Product information

Drummotors

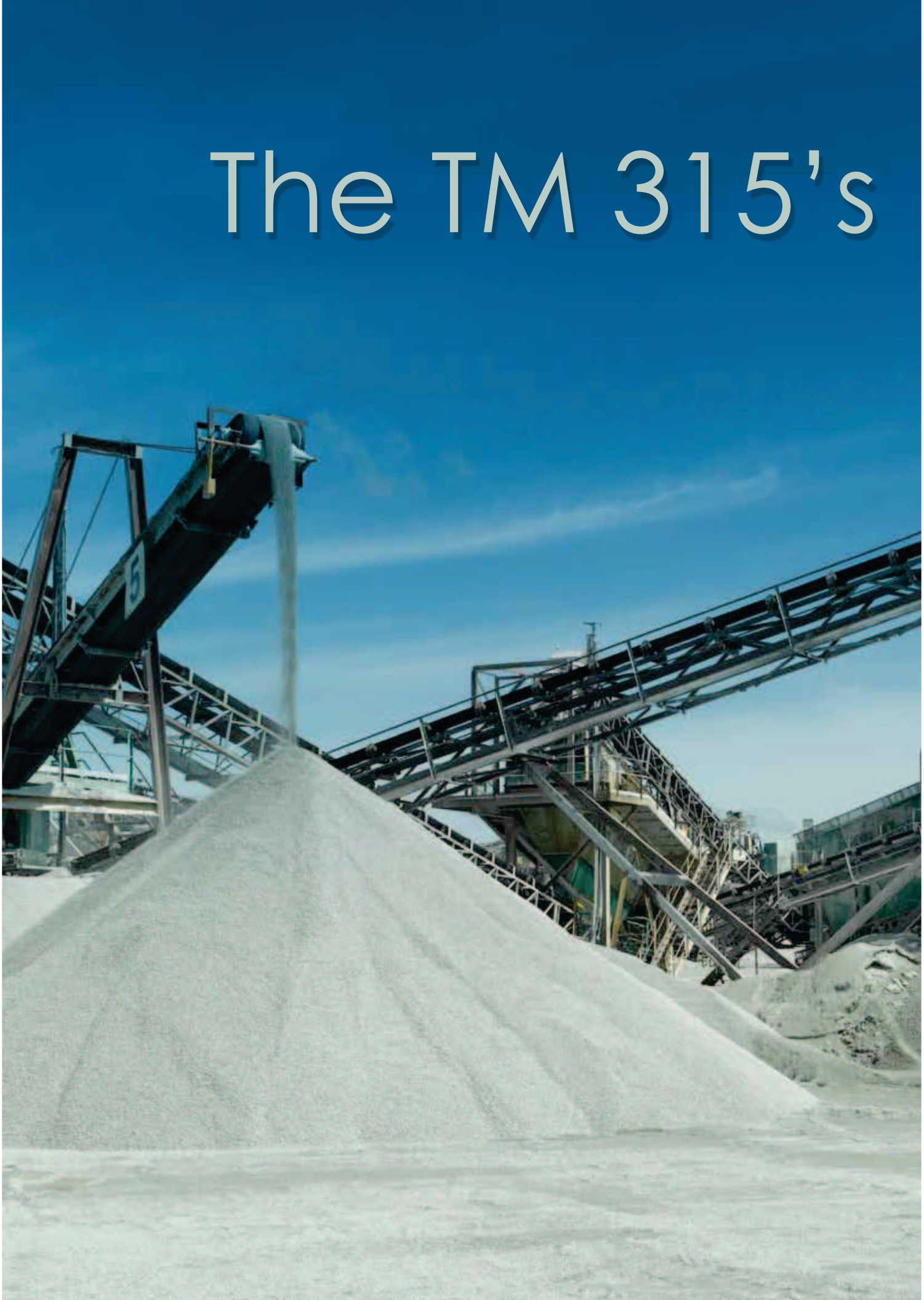
TM 315-50

Van der Graaf

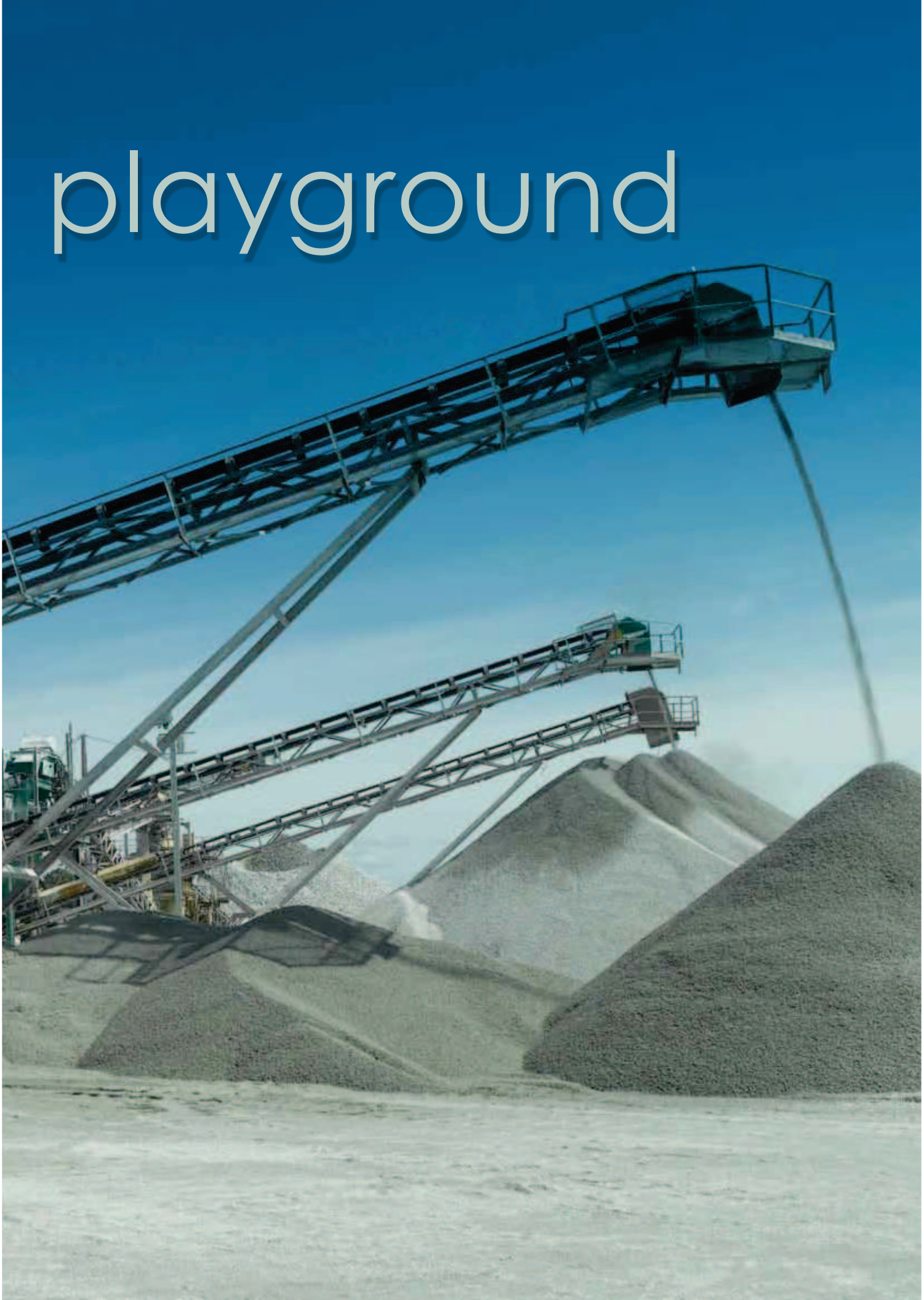
Power Transmission Equipment

www.vandergraafpte.nl

The TM 315's



playground



TM 315-50

A wide range of applications

Van der Graaf has achieved a prominent position on both the domestic and international market with its “GV” Drummotors. The “GV” Drummotor has found success in a wide range of applications including the following: automotive, X-ray, construction, postal, courier, mining, aggregate, airline baggage, package flow, tyre manufacturing, fish processing, poultry processing, meat processing, agriculture, fruit and vegetable, farming, forestry, baking, dairy and many more.

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Selection table

TYPE TM 315.50	Power kW	Beltspeed m/s at 50 Hz Beltpull N										Min. L mm Design A	Min. L mm Design B	Full load curr. 400 V - 50 Hz I = ... A	Weight kg L=600
215 215 Z 215 ZV	11,0	**4,40** 2375 **2,80** 3730 **1,90** 5500	**3,80** 2750 **2,50** 4180 **1,60** 6530	**3,40** 3075 **2,40** 4355	**3,00** 3485 **2,20** 4750							600	650	19,7	178
410 410 ZV	7,5	**4,10** 1740 **1,40** 5090	**3,40** 2095 **1,25** 5700	**3,00** 2375 **1,20** 5940	**2,40** 2970 **1,10** 6475	**2,20** 3240	**1,90** 3750	**1,70** 4190	**1,50** 4750			600	650	15,0	178
475 475 Z 475 ZV	5,5	**4,10** 1275 **1,40** 3730 **0,95** 5500	**3,40** 1535 **1,25** 4180 **0,80** 6530	**3,00** 1740 **1,20** 4355	**2,40** 2175 **1,10** 4750	**2,20** 2375	**1,90** 2750	**1,70** 3075	**1,50** 3485			550	600	10,5	173
455 455 Z 455 ZV	4,0	**4,10** 925 **1,10** 3455 **0,80** 4750 **0,70** 5430	**3,40** 1120 **0,90** 4220 **0,65** 5845	**3,00** 1265 **0,60** 6335	**2,40** 1585 **0,55** 6910	**2,30** 1650	**1,90** 2000	**1,70** 2235	**1,50** 2535	**1,40** 2715	**1,20** 3165	500	550	7,8	168
440 440 Z 440 ZV	3,0	**2,30** 1240 **0,70** 4070 **0,55** 5180	**1,90** 1500 **0,60** 4750 **0,50** 5700	**1,70** 1675	**1,50** 1900	**1,40** 2035	**1,20** 2375	**1,10** 2590	**0,90** 3165	**0,80** 3565		500	550	6,6	168
640 640 ZV	3,0	**2,70** 1055 **0,45** 6335	**1,60** 1780 **0,40** 7125									500	550	7,1	168
630 630 Z 630 ZV	2,2	**1,50** 1395 **0,45** 4645 **0,40** 5225	**1,20** 1740 **0,38** 5500	**1,10** 1900 **0,34** 6145	**0,90** 2320	**0,80** 2615	**0,70** 2985	**0,60** 3485	**0,50** 4180			500	550	4,9	168
820 820 Z 820 ZV	1,5	**1,10** 1295 **0,37** 3850 **0,25** 5700	**0,90** 1585 **0,32** 4455	**0,85** 1675 **0,29** 4915	**0,65** 2190	**0,60** 2375	**0,55** 2590	**0,45** 3165	**0,40** 3565			500	550	4,6	168
1220 1220 Z	1,5	**0,70** 2035 **0,24** 5940	**0,35** 4070 **0,21** 6785									550	600	5,8	173
815 815 Z	1,1	**1,10** 950 **0,37** 2825	**0,90** 1160 **0,32** 3265	**0,85** 1230 **0,29** 3605	**0,65** 1610 **0,25** 4180	**0,60** 1740	**0,55** 1900	**0,45** 2320	**0,40** 2615			500	550	3,3	168
1215 1215 Z 1215 ZV	1,1	**0,70** 1495 **0,24** 4355 **0,19** 5500	**0,35** 2985 **0,16** 6530									500	550	5,9	168

Available standard facewidth's: 500 - 550 - 600 - 650 - 700 - 750 - 800 - 850 - 900 - 950 - 1000 - 1050 - 1100 - 1150 mm
When an electro-mechanical brake is fitted, the minimum facewidth is increased by 150 mm
When a backstop is fitted in a 2-pole drum motor, the minimum facewidth is increased by 50 mm
The total weight of a Drummotor grows approx. 7 kg per 100 mm
Available torque: (Beltpull N x drum diameter m) / 2 Nm

Selection table Dahlander motors

TYPE TM 315.50	Power kW	Beltspeed m/s at 50 Hz Beltpull N								Min. L mm Design A	Min. L mm Design B	Full load curr. 400 V - 50 Hz I = ... A	Weight kg L=600
470/210 470/210 Z 470/210 ZV	5,0/7,5	**2,40/4,80** 1980/1485 **1,30/2,60** 3655/2740 **0,95/1,90** 5000/3750	**2,20/4,40** 2160/1620 **1,25/2,50** 3800/2850 **0,80/1,60** 5940/4455	**1,90/3,80** 2500/1875 **1,20/2,40** 3960/2970	**1,70/3,40** 2795/2095 **1,10/2,20** 4320/3240	**1,50/3,00** 3165/2375				600	650	10,6/15,2	178
455/275 455/275 Z 455/275 ZV	4,0/5,5	**2,40/4,80** 1585/1090 **1,10/2,20** 3455/2375 **0,80/1,60** 4750/3265 **0,70/1,40** 5430/3730	**2,20/4,40** 1725/1190 **0,90/1,80** 4220/2905 **0,65/1,30** 5845/4020	**1,90/3,80** 2000/1375 **0,60/1,20** 6335/4355	**1,80/3,60** 2110/1450 **0,55/1,10** 6910/4750	**1,70/3,40** 2235/1535	**1,50/3,00** 2535/1740	**1,40/2,80** 2715/1865	**1,20/2,40** 3165/2175	550	600	7,8/10,9	173
440/255 440/255 Z 440/255 ZV	3,0/4,0	**2,20/4,40** 1295/865 **0,80/1,60** 3565/2375 **0,70/1,40** 4070/2715 **0,55/1,10** 5180/3455	**1,80/3,60** 1585/1055 **0,65/1,30** 4385/2925 **0,50/1,00** 5700/3800	**1,70/3,40** 1675/1120 **0,60/1,20** 4750/3165	**1,50/3,00** 1900/1265	**1,40/2,80** 2035/1355	**1,20/2,40** 2375/1585	**1,10/2,20** 2590/1725	**0,90/1,80** 3165/2110	500	550	5,8/7,1	168
830/440 830/440 ZV	2,2/3,0	**1,10/2,20** 1900/1295 **0,40/0,80** 5225/3565	**0,90/1,80** 2320/1585 **0,35/0,70** 5970/4070	**0,85/1,70** 2460/1675 **0,32/0,64** 6530/4455	**0,75/1,50** 2785/1900 **0,30/0,60** 6965/4750	**0,70/1,40** 2985/2035	**0,60/1,20** 3485/2375	**0,55/1,10** 3800/2590	**0,45/0,90** 4645/3165	550	600	7,7/5,9	173
820/430 820/430 Z 820/430 ZV	1,5/2,2	**2,05/4,10** 695/510 **0,70/1,40** 2035/1495 **0,35/0,70** 4070/2985 **0,28/0,55** 5180/3800	**1,70/3,40** 840/615 **0,60/1,20** 2375/1740 **0,32/0,64** 4455/3265 **0,25/0,50** 5700/4180	**1,50/3,00** 950/695 **0,55/1,10** 2590/1900 **0,30/0,60** 4750/3485	**1,20/2,40** 1190/870 **0,45/0,90** 3165/2320	**1,10/2,20** 1295/950 **0,40/0,80** 3565/2615	**0,90/1,80** 1585/1160	**0,85/1,70** 1675/1230	**0,75/1,50** 1900/1395	500	550	5,8/4,7	168

Available standard facewidth's: 500 - 550 - 600 - 650 - 700 - 750 - 800 - 850 - 900 - 950 - 1000 - 1050 - 1100 - 1150 mm
When an electro-mechanical brake is fitted, the minimum facewidth is increased by 150 mm
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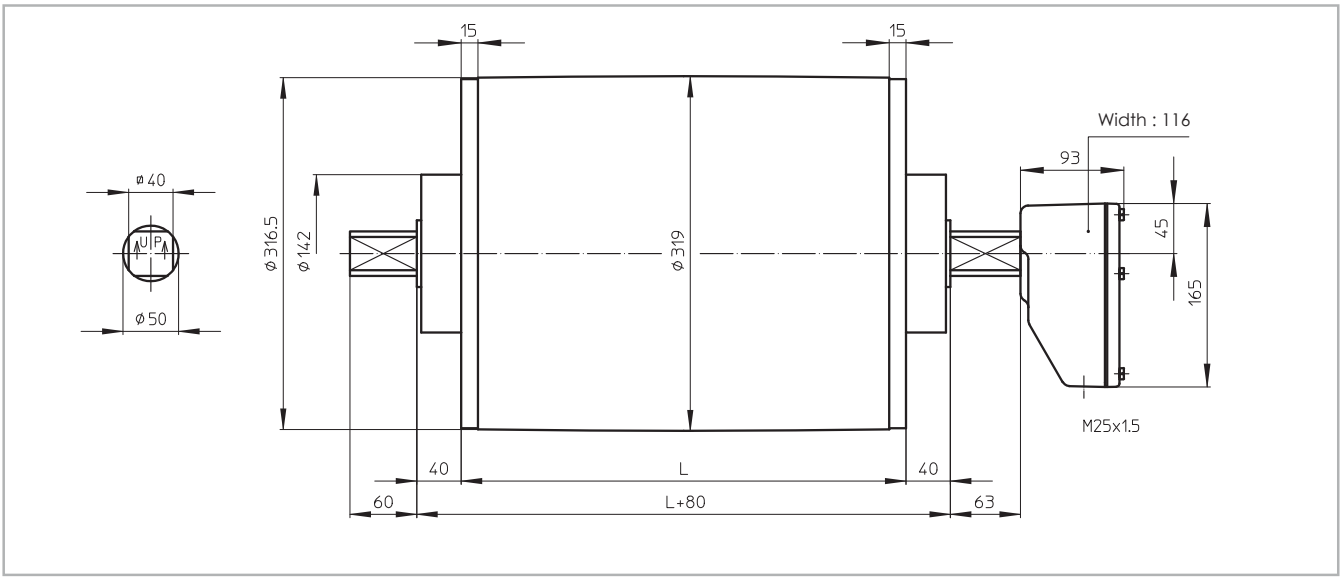
The total weight of a Drummotor grows approx. 7 kg per 100 mm
Available torque: (Beltpull N x drum diameter m) / 2 Nm

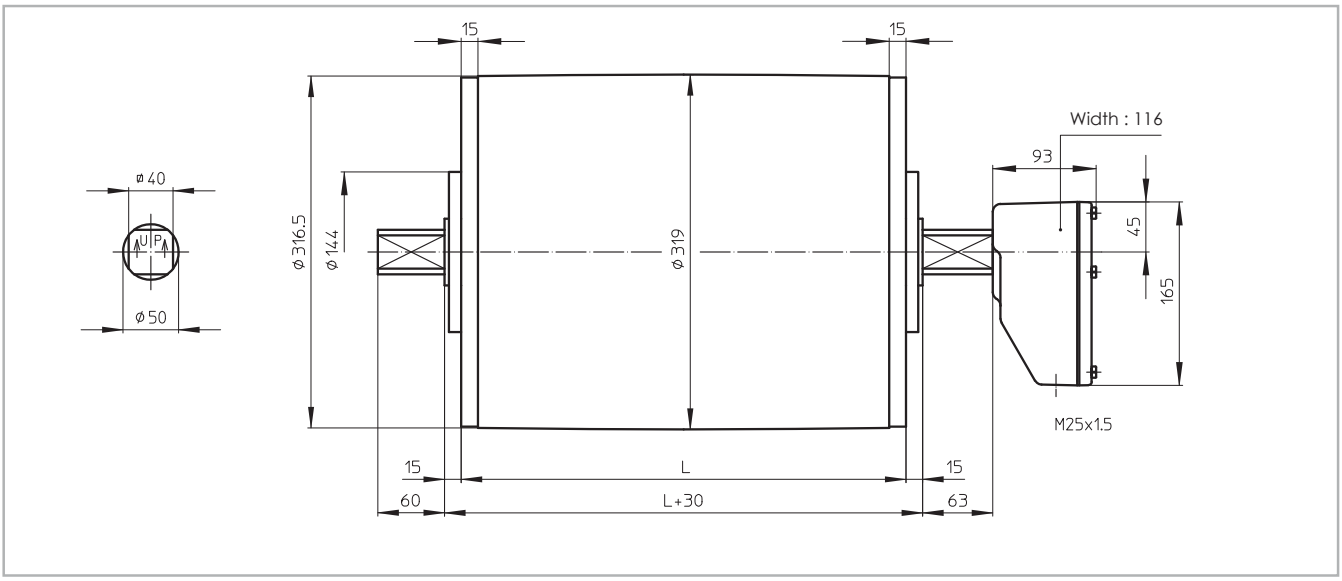
TM 315A50

TM 315A50, mild steel Drummotor with cast iron junctionbox



TM 315B50

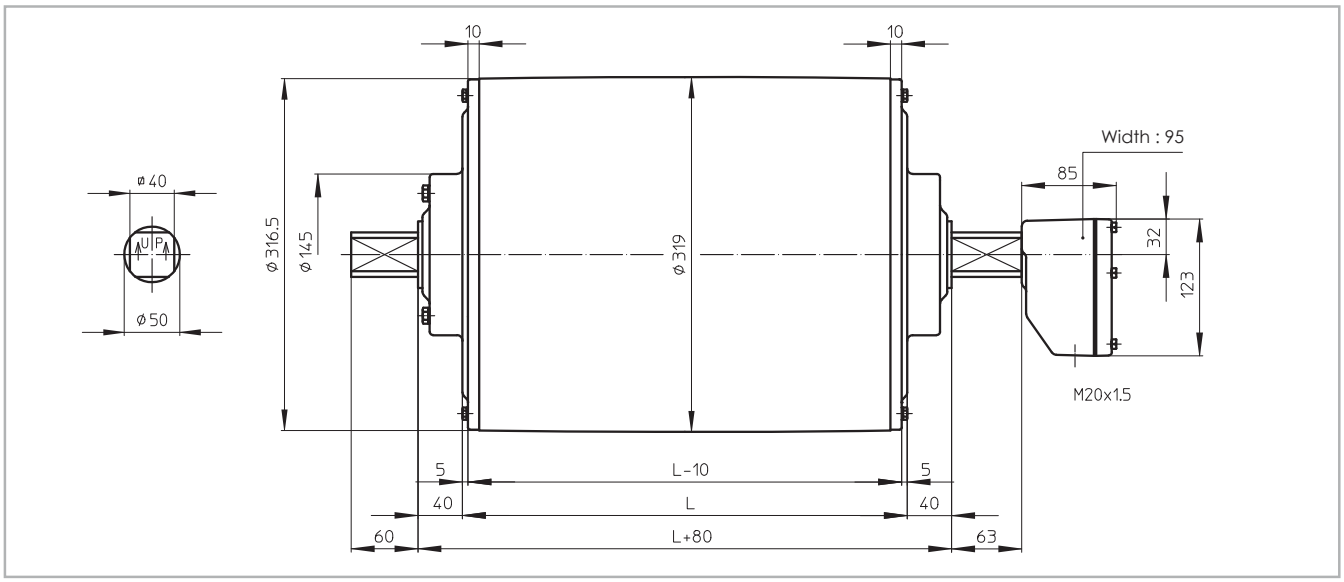
TM 315B50, mild steel Drummotor with cast iron junctionbox



Dimensions Drummotors stainless steel

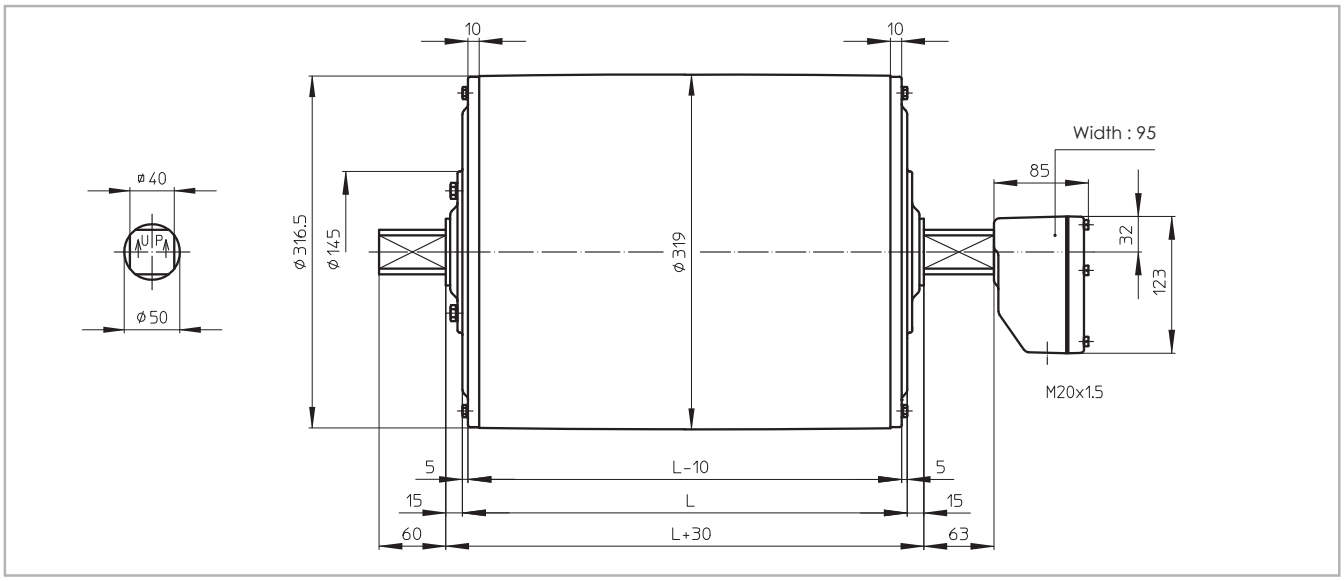
TM 315A50 CR

TM 315A50 CR, stainless steel Drummotor with polyamide junctionbox and CR sealing



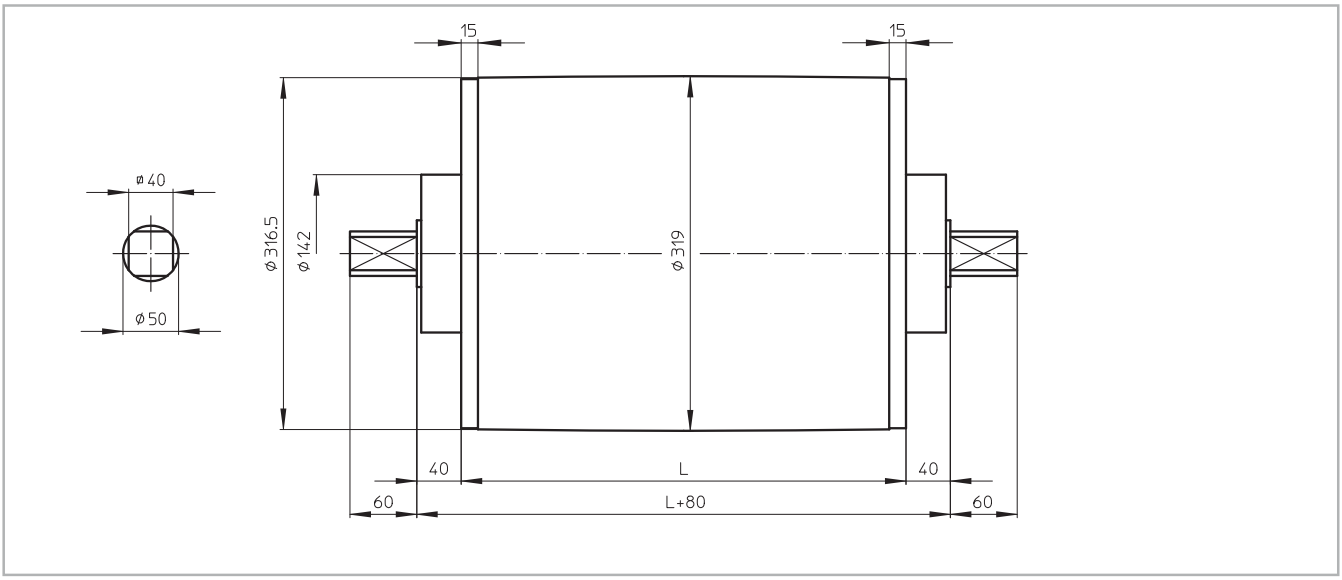
TM 315B50 CR

TM 315B50 CR, stainless steel Drummotor with polyamide junctionbox and CR sealing



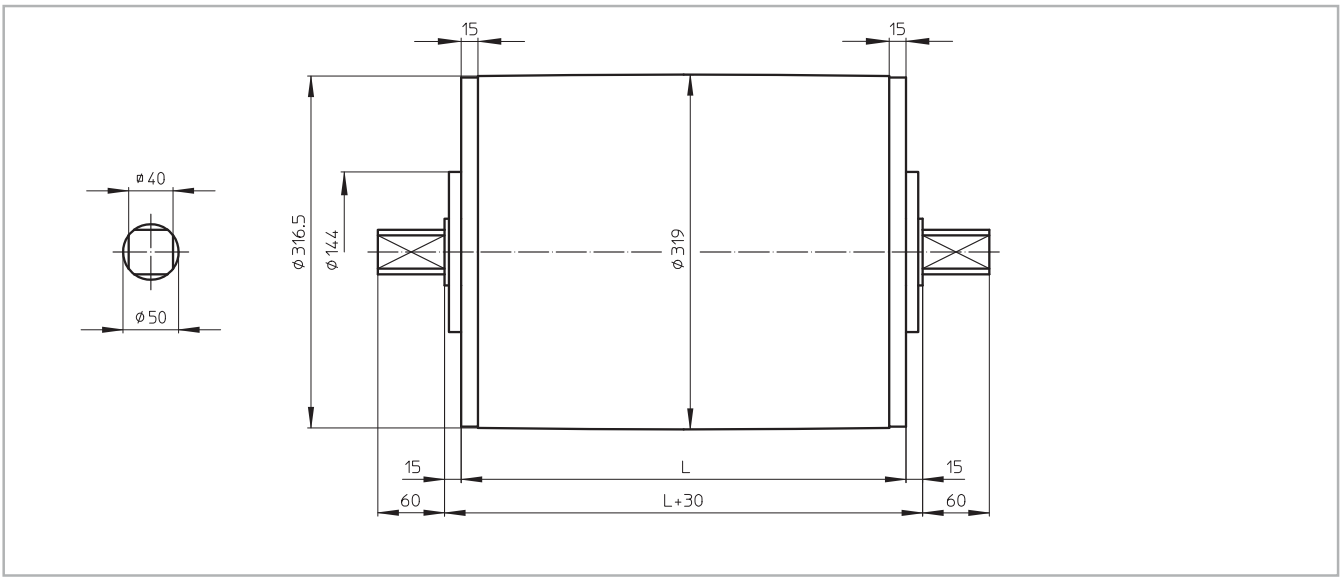
KT 315A50

KT 315A50, mild steel Taildrum



KT 315B50

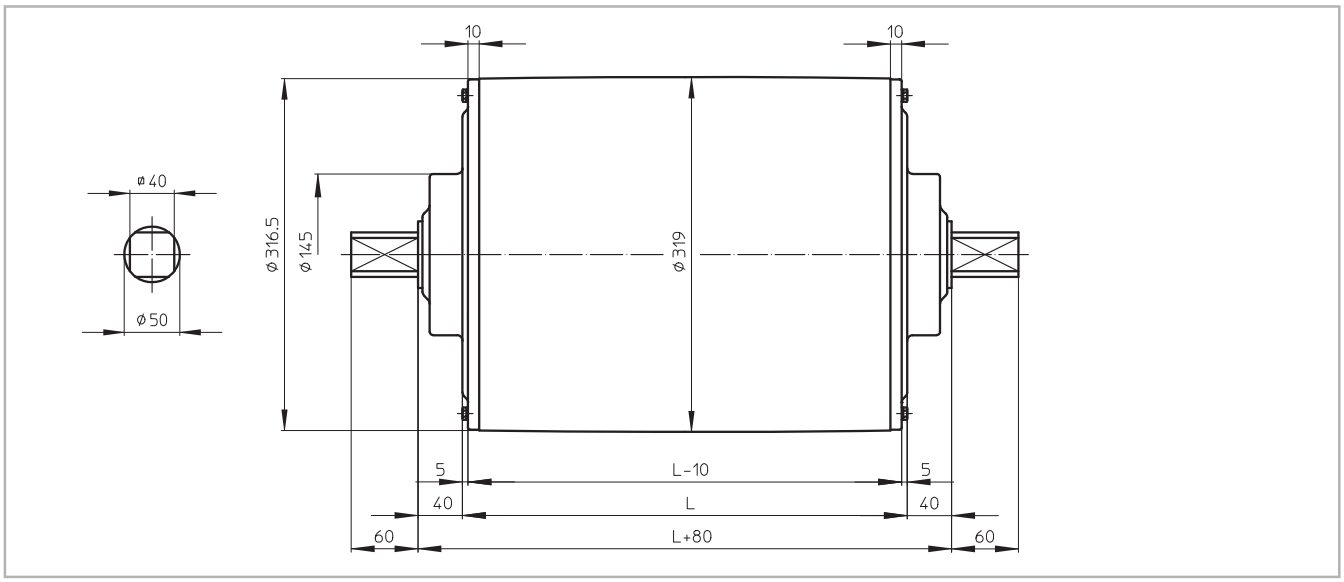
KT 315B50, mild steel Taildrum



Dimensions Taildrums stainless steel

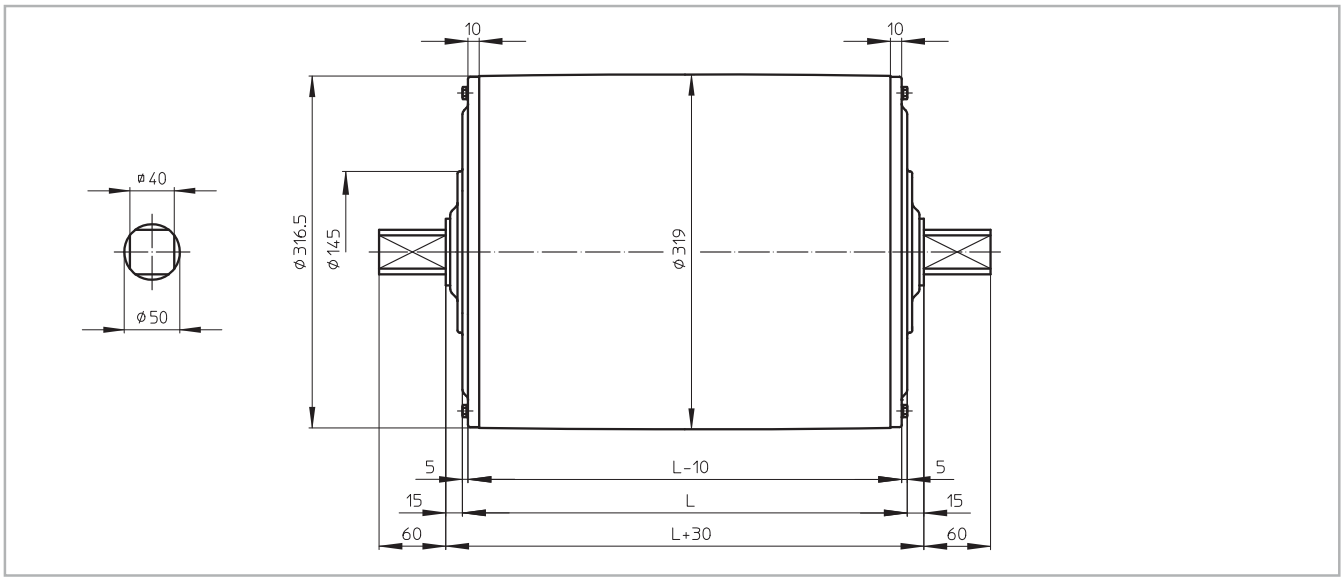
KT 315A50 CR

KT 315A50 CR, stainless steel Taildrum with CR sealing



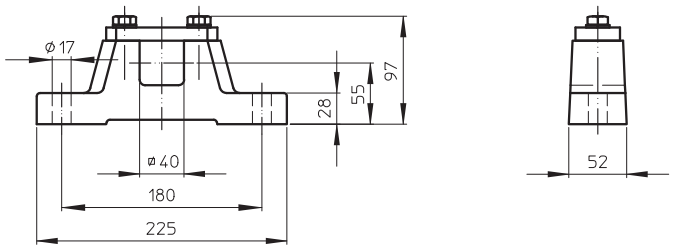
KT 315B50 CR

KT 315B50 CR, stainless steel Taildrum with CR sealing



AB 50

AB 50, cast iron or stainless steel bracket
Weight: 7,2 kg per pair



Cable exit

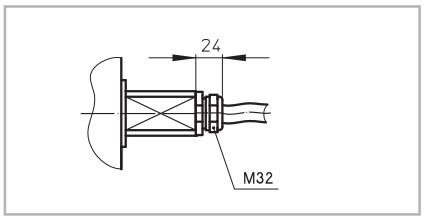
Standard design of a TM 315-50 is with a cast iron junctionbox. For stainless steel design, this can be either a cast iron PU coated cast iron or stainless steel junctionbox.

On request a drum motor can be fitted with a cable. In this case it is important to know the available voltage (preferably 1 voltage), the length of the cable, whether the cable is shielded or not and the type of cable exit.

An overview of available cable exits is shown below.

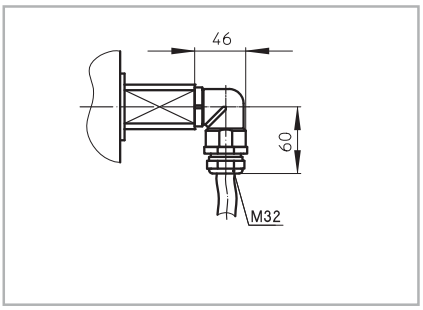
Option 1

Straight cable exit with cable gland

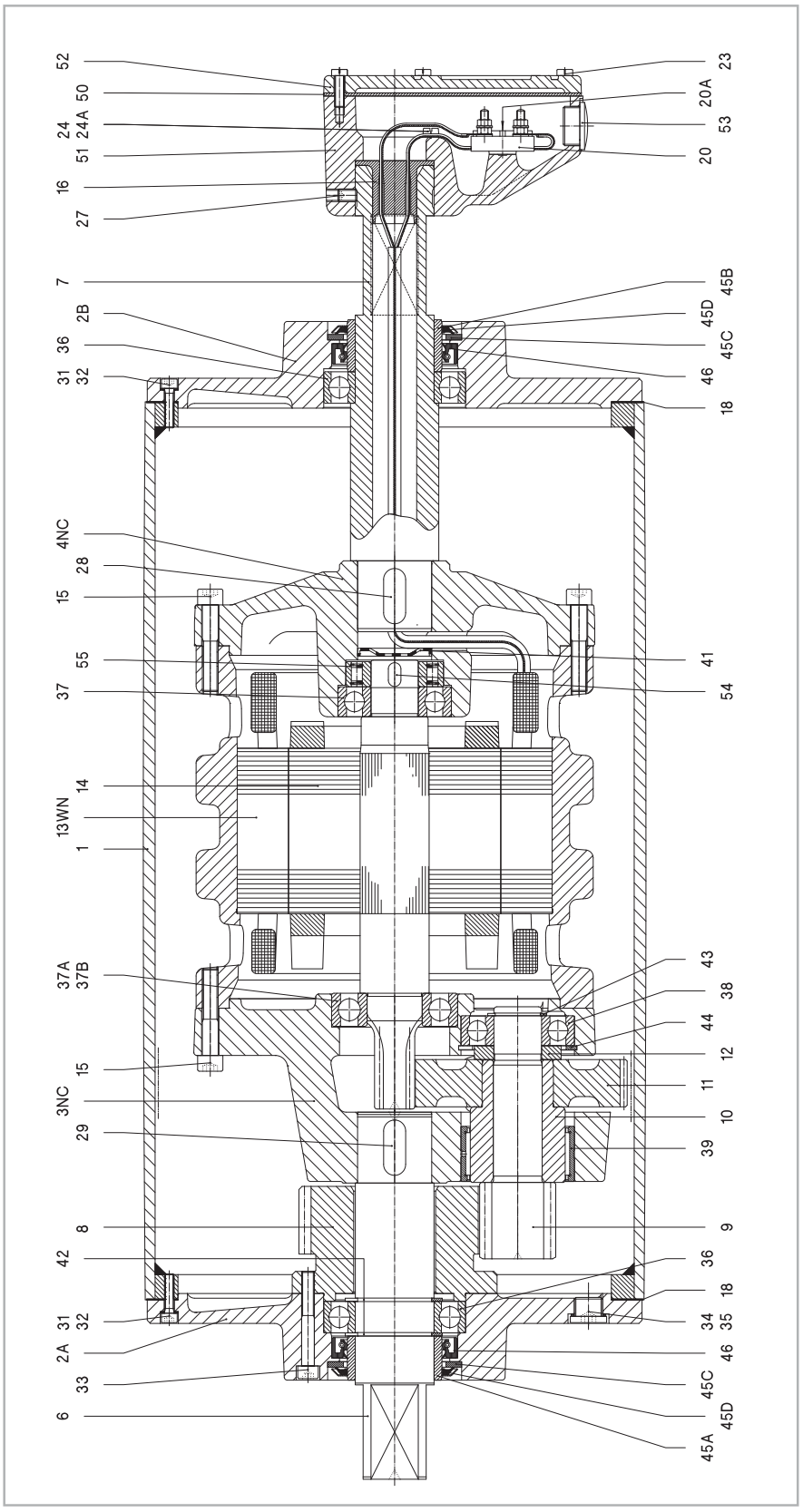


Option 3

Elbow cable exit with cable gland
(minimum facewidth increases with 50 mm)



TM 315A50



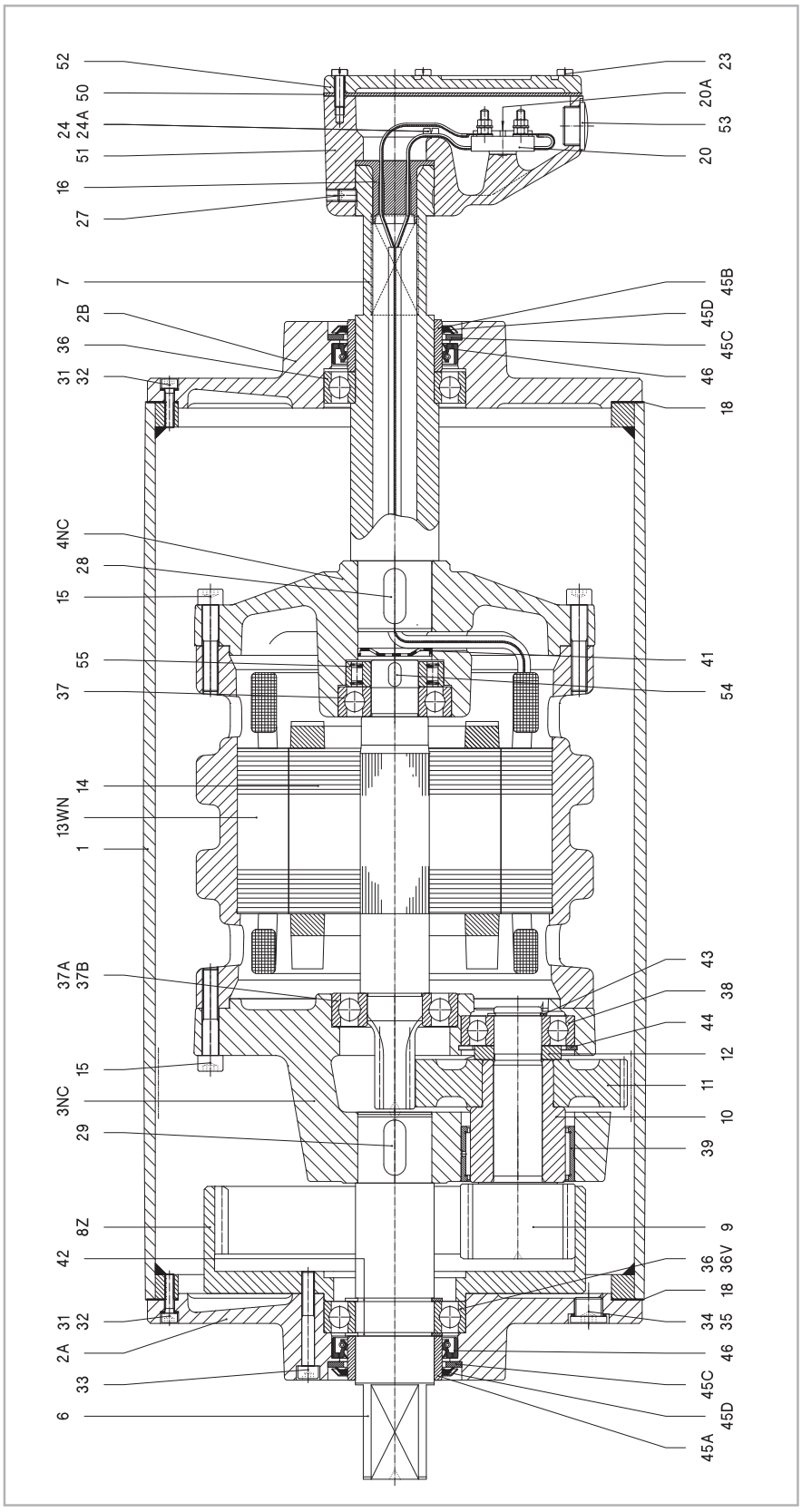
Remark: Drummotor also available in B-design (TM315B50)

Legenda

1	Shell	13WN	Stator	29	Key	39	Needlebearing	51	Junctionbox
2A	Endflange	14	Rotor	31	Int. hex screw	41	Disc	52	Junctionbox cover
2B	Endflange	15	Int. hex screw	32	Washer	42	Circlip	53	Stopping plug
3NC	Gearhousing	16	Cable passage	33	Int. hex screw	43	Circlip	54	Key
4NC	Motorflange	18	Gasket	34	Fillerplug	44	Circlip	55	Backstop
6	Shaftend	20	Terminalboard	35	Washer	45A	Bearing race	57	Dataplate
7	Hollow shaft	20A	Cyl. head screw	36	Ballbearing	45B	Bearing race		
8	External gear	23	Cyl. head screw	37	Ballbearing	45C	Shim plated		
9/10	Pinion with bush	24	Cyl. head screw	37A	Ballbearing	45D	Gammaring		
11	Gear	24A	Toothed lock washer	37B	Ballbearing	46	Oilseal		
12	Distance ring	27	Setscrew	38	Ballbearing	50	Seal		

Cross sectional / parts description

TM 315A50 Z

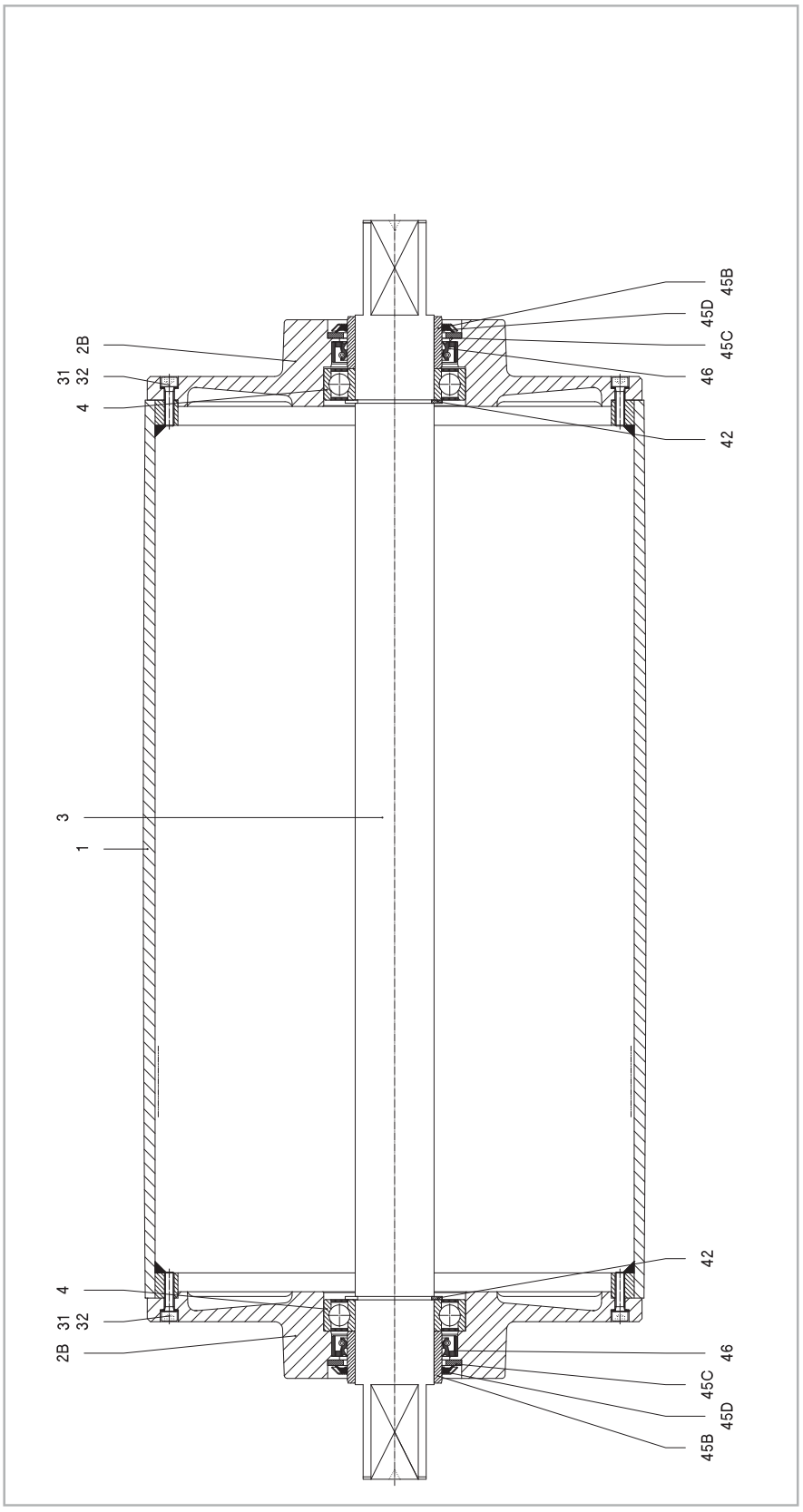


Remark: Drummotor also available in B-design (TM315B50 Z)

Legenda

1	Shell	13WN	Stator	29	Key	38	Ballbearing	50	Seal
2A	Endflange	14	Rotor	31	Int. hex screw	39	Needlebearing	51	Junctionbox
2B	Endflange	15	Int. hex screw	32	Washer	41	Disc	52	Junctionbox cover
3NC	Gearhousing	16	Cable passage	33	Int. hex screw	42	Circlip	53	Stopping plug
4NC	Motorflange	18	Gasket	34	Fillerplug	43	Circlip	54	Key
6	Shaftend	20	Terminalboard	35	Washer	44	Circlip	55	Backstop
7	Hollow shaft	20A	Cyl. head screw	36	Ballbearing	45A	Bearing race	57	Dataplate
8Z	Internal gear	23	Cyl. head screw	36V	Cyl. roller bearing	45B	Bearing race		
9/10	Pinion with bush	24	Cyl. head screw	37	Ballbearing	45C	Shim plated		
11	Gear	24A	Toothed lock washer	37A	Ballbearing	45D	Gammaring		
12	Distance ring	27	Setscrew	37B	Ballbearing	46	Oilseal		

KT 315A50



Remark: Taildrum also available in B-design (KT315B50)

Legenda

1	Shell		42	Circlip
2B	Endflange		45B	Bearing race
3	Shaft		45C	Shim plated
4	Ballbearing		45D	Gammaring
31	Int. hex screw		46	Oilseal
32	Washer			

Options

Material

The external parts of the Drummotor are made from mild steel and cast iron. Depending on the application it is also possible to manufacture in stainless steel (complete or part). You can choose between stainless steel 304 (general food industry) and stainless steel 316 (salt water applications).

Backstop - Brake

If an inclined belt conveyor is stopped fully loaded, it could run backwards.

To prevent this we can install a backstop. One of the bearings in the Drummotor is replaced by a one way bearing. The way this bearing is installed determines the direction of rotation of the drum. TBRH indicates a cw rotation and TBLH ccw.

In situations where a Drummotor needs to be able to drive in both directions it is not possible to use a backstop. In this case we use a brake. When an declined belt or a horizontal belt needs to be stopped quickly to pick or place items a brake is the best solution.

Inclined position

Sometimes a Drummotor needs to be installed on an inclined or even vertical position. This is possible, but we need to make adjustments to the oil level in the drum as the oil will flow to the lower side of the Drummotor causing the top bearing to run without lubrication. To prevent problems we will need to know the installation angle so we can fill the drum with extra oil and fit a double sealed bearing on the upper side.

Thermal protection

A Van der Graaf Drummotor can be fitted with thermal protection. This consists of either a thermistor (PTC) or bi-metal (klixon). We install these on each phase of the electric motor.

Encoder - Sensor bearing

In certain applications it is required to measure the speed or position of a conveyor belt. For this type of application we can install an encoder or sensor bearing to accurately measure rotational speed of the Drummotor.

The accuracy needed will determine the type of encoder or sensor used.

Lagging

The power produced by the Drummotor has to be transferred to the belt and lagging is used to give more friction between the Drummotor and the conveyor belt. Van der Graaf can fit your Drummotor with different kinds of lagging.

There is a difference between cold and hot vulcanised lagging. Cold vulcanised means the lagging is glued to the Drummotor usually in sheet form and the join ‘welded’ together. Hot vulcanising is a process where the shell is wrapped around with thin layers of rubber. The shell with the rubber is then baked in an autoclave fusing the layers together creating a seamless finish.

It is possible to cut grooves (e.g chevron or diamond) in the lagging.

Sprockets

Do you wish to use a Drummotor to drive modular belts? Van der Graaf can help you! Fitting sprockets suitable for various types of modular belts is a simple solution. The Drummotor is manufactured with a cylindrical shell and machined with a patented ‘keying’ system. The sprockets are simply ‘slid’ on and locked securely into position.

Sealings for mild steel Drummotors

RB sealing - IP 66

This is Van der Graaf's standard sealing. This type of sealing will work in most conditions.

RBS sealing - IP 66

This sealing is specifically designed for those applications where high water pressure is used for cleaning.

HD sealing - IP 66

This sealing is designed for abrasive applications, like sand, gravel and soil.

Sealings for stainless steel Drummotors

CR sealing - IP 66

This is our standard sealing for stainless steel Drummotors, a very effective, multi labyrinth sealing.

UW sealing - IP 68

This sealing is suitable for under water applications. The maximum depth is approx 2,5 m.

Options

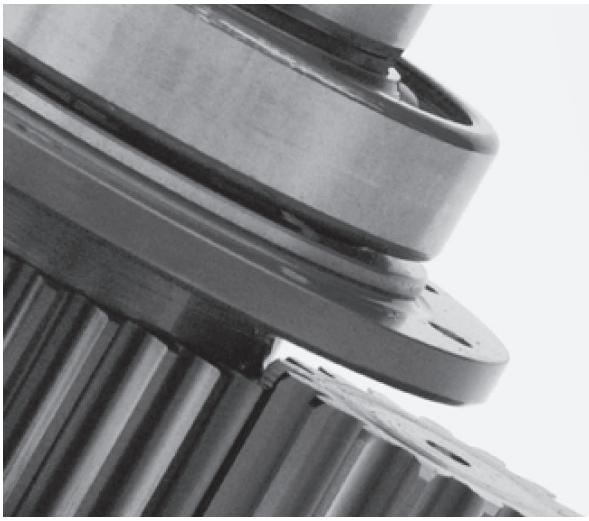
Specification	Standard	Optional
Construction		
Shafts and bolts	Mild steel	Stainless steel
End caps	Cast iron	Stainless steel
Shell	Mild steel	Stainless steel
Junctionbox	Cast iron	PU coated cast iron or stainless steel
Cable		Shielded or non-shielded
Sealing mild steel	RB	RBS, HD
Sealing stainless steel	CR	UW
Shell		
Crowned	•	
Cylindrical		•
Balanced		•
Lagging, cold vulcanised		•
Lagging, hot vulcanised		•
Lagging, FDA approved		•
Fitted with grooves, patterns		•
Electro motor		
Three-phase asynchronous	•	
Power supply (P < 3 kW)	230/400 V - 50 Hz	Other voltages and frequencies on request
Power supply (P ≥ 3 kW)	400/690 V - 50 Hz	Other voltages and frequencies on request
Two speed (Dahlander)		•
Insulation class	F	H
Thermal protection		Bi-metal or thermistor
Run by frequency inverter	•	
Other options		
Food grade oil		•
Backstop, mechanical		•
Brake, electro mechanical		•
Clutch brake, electro mechanical		•
Inclined or vertical position		•
Other facewidth's		•
Different shaft designs		•
Encoder or sensor bearing in Drummotor		•
Encoder or sensor bearing in Taildrum		•
Certificates		
CE	•	
UL		•
CSA		•
ATEX zone 22, dust		•

Our products, an overview

Drummotor type	TM 100B25	TM 113B25	TM 127.25	TM 138.25	TM 160.25	TM 160.30	TM 215.30	TM 215.40
Drum diameter (mm)	100	113	127	138	160	160	215	215
Shaft diameter (mm)	25	25	25	25	25	30	30	40
Power (kW)	0.05-0.37	0.04-0.55	0.10-1.1	0.10-1.1	0.10-0.75	0.10-2.2	0.10-2.2	0.37-5.5
Speed (m/s)	0.007-3.60	0.008-4.40	0.008-2.60	0.009-2.80	0.13-3.30	0.06-4.00	0.08-5.30	0.12-4.70

Drummotor type	TM 215B50	TM 273.40	TM 315.40	TM 315.50	TM 400A50	TM 400.60	TM 500A60	TM 500A75
Drum diameter (mm)	215	273	315	315	400	400	500	500
Shaft diameter (mm)	50	40	40	50	50	60	60	75
Power (kW)	1.5-4.0	0.37-5.5	0.37-5.5	1.1-11	1.1-11	1.5-22	1.5-22	11-30
Speed (m/s)	0.18-0.31	0.17-5.00	0.18-5.20	0.16-4.40	0.20-4.80	0.20-4.60	0.25-4.70	0.80-3.20

Drummotor type	TM 620A75	TM 630A100	TM 800A100	TM 800A130				
Drum diameter (mm)	620	630	800	800				
Shaft diameter (mm)	75	100	100	130				
Power (kW)	11-30	22-55	22-55	55-132				
Speed (m/s)	1.00-3.90	1.00-4.00	1.25-5.10	1.60-4.50				



Design benefits

- Robust, industrial design
- Fully enclosed
- Oil filled
- Well-sized gears and bearings

Installation advantages

- Easy to install
- Compact and reliable
- Easy to clean
- Virtually maintenance free
- Low Life Cycle Costs