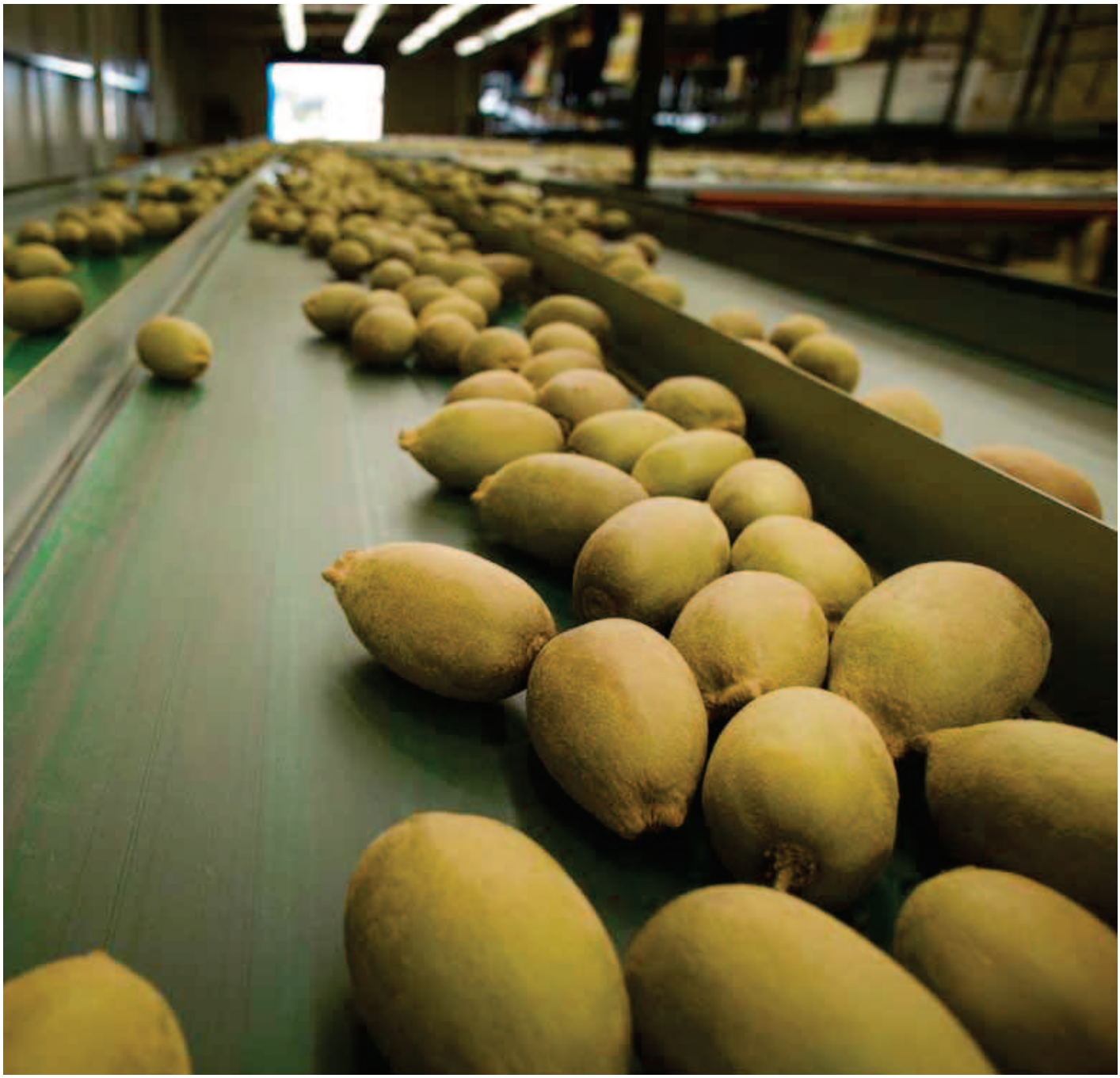
Product information

Drummotors

TM 160-30

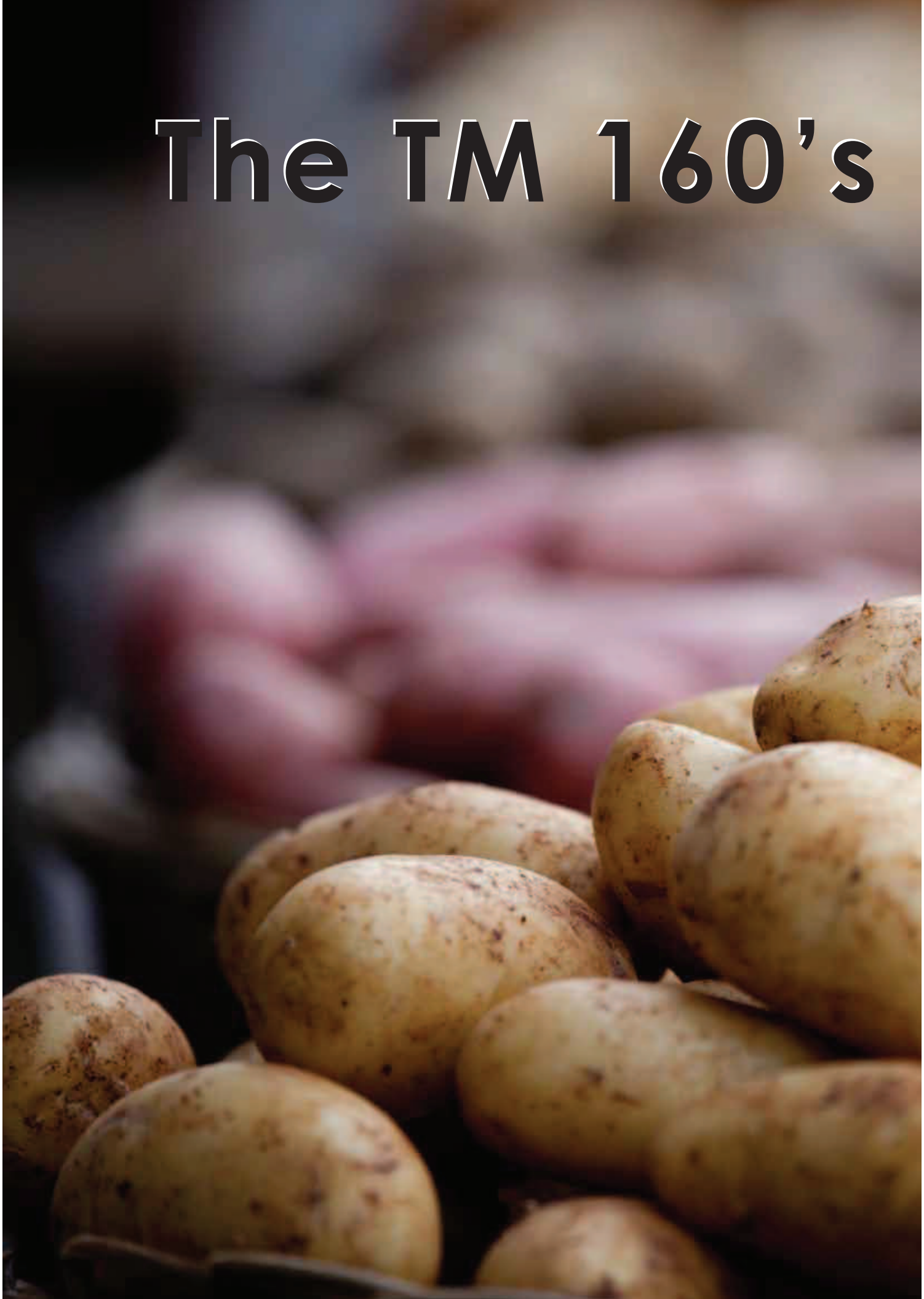


Van der Graaf

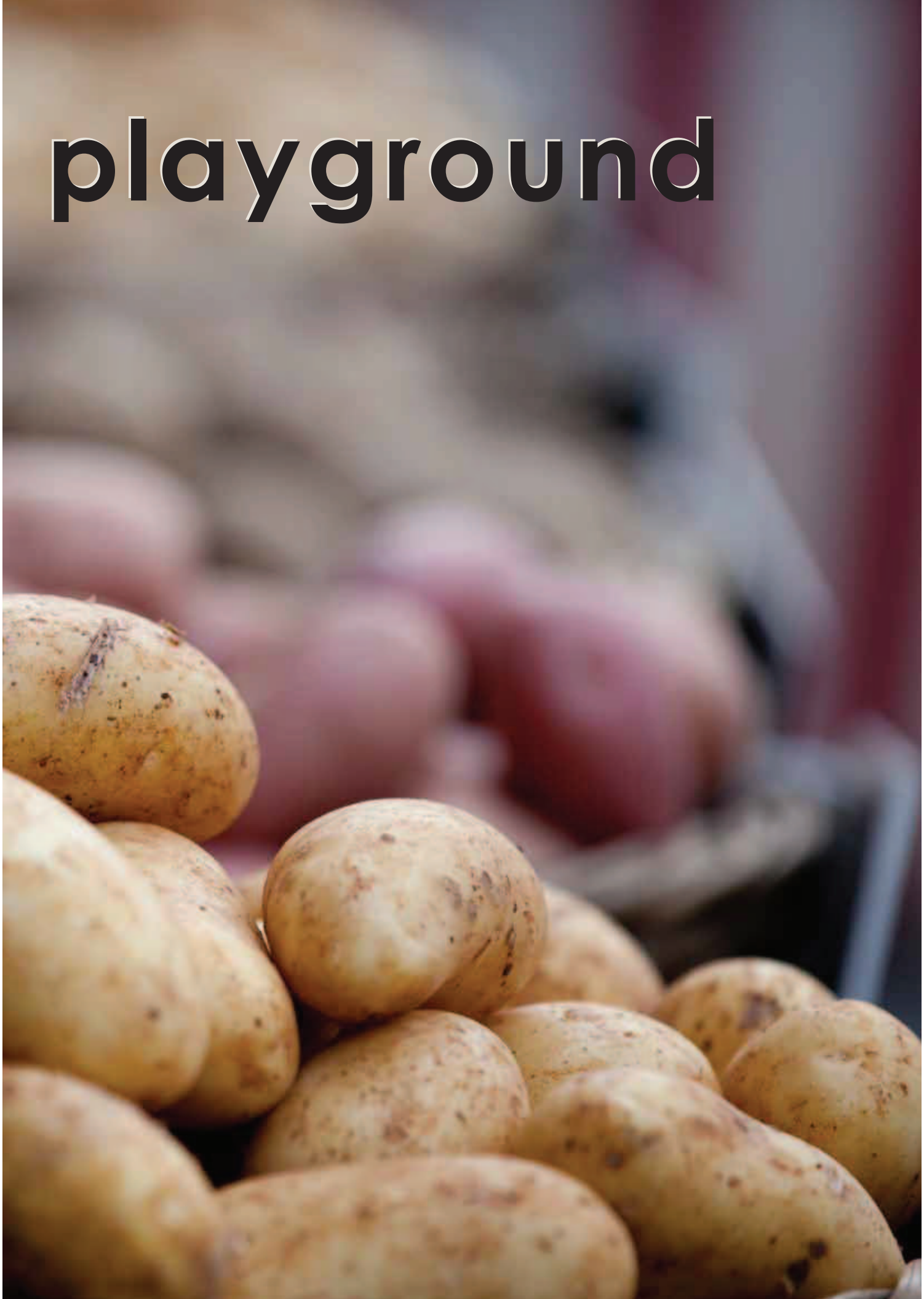
Power Transmission Equipment

www.vandergraafpte.nl

The TM 160's



playground



TM 160-30

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 160.30	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=350
230 230 Z 230 ZV	2,20	**4,00** 520 **1,40** 1495 **1,30** 1610	**3,40** 615 **1,20** 1740	**2,80** 745 **1,15** 1815	**2,60** 805 **1,00** 2090	**2,10** 995 **0,90** 2320	**1,70** 1230 **0,85** 2460	**0,80** 2610				400	450	4,6	32
220 220 Z 220 ZV	1,50	**4,00** 355 **1,40** 1020 **0,90** 1585	**3,40** 420 **1,30** 1095 **0,85** 1675	**2,80** 510 **1,20** 1190 **0,80** 1780	**2,60** 550 **1,15** 1240	**2,10** 680 **1,00** 1425	**1,70** 840					350	400	3,1	31
420 420 ZV	1,50	**2,50** 570 **0,85** 1675	**2,10** 680 **0,80** 1780	**1,80** 790 **0,75** 1900	**1,60** 890 **0,70** 2035	**1,30** 1095 **0,65** 2190	**1,10** 1295 **0,60** 2375	**0,55** 2590				400	450	3,7	32
415 415 Z 415 ZV	1,10	**2,00** 525 **0,70** 1495 **0,65** 1610	**1,70** 615 **0,60** 1740	**1,40** 745 **0,55** 1900	**1,25** 835 **0,50** 2090	**1,10** 950 **0,45** 2320	**0,85** 1230 **0,40** 2615					350	400	2,8	31
410 410 Z 410 ZV 410 PL2	0,75	**2,00** 355 **0,65** 1095 **0,45** 1585 **0,27** 2555	**1,70** 420 **0,60** 1190 **0,40** 1780 **0,23** 3000	**1,40** 510 **0,55** 1295 **0,34** 2095	**1,25** 570 **0,50** 1425	**1,10** 650	**0,85** 840	**0,75** 950	**0,70** 1020			350 350 350 400	400 400 400 425	1,9	30
475 475 Z 475 ZV 475 PL2	0,55	**2,00** 260 **0,65** 800 **0,31** 1685 **0,18** 2810	**1,70** 305 **0,50** 1045	**1,40** 375 **0,45** 1160	**1,25** 420 **0,40** 1305	**1,10** 475 **0,34** 1535	**0,85** 615	**0,75** 695	**0,70** 745	**0,55** 950		350 350 350 400	400 400 400 425	1,6	29
675 675 Z 675 ZV	0,55	**0,95** 550 **0,37** 1410 **0,29** 1800	**0,60** 870 **0,27** 1935	**0,23** 2270								350	400	1,6	31
605 605 Z 605 ZV 605 PL2	0,37	**1,40** 250 **0,30** 1170 **0,23** 1530 **0,18** 1890	**1,10** 320 **0,29** 1210 **0,20** 1760 **0,15** 2270	**0,95** 370 **0,27** 1300 **0,12** 2835	**0,85** 415	**0,70** 500	**0,60** 585	**0,50** 705	**0,45** 780	**0,35** 1005		350 350 350 400	400 400 400 425	1,4	30
634 634 Z	0,25	**1,40** 170 **0,29** 820	**1,10** 215 **0,27** 880	**0,95** 250 **0,23** 1035	**0,85** 280 **0,20** 1190	**0,70** 340	**0,60** 395	**0,50** 475	**0,45** 530	**0,35** 680	**0,30** 790	350	400	0,9	29
834 834 Z 834 PL2	0,25	**1,00** 240 **0,17** 1395 **0,14** 1645	**0,65** 365 **0,15** 1585 **0,12** 1915	**0,55** 430 **0,09** 2555	**0,40** 595	**0,26** 915						350 350 400	400 400 425	1,0	31
825 825 Z	0,18	**1,00** 170 **0,20** 855	**0,85** 200 **0,17** 1005	**0,70** 245 **0,15** 1140	**0,65** 265	**0,55** 310	**0,40** 430	**0,35** 490	**0,26** 660	**0,23** 745		350	400	0,9	30
818 818 Z	0,13	**1,00** 125 **0,20** 620	**0,85** 145 **0,17** 725	**0,70** 175 **0,15** 825	**0,65** 190	**0,55** 225	**0,40** 310	**0,35** 355	**0,26** 475	**0,23** 535		350	400	0,6	29

Selection table Dahlander motors

1218 **1218 Z** **1218 PL2**	**0,13**	**0,45** 275 **0,13** 950 **0,09** 1330	**0,33** 375 **0,11** 1125 **0,07** 1710	**0,10** 1235 **0,06** 1995								350 350 400	400 400 425	0,9	31
1213 **1213 Z**	**0,10**	**0,65** 145 **0,13** 730	**0,55** 175 **0,11** 865	**0,45** 210 **0,10** 950	**0,40** 240	**0,33** 290	**0,27** 350	**0,24** 395	**0,22** 430	**0,17** 560	**0,14** 680	350	400	0,8	30

Available standard facewidth's: 350 - 400 - 425 - 450 - 500 - 550 - 600 - 650 - 700 - 750 - 800 - 850 - 900 - 950 - 1000 mm
When an electro-mechanical brake is fitted, the minimum facewidth is increased by 100 mm
The total weight of a Drummotor grows approx. 2,5 kg per 100 mm; Available torque: (Beltpull N x drum diameter m) / 2 Nm

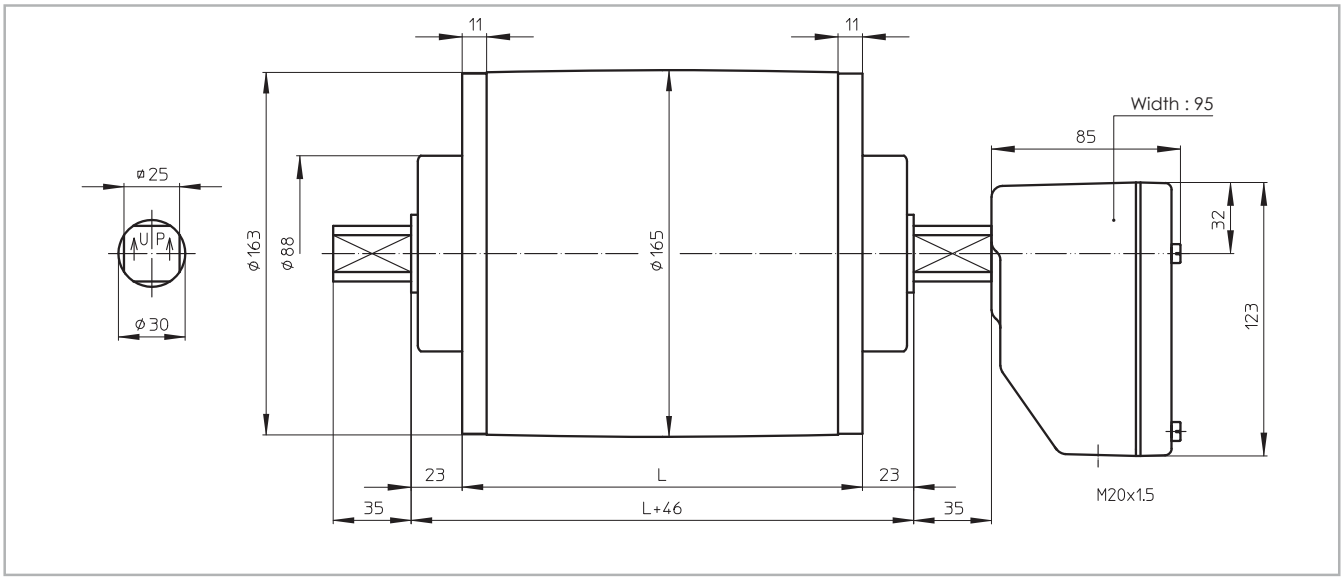
Dahlander motors

TYPE TM 160.30	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=350
410/220 **410/220 Z** **410/220 ZV**	**0,75/1,50**	**2,00/4,00** 355 **0,65/1,30** 1095 **0,45/0,90** 1585	**1,70/3,40** 420 **0,60/1,20** 1190 **0,42/0,84** 1695	**1,40/2,80** 510 **0,55/1,10** 1295 **0,40/0,80** 1780	**1,30/2,60** 550 **0,50/1,00** 1425 **0,35/0,70** 2035	**1,05/2,10** 680	**0,85/1,70** 840	**0,75/1,50** 950	**0,70/1,40** 1020	400	450	2,3/3,3	32
475/215 **475/215 Z** **475/215 ZV**	**0,55/1,10**	**2,00/4,00** 260 **0,65/1,30** 805 **0,31/0,62** 1685	**1,70/3,40** 305 **0,60/1,20** 870	**1,40/2,80** 375 **0,55/1,10** 950	**1,25/2,50** 420 **0,50/1,00** 1045	**1,05/2,10** 500 **0,45/0,90** 1160	**0,85/1,70** 615 **0,42/0,84** 1245	**0,75/1,50** 695 **0,40/0,80** 1305	**0,70/1,40** 745 **0,35/0,70** 1495	350	400	1,6/2,5	31
405/210 **405/210 Z**	**0,37/0,75**	**2,00/4,00** 180 **0,65/1,30** 550 **0,31/0,62** 1150	**1,70/3,40** 210 **0,60/1,20** 595	**1,40/2,80** 255 **0,55/1,10** 650	**1,25/2,50** 285 **0,50/1,00** 715	**1,05/2,10** 340 **0,45/0,90** 790	**0,85/1,70** 420 **0,42/0,84** 850	**0,75/1,50** 475 **0,40/0,80** 890	**0,70/1,40** 510 **0,35/0,70** 1020	350	400	1,0/1,8	29
837/475 **837/475 Z** **837/475 ZV** **837/475 PL2**	**0,27/0,55**	**1,00/2,00** 260 **0,26/0,52** 1005 **0,20/0,40** 1305 **0,17/0,34** 1535 **0,13/0,26** 1945	**0,85/1,70** 305 **0,23/0,46** 1135 **0,15/0,30** 1740 **0,11/0,22** 2300	**0,70/1,40** 375 **0,09/0,18** 2810	**0,65/1,30** 400	**0,55/1,10** 475	**0,45/0,90** 580	**0,40/0,80** 655	**0,35/0,70** 745	350 350 350 400	400 400 400 425	1,5/1,3	31
825/405 **825/405 Z** **825/405 PL2**	**0,18/0,37**	**1,00/2,00** 175 **0,26/0,52** 675 **0,20/0,40** 880 **0,13/0,26** 1310	**0,85/1,70** 205 **0,23/0,46** 765 **0,17/0,34** 1035 **0,11/0,22** 1545	**0,70/1,40** 250 **0,15/0,30** 1170 **0,09/0,18** 1890	**0,65/1,30** 270	**0,55/1,10** 320	**0,45/0,90** 390	**0,40/0,80** 440	**0,35/0,70** 500	350 350 400	400 400 425	1,2/1,0	30

Available standard facewidth's: 350 - 400 - 425 - 450 - 500 - 550 - 600 - 650 - 700 - 750 - 800 - 850 - 900 - 950 - 1000 mm
When an electro-mechanical brake is fitted, the minimum facewidth is increased by 100 mm
The total weight of a Drummotor grows approx. 2,5 kg per 100 mm; Available torque: (Beltpull N x drum diameter m) / 2 Nm

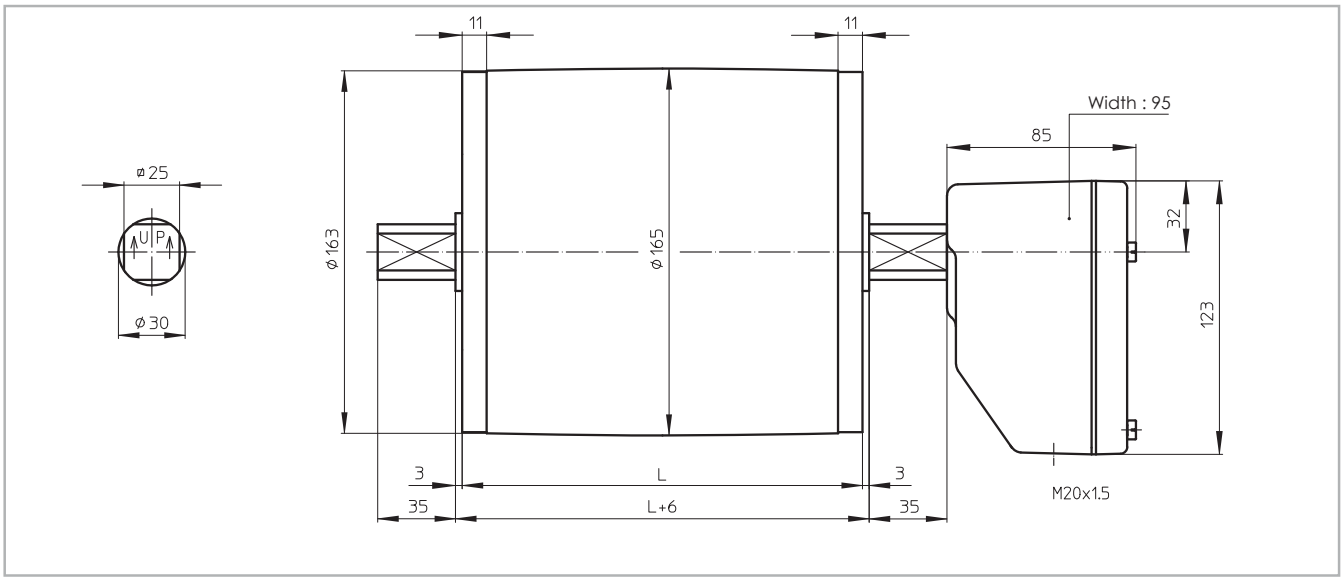
TM 160A30

TM 160A30, mild steel Drummotor with cast iron junctionbox



TM 160B30

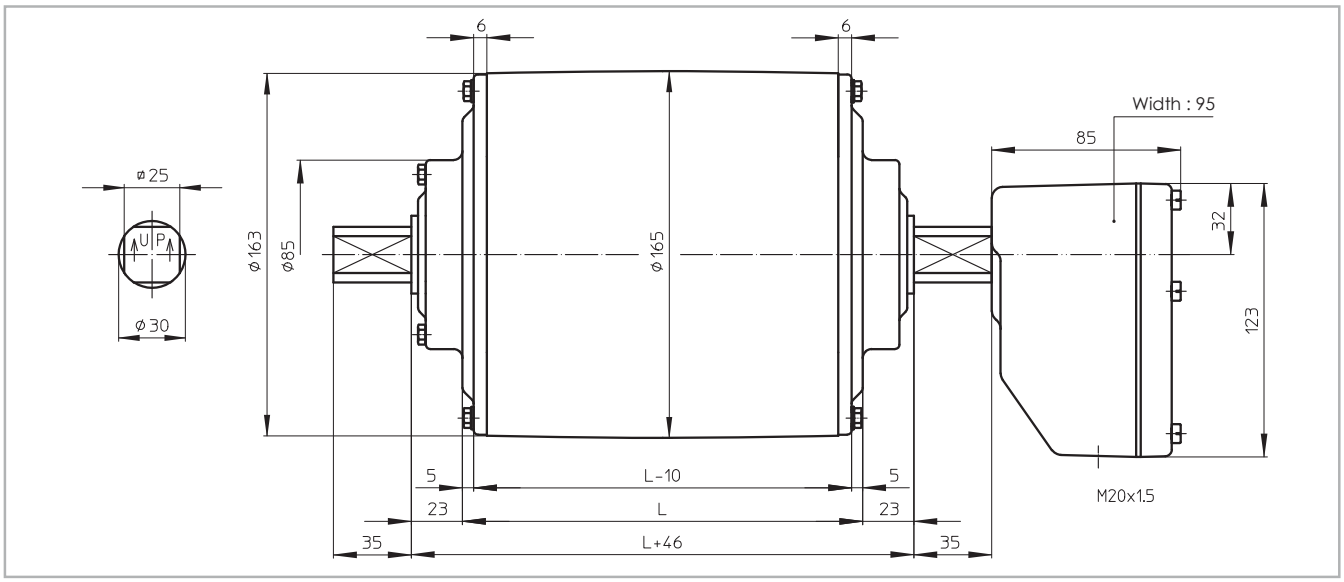
TM 160B30, mild steel Drummotor with cast iron junctionbox



Dimensions Drummotors stainless steel

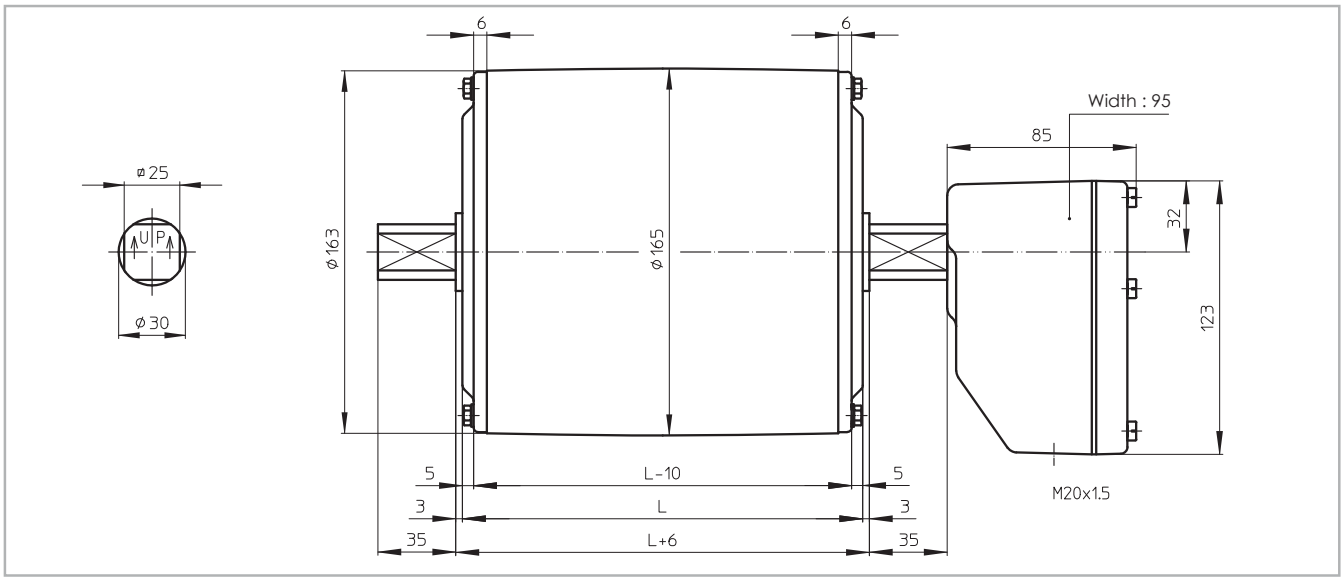
TM 160A30 CR

TM 160A30 CR, stainless steel Drummotor with polyamide junctionbox and CR sealing



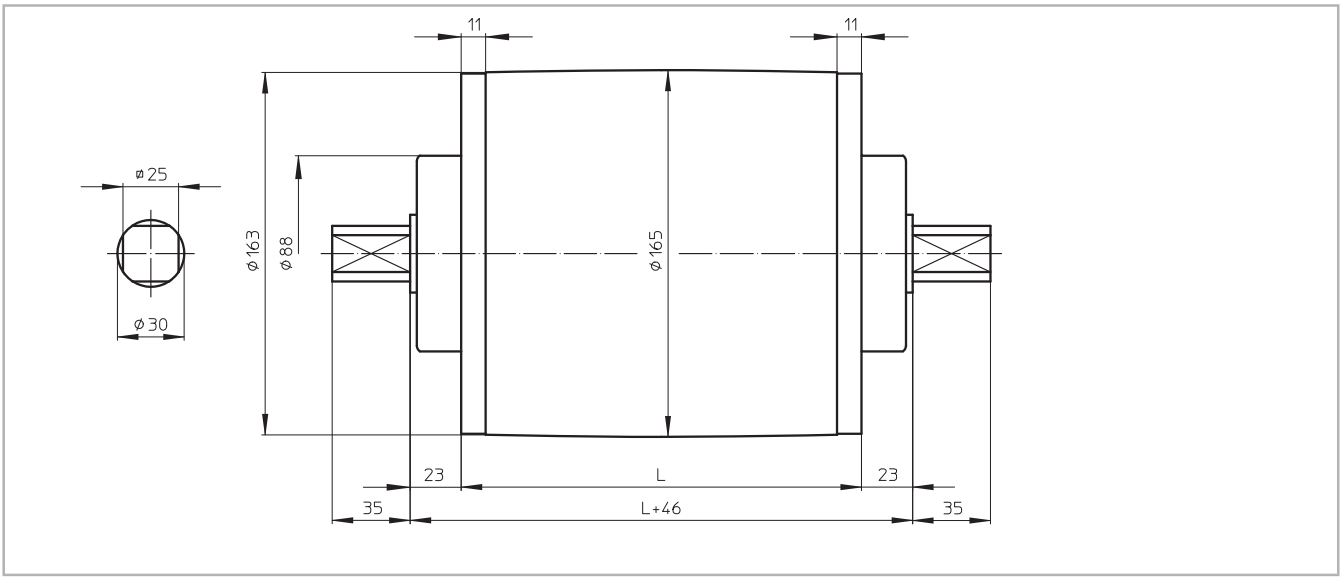
TM 160B30 CR

TM 160B30 CR, stainless steel Drummotor with polyamide junctionbox and CR sealing



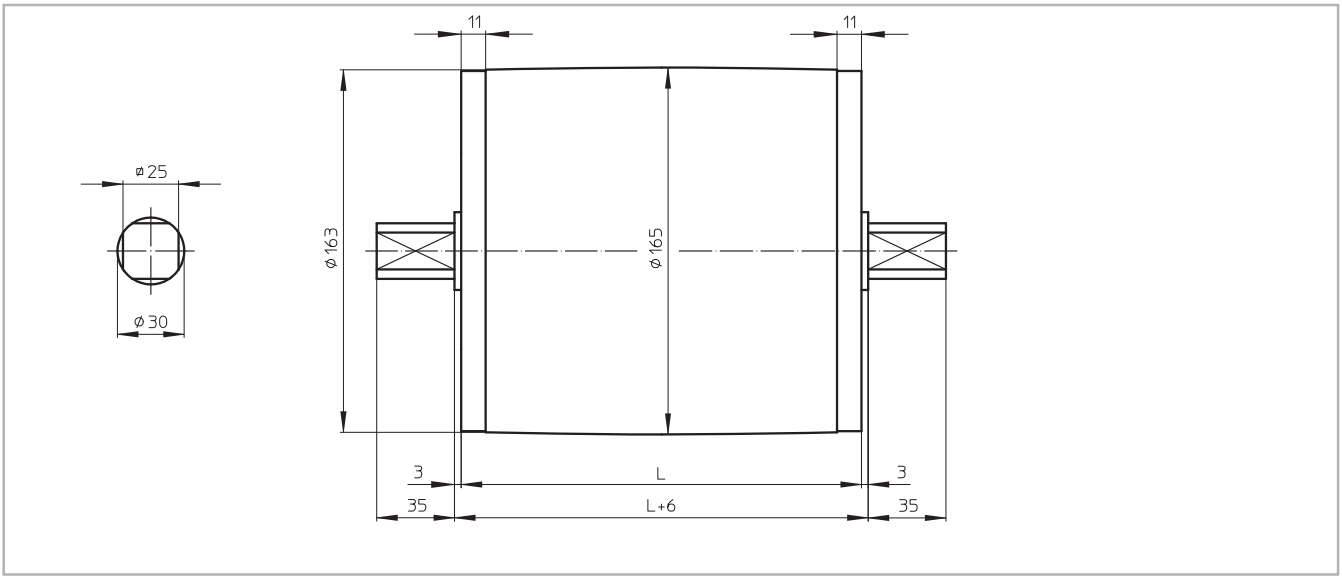
KT 160A30

KT 160A30, mild steel Taildrum



KT 160B30

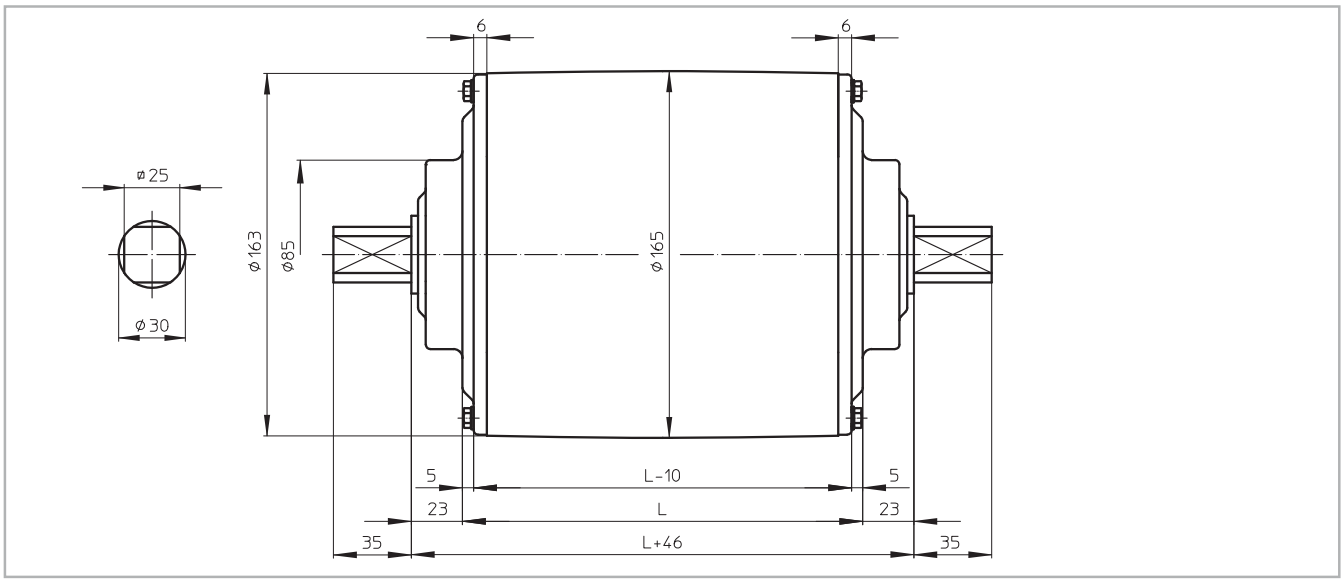
KT 160B30, mild steel Taildrum



Dimensions Taildrums stainless steel

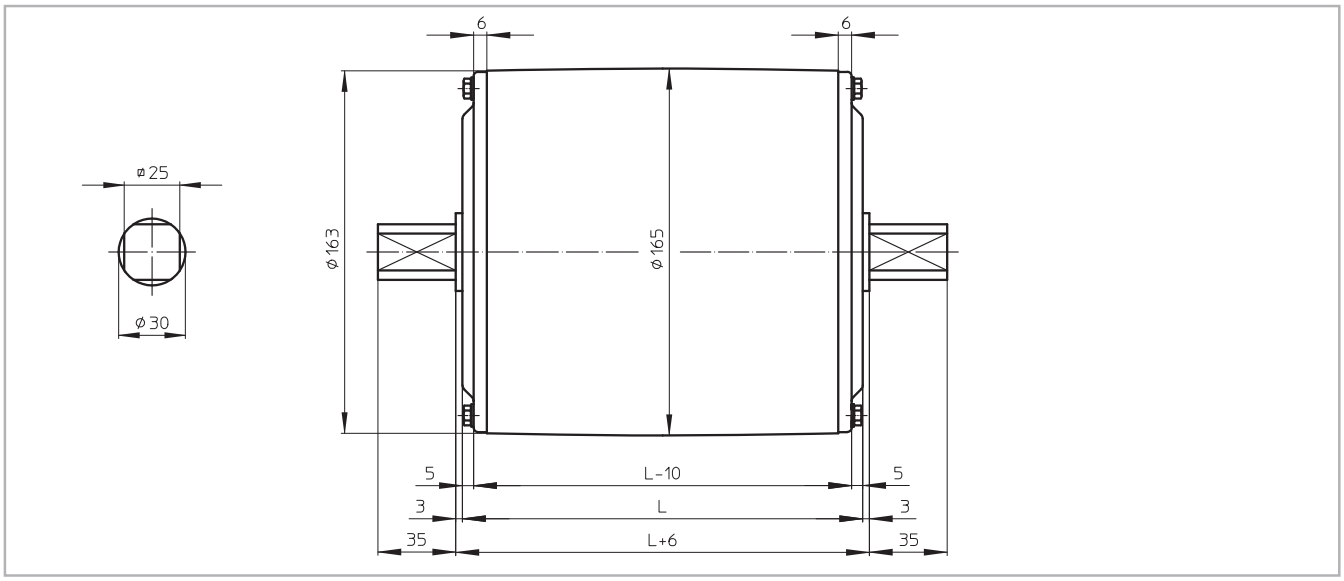
KT 160A30 CR

KT 160A30 CR, stainless steel Taildrum with CR sealing



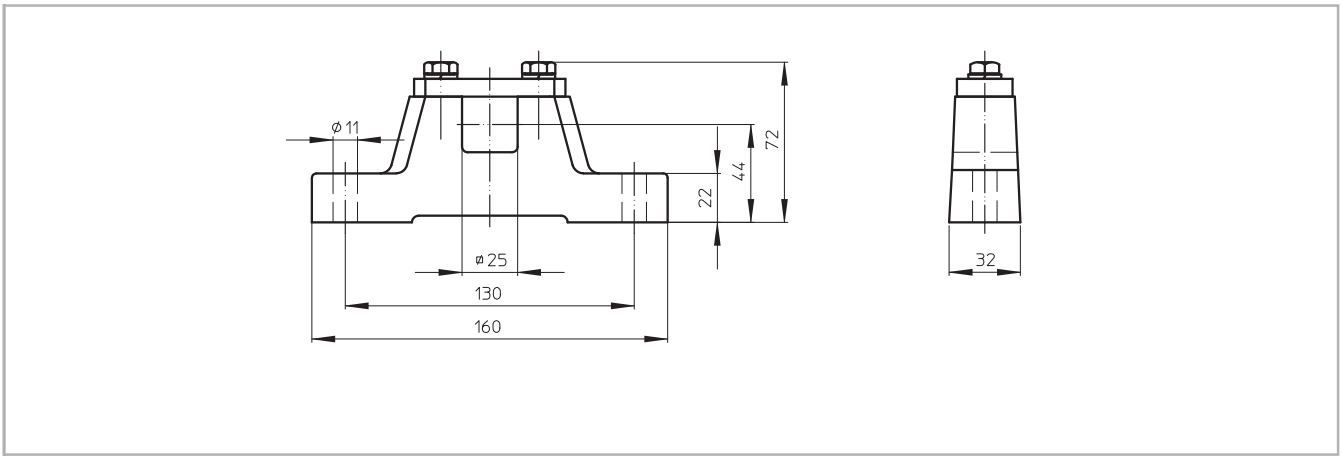
KT 160B30 CR

KT 160B30 CR, stainless steel Taildrum with CR sealing



AB 30

AB 30, cast iron or stainless steel bracket
Weight: 2,4 kg per pair

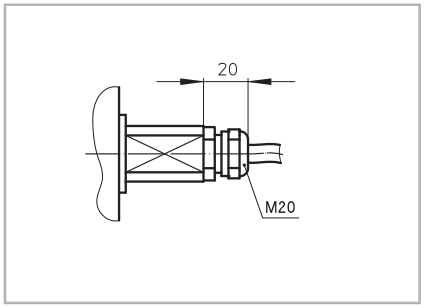


Standard design of a TM 160-30 is with a cast iron terminal box. For stainless steel design, this can be either a polyamide or stainless steel junctionbox.

On request a Drummotor 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.

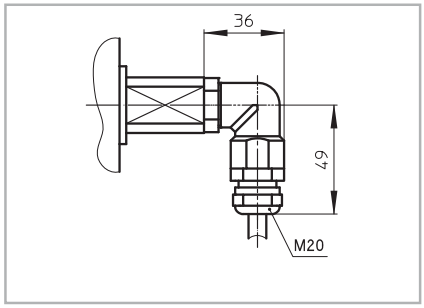
Option 1

Straight cable exit with cable gland



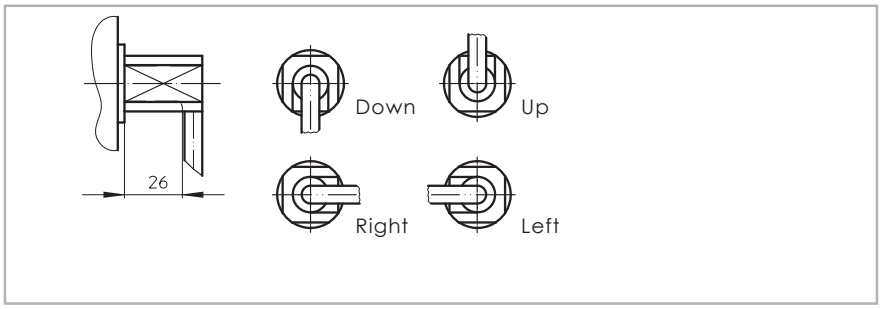
Option 3

Elbow cable exit with cable gland
(minimum facewidth increases with 25 mm)



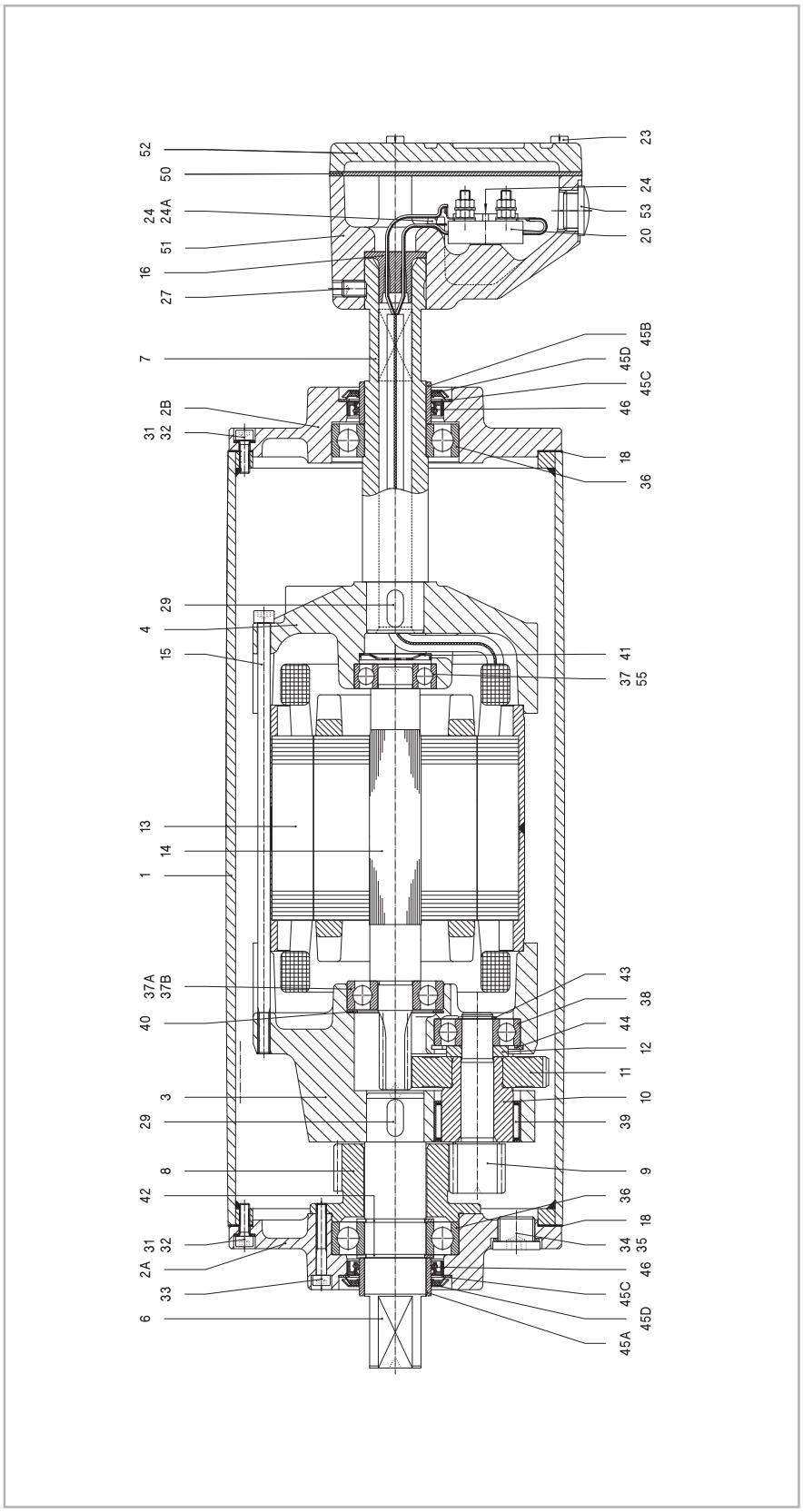
Option 4

Open cable exit (minimum facewidth increases with 25 mm)



Cross sectional / parts description

TM 160A30

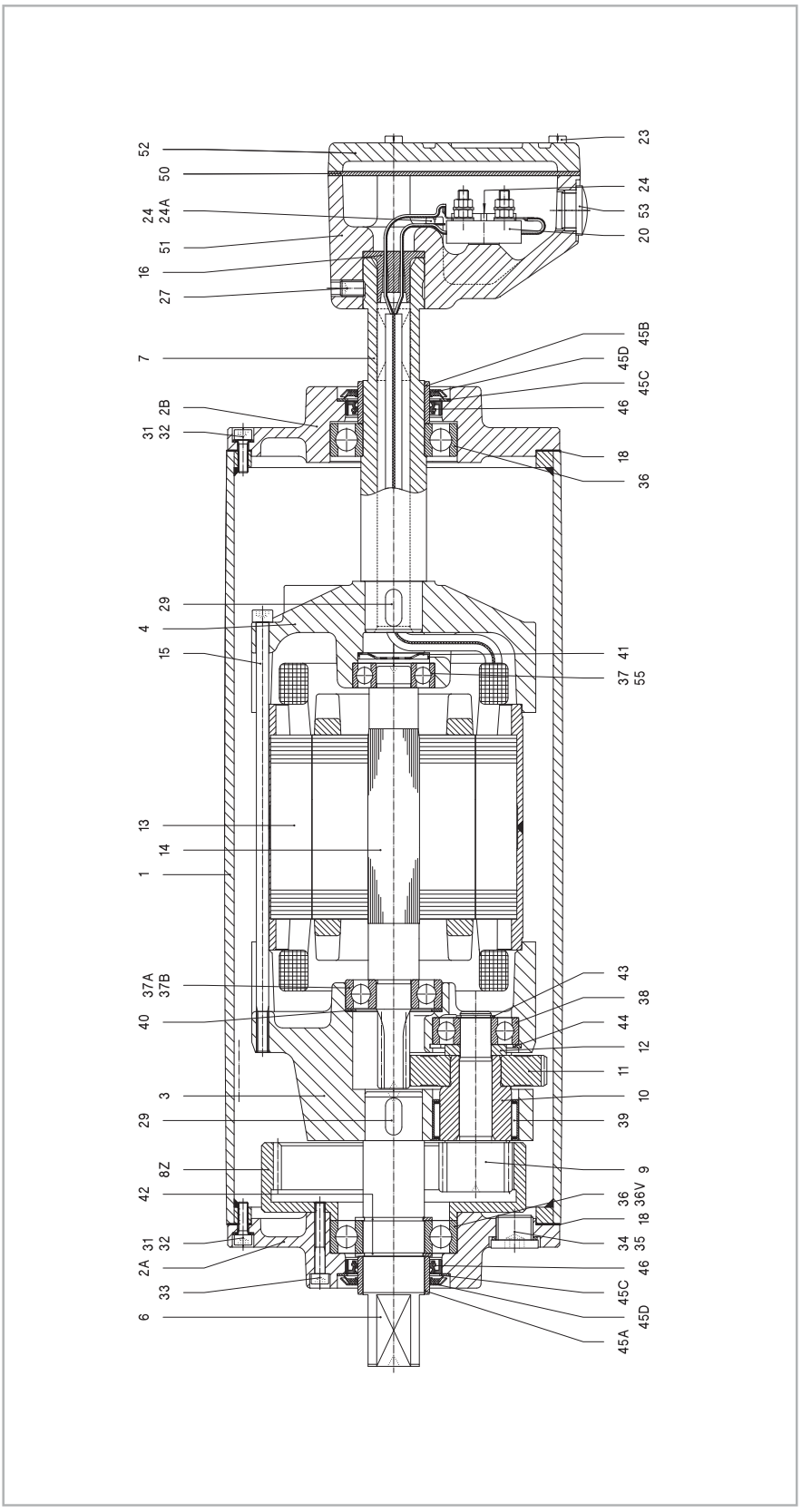


Remark: Drummotor also available in B-design (TM160B30)

Legenda

1	Shell	12	Distance ring	27	Setscrew	38	Ballbearing	45D	Gammaring
2A	Endflange	13	Stator	29	Key	39	Needlebearing	46	Oilseal
2B	Endflange	14	Rotor	31	Int. hex screw	40	Shim	50	Seal
3	Gearhousing	15	Int. hex screw	32	Washer	41	Disc	51	Junctionbox
4	Motorflange	16	Cable passage	33	Int. hex screw	42	Circlip	52	Junctionbox cover
6	Shaftend	18	Gasket	34	Fillerplug	43	Circlip	53	Stopping plug
7	Hollow shaft	20	Terminalboard	35	Washer	44	Circlip	55	Ballbearing incl. backstop
8	External gear	23	Cyl. head screw	36	Ballbearing	45A	Bearing race		
9/10	Pinion with bush	24	Cyl. head screw	37	Ballbearing	45B	Bearing race	57	Dataplate
11	Gear	24A	Toothed lock washer	37A/B	Ballbearing	45C	Shim plated		

TM 160A30 Z



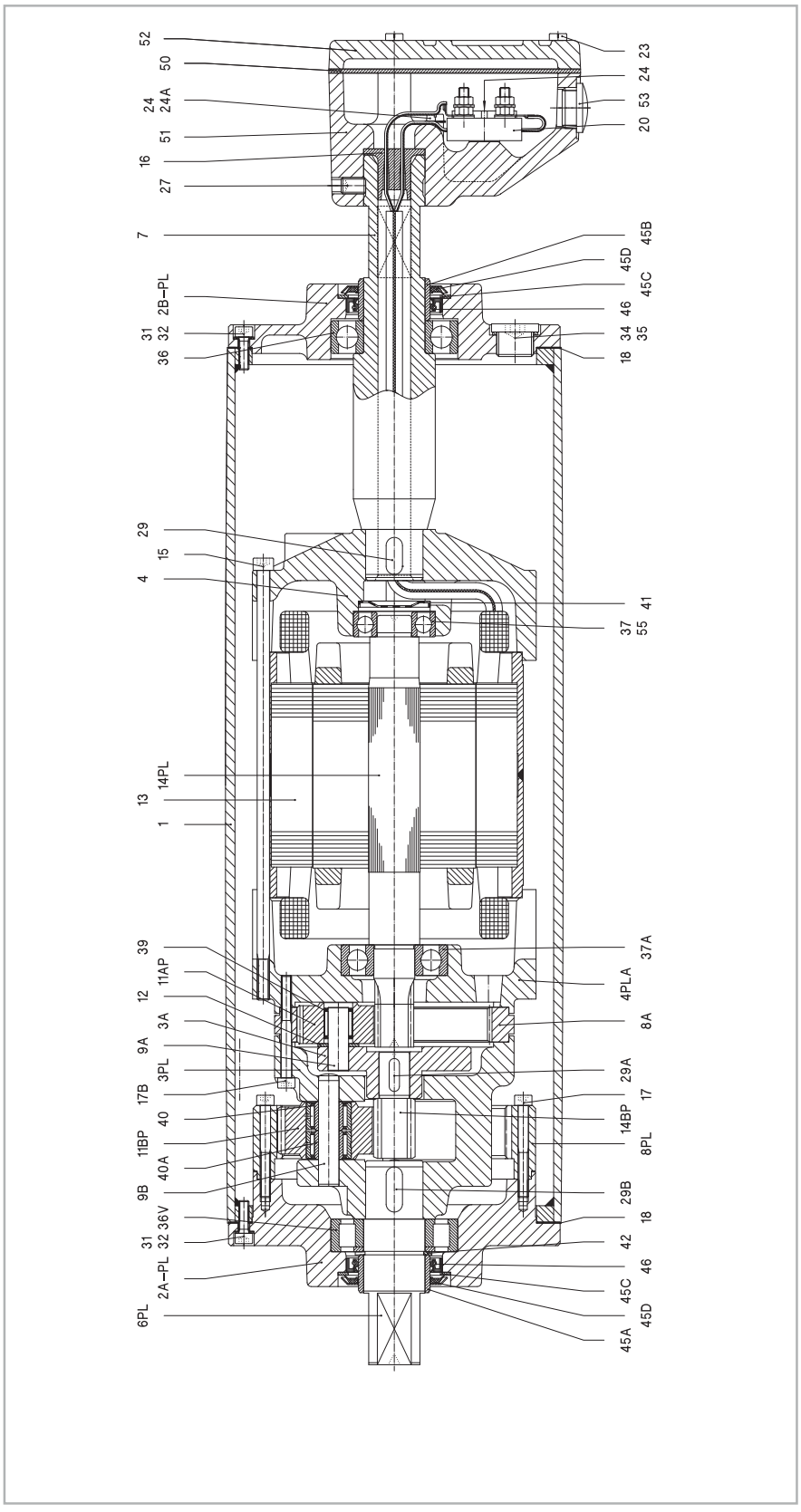
Remark: Drummotor also available in B-design (TM160B30 Z)

Legenda

1	Shell	12	Distance ring	27	Setscrew	37A/B	Ballbearing	45C	Shim plated
2A	Endflange	13	Stator	29	Key	38	Ballbearing	45D	Gammaring
2B	Endflange	14	Rotor	31	Int. hex screw	39	Needlebearing	46	Oilseal
3	Gearhousing	15	Int. hex screw	32	Washer	40	Shim	50	Seal
4	Motorflange	16	Cable passage	33	Int. hex screw	41	Disc	51	Junctionbox
6	Shaftend	18	Gasket	34	Fillerplug	42	Circlip	52	Junctionbox cover
7	Hollow shaft	20	Terminalboard	35	Washer	43	Circlip	53	Stopping plug
8Z	Internal gear	23	Cyl. head screw	36	Ballbearing	44	Circlip	55	Ballbearing incl. backstop
9/10	Pinion with bush	24	Cyl. head screw	36V	Cyl. roller bearing	45A	Bearing race		
11	Gear	24A	Toothed lock washer	37	Ballbearing	45B	Bearing race	57	Dataplate

Cross sectional / parts description

TM 160A30 PL2

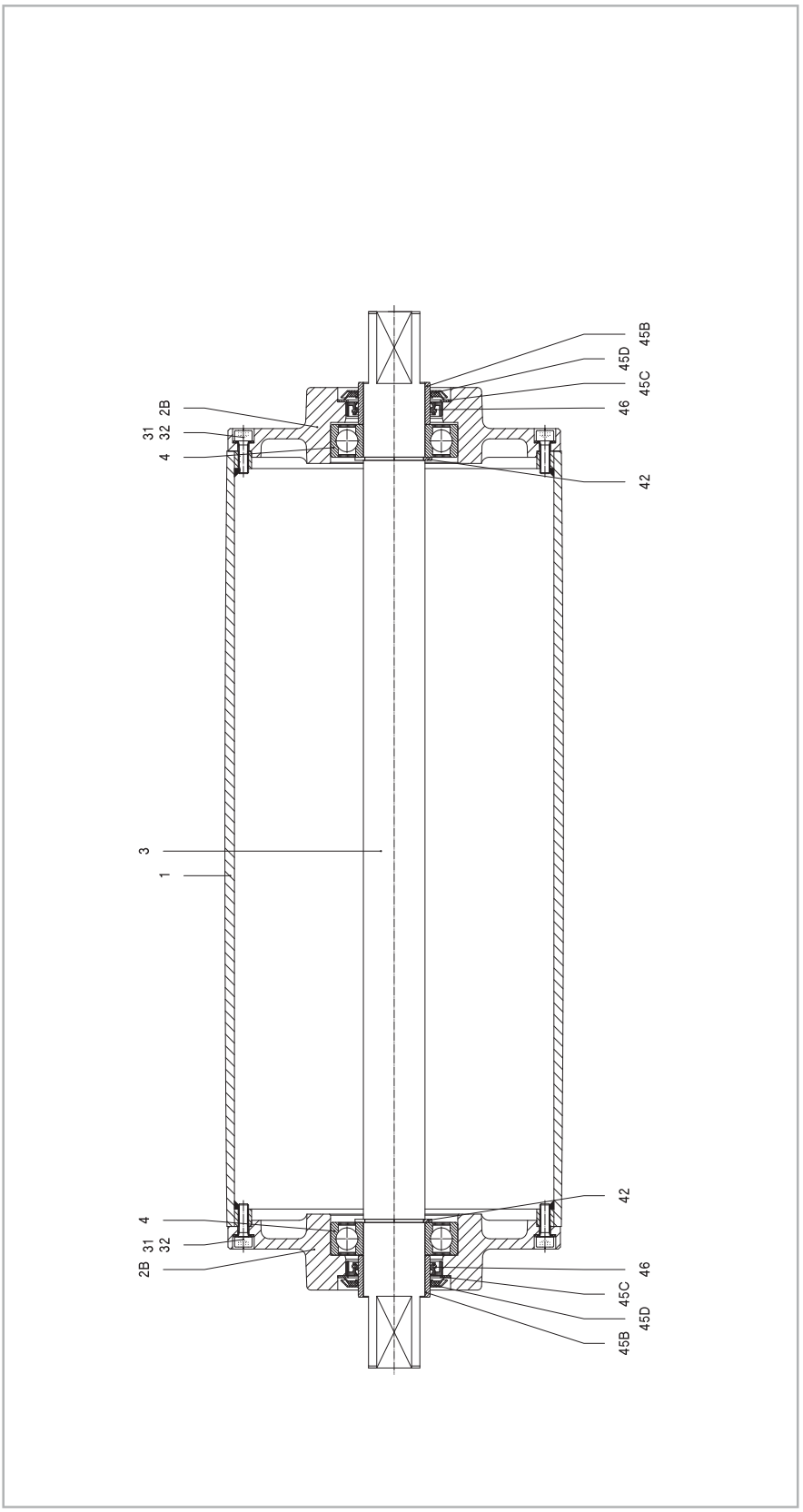


Remark: Drummotor also available in B-design (TM160B30 PL2)

Legenda

1	Shell	9B	Cylindrical pin	20	Terminalboard	36	Ballbearing	45D	Gammaring
2A-PL	Endflange	11AP	Planetary gear	23	Cyl. head screw	36V	Cyl. roller bearing	46	Oilseal
2B-PL	Endflange	11BP	Planetary gear	24	Cyl. head screw	37	Ballbearing	50	Seal
3A	Planetary carrier	12	Shim	24A	Toothed lock washer	37A	Ballbearing	51	Junctionbox
3PL	Planetary housing	13	Stator	27	Setscrew	39	Needlebearing	52	Junctionbox cover
4	Motorflange	14PL	Rotor	29	Key	40	Needlebearing	53	Stopping plug
4PLA	Motorflange	14BP	Sunwheel	29A	Key	40A	Innerring	55	Ballbearing incl. backstop
6PL	Shaftend	15	Int. hex screw	29B	Key	41	Disc		
7	Hollow shaft	16	Cable passage	31	Int. hex screw	42	Circlip	57	Dataplate
8A	Internal gear	17	Int. hex screw	32	Washer	45A	Bearing race		
8PL	Internal gear	17B	Int. hex screw	34	Fillerplug	45B	Bearing race		
9A	Cylindrical pin	18	Gasket	35	Washer	45C	Shim plated		

KT 160A30



Remark: Taildrum also available in B-design (KT160B30)

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

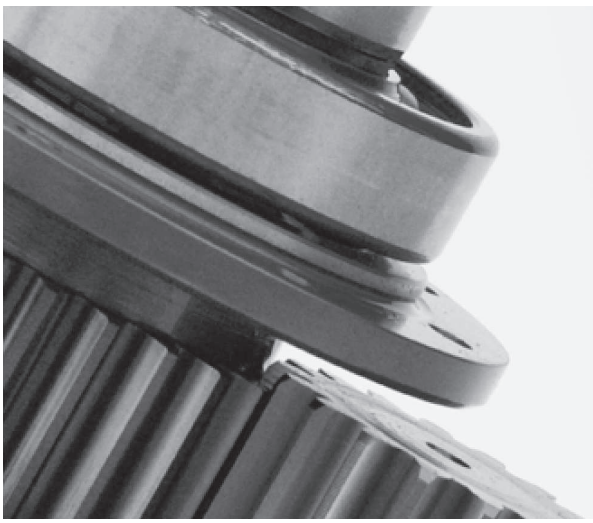
Specification	Standard	Optional
Construction		
Shafts and bolts	Mild steel	Stainless steel
Endflanges	Cast iron	Stainless steel
Shell	Mild steel	Stainless steel
Junctionbox	Cast iron	Stainless steel or polyamide
Cable		Shielded or non-shielded
Sealing mild steel	RB	RBS, HD
Sealing stainless steel	CR	UW
Shell		
Crowned	•	
Cylindrical		•
Balanced		•
Lagging, cold vulcanised		•
Lagging, hot vulcanised		•
Lagging, FDA approved		•
Fitted with grooves, patterns		•
Sprockets		•
Electro motor		
Three-phase asynchronous	•	
Power supply	230/400 V - 50 Hz	Other voltages and frequencies on request
Two speed (Dahlander)		•
Twin drive (double power)		•
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 drum motor		•
Encoder or sensor bearing in tail drum		•
Certificates		
CE	•	
UL		•
CSA		•
ATEX zone 22, dust		•
UW Under water application (IP68)		•

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