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References

Extract

ABB, MICHI, atec Sterile Technology, BOMAG, COMETTO PROPELLED TO THE MAX, ENERCON ENERGY FOR THE WORLD, HERMLE, HERRENKNECHT Tunnelling Systems, HINOWA, JENZ, KHS, KRONES, LIEBHERR, metso, Metz Rosenbauer Group, PHILIPS, SANDVIK, SUZLON POWERING A GREENER TOMORROW, TEUPEN ...access redefined, Vestas, WÄRTSILÄ, WISE, XEMC DARWIND

IMO

Slew Drive Product Catalog ST 318 E

ST 318 E

www.imo.de

IMO

Slew drives
Product catalog

www.imo.de

“We want you to be satisfied!“

IMO slew drives and **IMO ball and roller slewing rings** are quality products “made in Gremsdorf, Germany“ and are marketed around the world. Our corporate group, which has its head office in southern Germany, has around 30 years of experience in the production of slew drives and slewing rings.

The pinion or worm-driven **IMO slew drives** consist of a ball or roller slewing ring, a drive train and a completely enclosing, sealed housing.

As a ready-for-installation system module, they replace countless individual parts. Slew drives are used, for example, as steering gears in crane undercarriages and heavy load transporters, in manlift platforms, in picker arms, grabbers and other rotary devices in the construction, agricultural and forestry machine sectors. In the field of renewable energies, they are used in small wind turbines and solar trackers.

Depending on the area of application and the design of the **IMO slewing rings**, they can be up to over 6 m in diameter and more than 20 tonnes in weight. Areas of use include the fields of construction machines, agriculture, mining and quarrying, ship and plant engineering, transport and medical technology. IMO is one of the leading suppliers of blade, yaw and main bearings for on- and offshore wind turbines.

We have been certified since 1995 and currently hold DIN EN ISO 9001:2015, 14001:2015, BS OHSAS 18001:2007 and 50001:2011 approvals.

Table of contents

Quality DIN EN ISO 9001 certified

„Engineering at its best!“

IMO slew drives are subject to the highest quality requirements, as they are usually used as safety-critical machine elements. Development, design, calculation, production and marketing are performed strictly according to DIN EN ISO 9001 certified processes.

For special versions to customer requirements, we supply test certificates according to DIN EN 10204 (e.g. 2.1 Declaration of compliance with the order, 2.2 Test report, 3.1 or 3.2 Inspection certificate) for the material and/or the finished slewing ring. Material certificates document the chemical composition and the mechanical properties.

The destructive and non-destructive material test is carried out according to state of the art methods, including the use of ultrasonic inspection methods developed by the Fraunhofer Institute.

Nomenclature

WD – L □ 0156 / 3 – 01234

Drawing end number

Type of gearing
- **1:** Bronze
- **2:** Quenched and tempered
- **3:** Hardened tooth flanks
- **4:** Hardened tooth flanks and base (SP-H only)

for WD-L and SP: Raceway diameter [mm]
for WD-H: Bolt PCD of worm wheel [mm]

Identification only for special versions, e.g.
- **C:** Customer-specific

Series
- **L:** Light series
- **I:** Intermediate series
- **H:** Heavy duty series

Design types
- **WD:** Worm gear driven type
- **SP:** Spur gear driven type

Product range Overview / Comparison

Design types	Series	Sizes	Raceway diameters D_L [mm]	Maximum torque [1] $M_{d\,max}$ [kNm]	Maximum tilting moment [1) 2)] $M_{k\,max}$ [kNm]	Load carrying capacity [1] Static load rating, axial $C_{0\,ax}$ [kN]	Load carrying capacity [1] Static load rating, radial $C_{0\,rad}$ [kN]	Weight [1] G [kg]	Bearing clearance
Worm gear driven types	 **WD-L** series	0156 0223 0230 0343 0419 0478 0625 0620 0713	156 223 230 343 419 478 625 620 713	from 3280 to 446504	from 9 to 1095	from 253 to 7777	from 94 to 2906	from 40 to 1400	Preloaded raceway system
	 **WD-H** series	0220 0300 0373 0490 0645	220 300 373 490 645	from 11093 to 152610	from 94 to 1052	from 1650 to 7199	from 616 to 3528	from 89 to 516	Preloaded raceway system
Spur gear driven types	 **SP-I** series	0229 0311 0411 0541 0641 0741 0841 0941 1091	229 311 411 541 641 741 841 941 1091	from 3002 to 11172	from 22 to 353	from 426 to 1957	from 159 to 731	from 46 to 127	Radial clearance 0 - 0.05 mm Axial tilting clearance 0 - 0.08 mm
	 **SP-H** series	0455 0555 0655 0755 0855 0955	455 555 655 755 855 955	from 27673 to 51888	from 153 to 562	from 1477 to 3101	from 552 to 1159	from 207 to 315	Radial clearance 0 - 0.05 mm Axial tilting clearance 0 - 0.08 mm

1) Data relate to the smallest and largest size per series

2) Always check permissibility in the corresponding limiting load diagram of the individual sizes

A slew drive - what actually is that? What is it used for and why?

... A ready-to-install unit comprising:

- A ball or roller slewing ring for handling simultaneously occurring axial and radial and tilting moments
- Hydraulic or electric drives
- A fully enclosed housing

"Bolt, connect, slew - done!"

One slew drive instead of many individual parts!

- Perfectly matched components
- Simple to order - easy to mount
- Saves component assembly and any adjustment work
- Supply and system responsibility from a single source

Simple product selection and use

- Comprehensive standard program of various sizes and designs
- As a rule, immediately available from stock
- Comprehensive customer service and qualified technical support

IMO slew drives have it all...

- Compact design for space-saving constructions
- Maximum load capacity in compact design
- Designed for long service life with low maintenance
- Simple integration into existing applications
- Fast customization thanks to modular structure (modular system)
- Special designs deviating from our standard series are realizable

...and are used around the world in:

- Steering systems for specialized vehicles and cranes (as steering gears for wheel sets)
- Manlift platforms for slewing booms and baskets
- Lightweight cranes
- Machine attachments, such as concrete demolition pincers, picker arms and rotary forklifts
- Handling devices (automation technology)
- Loading and unloading devices
- Positioning devices / turntables including solar trackers

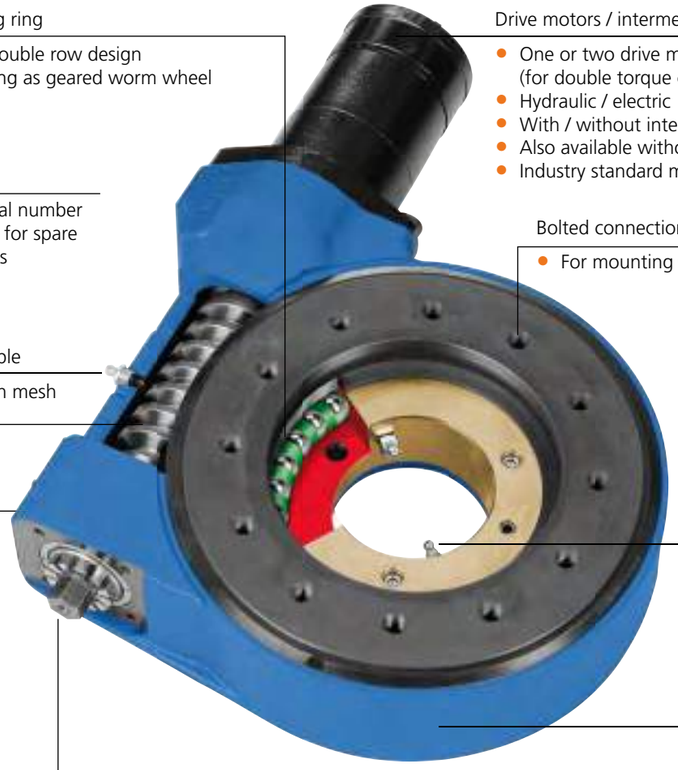
IMO – the driving force for innovative technologies

IMO slew drives with encapsulated housing

- Protection against
  - Contamination
  - Damage
  - Lubricant loss
- Results in
  - Increased service life
  - Lower maintenance costs
  - Extremely high operational safety
  - (reduced risk of injury)
  - Attractive, clean appearance

Wide range of applications for all kinds of loads

- Peak torques
  - Steel / bronze: 205.027 Nm
  - Steel / steel: 446.504 Nm
- Tilting moments to 1095 kNm
- Raceway diameters from 156 to 1091 mm
- Larger diameter variants available on request



Ball slewing ring
- Single/double row design
- Outer ring as geared worm wheel

Drive motors / intermediate brake if applicable*
- One or two drive motors (for double torque capacity)
- Hydraulic / electric
- With / without intermediate gear box
- Also available without motor
- Industry standard motor connection

Type plate
- Type / serial number
- Reference for spare part orders

Bolted connection
- For mounting structure

Grease nipple
- for tooth mesh

Grease nipple
- for raceway

Housing
- Closed
- Self-supporting

Connection point for optional attachments, such as rotary encoder, permanent or hydraulic brake*
- Integrated self-locking brake ensures safe and smooth operation
- No stick / slip effect, nosudden lurching when starting to move
- Rapid manual emergency operation possible using hand crank

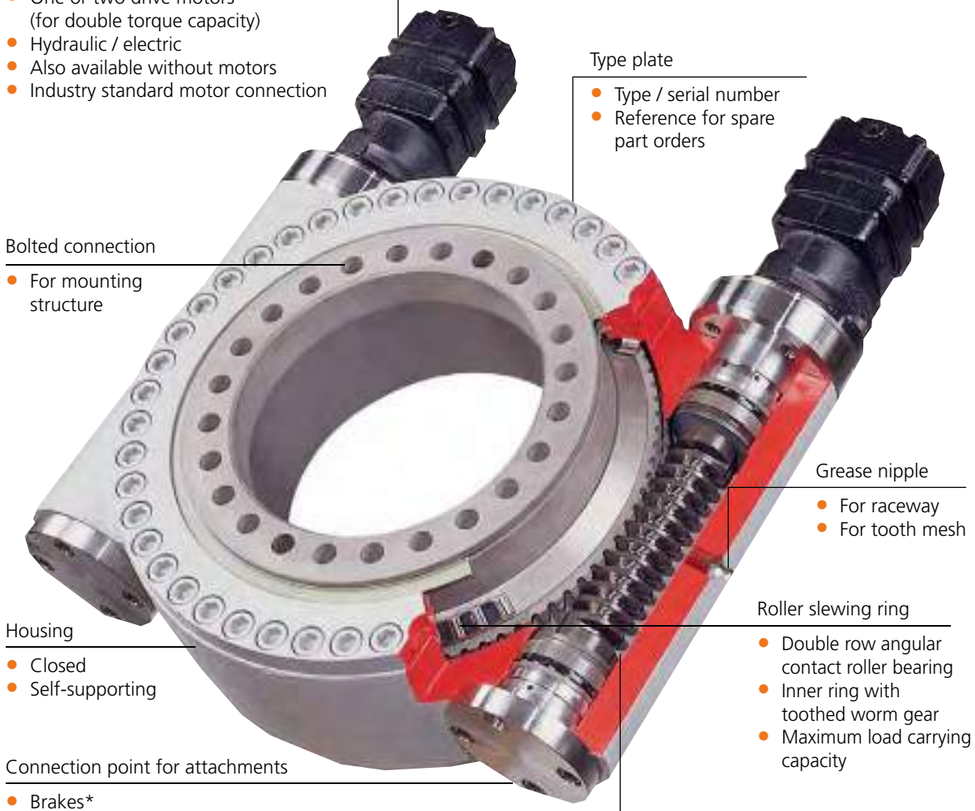
Worm drive
- High gear ratio / high torque
- Worm gear
- Highest load carrying capacity / service life
- Low tooth flank backlash

* Brake connection option dependent on slew drive design

Drive motors / intermediate brake if applicable*
- One or two drive motors (for double torque capacity)
- Hydraulic / electric
- Also available without motors
- Industry standard motor connection

Type plate
- Type / serial number
- Reference for spare part orders

Bolted connection
- For mounting structure



Grease nipple
- For raceway
- For tooth mesh

Roller slewing ring
- Double row angular contact roller bearing
- Inner ring with toothed worm gear
- Maximum load carrying capacity

Housing
- Closed
- Self-supporting

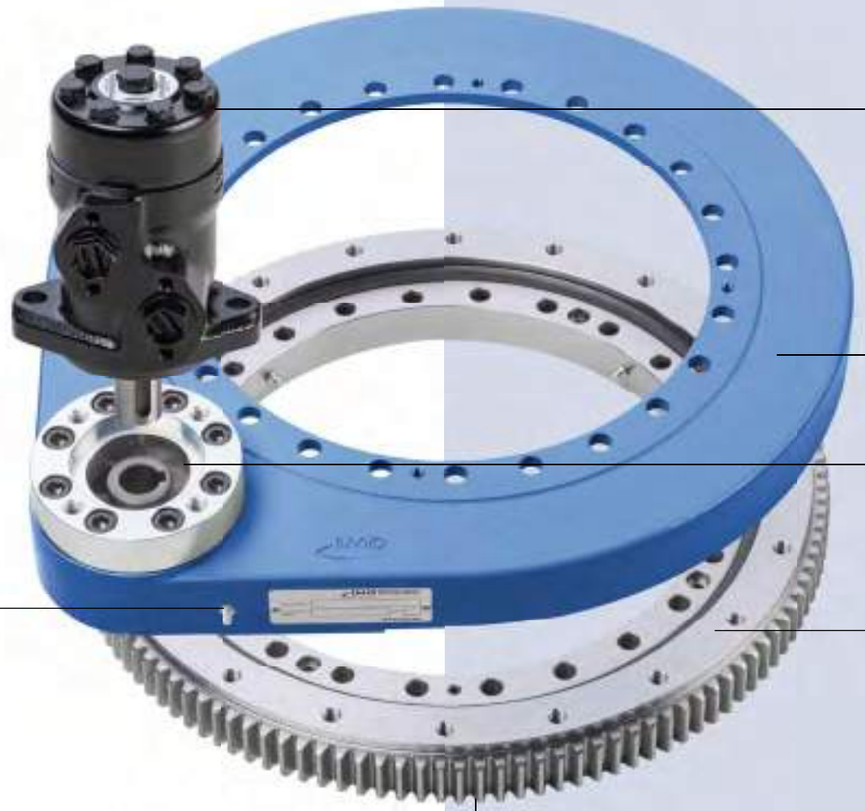
Connection point for attachments
- Brakes*
- Rotary encoder

Worm drive
- High gear ratio / high torque
- Worm gear
- Highest load carrying capacity / service life
- Low tooth flank backlash

Sealing

Axial bearing for the worm shaft

* Brake connection option dependent on slew drive design



Drive motors

- Hydraulic / electric
- With / without intermediate gear box
- One drive (standard)
- Multiple drives possible as special design

Housing

- Closed
- Self-supporting

Drive pinion

- Hardened
- Double supported (SP-I)
- Supported by planetary gearbox (SP-H)

Ball slewing ring

- With external gear
- High load carrying capacity

Grease nipple

- For tooth mesh

Sealing

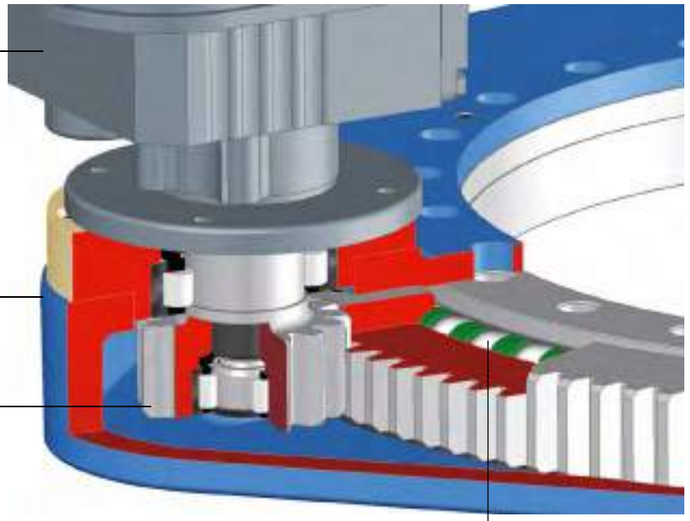
- Protects against ingress of foreign bodies

Bolted connection

- For mounting structure

Grease nipple

- For raceway



SP-I slew drive with three-phase electrical motor and intermediate spur gear box

WD-L slew drives have an impressive combination of features!

The WD-L series comprises **9 standard sizes**

WD-L 0156

WD-L 0223
WD-L 0230

WD-L 0343

WD-L 0419

WD-L 0478

WD-L 0620

WD-L 0625

WD-L 0713

If you are looking for a **standardized design solution** for different external loads and a broad torque range, then the lightweight IMO slew drives are exactly the right choice!

Modular system
enables the use of various drive motors (example: WD-L 0419)

Basic version without drive

Version with hydraulic motor

Version with three-phase electrical drive and intermediate spur gear box

Version with two drives to double torque capacity

Drives can be adapted
to your operating conditions (example: WD-L 0419)

Standard steel worm wheel, optimized for high load carrying capacity during short-term operation (intermittent operation)

Modified worm wheel made of bronze for applications with increased duty

Single row ball slewing ring

Double row ball slewing ring for increased load carrying capacity for the same size

Examples of our customized **special designs**

Assembly comprising a WD-L special version, bolted to a base plate for a paver stone laying machine turning device

Frameless worm gear set with integrated slewing ring, in a hot version (high temperature operation) for a forklift rotator (IMO delivers the worm gear set, customer mounts it in their own housing)

Optional **attachments** (example: WD-L 0343)

Slew drive with attached rotary encoder

Slew drive with installed spring-applied multi-disc brake and motor

Our WD-H family - which model do you need?

The WD-H series comprises **5 standard sizes**

WD-H 0220

WD-H 0300

WD-H 0373

WD-H 0490

WD-H 0645

The WD-H series is unique!

The torques transmitted in the compact construction space and the supported tilting moments set new standards on the market.

Flexible adaption to special operating conditions through **modular system** (example: WD-H 0300)

Basic version without drive

Version with one drive

Version with two drives (double torque capacity) available from size WD-H 0300 and above

Version with two drives and additional brakes opposite the motors

Version with two drives and attached rotary encoder

There's no problem without a solution – Examples of our customized **special versions**

WD-HC 0373
with twin three-phase electric drives and intermediate spur gear boxes

Slew drive with pinion outlet to drive a ball slewing ring for the tracking of satellite antennas

WD-HC 0373
with bronze worm wheel for increased duty (used for an amusement park ride)

WD-HC 0300
with spur toothed clutch as overload protection for a deep mining rock drilling rig

WD-HC 0300
with special housing made of seamlessly rolled quenched and tempered steel and special material acceptance test criteria and a specially designed worm wheel set for increased torques

SP slew drives offer a closed housing

Standard slewing ring connection dimensions ensure complete interchangeability!

SP-I

Structural overview

SP-I, intermediate series

Connection dimensions as for ball slewing ring 120 series

- Construction height increased by base plate thickness of 10 mm
- Ball Ø 20 mm
- Module 4 mm

Direct drive without intermediate gear box

SP-H

SP-H, heavy duty series

Connection dimensions as for ball slewing ring 125 series

- Construction height increased by base plate thickness of 15 mm
- Ball Ø 25 mm
- Module 8 mm

Single or multi-level planetary gears

SP-HC 0955

Examples of **special versions** on request

Slew drive of the heavy-duty SP-H series with four electric motors / planetary gears for a recycling plant agitator.

SP-HC 0755

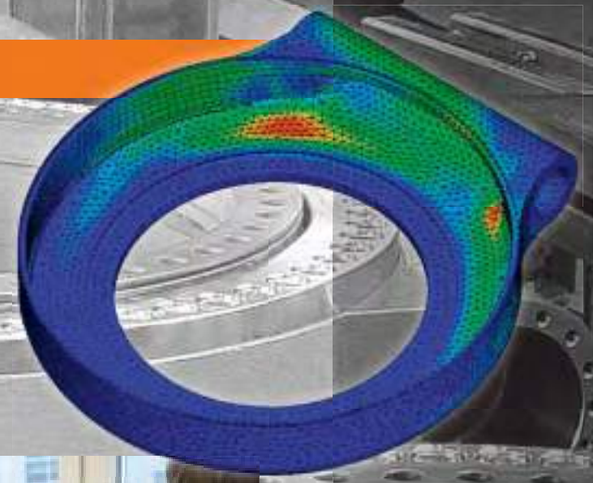
Slew drive of the SP-H series with two drive modules (hydraulic motor / planetary gears) for a marine rescue crane

SP-HC 0655

Special construction with mounting option for a rotary encoder next to the planetary gear (opening for pinion pick-up); application: Turning device for a backhoe bucket (construction machine for shafts)

Advice & Service

PRE SALES



KNOW-HOW

The right impetus for your successful project

- Technical advice
- Design and calculation
- Construction and drafting
- FE calculation including complex mounting structures
- Integration of your FE calculation
- Product training courses

AFTER SALES

SUPPORT

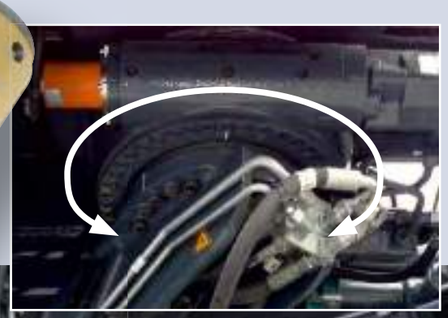
Expert support beyond project completion

- Installation support
- Assessment and optimization advice
- Repair and maintenance
- Lubricant analyses; sealing assessment, wear measurement
- Tests for the use of lubricants
- Examination of grease compatibilities
- Application-oriented component testing on test benches
- Bolting service, bolt check
- Dismantling and inspection
- Mobile CMS (Condition Monitoring System) measurements
- Measurement of the plane surfaces of the mounting structure using lasers
- Organization of the certification of slew drives, rolled rings, calculations, complete slewing rings
- e.g. through DNV, Bureau Veritas, Lloyds Register of Shipping
- Express service for urgently required spare parts or prototypes
- Packaging replacement, long-time packaging for up to 5 years
- Work on construction sites of leading Level 3 rope access technicians with FISAT certification
- Inspection of PPE (personal protection equipment) against falling according to BGG 906

Applications

Steering gears for special vehicles

Special slew drive WD-L 0582 with bronze worm wheel for longer duty.



Heavy load modular transporters present big technical challenges. Each individual axle is steered by an IMO Slew Drive under the highest axial and radial forces and tilting moments. Despite the extreme loads, an exceedingly compact design is required for the pivot plate. The **WD-H 0300 size with steering torques of up to 44720 Nm**, is, as shown in this example, predestined for this application.

Side loader with steering gears of the **WD-L 0223** and **WD-L 0419** series. The high duty requires the use of bronze worm wheels.

This **self-charging, self-controlling electrical transporter**, used in hazardous areas, uses a slew drive of the **WD-L** series.

Applications

Steering system solutions

Applications

Steering gears for crane undercarriages

Highest output torques, the capacity to handle extreme tilting moments and the very compact design mean that **WD-H slew drives** are predestined for use as **steering gears**. Integrated rotary encoders support computer-controlled steering systems.

Undercarriages of cranes and special vehicles thus achieve **unique maneuverability**, which also includes turning on the spot. Our steering gear gives the end product **unique selling points**, which our customers have appreciated for many years.

Mobile silo equipped with a slew drive of the **WD-H** series.

The undercarriage of a **mobile dock crane** with the **WD-HC 0300** steering gear. The rotary encoder for the pick-up of the absolute steering angel can be seen opposite the hydraulic motor.

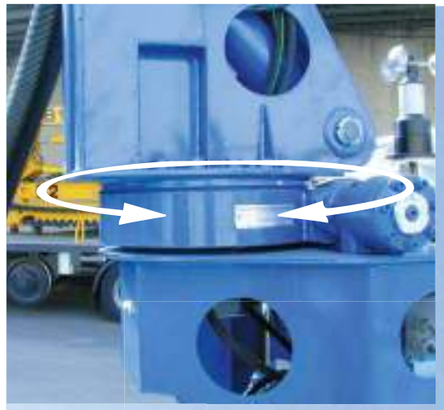
In this **ship lift with a width of 22 m and a height of 25 m**, there are sixteen axles, each with a **WD-H 0645** slew drive. They allow a 360° rotation of each axle.

Ship lift with four slew drives of the **WD-HC series** to lift and relocate ships with weights of up to 150 t.

This **remote-controlled ship lift** has a capacity of 320 tonnes. The 16 wheels can be moved in five steering modes: Front wheel, rear wheel and all wheel control, crab steering and carousel operation.

In concrete works, large **mobile gantry cranes** move heavy, bulky prefabricated concrete parts. The **WD-HC 0645** slew drive allows an individual steering angle for all axles. The steering torque under maximum load for stationary steering is approx. 150,000 Nm!

The high gear ratio and flat design of the **WD-L** series are stand out features when it comes to **manlift platforms**. The range of sizes in this series allows their use on all kinds of platforms with lifting heights of approx. 7 to 27 meters - design standardization at its best.

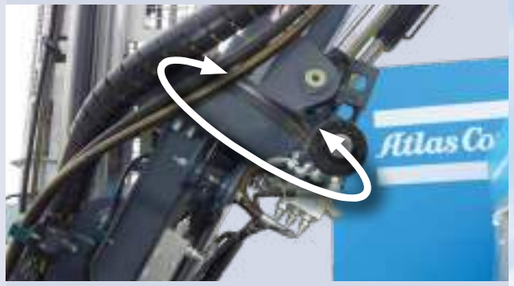


On account of their good power to weight ratio, single and double row **WD-L 0223** slew drives are ideal for **slewing the basket** on large platforms.

Applications
Lifting platforms

Underbridge inspection device with boom rotary joint **WD-HC 0300**; one worm drive train with multi-disc brake, suspended load.

Small lifting platforms on crawler tracks.



Slew drives of the **WD-H and WD-L** series are used in combination with hydraulic motors and brakes for slewing and positioning **various** stone drilling machine attachments.

Applications
Drilling and piling technology

This **ram** positions piles and sheet piling with the support of a **WD-H**.

Applications
Amusement park rides

The gondolas of the **roller coaster** are rotated using a **WD-HE 0373** slew drive.

A total of **five ball slewing rings with internal gears** in three rotation axes are used in this **amusement park** ride.

The audience viewing area in this **4-D movie theater,** which can be slewed in all directions, is moved by **two WD-L 0713 slew** drives.

In this **amusement park ride, Gyroswing**, passengers are given a feeling of near weightlessness. A **slew drive of the SP-HC 1160** series takes over the rotation of the passenger wheel.

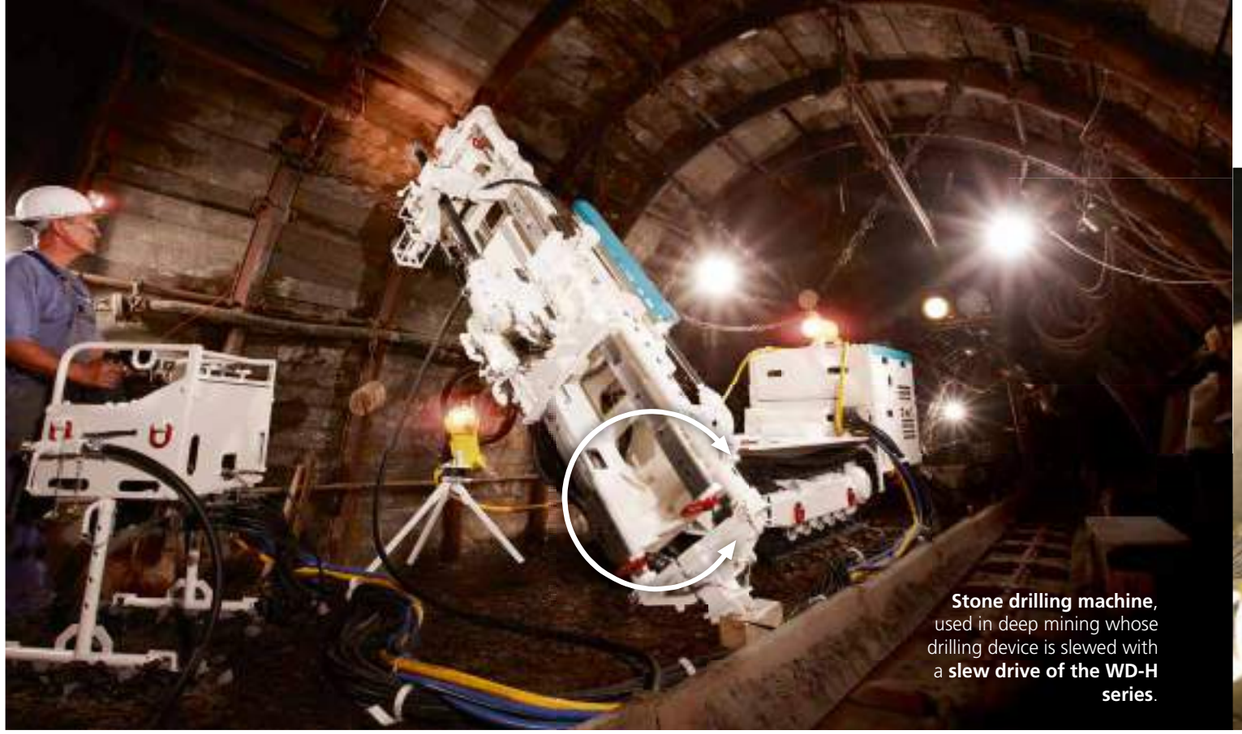
Applications
Medical technology

In these **clean room lifts** for handling vessels, containers and bags in the pharmaceuticals industry, there are two **WD-L** slew drives and one **WD-H** slew drive **with adaptions for various electric** motors.

Computer-aided testing and training devices are used for the prevention of back problems and rehabilitation after back problems. In this device, one **SP-I and one WD-L slew drive** enable the inclination of the body in two axes.

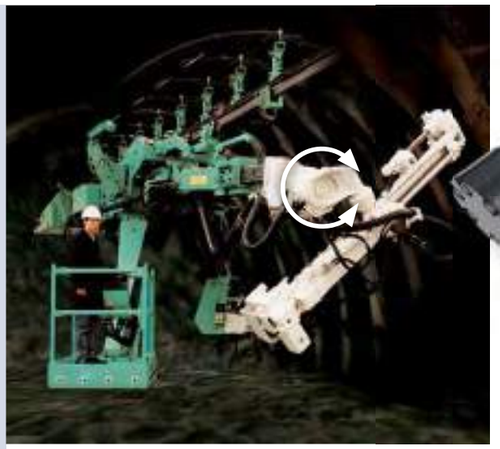
BfMC GmbH

Applications
Mining and tunneling



Stone drilling machine, used in deep mining whose drilling device is slewed with a **slew drive of the WD-H series**.

Instead of a standard erector bearing (a geared slewing ring with a large diameter for positioning wall form work for the segment lining of tunnels), this **manipulator** uses a considerably more compact **WD-HC 0373** slew drive with two worms and holding brakes.



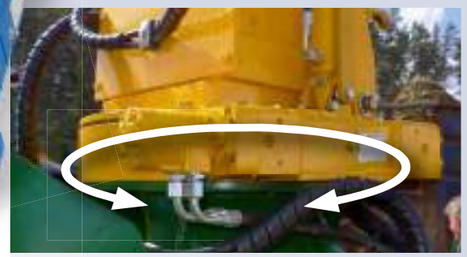
Here, slew drives of the WD-H series are used in a **handling grab in deep mining,** to maneuver the operating cab of a **drilling machine** and in a **concrete spraying machine** to position the long boom.

The **WD-HC 0220** slew drive shown here has an integrated locking device with decouplable spur gear to secure the position of this **deep mining blast hole drilling rig**, during drilling.

Slew drive **SP-HC 0698** with hydraulic gear motors to rotate an **excavator arm**, which is part of a cutting outrigger of a tunnel boring machine.

Applications
Forestry and agricultural technology

In all the **spouts of the wood chippers** shown, there is a slew drive of the **WD-L** series.



These **chippers** are e
quipped with slew drives of the **WD-L and SP-I** series, to position the chipper and/or the spout.

Applications
Forestry and agricultural technology

In the **forestry and agricultural sector**, IMO slew drives are used for **movement and** readjustment.

The driver's cab of this **combination forestry vehicle** is rotated using a slew drive of the **SP-I** series.

Manure vehicles are equipped with **WD-L 0419 and SP-IC 0411**.

On these **slope mowers**, the rotational adjustment of the mowing unit or of the motor block is performed by a slew drive of the **WD-L** series.

This **tree cutter**, used to cut back trees and bushes, works using a **WD-L 0478**.

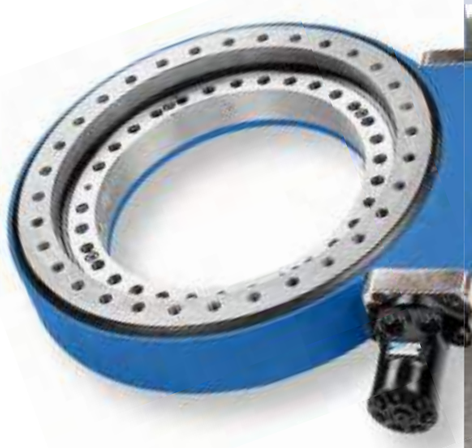
To protect the gear of the slewing device of this **concrete demolition pincer** safely against damage from overloading, a slip coupling is integrated into the spur gear driven **SP-OP 0580 slew drive** (OP = "overload protected").

This **picker arm** is equipped with a **slew drive of the SP series** as rotary joint.

Applications
Construction machines

With this **special vehicle for bulk material,** the discharge is rotated using a **WD-L 0343**.

Transport concrete mixer, equipped with a 16.5 m conveyor belt slewed with two **WD-LC 0419**. The significant area density of the belt leads to **high tilting moments**, hence the use of a double row design with reinforced housing.



A **WD-L 0478** allows the 360 ° otation of this **pivoted crawler track unit of a slipform paver**.

Slew drive of the **SP series** in a special design for the **foundation picker arm of a heavy-duty construction machine.**

In this **mobile animal feed plant**, an **SP-IC 0229** slew drive is used to rotate the boom.

Here, in this **high pressure rinsing and suction vehicle**, a **WD-L 0419** slew drive slews and positions the boom arm for drain cleaning work.

3 slew drives are **used in this suction dredger:**
A **WD-LC 0625** to rotate/tip out the grouped goods container, a **WD-L 0419** to slew the entire suction boom and an **SP-I 0311** to rotate a front, geared pipe for loosening stones and earth.

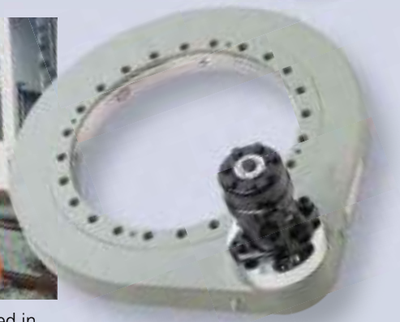
This **work boat**, used in Dutch canals, uses a slew drive of the **WD-L series to move the excavator arm**.

Driver cabs on harvesters can be rotated by a **WD-L slew drive** with integrated hydraulic motor and permanent brake.

A **WD-L slew drive** enables track adjustment of this **disc plow**.

© mera Rabeler

Special vehicles, like this refitted PistenBully, use **WD-L** slew drives for rotating attachments.



Slew drives of the SP series are integrated in **rail vehicles** of this type, used to clean tracks.

The turntable ladder of this fire truck is rotated **using a special slew drive of the SP** series.

Applications
Factory automation / intralogistics

A **WD-H 0645** is the central rotation element in this **pallet changer** for a **5-axis machining center**.

A **positioning and slewing device in combination with a hall crane** for heavy machine elements and workpieces. Here, **size 0478 WD-L slew drives** are in use.

Handling of a **workpiece storage system**.

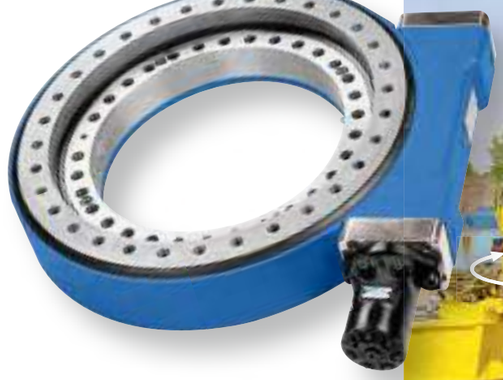
WD-L slew drives are used in these **forklift rotators**.

In this **transport vehicle for liquid metals**, a **WD-L slew drive 0478** is installed in the top rotary joint, as well as two additional **WD-L slew drives 0343** in the side arms, for slewing the casting ladle.

The aggressive environmental conditions that **deep mining cranes** are exposed to in salt mines are countered by using a **WD-HC 0373** slew drive. Brakes enable position locking, even when the crane is inclined steeply to the vertical.

This **crane** is rotated by a slew drive of the **WD-H 0373** series.

The railway slewing crane with cross-beam for positioning track sections uses a slew drive **WD-L 0478**.



Light cranes are part of the standard equipment of **service trucks**; slew drive used: **WD-L 0343**.

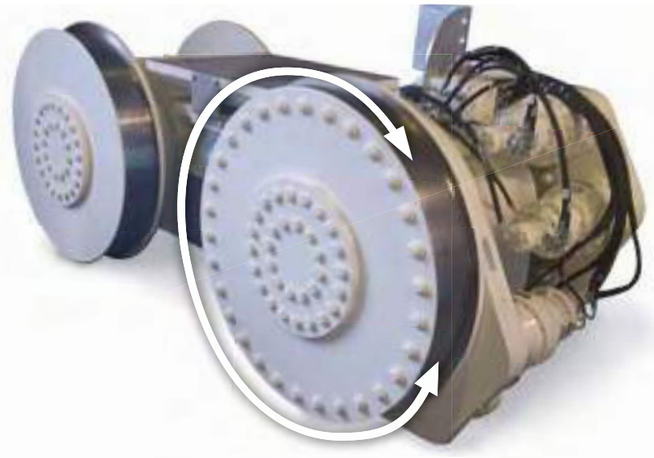
This crane, with a maximum main hoist load of 100 t, is used for **pipe handling in the oil and gas** industry. It is equipped with a double row variant of the **SP-H 0955** slew drive.

Applications
Cranes – On & offshore

Slew drives of the WD-L series are used in **cranes for industrial cleaning plants** or in **marine cranes**.

Enerpac IS

The currently **largest traveling crane in the world**, with a load capacity of 4,800 tonnes, moves concrete parts for road construction. Each carriage is equipped with 2 **SP-HC 0955** slew drives.



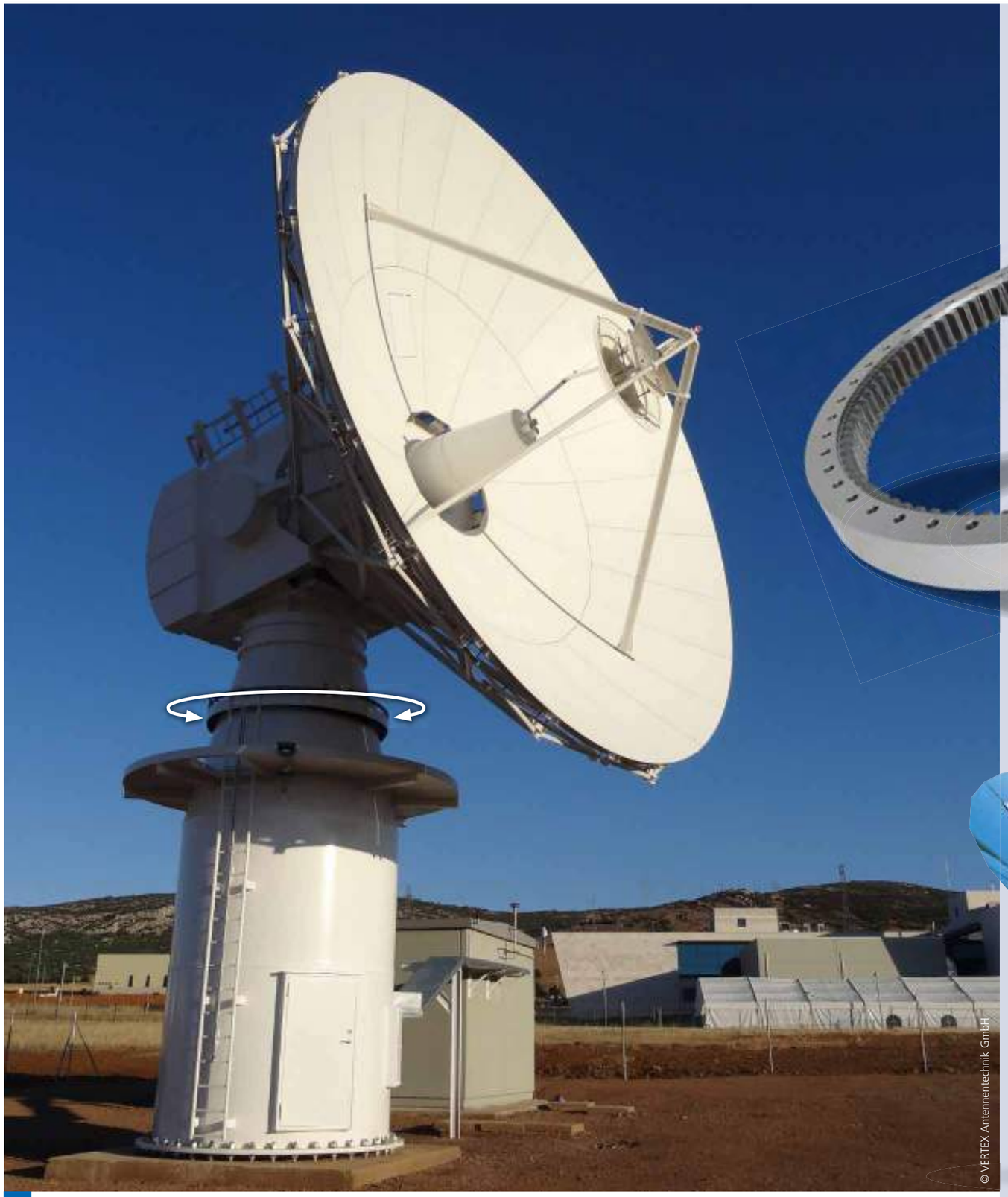
Enerpac IS

Solar trackers, which track the sun using slew drives of the **WD-L** and **WD-H** series.

On-roof plant trackers can be rotated with slew drives (here, a slew drive of the WD-L series is used).

Applications
Renewable energies

In **small wind turbines**, slew drives of the SP series are used with or without housings, **WD-H or WD-L slew drives are used as yaw bearings or for blade adjustment** in plant sizes of 20-150 kW.



© VERTEX Antennentechnik GmbH

In this **10 m antenna**, a single row ball slewing ring is used as an axle bearing. A **WD-H slew drive with flanged-on pinion** serves as a drive. The two-staged reduction produces an enormously high torque.

Pitch and yaw rotary joint of a **sun table** implemented with slew drives of the **WD-L series** and electric motors

Applications
Continued

In this **amphibious vehicle**, the front support legs, which stabilize the vehicle, are equipped with **two WD-H 0645** slew drives.

This **dust-laying sprayer** creates a fine mist, which is blown by the strong air current of a powerful fan. Used here: A **WD-L 0223 slew drive**.

This **winch** is used in wire rope hoists with tensile forces of up to 3 tonnes. Due to its use at heights of up to **3800 m above sea level**, the **slew drive of the SP series** is exposed to temperatures **of -30°C to +20°C**.

The workpiece can be positioned and fixed on this **testing table** at three levels. High positional accuracy is ensured by a **WD-L 0223 slew drive**.

Slewing rings

Ball & roller slewing ring

Besides slew drives, we also supply slewing rings in a large range of designs and sizes. We are experts in slewing rings individually tailored to customer requirements.

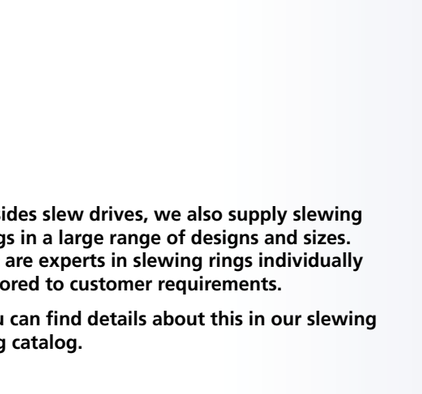
You can find details about this in our slewing ring catalog.

Slewing ring are roller bearings for simultaneous transmission of axial and radial forces as well as tilting moments.

- Replace traditional solutions with fixed and floating bearings as well as king pin bearings with support rollers
- Ball & roller slewing rings
- Available in a diameter range of 100 to over 6000 mm
- Integrated mounting holes
- Exterior or interior bearing ring gear possible (module 1 to 30 mm)
- Sealed raceway system with grease lubrication
- Standard series and special versions
- Test certificates according to DIN EN 10204 for materials, dimensions and specified characteristics

Request catalog at:

mail@imo.de



Ball slewing ring with flange ring

Ball slewing ring, single row

Double axial slewing ring

Ball-roller combination slewing rings Roller/ball

Roller slewing ring 3-row

Additional standard roller slewing ring

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Senvion, SE, 2014

Slewing rings

Examples of possible areas of use

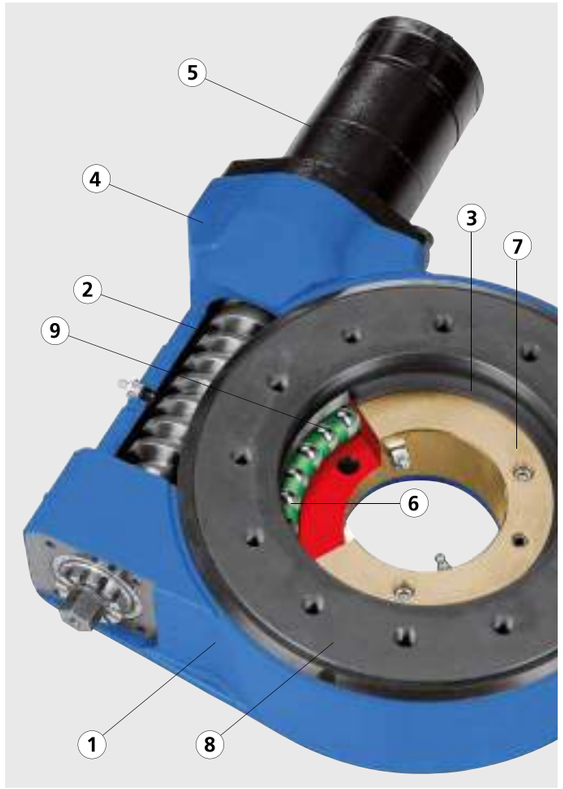
Symbols and units

α_A	—	Bolt tightening factor
C_{ax}	kN	Dynamic load rating, axial
C_{rad}	kN	Dynamic load rating, radial
$C_{0\ ax}$	kN	Static load rating, axial
$C_{0\ rad}$	kN	Static load rating, radial
D_L	mm	Raceway diameter of the rolling elements (see product range overview, P. 6/7)
ED_B	%/min	Duty per minute
f_a	—	Application service factor
F_{ax}	kN	Equivalent axial load including all occurring impact loads and required safety factors, calculated from all axial forces
F_{axD}	kN	Equivalent axial load including application service factor for determining the load point in the limiting load diagram
F_{rad}	kN	Equivalent radial load including all occurring impact loads and required safety factors, calculated from all axial forces. The gearing circumferential force that occurs must be taken into account!
$F_{rad\ max}$	kN	Limit value for checking frictional capability
F_{sp}	kN	Bolt tightening force
i	mm	Gear ratio
m	mm	Module
$M_{d\ B}$	Nm	Operating torque
$M_{d\ nom}$	Nm	Nominal torque
$M_{d\ max}$	Nm	Maximum torque
$M_{h\ max}$	Nm	Maximum holding torque
M_k	kNm	Equivalent tilting moment including all occurring impact loads and required safety factors, calculated from all axial and radial forces causing tilting
M_{kD}	kNm	Equivalent tilting moment including equivalent radial load and application service factor for determining the load point in the limiting load diagram
M_w	Nm	Friction torque of the slew drive under operating load in the installed state
M_{wA}	Nm	Friction torque of the slew drive in the unloaded state
n	min^{-1}	Output speed
n_{perm}	min^{-1}	Permissible output speed
n_b	—	Number of mounting holes per bearing ring
Q	l/min	Oil flow
p	bar	Pressure differential
S_F	—	SP series: Safety factor against tooth base fatigue WD series: Safety factor against tooth fracture, dynamic
$S_{F\ S}$	—	WD series: Safety factor against tooth fracture, static
S_W	—	WD series: Safety factor against tooth wear, dynamic
z_1	—	Number of teeth, pinion
z_2	—	Number of teeth, wheel

Function

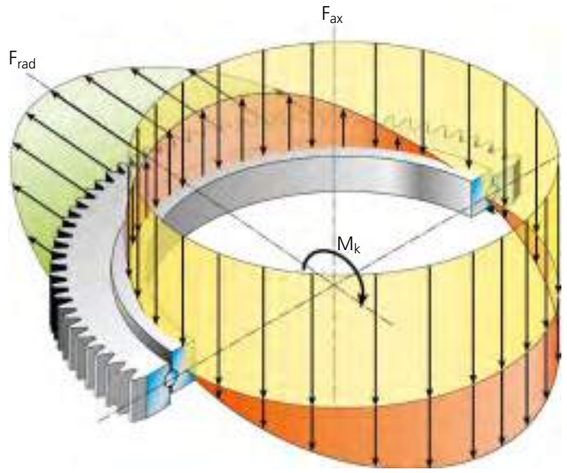
Function of the slew drive
Slew drives comprise a geared slew drive with high load carrying capacity (1), one or more geared drive elements (2), a functional seal (3), a housing (4) and a hydraulic or electric drive (5). Slew drives are designed for grease lubrication.

In the slew drive, rolling elements (6) transfer the loads between the inner (7) and outer ring (8). The load carrying capacity of the raceway system is determined by, amongst other parameters, the bearing design, the hardening depth, the rolling element size and quantity. Spacers (9) separate the rolling elements of the rolling element chain and minimize wear.



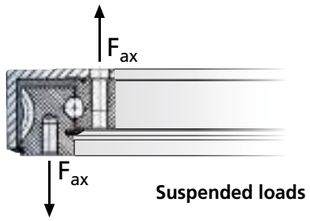
Load distribution
Depending on the external load, different load distributions and contact angles occur in the rolling element chain.

- In the case of an axial load F_{ax}, all the rolling elements are loaded in the same direction.
- In the case of a radial load F_{rad}, one segment of the rolling element chain carries the load.
- In the case of a tilting moment M_k, one segment carries the load on one side and one segment on the opposite side.
- Usually, combinations of axial, radial and tilting moments occur.



- Axial loads can be supported or suspended.
- Suspended axial loads and the load of the rising segment of the tilting moment must be held with the mounting bolts.

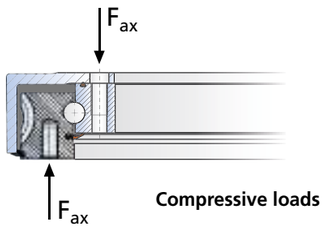
Caution: In this case, catalog information is not valid!



Suspended loads

- Radial loads must be transmitted through frictional capability between the slew drive and the mounting structure.
- Only a good bolted connection can ensure the function of the slew drive.
  The bolted connection and the tilting clearance of the slew drive must be checked regularly.

All bolt data given in the catalog is valid only for compressive loads!



Compressive loads

Gear
Slew drives of the WD series are designed with a worm gear. Slew drives of the SP series are designed with a spur bevel gear. Permissible torques are listed in the dimensioning tables.

Drive
The drive is provided by a flange mounted hydraulic or electric motor. Both the connection flange and the shaft/hub connection conform to the normal industrial standard. This means that standard hydraulic motors can be mounted without any trouble. Appropriate adapters are required for electric motors. At IMO, the drive motors are designed according to the specifications of the customer and can be very flexible with regard to rotational speed and torque.

Housing
The housings are made as a welded or cast components and are matched to the size of the slew drive. As standard, the housings are supplied with a primer.

Sealing
The polymer seals protect the slew drive against the ingress of normal quantities of dirt, dust and light spray water. In case of severe dirt contamination, water jets or mechanical load, the seals must be protected with upstream labyrinths on the mounting structure. The functionality and achievable service life of the slew drive are primarily dependent on avoiding the ingress of dirt particles into the slew drive.
High-pressure cleaners must not be used to clean slew drives.

Operating temperature
Standard versions of IMO slew drives can be used in ambient temperatures from –20°C to +70°C.

Selection criteria

The criteria listed below must be taken into account for the correct selection of a slew drive.

Position of the output shaft

Vertical: Slew drives of any series can be used.

Horizontal: Slew drives of any series can be used with the exception of the WD-H series as well as sizes 0478, 0625, 0620, and 0713 of the WD-L series. Here, it is essential that a slew drive with a double-threaded worm is used, because otherwise a jerk-free operation cannot be ensured during reverse load situations.

Alternating: Slew drives can be used as described under "Output shaft, vertical" up to an inclination angle of 5° to the vertical. In the case of inclination angles beyond this, slew drives must be used as described under "Output shaft, horizontal", as otherwise jerk-free operation cannot be ensured.

Slew drives that are not self-locking can optionally be equipped with a holding brake, if safe holding of the load is required.

Loads
The operating load point of external loads, such as axial load, radial load and tilting moment, must lie below the static limiting load curve. For this, please refer to the sections "Static raceway load carrying capacity" and "Mounting bolts".

Shocks, vibrations
To satisfy the special requirements of the various applications, shock coefficients for the gears must be taken into account. Slew drives of the WD series are not suitable for applications with continuous vibrations.

Reverse torques
Due to their high ratios WD-series slew drives can be severely damaged under reverse load conditions if the reverse torque exceeds the maximum permissible table values $M_{h\,max}$.

Torque
The operating torque must not exceed the maximum torques stated in the dimensioning tables, calculated with the application service factor 1. You can find explanations of the different torque specifications below:

SP series:

Maximum torque $M_{d\,max}$:
SP-H slew drive series:
The maximum torque is limited by the maximum radial load of the planetary gear used.
SP-I slew drive series:
The maximum torque is limited by the maximum input torque of the hydraulic motor used for a ø 25 mm key shaft.

Nominal torque $M_{d\,nom}$:
The nominal torque is calculated with a safety factor against tooth base fatigue $S_F = 1$, at the output speed stated in the dimensioning table and one-way varying load.

WD series:

Maximum torque $M_{d\,max}$:
The calculation of the maximum torque with a safety factor against tooth fracture $S_{F\,S} = 1$ is done according to G. Niemann / H. Winter, Maschinenelemente (machine elelments) Band III, 1986, for worm gears and is influenced by the
- Limit value of the tooth base stress
- Module
- Gear width

Nominal torque $M_{d\,nom}$:
The nominal torque is calculated with a safety factor against tooth wear $S_W = 1$,
- At the output speed given in the table
- For a calculated service life of 10000 h
- At a duty of 5%

For slew drives with two motors, the specified values are valid for a slew angle ≤ 170°.

SP and WD series:

Maximum holding torque M_h:
The maximum holding torque determines which reverse torque can be transmitted or held, without damage being caused to the gear. If the holding torque is unknown, the value of the maximum torque is assumed as the holding torque in the design process.

Rotational speed
Slew drives of SP series:
The max. permissible rotational speed is $\mathbf{n_{perm} = \frac{40000}{D_L}}$

WD slew drive series:
The maximum permissible rotational speed is given in the dimensioning tables. For higher speeds, please contact our Sales department.

Duty
Slew drives of the WD series are designed for intermittent duty. Applications with continuous running or with a high rate of duty and, simultaneously, a high output torque are not permissible. This would lead to unacceptable temperature increases in the gear and thus to premature failure of the slew drive.
The transmission of the maximum torque must be limited to 10% of each minute.

Static raceway load carrying capacity

The static load carrying capacity of the slew drive is determined by:

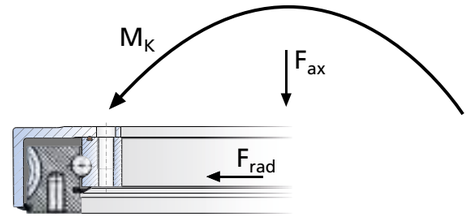
- Hardening depth of the raceway
- Number and size of the rolling elements
- Bearing design
- Raceway geometry

The limiting load diagram shows the permissible axial and tilting moments for the respective size of unit.

Each load case, including the required and recommended safety, must lie under the limiting load curve.

The limiting load diagrams are valid under the following condition:

- Static loading
- Limiting load curve with safety 1
- Grip length of the bolt at least 5x and maximum 10x the bolt diameter
- Continuous thread up to the bolt head is not permissible
- Bolt grade 10.9
- All mounting holes used
- Compressive load
- Sufficiently stiff and flat mounting structure
- Minimum strength of the mounting structure 500 N/mm²
- Radial loading taken into account as specified
- Compliance with all items of the Installation and Operating Manual



To address the peculiarities of the different applications, the following application service factors must be taken into account in the prevailing loads:

Application	Application service factor f_a	Remark
Construction machines	1.25	Normal operation
Forestry machinery	1.50	Rough operation
Foundry works	1.75	Rough operation
Manlift platforms	1.30	Normal operation
Mech. engineering, general	1.25	Normal operation
Mech. engineering, general	1.50	Heavy-duty operation
Measurement technology	2.00	Accuracy
Robot / handling systems	1.50	Accuracy
Rail vehicles	1.50	Rough operation
Special vehicles	1.50	Rough operation
Deep mining companies	1.75	Rough operation
Machine tools	1.50	Accuracy

The application service factors should be taken into account in the following equations for the prevailing loads:

$$F_{axD} = F_{ax} \bullet f_a$$

$$M_{kD} = (M_k + 1.73 \bullet F_{rad} \bullet \frac{D_L}{1000}) \bullet f_a$$

The tilting moment is increased accordingly to take the prevailing radial load into account.

This equation only applies when:

$$F_{rad} \leq 220 \bullet \frac{M_k}{1000} + 0.5 \bullet F_{ax}$$

Should the value be exceeded, then the limiting load diagram is no longer valid.
Please contact our Sales department.

Calculation example:

Application: Slew equipment for a construction machine in normal operation

Load:

Axial load	55	kN
Radial load	6	kN
Tilting moment	86	kNm

Slew drive: pre-selected SP-H 0455/2 - 05910

Checking the radial load:

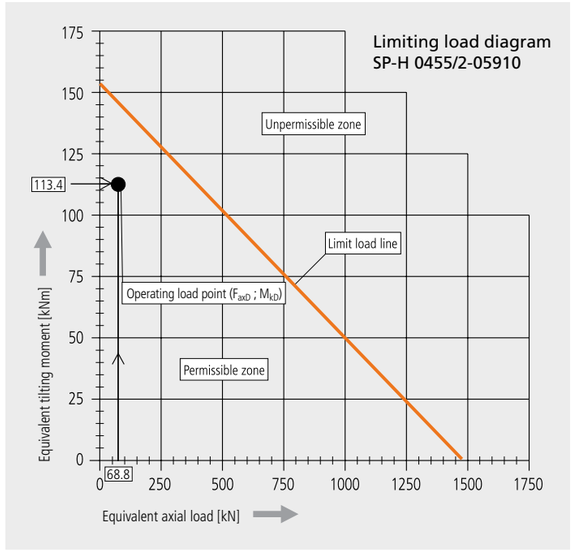
$$F_{rad} = 6\ kN \leq 46{,}4\ kN = 220 \bullet \frac{86}{1000} + 0.5 \bullet 55$$

An application service factor of 1.25 results in the following values:

$$F_{axD} = 55 \bullet 1.25 = 68.8\ kN$$

$$M_{kD} = (86 + 1.73 \bullet 6 \bullet \frac{455}{1000}) \bullet 1.25 = 113.4\ kNm$$

At this point, it is possible to check in the limiting load diagram, whether or not the preselected slew drive is statically adequate:



If the operating load point is below the limiting load curve, then the slew drive is statically adequately dimensioned. If the loads occur frequently during slewing, then the selected types should be reevaluated, dynamically, for service life. Please contact our Sales department about this.

Mounting bolts

Prevailing loads must be transmitted safely. To ensure this, besides checking the raceway loads, the mounting bolts must be sized accordingly.
The bolt curve is shown in the static limiting load diagram with the following conditions:

- Fulfillment of the conditions as specified for considering the static load carrying capacity of the raceway.
- Bolts are duly tightened with a torque wrench (bolt tightening factor $\alpha_A = 1.6$).
- For slew drives with through holes, use the largest possible metric bolts with coarse-pitched threads.

Caution: In the case of suspended loads, the bolts are additionally subjected to tensional forces. Please contact our Sales department.

Static load carrying capacity of the mounting bolts
The determination of the operating load point, both with and without a radial load, takes place analog to the checking of the static load carrying capacity of the raceway.
If the relevant load case lies below the limiting load curve in the static limiting load diagram, then the bolted connection is statically adequately dimensioned.

Dynamic load carrying capacity of the mounting bolts
Usually, a static dimensioning of the bolted connection is sufficient. Dynamic checking is required in cases in which high numbers of load reversals act on the slew drive.
Please contact our Sales department about this.

Frictional capability of the bolted connection
If radial loads act on the slew drive, then it must be ensured that these loads can be transmitted to the bolts without shearing forces. Therefore it must be determined whether the radial load can be transmitted through frictional capability between the mounting structure and the slew drive.

$$F_{rad\ max} = \frac{n_b \bullet F_{sp}}{18.8}$$

n_b = Number of mounting holes per ring

F_{sp} = Bolt tightening force of the mounting bolts

If the prevailing radial load exceeds the limit value, then we request you to contact our Sales department.

For slew drives with a different number of bolts or size of bolts in the inner and outer ring, the permissible radial load must be determined for both rings.
The smaller value is the limiting value.

Frictional capability prevails if $F_{rad\ max}$ is greater than the prevailing radial load.

Slew drives of the WD-H series must always be centered.

Securing the bolts

If the customer requires the bolts to be secured, we recommend the following products (the manufacturer's specifications apply):

Loctite
Application of Loctite 270 is suitable for high strength connections. This counteracts loosening and seals the thread.

Nord-Lock
Nord-Lock – self-locking bolt washers – are recommended for vibration and dynamic loads.
Due to a pair of wedge-locking washers, with tapered surface gradients between the two Nord-Lock washers greater than the gradient of the bolt thread, any bolt loosening tendencies are counteracted immediately.

We do not recommend using other bolt securing systems.

Friction torque

The friction torque of slew drives is dependent on many influence factors, such as:

- Stiffness and flatness of the mounting structure
- Load and loading combination
- Rotational speed and operating temperature
- Slew drive design
- Number and frictional torque of the seals
- Lubrication grease and filling level
- Production tolerances
- and other factors

The following equations can be used to approximately determine the friction torque of an unloaded slew drive:

Slew drives, SP series, with a minimum bearing clearance greater than zero

$$M_{wA} = 0.2 \bullet \frac{D_L^2}{2000}$$

WD-L slew drive series, with bearing preload

$$M_{wA} = 2.0 \bullet \frac{D_L^2}{2000}$$

WD-H slew drive series, with bearing preload

$$M_{wA} = 4.0 \bullet \frac{D_L^2}{2000}$$

The friction torque for a slew drive under load can approximately be determined using the following equation:

$$M_w = 0.005 \bullet (4400 \bullet M_k + 4 \bullet D_L \bullet F_{rad} + D_L \bullet F_{ax}) + M_{wA}$$

Gear

Shock coefficients
For applications, in which shocks can be expected, appropriate shock coefficients must be included to determine the max. torque.

Service life
The expected service life of the gear depends primarily on the operating conditions. These include:

- Torque
- Output speed
- Duty
- Ambient temperature
- etc.

SP series slew drives

Gear design
Slew drives of the SP series are designed with a spur bevel gear according to DIN 3960, DIN 3962 and DIN 3967.
If higher torques are necessary or if a longer service life is required, the gear can be manufactured as a tempered or hardened version.

Permissible torques
Please refer to the dimensioning tables for relevant information.

Drive pinion
The pinions used in the different sizes have hardened gears.
You can find information on the transmission ratios and numbers of teeth in the dimensioning tables.
In a direct drive (SP-I), the drive pinion is supported by two radial bearings, which are integrated into the housing and the motor mount.
In the case of slew drives equipped with a planetary gear, the drive pinion is supported by the planetary gear.

WD series slew drives

Gear design
Slew drives of the WD series are designed with a hardened worm gear according to DIN 3975.

Permissible torques
Please refer to the dimensioning tables for relevant information.

Worm shaft
The worm shafts are made of hardened steel, with ground tooth flanks.

Angular accuracy

The angular accuracy of the slew drives is dependent on various factors:

- Tooth flank backlash
- Tolerances of the individual parts
- Elastic deformation under loads
- Gear wear
- Attachments

Should a slew drive with increased positioning accuracy be required, please contact our Sales department.

Tooth flank backlash
The tooth flank backlash is required to ensure smooth rotation of the slew drives. It relates to the highest point of the gear in the unloaded condition. A greater tooth flank backlash can be assumed at other positions of the slewing ring circumference. Adjustment or modification of the tooth flank backlash by the customer is not intended and also not permitted!

Tolerances of the individual parts
As with every machined part, the individual parts of the slew drives are subject to tolerances, the combination of which influence the angular accuracy.

Elastic deformation under loads
Under the influence of external loads, elastic deformations inevitably occur at the slew drives, any installed extension parts and the customer mounting structure, irrespective of any rotation of the slew drives.

Gear wear
Wear leads to increasing play in the gear as the period of use increases. We recommend regular checking of the wear state by determining the tooth flank backlash. Please refer to the Installation and Operating Manual for more detailed information.

Attachments
Optional attachments, such as motors, gearboxes and brakes, have an additional influence on the angular accuracy of the overall system. For more detailed information, please consult the appropriate manufacturer's information.

SP series slew drives

The tooth flank backlash is factory set to the highest point of the gear in the unloaded state to a value of ≥ 0.04 * module.

WD series slew drives

The tooth flank backlash is ≥ 0.3 mm at the highest point of the gear and in the unloaded state.

Caution: Slew drives of the WD-H series and some slew drives of the WD-L series are equipped with disk springs in the bearing of the drive train as standard. Depending on the size, these can lead to an additional axial shift of the worm shaft of ±0.5 mm to ± 2.5 mm!

Self-locking

SP series slew drives

Slew drives of the SP series are not self-locking.
We recommend using a brake to transmit the required holding torque, to hold a desired position safely or achieve a safe stop.

WD series slew drives

Self-locking on slew drives of the WD series exists only if the slew drive cannot be driven from the output side. Self-locking is directly related to the efficiency of the slew drive, which depends on many factors, such as

- Lead angle
- Friction angle
- Rotational speed
- Lubrication
- Material matching
- Surface finish
- etc.

Theoretically the slew drives are self-locking when the efficiency of the gear is < 50%.
The information in the dimensioning table corresponds to this statement.However, it is essential that the actual availability of self-locking in the supplied slew drive is determined individually under the given operating conditions.

We take no responsibility for the agreement between the theoretical information in the dimensioning tables and the practically available self-locking or non-self-locking characteristics.
We recommend using a brake to transmit the required holding torque, to hold a desired position safely or achieve a safe stop.

Lubrication

Sufficient, regular lubrication is required to ensure reliable functioning and a long service life. In this regard, the lubrication grease fulfills the following functions:

For the raceway:

- Reduction of friction and wear in the roller contact
- Corrosion protection
- Lubrication of the seals
- Additional sealing effect of the grease collar

For the gear:

- Smoother running
- Less wear
- Reduced running noise
- Long service life
- Less heat development

Initial greasing
IMO slew drives are supplied pre-lubricated.
High-quality lithium grease based on mineral oil, with EP additives according to DIN 51502, KP 2 K-30, is the standard lubrication.

Regreasing intervals
Depending on the frequency of use and prevailing operating conditions, regreasing must be done at regular intervals. In general, care should be taken to ensure that the grease used is compatible with the initial greasing and the sealing material. In particular, care should be taken to ensure that the lubricating grease types specified in the order drawing are always used.
Should you wish to use another type of grease, you must check that this grease type is compatible with the one used for initial greasing. In this case, please contact your grease manufacturer. In addition, please always comply with the information in our Installation and Operating Manual.

Besides regular regreasing during operation, it is also necessary to lubricate the slew drive before and after longer down times. In addition, the equipment in which the slew drive is integrated must be regreased after cleaning.

CAUTION:
Slew drives must not be cleaned with high-pressure cleaners. Otherwise, larger pressurized volumes of water may ingress through the sealing gap and into the slew drive.
This cannot be removed, even through considerable amounts of regreasing. This greatly reduces the service life of a slew drive.

Miscibility
Greases with different saponification and base oils cannot be mixed. The grease manufacturers should always confirm the miscibility of different grease types.

Storage of lubricants
Even when unused, lubricants are subject to aging. After about 3 years, the grease used should be used up or replaced.

Design of the mounting structure

The safe transmission of prevailing loads and the reliable operation of the slew drive is achieved, among other things, through using an adequately dimensioned mounting structure. In this regard, the mounting structure must comply with certain minimum requirements for the slew drive to function reliably:

- Sufficient stiffness (see Installation and Operating Manual)
- The flatness requirements in the Installation and Operating Manual must be observed
- No hard points (e.g. from cross beams)
- Surfaces for bolts must at least be machined
- A cup-shaped structure is preferable
- Use all mounting bolts
- Use recommended bolt grade
- Minimum strength of the mounting structure 500 N/mm^2

Depending on the maximum load and the application, the solutions for the design of the mounting structure may be very different. If the mounting structure is designed as a cup-shaped structure, the flange thickness should be at least 50% of the slew drive's overall height. The wall thickness of the cup should be about 30% of the flange thickness.
For weight-critical applications, the flange thicknesses can only be reduced if appropriate stiffening is provided and the specifications for the permissible deviation from flatness and angular misalignment as well as deformation under load are complied with. Please refer to the Installation and Operating Manual for values.

Please comply with our Installation and Operating Manual.

This compliance is of essential functional and safety relevance for our product and has a decisive influence on the intended service life. You can find the current version of the Installation and Operating Manual on the Internet at www.imo.de.

On request, we can also send you the manual in paper form.

Selection of a slew drive in just a few steps

You will find a detailed procedure on the following pages!

START

SP series
Spur gear driven type

WD series
Worm gear driven type

Without restrictions
Application without continuous vibrations and without high impact loading
Condition fulfilled

n = 40000/D_L [min^{-1}]
Output speed 1)
n ≤ 1 min^{-1} (WD-L/WD-H 0490,0645)
n ≤ 2 min^{-1} (WD-H 0300,0373)
n ≤ 3 min^{-1} (WD-H 0220)

Without restrictions
Duty per minute ED_B , 1)
ED_B , ≤ 80 %/min

Position of the output shaft 1)

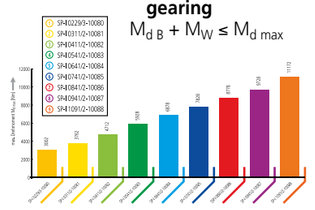
Vertical	Horizontal	Alternating	
		Angle of inclination to the vertical	
		≤ 5 degrees	> 5 degrees
WD-L or WD-H	WD-L or WD-L 0478, WD-L 0625, WD-L 0620, WD-L 0713, WD-H with double-threaded gearing	WD-L or WD-H with single-threaded gearing	WD-L or WD-L 0478, WD-L 0625, WD-L 0620, WD-L 0713, WD-H with double-threaded gearing

Selecting a slew drive using the limiting load diagram 1)2)
Operating point incl. application service factor f_a must lie below the selected curve.

Selecting a slew drive with greater max. torque $M_{d\,max}$

Condition fulfilled
Condition not fulfilled

Static checking of the gearing
$M_{d\,B} + M_W \leq M_{d\,max}$



Condition not fulfilled
Condition fulfilled

Checking the selected slew drive at IMO for service life and static suitability
Please provide the "Application Data Sheet" (see end of the catalog) and sketch of the application for inspection.

Selecting a slew drive with greater max. torque $M_{d\,max}$

SOLUTION

1) Selection criteria can only be used as rough guide values; if the limit value is exceeded, please contact IMO.
2) Please take the validity conditions into account as accurately as possible.

Procedure for selecting a slew drive in just 3 steps:

Using an example, the following section describes the pre-selection of a suitable slew drive:

Example
Application: Steering gear for an in-house transport vehicle; rough operation; limited installation space; output axis installed vertically, compressive loads

Load data:
Axial load: F_{ax} = 100 kN
Radial load: F_{rad} = 40 kN
Tilting moment: M_k = 80 kNm
Operating torque: $M_{d\,B}$ = 13200 Nm
Output speed: n = 1.0 min^{-1}

Description of the slew cycle under operating torque:
Slew 60° in 10 seconds in clockwise direction
Slew 60° in 10 seconds in counter-clockwise direction, slewing pause for 40 seconds
In terms of one minute: 20 seconds slewing - 40 seconds slew pause

→ 0.333 minutes slewing per minute
→ Duty per minute of operation:

$$ED_B = \frac{0.333}{\text{min.}} \bullet 100\ \% = \frac{33.3\ \%}{\text{min.}}$$

Step 1:
Selecting a suitable design (WD or SP)
Comparing product characteristics

WD design:

- Features high torques at low output speeds and transfers high tilting moments, axial and radial loads
- Achieves the highest power density with the smallest diameter configuration
- Flat design thanks to tangentially arranged drives
- Provides high torque transmission, however the duty must always be taken into account.
- Slew drives without self-locking can be equipped with holding brakes
- Always take the position of the output shaft into account when selecting the slew drive
- Not recommended in cases of continuous vibrations or heavy impact loading

Typical applications:
Manlift platforms, steering gears for undercarriages of crane and heavy-duty vehicles, loading cranes, turntables, forklift rotators, mining equipment, and much more.

SP design:

- Enables higher output speeds
- Extremely narrow around the slewing ring but the drive protudes in the axial direction
- Offers a large, open internal diameter
- Very suitable for structures with a large radial diameters
- Fundamentally not self-locking in design
- Can be equipped with holding brakes
- The position of the output shaft is insignificant
- Preferred design for vibrations and impact loading applications

Typical applications:
Handling and automation units, packaging machines, tool changers, picker arms, construction machines, agricultural and forest harvesters, and much more.

Example step 1:
Worm gear driven types have proved their worth as steering gears. A high torque level and low output speed with a small installation height and diameter clearly speak for the use of a WD design. A single-threaded worm gear can be selected on account of the vertical output shaft installation position. The WD-L series offers the smallest assembly height of the worm gear driven slew drives.

Step 2:
Selecting a suitable construction size in the limiting load diagram for compressive loads:

A suitable slew drive is selected iteratively. For a pre-selected slew drive (e.g. WD-L 0478/3-04904), an operating load point is calculated depending on the external load, the application service factor and the raceway diameter D_L. Loading is permissible for the raceway and bolt connection, if the operating load point lies below the limiting load curve of the pre-selected slew drive.
If the operating load point lies above the corresponding limiting load curve, a slew drive with a higher load capacity must be selected, whose limiting load curve lies above the current operating load point. The operating load point must be recalculated for the newly selected size and the permissibility of the new operating load point checked in the limiting load diagram.
If, on the other hand, the operating load point lies even below the limiting load curve of a smaller size, then the permissibility of the newly calculated operating load point for this size can be checked in the limiting load diagram.
This iterative procedure is continued until an optimally suitable size has been determined, by which the operating load point lies below the corresponding limiting load curve.

The following conditions must be fulfilled:

- Preconditions for the limiting load diagram apply (see section "Static raceway load carrying capacity")
- Equation $F_{rad} \le 220 \bullet \frac{M_k}{1000} + 0.5 \bullet F_{ax}$ fulfilled

Step 3:
Static checking of the permissibility of the operating torque $M_{d\,B}$:

The following condition must be fulfilled:
- Operating torque $M_{d\,B}$ + friction torque $M_w \le$ maximum torque $M_{d\,max}$

Please note:
We recommend having IMO check the service life of the selected slew drive. For this, please send our "Application Data Sheet" (see end of the catalog) to our Sales department together with sketches of the application.

Example step 2:

- Preconditions for the limiting load diagram apply
- Checking the condition:

$$F_{rad} \le 220 \bullet \frac{M_k}{1000} + 0.5 \bullet F_{ax}$$

$$40 \le 220 \bullet \frac{80}{1000} + 0.5 \bullet 100 = 67.6 \quad \text{(condition fulfilled)}$$

Calculation of the operating load point:
Application service factor: f_a = 1.5 (special vehicles)
Raceway diameter for WD-L 0478/3-04904: D_L = 478 mm
(see product range overview / compare P. 6 and P. 7)

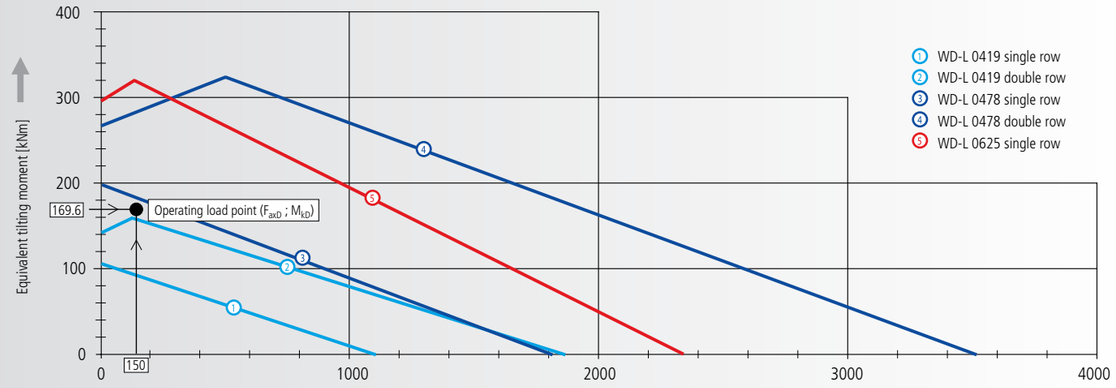
$$F_{axD} \le F_{ax} \bullet f_a$$

$$F_{axD} = 100\ kN \bullet 1.5 = 150\ kN$$

$$M_{kD} = (M_k + 1.73 \bullet F_{rad} \bullet \frac{D_L}{1000}) \bullet f_a$$

$$M_{kD} = (80 + 1.73 \bullet 40 \bullet \frac{478}{1000}) \bullet 1.5 = 169.6\ kNm$$

The operating load point lies below the limiting load curve of the selected slew drive WD-L 0478/3-04904 and is permissible. The operating load point of the selected slew drive lies above the limiting load curves of the smaller sizes, which are then not permissible. A slew drive that is larger than the selected slew drive WD-L 0478/3-04904 would not be the best solution in economic terms.



Example step 3:

- Checking the condition $M_{d\,B} + M_w \le M_{d\,max}$

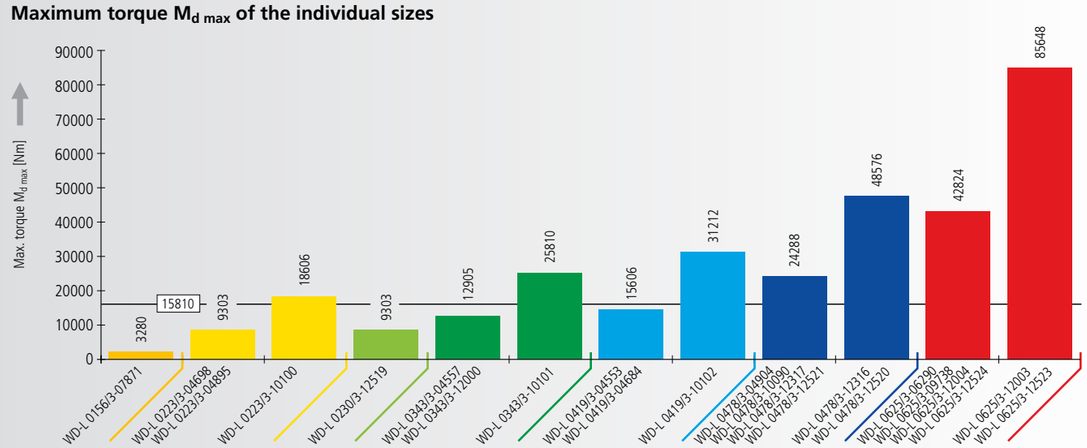
$$M_W = 0.005 \bullet (4400 \bullet M_k + 4 \bullet D_L \bullet F_{rad} + D_L \bullet F_{ax}) + M_{wA}$$

$$M_W = 0.005 \bullet (4400 \bullet 80 + 4 \bullet 478 \bullet 40 + 478 \bullet 100) + 2.0 \bullet 478^2/2000 = 2610\ Nm$$

13200 Nm + 2610 Nm = 15810 Nm ≤ 24288 Nm
(condition fulfilled)

The slew drives of the sizes WD-L 0223, WD-L 0343 and WD-L 0419, each with two drives, and WD-L 0478 and WD-L 0625, with one and two drives, can statically transfer the operating torque $M_{d\,B} + M_w$.
As the operating load points of the WD-L 0419 sizes and smaller are inadmissibly above their limiting load curves (cf. step 2), the smallest selectable sizes are WD-L 0478/3-04904. If torques $M_{d\,B} + M_w$ of greater than 24288 Nm are required, then slew drives of the sizes WD-L 0478 with two drives or WD-L 0625 with one or two drives must be selected. However, in this example, they do not represent an economic solution.

Maximum torque $M_{d\,max}$ of the individual sizes



WD-L series overview

WD – L 0156 / 1 – 07871

- **Drawing end number**
- **Type of gearing**
  - **1:** Bronze version
  - **3:** Hardened
- **Raceway diameter [mm]**
  156, 223, 230, 343, 419, 478, 620, 625 and 713 mm
- **L:** Light series
  LC: Customized
- **WD:** Worm gear driven type

Maximum torque $M_{d\,max}$ of the individual sizes

CAUTION: The duty per minute is limited.
Please always observe the explanations in the Technical Information section (from page 60).

Diagram
Steel design

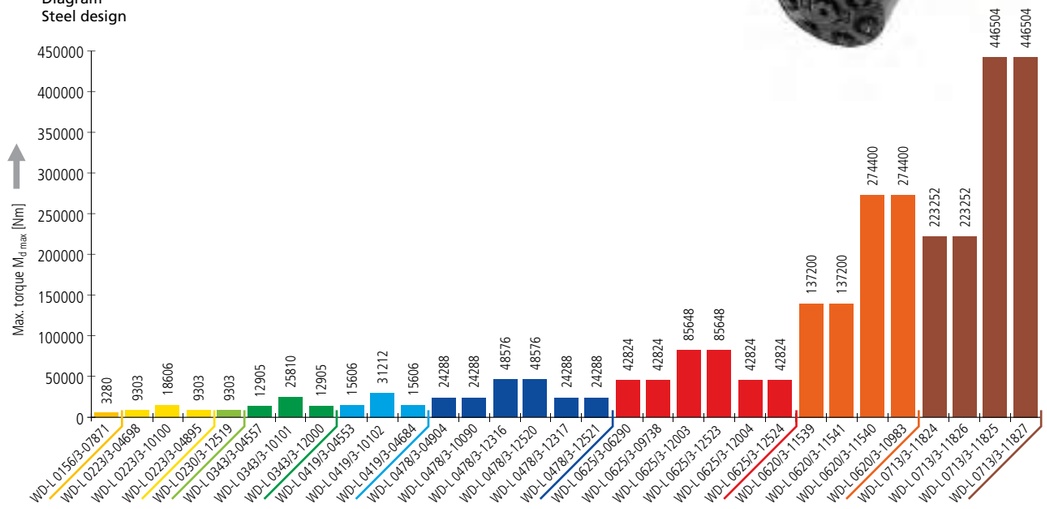
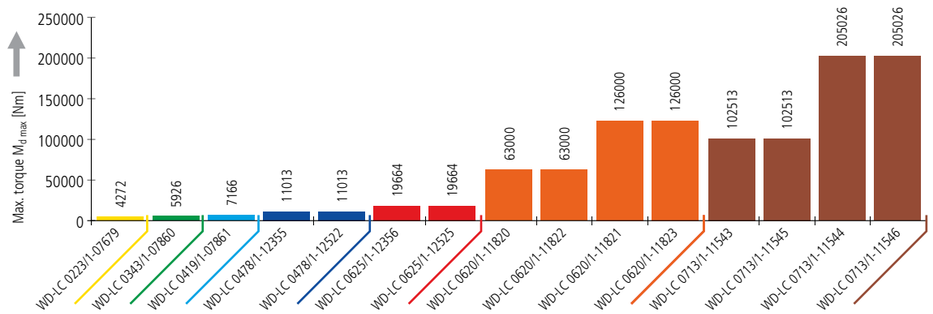


Diagram
Bronze design



WD-L series overview

Limiting load diagrams of the individual sizes for compressive loads

Please always observe the explanations in the Technical Information section (from page 60).

Diagram 1 - Steel design

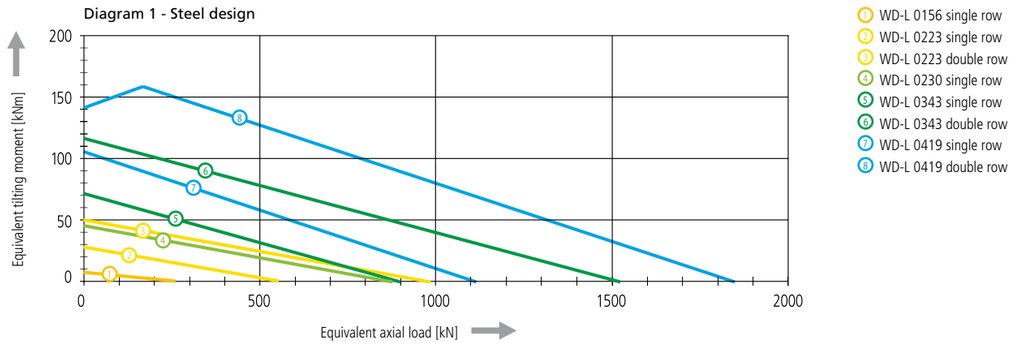


Diagram 2 - Steel design

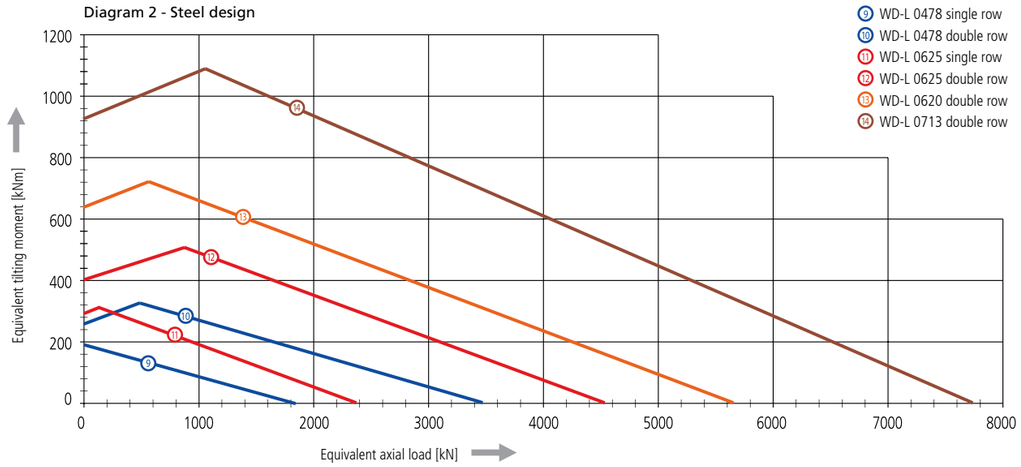
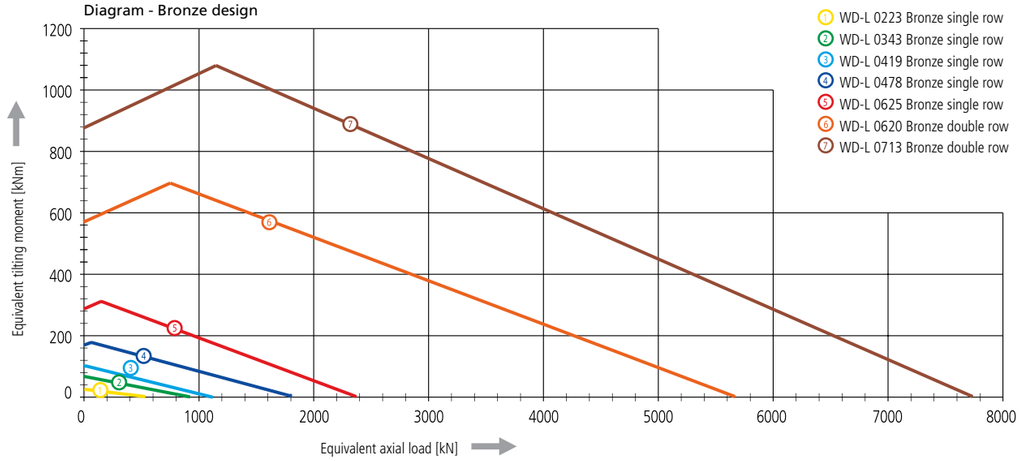
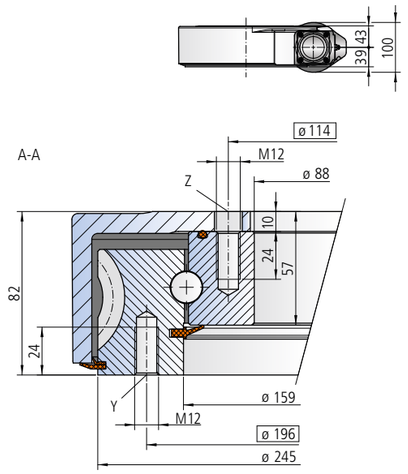
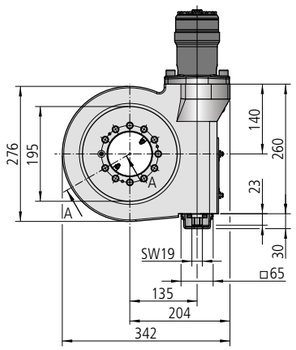


Diagram - Bronze design



Size WD-L 0156 / 1-row / 1 drive





The mounting structure must support the housing to at least ø156 and at most to ø225

Mounting holes
Y = 12 drill holes M12-24 deep, evenly distributed
Z = 11 drill holes ø14-10 deep / M12-24 deep, evenly spaced over 12 pitch

Lubricating ports
2 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

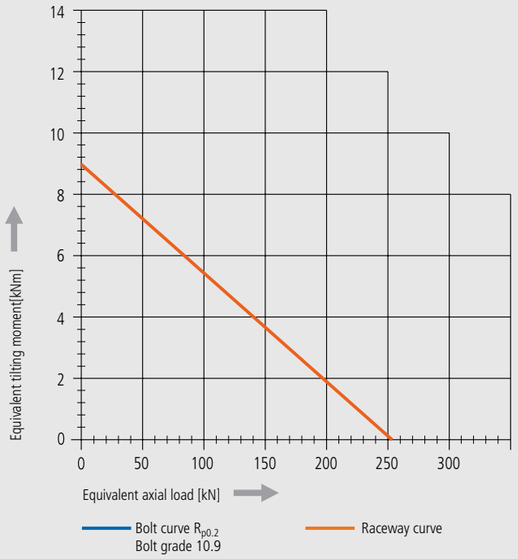
			Drawing number WD-L 0156/3-07871
Module	**m**	[mm]	5
Number of threads of the worm		[-]	1
Gear ratio	**i**	[-]	46
Self-locking gears			No**
Max. torque $S_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	3280
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	2520
Max. holding torque* $S_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	3280
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	94
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	253
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	83
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	97
Weight, incl. 6 kg for hydraulic motor OMP (X)160		[kg]	40

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor OMP (X) 160

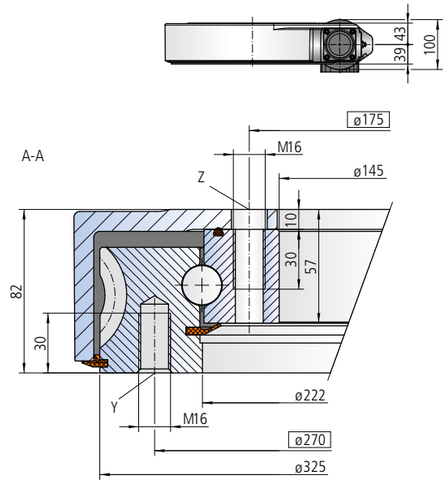
Pressure differential	**Δp**	[bar]	75
Oil flow	**Q**	[l/min]	8
Output speed	**n**	[min $^{-1}$]	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	3280

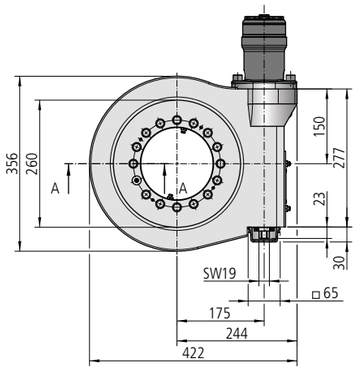
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-L 0223 / 1-row / 1 drive





The mounting structure must support the housing to at least ø223 and at most to ø329

Mounting holes
Y = 16 drill holes M16-30 deep, evenly distributed.
Z = 15 drill holes ø18-10 deep / M16-30 deep, evenly spaced over 16 pitch

Lubricating ports
2 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

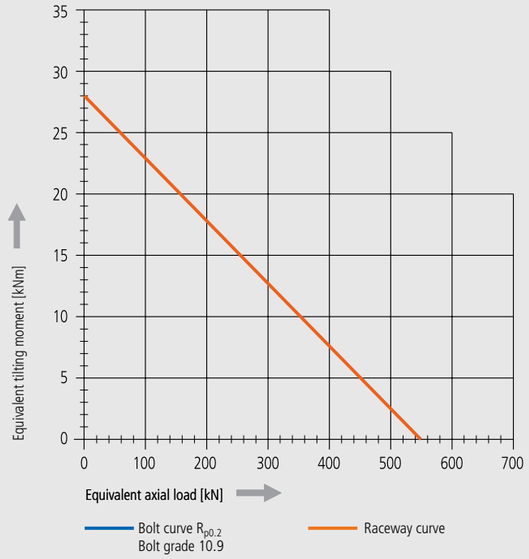
			Drawing number WD-L 0223/3-04698
Module	**m**	[mm]	5
Number of threads of the worm		[-]	1
Gear ratio	**i**	[-]	62
Self-locking gears			No**
Max. torque $S_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	9303
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	4795
Max. holding torque* $S_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	9303
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	204
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	547
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	132
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	154
Weight, incl. 6 kg for hydraulic motor OMP (X)160		[kg]	50

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor OMP (X) 160

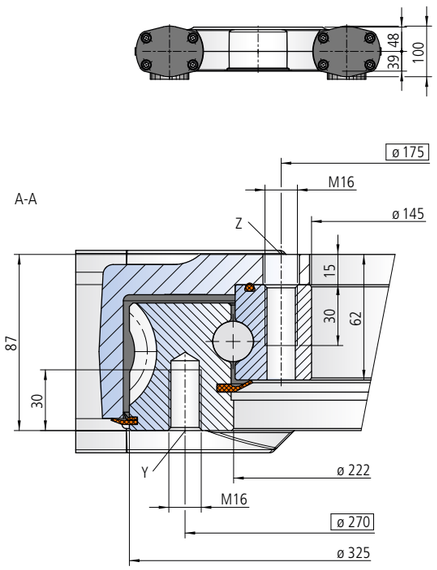
Pressure differential	**Δp**	[bar]	140
Oil flow	**Q**	[l/min]	14
Output speed	**n**	[min $^{-1}$]	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	9303

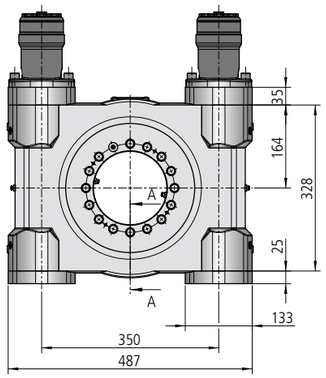
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-L 0223 / 1-row / 2 drives





The mounting structure must support the housing to at least ø223 and at most to ø345

Mounting holes
Y = 16 drill holes M16-30 deep, evenly distributed.
Z = 15 drill holes ø18-15 deep / M16-30 deep, evenly spaced over 16 pitch

Lubricating ports
2 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

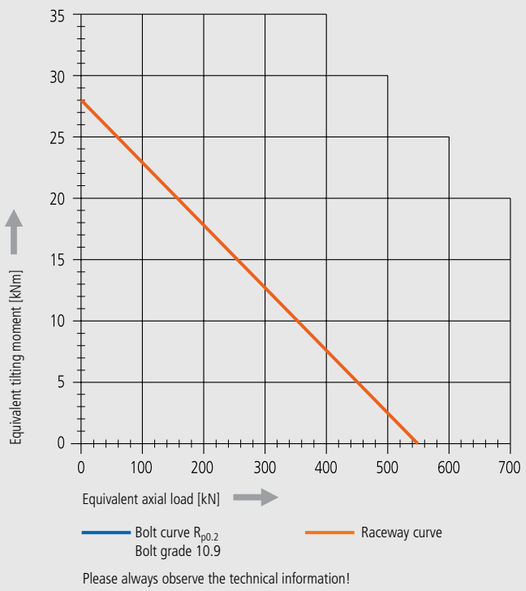
			Drawing number WD-L 0223/3-10100
Module	**m**	[mm]	5
Number of threads of the worm		[-]	1
Gear ratio	**i**	[-]	62
Self-locking gears			No**
Max. torque $S_F = 1$	$M_{d\ max}$	[Nm]	18606
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$M_{d\ nom}$	[Nm]	9590
Max. holding torque* $S_{F\,S} = 1$ (static)	$M_{h\ max}$	[Nm]	18606
Static load rating, radial	$C_{o\ rad}$	[kN]	204
Static load rating, axial	$C_{o\ ax}$	[kN]	547
Dynamic load rating, radial	C_{rad}	[kN]	132
Dynamic load rating, axial	C_{ax}	[kN]	154
Weight, incl. 12 kg for two hydraulic motors OMP (X) 160		[kg]	93

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with two hydraulic motors OMP (X) 160

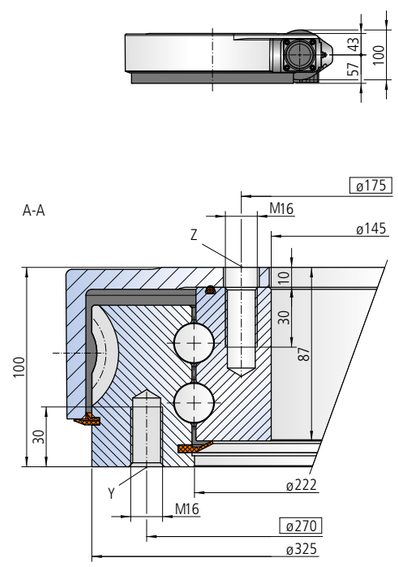
Pressure differential	**Δp**	[bar]	140
Oil flow	**Q**	[l/min]	28
Output speed	**n**	[min $^{-1}$]	1
Max. achievable torque	M_d	[Nm]	18606

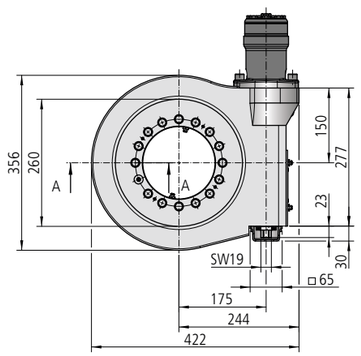
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-L 0223 / 2-row / 1 drive





The mounting structure must support the housing to at least ø223 and at most to ø329

Mounting holes
Y = 16 drill holes M16-30 deep, evenly distributed.
Z = 15 drill holes ø18-10 deep / M16-30 deep, evenly spaced over 16 pitch

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

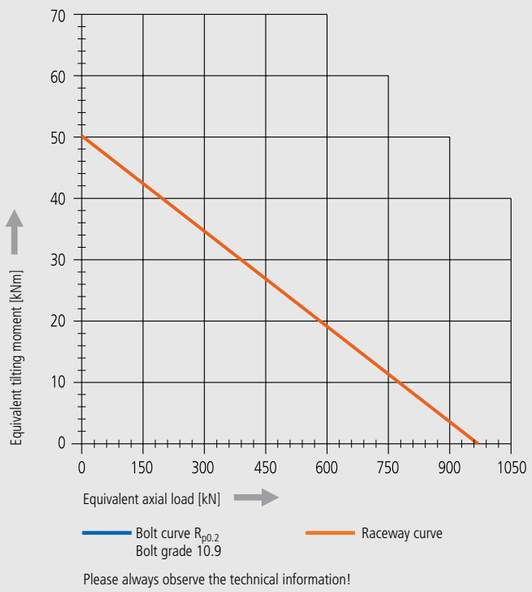
			Drawing number WD-L 0223/3-04895
Module	**m**	[mm]	5
Number of threads of the worm		[-]	1
Gear ratio	**i**	[-]	62
Self-locking gears			No**
Max. torque $S_F = 1$	$M_{d\ max}$	[Nm]	9303
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$M_{d\ nom}$	[Nm]	4795
Max. holding torque* $S_{F\,S} = 1$ (static)	$M_{h\ max}$	[Nm]	9303
Static load rating, radial	$C_{o\ rad}$	[kN]	367
Static load rating, axial	$C_{o\ ax}$	[kN]	984
Dynamic load rating, radial	C_{rad}	[kN]	215
Dynamic load rating, axial	C_{ax}	[kN]	250
Weight, incl. 6 kg for hydraulic motor OMP (X) 160		[kg]	60

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor OMP (X) 160

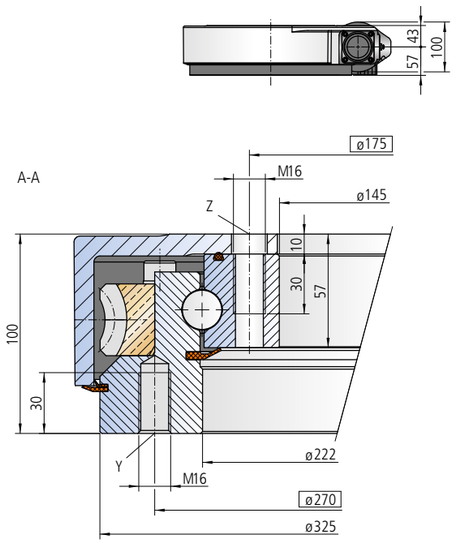
Pressure differential	**Δp**	[bar]	140
Oil flow	**Q**	[l/min]	14
Output speed	**n**	[min $^{-1}$]	1
Max. achievable torque	M_d	[Nm]	9303

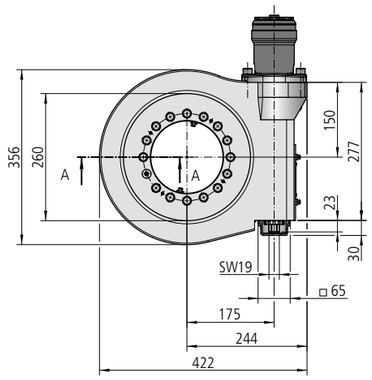
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-LC 0223 / 1-row / 1 drive - Bronze special design





The mounting structure must support the housing
to at least ø223 and at most to ø329

Mounting holes
Y = 16 drill holes M16-30 deep, evenly distributed
Z = 15 drill holes ø18-10 deep / M16-30 deep, evenly spaced over 16 pitch

Lubricating ports
2 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

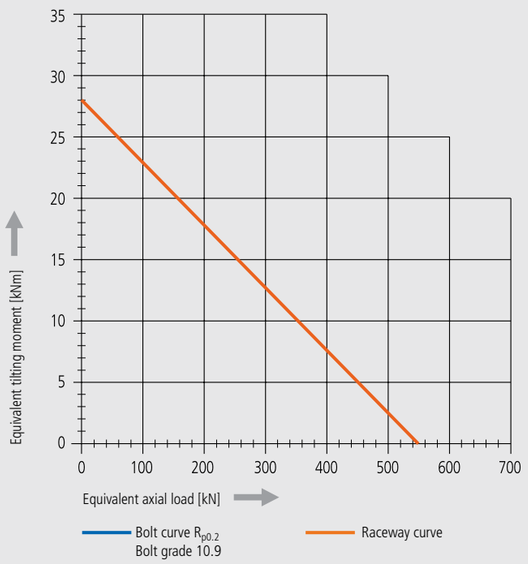
			Drawing number WD-LC 0223/1-07679
Module	**m**	[mm]	5
Number of threads of the worm		[-]	1
Gear ratio	**i**	[-]	62
Self-locking gears			No**
Max. torque $S_F = 1$	$M_{d\ max}$	[Nm]	4272
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$M_{d\ nom}$	[Nm]	4272
Max. holding torque* $S_{F\,S} = 1$ (static)	$M_{h\ max}$	[Nm]	4272
Static load rating, radial	$C_{o\ rad}$	[kN]	204
Static load rating, axial	$C_{o\ ax}$	[kN]	547
Dynamic load rating, radial	C_{rad}	[kN]	132
Dynamic load rating, axial	C_{ax}	[kN]	154
Weight, incl. 6 kg for hydraulic motor OMP (X) 160		[kg]	58

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor OMP (X) 160

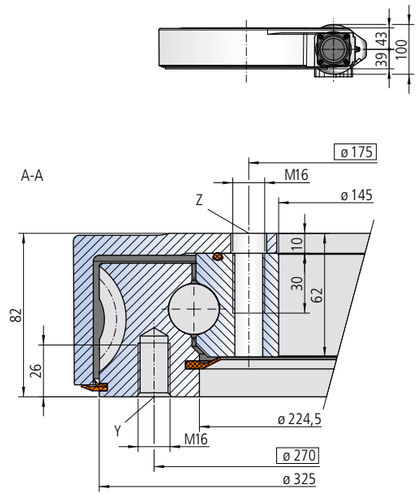
Pressure differential	**Δp**	[bar]	59
Oil flow	**Q**	[l/min]	10
Output speed	**n**	[min $^{-1}$]	1
Max. achievable torque	M_d	[Nm]	4272

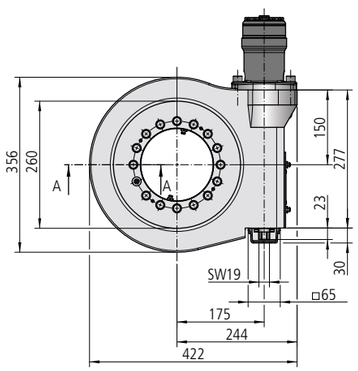
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-L 0230 / 1-row / 1 drive





The mounting structure must support the housing
to at least ø230 and at most to ø329

Mounting holes
Y = 16 drill holes M16-24 deep, evenly distributed
Z = 15 drill holes ø18-10 deep / M16-30 deep, evenly spaced over 16 pitch

Lubricating ports
2 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

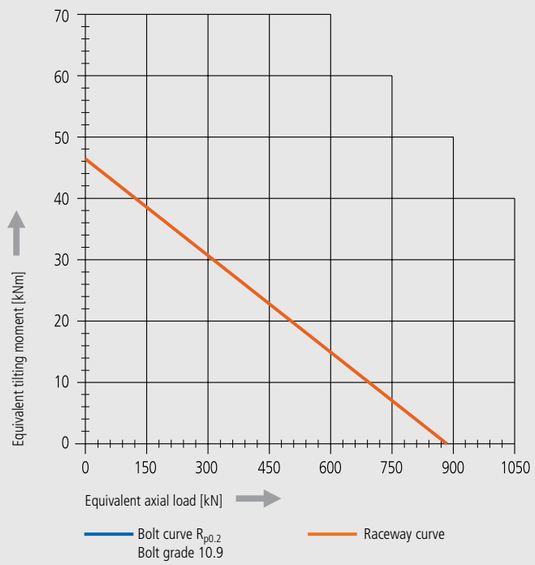
			Drawing number WD-L 0230/3-12519
Module	**m**	[mm]	5
Number of threads of the worm		[-]	1
Gear ratio	**i**	[-]	62
Self-locking gears			No**
Max. torque $S_F = 1$	$M_{d\ max}$	[Nm]	9303
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$M_{d\ nom}$	[Nm]	4795
Max. holding torque* $S_{F\,S} = 1$ (static)	$M_{h\ max}$	[Nm]	9303
Static load rating, radial	$C_{o\ rad}$	[kN]	328
Static load rating, axial	$C_{o\ ax}$	[kN]	878
Dynamic load rating, radial	C_{rad}	[kN]	186
Dynamic load rating, axial	C_{ax}	[kN]	216
Weight, incl. 6 kg for hydraulic motor OMP (X) 160		[kg]	55

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor OMP (X) 160

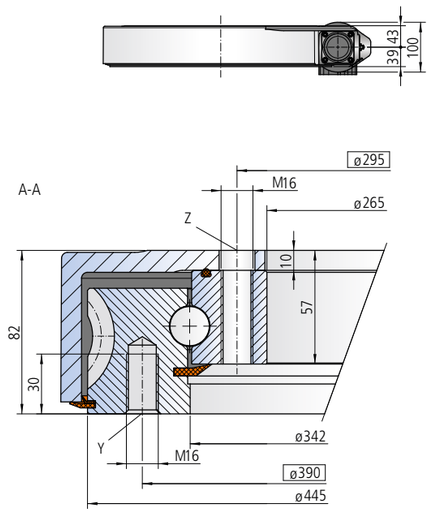
Pressure differential	**Δp**	[bar]	140
Oil flow	**Q**	[l/min]	14
Output speed	**n**	[min $^{-1}$]	1
Max. achievable torque	M_d	[Nm]	9303

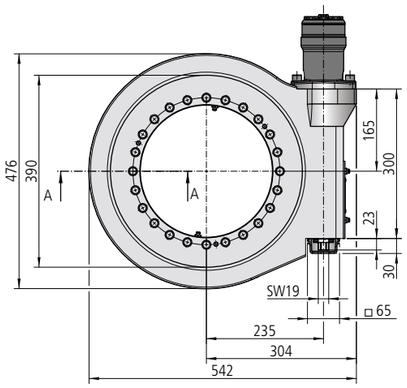
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-L 0343 / 1-row / 1 drive





The mounting structure must support the housing to at least ø343 and at most to ø449

Mounting holes
Y = 18 drill holes M16-30 deep, evenly distributed
Z = 24 drill holes ø18-10 deep / M16, evenly distributed

Lubricating ports
2 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

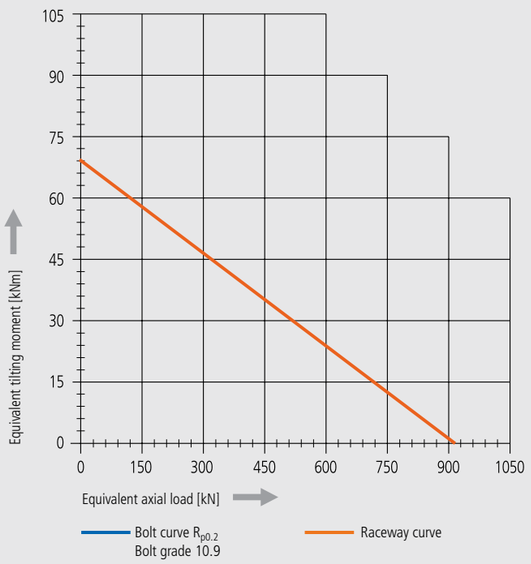
			Drawing number WD-L 0343/3-04557
Module	**m**	[mm]	5
Number of threads of the worm		[-]	1
Gear ratio	**i**	[-]	86
Self-locking gears			No**
Max. torque $S_F = 1$	$M_{d\ max}$	[Nm]	12905
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$M_{d\ nom}$	[Nm]	10150
Max. holding torque* $S_{F\,S} = 1$ (static)	$M_{h\ max}$	[Nm]	12905
Static load rating, radial	$C_{o\ rad}$	[kN]	338
Static load rating, axial	$C_{o\ ax}$	[kN]	905
Dynamic load rating, radial	C_{rad}	[kN]	157
Dynamic load rating, axial	C_{ax}	[kN]	183
Weight, incl. 6 kg for hydraulic motor OMP (X) 160		[kg]	68

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor OMP (X) 160

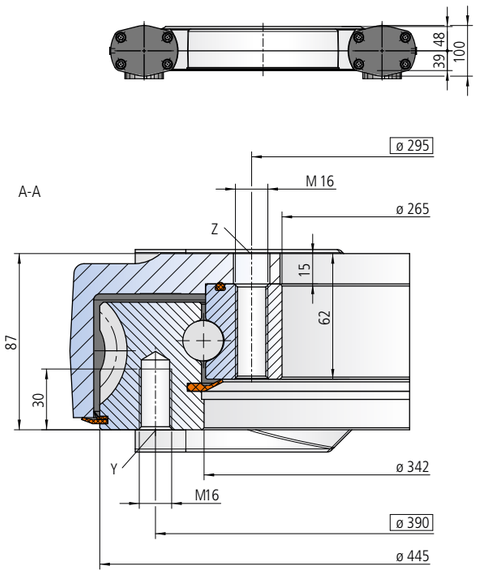
Pressure differential	**Δp**	[bar]	140
Oil flow	**Q**	[l/min]	18
Output speed	**n**	[min $^{-1}$]	1
Max. achievable torque	M_d	[Nm]	12905

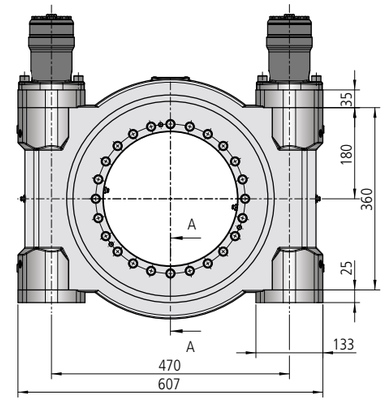
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-L 0343 / 1-row / 2 drives





The mounting structure must support the housing to at least ø343 and at most to ø465

Mounting holes
Y = 18 drill holes M16-30 deep, evenly distributed
Z = 24 drill holes ø18-15 deep / M16, evenly distributed

Lubricating ports
2 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

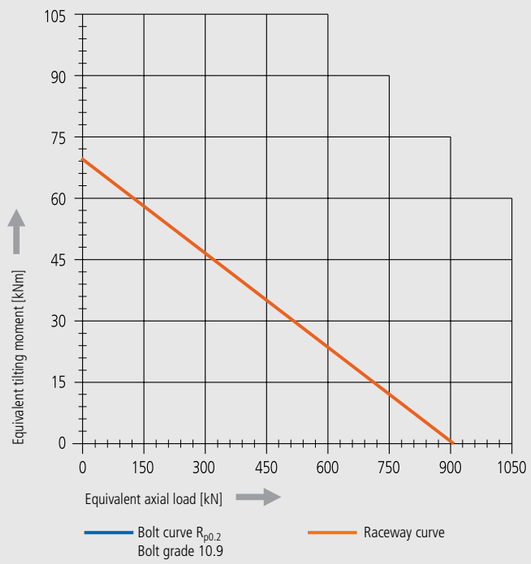
			Drawing number WD-L 0343/3-10101
Module	**m**	[mm]	5
Number of threads of the worm		[-]	1
Gear ratio	**i**	[-]	86
Self-locking gears			No**
Max. torque $S_F = 1$	$M_{d\ max}$	[Nm]	25810
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$M_{d\ nom}$	[Nm]	20300
Max. holding torque* $S_{F\,S} = 1$ (static)	$M_{h\ max}$	[Nm]	36872
Static load rating, radial	$C_{o\ rad}$	[kN]	338
Static load rating, axial	$C_{o\ ax}$	[kN]	905
Dynamic load rating, radial	C_{rad}	[kN]	157
Dynamic load rating, axial	C_{ax}	[kN]	183
Weight, incl. 12 kg for two hydraulic motors OMP (X)b 160		[kg]	107

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with two hydraulic motors OMP (X) 160

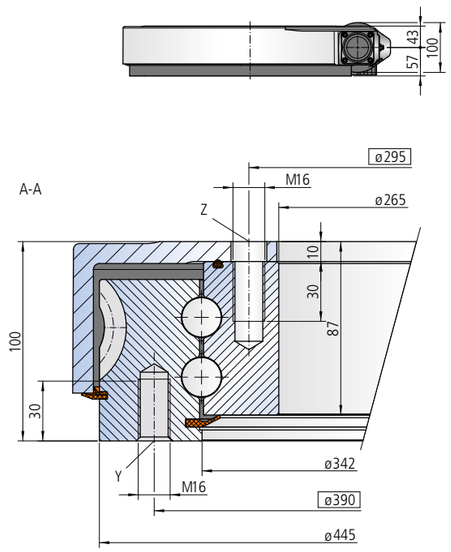
Pressure differential	**Δp**	[bar]	140
Oil flow	**Q**	[l/min]	36
Output speed	**n**	[min $^{-1}$]	1
Max. achievable torque	M_d	[Nm]	25810

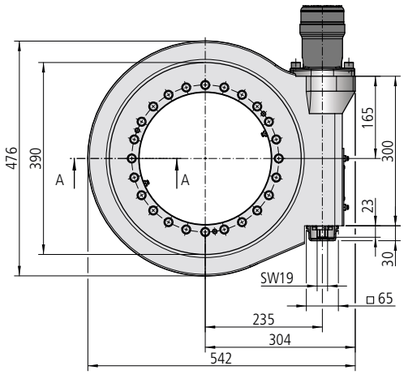
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-L 0343 / 2-row / 1 drive





The mounting structure must support the housing to at least ø343 and at most to ø449

Mounting holes
Y = 18 drill holes M16-30 deep, evenly distributed
Z = 24 drill holes ø18-10 deep / M16-30 deep, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

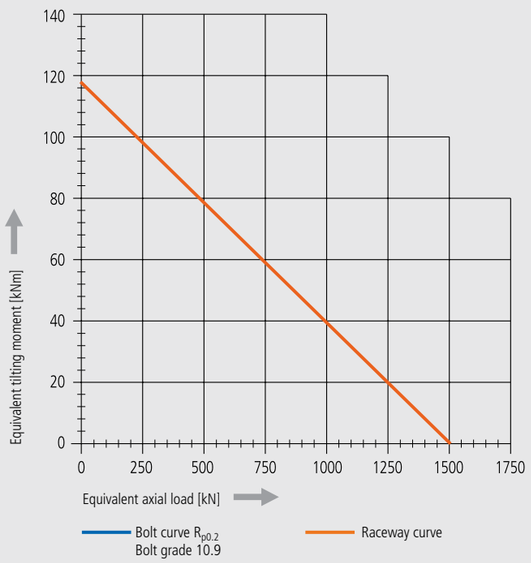
			Drawing number WD-L 0343/3-12000
Module	**m**	[mm]	5
Number of threads of the worm		[-]	1
Gear ratio	**i**	[-]	86
Self-locking gears			No**
Max. torque $S_F = 1$	$M_{d\ max}$	[Nm]	12905
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$M_{d\ nom}$	[Nm]	10150
Max. holding torque* $S_{F\,S} = 1$ (static)	$M_{h\ max}$	[Nm]	12905
Static load rating, radial	$C_{o\ rad}$	[kN]	564
Static load rating, axial	$C_{o\ ax}$	[kN]	1511
Dynamic load rating, radial	C_{rad}	[kN]	255
Dynamic load rating, axial	C_{ax}	[kN]	298
Weight, incl. 6 kg for hydraulic motor OMP (X) 160		[kg]	82

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor OMP (X) 160

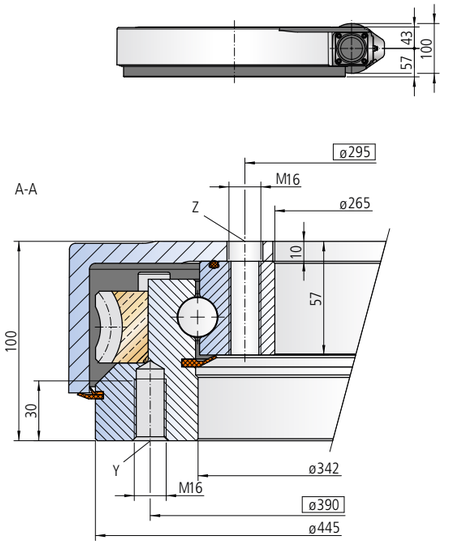
Pressure differential	**Δp**	[bar]	140
Oil flow	**Q**	[l/min]	18
Output speed	**n**	[min $^{-1}$]	1
Max. achievable torque	M_d	[Nm]	12905

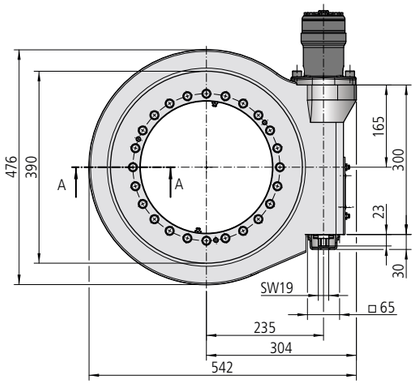
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-LC 0343 / 1-row / 1 drive - Bronze special design





The mounting structure must support the housing to at least ø343 and at most to ø449

Mounting holes
Y = 18 drill holes M16-30 deep, evenly distributed
Z = 24 drill holes ø18-10 deep / M16, evenly distributed

Lubricating ports
2 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

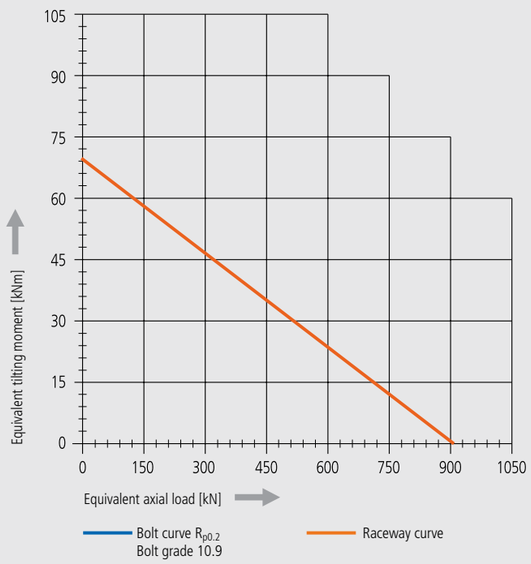
			Drawing number WD-LC 0343/1-07860
Module	**m**	[mm]	5
Number of threads of the worm		[-]	1
Gear ratio	**i**	[-]	86
Self-locking gears			No**
Max. torque $S_F = 1$	$M_{d\ max}$	[Nm]	5926
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$M_{d\ nom}$	[Nm]	5926
Max. holding torque* $S_{F\,S} = 1$ (static)	$M_{h\ max}$	[Nm]	5926
Static load rating, radial	$C_{o\ rad}$	[kN]	338
Static load rating, axial	$C_{o\ ax}$	[kN]	905
Dynamic load rating, radial	C_{rad}	[kN]	157
Dynamic load rating, axial	C_{ax}	[kN]	183
Weight, incl. 6 kg for hydraulic motor OMP (X) 160		[kg]	88

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor OMP (X) 160

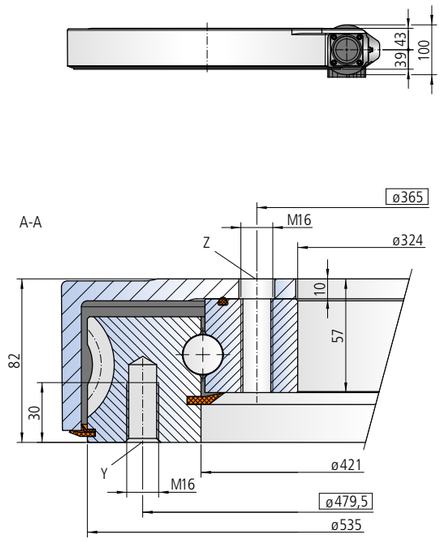
Pressure differential	**Δp**	[bar]	59
Oil flow	**Q**	[l/min]	14
Output speed	**n**	[min $^{-1}$]	1
Max. achievable torque	M_d	[Nm]	5926

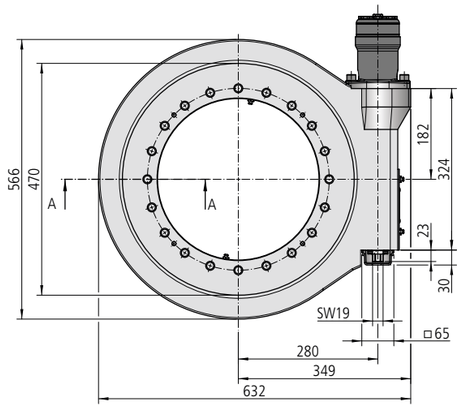
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-L 0419 / 1-row / 1 drive





The mounting structure must support the housing to at least ø419 and at most to ø544

Mounting holes
Y = 20 drill holes M16-30 deep, evenly distributed
Z = 20 drill holes ø18-10 deep / M16, evenly distributed

Lubricating ports
2 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

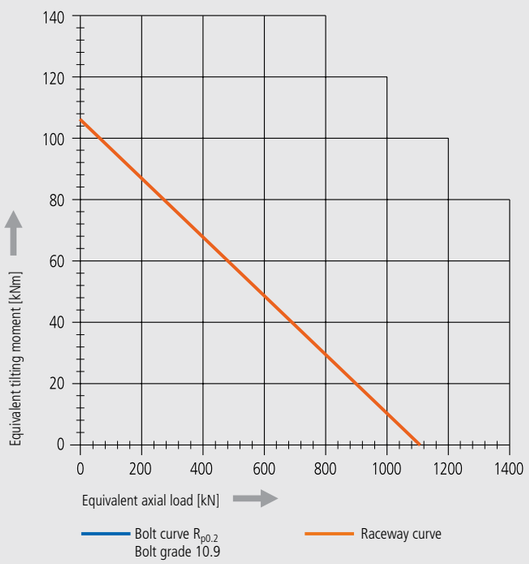
			Drawing number WD-L 0419/3-04553
Module	**m**	[mm]	5
Number of threads of the worm		[-]	1
Gear ratio	**i**	[-]	104
Self-locking gears			No**
Max. torque $S_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	15606
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	15606
Max. holding torque* $S_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	15606
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	413
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	1107
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	170
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	198
Weight, incl. 6 kg for hydraulic motor OMP (X) 160		[kg]	92

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor OMP (X) 160

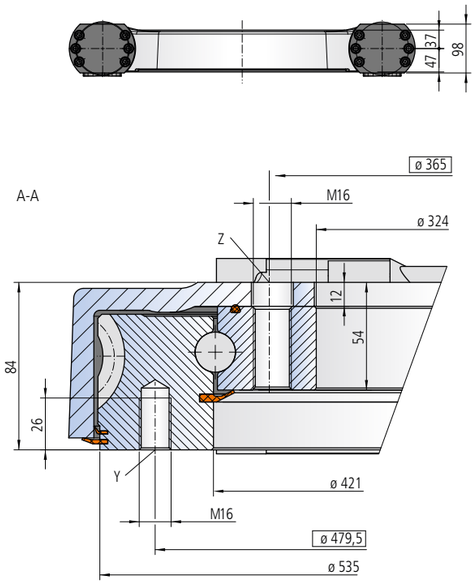
Pressure differential	**Δp**	[bar]	140
Oil flow	**Q**	[l/min]	20
Output speed	**n**	[min $^{-1}$]	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	15606

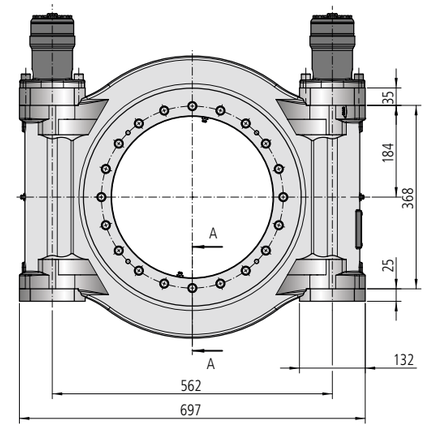
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-L 0419 / 1-row / 2 drives





The mounting structure must support the housing to at least ø419 and at most to ø486

Mounting holes
Y = 20 drill holes M16-30 deep, evenly distributed
Z = 20 drill holes ø18-12 deep / M16, evenly distributed

Lubricating ports
2 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

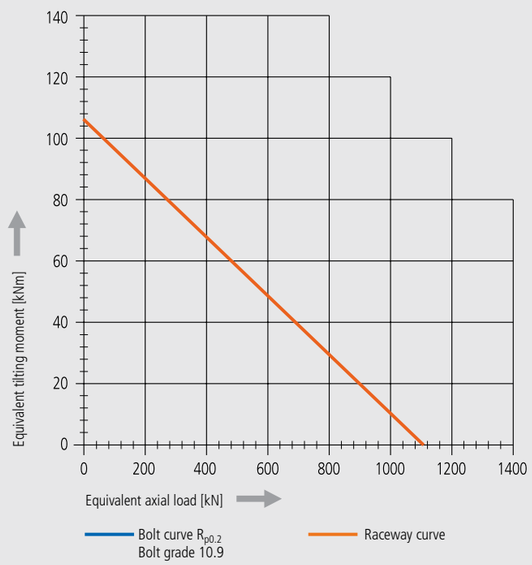
			Drawing number WD-L 0419/3-10102
Module	**m**	[mm]	5
Number of threads of the worm		[-]	1
Gear ratio	**i**	[-]	104
Self-locking gears			No**
Max. torque $S_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	31212
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	31212
Max. holding torque* $S_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	44590
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	413
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	1107
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	170
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	198
Weight, incl. 12 kg for two hydraulic motors OMP (X) 160		[kg]	150

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with two hydraulic motors OMP (X) 160

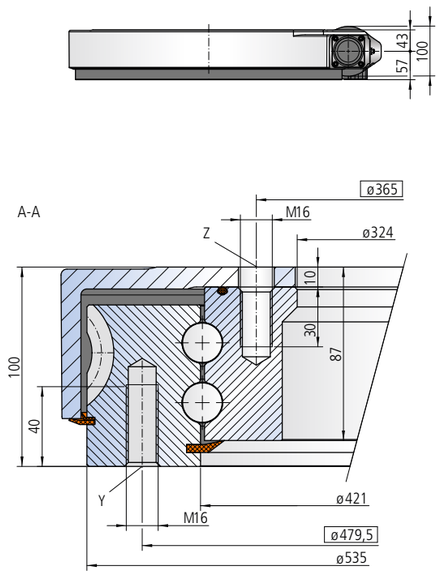
Pressure differential	**Δp**	[bar]	140
Oil flow	**Q**	[l/min]	40
Output speed	**n**	[min $^{-1}$]	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	31212

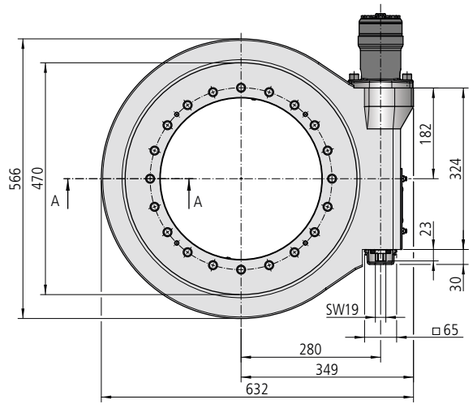
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-L 0419 / 2-row / 1 drive





The mounting structure must support the housing to at least ø419 and at most to ø544

Mounting holes
Y = 20 drill holes M16-40 deep, evenly distributed
Z = 20 drill holes ø18-10 deep / M16-30 deep, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

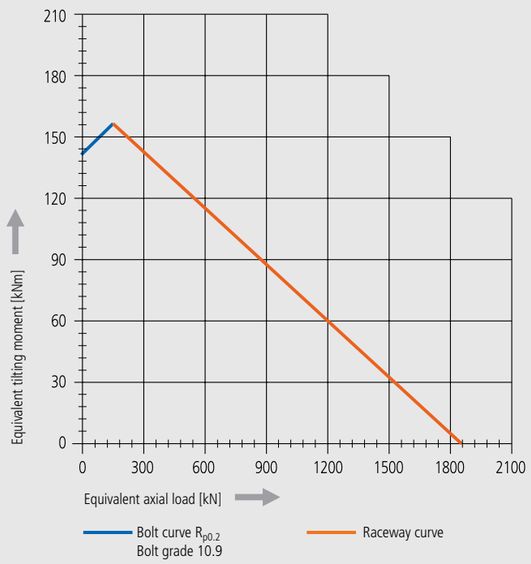
			Drawing number WD-L 0419/3-04684
Module	**m**	[mm]	5
Number of threads of the worm		[-]	1
Gear ratio	**i**	[-]	104
Self-locking gears			No**
Max. torque $S_F = 1$	$M_{d\ max}$	[Nm]	15606
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$M_{d\ nom}$	[Nm]	15606
Max. holding torque* $S_{F\,S} = 1$ (static)	$M_{h\ max}$	[Nm]	15606
Static load rating, radial	$C_{o\ rad}$	[kN]	691
Static load rating, axial	$C_{o\ ax}$	[kN]	1849
Dynamic load rating, radial	C_{rad}	[kN]	277
Dynamic load rating, axial	C_{ax}	[kN]	323
Weight, incl. 6 kg for hydraulic motor OMP (X) 160		[kg]	112

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor OMP (X) 160

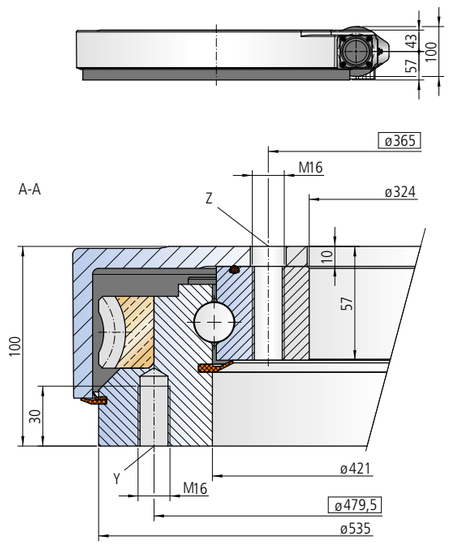
Pressure differential	**Δp**	[bar]	140
Oil flow	**Q**	[l/min]	20
Output speed	**n**	[min $^{-1}$]	1
Max. achievable torque	M_d	[Nm]	15606

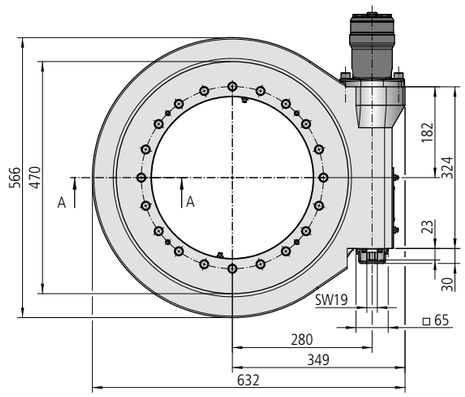
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-LC 0419 / 1-row / 1 drive - Bronze special design





The mounting structure must support the housing to at least ø419 and at most to ø544

Mounting holes
Y = 20 drill holes M16-30 deep, evenly distributed
Z = 20 drill holes ø18-10 deep / M16, evenly distributed

Lubricating ports
2 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

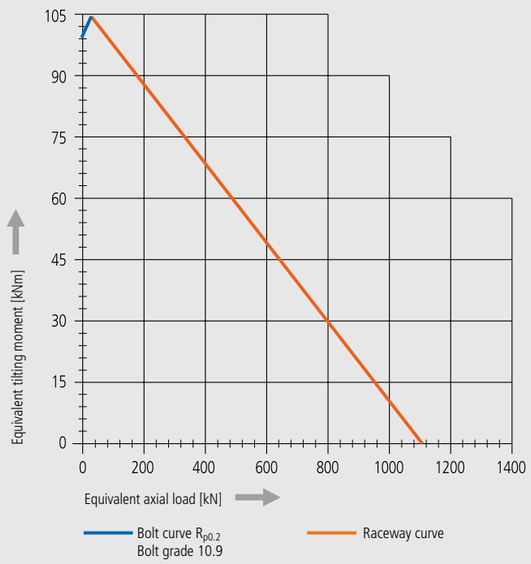
			Drawing number WD-LC 0419/1-07861
Module	**m**	[mm]	5
Number of threads of the worm		[-]	1
Gear ratio	**i**	[-]	104
Self-locking gears			No**
Max. torque $S_F = 1$	$M_{d\ max}$	[Nm]	7166
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$M_{d\ nom}$	[Nm]	7166
Max. holding torque* $S_{F\,S} = 1$ (static)	$M_{h\ max}$	[Nm]	7166
Static load rating, radial	$C_{o\ rad}$	[kN]	413
Static load rating, axial	$C_{o\ ax}$	[kN]	1107
Dynamic load rating, radial	C_{rad}	[kN]	170
Dynamic load rating, axial	C_{ax}	[kN]	198
Weight, incl. 6 kg for hydraulic motor OMP (X) 160		[kg]	103

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor OMP (X) 160

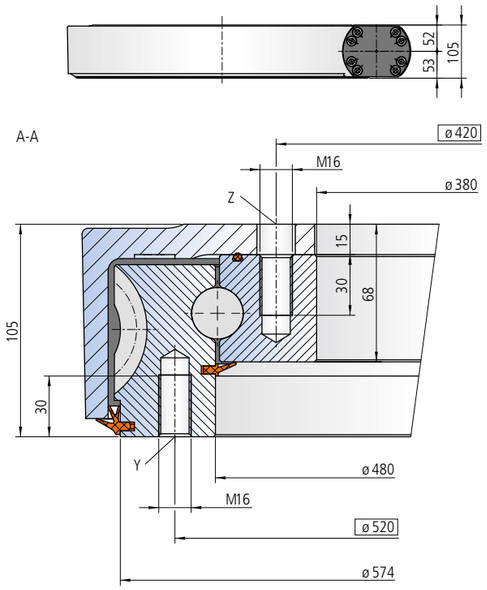
Pressure differential	**Δp**	[bar]	59
Oil flow	**Q**	[l/min]	17
Output speed	**n**	[min $^{-1}$]	1
Max. achievable torque	M_d	[Nm]	7166

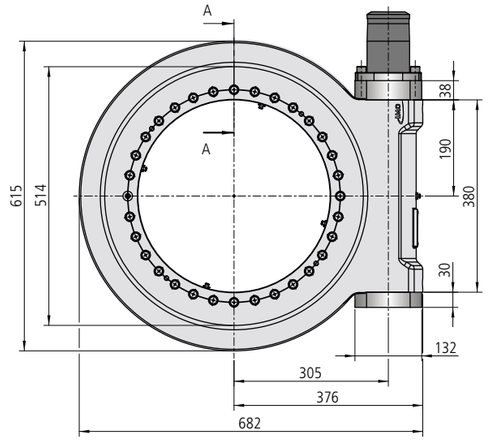
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-L 0478 / 1-row / 1 drive





The mounting structure must support the housing to at least ø478

Mounting holes
Y = 32 drill holes M16-30 deep, evenly distributed
Z = 31 drill holes ø19-15 deep / M16-30 deep, evenly spaced over 32 pitch

Lubricating ports
4 conical grease nipples on internal diameter
1 conical grease nipple on housing exterior
Slew drive supplied pre-lubricated

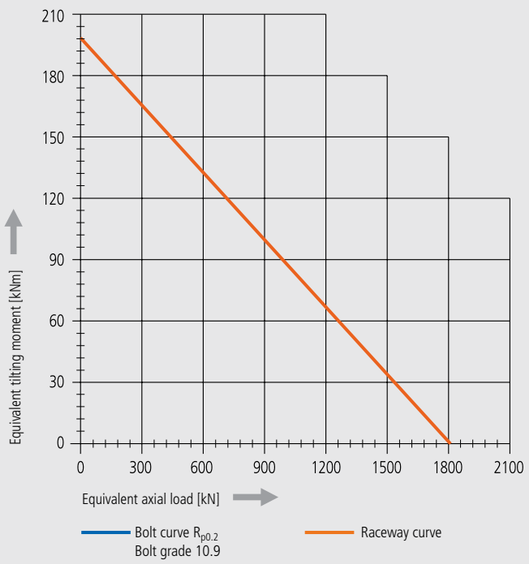
			Drawing number WD-L 0478/3-10090	
			Drawing number WD-L 0478/3-04904	
Module	**m**	[mm]	6	6
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	93	47
Self-locking gears			No**	No**
Max. torque $S_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	24288	24288
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	24288	24288
Max. holding torque* $S_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	34263	34263
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	675	675
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	1808	1808
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	251	251
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	293	293
Weight, incl. 12 kg for hydraulic motor RE 300		[kg]	139	139

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE 300

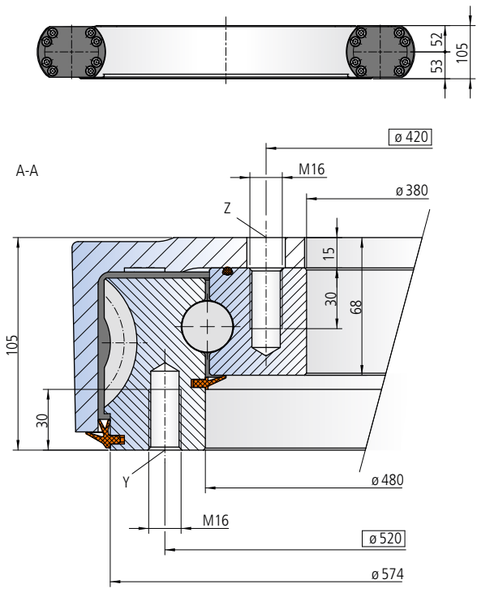
Pressure differential	**Δp**	[bar]	120	200
Oil flow	**Q**	[l/min]	33	22
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	24288	24288

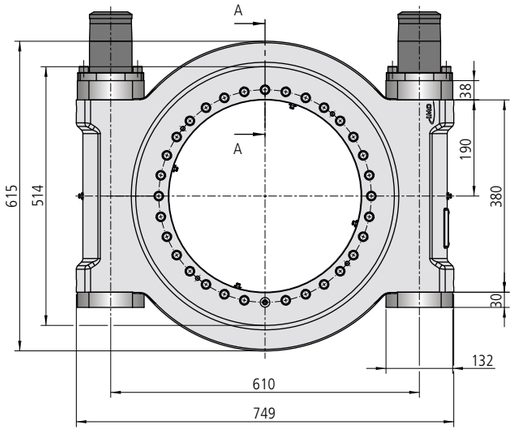
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-L 0478 / 1-row / 2 drives





The mounting structure must support the housing to at least ø478

Mounting holes
Y = 32 drill holes M16-30 deep, evenly distributed
Z = 31 drill holes ø19-15 deep / M16-30 deep, evenly spaced over 32 pitch

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

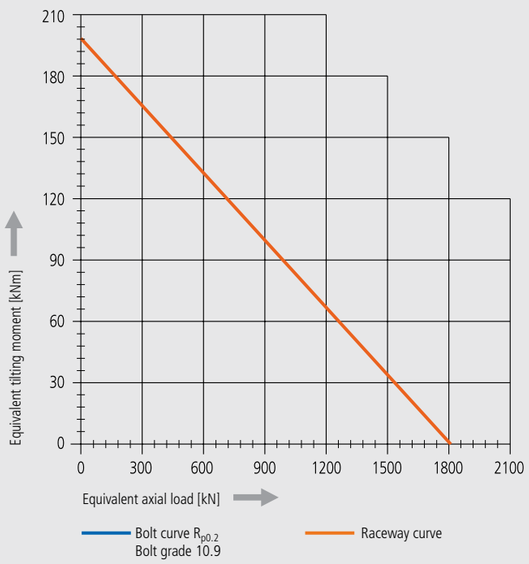
			Drawing number WD-L 0478/3-12520	
			Drawing number WD-L 0478/3-12316	
Module	**m**	[mm]	6	6
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	93	47
Self-locking gears			No**	No**
Max. torque $S_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	48576	48576
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	48576	48576
Max. holding torque* $S_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	68526	68526
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	675	675
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	1808	1808
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	251	251
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	293	293
Weight, incl. 24 kg for two hydraulic motors RE 300		[kg]	184	184

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with two hydraulic motors RE300

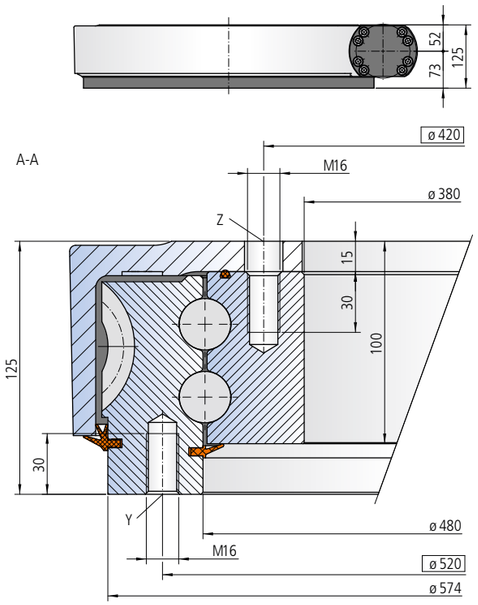
Pressure differential	**Δp**	[bar]	120	200
Oil flow	**Q**	[l/min]	66	44
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	48576	48576

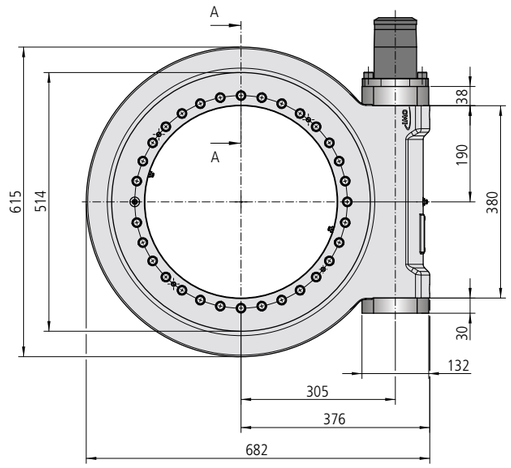
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-L 0478 / 2-row / 1 drive





The mounting structure must support the housing to at least ø478

Mounting holes
Y = 32 drill holes M16-28 deep, evenly distributed
Z = 31 drill holes ø19-15 deep / M16-30 deep, evenly spaced over 32 pitch

Lubricating drill holes
4 conical grease nipples on internal diameter
1 conical grease nipple on housing exterior
Slew drive supplied pre-lubricated

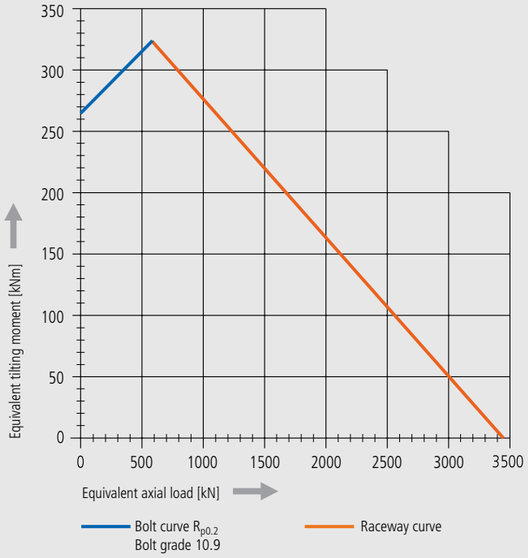
			Drawing number WD-L 0478/3-12521	
			Drawing number WD-L 0478/3-12317	
Module	**m**	[mm]	6	6
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	93	47
Self-locking gears			No**	No**
Max. torque $S_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	24288	24288
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	24288	24288
Max. holding torque* $S_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	34263	34263
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	1298	1298
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	3474	3474
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	460	460
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	536	536
Weight, incl. 12 kg for hydraulic motor RE 300		[kg]	179	179

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE300

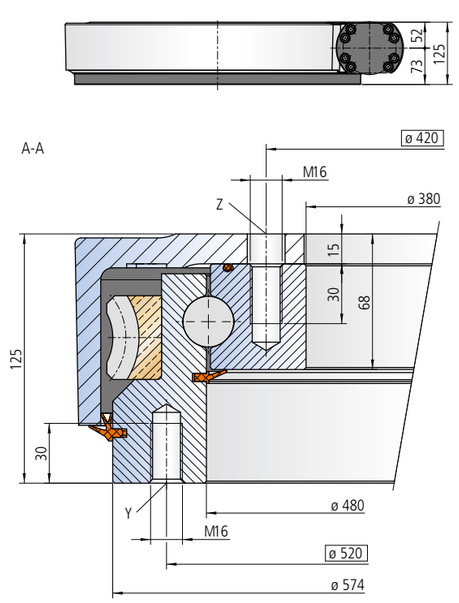
Pressure differential	**Δp**	[bar]	120	200
Oil flow	**Q**	[l/min]	33	22
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	24288	24288

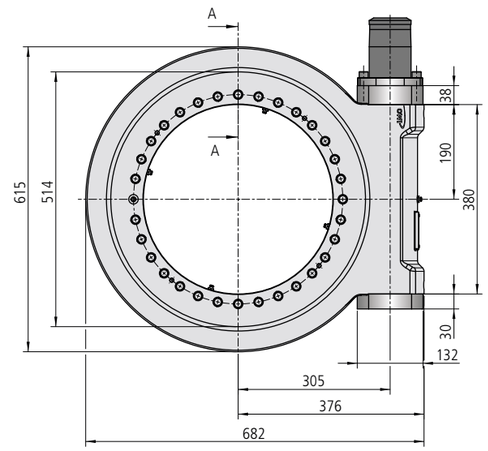
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-LC 0478 / 1-row / 1 drive - Bronze special design





The mounting structure must support the housing to at least ø478

Mounting holes
Y = 32 drill holes M16-30 deep, evenly distributed
Z = 31 drill holes ø19-15 deep / M16-30 deep, evenly spaced over 32 pitch

Lubricating ports
4 conical grease nipples on internal diameter
1 conical grease nipple on housing exterior
Slew drive supplied pre-lubricated

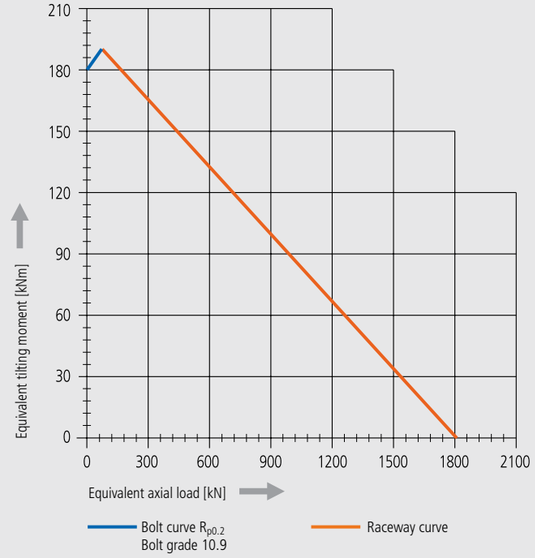
			Drawing number WD-LC 0478/1-12522	
			Drawing number WD-LC 0478/1-12355	
Module	**m**	[mm]	6	6
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	93	47
Self-locking gears			No**	No**
Max. torque $S_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	11013	11013
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	11013	11013
Max. holding torque* $S_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	11013	11013
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	675	675
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	1808	1808
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	251	251
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	293	293
Weight, incl. 6 kg for OMP (X) 160 / 11 kg for RE 160		[kg]	170	175

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor

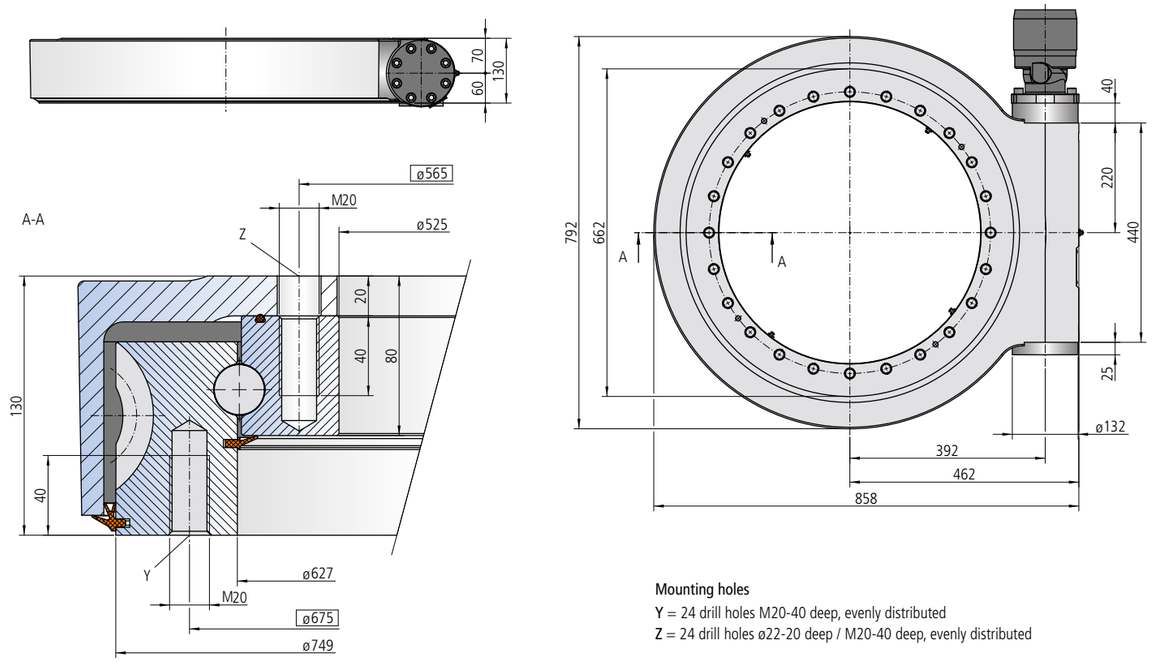
			OMP (X) 160	RE160
Pressure differential	**Δp**	[bar]	99	138
Oil flow	**Q**	[l/min]	17	10
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	11013	11013

Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-L 0625 / 1-row / 1 drive



Mounting holes
Y = 24 drill holes M20-40 deep, evenly distributed
Z = 24 drill holes ø22-20 deep / M20-40 deep, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
1 conical grease nipple on housing exterior
Slew drive supplied pre-lubricated

The mounting structure must support the housing to at least ø625

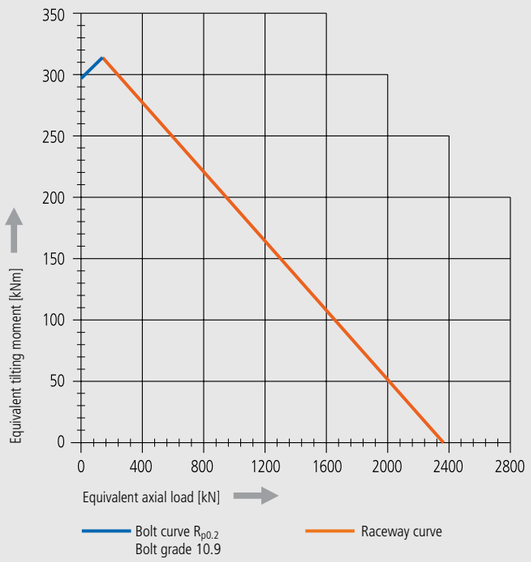
			Drawing number WD-L 0625/3-09738	
			Drawing number WD-L 0625/3-06290	
Module	**m**	[mm]	7	7
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	104	51.5
Self-locking gears			No**	No**
Max. torque $s_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	42824	42824
Nom. torque $s_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	42824	42824
Max. holding torque* $s_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	61177	61177
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	883	883
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	2364	2364
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	280	280
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	327	327
Weight, incl. 13 kg for RE470 / 24 kg for DT750		[kg]	235	246

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:

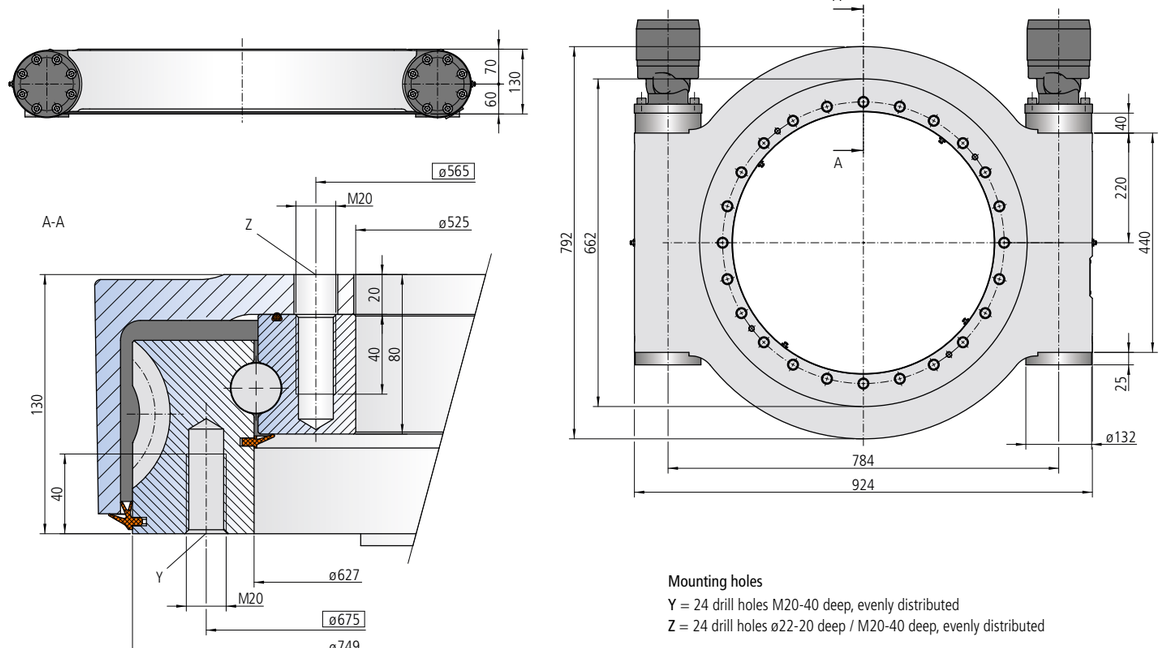
Performance data with hydraulic motor			RE470	DT750
Pressure differential	$\Delta\mathbf{p}$	[bar]	138	128
Oil flow	**Q**	[l/min]	51	46
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	42824	42824

Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-L 0625 / 1-row / 2 drives



Mounting holes
Y = 24 drill holes M20-40 deep, evenly distributed
Z = 24 drill holes ø22-20 deep / M20-40 deep, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

The mounting structure must support the housing to at least ø625

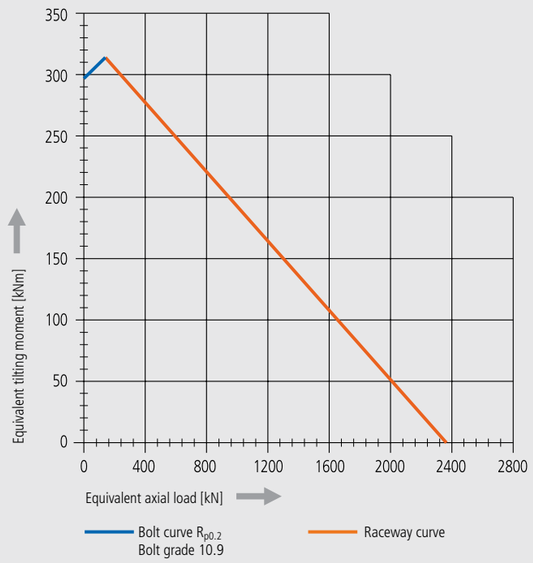
			Drawing number WD-L 0625/3-12523	
			Drawing number WD-L 0625/3-12003	
Module	**m**	[mm]	7	7
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	104	51.5
Self-locking gears			No**	No**
Max. torque $s_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	85648	85648
Nom. torque $s_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	85648	85648
Max. holding torque* $s_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	122354	122354
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	883	883
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	2364	2364
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	280	280
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	327	327
Weight, incl. 26 kg for RE470 / 48 kg for 2x DT750		[kg]	291	313

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:

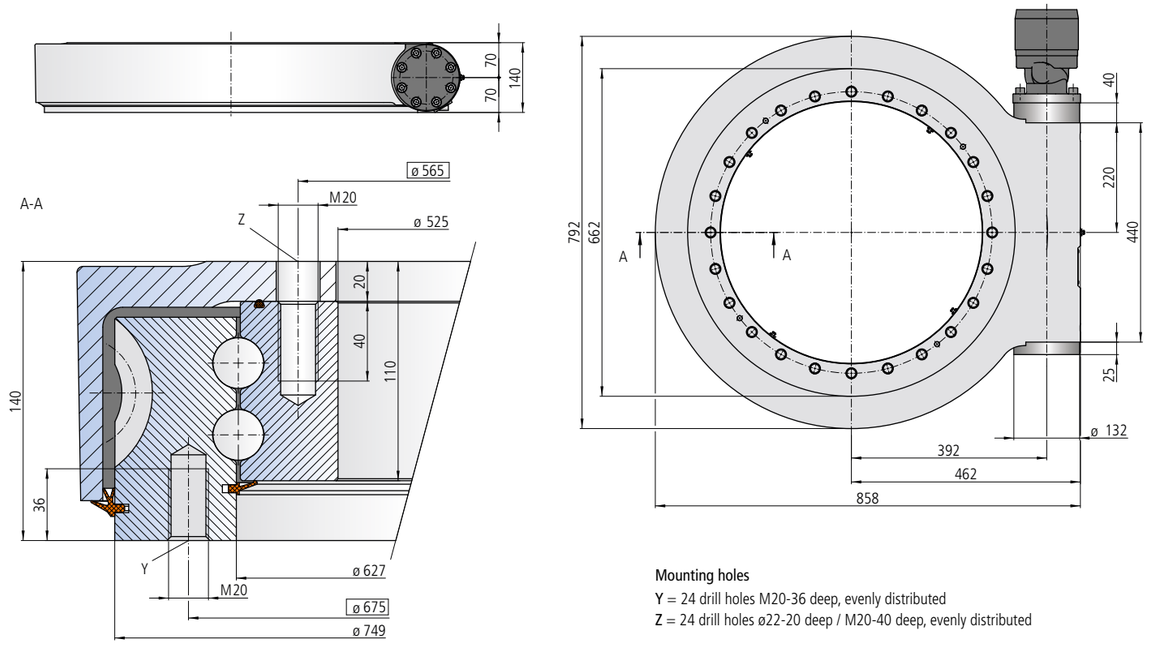
Performance data with two hydraulic motors			RE470	DT750
Pressure differential	$\Delta\mathbf{p}$	[bar]	138	128
Oil flow	**Q**	[l/min]	102	92
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	85648	85648

Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-L 0625 / 2-row / 1 drive



Mounting holes
Y = 24 drill holes M20-36 deep, evenly distributed
Z = 24 drill holes ø22-20 deep / M20-40 deep, evenly distributed

The mounting structure must support the housing to at least ø625

Lubricating ports
8 conical grease nipples on internal diameter
1 conical grease nipple on housing exterior
Slew drive supplied pre-lubricated

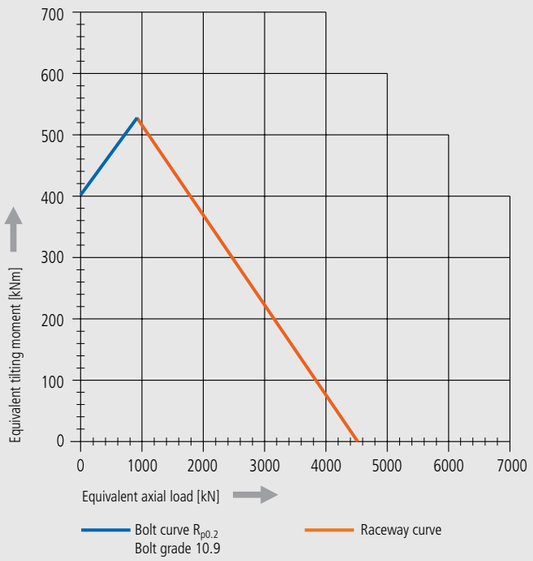
			Drawing number WD-L 0625/3-12524	
			Drawing number WD-L 0625/3-12004	
Module	**m**	[mm]	7	7
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	104	51.5
Self-locking gears			No**	No**
Max. torque $S_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	42824	42824
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	42824	42824
Max. holding torque* $S_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	61177	61177
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	1697	1697
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	4543	4543
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	512	512
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	598	598
Weight, incl. 13 kg for RE470 / 24 kg for DT750		[kg]	281	292

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:

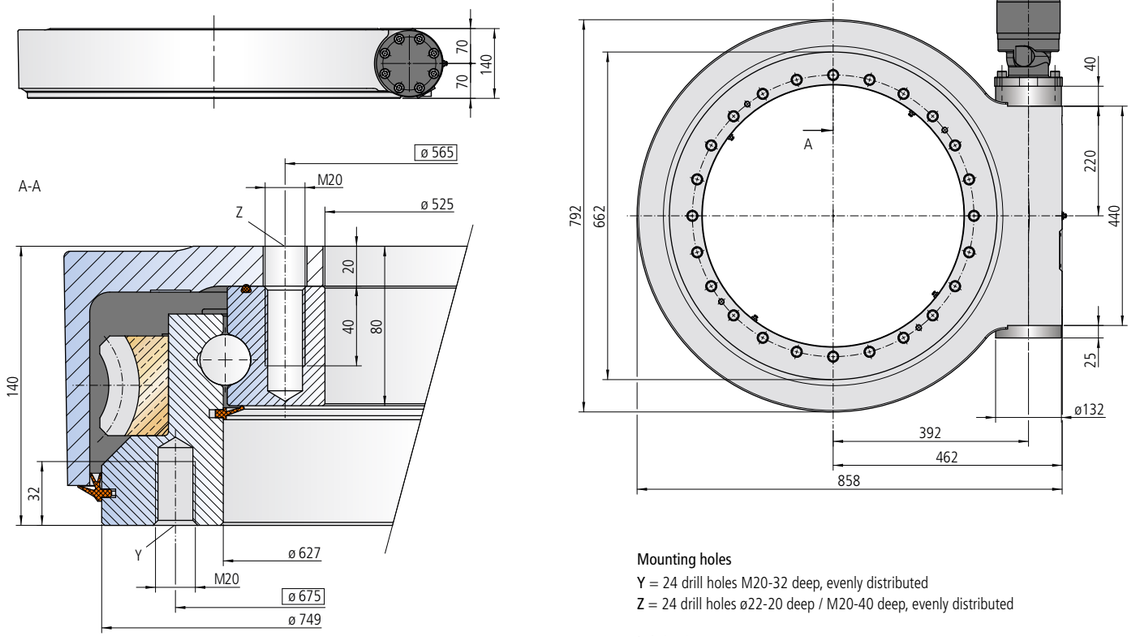
Performance data with hydraulic motor			RE470	DT750
Pressure differential	**Δp**	[bar]	138	128
Oil flow	**Q**	[l/min]	51	46
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	42824	42824

Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-LC 0625 / 1-row / 1 drive - Bronze special design



Mounting holes
Y = 24 drill holes M20-32 deep, evenly distributed
Z = 24 drill holes ø22-20 deep / M20-40 deep, evenly distributed

The mounting structure must support the housing to at least ø625

Lubricating ports
4 conical grease nipples on internal diameter
1 conical grease nipple on housing exterior
Slew drive supplied pre-lubricated

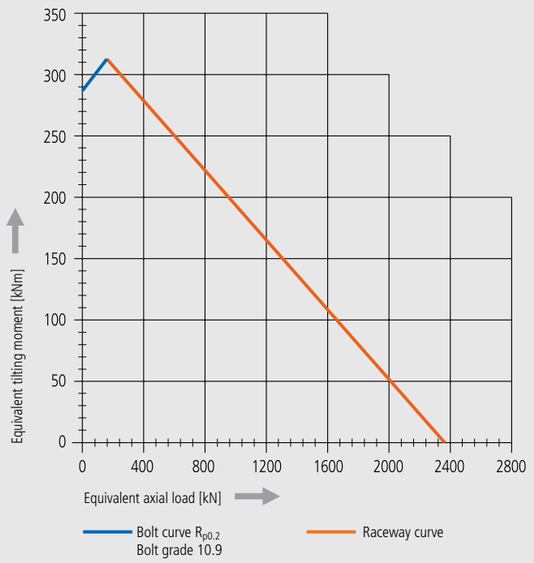
			Drawing number WD-LC 0625/1-12525	
			Drawing number WD-LC 0625/1-12356	
Module	**m**	[mm]	7	7
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	104	51.5
Self-locking gears			No**	No**
Max. torque $S_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	19664	19664
Nom. torque $S_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	19664	19664
Max. holding torque* $S_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	19664	19664
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	883	883
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	2364	2364
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	280	280
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	327	327
Weight, incl. 11 kg for RE160 / 12 kg for RE260		[kg]	253	254

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:

Performance data with hydraulic motor			RE160	RE260
Pressure differential	**Δp**	[bar]	137	163
Oil flow	**Q**	[l/min]	20	17
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	19664	19664

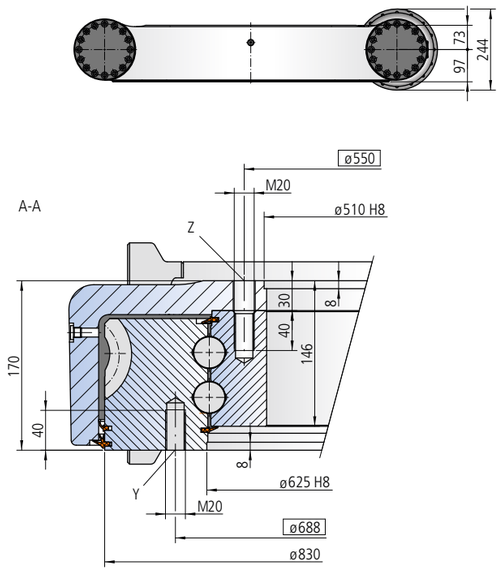
Limiting load diagram for compressive loads

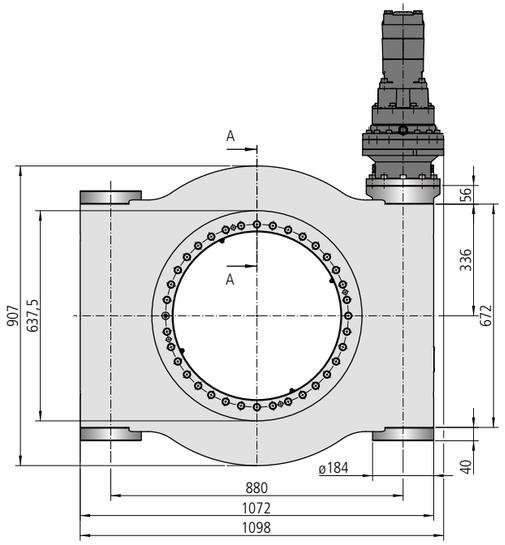


Please always observe the technical information!

Please note: This slew drive is only available after prior technical design by IMO Application Engineering department.

Size WD-L 0620 / 2-row / 1 drive





Mounting holes
Y = 40 drill holes M20-40 deep, evenly distributed
Z = 35 drill holes ø22-30 deep / M20-40 deep, evenly spaced over 36 pitch

Lubricating ports
8 conical grease nipples on internal diameter
4 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

The mounting structure must support the housing to at least ø620 and at most to ø700

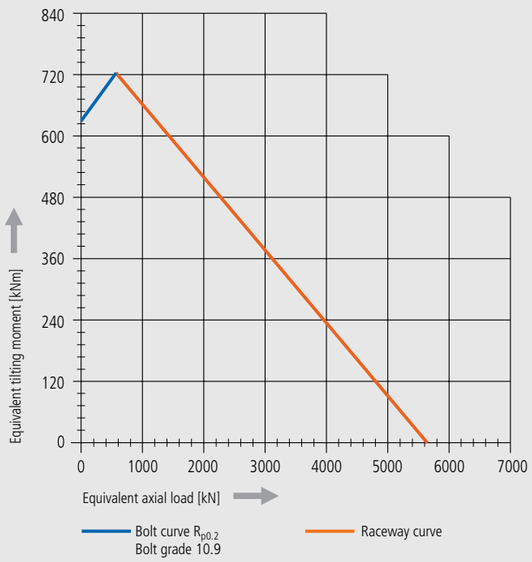
			Drawing number WD-L 0620/3-11539	Drawing number WD-L 0620/3-11541
Module	**m**	[mm]	10	10
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	80	40
Overall gear ratio incl. gear box	i_{tot}	[-]	340	170
Self-locking gears			No**	No**
Max. torque $s_F = 1$	$M_{d\ max}$	[Nm]	137200	137200
Nom. torque $s_W = 1$ at n = 1 min^{-1}	$M_{d\ nom}$	[Nm]	137200	137200
Max. holding torque* $s_{F\,S} = 1$ (static)	$M_{h\ max}$	[Nm]	137200	137200
Static load rating, radial	$C_{o\ rad}$	[kN]	2116	2116
Static load rating, axial	$C_{o\ ax}$	[kN]	5664	5664
Dynamic load rating, radial	C_{rad}	[kN]	753	753
Dynamic load rating, axial	C_{ax}	[kN]	878	878
Weight, incl. 22 kg for OTM315 / 24 kg for OMT500		[kg]	740	742

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example: Performance data with gear box 305 and hydraulic motor

			OMT315	OMT500
Pressure differential	**Δp**	[bar]	175	165
Oil flow	**Q**	[l/min]	115	98
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	M_d	[Nm]	137200	137200

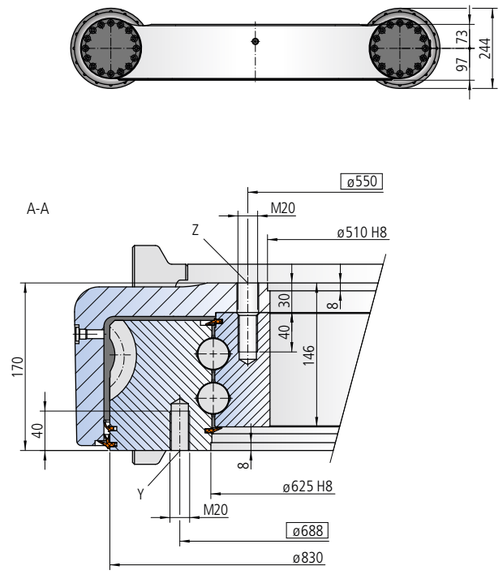
Limiting load diagram for compressive loads

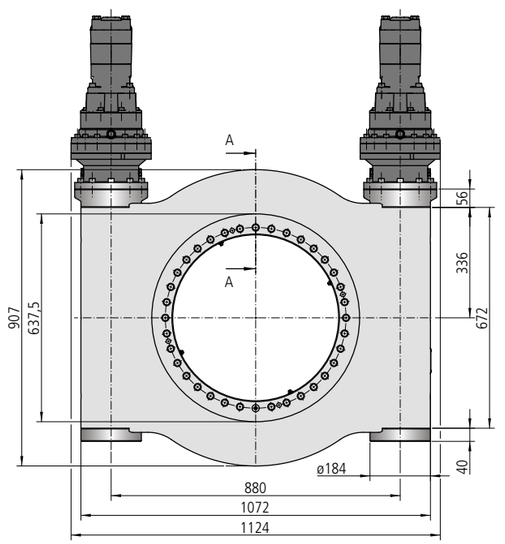


Please always observe the technical information!

Please note: This slew drive is only available after prior technical design by IMO Application Engineering department.

Size WD-L 0620 / 2-row / 2 drives





Mounting holes
Y = 40 drill holes M20-40 deep, evenly distributed
Z = 35 drill holes ø22-30 deep / M20-40 deep, evenly spaced over 36 pitch

Lubricating ports
8 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

The mounting structure must support the housing to at least ø620 and at most to ø700

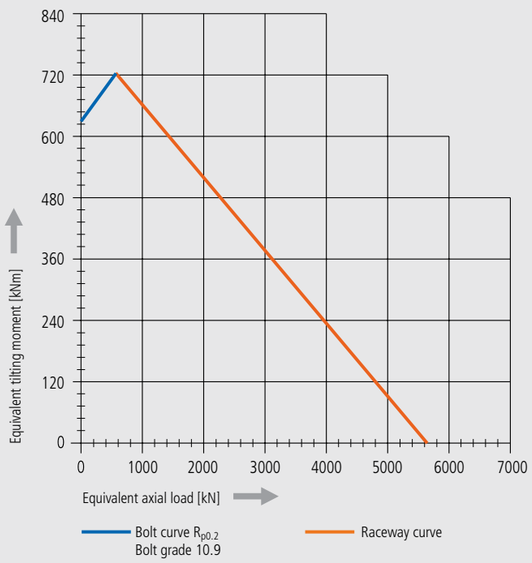
			Drawing number WD-L 0620/3-11540	Drawing number WD-L 0620/3-10983
Module	**m**	[mm]	10	10
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	80	40
Overall gear ratio incl. gear box	i_{tot}	[-]	340	170
Self-locking gears			No**	No**
Max. torque $s_F = 1$	$M_{d\ max}$	[Nm]	274400	274400
Nom. torque $s_W = 1$ at n = 1 min^{-1}	$M_{d\ nom}$	[Nm]	274400	274400
Max. holding torque* $s_{F\,S} = 1$ (static)	$M_{h\ max}$	[Nm]	274400	274400
Static load rating, radial	$C_{o\ rad}$	[kN]	2116	2116
Static load rating, axial	$C_{o\ ax}$	[kN]	5664	5664
Dynamic load rating, radial	C_{rad}	[kN]	753	753
Dynamic load rating, axial	C_{ax}	[kN]	878	878
Weight, incl. 44kg for 2x OTM315 / 48 kg for 2x OMT500		[kg]	860	864

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example: Performance data with gear box 305 and two hydraulic motors

			OMT315	OMT500
Pressure differential	**Δp**	[bar]	175	165
Oil flow	**Q**	[l/min]	230	196
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	M_d	[Nm]	274400	274400

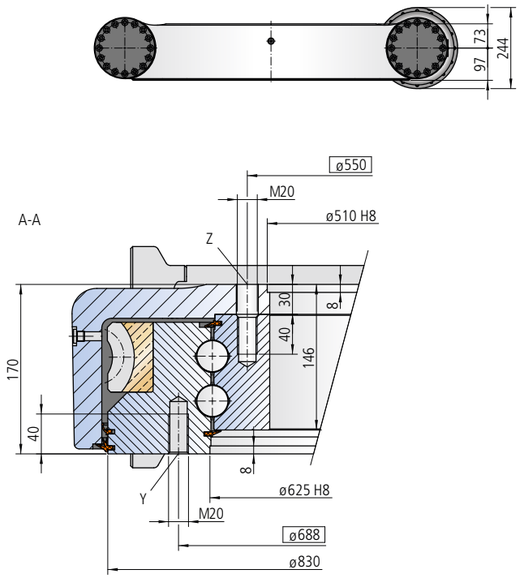
Limiting load diagram for compressive loads

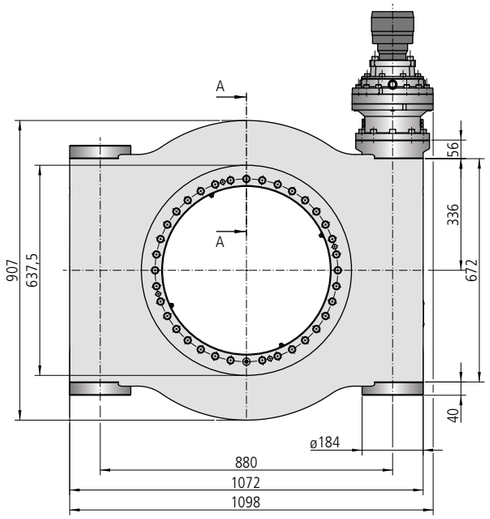


Please always observe the technical information!

Please note: This slew drive is only available after prior technical design by IMO Application Engineering department.

Size WD-LC 0620 / 2-row / 1 drive - Bronze special design





Mounting holes
Y = 40 drill holes M20-40 deep, evenly distributed
Z = 35 drill holes ø22-30 deep / M20-40 deep, evenly spaced over 36 pitch

Lubricating ports
8 conical grease nipples on internal diameter
4 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

The mounting structure must support the housing to at least ø620 and at most to ø700

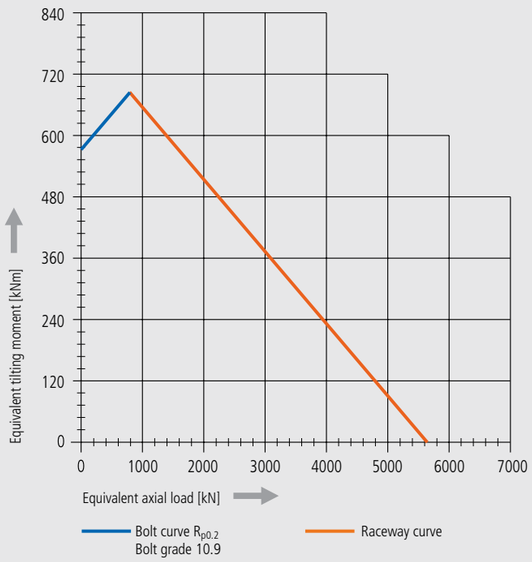
			Drawing number WD-LC 0620/1-11822	
			Drawing number WD-LC 0620/1-11820	
Module	**m**	[mm]	10	10
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	80	40
Overall gear ratio incl. gear box	$\mathbf{i_{tot}}$	[-]	340	170
Self-locking gears			No**	No**
Max. torque $s_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	63000	63000
Nom. torque $s_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	63000	63000
Max. holding torque* $s_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	63000	63000
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	2116	2116
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	5664	5664
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	753	753
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	878	878
Weight, incl. 11 kg for hydraulic motor RE200		[kg]	728	728

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with gear box 303 and hydraulic motor RE200

Pressure differential	**Δp**	[bar]	141	202
Oil flow	**Q**	[l/min]	71	38
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	63000	63000

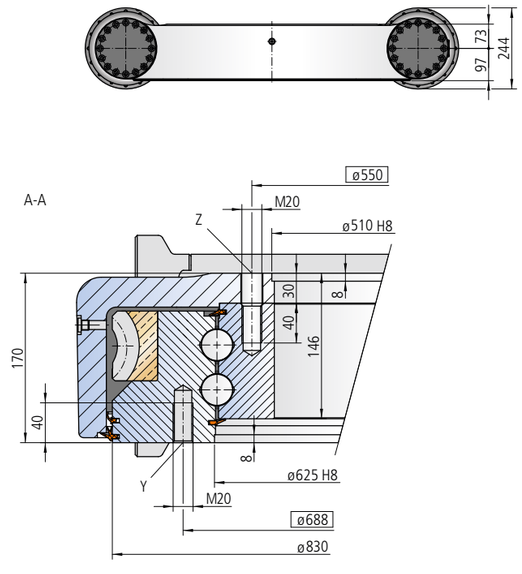
Limiting load diagram for compressive loads

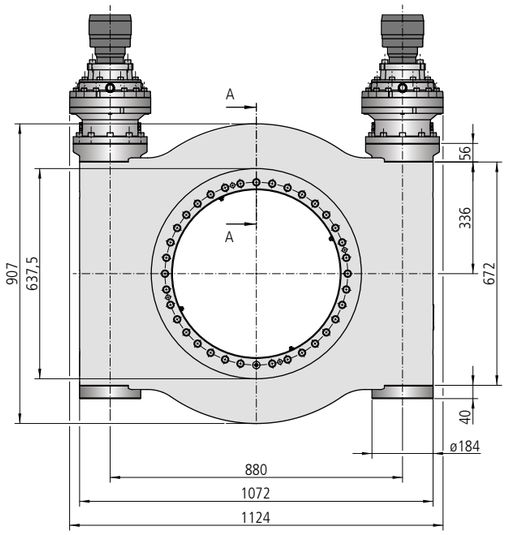


Please always observe the technical information!

Please note: This slew drive is only available after prior technical design by IMO Application Engineering department.

Size WD-LC 0620 / 2-row / 2 drives - Bronze special design





Mounting holes
Y = 40 drill holes M20-40 deep, evenly distributed
Z = 35 drill holes ø22-30 deep / M20-40 deep, evenly spaced over 36 pitch

Lubricating ports
8 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

The mounting structure must support the housing to at least ø620 and at most to ø700

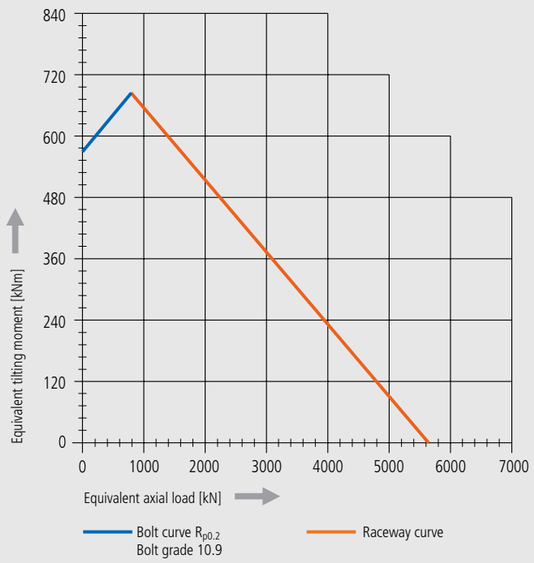
			Drawing number WD-LC 0620/1-11823	
			Drawing number WD-LC 0620/1-11821	
Module	**m**	[mm]	10	10
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	80	40
Overall gear ratio incl. gear box	$\mathbf{i_{tot}}$	[-]	340	170
Self-locking gears			No**	No**
Max. torque $s_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	126000	126000
Nom. torque $s_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	126000	126000
Max. holding torque* $s_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	126000	126000
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	2116	2116
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	5664	5664
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	753	753
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	878	878
Weight, incl. 22 kg for 2 hydraulic motors RE200		[kg]	835	835

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with gear box 303 and two hydraulic motors RE200

Pressure differential	**Δp**	[bar]	141	202
Oil flow	**Q**	[l/min]	142	76
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	126000	126000

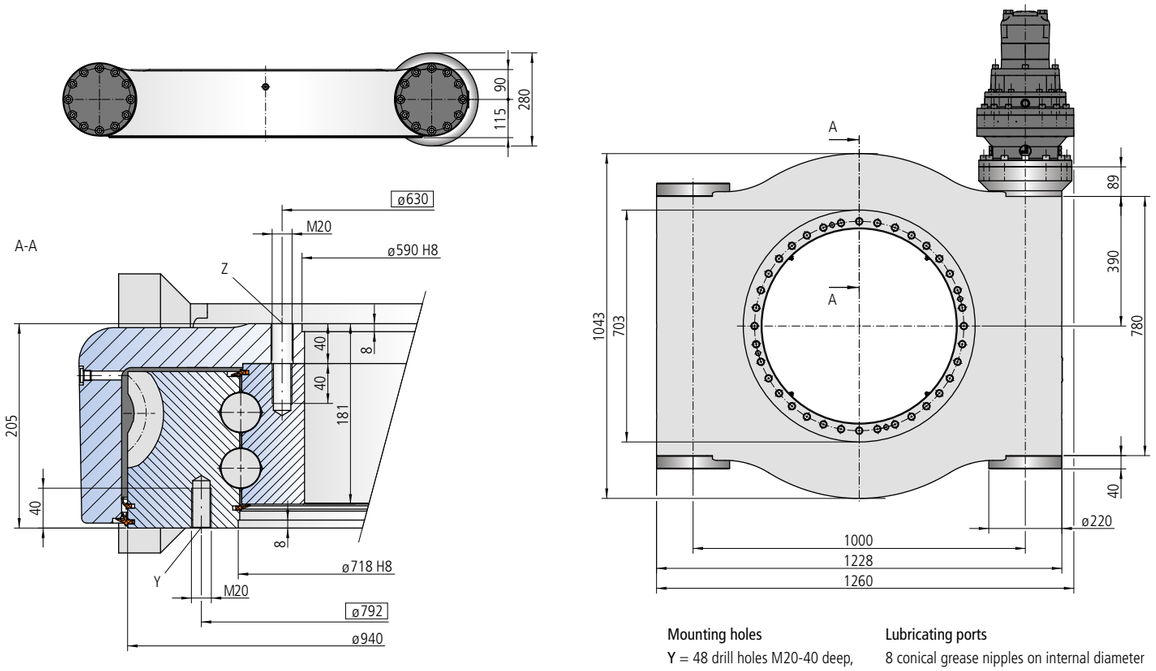
Limiting load diagram for compressive loads



Please always observe the technical information!

Please note: This slew drive is only available after prior technical design by IMO Application Engineering department.

Size WD-L 0713 / 2-row / 1 drive



The mounting structure must support the housing to at least ø713 and at most to ø760

Mounting holes
Y = 48 drill holes M20-40 deep, evenly distributed
Z = 36 drill holes ø22-40 deep / M20-40 deep, evenly distributed

Lubricating ports
8 conical grease nipples on internal diameter
4 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

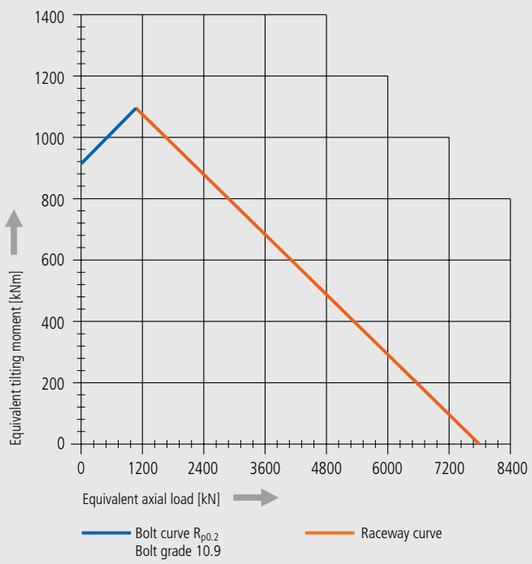
			Drawing number WD-L 0713/3-11824	Drawing number WD-L 0713/3-11826
Module	**m**	[mm]	12	12
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	75	37.5
Overall gear ratio incl. gear box	$\mathbf{i_{tot}}$	[-]	270	200
Self-locking gears			No**	No**
Max. torque $s_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	223252	223252
Nom. torque $s_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	223252	223252
Max. holding torque* $s_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	223252	223252
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	2906	2906
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	7777	7777
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	1003	1003
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	1169	1169
Weight, incl. 26 kg for hydraulic motor OMVS630		[kg]	1215	1215

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with gear box 306 and hydraulic motor OMVS630

Pressure differential	**Δp**	[bar]	185	190
Oil flow	**Q**	[l/min]	180	135
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	223252	223252

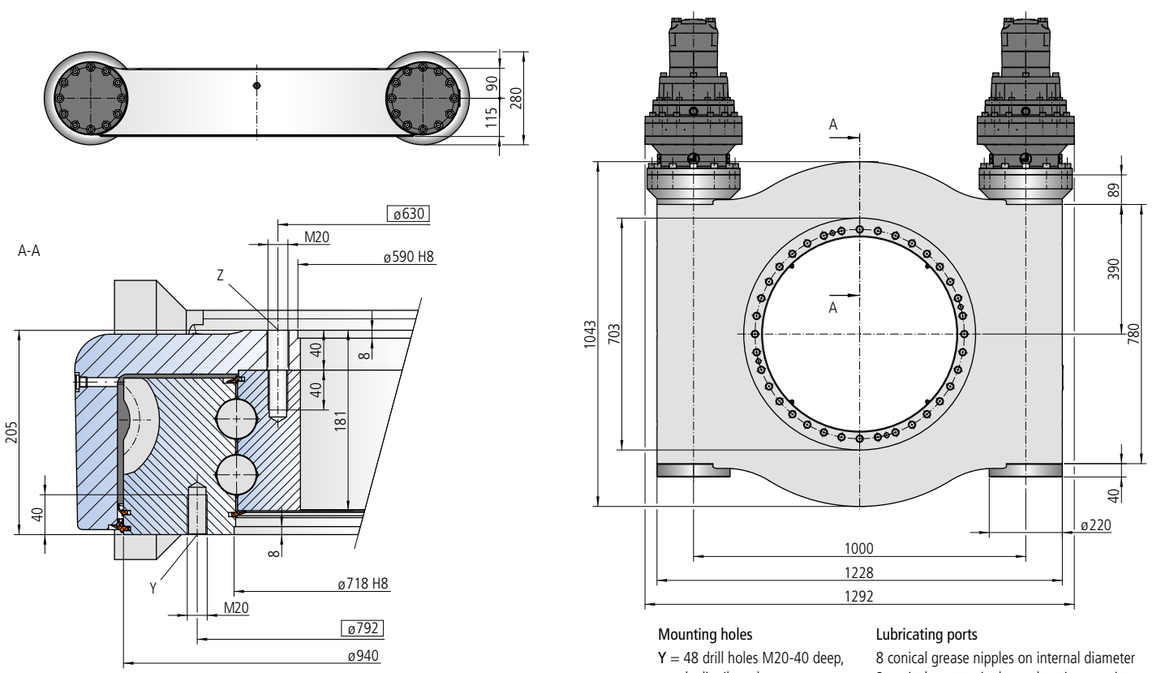
Limiting load diagram for compressive loads



Please always observe the technical information!

Please note: This slew drive is only available after prior technical design by IMO Application Engineering department.

Size WD-L 0713 / 2-row / 2 drives



The mounting structure must support the housing to at least ø713 and at most to ø760

Mounting holes
Y = 48 drill holes M20-40 deep, evenly distributed
Z = 36 drill holes ø22-40 deep / M20-40 deep, evenly distributed

Lubricating ports
8 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

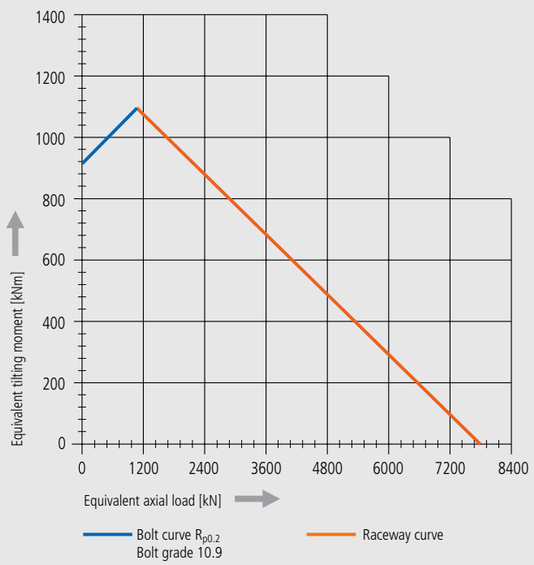
			Drawing number WD-L 0713/3-11825	Drawing number WD-L 0713/3-11827
Module	**m**	[mm]	12	12
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	75	37.5
Overall gear ratio incl. gear box	$\mathbf{i_{tot}}$	[-]	270	200
Self-locking gears			No**	No**
Max. torque $s_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	446504	446504
Nom. torque $s_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	446504	446504
Max. holding torque* $s_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	446504	446504
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	2906	2906
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	7777	7777
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	1003	1003
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	1169	1169
Weight, incl. 52 kg for 2 hydraulic motors OMVS630		[kg]	1400	1400

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with gear box 306 and two hydraulic motors OMVS630

Pressure differential	**Δp**	[bar]	185	190
Oil flow	**Q**	[l/min]	360	270
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	446504	446504

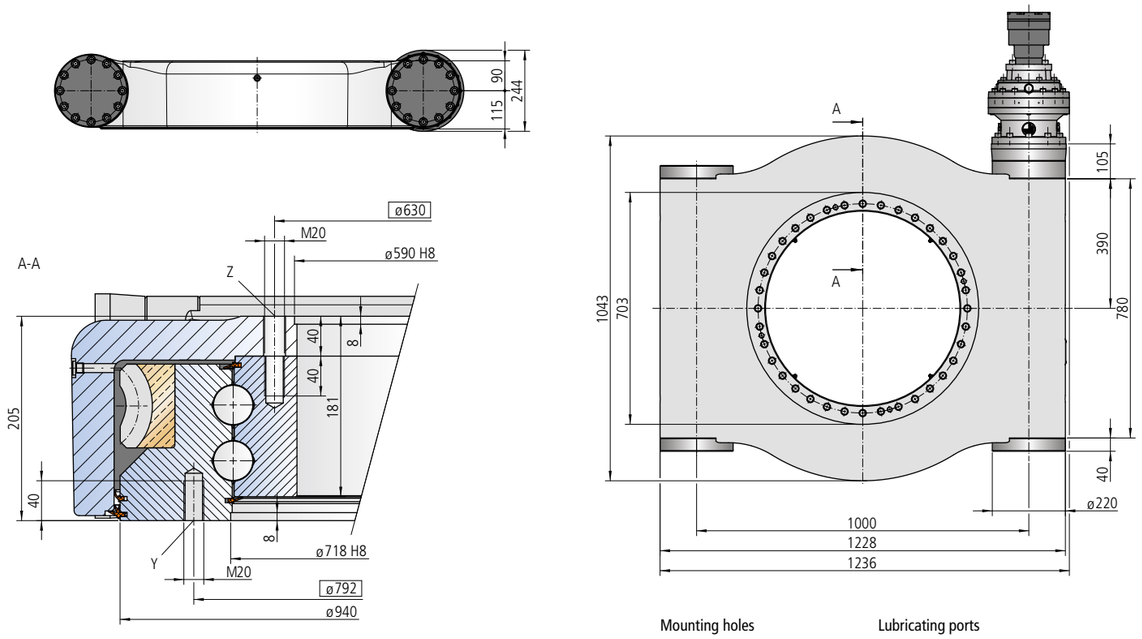
Limiting load diagram for compressive loads



Please always observe the technical information!

Please note: This slew drive is only available after prior technical design by IMO Application Engineering department.

Size WD-LC 0713 / 2-row / 1 drive - Bronze special design



The mounting structure must support the housing to at least ø713 and at most to ø760

Mounting holes
Y = 48 drill holes M20-40 deep, evenly distributed
Z = 36 drill holes ø22-40 deep / M20-40 deep, evenly distributed

Lubricating ports
8 conical grease nipples on internal diameter
4 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

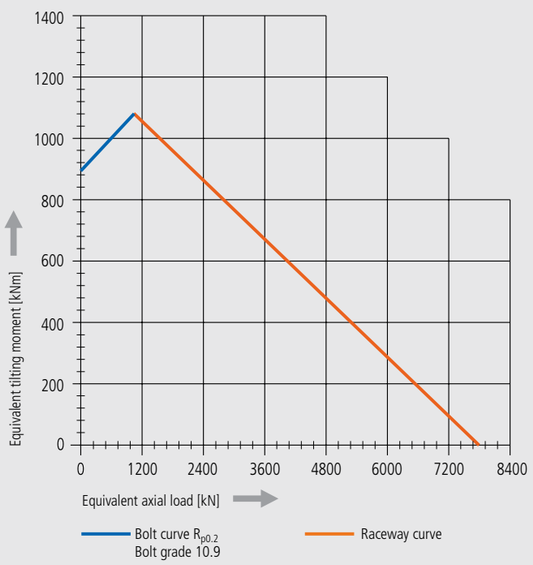
			Drawing number WD-LC 0713/1-11543	Drawing number WD-LC 0713/1-11545
Module	**m**	[mm]	12	12
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	75	37.5
Overall gear ratio incl. gear box	$\mathbf{i_{tot}}$	[-]	270	200
Self-locking gears			No**	No**
Max. torque $s_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	102513	102513
Nom. torque $s_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	102513	102513
Max. holding torque* $s_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	102513	102513
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	2906	2906
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	7777	7777
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	1003	1003
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	1169	1169
Weight, incl. 12 kg for hydraulic motor RE300		[kg]	1132	1132

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with gear box 305 and hydraulic motor RE300

Pressure differential	**Δp**	[bar]	197	192
Oil flow	**Q**	[l/min]	87	69
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	102513	102513

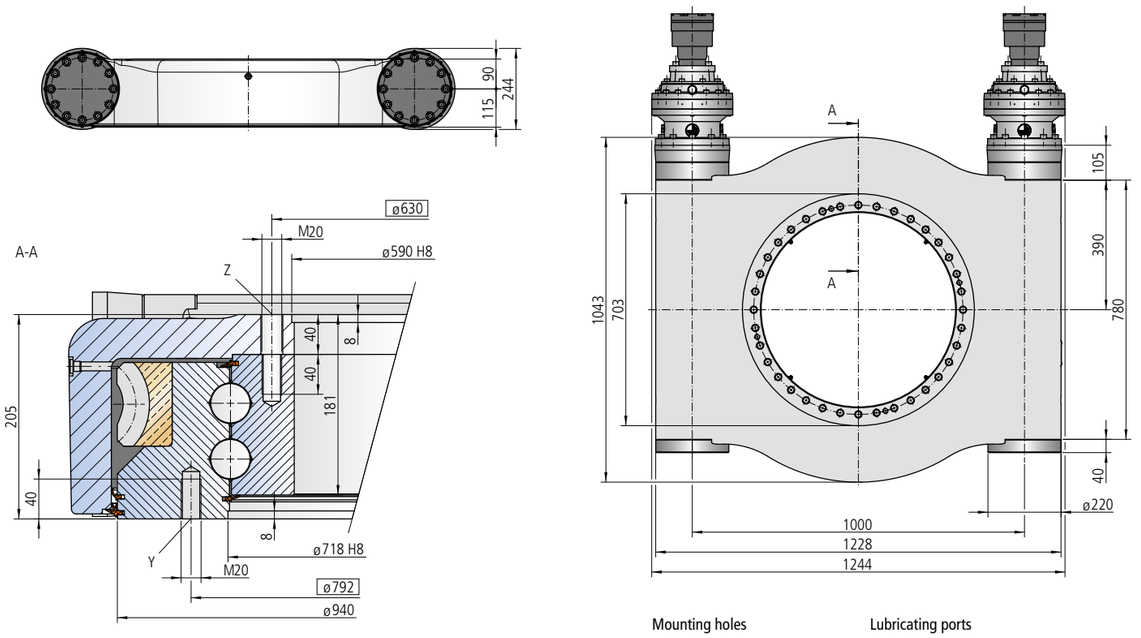
Limiting load diagram for compressive loads



Please always observe the technical information!

Please note: This slew drive is only available after prior technical design by IMO Application Engineering department.

Size WD-LC 0713 / 2-row / 2 drives - Bronze special design



The mounting structure must support the housing to at least ø713 and at most to ø760

Mounting holes
Y = 48 drill holes M20-40 deep, evenly distributed
Z = 36 drill holes ø22-40 deep / M20-40 deep, evenly distributed

Lubricating ports
8 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

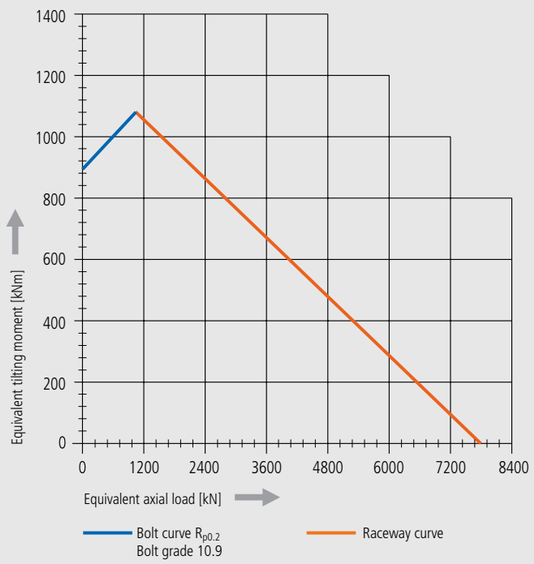
			Drawing number WD-LC 0713/1-11544	Drawing number WD-LC 0713/1-11546
Module	**m**	[mm]	12	12
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	75	37.5
Overall gear ratio incl. gear box	$\mathbf{i_{tot}}$	[-]	270	200
Self-locking gears			No**	No**
Max. torque $s_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	205026	205026
Nom. torque $s_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	205026	205026
Max. holding torque* $s_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	205026	205026
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	2906	2906
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	7777	7777
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	1003	1003
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	1169	1169
Weight, incl. 24 kg for 2 hydraulic motors RE300		[kg]	1285	1285

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with gear box 305 and two hydraulic motors RE300

Pressure differential	**Δp**	[bar]	197	192
Oil flow	**Q**	[l/min]	174	138
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	205026	205026

Limiting load diagram for compressive loads



Please always observe the technical information!

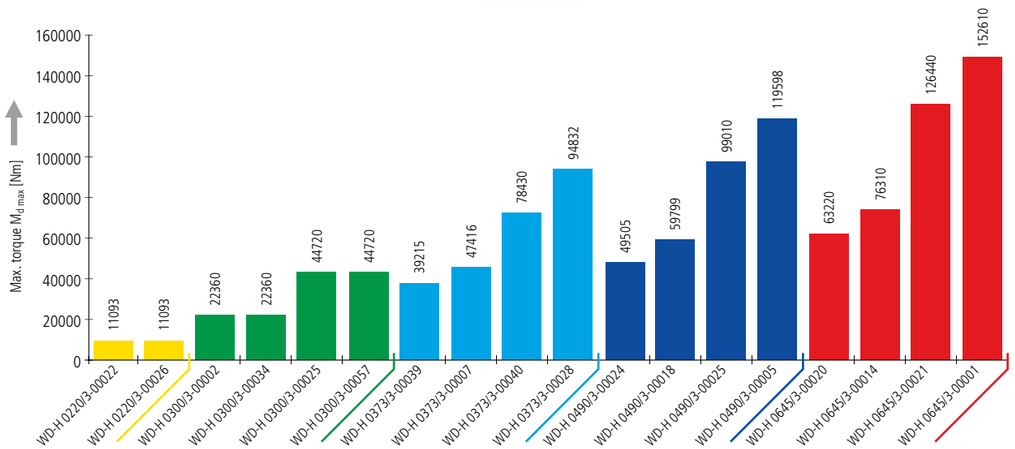
WD-H series overview

WD – H 0220 / 3 – 00022

- **00022** – Drawing end number
- **3:** Type of gearing – Hardened
- **0220:** Bolt PCD of worm wheel [mm] – 220, 300, 373, 490 and 645 mm
- **H:** Heavy duty series
- **WD:** Worm gear driven type

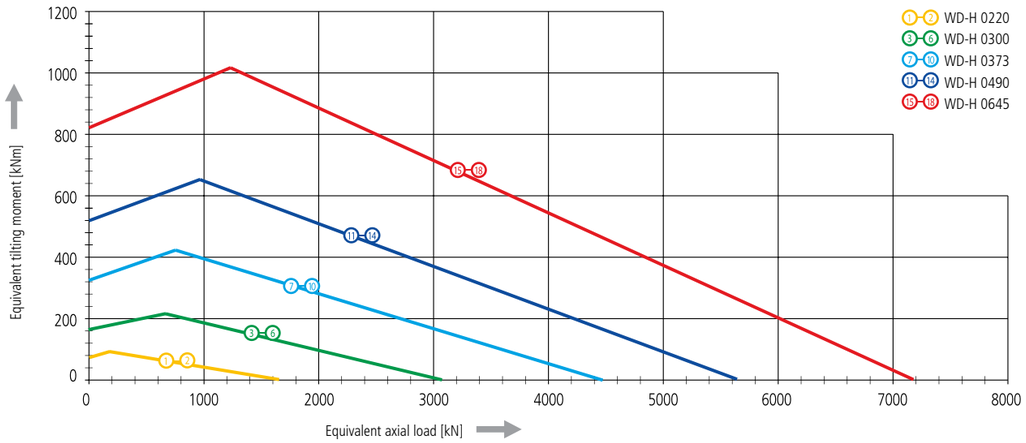
Maximum torque $M_{d\,max}$ of the individual sizes

CAUTION: The duty per minute is limited.
Please always observe the explanations in the Technical Information section (from page 60).

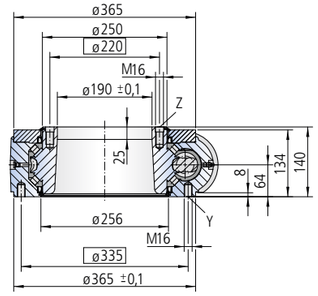


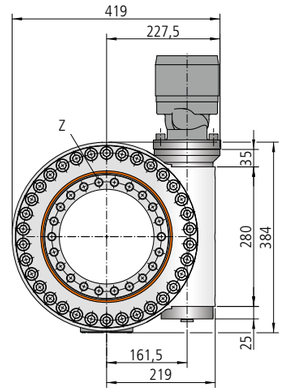
Limiting load diagrams of the individual sizes for compressive loads

Please always observe the explanations in the Technical Information section (from page 60).



Size WD-H 0220 / 1 drive





Mounting holes
Y = 24 drill holes M16-24 deep, evenly distributed
Z = 22 drill holes ø17-10 deep / M16-25 deep, evenly distributed

Lubricating ports
1 conical grease nipple on housing exterior
Slew drive supplied pre-lubricated

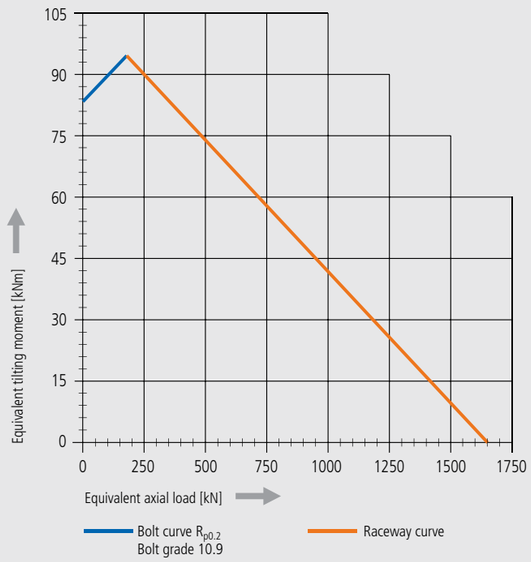
			Drawing number WD-H 0220/3-00022	
			Drawing number WD-H 0220/3-00026	
Module	**m**	[mm]	5	5
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	56	28
Self-locking gears			No**	No**
Max. torque $S_F = 1$	$\mathbf{M_{d\,max}}$	[Nm]	11093	11093
Nom. torque $S_W = 1$ at n = 3 min^{-1}	$\mathbf{M_{d\,nom}}$	[Nm]	4800	5150
Max. holding torque* $S_{F\,S} = 1$ (static)	$\mathbf{M_{h\,max}}$	[Nm]	11093	11093
Static load rating, radial	$\mathbf{C_{o\,rad}}$	[kN]	616	616
Static load rating, axial	$\mathbf{C_{o\,ax}}$	[kN]	1650	1650
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	193	193
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	224	224
Weight, incl. 11 kg for hydraulic motor RE200		[kg]	89	89

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE200

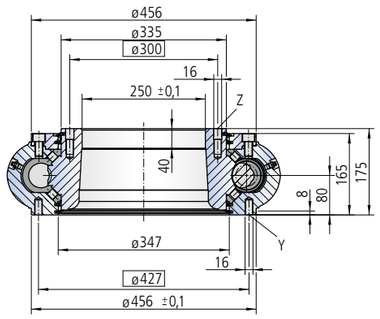
Pressure differential	**Δp**	[bar]	145	230
Oil flow	**Q**	[l/min]	38	22
Output speed	**n**	[min $^{-1}$]	3	3
Max. achievable torque	$\mathbf{M_d}$	[Nm]	11093	11093

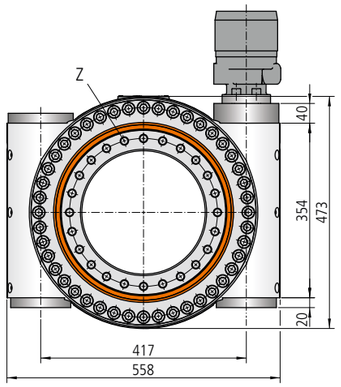
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-H 0300 / 1 drive





Mounting holes
Y = 24 drill holes M16-30 deep, evenly distributed
Z = 24 drill holes ø17-22 deep / M16-30 deep, evenly distributed

Lubricating ports
1 conical grease nipple on housing exterior, right side
3 conical grease nipples on housing exterior, left side
Slew drive supplied pre-lubricated

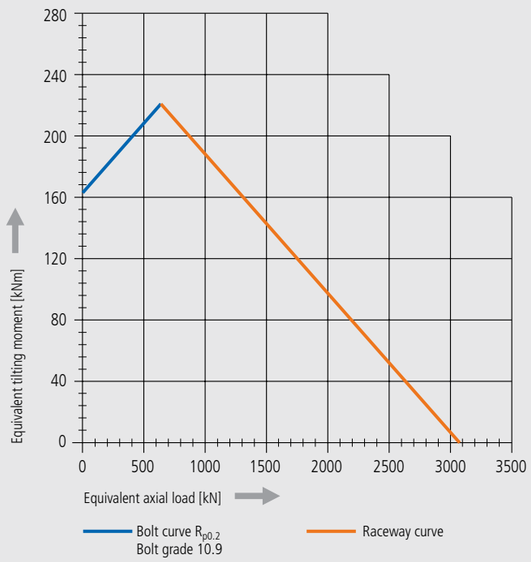
			Drawing number WD-H 0300/3-00034	
			Drawing number WD-H 0300/3-00002	
Module	**m**	[mm]	6	6
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	61	30.5
Self-locking gears			No**	No**
Max. torque $S_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	22360	22360
Nom. torque $S_W = 1$ at n = 3 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	12600	14000
Max. holding torque* $S_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	22360	22360
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	1506	1506
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	3074	3074
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	316	316
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	445	445
Weight, incl. 13 kg for hydraulic motor RE470		[kg]	167	167

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE470

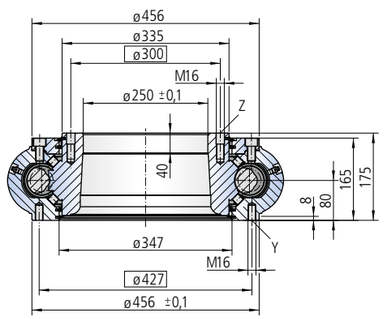
Pressure differential	**Δp**	[bar]	125	180
Oil flow	**Q**	[l/min]	61	38
Output speed	**n**	[min $^{-1}$]	2	2
Max. achievable torque	$\mathbf{M_d}$	[Nm]	22360	22360

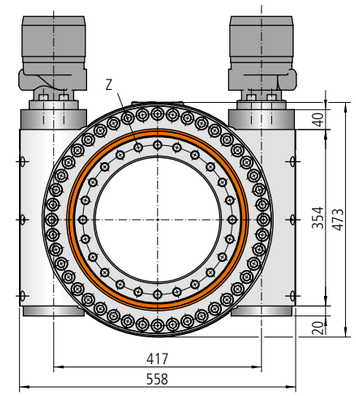
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-H 0300 / 2 drives





Mounting holes
Y = 24 drill holes M16-30 deep, evenly distributed
Z = 24 drill holes ø17-22 deep / M16-30 deep, evenly distributed

Lubricating ports
1 conical grease nipple on both left and right side of housing exterior
Slew drive supplied pre-lubricated

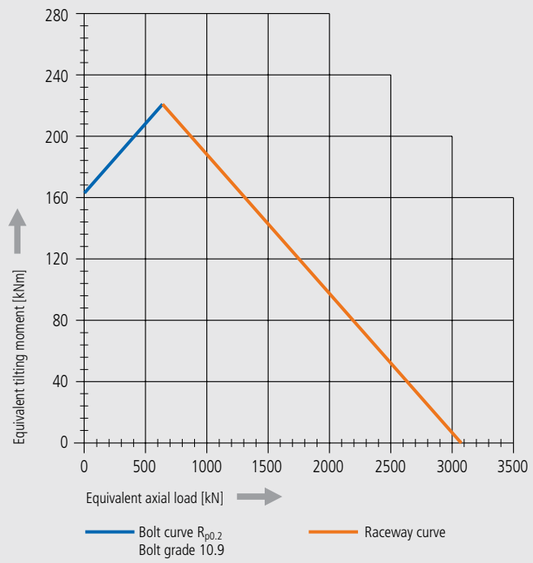
			Drawing number WD-H 0300/3-00057	
			Drawing number WD-H 0300/3-00025	
Module	**m**	[mm]	6	6
Number of threads of the worm		[-]	1	2
Gear ratio	**i**	[-]	61	30.5
Self-locking gears			No**	No**
Max. torque $S_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	44720	44720
Nom. torque $S_W = 1$ at n = 2 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	25200	28000
Max. holding torque* $S_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	44720	44720
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	1506	1506
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	3074	3074
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	316	316
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	445	445
Weight, incl. 26 kg for 2 hydraulic motors RE470		[kg]	186	186

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with two hydraulic motors RE470

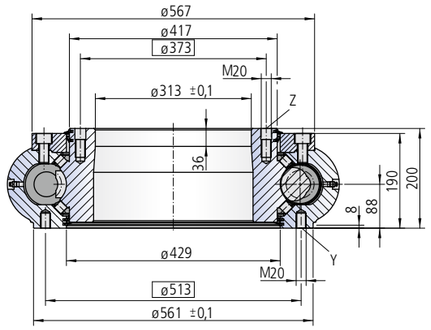
Pressure differential	**Δp**	[bar]	125	180
Oil flow	**Q**	[l/min]	122	76
Output speed	**n**	[min $^{-1}$]	2	2
Max. achievable torque	$\mathbf{M_d}$	[Nm]	44720	44720

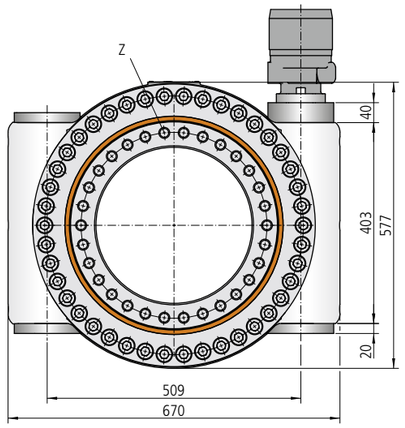
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-H 0373 / 1 drive





Mounting holes
Y = 32 drill holes M20-30 deep, evenly distributed
Z = 30 drill holes ø22-22 deep / M20-36 deep, evenly distributed

Lubricating ports
1 conical grease nipple on housing exterior, right side
3 conical grease nipples on housing exterior, left side
Slew drive supplied pre-lubricated

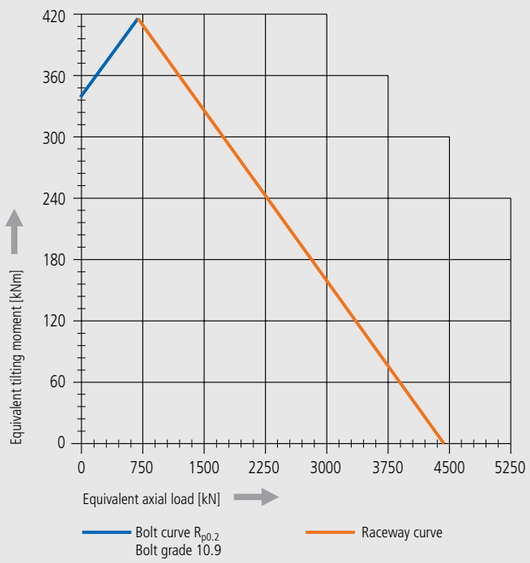
			Drawing number WD-H 0373/3-00007	
			Drawing number WD-H 0373/3-00039	
Module	**m**	[mm]	7	8
Number of threads of the worm		[-]	2	1
Gear ratio	**i**	[-]	31.5	56
Self-locking gears			No**	No**
Max. torque $S_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	39215	47416
Nom. torque $S_W = 1$ at n = 2 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	36000	35500
Max. holding torque* $S_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	39215	47416
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	2185	2185
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	4458	4458
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	442	442
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	622	622
Weight, incl. 25 kg for hydraulic motor DT930		[kg]	285	285

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor DT930

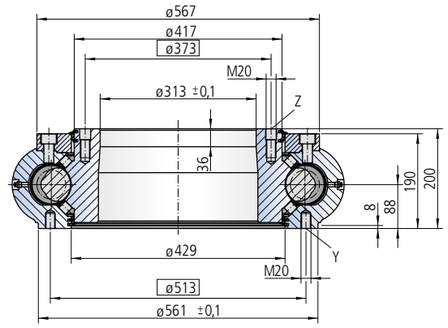
Pressure differential	**Δp**	[bar]	165	160
Oil flow	**Q**	[l/min]	76	114
Output speed	**n**	[min $^{-1}$]	2	2
Max. achievable torque	$\mathbf{M_d}$	[Nm]	39215	47416

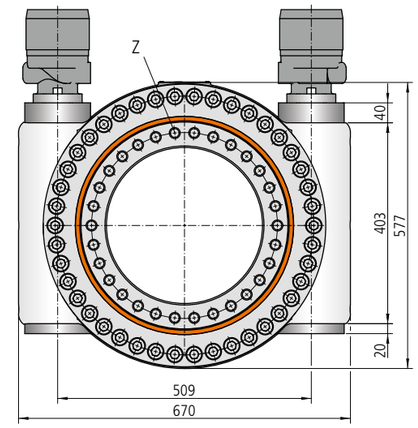
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-H 0373 / 2 drives





Mounting holes
Y = 32 drill holes M20-30 deep, evenly distributed
Z = 30 drill holes ø22-22 deep / M20-36 deep, evenly distributed

Lubricating ports
1 conical grease nipple on both left and right side of housing exterior
Slew drive supplied pre-lubricated

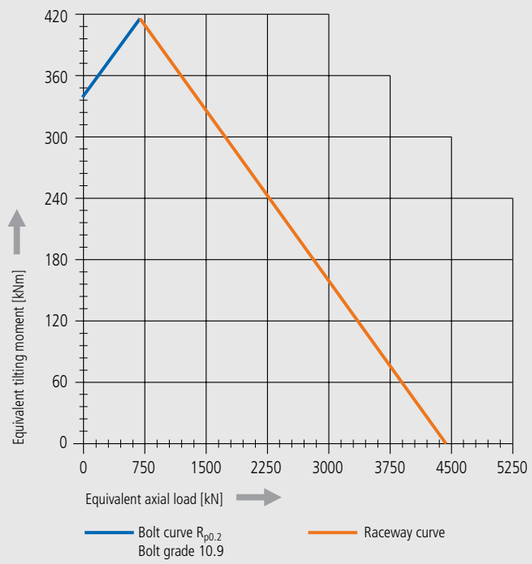
			Drawing number WD-H 0373/3-00028	
			Drawing number WD-H 0373/3-00040	
Module	**m**	[mm]	7	8
Number of threads of the worm		[-]	2	1
Gear ratio	**i**	[-]	31.5	56
Self-locking gears			No**	No**
Max. torque $S_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	78430	94832
Nom. torque $S_W = 1$ at n = 2 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	72000	71000
Max. holding torque* $S_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	78430	94832
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	2185	2185
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	4458	4458
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	442	442
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	622	622
Weight, incl. 50 kg for 2 hydraulic motors DT930		[kg]	330	330

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with two hydraulic motors DT930

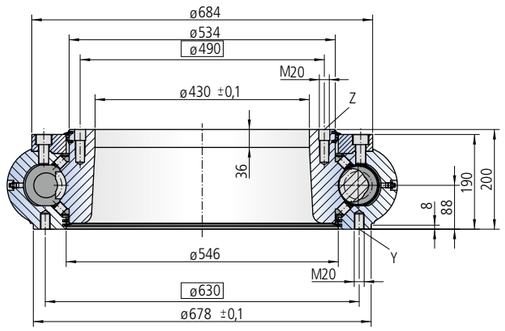
Pressure differential	**Δp**	[bar]	165	160
Oil flow	**Q**	[l/min]	152	228
Output speed	**n**	[min $^{-1}$]	2	2
Max. achievable torque	$\mathbf{M_d}$	[Nm]	78430	94832

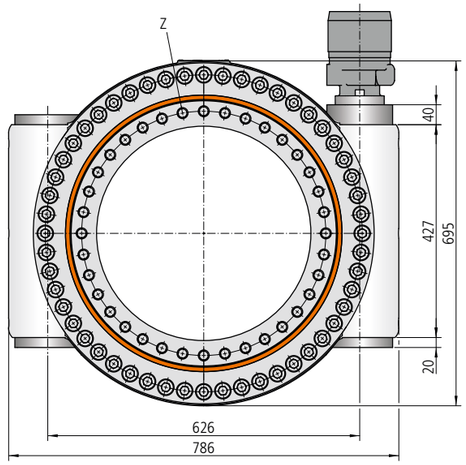
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-H 0490 / 1 drive





Mounting holes
Y = 36 drill holes M20-30 deep, evenly distributed
Z = 36 drill holes ø22-22 deep / M20-36 deep, evenly distributed

Lubricating ports
1 conical grease nipple on housing exterior, right side
3 conical grease nipples on housing exterior, left side
Slew drive supplied pre-lubricated

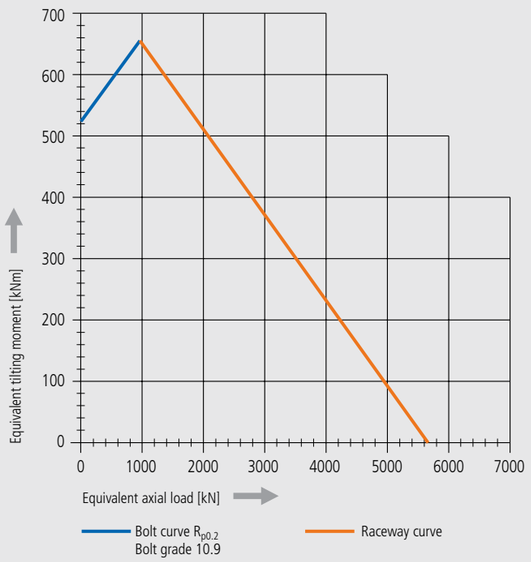
			Drawing number WD-H 0490/3-00018	
			Drawing number WD-H 0490/3-00024	
Module	**m**	[mm]	7	8
Number of threads of the worm		[-]	2	1
Gear ratio	**i**	[-]	40	70
Self-locking gears			No**	No**
Max. torque $s_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	49505	59799
Nom. torque $s_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	49505	59799
Max. holding torque* $s_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	49505	59799
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	2775	2775
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	5662	5662
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	502	502
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	707	707
Weight, incl. 25 kg for hydraulic motor DT930		[kg]	347	347

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor DT930

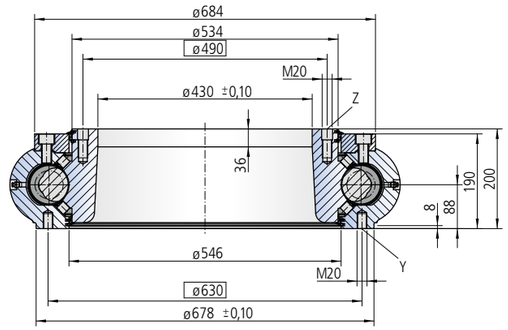
Pressure differential	**Δp**	[bar]	155	145
Oil flow	**Q**	[l/min]	50	74
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	49505	59799

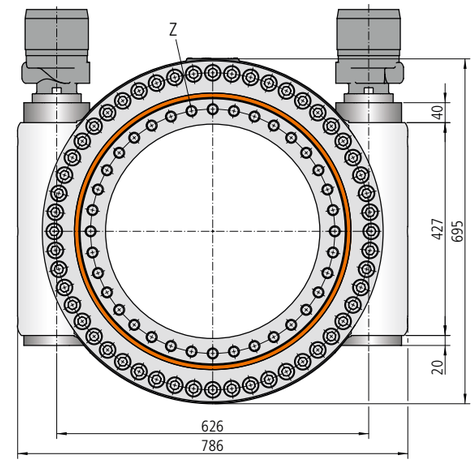
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-H 0490 / 2 drives





Mounting holes
Y = 36 drill holes M20-30 deep, evenly distributed
Z = 36 drill holes ø22-22 deep / M20-36 deep, evenly distributed

Lubricating ports
1 conical grease nipple on both left and right side of housing exterior
Slew drive supplied pre-lubricated

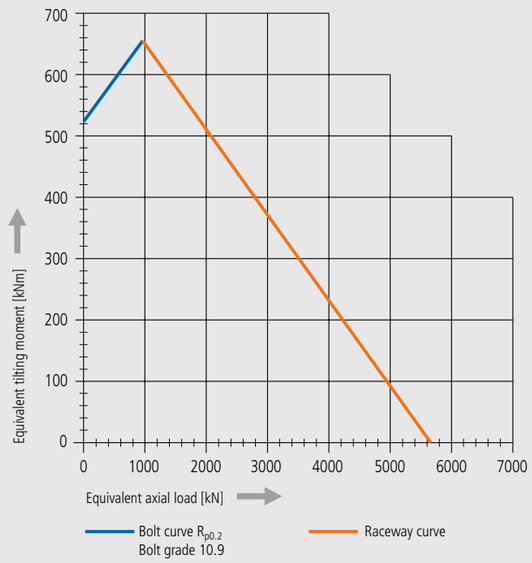
			Drawing number WD-H 0490/3-00005	
			Drawing number WD-H 0490/3-00025	
Module	**m**	[mm]	7	8
Number of threads of the worm		[-]	2	1
Gear ratio	**i**	[-]	40	70
Self-locking gears			No**	No**
Max. torque $s_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	99010	119598
Nom. torque $s_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	99010	119598
Max. holding torque* $s_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	99010	119598
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	2775	2775
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	5662	5662
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	502	502
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	707	707
Weight, incl. 50 kg for 2 hydraulic motors DT930		[kg]	394	394

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with two hydraulic motors DT930

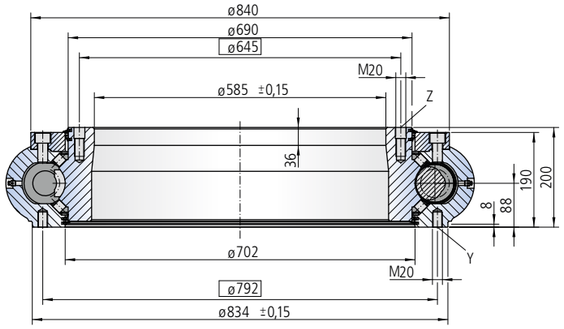
Pressure differential	**Δp**	[bar]	155	145
Oil flow	**Q**	[l/min]	100	148
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	99010	119598

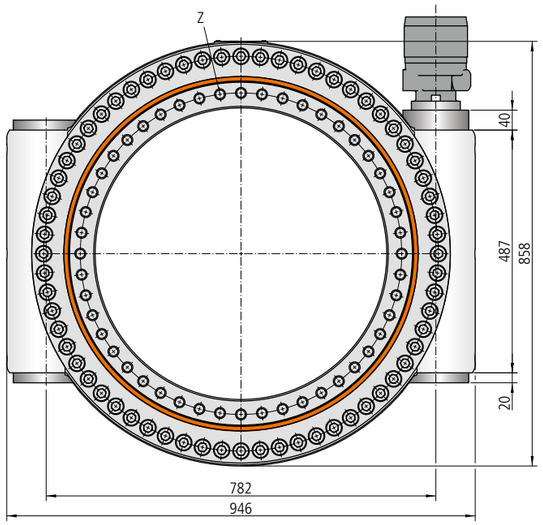
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-H 0645 / 1 drive





Mounting holes
Y = 48 drill holes M20-30 deep, evenly distributed
Z = 48 drill holes ø22-22 deep / M20-36 deep, evenly distributed

Lubricating ports
1 conical grease nipple on housing exterior, right side
3 conical grease nipples on housing exterior, left side
Slew drive supplied pre-lubricated

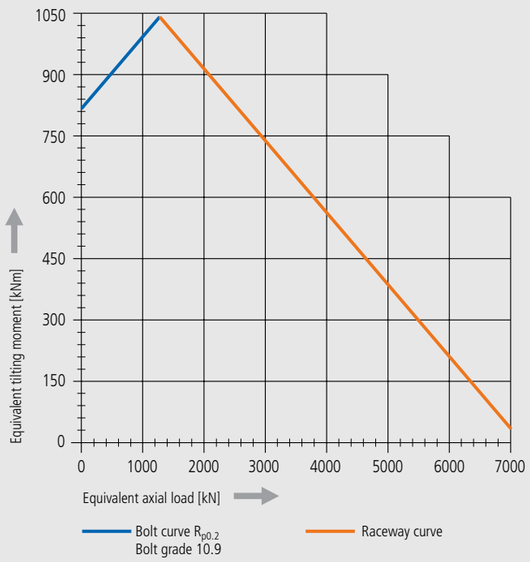
			Drawing number WD-H 0645/3-00014	
			Drawing number WD-H 0645/3-00020	
Module	**m**	[mm]	7	8
Number of threads of the worm		[-]	2	1
Gear ratio	**i**	[-]	51	90
Self-locking gears			No**	No**
Max. torque $s_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	63220	76310
Nom. torque $s_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	63220	76310
Max. holding torque* $s_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	63220	76310
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	3528	3528
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	7199	7199
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	570	570
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	803	803
Weight, incl. 25 kg for hydraulic motor DT930		[kg]	430	430

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor DT930

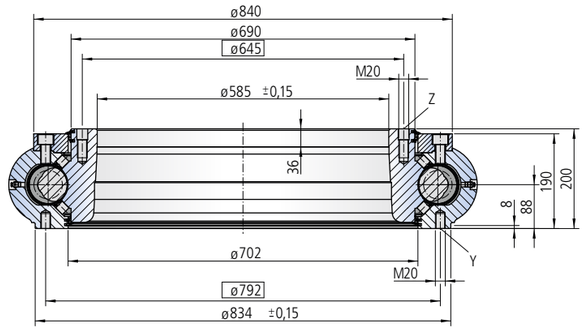
Pressure differential	**Δp**	[bar]	160	150
Oil flow	**Q**	[l/min]	63	95
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	63220	76310

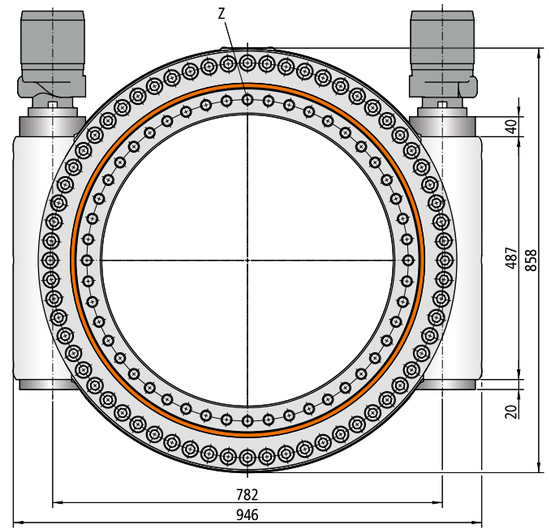
Limiting load diagram for compressive loads



Please always observe the technical information!

Size WD-H 0645 / 2 drives





Mounting holes
Y = 48 drill holes M20-30 deep, evenly distributed
Z = 48 drill holes ø22-22 deep / M20-36 deep, evenly distributed

Lubricating ports
1 conical grease nipple on both left and right side of housing exterior
Slew drive supplied pre-lubricated

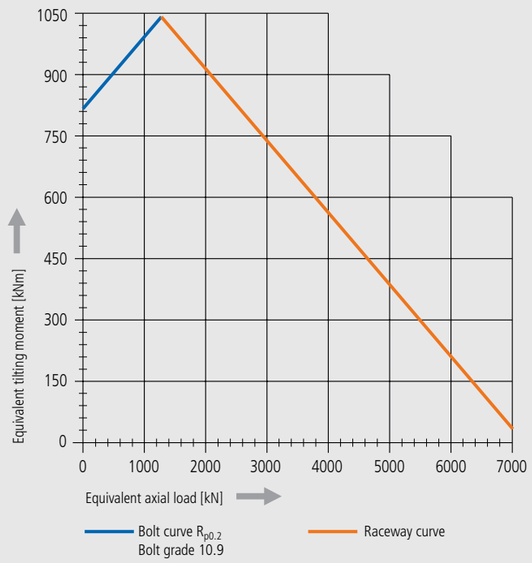
			Drawing number WD-H 0645/3-00001	
			Drawing number WD-H 0645/3-00021	
Module	**m**	[mm]	7	8
Number of threads of the worm		[-]	2	1
Gear ratio	**i**	[-]	51	90
Self-locking gears			No**	No**
Max. torque $s_F = 1$	$\mathbf{M_{d\ max}}$	[Nm]	126440	152610
Nom. torque $s_W = 1$ at n = 1 min^{-1}	$\mathbf{M_{d\ nom}}$	[Nm]	126440	152610
Max. holding torque* $s_{F\,S} = 1$ (static)	$\mathbf{M_{h\ max}}$	[Nm]	126440	152610
Static load rating, radial	$\mathbf{C_{o\ rad}}$	[kN]	3528	3528
Static load rating, axial	$\mathbf{C_{o\ ax}}$	[kN]	7199	7199
Dynamic load rating, radial	$\mathbf{C_{rad}}$	[kN]	570	570
Dynamic load rating, axial	$\mathbf{C_{ax}}$	[kN]	803	803
Weight, incl. 50 kg for 2 hydraulic motors DT930		[kg]	516	516

* Optionally with brake
** See: Technical Information, section *Self-locking*

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with two hydraulic motors DT930

Pressure differential	**Δp**	[bar]	160	150
Oil flow	**Q**	[l/min]	126	190
Output speed	**n**	[min $^{-1}$]	1	1
Max. achievable torque	$\mathbf{M_d}$	[Nm]	126440	152610

Limiting load diagram for compressive loads



Please always observe the technical information!

SP-I series overview

SP – I 0229 / 3 – 10080

Drawing end number

Type of gearing
2: Quenched and tempered
3: Hardened tooth flanks

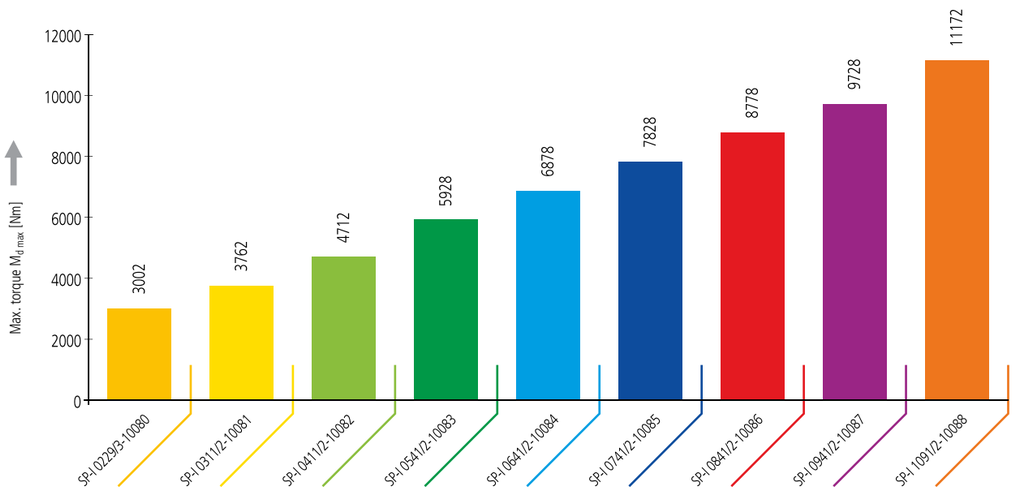
Raceway diameter [mm]
229, 311, 411, 541, 641, 741, 841, 941 and 1091 mm

I: Intermediate series

SP: Spur gear driven type

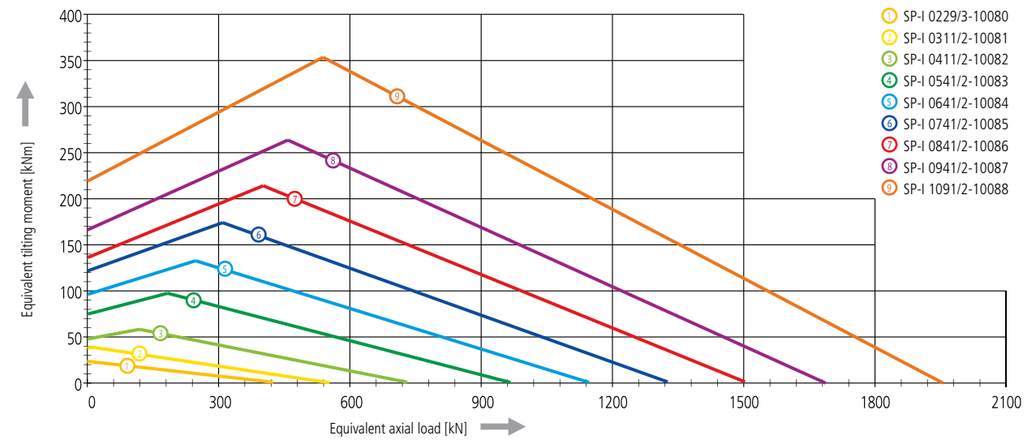
Maximum torque $M_{d\,max}$ of the individual sizes

CAUTION: The duty per minute is limited.
Please always observe the explanations in the Technical Information section (from page 60).

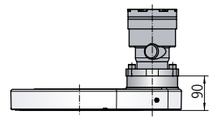


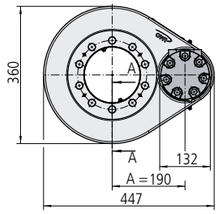
Limiting load diagrams of the individual sizes for compressive loads

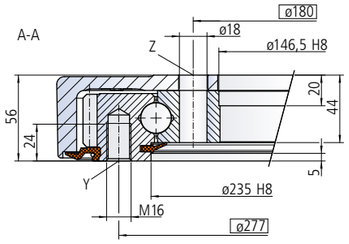
Please always observe the explanations in the Technical Information section (from page 60).



Size SP-I 0229







The mounting structure must support the housing to at least ø229.

The seal must be supported by the mounting structure to at least ø353, in order to guarantee the full sealing effect.
A recess in the mounting structure of 10 mm above the housing is recommended.

Mounting holes
Y = 12 drill holes M16-24 deep, evenly distributed
Z = 10 drill holes ø18, evenly distributed

Lubricating ports
2 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

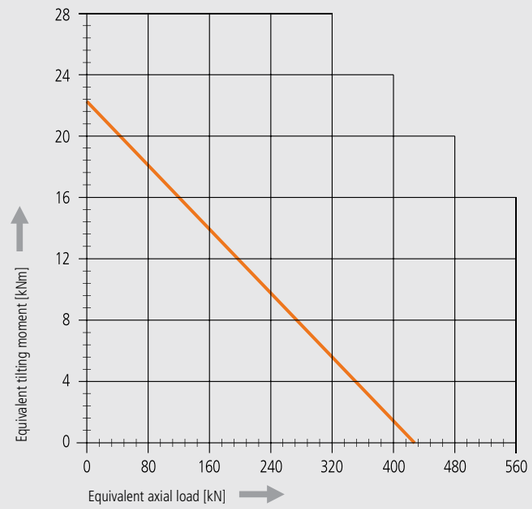
			Drawing number SP-I 0229/3-10080
Module	**m**	[mm]	4
Number of teeth, wheel	z_2	[-]	79
Number of teeth, pinion	z_1	[-]	15
Overall gear ratio	**i**	[-]	5.27
Max. torque	$M_{d\,max}$	[Nm]	3002
Nom. torque $S_F = 1$ at $n = 5\ min^{-1}$	$M_{d\,nom}$	[Nm]	2607
Max. holding torque*	$M_{h\,max}$	[Nm]	3002
Static load rating, radial	$C_{o\,rad}$	[kN]	159
Static load rating, axial	$C_{o\,ax}$	[kN]	426
Dynamic load rating, radial	C_{rad}	[kN]	151
Dynamic load rating, axial	C_{ax}	[kN]	176
Weight, incl. 12 kg for hydraulic motor RE300		[kg]	46

* Optionally with brake

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE300

Pressure differential	Δp	[bar]	150
Oil flow	**Q**	[l/min]	13
Output speed	**n**	[min $^{-1}$]	5
Max. achievable torque	M_d	[Nm]	3002

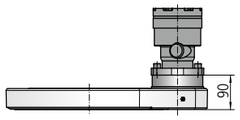
Limiting load diagram for compressive loads

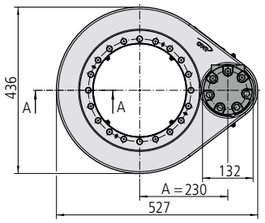


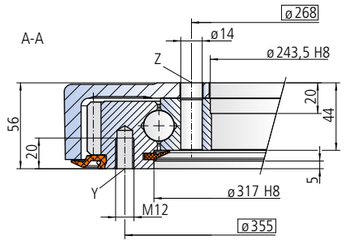
Please always observe the technical information!

SP-I

Size SP-I 0311







The mounting structure must support the housing to at least ø311.

The seal must be supported by the mounting structure to at least ø431, in order to guarantee the full sealing effect.
A recess in the mounting structure of 10 mm above the housing is recommended.

Mounting holes
Y = 20 drill holes M12-20 deep, evenly distributed
Z = 20 drill holes ø14, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

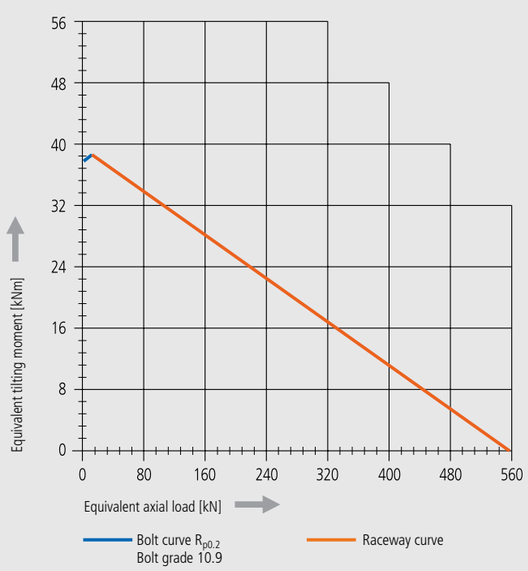
			Drawing number SP-I 0311/2-10081
Module	**m**	[mm]	4
Number of teeth, wheel	z_2	[-]	99
Number of teeth, pinion	z_1	[-]	15
Overall gear ratio	**i**	[-]	6.60
Max. torque	$M_{d\ max}$	[Nm]	3762
Nom. torque $S_F = 1$ at $n = 5\ min^{-1}$	$M_{d\ nom}$	[Nm]	2653
Max. holding torque*	$M_{h\ max}$	[Nm]	3762
Static load rating, radial	$C_{o\ rad}$	[kN]	208
Static load rating, axial	$C_{o\ ax}$	[kN]	557
Dynamic load rating, radial	C_{rad}	[kN]	172
Dynamic load rating, axial	C_{ax}	[kN]	200
Weight, incl. 12 kg for hydraulic motor RE300		[kg]	50

* Optionally with brake

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE300

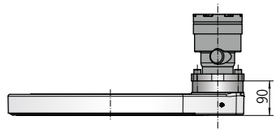
Pressure differential	**Δp**	[bar]	150
Oil flow	**Q**	[l/min]	15
Output speed	**n**	[min $^{-1}$]	5
Max. achievable torque	M_d	[Nm]	3762

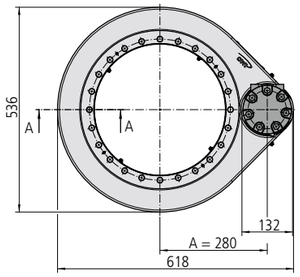
Limiting load diagram for compressive loads

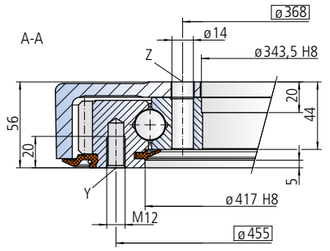


Please always observe the technical information!

Size SP-I 0411







The mounting structure must support the housing to at least ø411.

The seal must be supported by the mounting structure to at least ø531, in order to guarantee the full sealing effect.
A recess in the mounting structure of 10 mm above the housing is recommended.

Mounting holes
Y = 20 drill holes M12-20 deep, evenly distributed
Z = 24 drill holes ø14, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

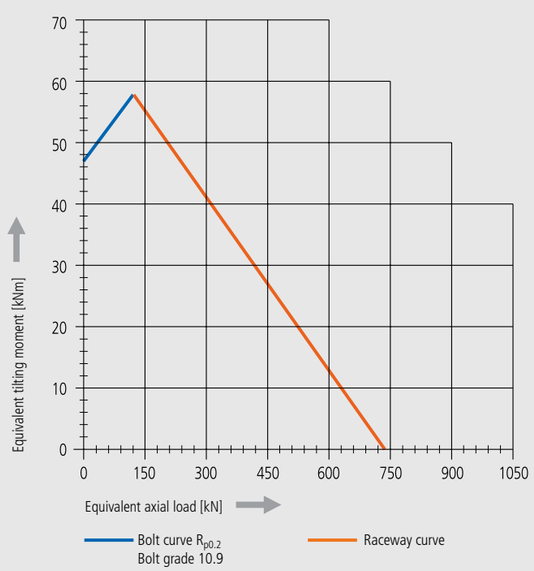
			Drawing number SP-I 0411/2-10082
Module	**m**	[mm]	4
Number of teeth, wheel	z_2	[-]	124
Number of teeth, pinion	z_1	[-]	15
Overall gear ratio	**i**	[-]	8.27
Max. torque	$M_{d\ max}$	[Nm]	4712
Nom. torque $S_F = 1$ at $n = 5\ min^{-1}$	$M_{d\ nom}$	[Nm]	3348
Max. holding torque*	$M_{h\ max}$	[Nm]	4712
Static load rating, radial	$C_{o\ rad}$	[kN]	275
Static load rating, axial	$C_{o\ ax}$	[kN]	736
Dynamic load rating, radial	C_{rad}	[kN]	190
Dynamic load rating, axial	C_{ax}	[kN]	222
Weight, incl. 12 kg for hydraulic motor RE300		[kg]	59

* Optionally with brake

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE300

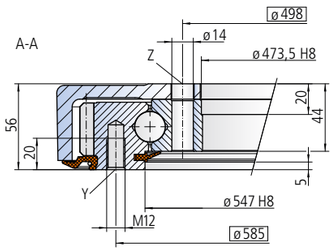
Pressure differential	**Δp**	[bar]	150
Oil flow	**Q**	[l/min]	17
Output speed	**n**	[min $^{-1}$]	5
Max. achievable torque	M_d	[Nm]	4712

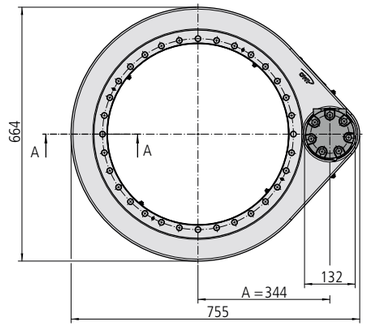
Limiting load diagram for compressive loads



Please always observe the technical information!

Size SP-I 0541





The mounting structure must support the housing to at least ø541.

The seal must be supported by the mounting structure to at least ø661, in order to guarantee the full sealing effect.
A recess in the mounting structure of 10 mm above the housing is recommended.

Mounting holes
Y = 28 drill holes M12-20 deep, evenly distributed
Z = 32 drill holes ø14, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

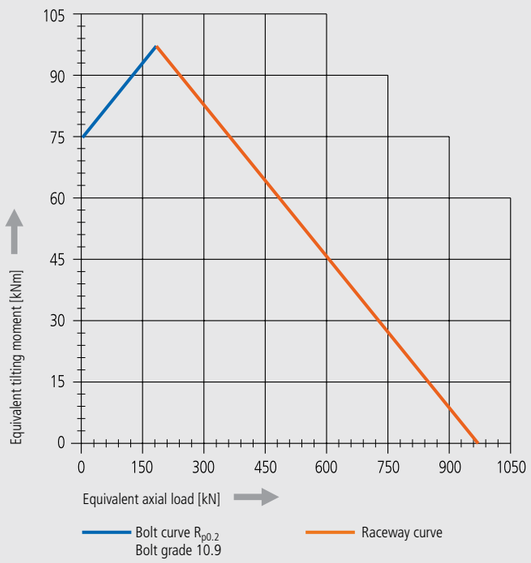
			Drawing number SP-I 0541/2-10083
Module	**m**	[mm]	4
Number of teeth, wheel	z_2	[-]	156
Number of teeth, pinion	z_1	[-]	15
Overall gear ratio	**i**	[-]	10.4
Max. torque	$M_{d\,max}$	[Nm]	5928
Nom. torque $S_F = 1$ at $n = 5\ min^{-1}$	$M_{d\,nom}$	[Nm]	4243
Max. holding torque*	$M_{h\,max}$	[Nm]	5928
Static load rating, radial	$C_{o\,rad}$	[kN]	362
Static load rating, axial	$C_{o\,ax}$	[kN]	970
Dynamic load rating, radial	C_{rad}	[kN]	212
Dynamic load rating, axial	C_{ax}	[kN]	248
Weight, incl. 12 kg for hydraulic motor RE300		[kg]	72

* Optionally with brake

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE300

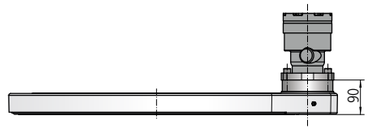
Pressure differential	**Δp**	[bar]	150
Oil flow	**Q**	[l/min]	21
Output speed	**n**	[min $^{-1}$]	5
Max. achievable torque	M_d	[Nm]	5928

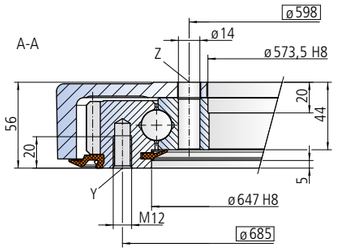
Limiting load diagram for compressive loads

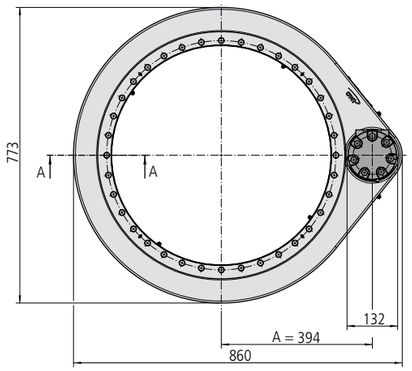


Please always observe the technical information!

Size SP-I 0641







The mounting structure must support the housing to at least ø641.

The seal must be supported by the mounting structure to at least ø761, in order to guarantee the full sealing effect.
A recess in the mounting structure of 10 mm above the housing is recommended.

Mounting holes
Y = 32 drill holes M12-20 deep, evenly distributed
Z = 36 drill holes ø14, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

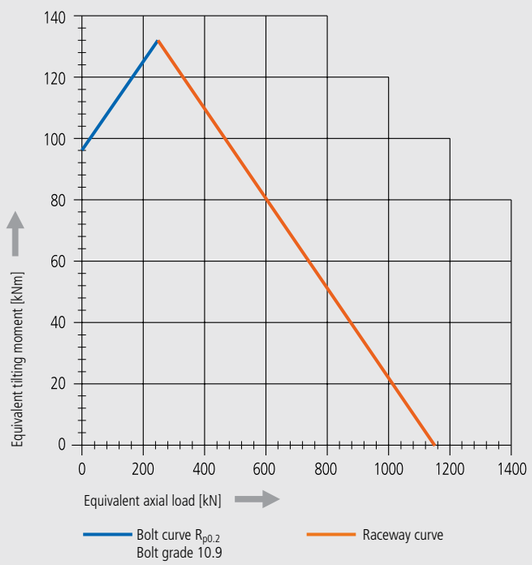
			Drawing number SP-I 0641/2-10084
Module	**m**	[mm]	4
Number of teeth, wheel	z_2	[-]	181
Number of teeth, pinion	z_1	[-]	15
Overall gear ratio	**i**	[-]	12.07
Max. torque	$M_{d\,max}$	[Nm]	6878
Nom. torque $S_F = 1$ at $n = 5\ min^{-1}$	$M_{d\,nom}$	[Nm]	4921
Max. holding torque*	$M_{h\,max}$	[Nm]	6878
Static load rating, radial	$C_{o\,rad}$	[kN]	429
Static load rating, axial	$C_{o\,ax}$	[kN]	1149
Dynamic load rating, radial	C_{rad}	[kN]	226
Dynamic load rating, axial	C_{ax}	[kN]	264
Weight, incl. 12 kg for hydraulic motor RE300		[kg]	84

* Optionally with brake

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE300

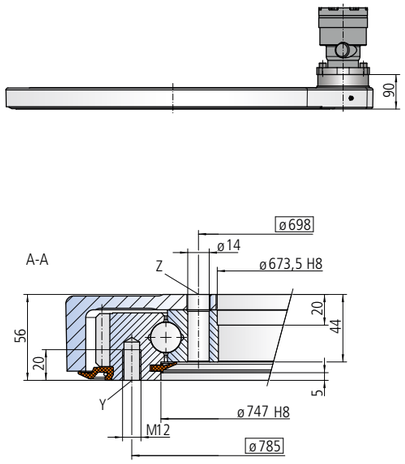
Pressure differential	**Δp**	[bar]	155
Oil flow	**Q**	[l/min]	23
Output speed	**n**	[min $^{-1}$]	5
Max. achievable torque	M_d	[Nm]	6878

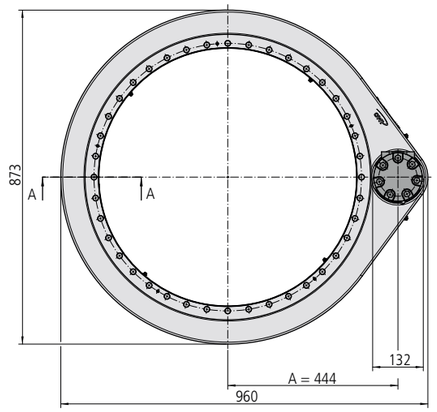
Limiting load diagram for compressive loads



Please always observe the technical information!

Size SP-I 0741





The mounting structure must support the housing to at least ø741.

The seal must be supported by the mounting structure to at least ø861, in order to guarantee the full sealing effect.
A recess in the mounting structure of 10 mm above the housing is recommended.

Mounting holes
Y = 36 drill holes M12-20 deep, evenly distributed
Z = 40 drill holes ø14, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

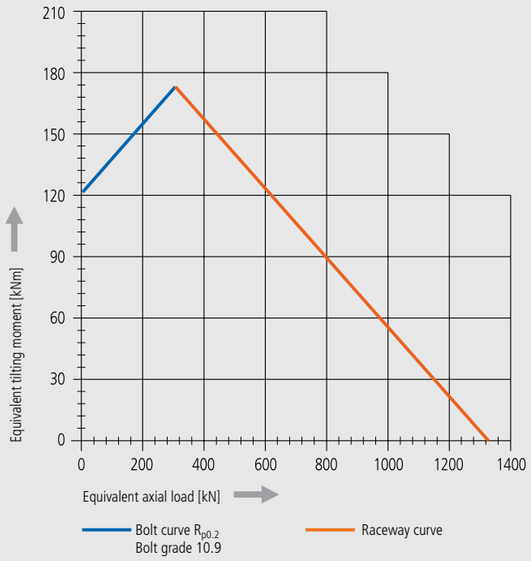
			Drawing number SP-I 0741/2-10085
Module	**m**	[mm]	4
Number of teeth, wheel	z_2	[-]	206
Number of teeth, pinion	z_1	[-]	15
Overall gear ratio	**i**	[-]	13.73
Max. torque	$M_{d\,max}$	[Nm]	7828
Nom. torque $S_F = 1$ at $n = 5\ min^{-1}$	$M_{d\,nom}$	[Nm]	5644
Max. holding torque*	$M_{h\,max}$	[Nm]	7828
Static load rating, radial	$C_{o\,rad}$	[kN]	496
Static load rating, axial	$C_{o\,ax}$	[kN]	1329
Dynamic load rating, radial	C_{rad}	[kN]	238
Dynamic load rating, axial	C_{ax}	[kN]	278
Weight, incl. 12 kg for hydraulic motor RE300		[kg]	95

* Optionally with brake

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE300

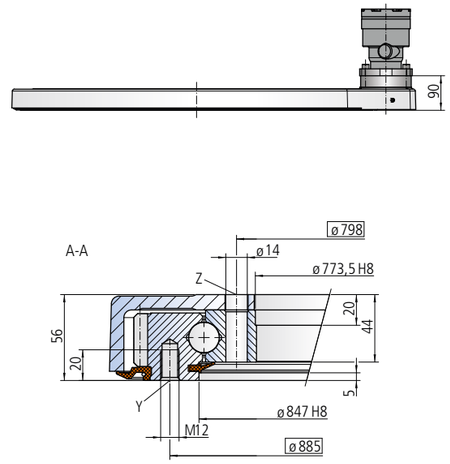
Pressure differential	**Δp**	[bar]	155
Oil flow	**Q**	[l/min]	25
Output speed	**n**	[min $^{-1}$]	5
Max. achievable torque	M_d	[Nm]	7828

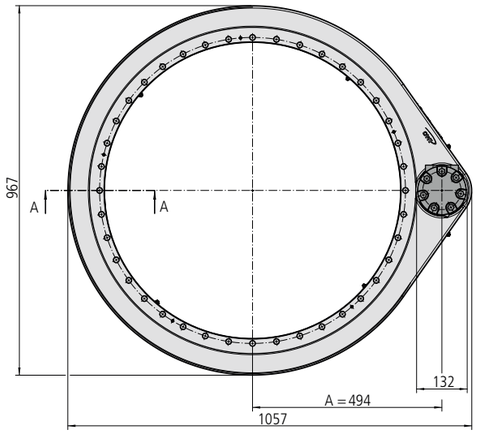
Limiting load diagram for compressive loads



Please always observe the technical information!

Size SP-I 0841





The mounting structure must support the housing to at least ø841.

The seal must be supported by the mounting structure to at least ø961, in order to guarantee the full sealing effect.
A recess in the mounting structure of 10 mm above the housing is recommended.

Mounting holes
Y = 36 drill holes M12-20 deep, evenly distributed
Z = 40 drill holes ø14, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

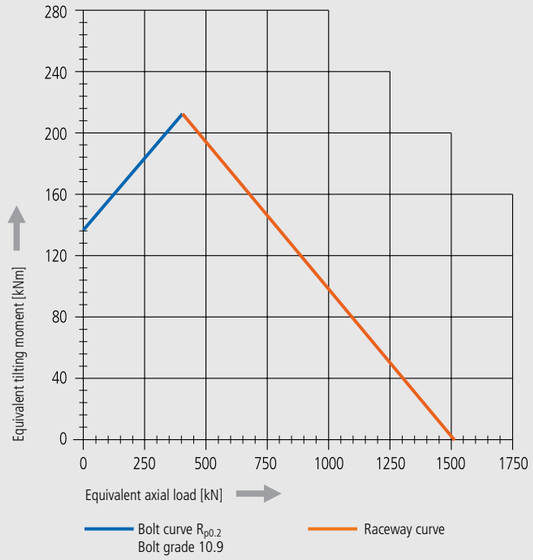
			Drawing number SP-I 0841/2-10086
Module	**m**	[mm]	4
Number of teeth, wheel	z_2	[-]	231
Number of teeth, pinion	z_1	[-]	15
Overall gear ratio	**i**	[-]	15.4
Max. torque	$M_{d\,max}$	[Nm]	8778
Nom. torque $S_F = 1$ at $n = 5\ min^{-1}$	$M_{d\,nom}$	[Nm]	6329
Max. holding torque*	$M_{h\,max}$	[Nm]	8778
Static load rating, radial	$C_{o\,rad}$	[kN]	563
Static load rating, axial	$C_{o\,ax}$	[kN]	1508
Dynamic load rating, radial	C_{rad}	[kN]	250
Dynamic load rating, axial	C_{ax}	[kN]	293
Weight, incl. 12 kg for hydraulic motor RE300		[kg]	102

* Optionally with brake

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE300

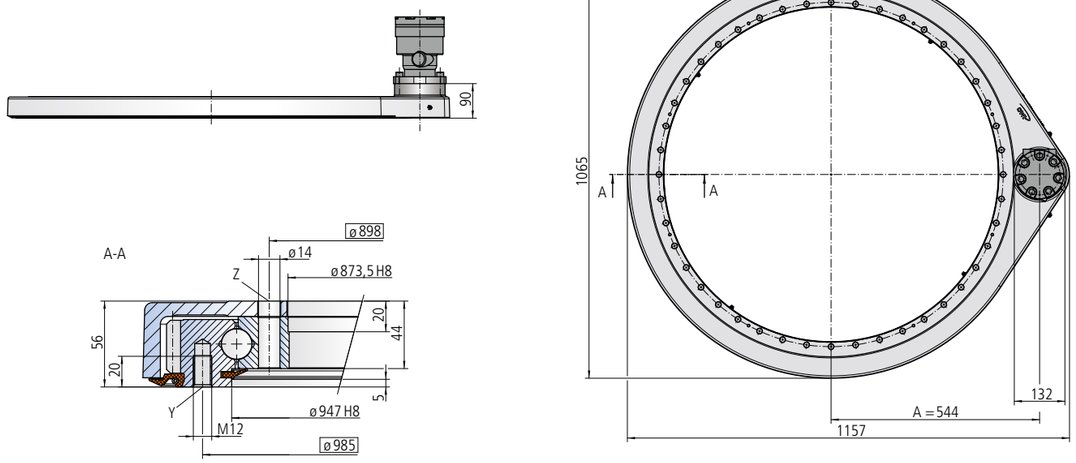
Pressure differential	**Δp**	[bar]	155
Oil flow	**Q**	[l/min]	28
Output speed	**n**	[min $^{-1}$]	5
Max. achievable torque	M_d	[Nm]	8778

Limiting load diagram for compressive loads



Please always observe the technical information!

Size SP-I 0941



The mounting structure must support the housing to at least ø941.

The seal must be supported by the mounting structure to at least ø1061, in order to guarantee the full sealing effect.
A recess in the mounting structure of 10 mm above the housing is recommended.

Mounting holes
Y = 40 drill holes M12-20 deep, evenly distributed
Z = 44 drill holes ø14, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior

Slew drive supplied pre-lubricated

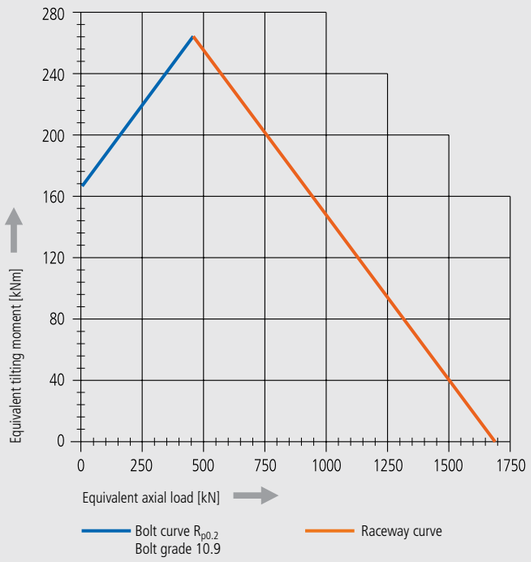
			Drawing number SP-I 0941/2-10087
Module	**m**	[mm]	4
Number of teeth, wheel	z_2	[-]	256
Number of teeth, pinion	z_1	[-]	15
Overall gear ratio	**i**	[-]	17.07
Max. torque	$M_{d\ max}$	[Nm]	9728
Nom. torque $S_F = 1$ at $n = 5\ min^{-1}$	$M_{d\ nom}$	[Nm]	7040
Max. holding torque*	$M_{h\ max}$	[Nm]	9728
Static load rating, radial	$C_{o\ rad}$	[kN]	630
Static load rating, axial	$C_{o\ ax}$	[kN]	1688
Dynamic load rating, radial	C_{rad}	[kN]	260
Dynamic load rating, axial	C_{ax}	[kN]	305
Weight, incl. 12 kg for hydraulic motor RE300		[kg]	115

* Optionally with brake

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE300

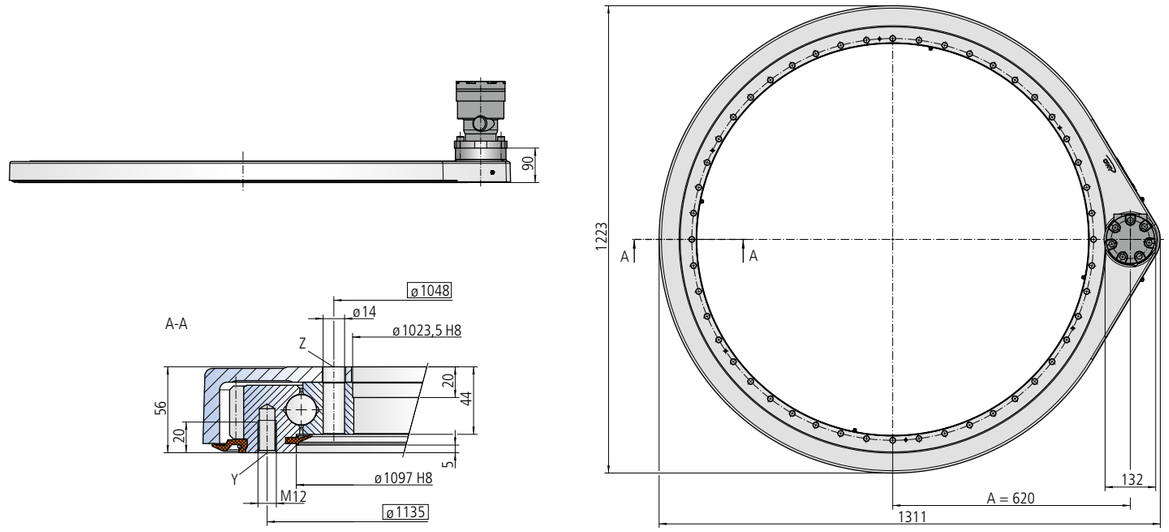
Pressure differential	**Δp**	[bar]	155
Oil flow	**Q**	[l/min]	30
Output speed	**n**	[min $^{-1}$]	5
Max. achievable torque	M_d	[Nm]	9728

Limiting load diagram for compressive loads



Please always observe the technical information!

Size SP-I 1091



The mounting structure must support the housing to at least ø1091.

The seal must be supported by the mounting structure to at least ø1213, in order to guarantee the full sealing effect.
A recess in the mounting structure of 10 mm above the housing is recommended.

Mounting holes
Y = 44 drill holes M12-20 deep, evenly distributed
Z = 48 drill holes ø14, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior

Slew drive supplied pre-lubricated

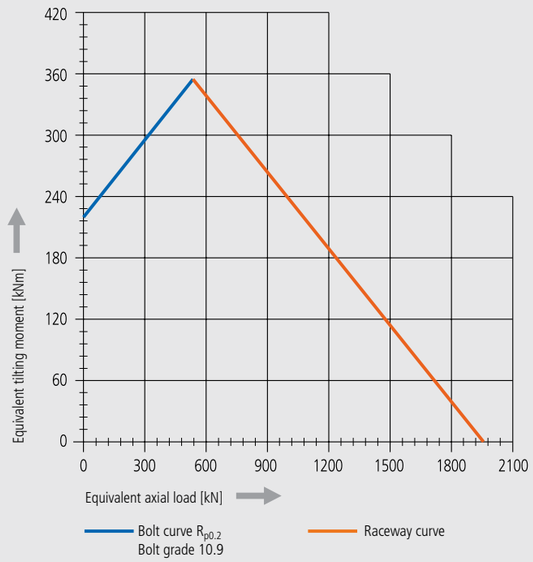
			Drawing number SP-I 1091/2-10088
Module	**m**	[mm]	4
Number of teeth, wheel	z_2	[-]	294
Number of teeth, pinion	z_1	[-]	15
Overall gear ratio	**i**	[-]	19.6
Max. torque	$M_{d\ max}$	[Nm]	11172
Nom. torque $S_F = 1$ at $n = 5\ min^{-1}$	$M_{d\ nom}$	[Nm]	8085
Max. holding torque*	$M_{h\ max}$	[Nm]	11172
Static load rating, radial	$C_{o\ rad}$	[kN]	731
Static load rating, axial	$C_{o\ ax}$	[kN]	1957
Dynamic load rating, radial	C_{rad}	[kN]	275
Dynamic load rating, axial	C_{ax}	[kN]	321
Weight, incl. 12 kg for hydraulic motor RE300		[kg]	127

* Optionally with brake

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE300

Pressure differential	**Δp**	[bar]	150
Oil flow	**Q**	[l/min]	35
Output speed	**n**	[min $^{-1}$]	5
Max. achievable torque	M_d	[Nm]	11172

Limiting load diagram for compressive loads



Please always observe the technical information!

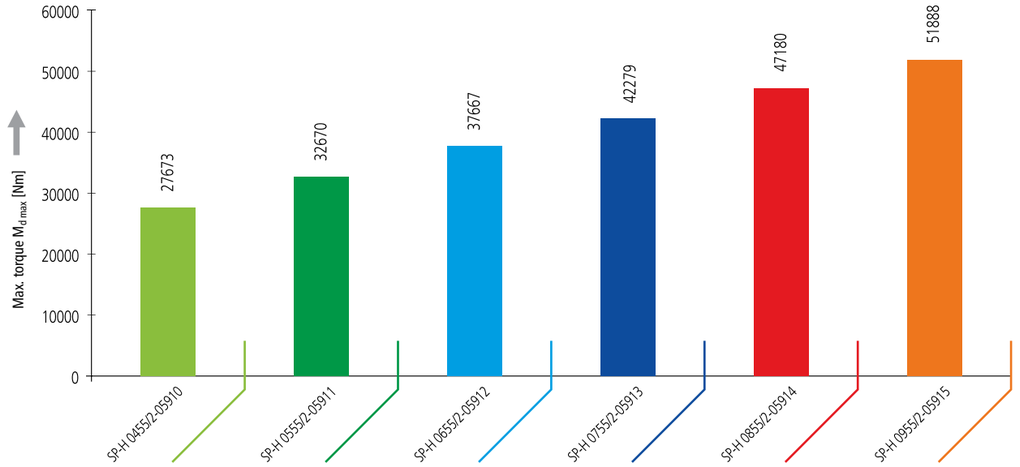
Series overview

SP – H 0455 / 2 – 05910

- **Drawing end number**
- **Type of gearing**
  2: Quenched and tempered
- **Raceway diameter [mm]**
  455, 555, 655, 755, 855 and 955 mm
- **H:** Heavy duty series
- **SP:** Spur gear driven type

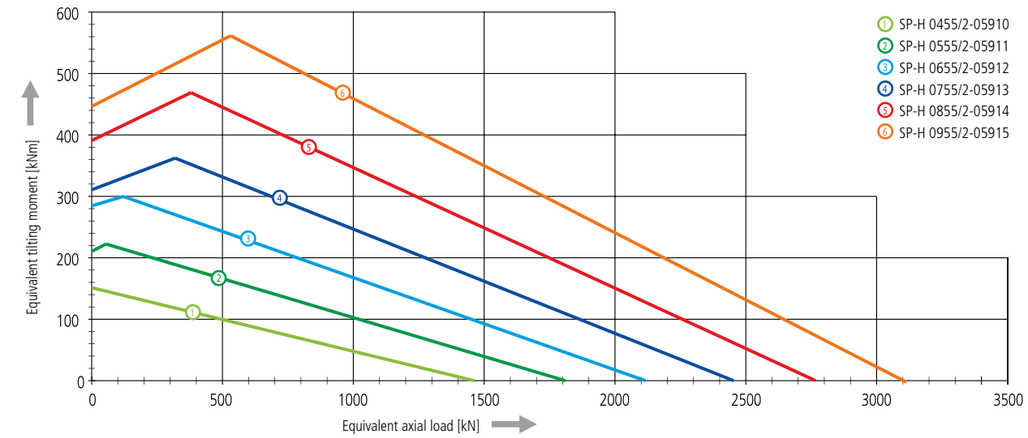
Maximum torque $M_{d\,max}$ of the individual sizes

CAUTION: The duty per minute is limited.
Please always observe the explanations in the Technical Information section (from page 60).

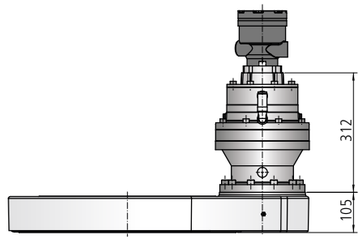


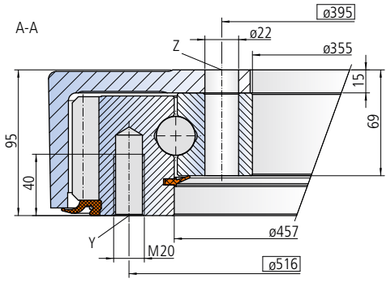
Limiting load diagrams of the individual sizes for compressive loads

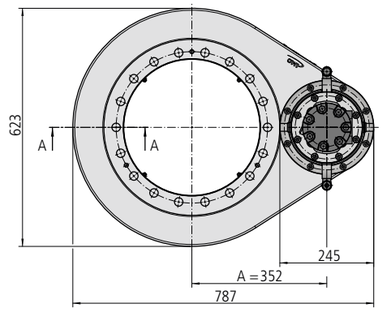
Please always observe the explanations in the Technical Information section (from page 60).



Size SP-H 0455







The mounting structure must support the housing to at least ø455.

The seal must be supported by the mounting structure to at least ø610, in order to ensure the full sealing effect.
A recess in the mounting structure of 10 mm above the housing is recommended.

Mounting holes
Y = 18 drill holes M20-40 deep, evenly distributed
Z = 18 drill holes ø22, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

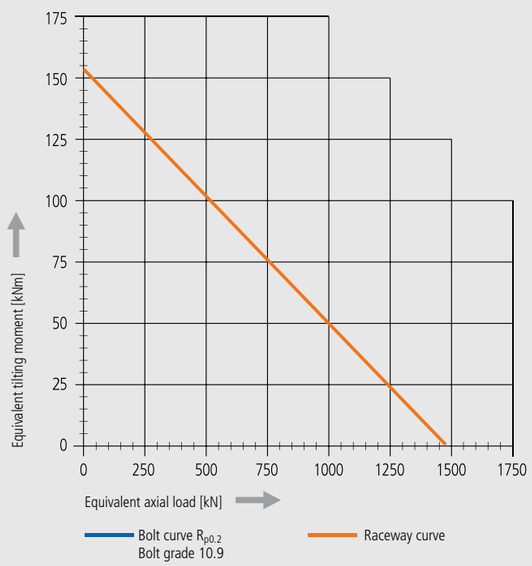
	Drawing number SP-H 0455/2-05910		
Module	**m**	[mm]	8
Number of teeth, wheel	z_2	[-]	72
Number of teeth, pinion	z_1	[-]	15
Slew drive gear ratio	**i**	[-]	4.8
Overall gear ratio incl. gear box	i_{tot}	[-]	86.88
Max. torque	$M_{d\,max}$	[Nm]	27673
Nom. torque $S_F = 1$ at $n = 3$ min^{-1}	$M_{d\,nom}$	[Nm]	18115
Max. holding torque*	$M_{h\,max}$	[Nm]	27673
Static load rating, radial	$C_{o\,rad}$	[kN]	552
Static load rating, axial	$C_{o\,ax}$	[kN]	1477
Dynamic load rating, radial	C_{rad}	[kN]	280
Dynamic load rating, axial	C_{ax}	[kN]	326
Weight, incl. 11 kg for hydraulic motor RE160		[kg]	207

* Optionally with brake

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE160

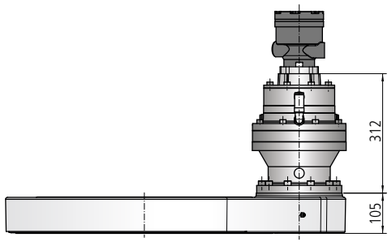
Pressure differential	**Δp**	[bar]	165
Oil flow	**Q**	[l/min]	45
Output speed	**n**	[min $^{-1}$]	3
Max. achievable torque	M_d	[Nm]	27673

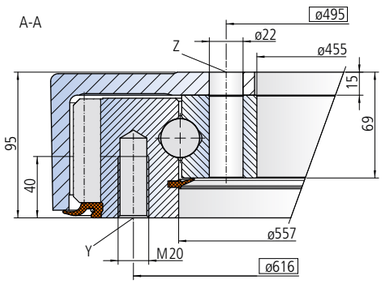
Limiting load diagram for compressive loads

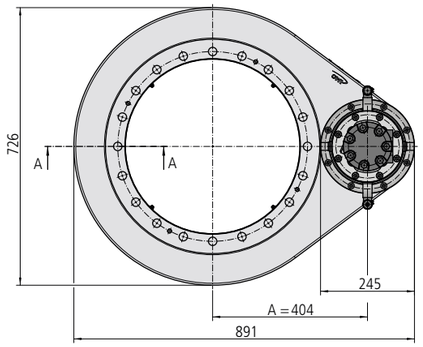


Please always observe the technical information!

Size SP-H 0555







The mounting structure must support the housing to at least ø555.

The seal must be supported by the mounting structure to at least ø714, in order to ensure the full sealing effect.
A recess in the mounting structure of 10 mm above the housing is recommended.

Mounting holes
Y = 20 drill holes M20-40 deep, evenly distributed
Z = 20 drill holes ø22, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

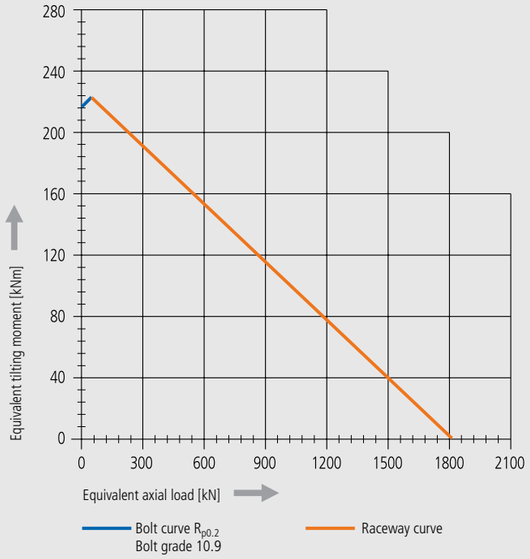
			Drawing number SP-H 0555/2-05911
Module	**m**	[mm]	8
Number of teeth, wheel	z_2	[-]	85
Number of teeth, pinion	z_1	[-]	15
Slew drive gear ratio	**i**	[-]	5.67
Overall gear ratio incl. gear box	i_{tot}	[-]	102.56
Max. torque	$M_{d\ max}$	[Nm]	32670
Nom. torque $S_F = 1$ at $n = 3\ min^{-1}$	$M_{d\ nom}$	[Nm]	21590
Max. holding torque*	$M_{h\ max}$	[Nm]	32670
Static load rating, radial	$C_{o\ rad}$	[kN]	673
Static load rating, axial	$C_{o\ ax}$	[kN]	1802
Dynamic load rating, radial	C_{rad}	[kN]	301
Dynamic load rating, axial	C_{ax}	[kN]	351
Weight, incl. 11 kg for hydraulic motor RE160		[kg]	226

* Optionally with brake

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE160

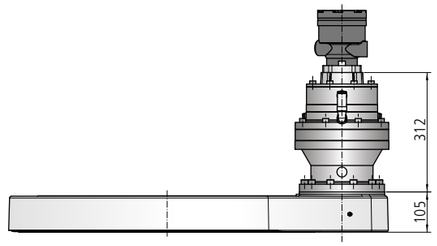
Pressure differential	**Δp**	[bar]	165
Oil flow	**Q**	[l/min]	53
Output speed	**n**	[min ·1]	3
Max. achievable torque	M_d	[Nm]	32670

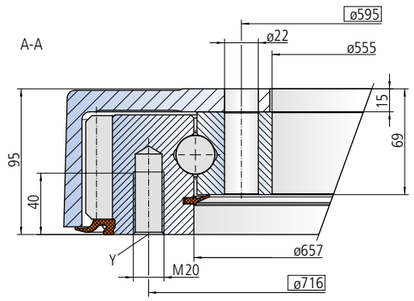
Limiting load diagram for compressive loads

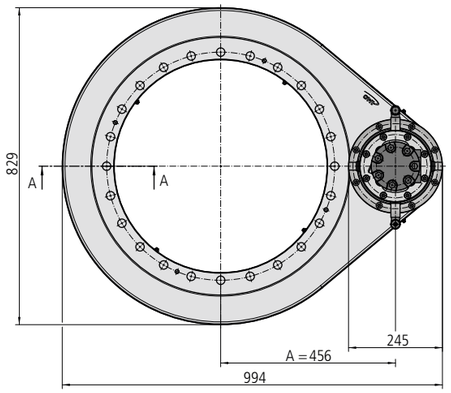


Please always observe the technical information!

Size SP-H 0655







The mounting structure must support the housing to at least ø655.

The seal must be supported by the mounting structure to at least ø818, in order to ensure the full sealing effect.
A recess in the mounting structure of 10 mm above the housing is recommended.

Mounting holes
Y = 24 drill holes M20-40 deep, evenly distributed
Z = 24 drill holes ø22, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

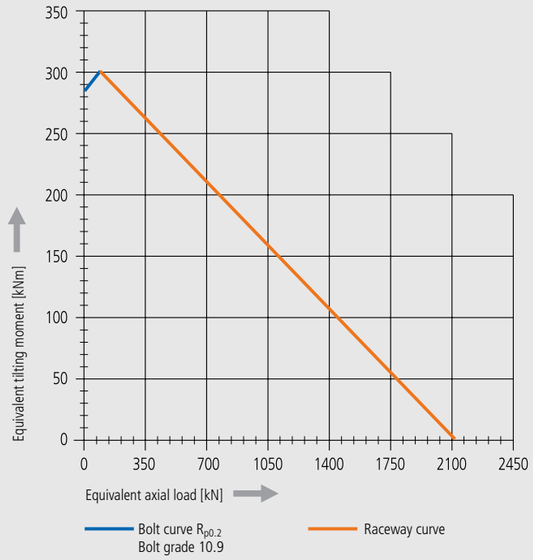
			Drawing number SP-H 0655/2-05912
Module	**m**	[mm]	8
Number of teeth, wheel	z_2	[-]	98
Number of teeth, pinion	z_1	[-]	15
Slew drive gear ratio	**i**	[-]	6.53
Overall gear ratio incl. gear box	i_{tot}	[-]	118.25
Max. torque	$M_{d\ max}$	[Nm]	37667
Nom. torque $S_F = 1$ at $n = 3\ min^{-1}$	$M_{d\ nom}$	[Nm]	25048
Max. holding torque*	$M_{h\ max}$	[Nm]	37667
Static load rating, radial	$C_{o\ rad}$	[kN]	794
Static load rating, axial	$C_{o\ ax}$	[kN]	2127
Dynamic load rating, radial	C_{rad}	[kN]	319
Dynamic load rating, axial	C_{ax}	[kN]	373
Weight, incl. 11 kg for hydraulic motor RE160		[kg]	246

* Optionally with brake

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE160

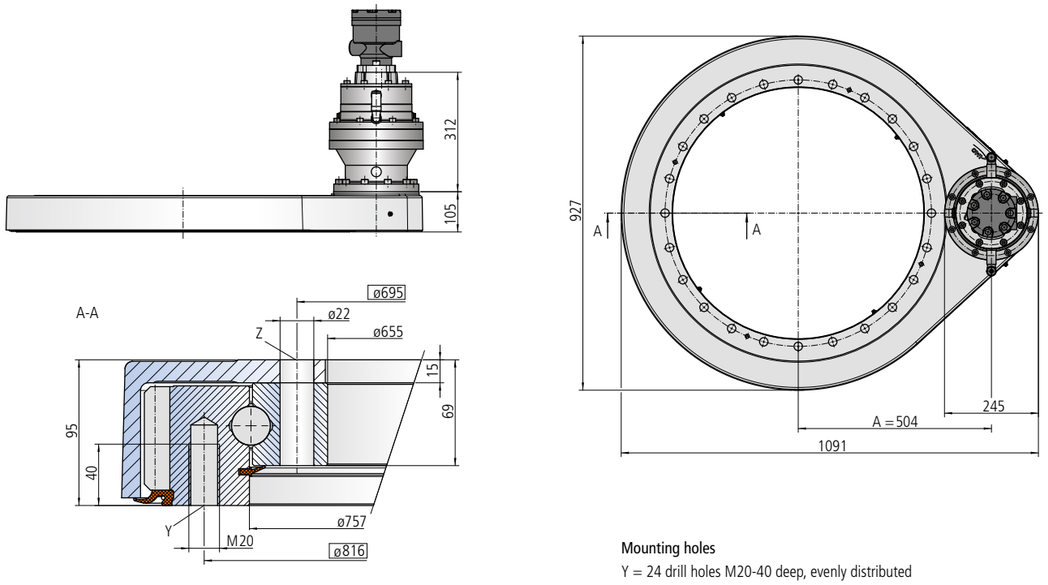
Pressure differential	**Δp**	[bar]	165
Oil flow	**Q**	[l/min]	60
Output speed	**n**	[min ·1]	3
Max. achievable torque	M_d	[Nm]	37667

Limiting load diagram for compressive loads



Please always observe the technical information!

Size SP-H 0755



The mounting structure must support the housing to at least ø755.

The seal must be supported by the mounting structure to at least ø914, in order to ensure the full sealing effect.
A recess in the mounting structure of 10 mm above the housing is recommended.

Mounting holes
Y = 24 drill holes M20-40 deep, evenly distributed
Z = 24 drill holes ø22, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

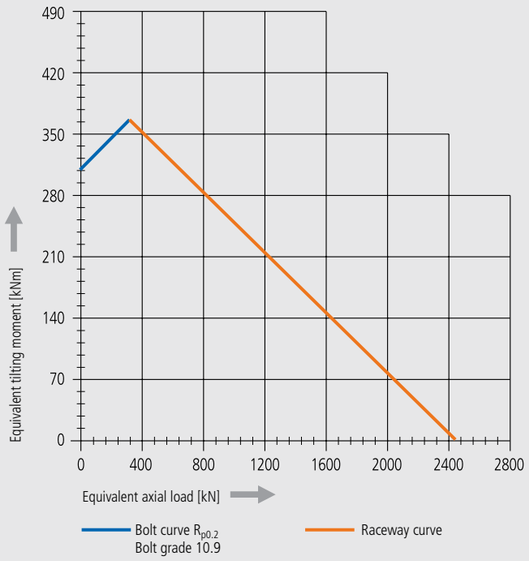
			Drawing number SP-H 0755/2-05913
Module	**m**	[mm]	8
Number of teeth, wheel	z_2	[-]	110
Number of teeth, pinion	z_1	[-]	15
Slew drive gear ratio	**i**	[-]	7.33
Overall gear ratio incl. gear box	i_{tot}	[-]	132.73
Max. torque	$M_{d\ max}$	[Nm]	42279
Nom. torque S_F = 1 at n = 3 min^{-1}	$M_{d\ nom}$	[Nm]	28204
Max. holding torque*	$M_{h\ max}$	[Nm]	42279
Static load rating, radial	$C_{o\ rad}$	[kN]	916
Static load rating, axial	$C_{o\ ax}$	[kN]	2452
Dynamic load rating, radial	C_{rad}	[kN]	336
Dynamic load rating, axial	C_{ax}	[kN]	393
Weight, incl. 11 kg for hydraulic motor RE160		[kg]	268

* Optionally with brake

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE160

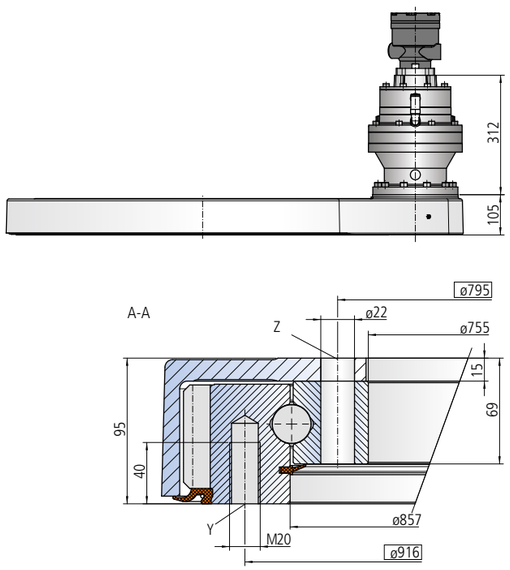
Pressure differential	**Δp**	[bar]	170
Oil flow	**Q**	[l/min]	67
Output speed	**n**	[min $^{-1}$]	3
Max. achievable torque	M_d	[Nm]	42279

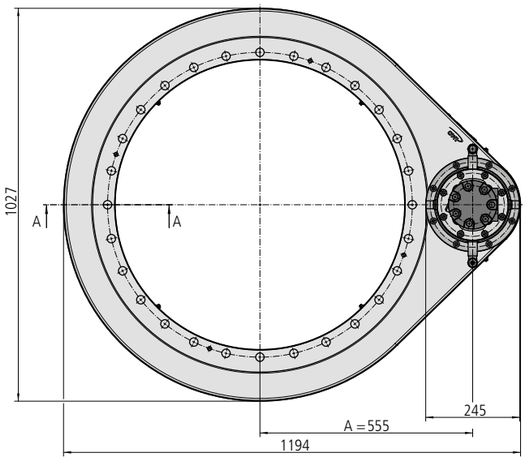
Limiting load diagram for compressive loads



Please always observe the technical information!

Size SP-H 0855





The mounting structure must support the housing to at least ø855.

The seal must be supported by the mounting structure to at least ø1016, in order to ensure the full sealing effect.
A recess in the mounting structure of 10 mm above the housing is recommended.

Mounting holes
Y = 28 drill holes M20-40 deep, evenly distributed
Z = 28 drill holes ø22, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

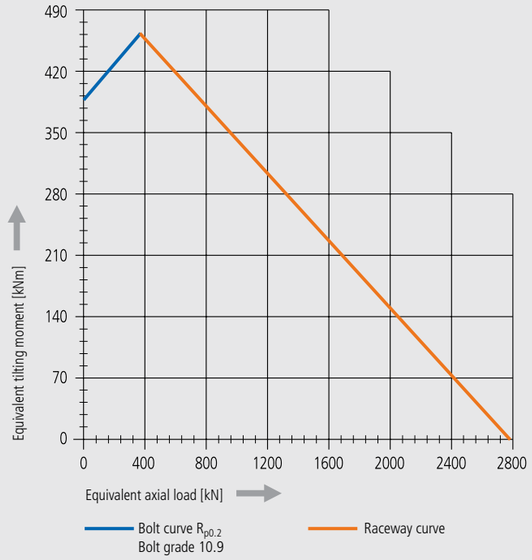
			Drawing number SP-H 0855/2-05914
Module	**m**	[mm]	8
Number of teeth, wheel	z_2	[-]	122
Number of teeth, pinion	z_1	[-]	15
Slew drive gear ratio	**i**	[-]	8.13
Overall gear ratio incl. gear box	i_{tot}	[-]	147.21
Max. torque	$M_{d\ max}$	[-]	47180
Nom. torque S_F = 1 at n = 3 min^{-1}	$M_{d\ nom}$	[Nm]	32749
Max. holding torque*	$M_{h\ max}$	[Nm]	47180
Static load rating, radial	$C_{o\ rad}$	[Nm]	1037
Static load rating, axial	$C_{o\ ax}$	[kN]	2777
Dynamic load rating, radial	C_{rad}	[kN]	354
Dynamic load rating, axial	C_{ax}	[kN]	414
Weight, incl. 11 kg for hydraulic motor RE160		[kg]	289

* Optionally with brake

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor RE160

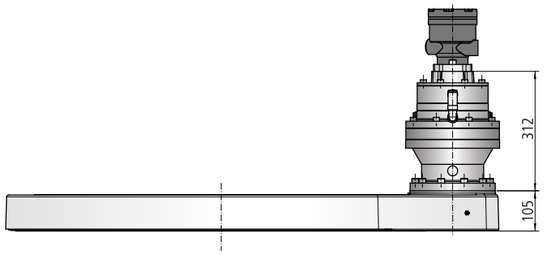
Pressure differential	**Δp**	[bar]	175
Oil flow	**Q**	[l/min]	74
Output speed	**n**	[min $^{-1}$]	3
Max. achievable torque	M_d	[Nm]	47180

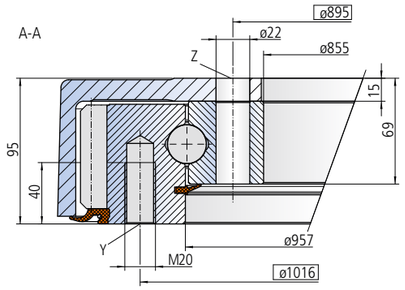
Limiting load diagram for compressive loads

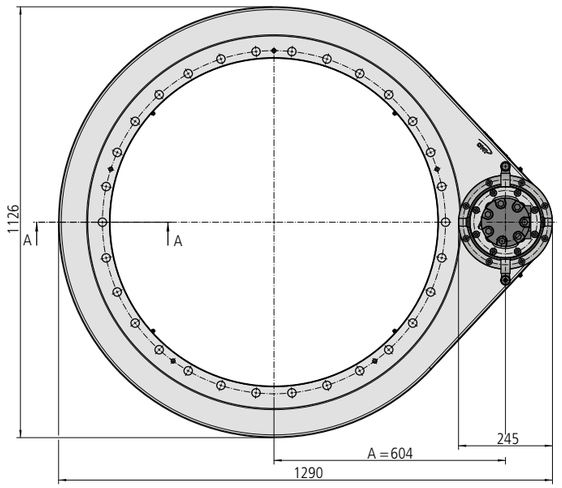


Please always observe the technical information!

Size SP-H 0955







The mounting structure must support the housing to at least ø955.

The seal must be supported by the mounting structure to at least ø1114, in order to ensure the full sealing effect.
A recess in the mounting structure of 10 mm above the housing is recommended.

Mounting holes
Y = 30 drill holes M20-40 deep, evenly distributed
Z = 30 drill holes ø22, evenly distributed

Lubricating ports
4 conical grease nipples on internal diameter
2 conical grease nipples on housing exterior
Slew drive supplied pre-lubricated

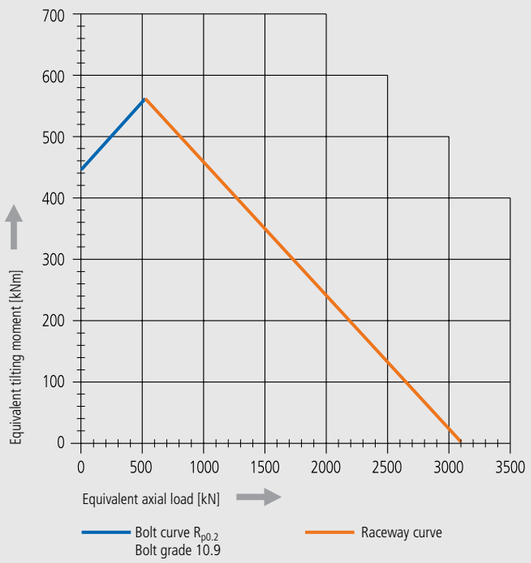
			Drawing number SP-H 0955/2-05915
Module	**m**	[mm]	8
Number of teeth, wheel	z_2	[-]	134
Number of teeth, pinion	z_1	[-]	15
Slew drive gear ratio	**i**	[-]	8.93
Overall gear ratio incl. gear box	i_{tot}	[-]	161.69
Max. torque	$M_{d\ max}$	[Nm]	51888
Nom. torque $S_F = 1$ at $n = 3\ min^{-1}$	$M_{d\ nom}$	[Nm]	36342
Max. holding torque*	$M_{h\ max}$	[Nm]	51888
Static load rating, radial	$C_{o\ rad}$	[kN]	1159
Static load rating, axial	$C_{o\ ax}$	[kN]	3101
Dynamic load rating, radial	C_{rad}	[kN]	369
Dynamic load rating, axial	C_{ax}	[kN]	431
Weight, incl. 10 kg for hydraulic motor OMS125		[kg]	315

* Optionally with brake

The hydraulic/electric motor is selected according to the actual requirements and customer specification.
Selection example:
Performance data with hydraulic motor OMS125

Pressure differential	**Δp**	[bar]	200
Oil flow	**Q**	[l/min]	65
Output speed	**n**	[min $^{-1}$]	3
Max. achievable torque	M_d	[Nm]	51888

Limiting load diagram for compressive loads



Please always observe the technical information!

Your notes

Your notes

Application Data Sheet - Slew Drives

FM AEA 001 00

Please copy, complete and send to:
Our Application Data Sheets can also be downloaded from our website: www.imo.de

IMO GmbH & Co. KG
Imostr. 1 – 91350 Gremsdorf, Germany
e-Mail: sales@imo.de

1. Contact

CUSTOMER | IMO GmbH & Co. KG

Company:
Postal code/City:
Country:
Contact person:
E-mail: Phone:

Contact person (Sales):
E-mail:
Phone:
File number:

Fields highlighted in grey show our standard options. In case of insufficient customer information we take these as the basis of our calculation.

2. Application

In case of several slew drives per application, please fill in a separate application data sheet for each slew drive.

Description of plant/system (please provide a sketch):

Function of slew drive in plant/system?

Current solution?

3. Special requirements

Military/Nuclear application: ☐ No ☐ Yes, military ☐ Yes, nuclear

Operating/ambient temperature: ■ IMO standard (-20°C to 70°C) ☐ from °C – °C

Do shocks or vibrations occur? ☐ No ☐ Yes, which?

Special environmental conditions? ■ IMO standard (dust + water spray) ☐ Seawater ☐ Food industry.
☐ Other:

Special certification/approval required? ☐ No ☐ Yes, which?

4. Preferred slew drive

Drive type: ☐ Worm gear (WD) ☐ Spur gear (SP) ■ No preference

Preferred slew drive type/designation:

Limiting size and/or interface dimensions?

5. Additional attachments

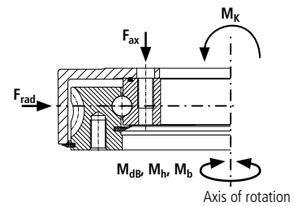
Drive:
■ Without motor ☐ IMO standard (default hydraulic motor)
☐ Hydraulic motor Δp_{max}= bar Q_{max}= l/min
☐ Electric motor (three-phase AC motors)
Voltage: ☐ 230 V AC ☐ 400 V AC ☐ V AC
Frequency: ☐ 50 Hz ☐ 60 Hz
Brake volt. (if appl.): ☐ 24 V DC ☐ 230 V AC ☐ 400 V AC

Holding brake: ■ Not required ☐ Yes, (IMO recommendation for 100 % secure hold)

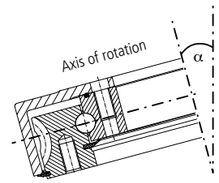
Slew angle monitoring:: ■ Not required ☐ Yes, IMO default type (» see Application Data Sheet – Encoder – FM AEA 002)
☐ Yes, customer-specific (» please supply detailed specification, see Section 8)

6. Mounting postion and loads

☐ Axis of rotation vertical



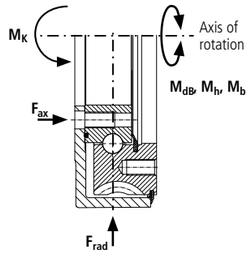
☐ Axis of rotation changing



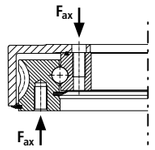
Angle of axis of rotation to vertical

α = °

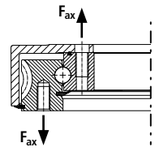
☐ Axis of rotation horizontal



☐ Axial load compressive



☐ Axial load suspended



			Load case no. 1	2	3	4	5	6
Axial load	F_{ax}	N						
Radial load	F_{rad}	N						
Tilting moment	M_k	Nm						
Operating torque	M_{dB}	Nm						
Holding torque	M_h	Nm						
Additional acceleration torque	M_b	Nm						
Alternative: Moment of inertia about the axis of rotation	J	kgm^2						
Alternative: Duration of acceleration/decelaration	Δt_b	s						
Operating speed	n	min^{-1}						
Slewing angle (degrees it will rotate)	δ_s	Degrees						
Duration of load case (total = 100 %)		%						

Are safety factors included in the loads above? ☐ No ☐ Yes, which (value)?

Should additional load increasing factors be included in the loads? ☐ No ☐ Yes, which (value)?

Continuous operation (> 80 %/min): ☐ No ☐ Yes

Slewing direction: ☐ One direction only ☐ Alternating (both directions)

Desired life time in years: a

Slewing time of slew drive per year (slew drive is turning): h/a

Alternative:
Slewing time for one cycle of operation: s
Operation cycles of plant/system per hour: 1/h
Operating hours of plant/system per year: h/a

Description of load cases: We recommend providing at least one normal load case with a higher time share (e.g. 90%) and one extreme load case with a lower time share (e.g. 10%) for a better calculation result.

If necessary, attach further explanations.

Application Data Sheet - Slew Drives

7. Commercial data

Expected yearly demand:	Units/year	Required batch size:	Units/delivery
Required sample date:		Planned production start:	
Target price range:		Desired offer date:	

8. Remarks

Are there any additional customer requirements (e.g. standards and certification, special packaging, quality control agreements) that must be considered?
Additional helpful information from the customer (e.g. application description, operating cycle description, drawings, photos, etc.)?

9. Customer confirmation

I hereby confirm the correctness of the data provided above as the basis for the design and offer.
If not otherwise specified, the grey standard options will be assumed.

Date **Name** **Signature**

Preface & imprint

For more than 30 years, IMO has developed, produced and marketed high-quality slew drives for international customers.

In this catalog, we wish to inform you about our standard slew drive range. For special versions, please contact our Sales department (sales@imo.de; Tel. +49 9193 6395-0)

This current catalog, version 318, replaces all earlier catalogs. Information in earlier catalogs which is not consistent with the information in this edition is thus no longer valid.

The Application Data sheet for your data

Please find the "Application Data Sheet (ADS)" on page 134-136. A technical work sheet completed by you provides the specifications for your requirements with regard to the use of our products. Slew drives are highly technical products, which must be perfectly matched to the requirements and environmental conditions of each application. For this reason, it is necessary that you complete the Application Data Sheet accurately and completely and make it available to us in good time.

Usage approval for our product in your application

Due to our decades of experience, we can give you usage approval on the basis of your data in the technical requirement sheet, assuming the loads you have specified for the application you have described and providing that there are no technical reasons against this.

Valid conditions of sale and delivery, installation and operating manual

Our general conditions of sale and delivery, which form the basis of the supply contracts and our offers and order confirmations, shall apply. In addition, strict compliance with our installation and operating manual is required. The latest edition, which is published on our website www.imo.de/Downloads and can be downloaded from there, shall apply in each case. Compliance with the information therein is of primary functional and safety relevance for our product.

Additional information material

Detailed information about our corporate group, additional products and special information on areas of application can be found in the Download area of our website www.imo.de.

Information in this catalog

This catalog was compiled with the utmost care and all information carefully checked for accuracy. However, no liability can be assumed for any incorrect or incomplete information.
Product and application images are only intended for information purposes and must not be used for design work. As the basis for design work, please use only the technical data specified in the catalog, preferably the technical drawings, made available to your by our Sales team. In cases of doubt, we will gladly assist you.

Application illustrations only show examples of possible applications for which IMO slew drives could generally be used after a technical inspection by our Application Technology department.

Our products undergo continuous further development. We reserve the right to make changes to the product range, the product design and the performance characteristics.

Our product range, our designs and intellectual copyrights are continuously updated.

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