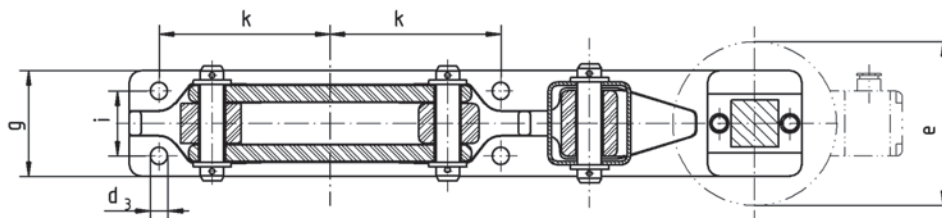
Brake release by DC magnet  
Dimensions (DIN 15435) and technical data



Rev. 09-02



f = required space for removing brake shoe pin



\*) Average friction factor of standard material combination

All dimensions in mm  
Alterations reserved without notice

Brake type	Magnet Type	$M_{BR\ max} \ (Nm) \ \mu=0,4^*$																						
		without forcing	with forcing	$a_{max}$	$b_1$	$b_2$	c	$d_1$	$d_3$	e	f	g	$h_1$	$h_2$	i	k	$l_{max}$	m	n	p	q	r	$s_3$	kg
MBN 200-141	GH-141	120	420	563	75	70	96	200	14	140	115	90	155	5	55	145	670	185	100	70	100	12	0,8	22
MBN 250-141	GH-141	145	535	572	95	90	115	250	18	140	135	100	185	5	65	180	790	205	105	95	105	13	1	28
MBN 250-160	GH-160	250	800							160							800							
MBN 315-141	GH-141	175	625	665	118	110	140	315	18	140	165	110	225	5	80	220	965	300	110	133	240	13	1	47
MBN 315-160	GH-160	300	1015							160							975							
MBN 400-160	GH-160	310	1080	680	150	140	167	400	22	160	195	140	270	10	100	270	1055	310	135	165	280	15	1,2	82
MBN 400-180	GH-180	495	1780							180							1065							
MBN 500-160	GH-160	360	1225	830	190	180	210	500	22	160	245	170	330	10	130	325	1190	370	155	210	315	20	1,2	122
MBN 500-180	GH-180	620	2000							180							1200							



To connect the MBN to AC voltage either a rectifier (without forcing) or a rectifier and economizer unit (with forcing) is required.

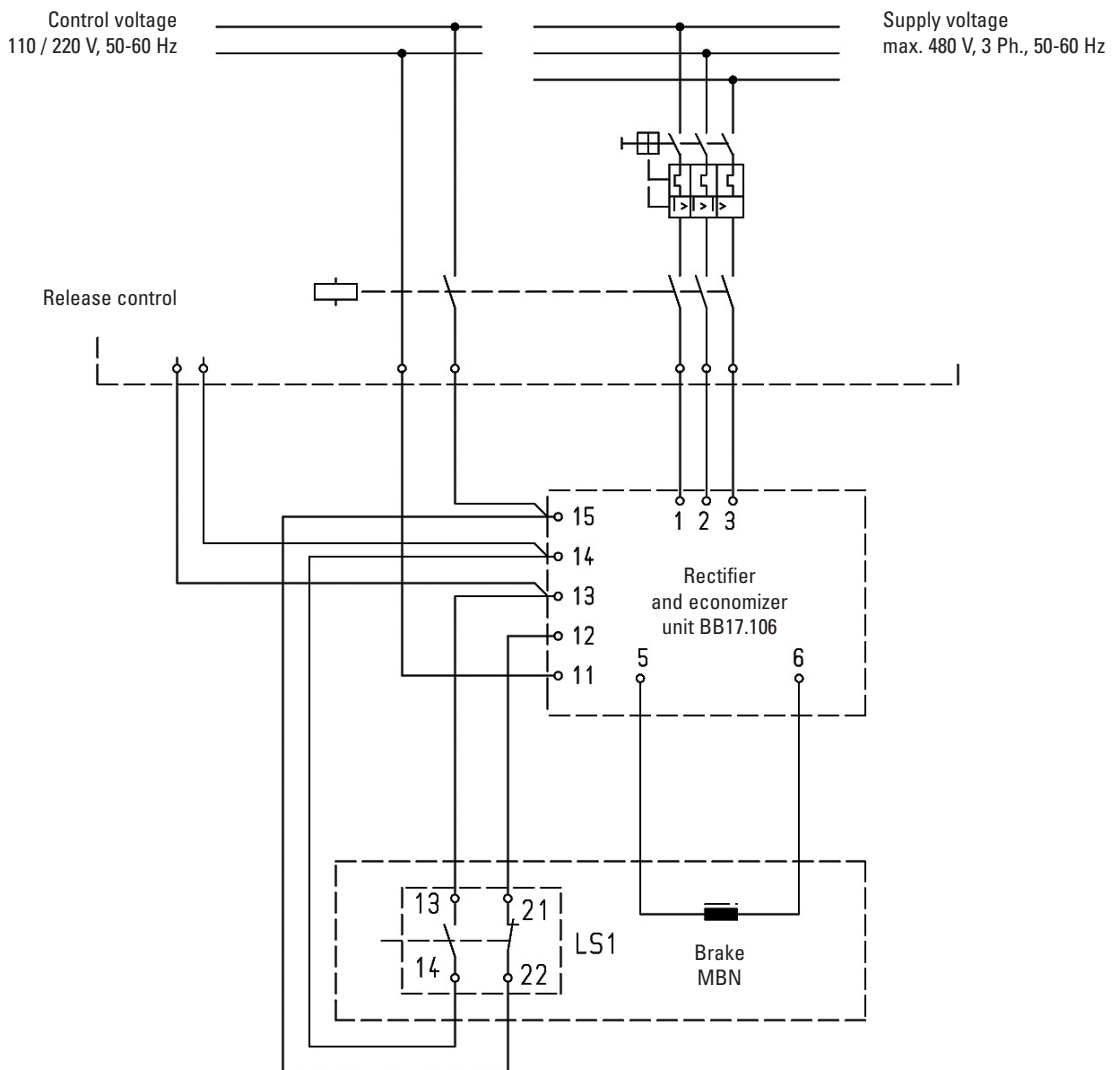


# Drum Brake Type MBN

Rectifier and economizer unit BB17.106



Rev. 09-02



**One** brake can be connected to the BB17.106, but a rectifier and economizer unit type BB17.141 for the connection **of up to four** brakes is available as well.

(Technical data for BB17.141 upon request)

Supply voltage:  
Up to 480 V AC, 3 Ph, 50/60 Hz

Control voltage:  
110-120 V AC or 220-240 V AC 50/60 Hz

The rectifier and economizer unit BB17.106 is available on circuit board or with enclosure IP65. Dimensions of the enclosure approx. 200 x 200 x 128 mm (W x H x D).

## Functional description:

The brake is released by forcing the solenoid for a short time to achieve higher forces. After the brake is fully released, the solenoid is supplied with a low holding voltage for continuous duty.

The switching back to holding voltage is done by the limit switch release control. Therefore, the limit switch release control is a necessary feature of the MBN drum brake.



To connect the MBN drum brake to AC voltage and in order to achieve higher braking torques, a rectifier and economizer unit type BB17.106 is required.

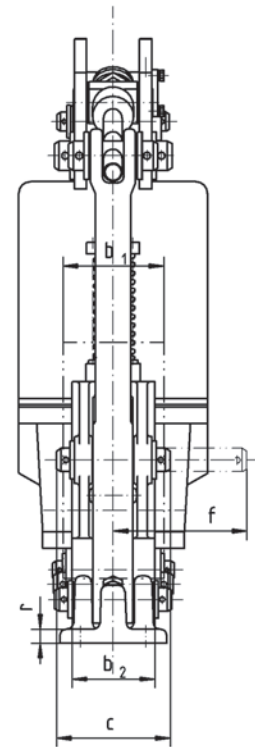
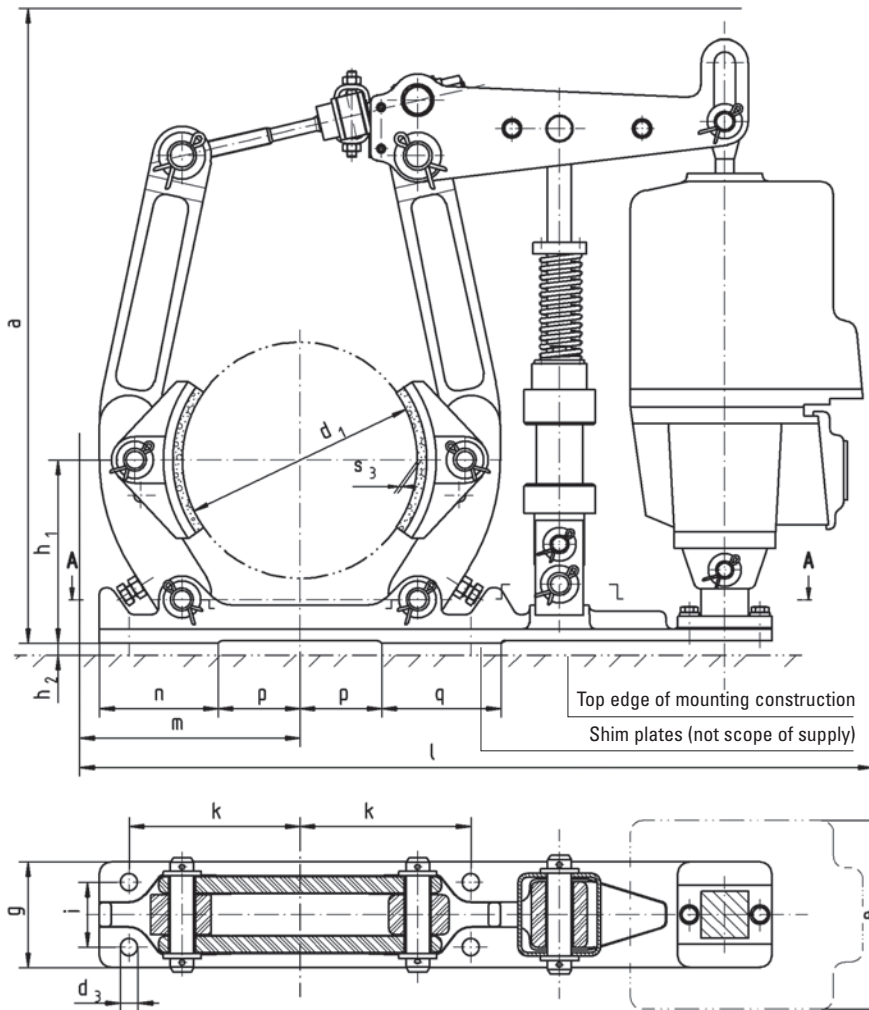
E

# Drum Brake Type HBNdE

Dimensions (DIN 15435) and technical data



Rev. 11-04



f = required space for removing brake shoe pin

\*) Average friction factor of standard material combination

All dimensions in mm  
Alterations reserved without notice

Master cylinder type	
31,75	25,4

Brake type	Thruster type	$M_{BR \max}$ (Nm) $\mu=0,4^*$			$a_{\max}$	$b_1$	$b_2$	$c$	$d_1$	$d_3$	$e$	$f$	$g$	$h_1$	$h_2$	$i$	$k$	$l_{\max}$	$m$	$n$	$p$	$q$	$r$	$s_3$	kg
		2 Brakes 1 Foot pedal	1 Brake 1 Foot pedal	Static torque																					
HBNdE 200-23/5c	Ed 23/5c	200	200	80	550	75	70	96	200	14	160	115	90	155	5	55	145	665	185	100	70	100	12	1	23
HBNdE 200-30/5c	Ed 30/5c	200	200	170	550	95	90	115	250	18	160	135	100	185	5	65	180	770	205	105	95	105	13	1,2	28
HBNdE 250-23/5c	Ed 23/5c	280	550	100	550	95	90	115	250	18	160	135	100	185	5	65	180	770	205	105	95	105	13	1,2	28
HBNdE 250-30/5c	Ed 30/5c	280	550	180	560	95	90	115	250	18	160	135	100	185	5	65	180	770	205	105	95	105	13	1,2	28
HBNdE 250-50/6c	Ed 50/6c	280	550	350	560	95	90	115	250	18	195	135	100	185	5	65	180	810	205	105	95	105	13	1,2	28
HBNdE 315-23/5c	Ed 23/5c	350	700	150	660	118	110	140	315	18	160	165	110	225	5	80	220	920	300	110	133	240	13	1,2	47
HBNdE 315-30/5c	Ed 30/5c	350	700	320	660	118	110	140	315	18	160	165	110	225	5	80	220	920	300	110	133	240	13	1,2	47
HBNdE 315-50/6c	Ed 50/6c	350	700	500	660	118	110	140	315	18	195	165	110	225	5	80	220	1000	300	110	133	240	13	1,2	47
HBNdE 315-80/6c	Ed 80/6c	350	700	750	660	118	110	140	315	18	195	165	110	225	5	80	220	1000	300	110	133	240	13	1,2	47



The HBNdE releases and applies via thruster (with C-spring). The brake torque is not adjustable. Additionally, the brake can be applied by a hydraulic foot pedal. (Further sizes upon request.)

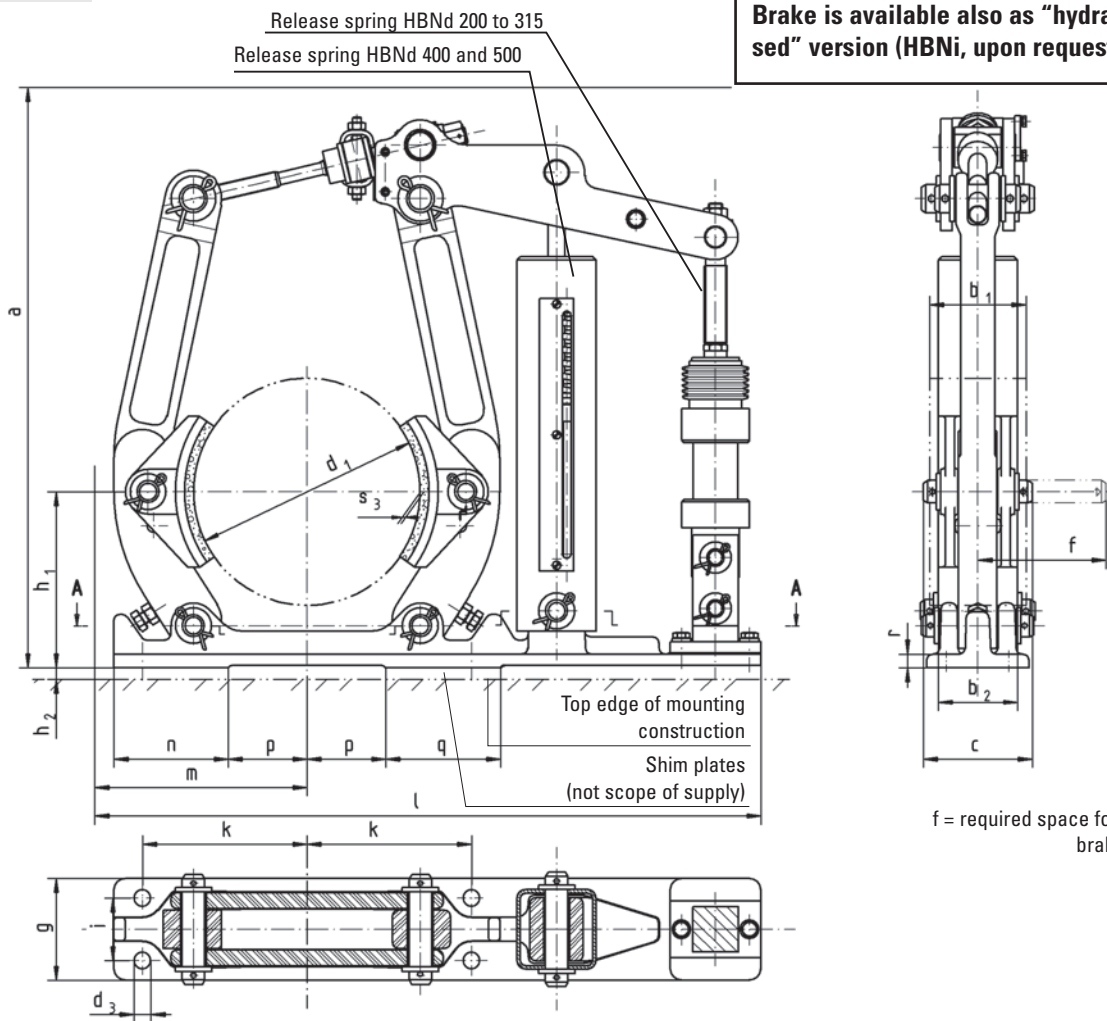
# Drum Brake Type HBNd

Spring released, **hydraulic** applied (Foot pedal)  
 Dimensions (DIN 15435) and technical data



Rev. 09-02

Brake is available also as "hydraulic released" version (HBNi, upon request)



Execution consists of:

0	1 Brake 1 Foot pedal with simple main cylinder	31,75
1	consists of 2 Brakes 1 Foot pedal with simple main cylinder	31,75
2	consists of 2 Brakes 1 Foot pedal with step main cylinder	31,75 28,57

\*) Average friction factor of standard material combination

All dimensions in mm  
 Alterations reserved without notice

Brake type	Execution	$M_{BR\ max} (Nm)$ $\mu=0,4^*$	$a_{max}$	$b_1$	$b_2$	c	$d_1$	$d_3$	f	g	$h_1$	$h_2$	i	k	$l_{max}$	m	n	p	q	r	$s_3$	kg
HBNd 200-25	0	300	500	75	70	96	200	14	115	90	155	5	55	145	590	185	100	70	100	12	1	25
HBNd 200-25	1																					
HBNd 250-25	0	380	500	95	90	115	250	18	135	100	185	5	65	180	700	205	105	95	105	13	1,2	31
HBNd 250-25	1																					
HBNd 315-32	1	800	665	118	110	140	315	18	165	110	225	5	80	220	900	300	110	133	240	13	1,2	49
HBNd 315-25	2	900																				
HBNd 400-32	1	1050	680	150	140	167	400	22	195	140	270	10	100	270	965	310	135	165	280	15	1,5	84
HBNd 400-25	2	1170																				
HBNd 500-32	1	1300	830	190	180	210	500	22	245	170	330	10	130	325	1110	370	155	210	315	20	1,5	126
HBNd 500-32	2	1450																				



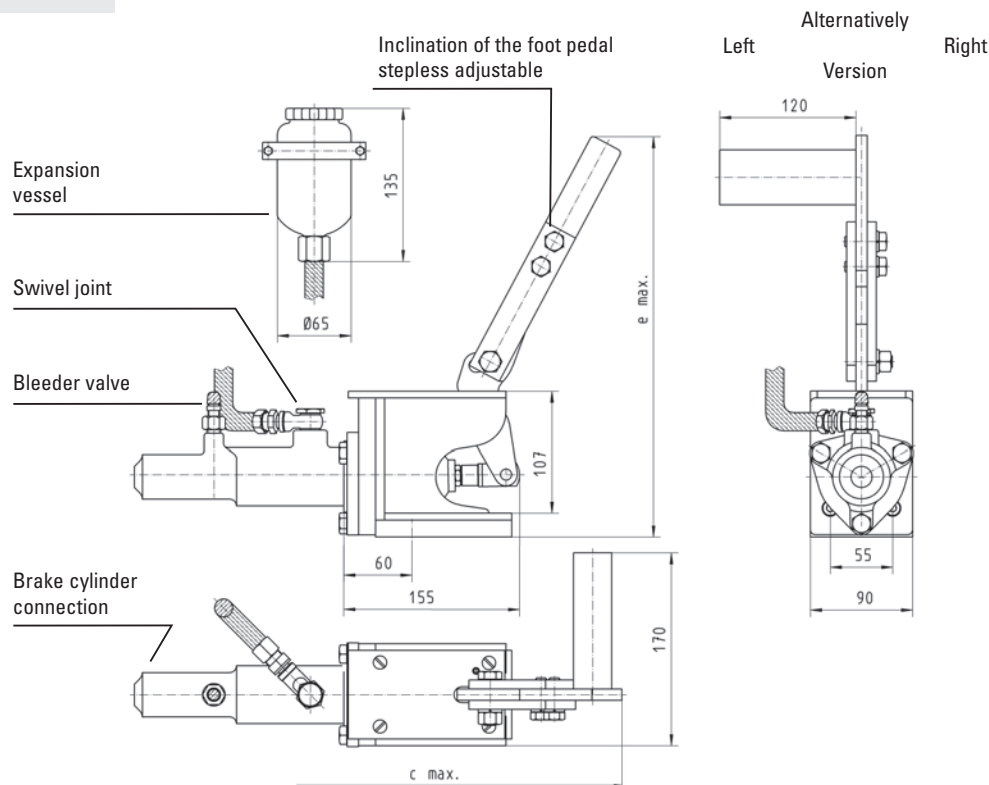
The calculated brake torques are based on a foot force of 150 N.

# Foot Pedal

for hydraulic brakes



Rev. 09-02



## Hydraulic foot pedal for the installation in cabin floors

Execution	a	b	c <sub>Max</sub>	d	e <sub>Max</sub>	Weight <sub>kg</sub>
1 with simple main cylinder	300	60	485	6	330	6,8
2 with two step cylinder	355	40	540	21	345	9,8

**In order to operate two brakes synchronously by one foot pedal, the pipe connections from the foot pedal to each brake must be of the same length.**

### Scope of supply:

- Brake with built-in slave cylinder, bleeder valve and straight screw union for the connection of:
- One high-pressure hose, 500 mm long, with straight screw union, for connection to the pressure line.
- Expansion vessel with straight screw union.
- Foot pedal with attached master cylinder, a swivelling screw-fitting for the connection of the expansion vessel and a bleeder valve.
- Two high-pressure hoses, 300 mm long, for the connections of the master-cylinder pressure line and slave-cylinder pressure line to the expansion vessel.

PistonØ	ca. Pressure (at 150N foot force)
25,4	24 bar
28,5	18 bar
31,8	15 bar
38,0	10 bar

All the screw unions are arranged for pipe outer dia 10 mm. Pipes and other connection elements are not scope of supply but can be supplied if desired.



Please observe the notes on the following page for the piping and commissioning of the system.

# Foot Pedal

Notes on the piping and commissioning



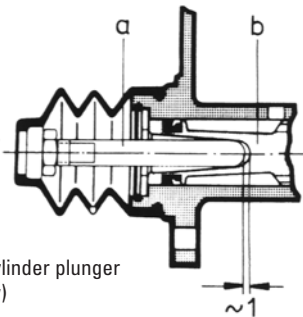
Rev. 09-02

## General remarks:

Only brake fluid as specified in SAE J-1703e and DOT3 / DOT4 may be used. The use of even slight additions of hydraulic fluid or other mineral oils (residues in unclean pipework) leads in every case to the destruction of the seal elements and invalidates any guarantee granted by the manufacturer.

### 1) Master Cylinder

This cylinder may only be installed in a horizontal position, with connection on top for the expansion vessel (swivelling screw fitting). The high-pressure hose to the expansion vessel must not be kinked downwards but must be laid in a constantly ascending manner.



Master-cylinder plunger (part-view)

When actuated, the foot pedal is held by a pressure spring in the "off"-position against a stop, whereby there should be about 1 mm play between the plunger (a) and the top of the piston (b). This is to be taken into consideration if the factory setting of the stop has been disturbed.

### 2) Slave Cylinder (Brake)

Installation is possible in any position but the air bleed cock must always be arranged at the highest point. The slave cylinder is to be connected to the pressure line by the high-pressure hose supplied to allow movement of the cylinder when the brake is actuated.

### 3) Pipework

Material: Precision pipe as specified in DIN 2391, annealed and descaled. Dimensions dia. 10x1. Pipe bends are to be fabricated in a pipe bending device to avoid cross-sectional restrictions. After cutting to size and before laying, pipe sections are to be thoroughly flushed out (spirit) and blown through.

If possible, pressure lines are to be laid with a slight slope. If air pockets through ascending and descending loops cannot be avoided, a bleeding facility must be provided at the highest point.

### 4) High-pressure hoses

These hoses must be resistant to brake fluid. They must not be painted and are to be shielded from ambient heat.

### 5) Brake fluid

The brake fluid assures operational reliability down to -40°C. Depending on the quality, the wet boiling point (after water has been absorbed from the air) is between 140 and 155°C.

### 6) Filling and bleeding of the system

#### a) without filling and bleeding unit

Fill expansion vessel and in the subsequent filling and bleeding operation ensure that there is always sufficient fluid in the vessel by topping up. The air from the line to the master cylinder rises automatically when the line has been laid correctly. Press the foot pedal right down on the stop once or twice and with the pedal fully actuated first bleed the master cylinder. Close the bleeder valve.

Then open the valve at the slave cylinder (1-2 turns), fit transparent bleed tube and place other end in a receptacle. Pump foot pedal until air bubbles are no longer seen. At the same time, check the level of fluid in the expansion vessel to ensure that no air can be sucked in!

Close bleeder valve and actuate brake several times via the pedal. Then repeat bleeding procedure. The fluid pumped through during the bleeding procedure should not be reused.

#### b) with filling and bleeding unit (ATE, FAG or similar)

Small, moderately priced units are available on the market which can be connected to the expansion vessel and force the fluid under pressure through the system. Through the flexible separation of fluid and compressed air, the two elements cannot affect each other.

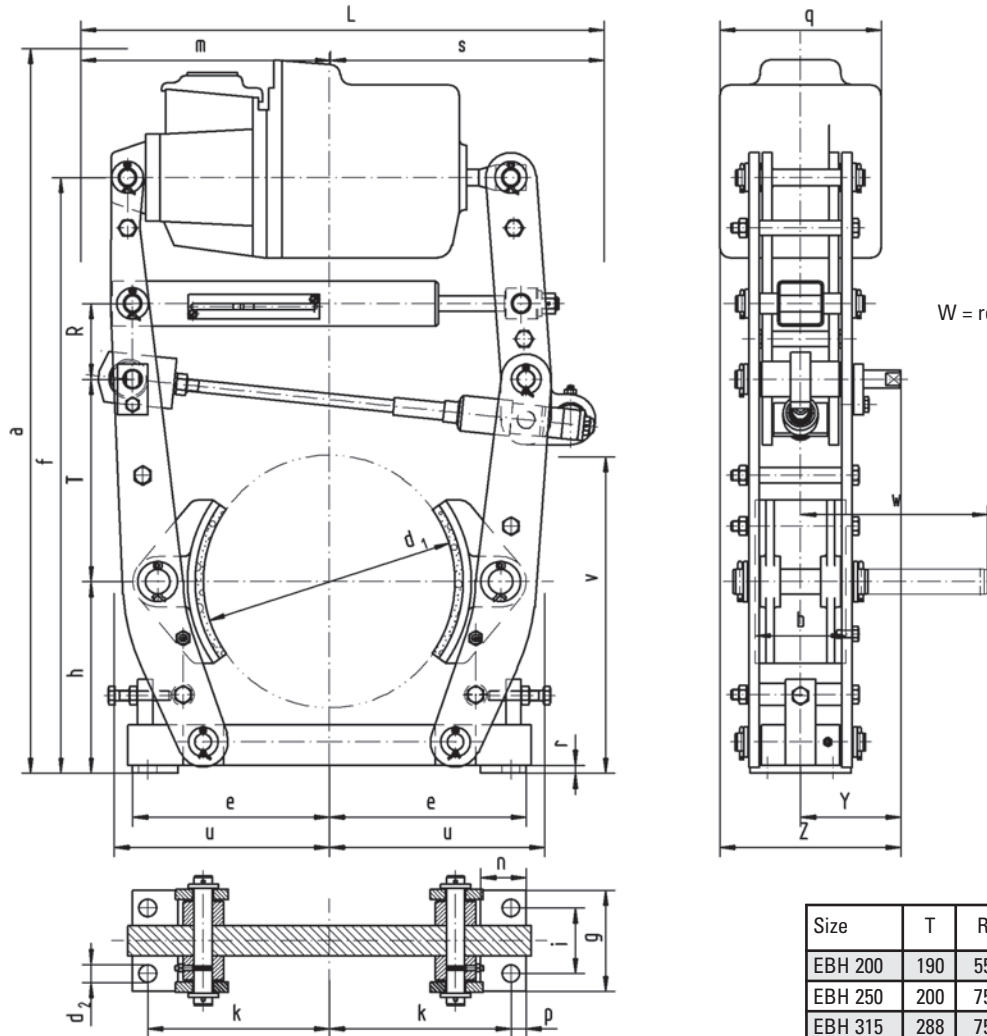
Advantage: The complete procedure can be carried out by one person only. Filling and bleeding will be quicker, safer and more straight forward. The filling and bleeding units come with operating instructions which must be followed exactly when working with such units.

# Drum Brake Type EBH

Dimensions (DIN 15435) and technical data



Rev. 12-06



W = required space for removing brake shoe pin

Size	T	R	Y	Z	Weight (kg)
EBH 200	190	55	95	190	17
EBH 250	200	75	105	210	23
EBH 315	288	75	125	250	36
EBH 400	305	100	140	280	70
EBH 500	370	116	170	340	130
EBH 630	upon request				
EBH 710	upon request				

\*) Average friction factor of standard material combination

All dimensions in mm  
Alterations reserved without notice

Brake type	Thruster type	$M_{BR\ max}$ (Nm) $\mu=0,4^*$	a	b	c	d <sub>1</sub>	d <sub>2</sub>	e	f	g	h	i	k	L	m	n	p	q	r	s	u	w
EBH 200-23/5	Ed 23/5	200	640	70	110	200	14	165	520	90	160	55	145	400	190	45	15	160	8	210	180	115
EBH 200-30/5	Ed 30/5	280												485	220					265		
EBH 250-23/5	Ed 23/5	240	710	90	130	250	18	200	590	100	190	65	180	440	210	45	15	160	8	230	215	135
EBH 250-30/5	Ed 30/5	340												505	235					270		
EBH 250-50/6	Ed 50/6	510												600	260					340		
EBH 315-23/5	Ed 23/5	260	870	110	170	315	18	245	738	110	230	80	220	610	280	50	20	160	10	330	265	165
EBH 315-30/5	Ed 30/5	410												670	290					380		
EBH 315-50/6	Ed 50/6	600	910	140	200	400	22	305	845	140	280	100	270	690	300	135	25	195	10	390	320	195
EBH 315-80/6	Ed 80/6	1120												870	290					380		
EBH 400-50/6	Ed 50/6	700	1010	140	200	400	22	305	845	140	280	100	270	690	300	135	25	195	10	390	320	195
EBH 400-80/6	Ed 80/6	1410												870	400					470		
EBH 400-121/6	Ed 121/6	2000	1000	140	200	400	22	305	845	140	280	100	270	870	400	135	25	240	10	470	320	195
EBH 500-50/6	Ed 50/6	800												900	410					490		
EBH 500-80/6	Ed 80/6	1750	1120	180	250	500	22	360	954	170	340	130	325	740	320	150	30	195	12	420	400	245
EBH 500-121/6	Ed 121/6	2200												900	410					490		
EBH 500-201/6	Ed 201/6	4000	1110											900	410			240		490		

# Enclosures

For drum brakes type EBN – Dimensions and executions



Rev. 11-03

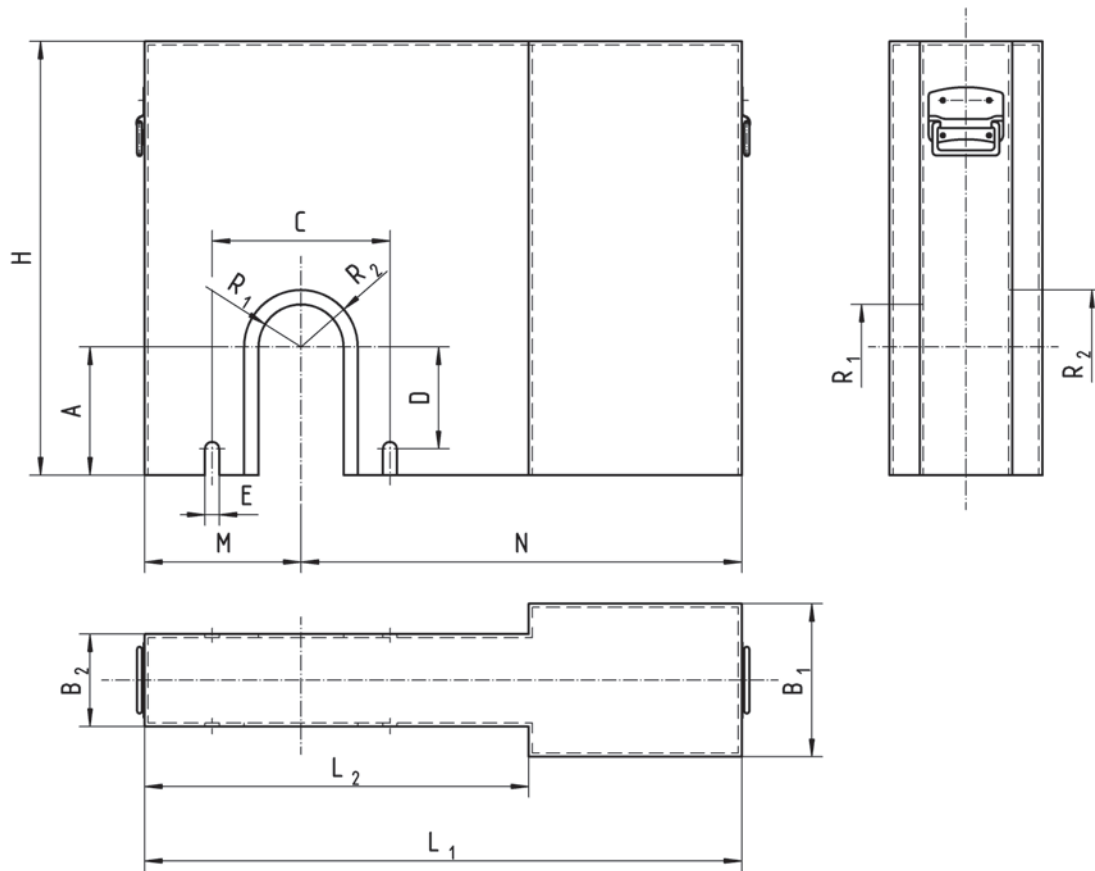


Plate thickness = 1,5mm  
 All enclosures are provided with handles  
 Other dimensions upon request

All dimensions in mm  
 Alterations reserved without notice

Brake type	A	B <sub>1</sub>	B <sub>2</sub>	C	D	E	H	L <sub>1</sub>	L <sub>2</sub>	M	N	R <sub>max</sub>
EBN 200-23/5	150	180	130	200	118	10	530	690	460	195	495	90
EBN 200-30/5		215					580					
EBN 200-50/6		215					440					
EBN 250-23/5	180	180	130	250	143	10	530	810	560	220	590	110
EBN 250-30/5		215					610					
EBN 250-50/6		215					840					
EBN 250-80/6		215					540					
EBN 315-30/5	220	180	170	315	179	12	700	960	700	320	640	140
EBN 315-50/6		215					1030					
EBN 315-80/6		215					710					
EBN 315-121/6		260					830					
EBN 400-50/6	260	215	180	400	205	12	710	1100	800	320	780	180
EBN 400-80/6		260					830					
EBN 400-121/6		260					780					
EBN 400-201/6		260					780					
EBN 500-121/6	320	280	240	500	260	12	900	1280	930	400	880	230
EBN 500-201/6												



When ordering please advise: Brake type, Dimension "R<sub>1</sub> and R<sub>2</sub>"



# Enclosures

For drum brakes type EBN – Dimensions and executions



Rev. 11-03

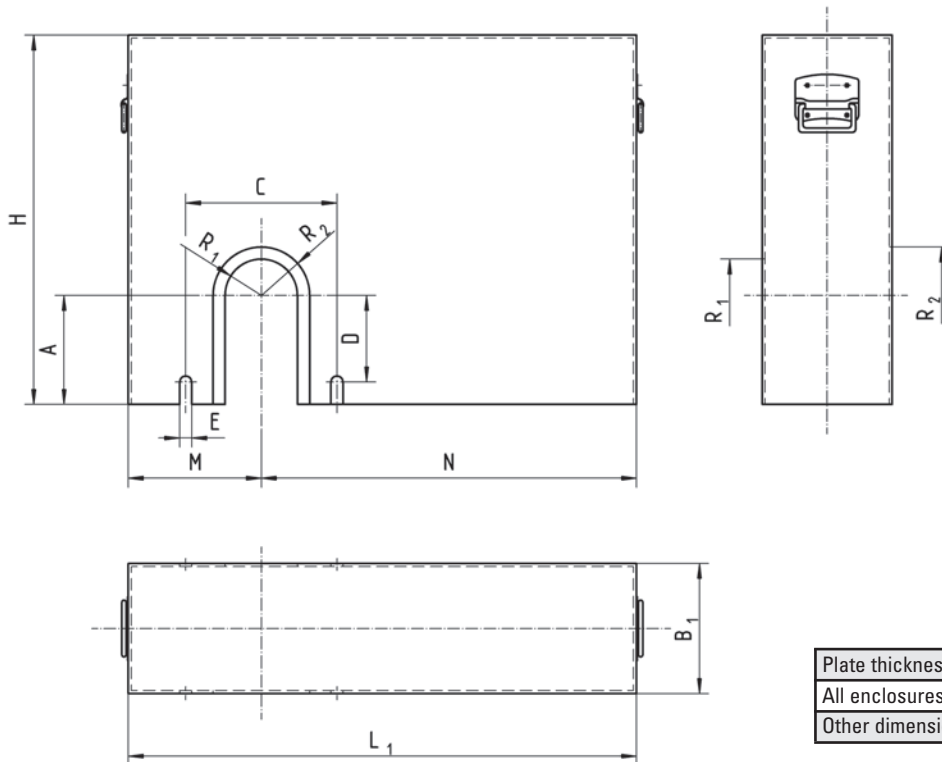


Plate thickness = 1,5mm  
 All enclosures are provided with handles  
 Other dimensions upon request

All dimensions in mm  
 Alterations reserved without notice

Brake Type	A	B	C	D	E	H	L <sub>1</sub>	M	N	R <sub>max</sub>	
EBN 200-23/5	150	180	200	118	10	530	690	195	495	90	
EBN 200-30/5		215									
EBN 200-50/6		580									730
EBN 250-23/5	180	180	250	143	10	530	810	220	590	110	
EBN 250-30/5		215									610
EBN 250-50/6						260	960		640		
EBN 250-80/6		215									610
EBN 315-30/5	220	180	315	179	12	700	1030	320	710	140	
EBN 315-50/6		215									830
EBN 315-80/6						260			880		
EBN 315-121/6		260									830
EBN 400-50/6	260	215	400	205	12	710	1100	320	780	180	
EBN 400-80/6											260
EBN 400-121/6		320				880					
EBN 400-201/6											260
EBN 500-50/6	320	280	500	260	12	880	1280	400	880	230	
EBN 500-80/6											900
EBN 500-121/6						1080					
EBN 500-201/6											900
EBN 630-121/6	400	280	630	325	14	1080	1350	470	880	290	
EBN 630-201/6											
EBN 630-301/6											
EBN 710-121/6	450	320	710	370	14	1150	1530	530	1000	330	
EBN 710-201/6											
EBN 710-301/6											



When ordering please advise: Brake type, Dimension "R<sub>1</sub> and R<sub>2</sub>"

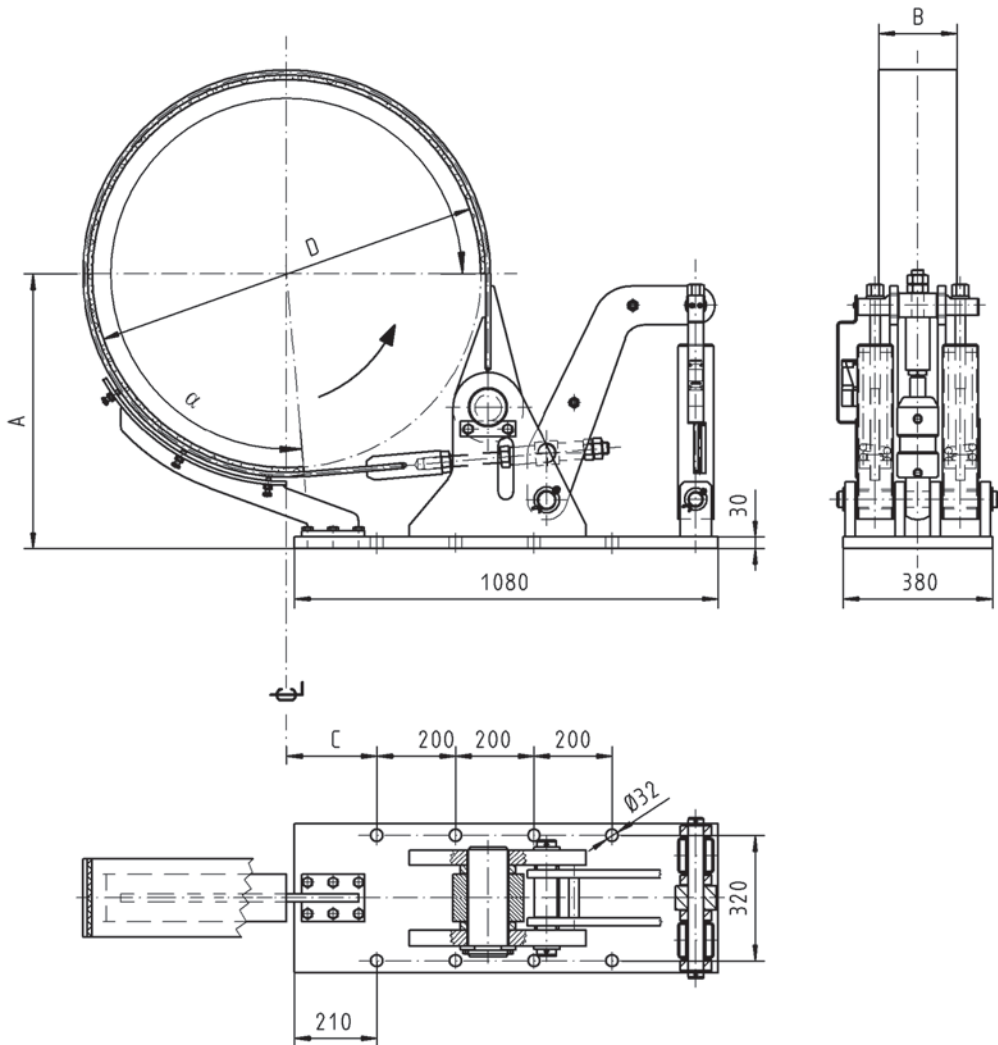


# Band Brake Type BHB

Dimensions and technical data



Rev. 11-04



**Other diameters and release by thruster upon request.**

\*) Average friction factor of standard material combination

All dimensions in mm  
Alterations reserved without notice

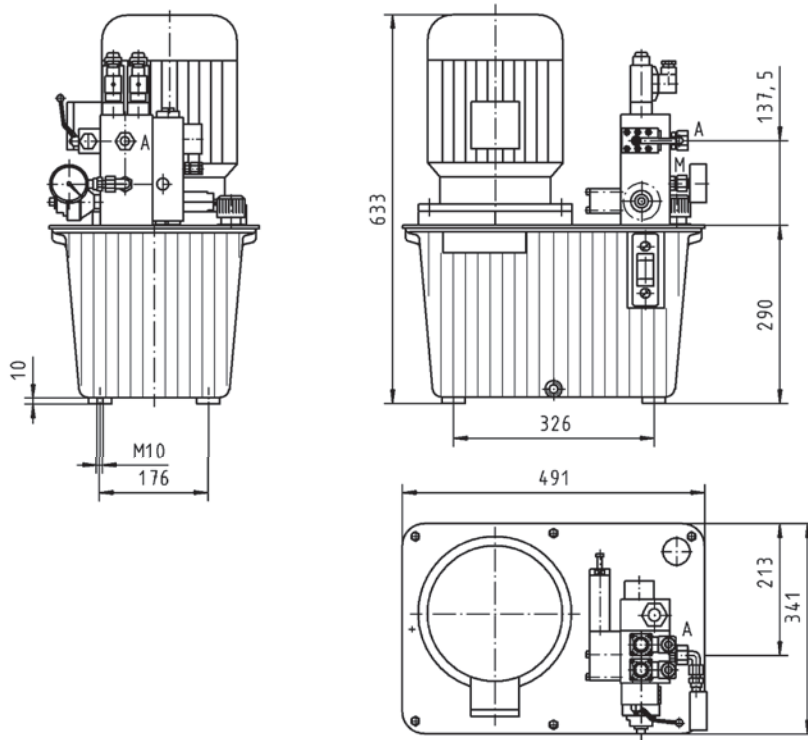
Brake type	A	D	C	E	$M_{Br}$ (kNm) $\mu=0,4^*$	Band width (B)
BHB 990-80/60	700	990	20	230	min. 60	
					<100	120
					<160	160
					max. 203	200
BHB 1110-80/60	760	1110	80	290	min. 70	
					<140	120
					<180	160
					max. 230	200
BHB 1240-80/60	825	1240	145	355	min. 60	
					<160	120
					<200	160
					max. 253	200
BHB 790-80/60 (Wrap angle 265° !)	600	790	-30	180	min. 60	120
					<100	160
					max. 130	200

# Band Brake Type BHB

Hydraulic power unit for one or more brakes



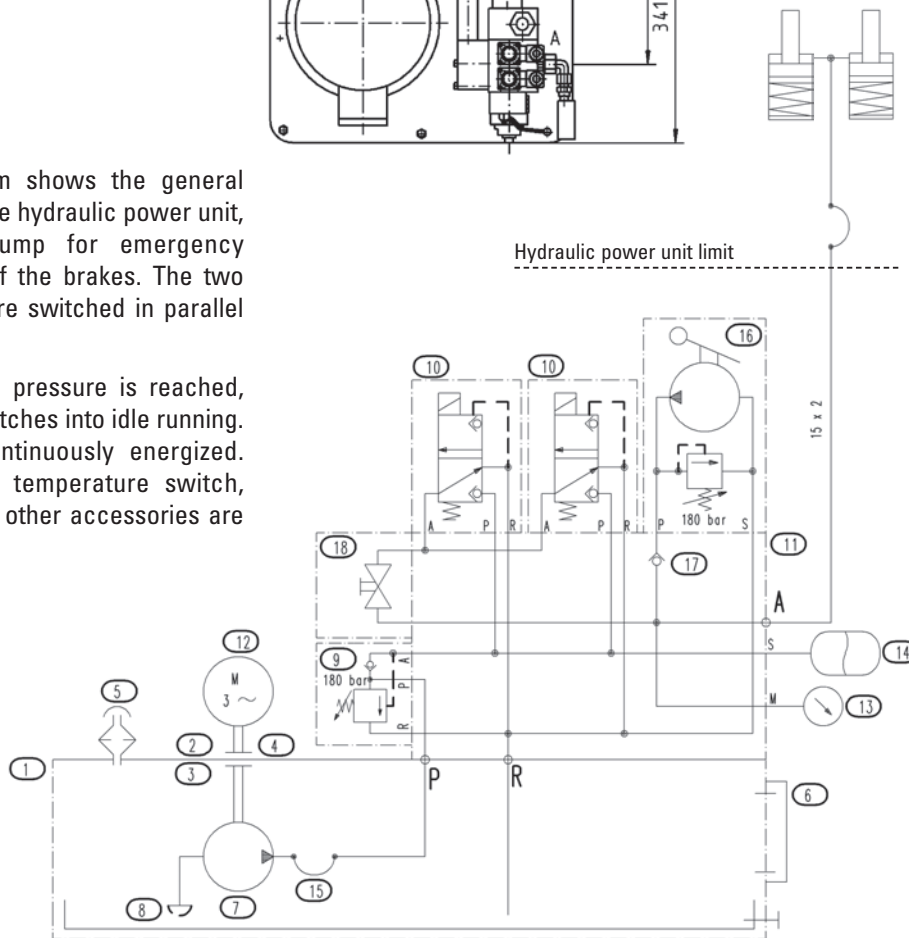
Rev. 09-02



Example:	
Motor:	3 kW
Pump:	9 l/min
Pressure:	180 bar
Tank:	30 l

The flow diagram shows the general arrangement of the hydraulic power unit, including handpump for emergency manual release of the brakes. The two solenoid valves are switched in parallel (redundancy).

After the nominal pressure is reached, the idler valve switches into idle running. The motor is continuously energized. Pressure switch, temperature switch, space heater and other accessories are available options.



All dimensions in mm  
Alterations reserved without notice



With every order we supply a complete hydraulic and electric diagram according to the order specification.