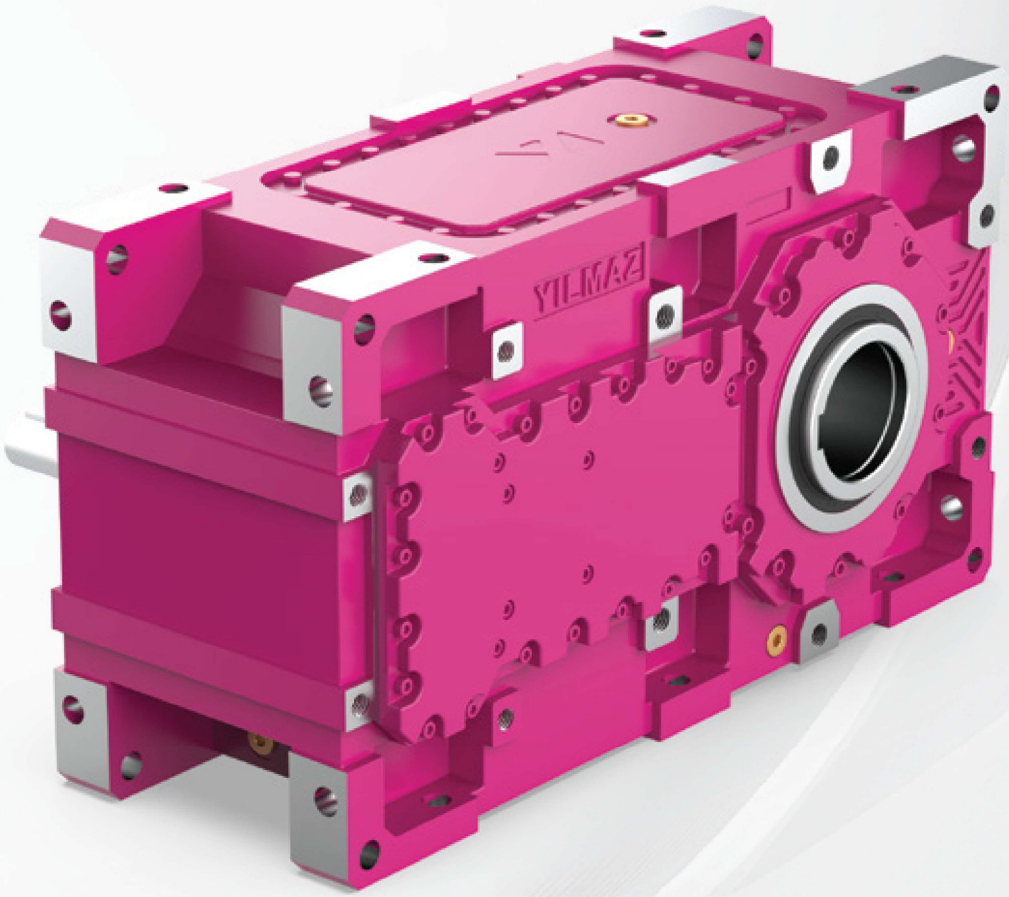
YILMAZ REDÜKTÖR ISO 9001

OPERATING INSTRUCTIONS

H Serie



YILMAZ REDÜKTÖR

OIHCE0900-0926

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1- How To Use This Manual

Take attention to the following safety and warning signs for proper understanding and quick reference.


Electric Hazard; Can cause severe or fatal injuries.


Mechanical Hazard; Can cause severe or fatal injuries.


Likely to be Hazardous; Can cause minor or fatal injuries



Damage Risk; Can damage the drive or environment


Important Information


EC Machinery Directive:
Within terms of the EC machinery directive 2006/42/EC, the gear reducer is not considered an autonomous machine, but as a component to install in machines.
Operation is prohibited within the area of validity of the 2006/42/EC directive, until it has been determined that the machine, in which this product is installed, corresponds to the regulations within this directive.


The machine manufacturer or user is responsible for taking the necessary precautions on the machine or at the place where the gearbox will be used, in order to prevent injury and life-threatening risks by taking into account the shaft, gear failures etc. that may occur in the gearboxes.

The operating instructions contain important information to ensure;
- Trouble-free operation
- Fulfilment of any rights to claim under guarantee

The operating instruction must be kept close to the gearbox and must be available in case it is needed.

This operating instruction is written for H Series gear units and is applicable only for H Series. If any different type of gearbox is used please ask YILMAZ REDUKTOR for the operating instructions of that type.

This instruction can be used only for standard type geared units of YILMAZ REDUKTOR. For special application and modified gear units ask YILMAZ REDUKTOR for validity.

This manual does not cover 2014/34/EU (ATEX) compatible gearboxes. For 2014/34/EU contact YILMAZ REDUKTOR.

2 - Unit Designation

2.1- Detailed Unit Designation

Detailed H series gear units designation for ordering
(This Designation is different from the short nameplate designation)

H T 05 2 3 . 0 1 R - M1 / A25

/ 3E200L4D

30 kW 1500 rpm IE3 ELK AC Motor
Only for HV Types

IEC Motor Flange Size
Only for HK Types
A13: *IEC 132 B5 (300x265x230 mm)*
A16: *IEC 160 B5 (350x300x250 mm)*
A18: *IEC 180 B5 (350x300x250 mm)*
A20: *IEC 200 B5 (400x350x300 mm)*
A22: *IEC 225 B5 (450x400x350 mm)*
A25: *IEC 250 B5 (550x500x450 mm)*
A28: *IEC 280 B5 (550x500x450 mm)*
A31: *IEC 315 B5 (660x600x550 mm)*

Mounting Position
M1: *Output shaft is parallel to earth, cover is on top*
M2: *Gearbox is upright and output shaft is over input shaft*
M3: *Output shaft is parallel to earth, cover is on bottom*
M4: *Gearbox is upright and output shaft is under input shaft*
M5: *While the output shaft perpendicular to the ground and the mounting cover is on the front, the right side surface (Y1) faces downwards*
M6: *While the output shaft perpendicular to the ground and the mounting cover is on the front, the left side surface (Y4) faces downwards*
M./.-..º: *Gearbox works in an angle (Example coding for 30º from M1 to M2: M1/2-30º)*
...T: *with torque arm*

Shaft and Flange Arrangement
Please refer to shaft and flange arrangements section

Output Shaft Properties
0: *Hollow Shaft*
1: *Solid Output Shaft*
2: *Solid Output Shaft And Output Flange*
3: *Hollow Shaft And Output Flange*
4: *Double Output Shaft*
5: *Double Output Shaft And Flange*
8: *Hollow Output Shaft And Double Output Flange*
S: *Hollow Shaft With Shrink Disc*
0K: *Splined Hollow Output Shaft (DIN5480)*
1K: *Splined Solid Output Shaft (DIN5480)*
0E: *Standard Extruder Housing With Hollow Output Shaft*
0EK: *Standard Extruder Housing With Splined Hollow Output Shaft (DIN5480)*
1E: *Optional Extruder Housing With Hollow Output Shaft*
1EK: *Optional Extruder Housing With Splined Hollow Output Shaft (DIN5480)*
0A: *Drywell Gearbox With Hollow Output Shaft*
1A: *Drywell Gearbox With Solid Output Shaft*
SA: *Drywell Gearbox With Shrink Disc*
X: *Special*

Input Shaft Properties
0: *Standard Input Shaft*
2: *Double Input Shaft*

Number of Gear Stages
1: *One stage* ***3:*** *Three stages*
2: *Two stages* ***4:*** *Four stages*

Revision Number
Second revision

Gearbox Size
Sizes from 03.....to 22

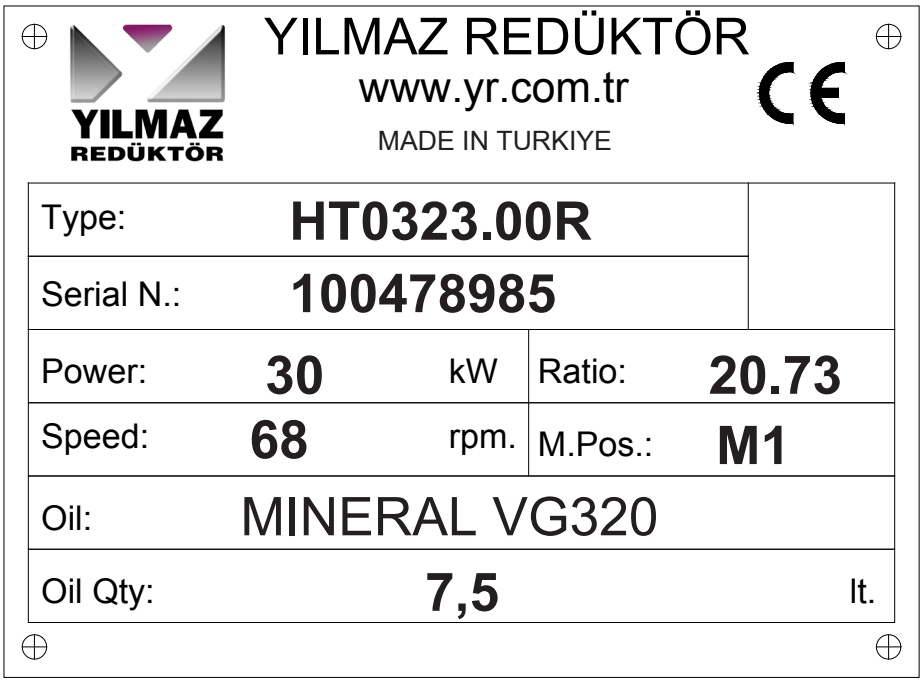
Version of Gearbox
T: *Free Solid Input Shaft*
K: *With IEC B5 Flange And Free Input Shaft*
V: *With IEC B5 Flange And Motor*
TE: *Extruder Type With Free Input Shaft*
KE: *Extruder Type With IEC B5 Flange And Free Input Shaft*
VE: *Extruder Type With IEC B5 Flange And Motor*
TB: *Drywell Gearbox With Free Solid Input Shaft*
KB: *Drywell Gearbox With IEC B5 Flange And Free Input Shaft*
VB: *Drywell Gearbox With IEC B5 Flange And Motor*

Serie of Gear Unit
H: *Helical Gear Type Horizontal Industrial Gear Units*

2.2- Nameplate, Unit Designation

Nameplate unit designation is a short abbreviation from the detailed designation

A sample name plate for H Series



Abbreviations:
Serial N. : Serial Number
M.Pos. : Mounting Position

Type Designation;

HT0323.00 R

Type

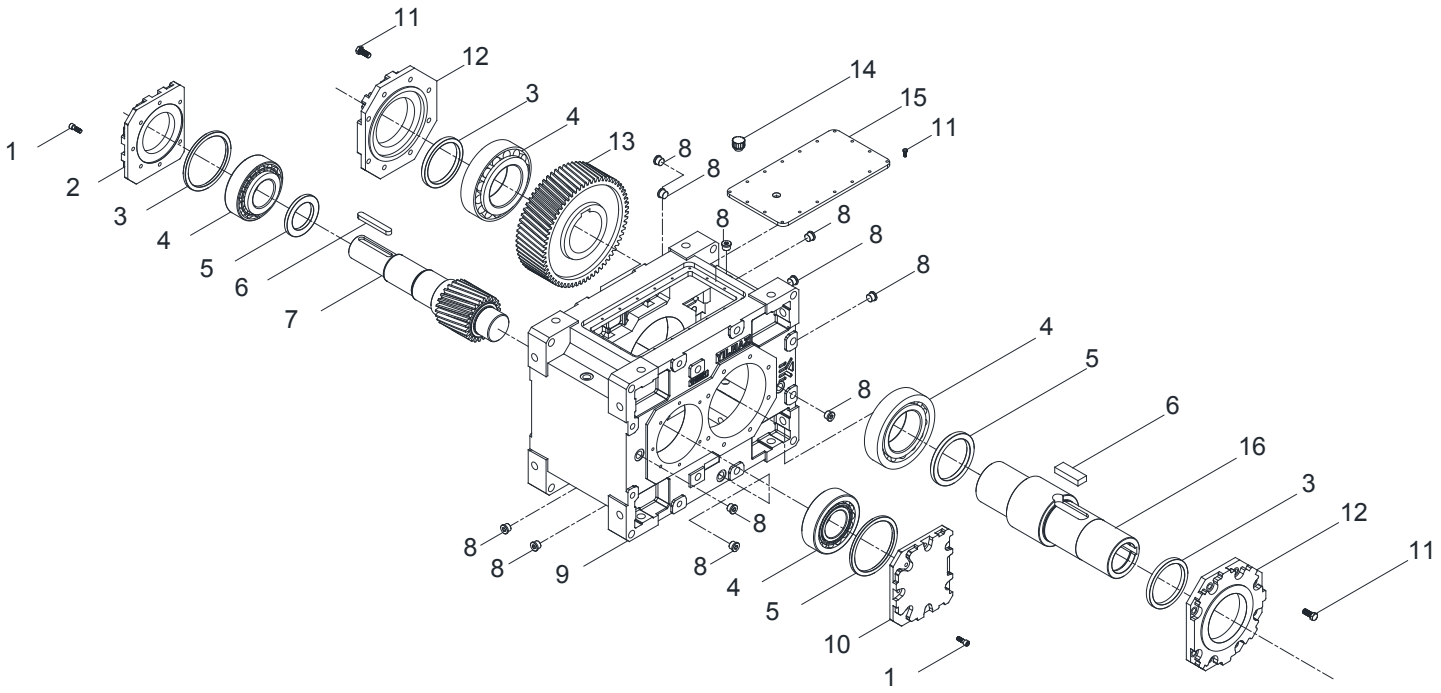
Shaft and Flange Arrangement

Serial Number: 100478985

Viewed from input side
L - Right input, Left output
R - Left input, Right output
U - Right input, Right output
V - Left input, Left output

3. Standard Type Gearbox Part Lists

3.1- HT...1.00 Types

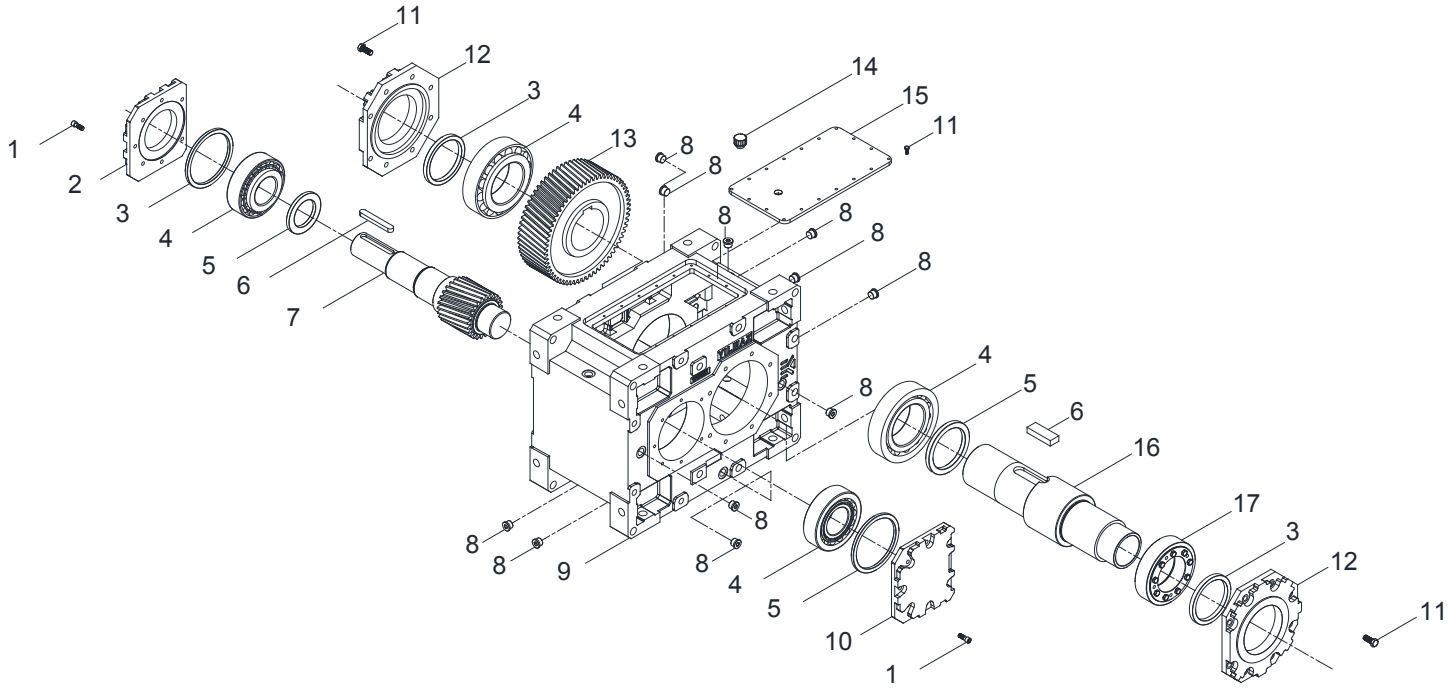


Standard HT...1.00 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Imbus Bolt	9- Housing
2- Seal Cover	10- Side Cover
3- Seal	11- Hexagonal Head Bolt
4- Bearing	12- Output Seal Cover
5- Washer	13- Gear
6- Key	14- Breather Plug
7- Input Shaft	15- Top Cover
8- Oil Plug	16- Hollow Shaft

3.2- HT...1.0S Types

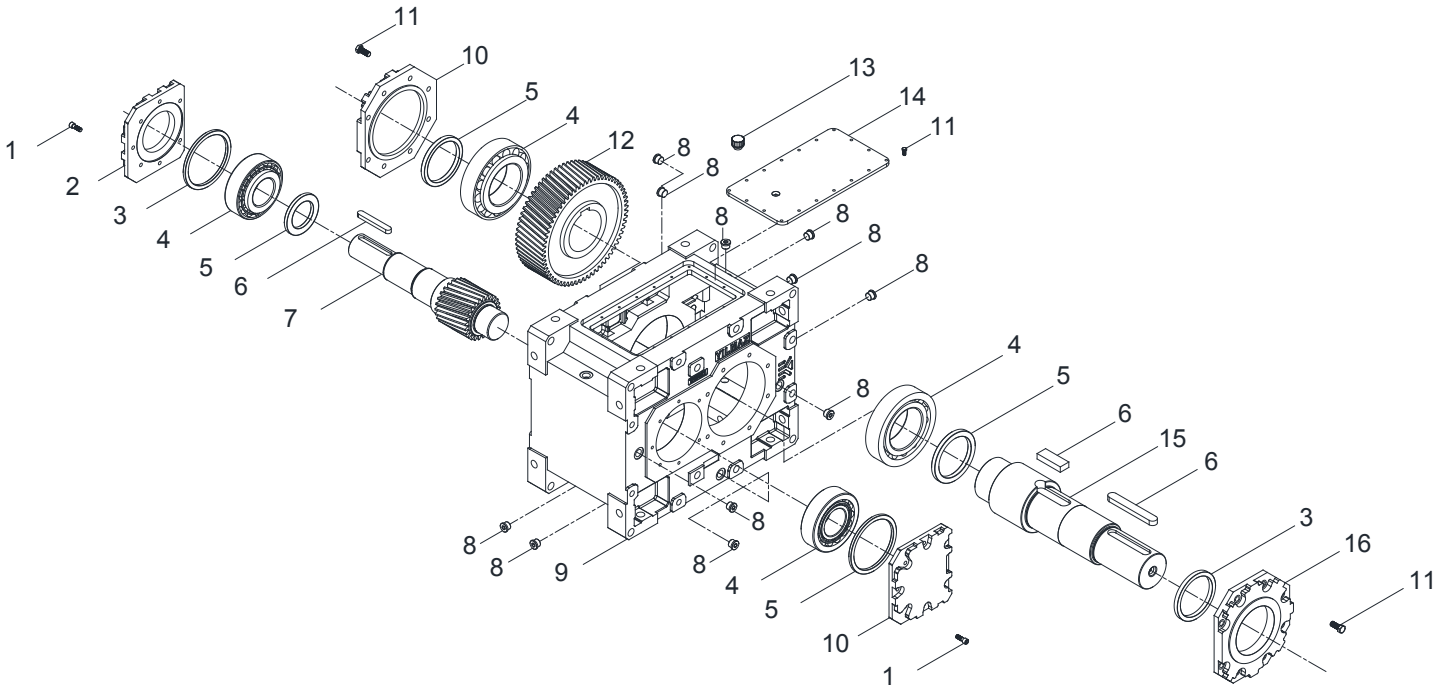


Standard HT...1.0S type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Imbus Bolt	10- Side Cover
2- Seal Cover	11- Hexagonal Head Bolt
3- Seal	12- Output Seal Cover
4- Bearing	13- Gear
5- Washer	14- Breather Plug
6- Key	15- Top Cover
7- Input Shaft	16- Hollow Shaft
8- Oil Plug	17- Shrink Disc
9- Housing	

3.3- HT...1.01 Types

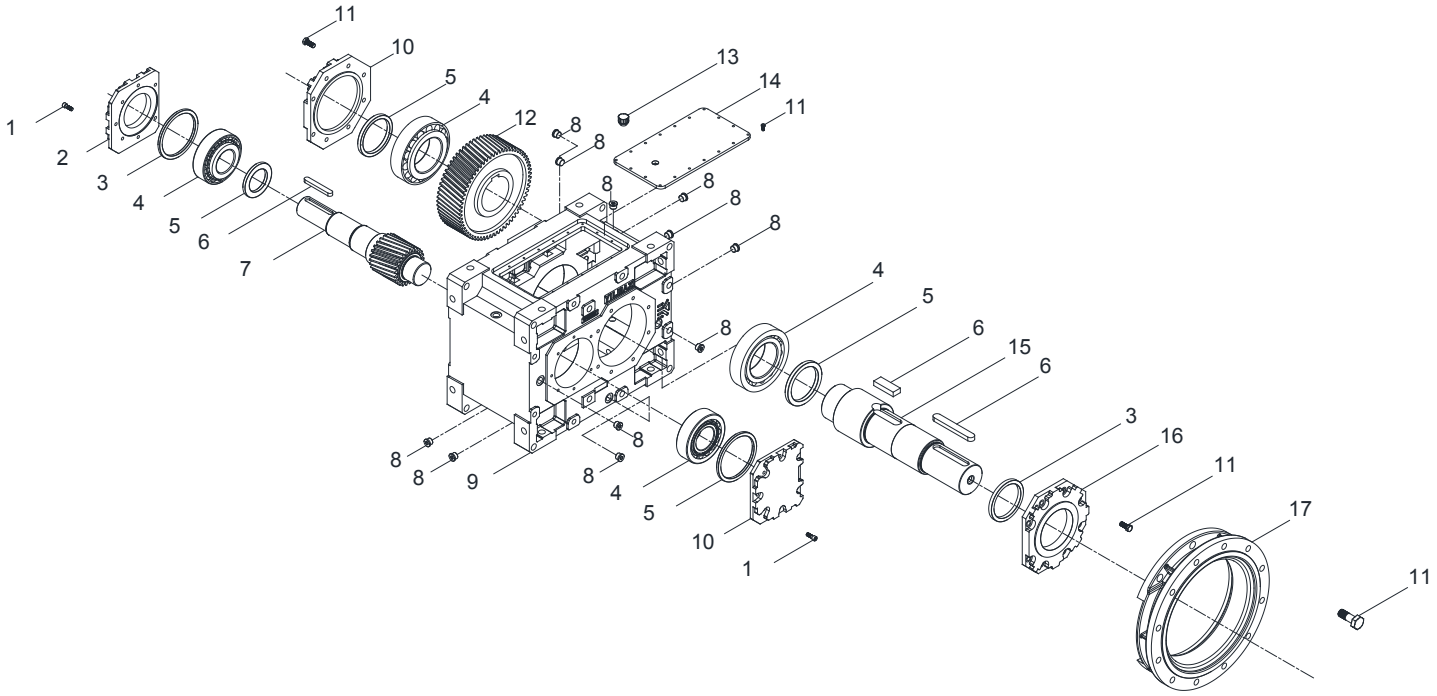


Standard HT...1.01 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Imbus Bolt	9- Housing
2- Seal Cover	10- Side Cover
3- Seal	11- Hexagonal Head Bolt
4- Bearing	12- Gear
5- Washer	13- Breather Plug
6- Key	14- Top Cover
7- Input Shaft	15- Solid Shaft
8- Oil Plug	16- Output Seal Cover

3.4- HT...1.02 Types

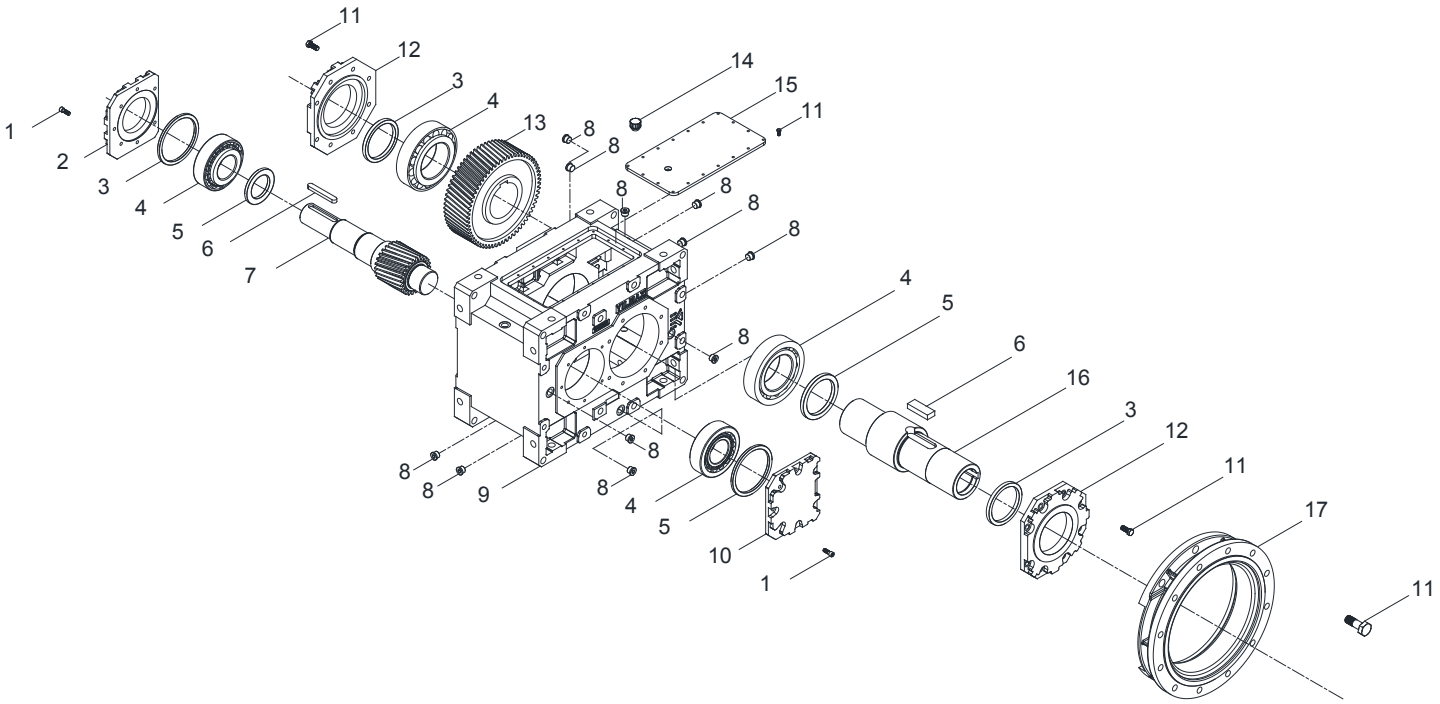


Standard HT...1.02 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Imbus Bolt	10- Side Cover
2- Seal Cover	11- Hexagonal Head Bolt
3- Seal	12- Gear
4- Bearing	13- Breather Plug
5- Washer	14- Top Cover
6- Key	15- Solid Shaft
7- Input Shaft	16- Output Seal Cover
8- Oil Plug	17- Output Flange
9- Housing	

3.5- HT...1.03 Types

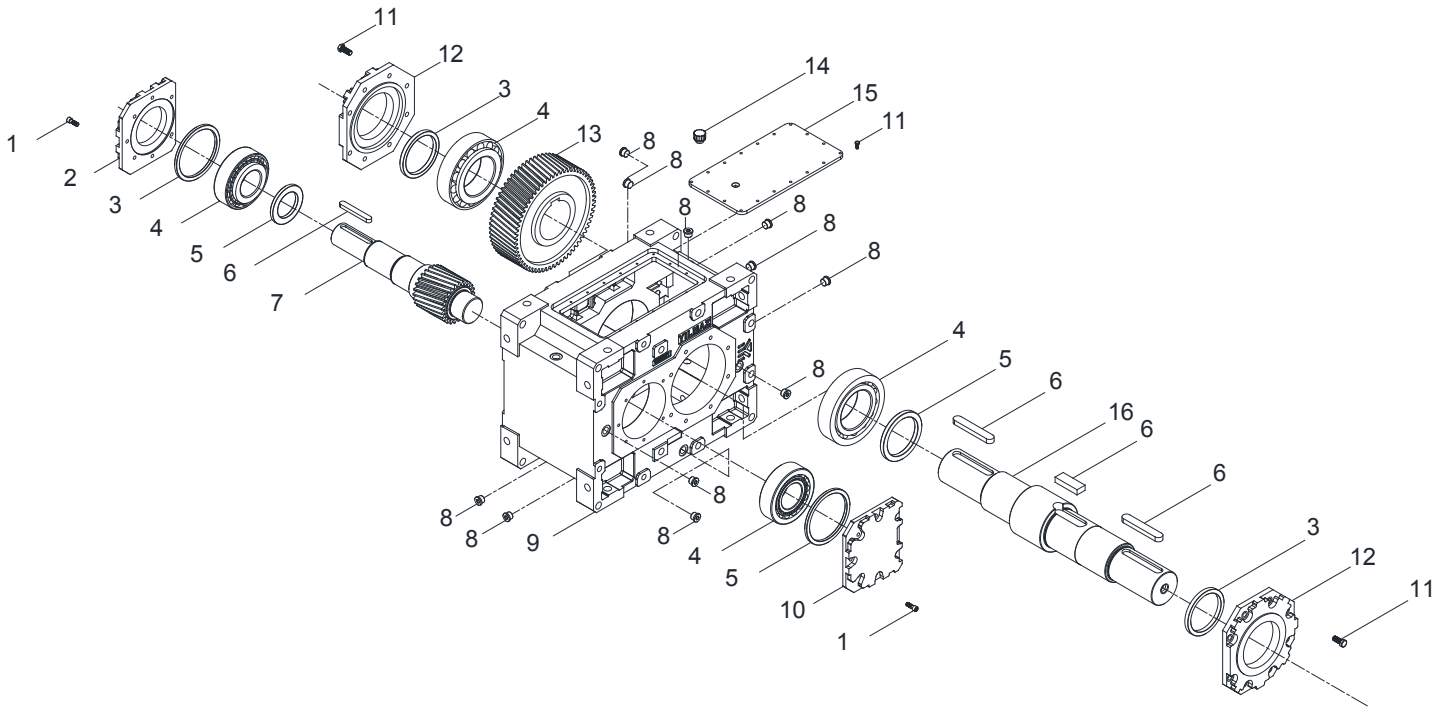


Standard HT...1.03 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Imbus Bolt	10- Side Cover
2- Seal Cover	11- Hexagonal Head Bolt
3- Seal	12- Output Seal Cover
4- Bearing	13- Gear
5- Washer	14- Breather Plug
6- Key	15- Top Cover
7- Input Shaft	16- Hollow Shaft
8- Oil Plug	17- Output Flange
9- Housing	

3.6- HT...1.04 Types

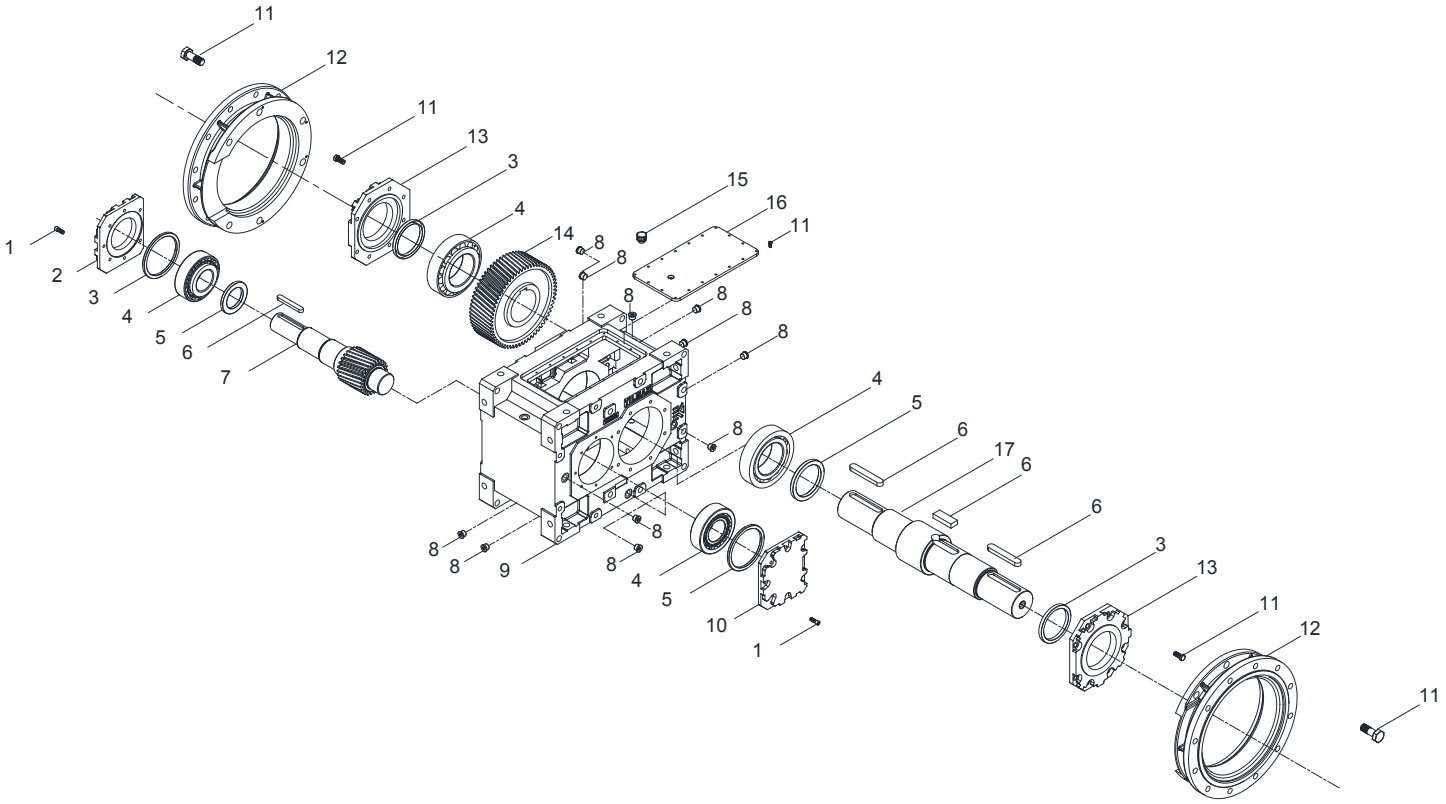


Standard HT...1.04 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Imbus Bolt	9- Housing
2- Seal Cover	10- Side Cover
3- Seal	11- Hexagonal Head Bolt
4- Bearing	12- Output Seal Cover
5- Washer	13- Gear
6- Key	14- Breather Plug
7- Input Shaft	15- Top Cover
8- Oil Plug	16- Solid Shaft

3.7- HT...1.05 Types

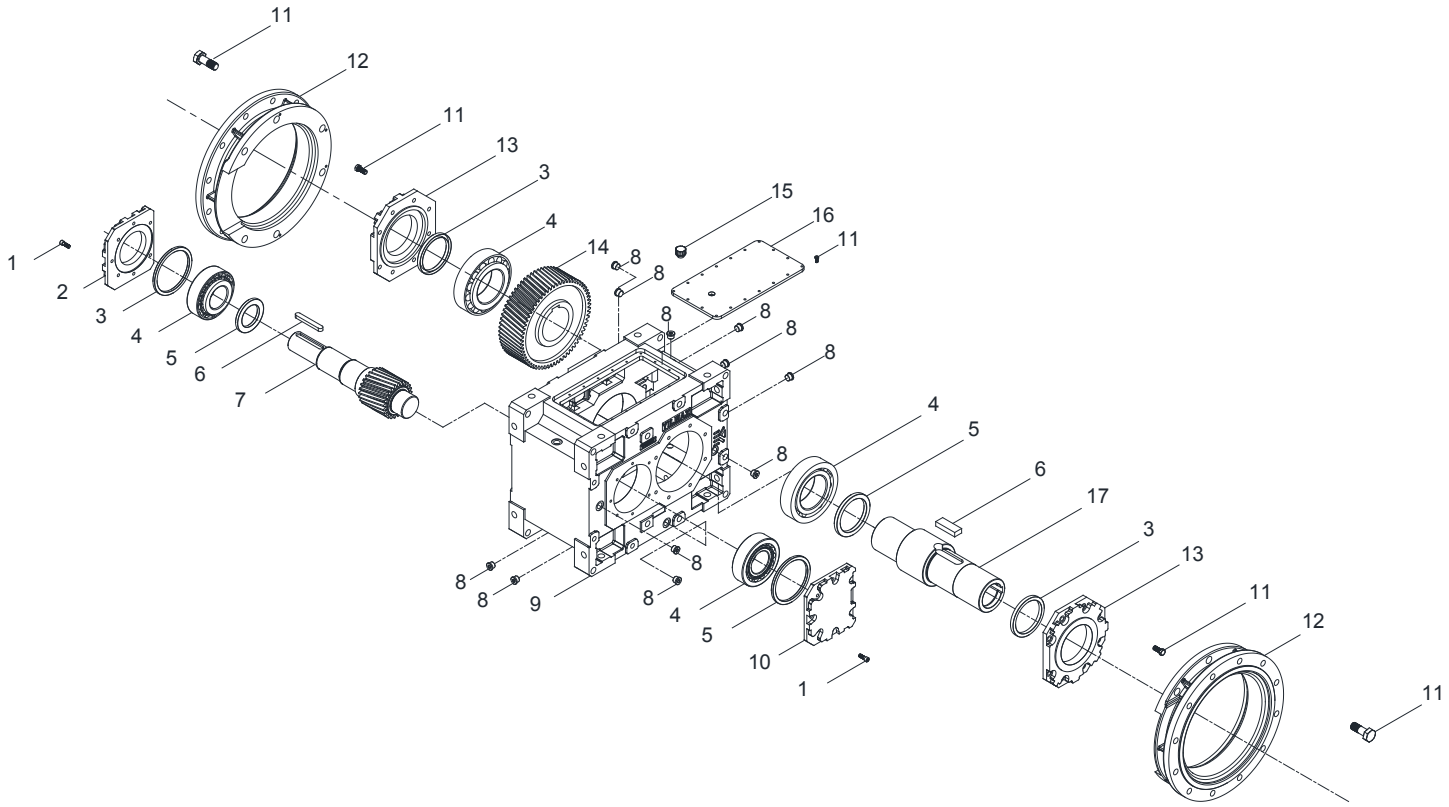


Standard HT...1.05 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Imbus Bolt	10- Side Cover
2- Seal Cover	11- Hexagonal Head Bolt
3- Seal	12- Output Flange
4- Bearing	13- Output Seal Cover
5- Washer	14- Gear
6- Key	15- Breather Plug
7- Input Shaft	16- Top Cover
8- Oil Plug	17- Solid Shaft
9- Housing	

3.8- HT...1.08 Types

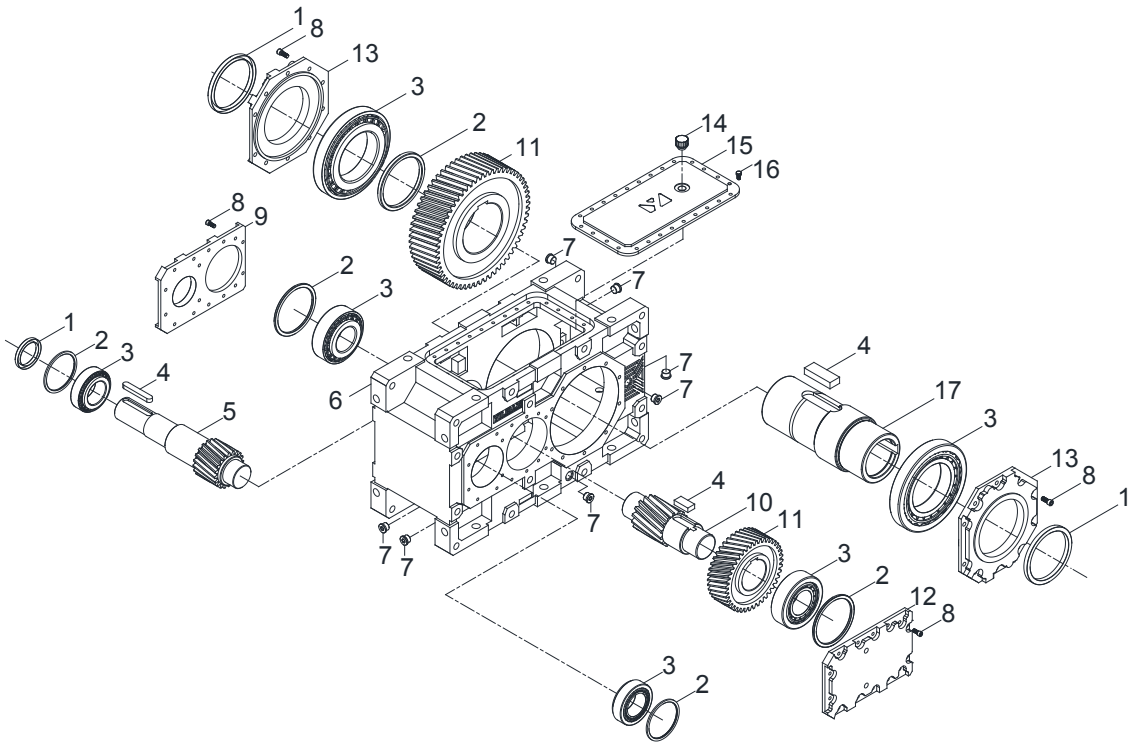


Standard HT...1.08 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Imbus Bolt	10- Side Cover
2- Seal Cover	11- Hexagonal Head Bolt
3- Seal	12- Output Flange
4- Bearing	13- Output Seal Cover
5- Washer	14- Gear
6- Key	15- Breather Plug
7- Input Shaft	16- Top Cover
8- Oil Plug	17- Hollow Shaft
9- Housing	

3.9- HT...2.00 Types

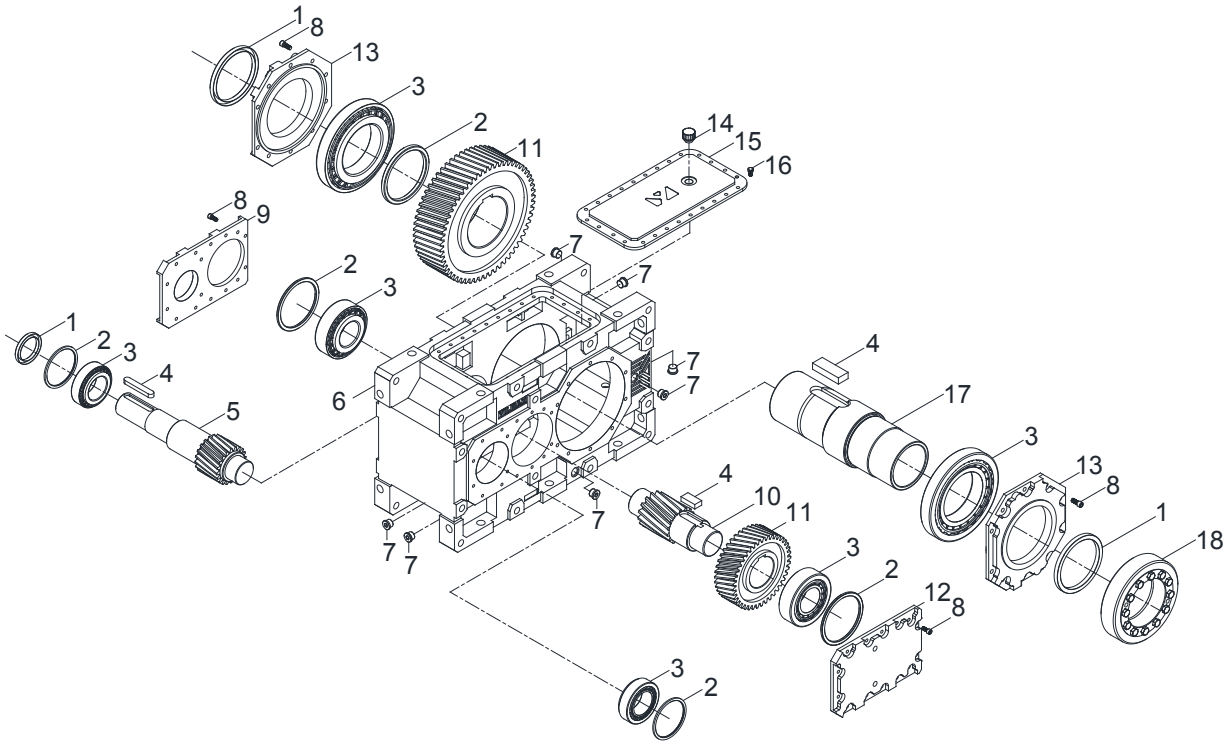


Standard HT...2.00 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	10- Geared Shaft
2- Washer	11- Gear
3- Bearing	12- Side Cover
4- Key	13- Output Seal Cover
5- Input Shaft	14- Breather Plug
6- Housing	15- Top Cover
7- Oil Plug	16- Hexagonal Head Bolt
8- Imbus Bolt	17- Hollow Shaft
9- Seal Cover	

3.10- HT...2.0S Types

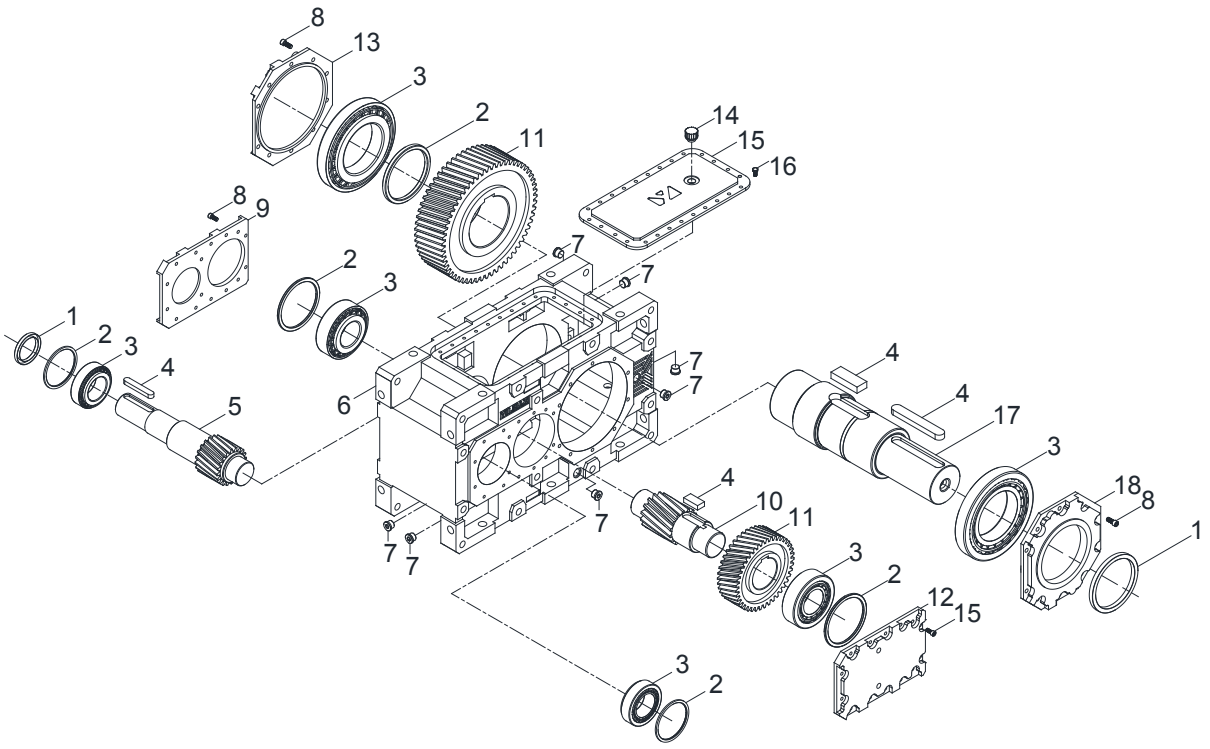


Standard HT...2.0S type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	10- Geared Shaft
2- Washer	11- Gear
3- Bearing	12- Side Cover
4- Key	13- Output Seal Cover
5- Input Shaft	14- Breather Plug
6- Housing	15- Top Cover
7- Oil Plug	16- Hexagonal Head Bolt
8- Imbus Bolt	17- Hollow Shaft
9- Seal Cover	18- Shrink Disc

3.11- HT...2.01 Types

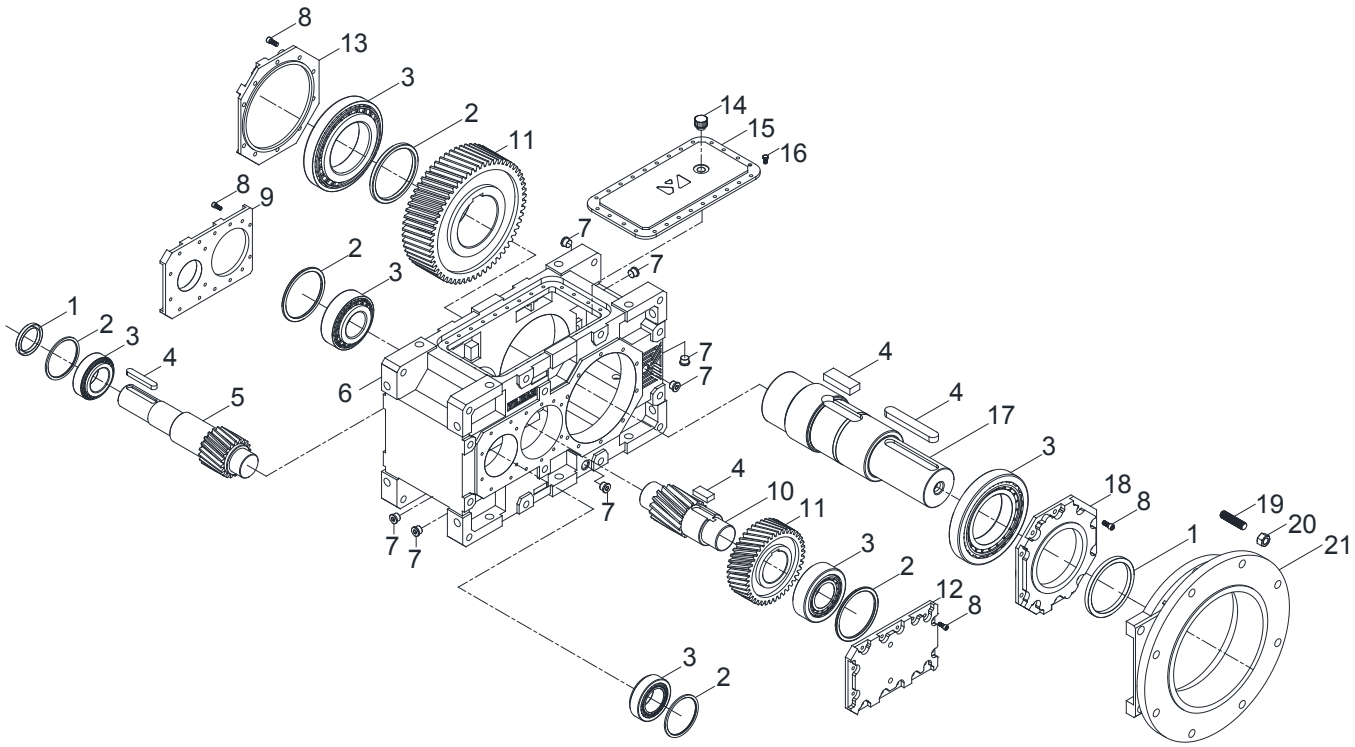


Standard HT...2.01 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	10- Geared Shaft
2- Washer	11- Gear
3- Bearing	12- Side Cover
4- Key	13- Output Side Cover
5- Input Shaft	14- Breather Plug
6- Housing	15- Top Cover
7- Oil Plug	16- Hexagonal Head Bolt
8- Imbus Bolt	17- Solid Shaft
9- Seal Cover	18- Shrink Disc

3.12- HT...2.02 Types

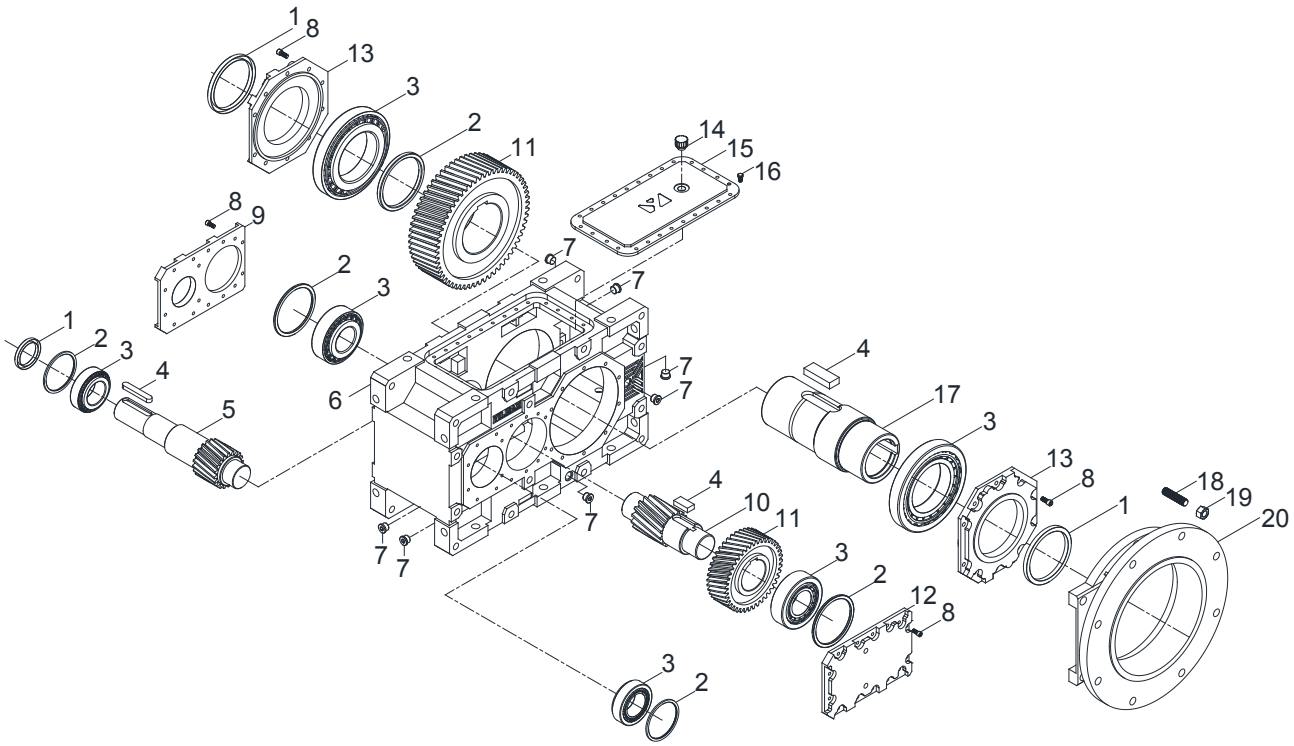


Standard HT...2.02 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Seal Cover	17- Solid Shaft
2- Washer	10- Geared Shaft	18- Output Seal Cover
3- Bearing	11- Gear	19- Screw Pin
4- Key	12- Side Cover	20- Nut
5- Input Shaft	13- Output Side Cover	21- Output Flange
6- Housing	14- Breather Plug	
7- Oil Plug	15- Top Cover	
8- Imbus Bolt	16- Hexagonal Head Bolt	

3.13- HT...2.03 Types

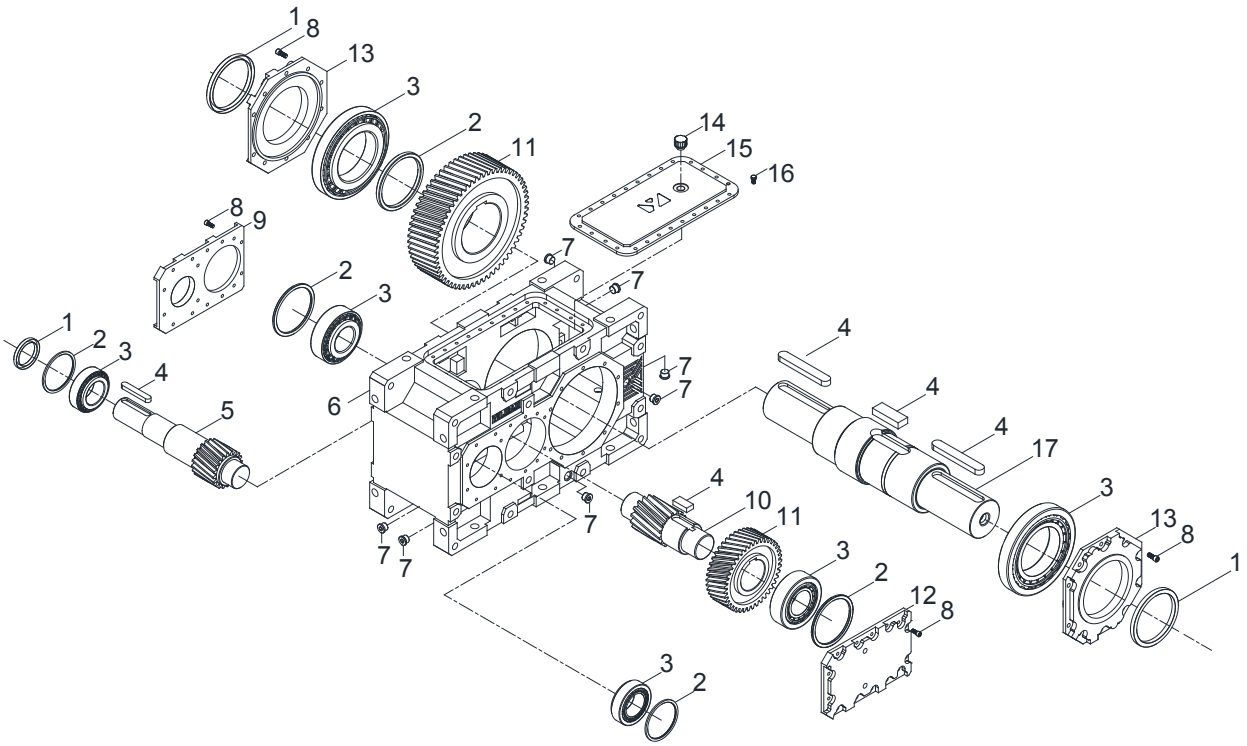


Standard HT...2.03 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Seal Cover	17- Hollow Shaft
2- Washer	10- Geared Shaft	18- Screw Pin
3- Bearing	11- Gear	19- Nut
4- Key	12- Side Cover	20- Output Flange
5- Input Shaft	13- Output Side Cover	
6- Housing	14- Breather Plug	
7- Oil Plug	15- Top Cover	
8- Imbus Bolt	16- Hexagonal Head Bolt	

3.14- HT...2.04 Types

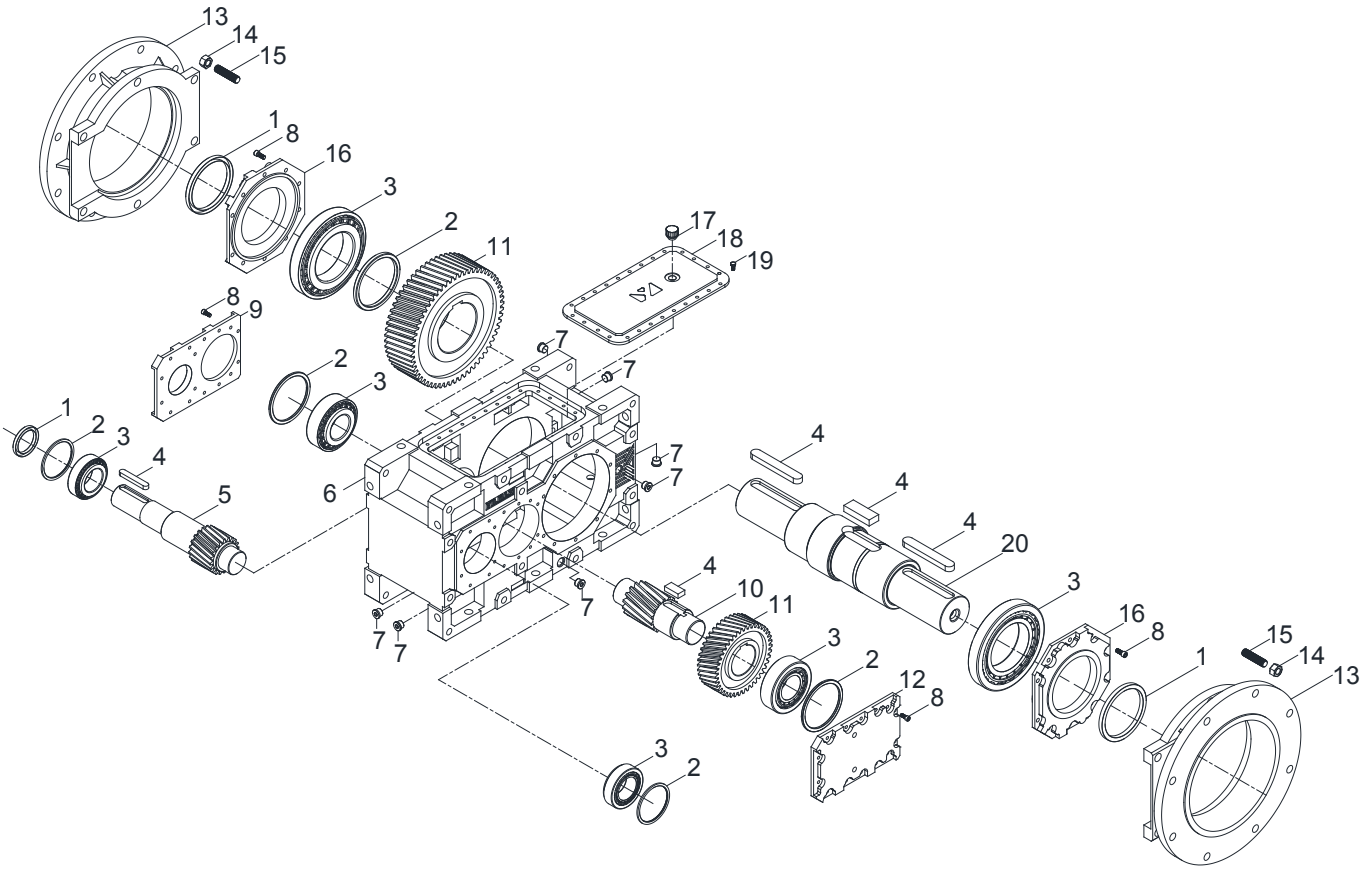


Standard HT...2.04 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	10- Geared Shaft
2- Washer	11- Gear
3- Bearing	12- Side Cover
4- Key	13- Output Seal Cover
5- Input Shaft	14- Breather Plug
6- Housing	15- Top Cover
7- Oil Plug	16- Hexagonal Head Bolt
8- Imbus Bolt	17- Solid Shaft
9- Seal Cover	

3.15- HT...2.05 Types

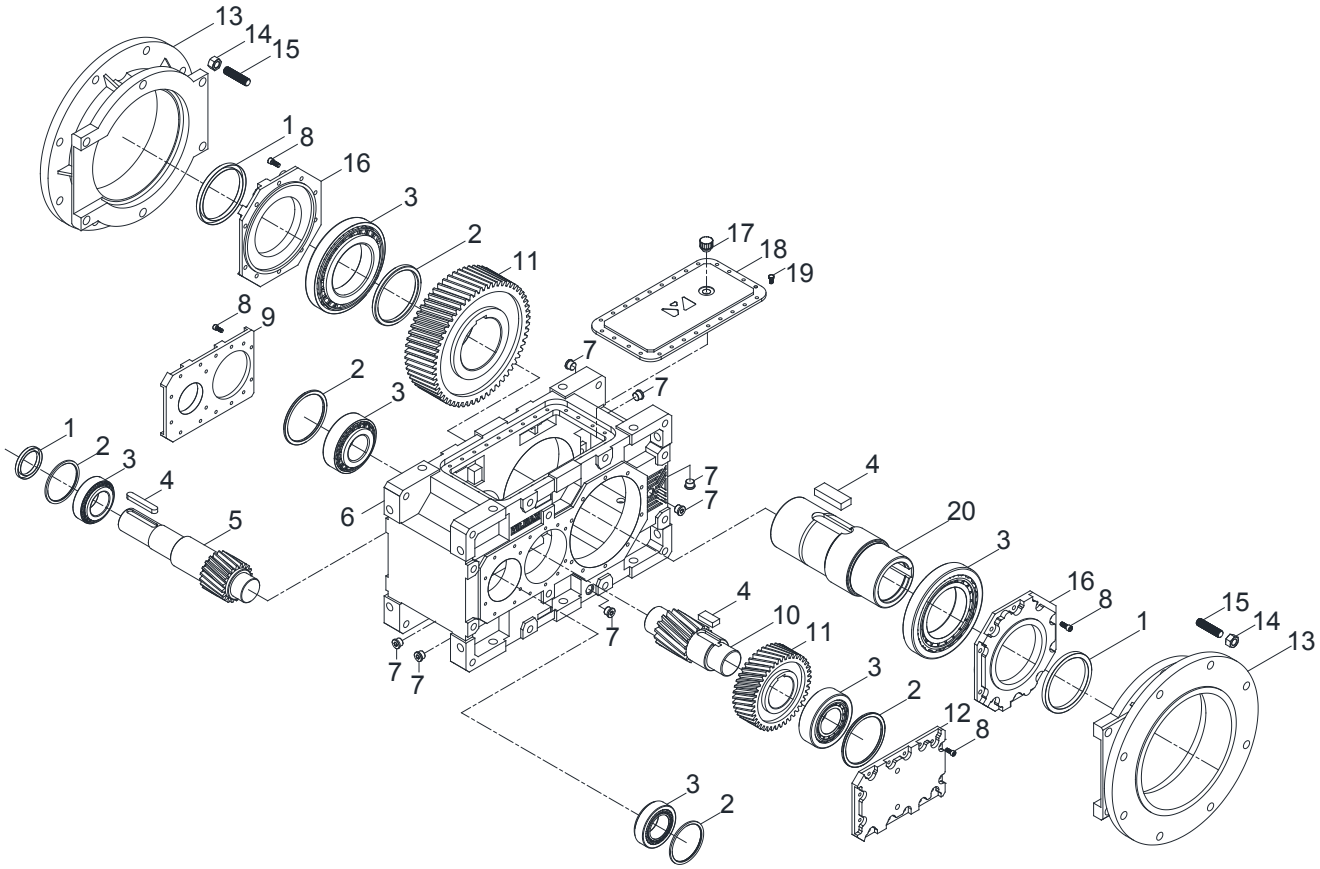


Standard HT...2.05 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Seal Cover	17- Breather Plug
2- Washer	10- Geared Shaft	18- Top Cover
3- Bearing	11- Gear	19- Hexagonal Head Bolt
4- Key	12- Side Cover	20- Solid Shaft
5- Input Shaft	13- Output Flange	
6- Housing	14- Nut	
7- Oil Plug	15- Screw Pin	
8- Imbus Bolt	16- Output Seal Cover	

3.16- HT...2.08 Types

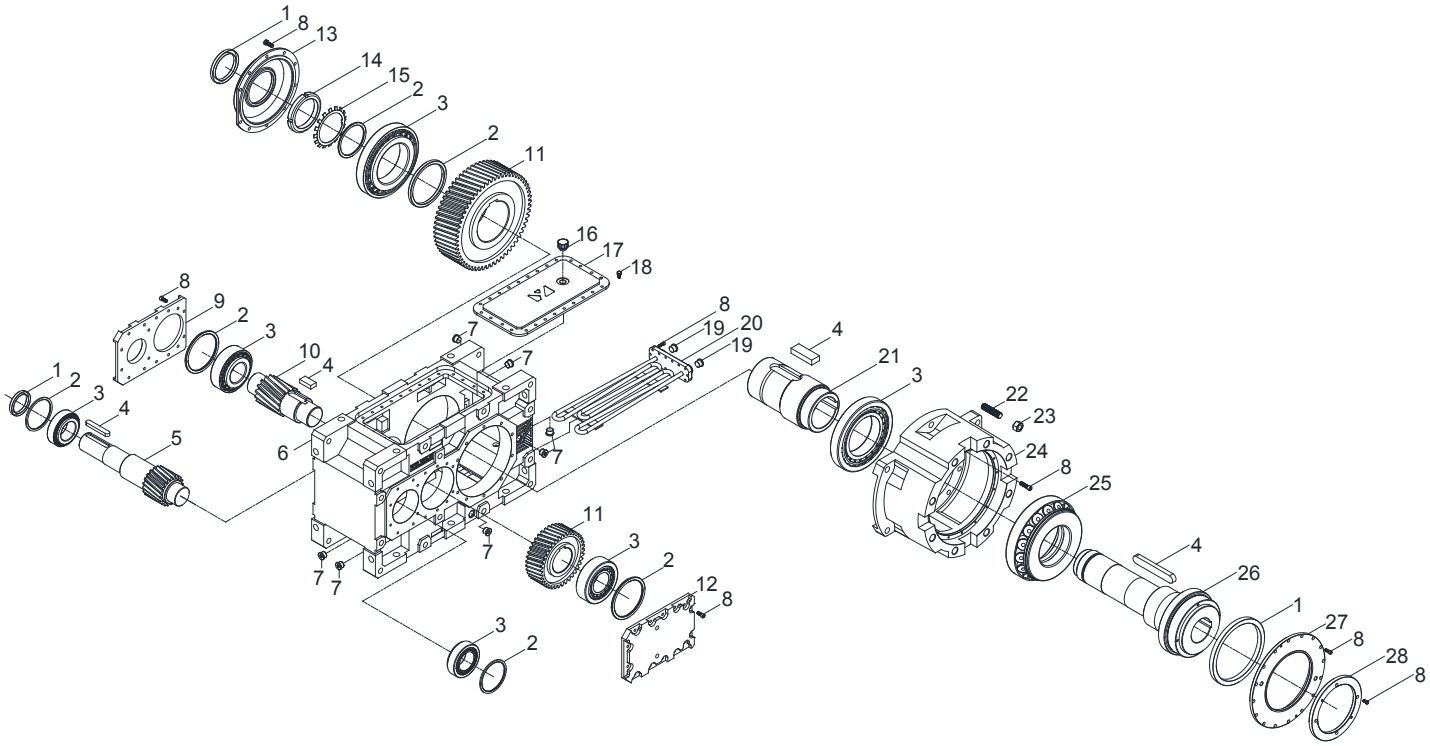


Standard HT...2.08 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Seal Cover	17- Breather Plug
2- Washer	10- Geared Shaft	18- Top Cover
3- Bearing	11- Gear	19- Hexagonal Head Bolt
4- Key	12- Side Cover	20- Hollow Shaft
5- Input Shaft	13- Output Flange	
6- Housing	14- Nut	
7- Oil Plug	15- Screw Pin	
8- Imbus Bolt	16- Output Seal Cover	

3.17- HTE..2.0E and HTE..2.1E Types

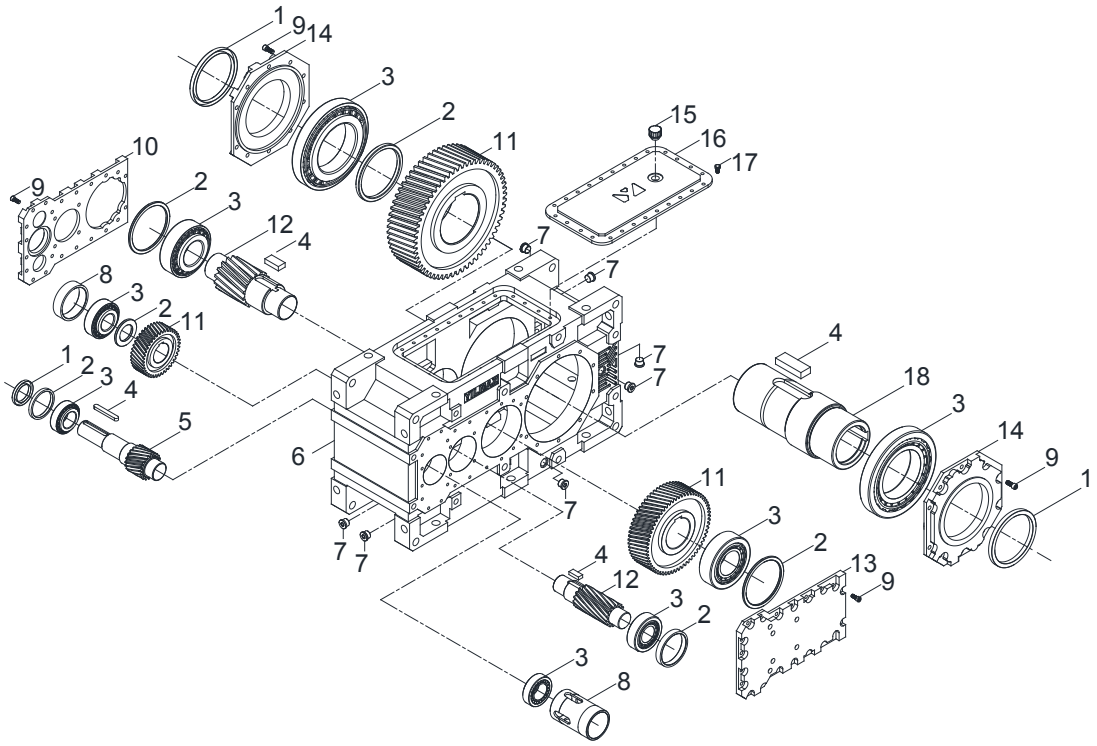


Standard HTE..2.0E and HTE..2.1E type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Seal Cover	17- Top Cover	25- Spherical Roller Thrust Bearing
2- Washer	10- Geared Shaft	18- Hexagonal Head Bolt	26- Extruder Output Shaft
3- Bearing	11- Gear	19- Plug	27- Extruder Seal Cover
4- Key	12- Side Cover	20- Cooling Coil	28- Cover
5- Input Shaft	13- Output Seal Cover	21- Hollow Shaft	
6- Housing	14- Locking Nut	22- Screw Pin	
7- Oil Plug	15- Locking Plate	23- Nut	
8- Imbus Bolt	16- Breather Plug	24- Extruder Housing	

3.18- HT...3.00 Types

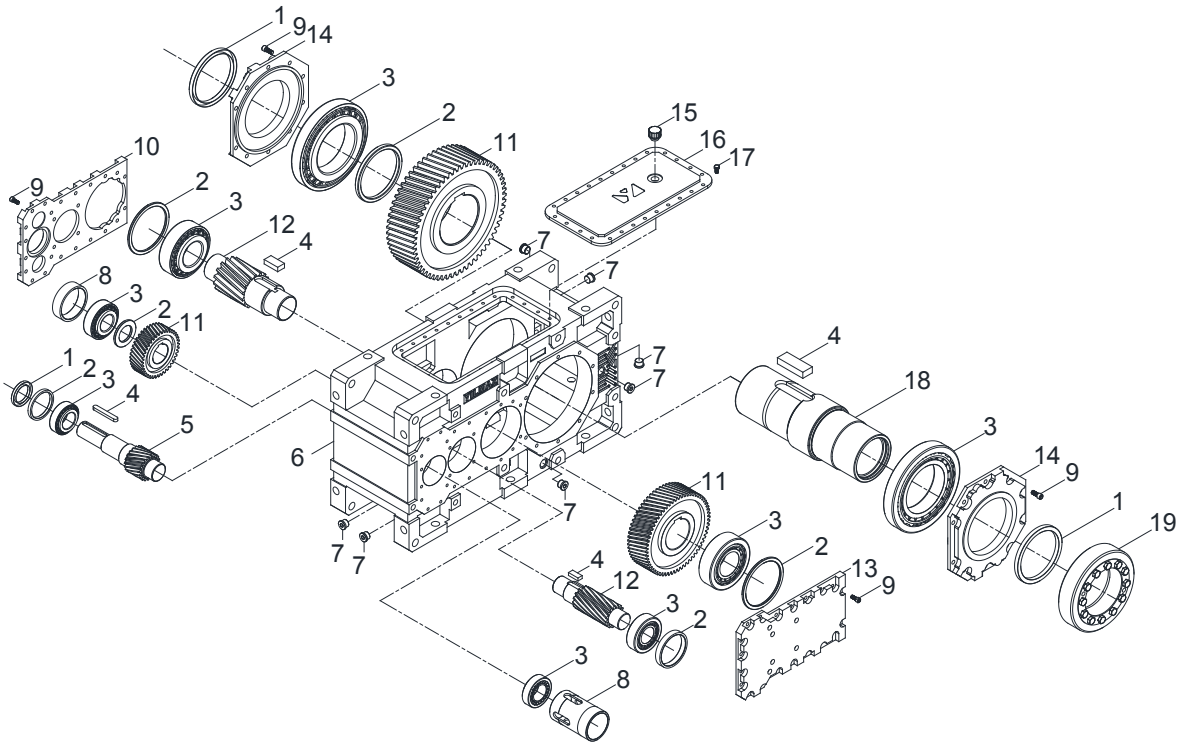


Standard HT...3.00 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	10- Seal Cover
2- Washer	11- Gear
3- Bearing	12- Geared Shaft
4- Key	13- Side Cover
5- Input Shaft	14- Output Seal Cover
6- Housing	15- Breather Plug
7- Oil Plug	16- Top Cover
8- Spacer	17- Hexagonal Head Bolt
9- Imbus Bolt	18- Hollow Shaft

3.19- HT...3.0S Types

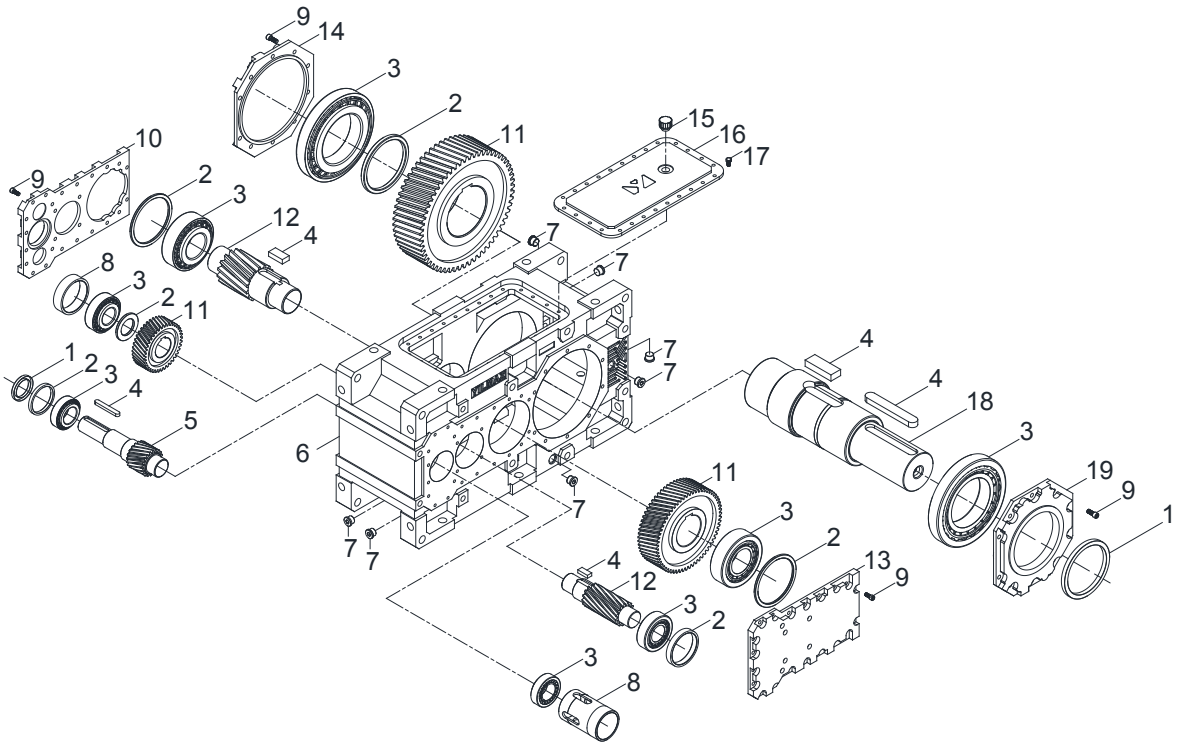


Standard HT...3.0S type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Imbus Bolt	17- Hexagonal Head Bolt
2- Washer	10- Seal Cover	18- Hollow Shaft
3- Bearing	11- Gear	19- Shrink Disc
4- Key	12- Geared Shaft	
5- Input Shaft	13- Side Cover	
6- Housing	14- Output Seal Cover	
7- Oil Plug	15- Breather Plug	
8- Spacer	16- Top Cover	

3.20- HT...3.01 Types

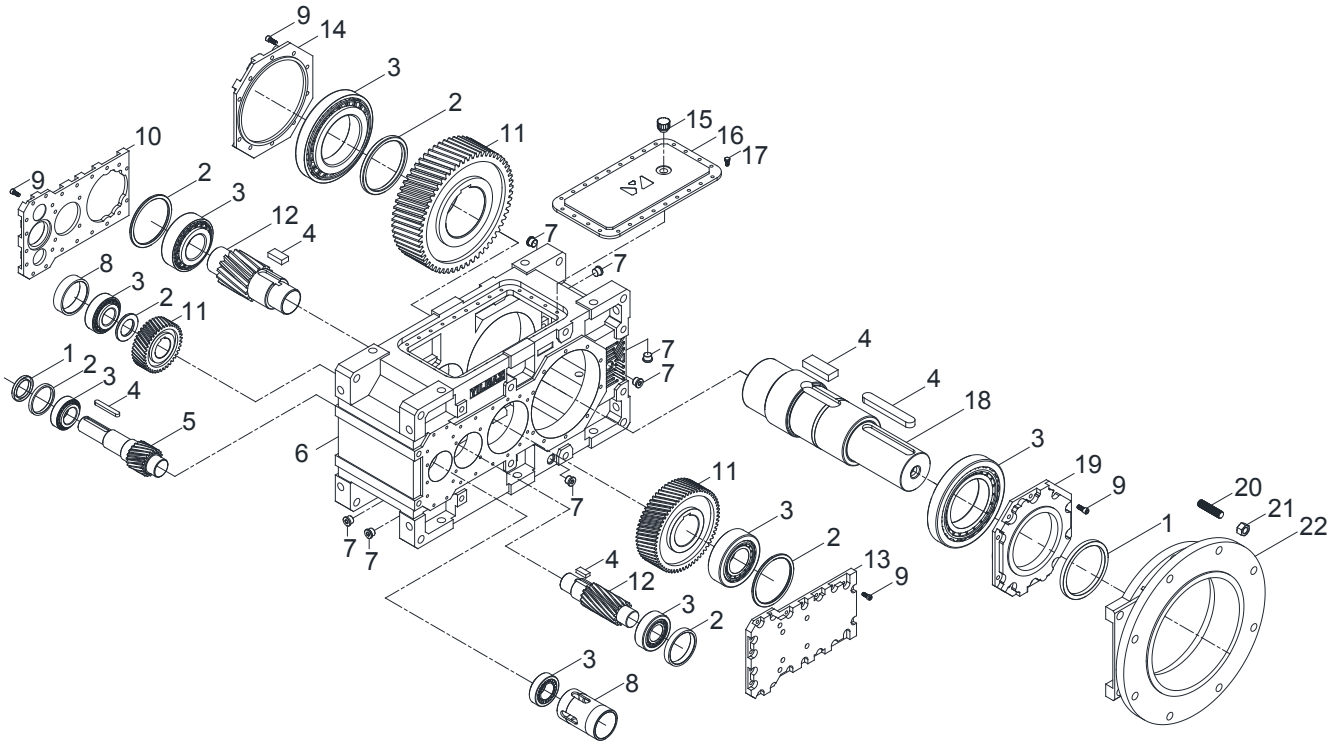


Standard HT...3.01 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Imbus Bolt	17- Hexagonal Head Bolt
2- Washer	10- Seal Cover	18- Solid Shaft
3- Bearing	11- Gear	19- Output Seal Cover
4- Key	12- Geared Shaft	
5- Input Shaft	13- Side Cover	
6- Housing	14- Output Side Cover	
7- Oil Plug	15- Breather Plug	
8- Spacer	16- Top Cover	

3.21- HT...3.02 Types

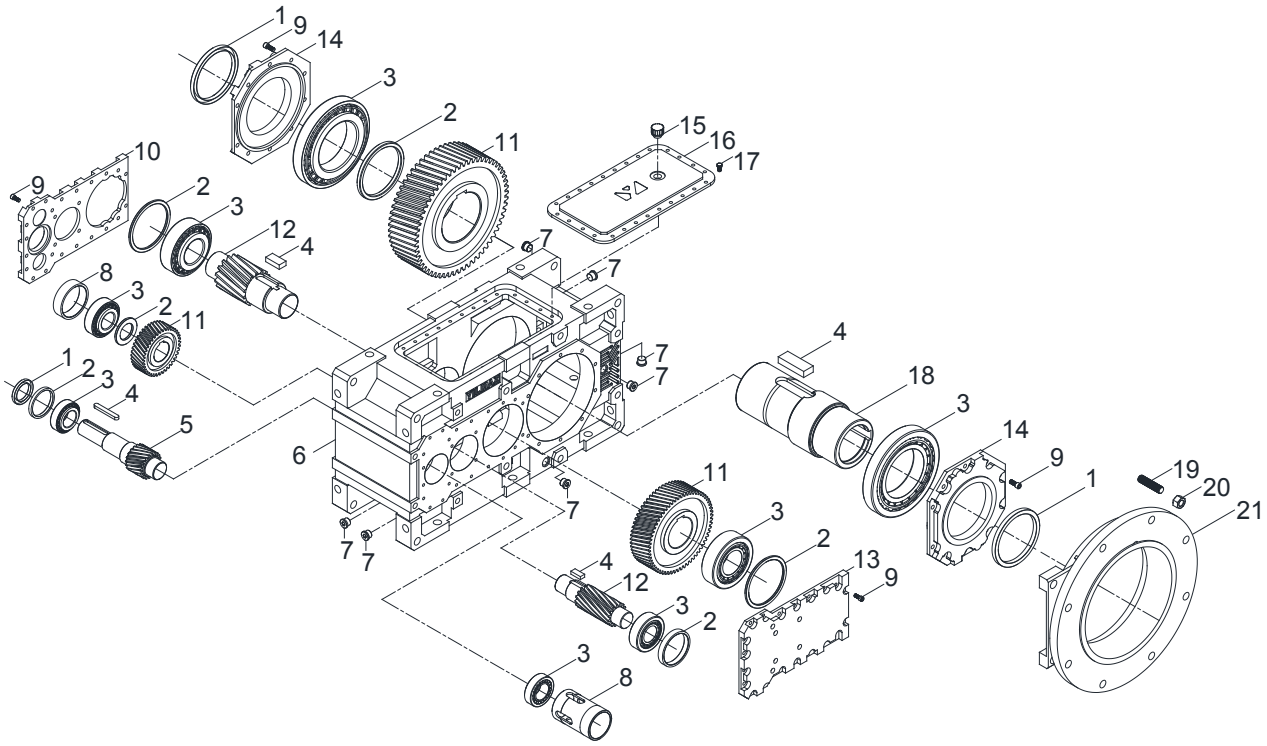


Standard HT...3.02 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Imbus Bolt	17- Hexagonal Head Bolt
2- Washer	10- Seal Cover	18- Solid Shaft
3- Bearing	11- Gear	19- Output Seal Cover
4- Key	12- Geared Shaft	20- Screw Pin
5- Input Shaft	13- Side Cover	21- Nut
6- Housing	14- Output Side Cover	22- Output Flange
7- Oil Plug	15- Breather Plug	
8- Spacer	16- Top Cover	

3.22- HT...3.03 Types

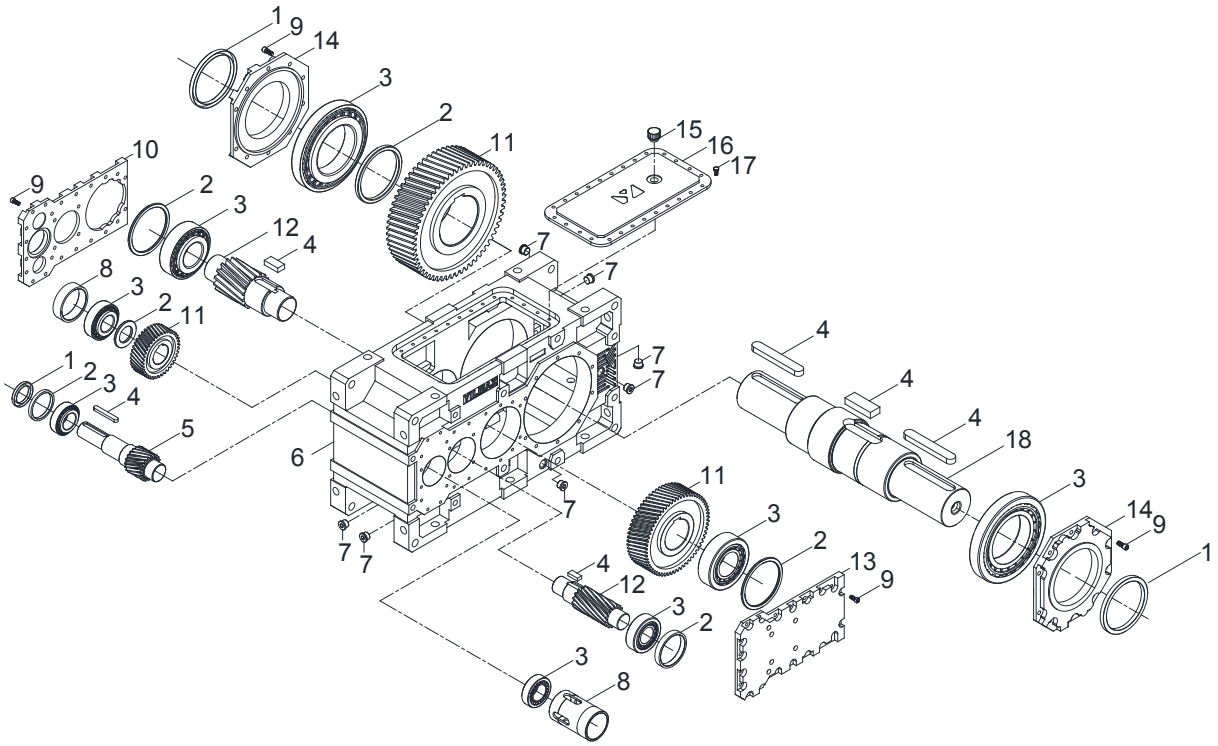


Standard HT...3.03 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Imbus Bolt	17- Hexagonal Head Bolt
2- Washer	10- Seal Cover	18- Hollow Shaft
3- Bearing	11- Gear	19- Screw Pin
4- Key	12- Geared Shaft	20- Nut
5- Input Shaft	13- Side Cover	21- Output Flange
6- Housing	14- Output Seal Cover	
7- Oil Plug	15- Breather Plug	
8- Spacer	16- Top Cover	

3.23- HT...3.04 Types

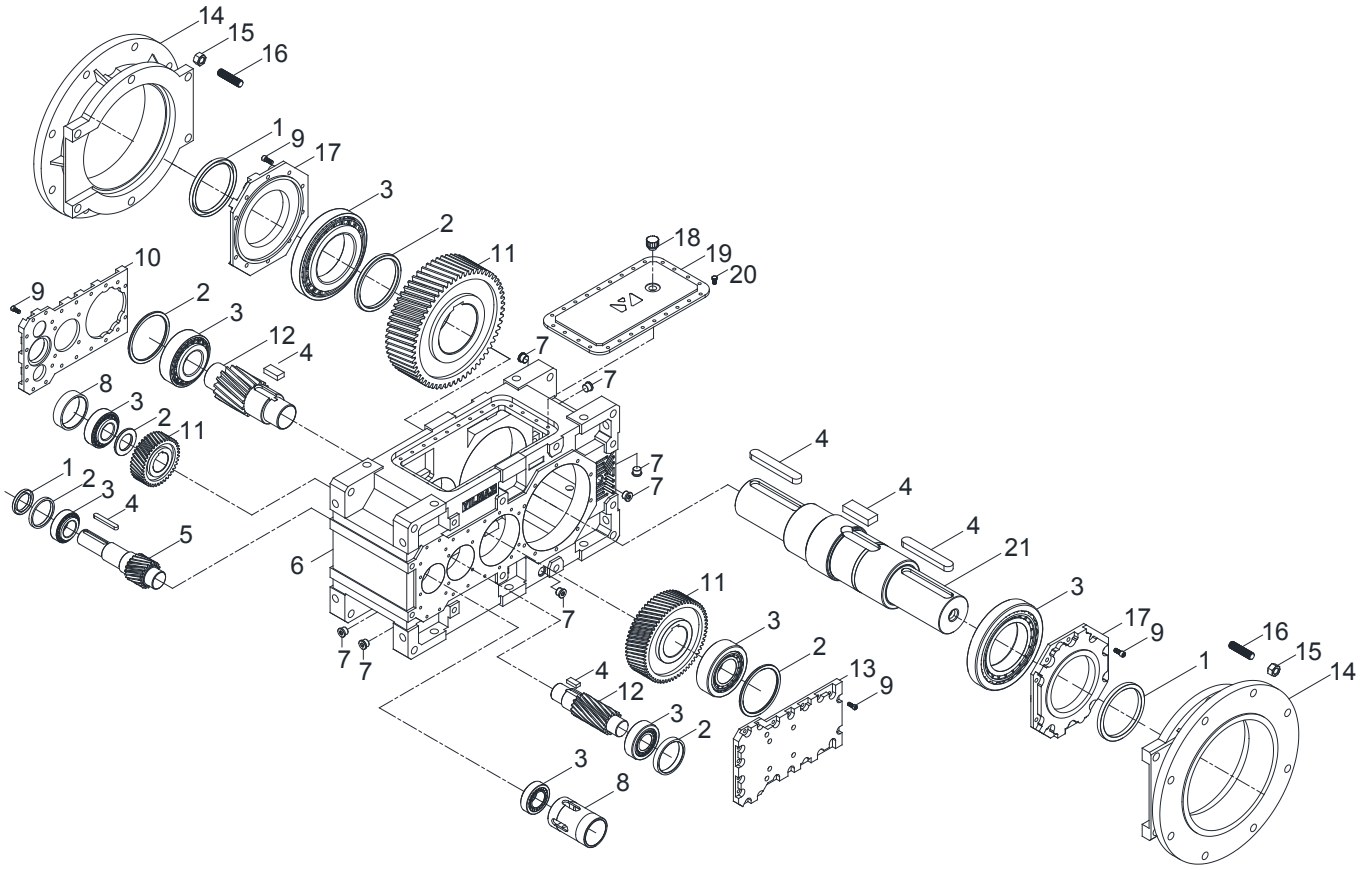


Standard HT...3.04 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	10- Seal Cover
2- Washer	11- Gear
3- Bearing	12- Geared Shaft
4- Key	13- Side Cover
5- Input Shaft	14- Output Seal Cover
6- Housing	15- Breather Plug
7- Oil Plug	16- Top Cover
8- Spacer	17- Hexagonal Head Bolt
9- Imbus Bolt	18- Solid Shaft

3.24- HT...3.05 Types

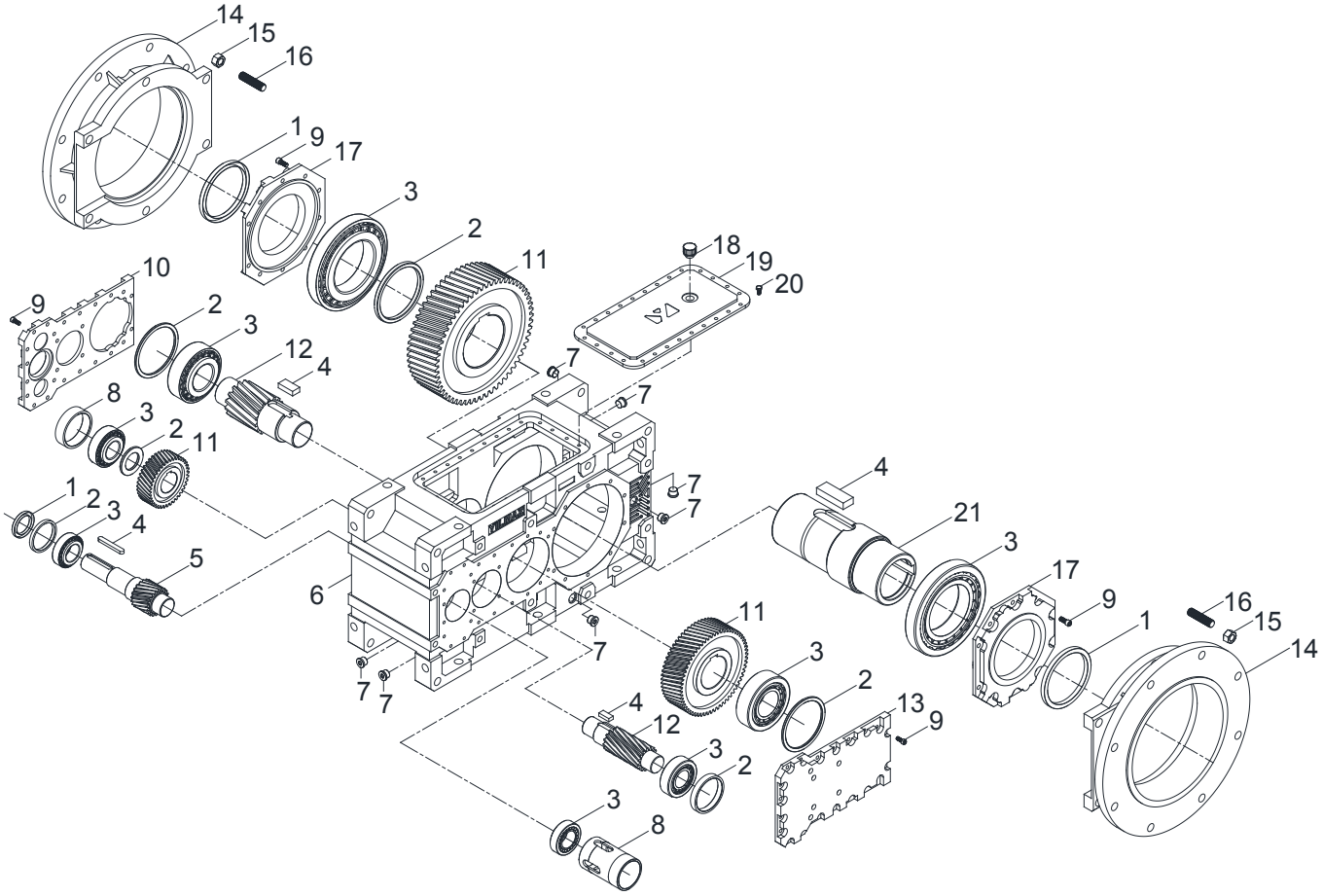


Standard HT...3.05 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Imbus Bolt	17- Output Seal Cover
2- Washer	10- Seal Cover	18- Breather Plug
3- Bearing	11- Gear	19- Top Cover
4- Key	12- Geared Shaft	20- Hexagonal Head Bolt
5- Input Shaft	13- Side Cover	21- Solid Shaft
6- Housing	14- Output Flange	
7- Oil Plug	15- Nut	
8- Spacer	16- Screw Pin	

3.25- HT...3.08 Types

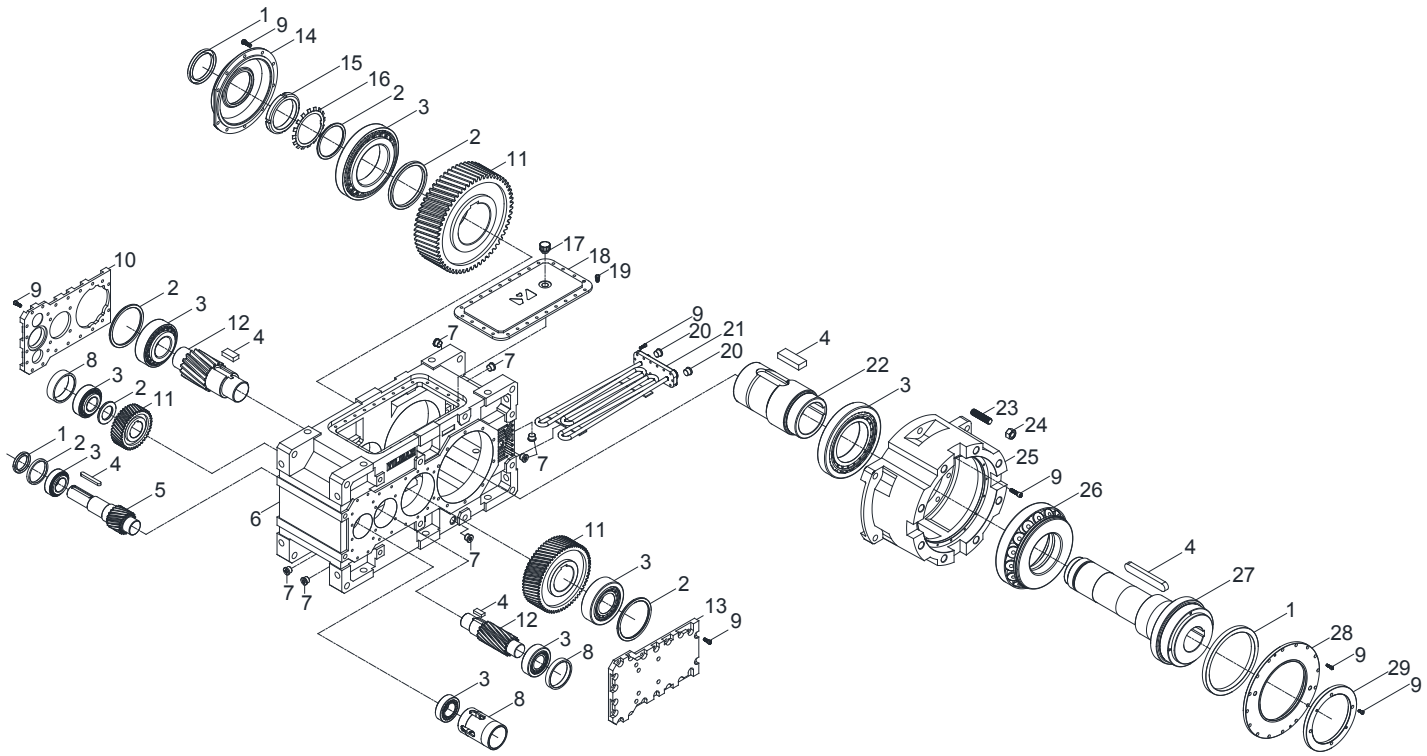


Standard HT...3.08 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Imbus Bolt	17- Output Seal Cover
2- Washer	10- Seal Cover	18- Breather Plug
3- Bearing	11- Gear	19- Top Cover
4- Key	12- Geared Shaft	20- Hexagonal Head Bolt
5- Input Shaft	13- Side Cover	21- Hollow Shaft
6- Housing	14- Output Flange	
7- Oil Plug	15- Nut	
8- Spacer	16- Screw Pin	

3.26- HTE..3.0E and HTE..3.1E Types

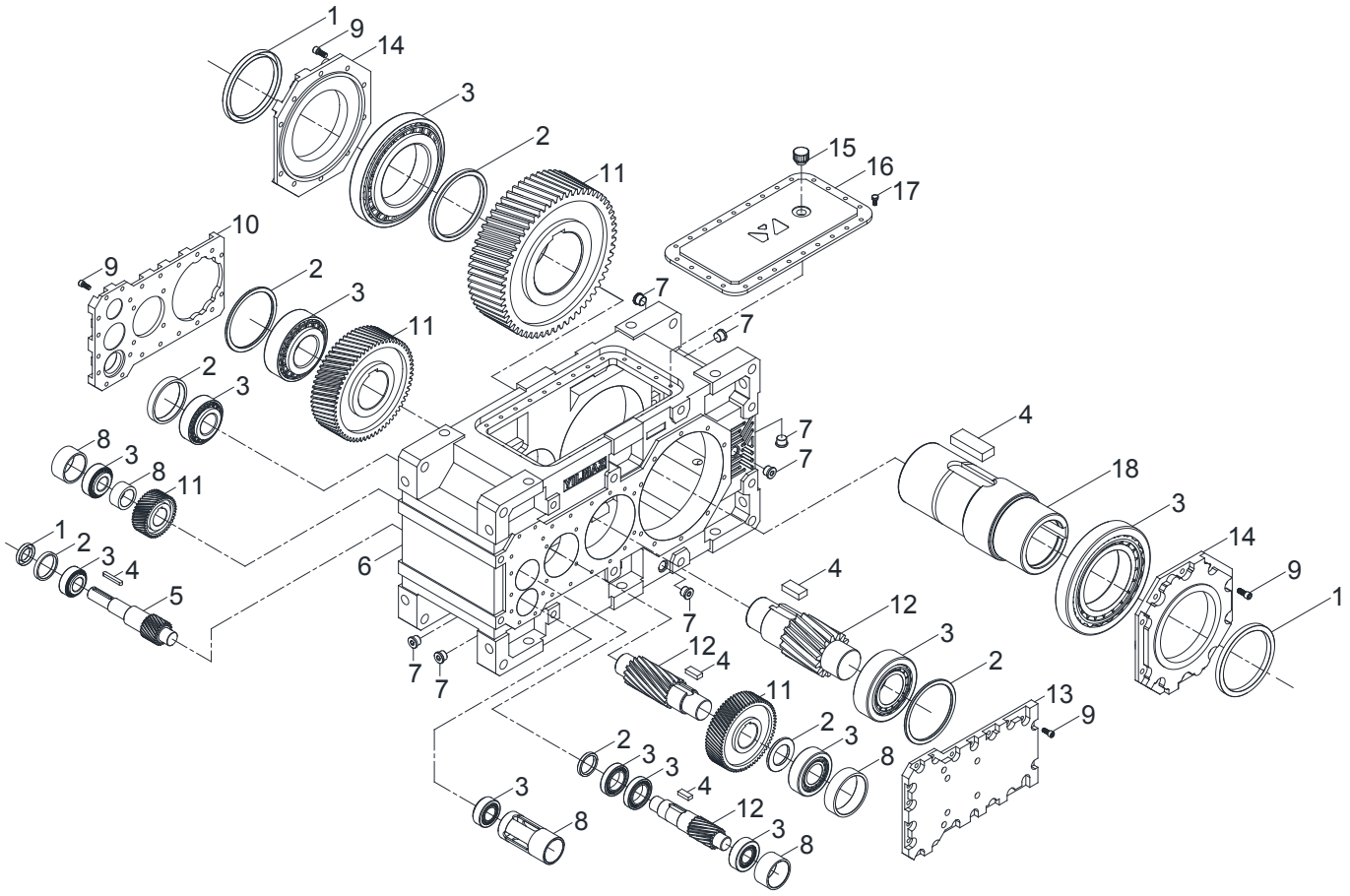


Standard HTE..3.0E and HTE..3.1E type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Imbus Bolt	17- Breather Plug	25- Extruder Housing
2- Washer	10- Seal Cover	18- Top Cover	26- Spherical Roller Thrust Bearing
3- Bearing	11- Gear	19- Hexagonal Head Bolt	27- Extruder Output Shaft
4- Key	12- Geared Shaft	20- Plug	28- Extruder Seal Cover
5- Input Shaft	13- Side Cover	21- Cooling Coil	29- Cover
6- Housing	14- Output Seal Cover	22- Hollow Shaft	
7- Oil Plug	15- Locking Nut	23- Screw Pin	
8- Spacer	16- Locking Plate	24- Nut	

3.27- HT...4.00 Types

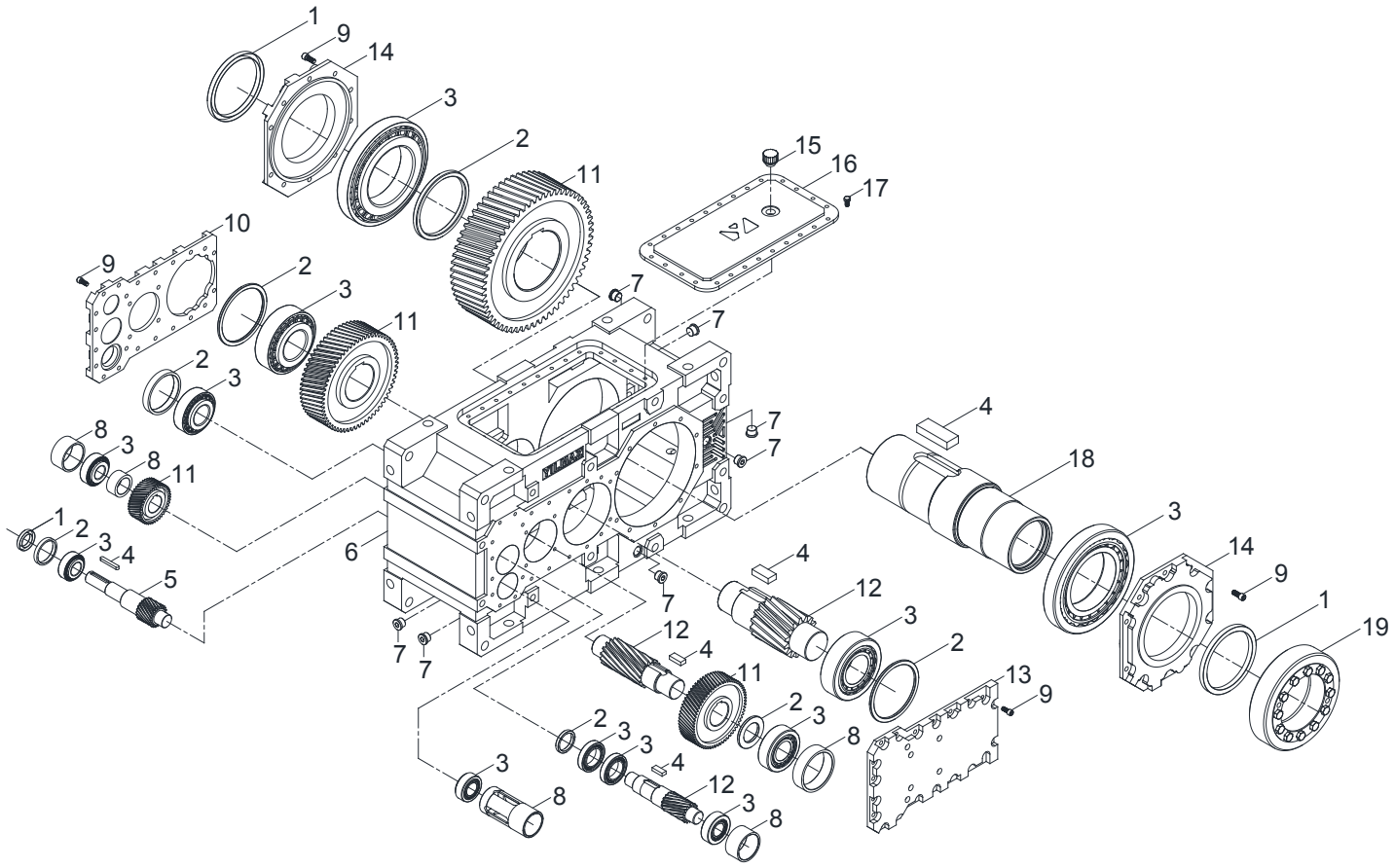


Standard HT...4.00 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	10- Seal Cover
2- Washer	11- Gear
3- Bearing	12- Geared Shaft
4- Key	13- Side Cover
5- Input Shaft	14- Output Seal Cover
6- Housing	15- Breather Plug
7- Oil Plug	16- Top Cover
8- Spacer	17- Hexagonal Head Bolt
9- Imbus Bolt	18- Hollow Shaft

3.28- HT...4.0S Types

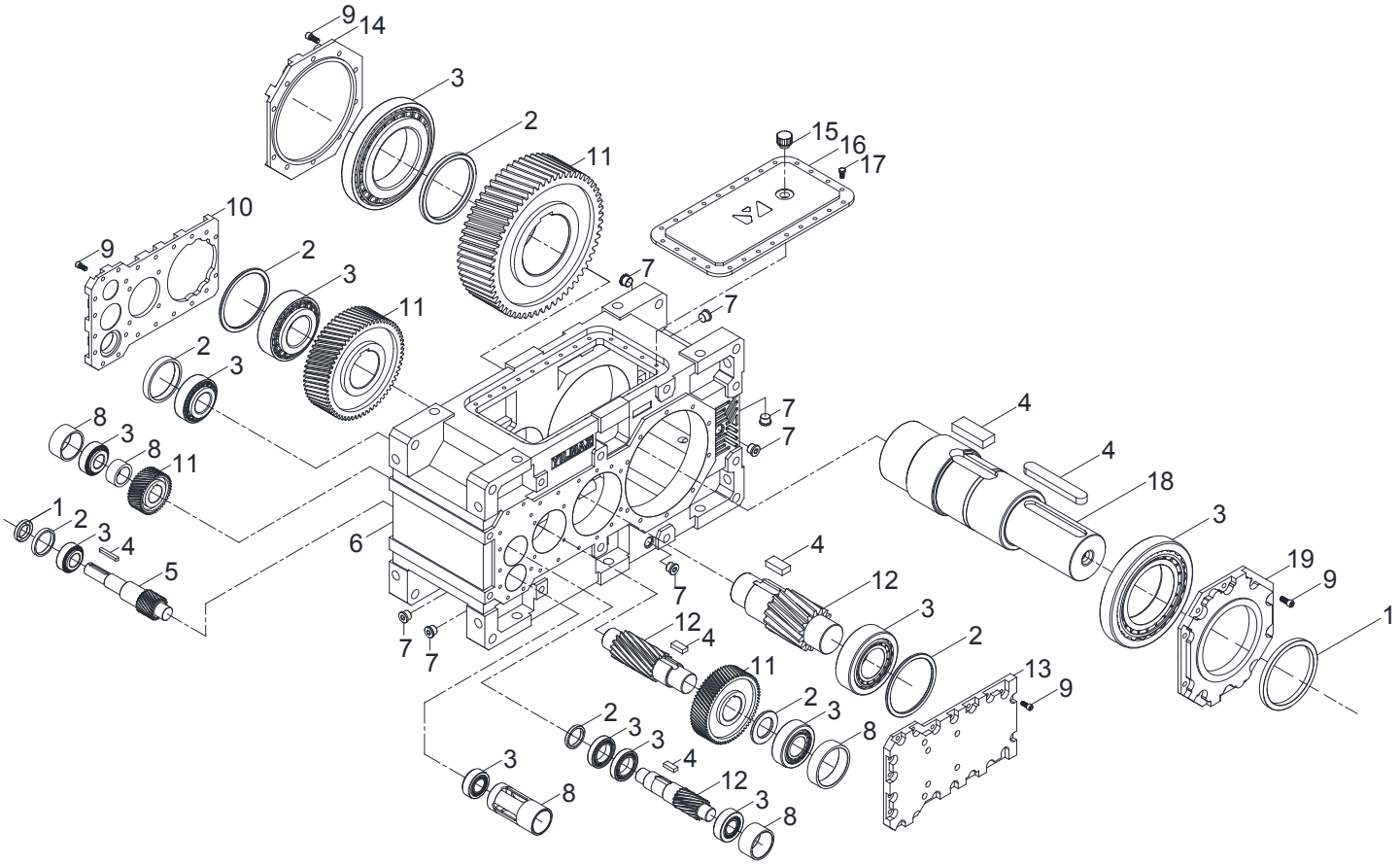


Standard HT...4.0S type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Imbus Bolt	17- Hexagonal Head Bolt
2- Washer	10- Seal Cover	18- Hollow Shaft
3- Bearing	11- Gear	19- Shrink Disc
4- Key	12- Geared Shaft	
5- Input Shaft	13- Side Cover	
6- Housing	14- Output Seal Cover	
7- Oil Plug	15- Breather Plug	
8- Spacer	16- Top Cover	

3.29- HT...4.01 Types

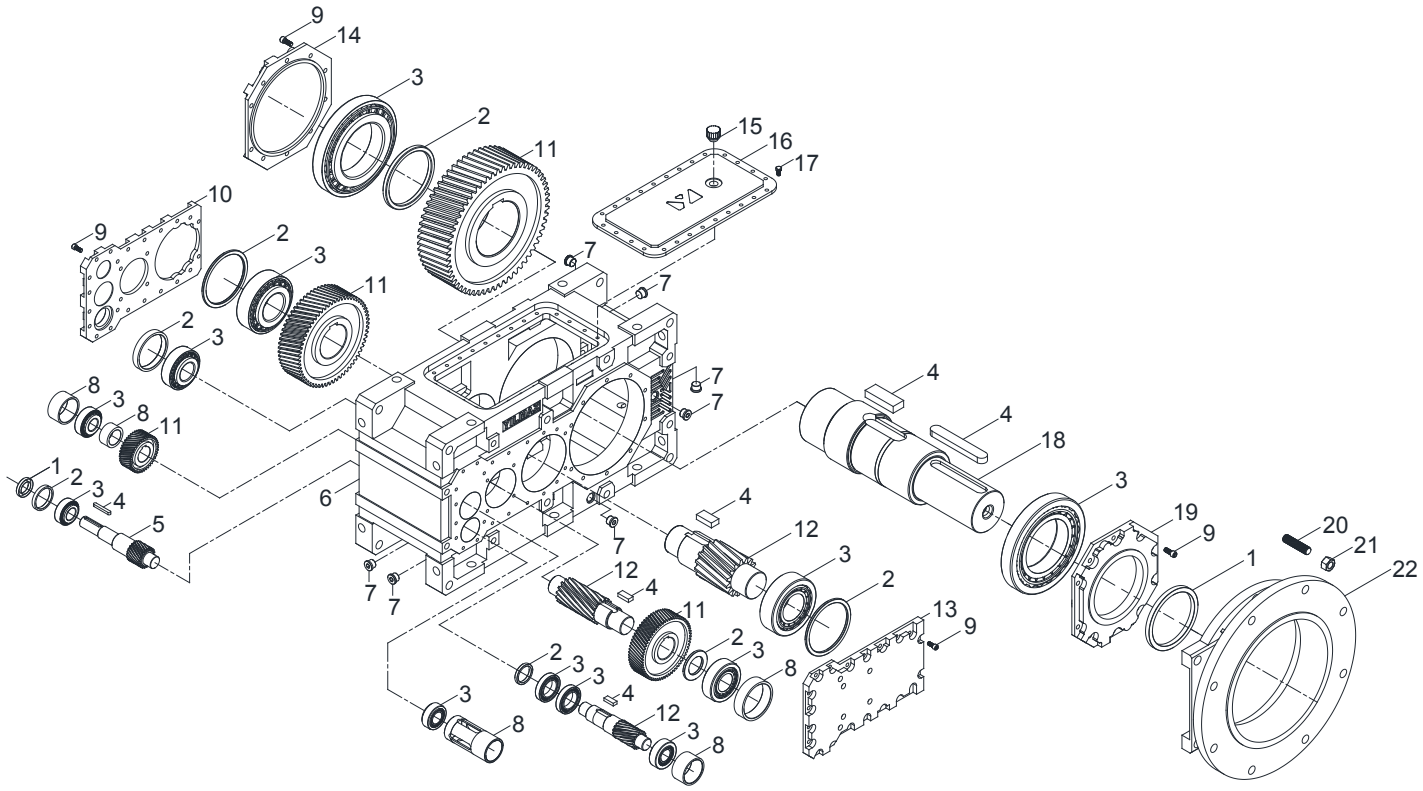


Standard HT...4.01 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Imbus Bolt	17- Hexagonal Head Bolt
2- Washer	10- Seal Cover	18- Solid Shaft
3- Bearing	11- Gear	19- Output Seal Cover
4- Key	12- Geared Shaft	
5- Input Shaft	13- Side Cover	
6- Housing	14- Output Side Cover	
7- Oil Plug	15- Breather Plug	
8- Spacer	16- Top Cover	

3.30- HT...4.02 Types

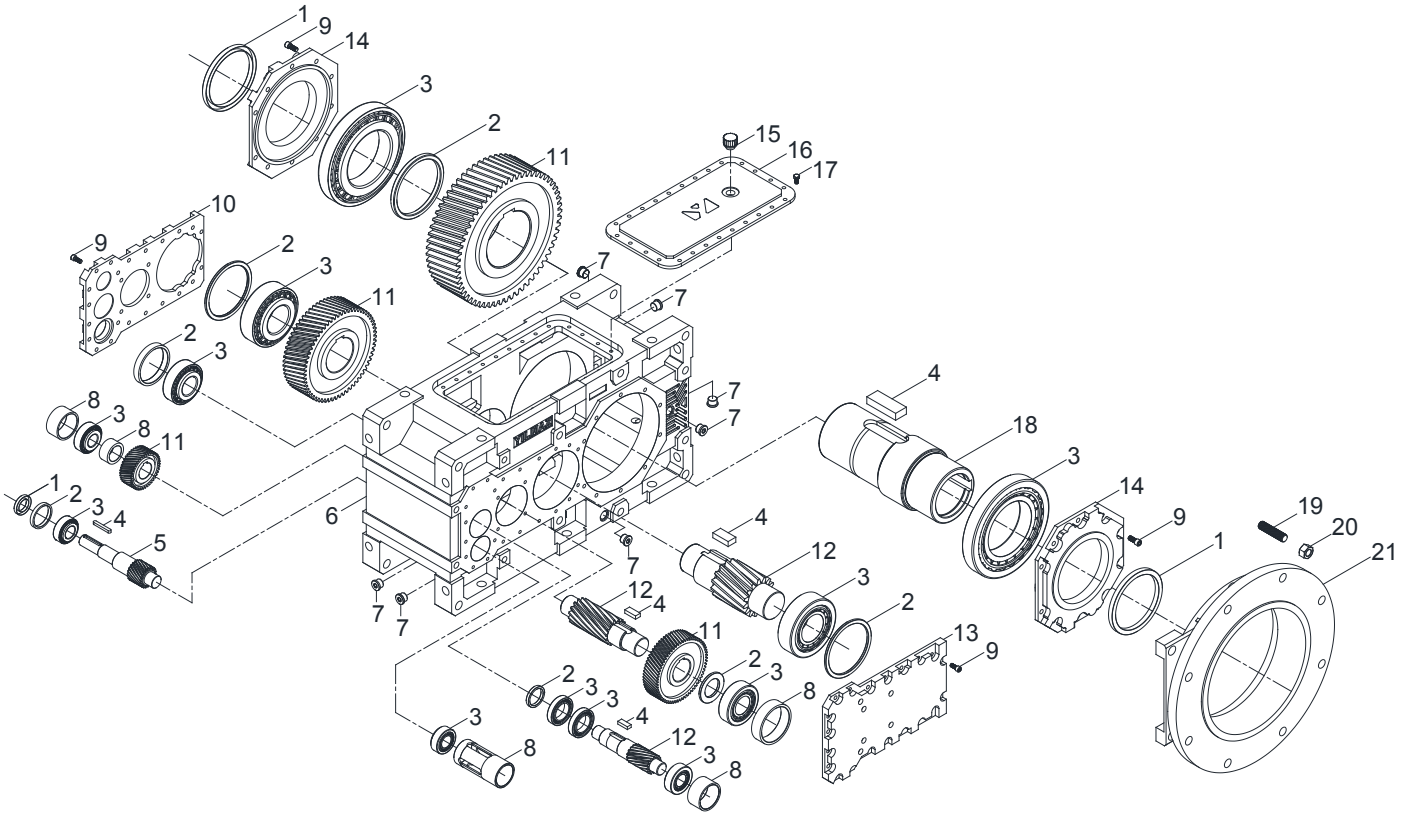


Standard HT...4.02 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Imbus Bolt	17- Hexagonal Head Bolt
2- Washer	10- Seal Cover	18- Solid Shaft
3- Bearing	11- Gear	19- Output Seal Cover
4- Key	12- Geared Shaft	20- Screw Pin
5- Input Shaft	13- Side Cover	21- Nut
6- Housing	14- Output Side Cover	22- Output Flange
7- Oil Plug	15- Breather Plug	
8- Spacer	16- Top Cover	

3.31- HT...4.03 Types

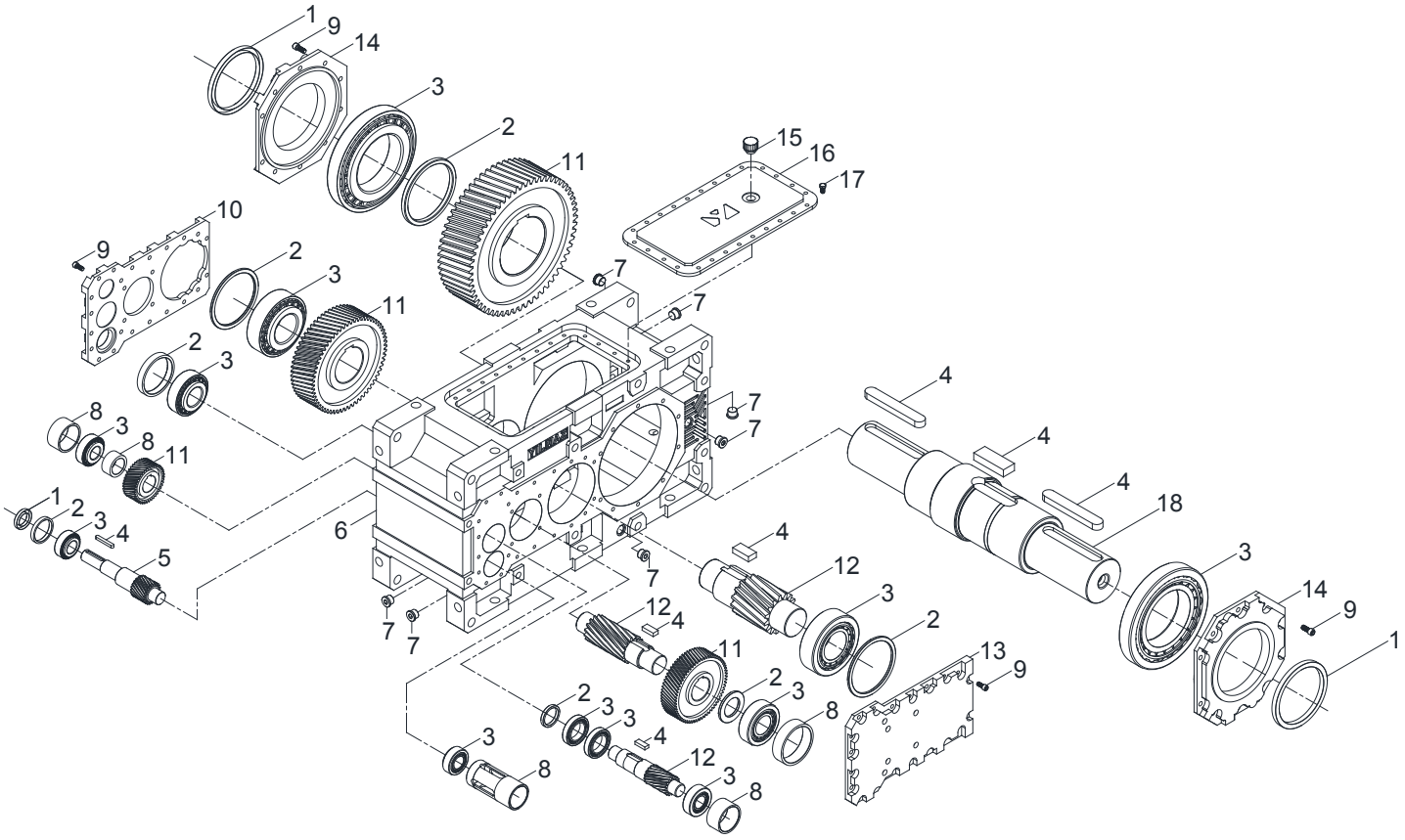


Standard HT...4.03 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Imbus Bolt	17- Hexagonal Head Bolt
2- Washer	10- Seal Cover	18- Hollow Shaft
3- Bearing	11- Gear	19- Screw Pin
4- Key	12- Geared Shaft	20- Nut
5- Input Shaft	13- Side Cover	21- Output Flange
6- Housing	14- Output Seal Cover	
7- Oil Plug	15- Breather Plug	
8- Spacer	16- Top Cover	

3.32- HT...4.04 Types

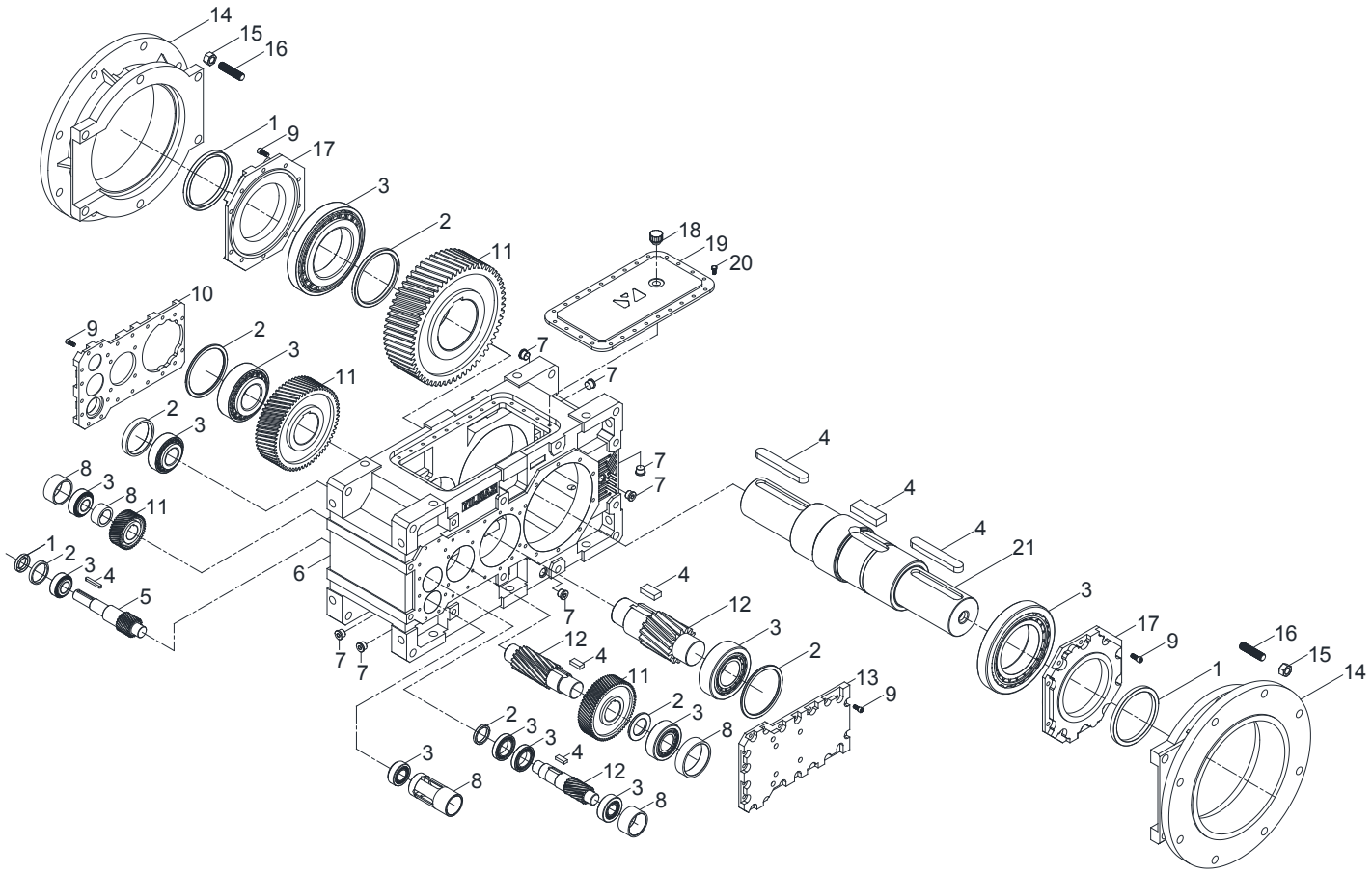


Standard HT...4.04 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	10- Seal Cover
2- Washer	11- Gear
3- Bearing	12- Geared Shaft
4- Key	13- Side Cover
5- Input Shaft	14- Output Seal Cover
6- Housing	15- Breather Plug
7- Oil Plug	16- Top Cover
8- Spacer	17- Hexagonal Head Bolt
9- Imbus Bolt	18- Solid Shaft

3.33- HT...4.05 Types

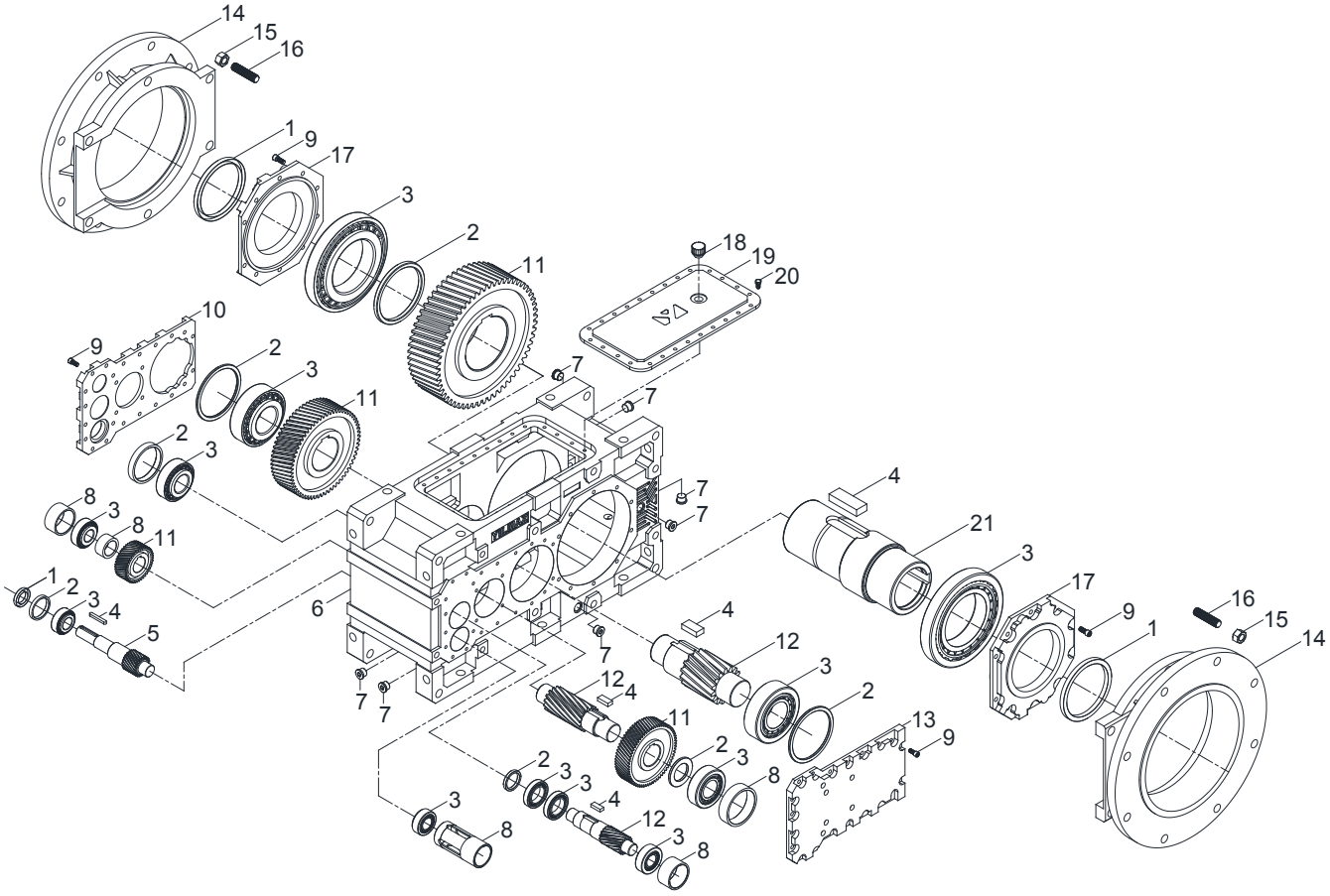


Standard HT...4.05 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Imbus Bolt	17- Output Seal Cover
2- Washer	10- Seal Cover	18- Breather Plug
3- Bearing	11- Gear	19- Top Cover
4- Key	12- Geared Shaft	20- Hexagonal Head Bolt
5- Input Shaft	13- Side Cover	21- Solid Shaft
6- Housing	14- Output Flange	
7- Oil Plug	15- Nut	
8- Spacer	16- Screw Pin	

3.34- HT...4.08 Types

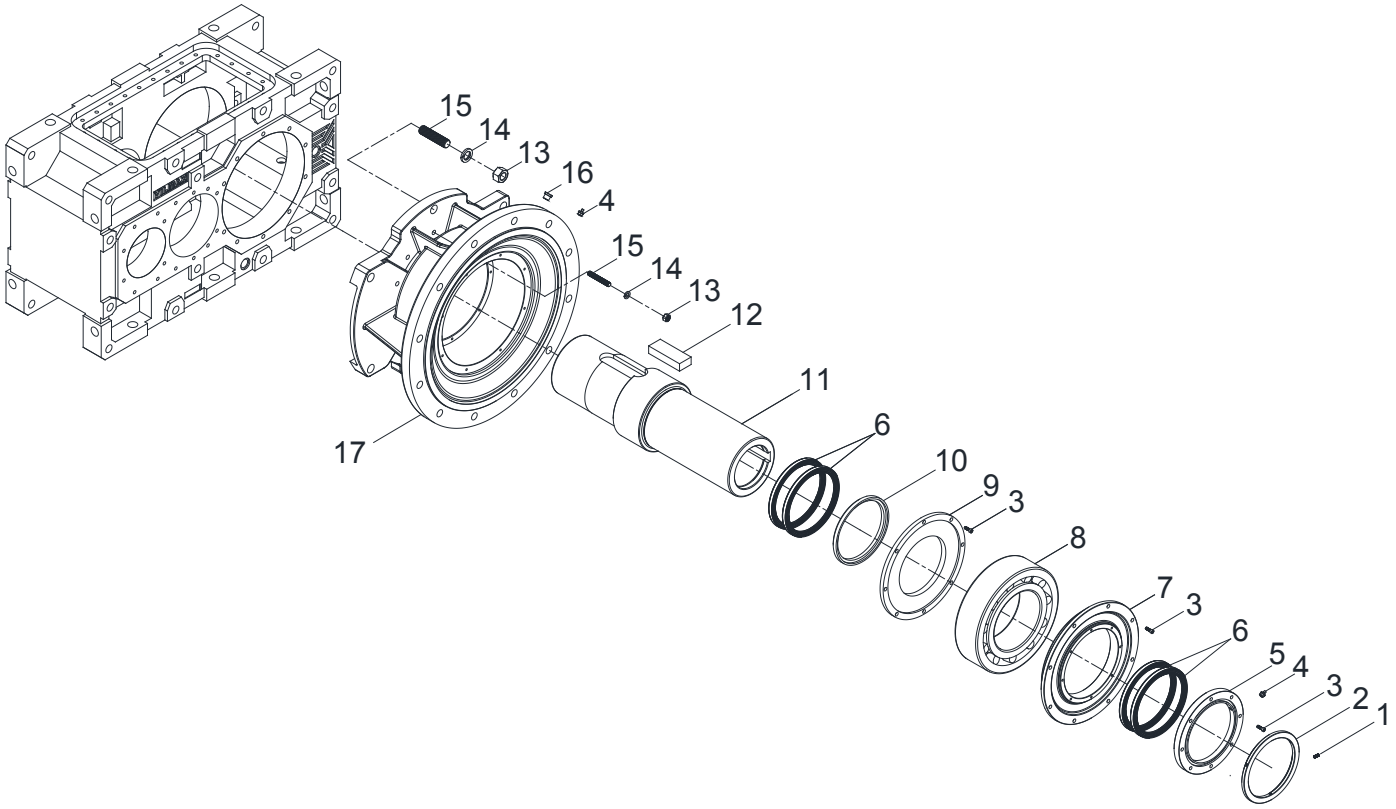


Standard HT...4.08 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Seal	9- Imbus Bolt	17- Output Seal Cover
2- Washer	10- Seal Cover	18- Breather Plug
3- Bearing	11- Gear	19- Top Cover
4- Key	12- Geared Shaft	20- Hexagonal Head Bolt
5- Input Shaft	13- Side Cover	21- Hollow Shaft
6- Housing	14- Output Flange	
7- Oil Plug	15- Nut	
8- Spacer	16- Screw Pin	

3.35- H.B...0A Types

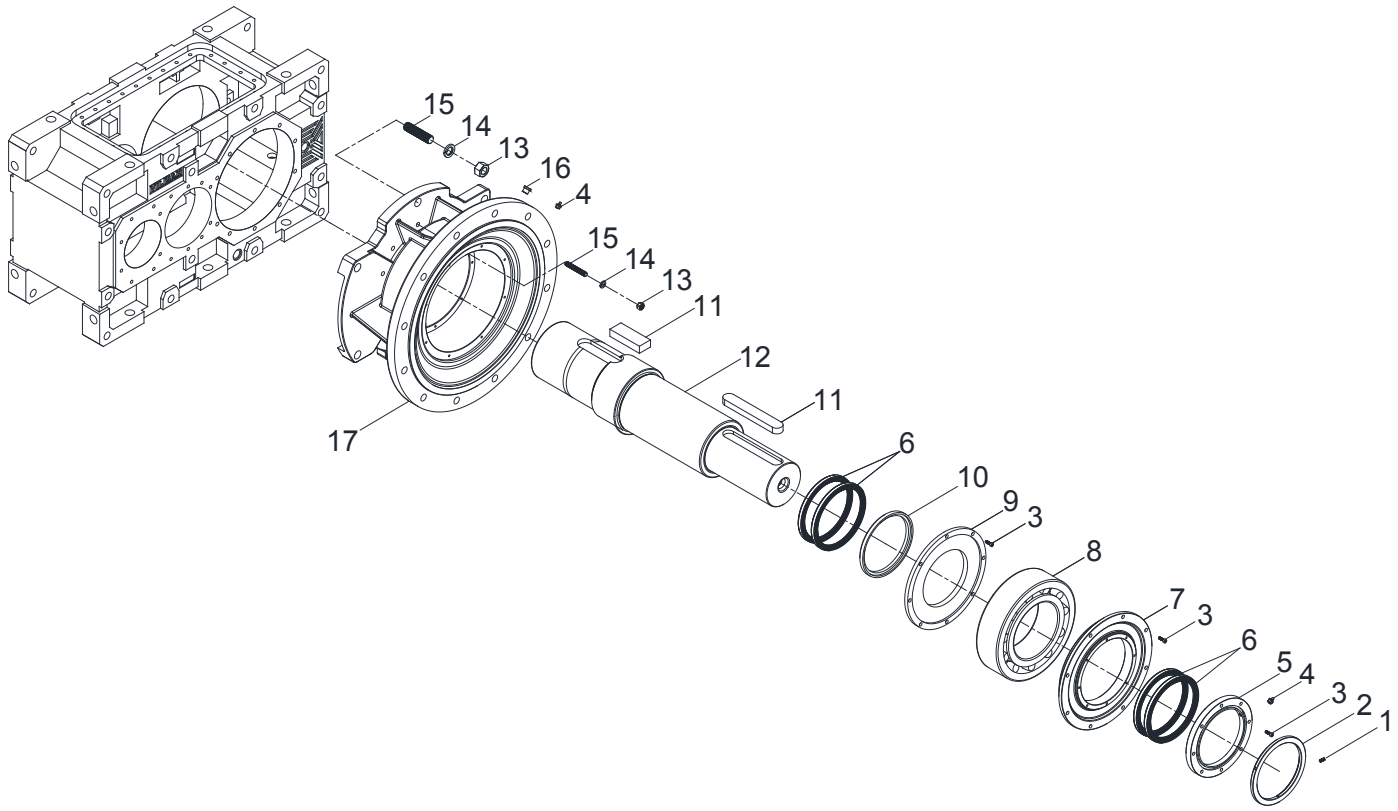


Standard H.B...0A type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Screw Pin	10- Oil Slinger Ring
2- Output Seal Labyrinth Cover	11- Hollow Output Shaft
3- Imbus Bolt	12- Key
4- Greaser	13- Nut
5- Output Seal Protection Cover	14- Spring Washer
6- Seal	15- Screw Pin
7- Output Seal Cover	16- Plug
8- Bearing	17- Drywell Housing
9- Bearing Rear Cover	

3.36- H.B...1A Types

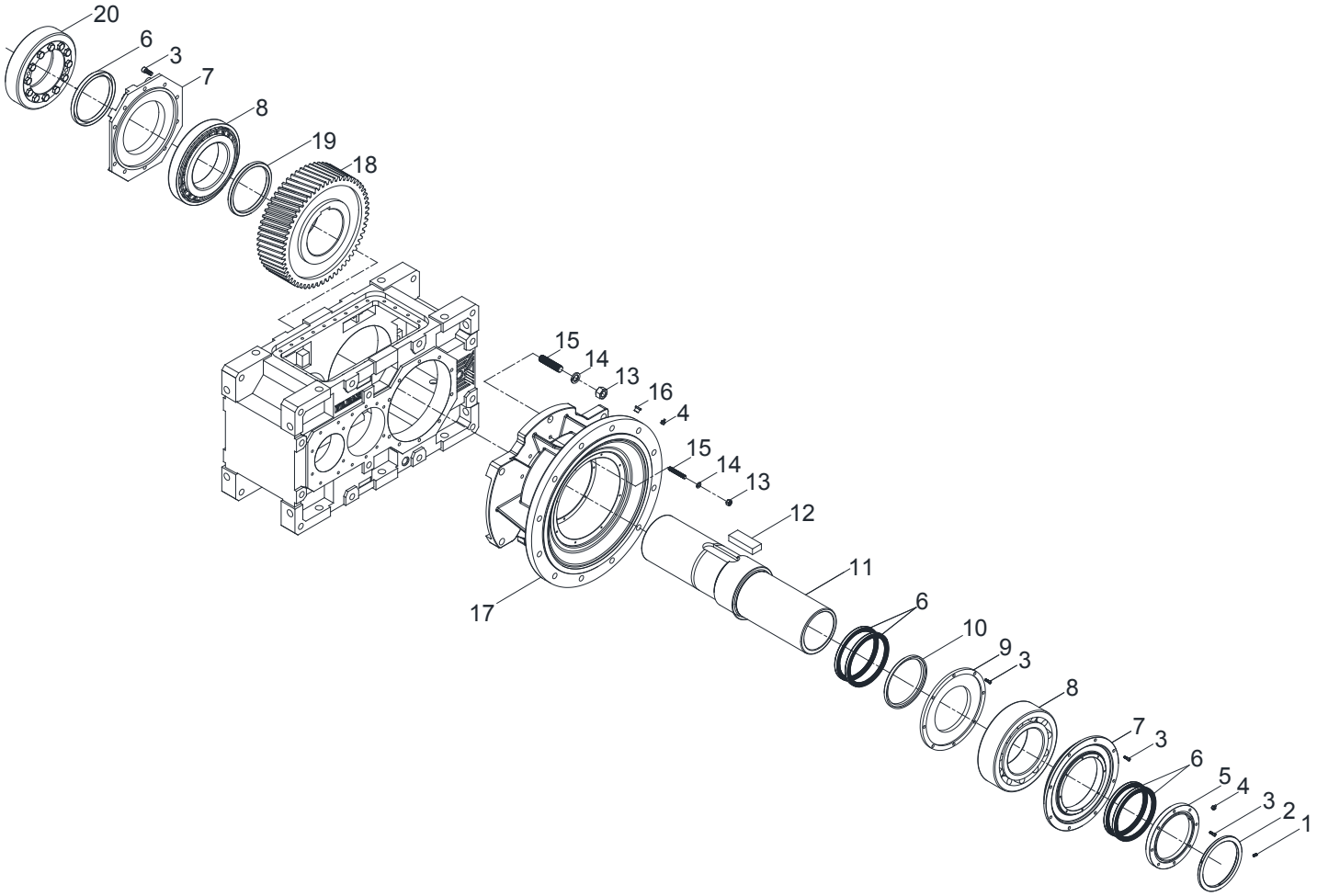


Standard H.B...1A type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Screw Pin	10- Oil Slinger Ring
2- Output Seal Labyrinth Cover	11- Key
3- Imbus Bolt	12- Output Shaft
4- Greaser	13- Nut
5- Output Seal Protection Cover	14- Spring Washer
6- Seal	15- Screw Pin
7- Output Seal Cover	16- Plug
8- Bearing	17- Drywell Housing
9- Bearing Rear Cover	

3.37- H.B...SA Types

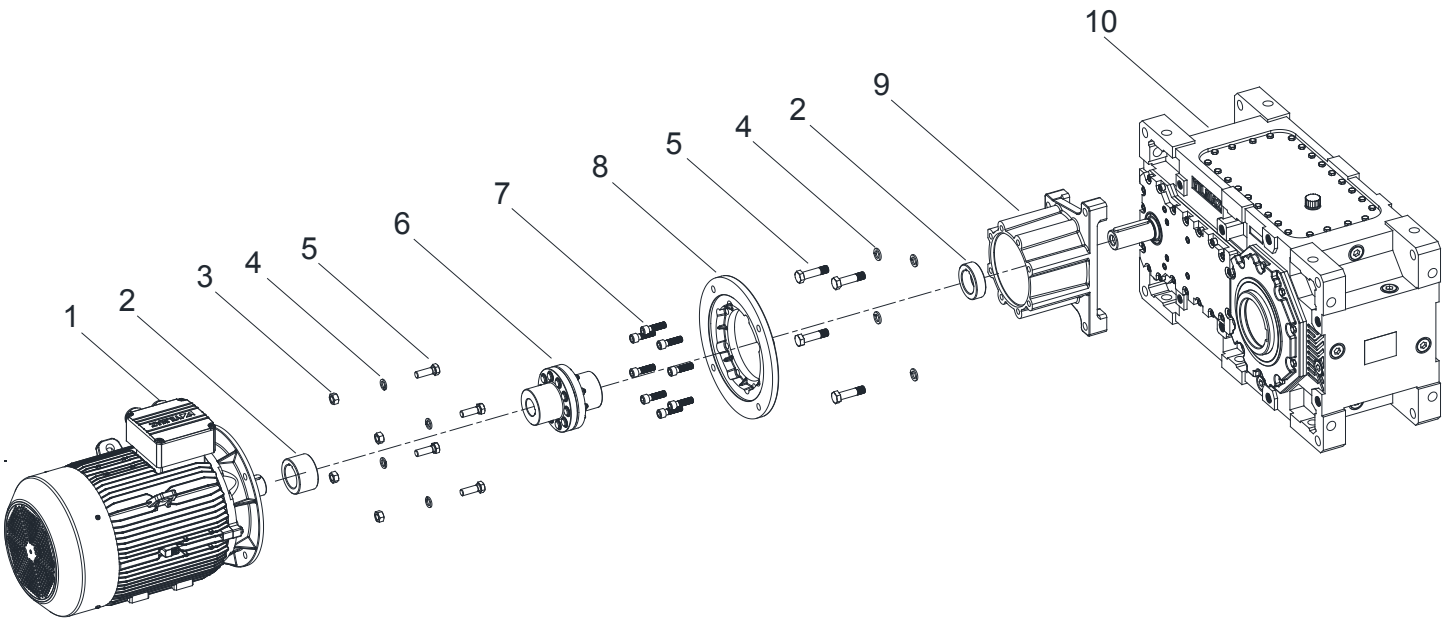


Standard H.B...SA type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Screw Pin	9- Bearing Rear Cover	17- Drywell Housing
2- Output Seal Labyrinth Cover	10- Oil Slinger Ring	18- Gear
3- Imbus Bolt	11- Hollow Output Shaft	19- Washer
4- Greaser	12- Key	20- Shrink Disc
5- Output Seal Protection Cover	13- Nut	
6- Seal	14- Spring Washer	
7- Output Seal Cover	15- Screw Pin	
8- Bearing	16- Plug	

3.38- HV... Input Side

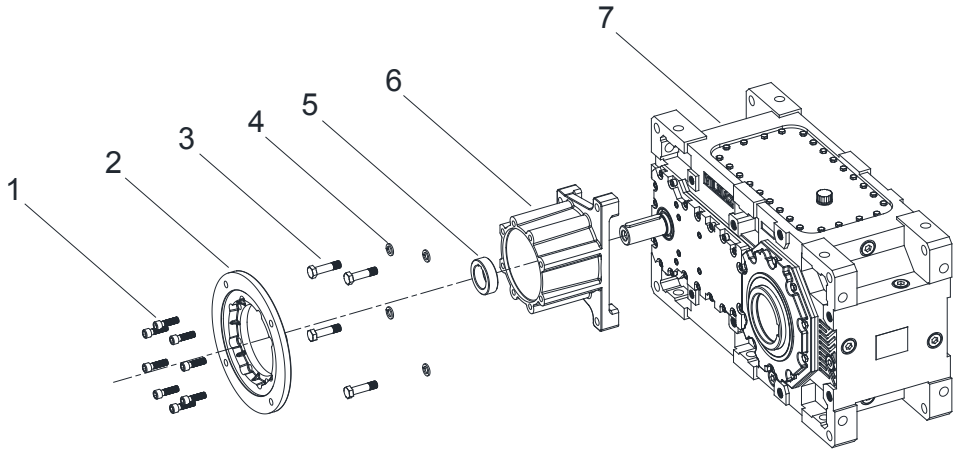


Standard HV... input side basic part diagram. Parts may differ for special applications.

Standard Part List

1- Motor	6- Coupling
2- Spacer	7- Imbus Bolt
3- Nut	8- Input Flange (Motor Side)
4- Spring Washer	9- Input Flange (Housing Side)
5- Hexagonal Head Bolt	10- Housing

3.39- HK... Input Side



Standard HK... input side basic part diagram. Parts may differ for special applications.

Standard Part List

1- Imbus Bolt	5- Spacer
2- Input Flange (Motor Side)	6- Input Flange (Housing Side)
3- Hexagonal Head Bolt	7- Housing
4- Spring Washer	

4- Safety

4.1- Intended Use

The gearbox is designed for usage in industrial machines. Please refer to our catalogue or our web page for the maximum permitted torques and speeds. The most important maximum permitted values are indicated on the nameplate of the product, but the whole data can be found on our product catalogues. Using the product out of the product catalogue/ nameplate's permitted ranges will cancel the warranty/manufacturer declaration and YILMAZ REDUKTOR will not take any responsibility.

The gear units are intended to use for industrial machines and may only be used in accordance with the information provided in this manual the product catalogue and the nameplate of the gearbox. They comply with the applicable standards and regulations and meet the requirements of the directive 2006/42/EC. The gearbox must be started up, maintained and operated according to this manual. The gearbox must be incorporated with 2006/42/EC confirming parts/ machines.

If the motor is compatible with the data provided on the gearbox's nameplate, it is allowed to be installed and operated. If the motor is to be used with a frequency inverter, the frequency range at which the motor will operate must be notified to YILMAZ REDÜKTÖR at the time of order. If not notified, the product is allowed to operated at the input speed indicated on the nameplate. The electric motor and frequency inverter must be in accordance with *2006/42/EC.*

If the gear unit's input is used with variable speed mechanical drive systems (variator), this must be notified to YILMAZ REDUKTOR at the time of order. Otherwise, the product is allowed to operated at the input speed indicated on the nameplate.

If the gear unit will be driven by belt / coupling / chain drive etc. the gearbox is only allowed to used according the nameplate/catalogue entries. Different speed, higher motor power, higher radial/axial loads etc. than nameplate/catalogue is not allowed.

The ambient temperature must be between +5, +40 Celsius and no corrosive media must attack the paint and seals. If there is different working conditions YILMAZ REDUKTOR must be informed before ordering.

The gearbox maintenance (oil change / check) must be done according to this manual

4.2- Improper Use

Every usage which exceeds the limits stated above, the nameplate and catalogue of the product (especially higher torques and speeds) is not compliant with the regulations, and thus prohibited. The operation of the gearbox is prohibited if;

-It was not mounted/installed according to regulations and this manual
-The gearbox is very dirty and soiled
-It is operated without lubricant
-It is operated out of the permitted values provided on catalogues and/or nameplate.



4.3- Safety Instructions

4.3.1- General Safety Instructions

4.3.1.1- Working on the Gearbox



- Inappropriately executed work can lead to injury or damage.
Make sure that the gear reducer is only installed, maintained and dismantled by trained technicians.



- Foreign objects spinning through the air can cause grave injury.
Before putting the gear reducer into operation, check that there are no foreign objects or tools near the gearbox.

4.3.1.2- Operation



- Touching hot surfaces can lead to burning.
Do not touch the gearboxes if their operation temperatures are too high, or use suitable safety equipment like gloves.



-Rotating machinery can lead to injuries. There is danger of being trapped or pulled in!
Keep a sufficient distance and make safeguarding to rotating machinery. See relevant norms EN349 + A1 and EN13857.

4.3.1.3- Maintenance



- An unintentional start of the machine during maintenance work can lead to serious accidents.
Make sure no one can start the machine while you are working on it.



- Even a brief running of the machine during maintenance work can lead to accidents if the safety devices are not operating.
Make sure that all safety devices are mounted and active.

4.3.1.4- Lubricant



- Extended, intensive contact with oils can lead to skin irritations.
Avoid extended contact with oil, and clean oil off skin immediately



- Hot oil can cause scalding.
When changing oil, protect yourself against contact of hot oil.

4.3.1.5- Ambient Conditions



- Standard gearboxes are allowed to work in ambient temperatures between +5 to +40 Celsius unless differently specified on the nameplate. *Using the gear unit out of this range can cause damage to the gearbox or environment. Over +40 celsius ambient conditions the gearbox surface temperature could be so high causing burns when touched.*



- If the gear unit will be used in outdoor applications the gear unit must be protected from rain snow and dust. *Entering substances inside the gear unit from seals can damage the gear unit. Observe the safety instructions for outdoor use EN12100 and EN 14121.*

4.4- Tightening Torques

All screwed connections for which a tightening torque is specified, must be tightened with a calibrated torque wrench and checked. Use the following torques for the threaded bores over the gear unit housing. For connecting elements refer to the mechanical installation part.

Bolt Size	Tightening Torques [Nm] (Coefficient of Friction in the Thread-μG=0,12)		
	Grade: 8.8	Grade: 10.9	Grade: 12.9
M5	6	9	10
M6	10	15	17
M8	25	36	42
M10	48	71	83
M12	84	123	144
M14	133	195	229
M16	206	302	354
M20	415	592	692
M24	714	1017	1190
M30	1428	2033	2380
M36	2482	3535	4136
M39	3208	4569	5346
M42	3550	4990	5990
M48	5350	7530	9030
M52	6920	9730	11670
M56	8550	12030	14430

The values in the table above are from VDI2230 Part1:2015 - Table A1

4.5- Case of Fire

The gear reducer itself is not combustible. However, it contains a synthetic or mineral gear oil. Please observe the following if the gearbox is situated in a burning environment.

4.5.1- Suitable Extinguishing Agents, Protective Equipment

Always keep suitable extinguishing, protective equipment like carbondioxide, powder, foam, fog easily accessible around the gearbox.

- Higher temperatures produce irritating steam.
Use a protective breathing apparatuses.

4.5.2- Unsuitable Extinguishing Agents

-Do not spray with water!

5- Checking Before the Gear Unit or Geared Motor is Installed

If your gearbox is with motor, please also refer to the manual of the motor manufacturer.

Before you install the gearbox you have to be sure that the gearbox is arrived with the all necessary equipment and without damage. Things to take into consideration before you start to install the unit;
- You have received the correct operation manual of the your product.
- The gearbox and all its parts are transported without damage.
- The gearbox is stored correctly according the instructions in this manual
- You have the latest product catalogue or you have access to internet.

5.1- Transportation

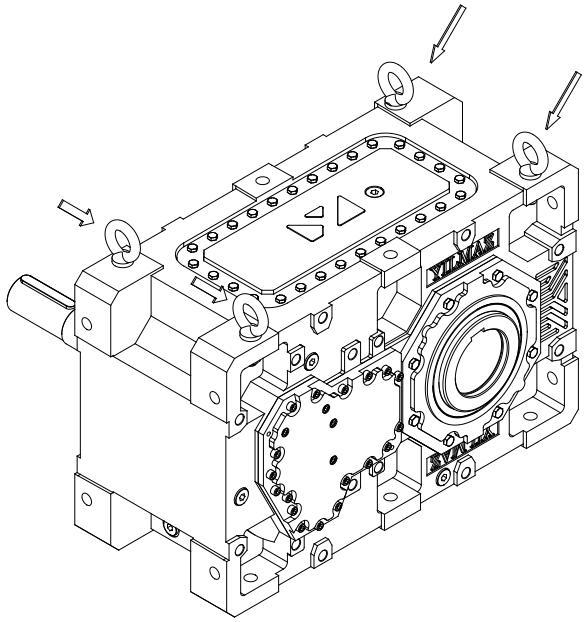
When the goods arrive, first check for any damage. If some damage observed, immediately contact the transport company and inform about the damage. Contact YILMAZ REDUKTOR for the damage and do not start to install the unit until it is agreed that the damage has no affect of operation.

Use the upper foot connection holes for lifting up the gear unit by using eyebolts. The eye-bolts should be capable to carry the weight of gearboxes. Do not hang additional loads on the gearbox while lifting. Use suitable hoisting equipment which is capable to hold the gear units weight. Refer to the catalogue for various types weights. If the gearbox is delivered with steel carrying construction use the construction holes for lifting the gear unit. See drawing bellow for hoisting point.

Do not stay beneath / under the lifting / hoisting equipment which may cause serious injuries by falling down objects, accidentally movements, unexpected accidents.

STOP

Falling or hard movement can damage the gear unit.
Only use hoisting and securing equipment which is permitted for the size / weight of your gearbox. Ensure that the load is slowly and carefully handled and placed.



5.2- Storage

If the gear unit or geared motor will be stored up to 3 years refer to the following instructions

With Packing ;

- Use corrosion protection oil for the output shaft and connection surfaces like flange surface or foot assembling surfaces. Seal the unit in a plastic wrap and pack it in container. A moisture indicator should be placed around the container to observe the moisture. Relative atmospheric humidity should not exceed 50%. The container should be kept under roof which protects from snow and rain. Under this condition the gear unit can be stored up to 3 years with regular checks. The ambient temperature should be between -5 to +60 Celsius degrees.

Without Packing ;

- Use protection oil for the output shaft and connection surfaces like flange surface or foot assembling surfaces. If no packing is used and the gearbox is stored without packing, the ambient temperature should be between +5 to +60 Celsius degrees. The gearbox must be kept under enclosed roof with constant temperature and constant humidity which is not exceeding 50%. The storage should be free of dust and dirt and ventilated with filter. If the gearbox is stored without packing it is recommended not to store more than 2 years and regular checking during this time is recommended. If stored in open areas protect against insect damage.

6- Installing The Gear Unit

6.1- Before You Start

- Observe the gear unit for damages of storage or transportation. If any damage please contact YILMAZ REDUKTOR.
- Be sure that you have all the equipment necessary for installing like; Spanners, torque wrench, shims and distance rings, fixing devices for input and output elements, lubricant, bolt adhesive etc.

- This manual is not for 2014/34/EU (ATEX) conforming gear units. For 2014/34/EU conforming gear units refer to the ATEX range manual. ATEX conforming gear units have name plates indicating the zone and the temperature class and are different from standard type geared units. Therefore standard units can not be installed on potentially explosive atmospheres.



6.2- Check the Shaft Dimensions to Fit

Type	Hollow Output Shaft Dia. [mm]	Hollow Output Shaft Tolerance. (H8)	Solid Output Shaft Dia. [mm]	Solid Output Shaft Dia. (DIN 748) (m6)	Type	Hollow Output Shaft Dia. [mm]	Hollow Output Shaft Tolerance. (H8)	Solid Output Shaft Dia. [mm]	Solid Output Shaft Dia. (DIN 748) (m6)
H.0321	60	0 / +0.05	60	+0.01 / +0.03	**H.1122 H.1123 H.1124**	165	0 / +0.06	170	+0.02 / +0.04
H.0322 H.0323	60	0 / +0.05	70	+0.01 / +0.03	**H.1222 H.1223 H.1224**	180	0 / +0.06	180	+0.02 / +0.04
H.0422 H.0423	80	0 / +0.05	80	+0.01 / +0.03	**H.1322 H.1323 H.1324**	190	0 / +0.07	200	+0.02 / +0.05
H.0521	80	0 / +0.05	85	+0.01 / +0.04	**H.1422 H.1423 H.1424**	210	0 / +0.07	220	+0.02 / +0.05
H.0522 H.0523	95	0 / +0.05	100	+0.01 / +0.04	**H.1522 H.1523 H.1524**	230	0 / +0.07	230	+0.02 / +0.05
H.0622 H.0623	105	0 / +0.05	110	+0.01 / +0.04	**H.1622 H.1623 H.1624**	240	0 / +0.07	240	+0.02 / +0.05
H.0721	100	0 / +0.05	110	+0.01 / +0.04	**H.1722 H.1723 H.1724**	-	-	250	+0.02 / +0.05
H.0722 H.0723 H.0724	115	0 / +0.05	120	+0.01 / +0.04	**H.1822 H.1823 H.1824**	-	-	270	+0.02 / +0.05
H.0822 H.0823 H.0824	125	0 / +0.06	130	+0.02 / +0.04	**H.1922 H.1923 H.1924**	-	-	290	+0.02 / +0.05
H.0921	-	-	130	+0.02 / +0.04	**H.2022 H.2023 H.2024**	-	-	300	+0.02 / +0.05
H.0922 H.0923 H.0924	135	0 / +0.06	140	+0.02 / +0.04	**H.2122 H.2123 H.2124**	-	-	320	+0.02 / +0.06
H.1022 H.1023 H.1024	150	0 / +0.06	160	+0.02 / +0.04	**H.2222 H.2223 H.2224**	-	-	340	+0.02 / +0.06
H1121	-	-	160	+0.02 / +0.04					

6.3- Check the Ambient Temperature

The ambient temperature must be between +5 celsius to +40 celsius for standard type gear units. If there is different ambient conditions please contact YILMAZ REDUKTOR for special solutions.

6.4- Check the Voltage Supply

The standard geared motors are supplied with 230/400V 50/60Hz. up to 3kW including 3kW and 400/690 V 50/60 Hz. over 3kW and is indicated on the motors nameplate unless it is differently ordered. In case of only gear unit is supplied from YILMAZ REDUKTOR please observe the nameplate of the electric motor and the instructions of the supplier. Check the basic electric connection diagrams given on next pages. Use experienced electric technician.

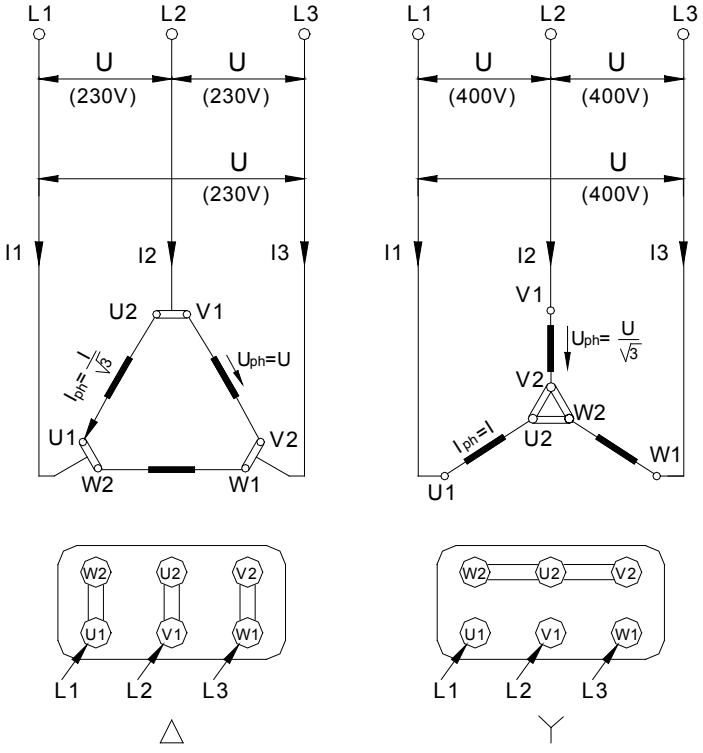
STOP *Using wrong connection or voltage can damage the electric motor or environment.*

The following wiring diagram is for standard 230/400 V 50Hz AC electric motors. For different voltages please contact YILMAZ REDUKTOR. For gear units supplied without motor, refer to the motor manufacturers user manual.

The electric connection must be done by experienced electric technician.
The gearbox, the motor and the brake must be grounded to prevent potential differences of earth and gearbox / motor.

Pole	Nominal Power 400V, 50Hz	
	230V (Δ) / 400 V (Y)	400V (Δ)
2 or 4	≦ 3 kW	⩾ 4 kW
6	≦ 2,2 kW	⩾ 3 kW
8	≦ 1,5 kW	⩾ 2,2 kW
Operating Pr.	Direct	Direkt or Y/Δ

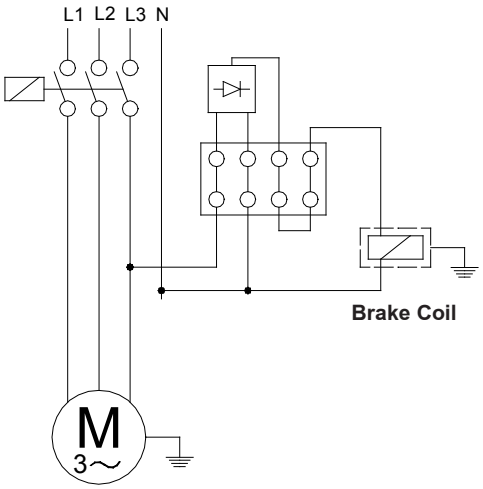
Basic Motor Connection Wiring Diagram



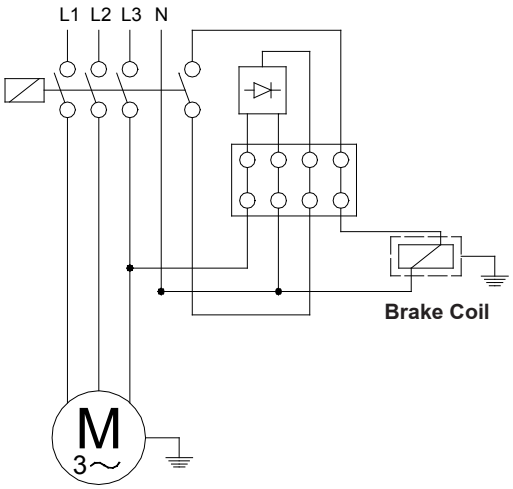
Standard Type Brakes Basic Wiring Diagram

The electric connection must be done by experienced electric technician.
The gearbox and the motor must be grounded to prevent potential differences of earth and gearbox/motor.

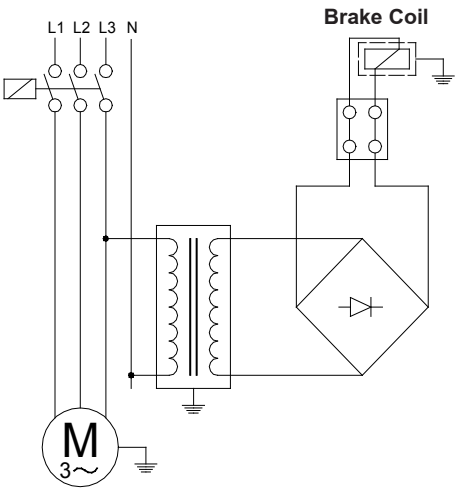
Delayed Running Brake (230V AC-98V DC)



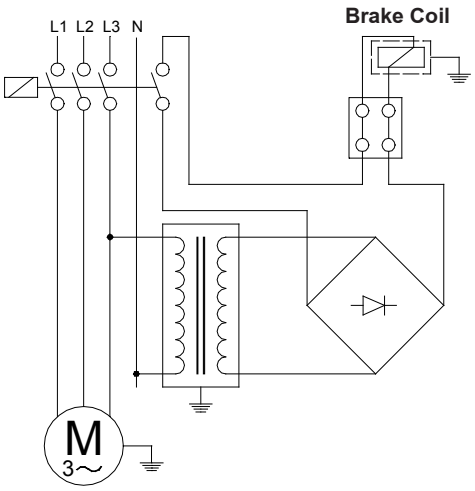
Sudden Brake (230V AC-98V DC)



Delayed Running Brake (230V AC-24V DC)



Sudden Brake (230V AC-24V DC)



6.5- Check the Mounting Position

The mounting position must be in accordance with the mounting position mentioned on the nameplate. If different please contact YILMAZ REDUKTOR for possibilities of using in a different mounting position. Refer to the mounting positions and oil quantities on this manual and adjust the oil level accordingly with the recommended oil types given on this manual.
If the gearbox is used in a different mounting position than that specified on the nameplate without obtaining approval, the CE conformity is automatically canceled; furthermore, the manufacturer's warranty obligation is also extinguished.

STOP *Do not mix synthetic oils with mineral oils which can cause serious damage on the gear unit.*

6.6- Usage of Breather Plug

In the M1 (horizontal) mounting position, the breather plug is delivered mounted to the gearbox. In other mounting positions, to prevent any oil leakage that may occur from the breather plug during the delivery, it is sent separately from the gearbox. The separately delivered breather plug must be mounted in place of the topmost plug after the gearbox is mounted.

In H Series gearbox, a springless, open-to-atmosphere, perforated plastic breather plug is used. In environments with high humidity (≥90%), a membrane expansion tank must be used instead of the breather plug to prevent water condensation inside the gearbox. For such special operating conditions, please consult us.

6.7- Check the Oil Level

On the oil plugs tables the oil plugs are shown. Please refer to those tables and be sure that the oil level is correct according the mounting position by screwing half way out the level plug and see if oil comes out from that plug. If oil comes out tighten the plug again. If no oil comes out take out the filling plug and add oil until oil comes out from the level plug and tighten both plugs after finish. Be sure you are using the correct oil mentioned on the oil tables on this manual.

STOP *Do not mix synthetic oils with mineral oils which can cause serious damage on the gear unit.*

After checking the oil level of the gearbox, tighten the screws carefully to prevent oil leakage.

6.8- Check Shaft Ends and Mounting Surfaces

Before you start installing be sure that all the connection elements are free of oil and dust. The output shaft may be protected by anti-corrosion oil. Please remove this using available solvents on your market. By using this do not touch sealing lips or painting of the housing.

6.9- Cover Against Corrosive Ambient

If the gear unit will be placed on a corrosive ambient be sure that the output seals are covered so that no corrosive material, chemicals or water touches the seals. Any pressure coming from outside over the seals can cause substances to enter the gearbox and cause serious damage to the gear unit. If pressure or abrasive material can not be prevented from coming over the sealing, contact YILMAZ REDUKTOR for solutions.





Abrasive material, chemicals, water, positive or negative pressure exceeding 0,2 bar can affect or damage the sealing lip or output shaft. Substances entering to the inside from the seals can cause serious damage to the gear unit.



To reduce the temperature increase of the gearbox, dust should be removed from the housing of the gearbox.

6.10- Check Accessibility to Filling, Breather and Drain Plugs

The filling, breather and drain plugs must be freely accessible for further checking and service.

7- Mechanical Installation

The gear unit can only be installed using the given connection points like foots and flanges.



To install the gear unit without the given connection points can cause serious injuries by loosening or breaking the gear unit. Even the gear unit is installed totally correctly according this manual, be sure that no one will be harmed by accidentally brake downs or loosening.

The mounting plate must be rigid enough not allowing torsions, flat enough to prevent strains by tightening the bolts and stable enough not allowing vibrations. By using chain drives this becomes much more important because of the polygon effect on chain drives. According to your connection elements the maximal permitted radial and axial load of the gear unit must be in accordance with your application. Check the product catalogue for permitted radial loads and calculation.



If the output or input shaft is overloaded by radial or axial loads it can cause serious damage to the gear unit.

Secure the gear unit using 8.8 or higher quality bolts.



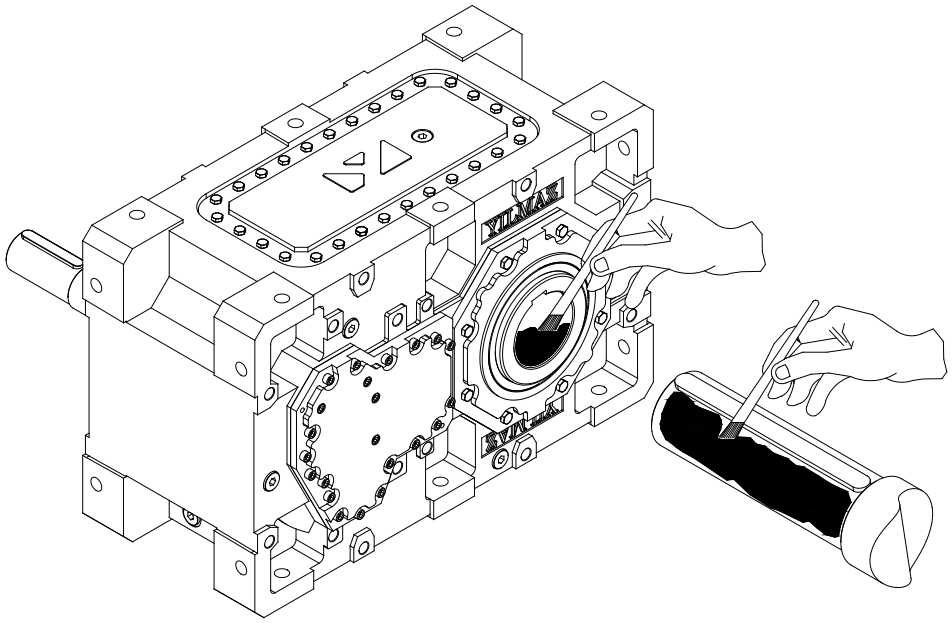
Cover all the turning parts to prevent touching. Turning parts can cause severe or fatal injuries.



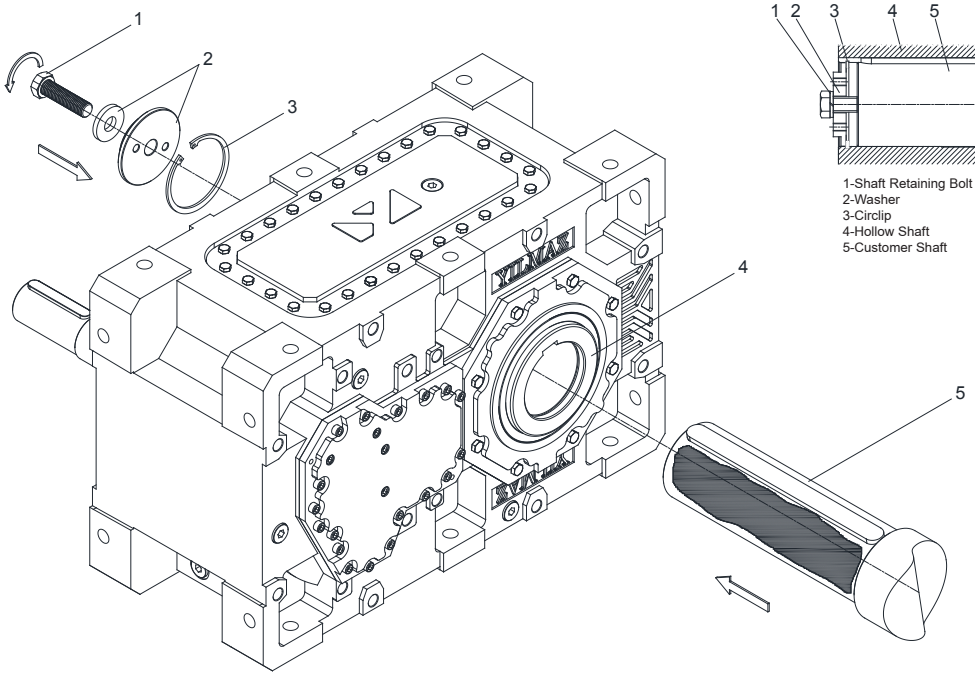
For different kind of basic installations refer to the following illustrations.

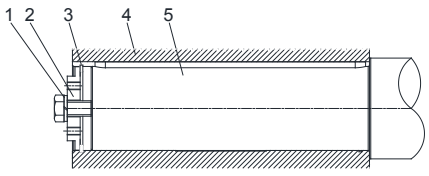
7.1- Installing Customer Shaft with Shoulder

7.1.1- Use anti-seize assembling paste available on your market. Use a brush to apply the paste.



7.1.2- Fasten the bold as shown below.

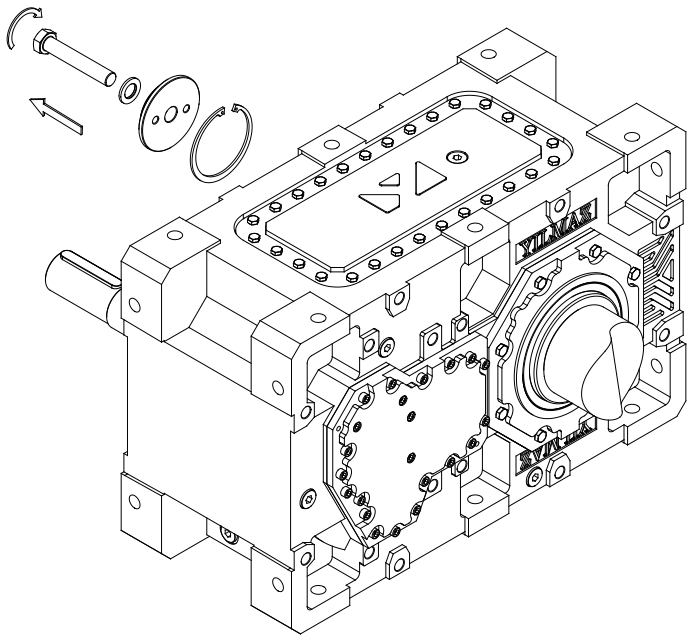




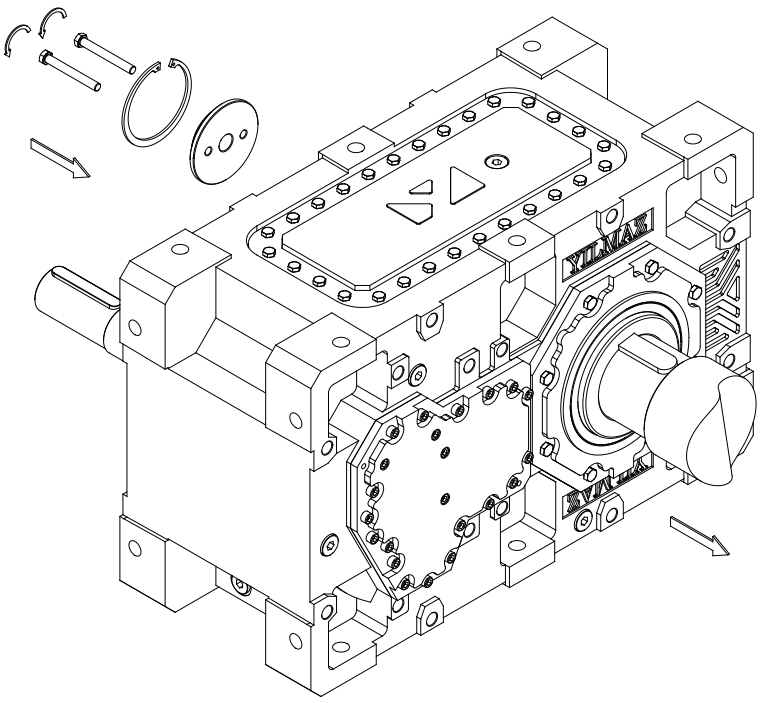
1-Shaft Retaining Bolt (Standard Scope of Delivery)
2-Washer
3-Circlip
4-Hollow Shaft
5-Customer Shaft

7.2- Disassembling Customer Shaft with Shoulder

7.2.1- Disassemble the bolt and take out the parts as shown

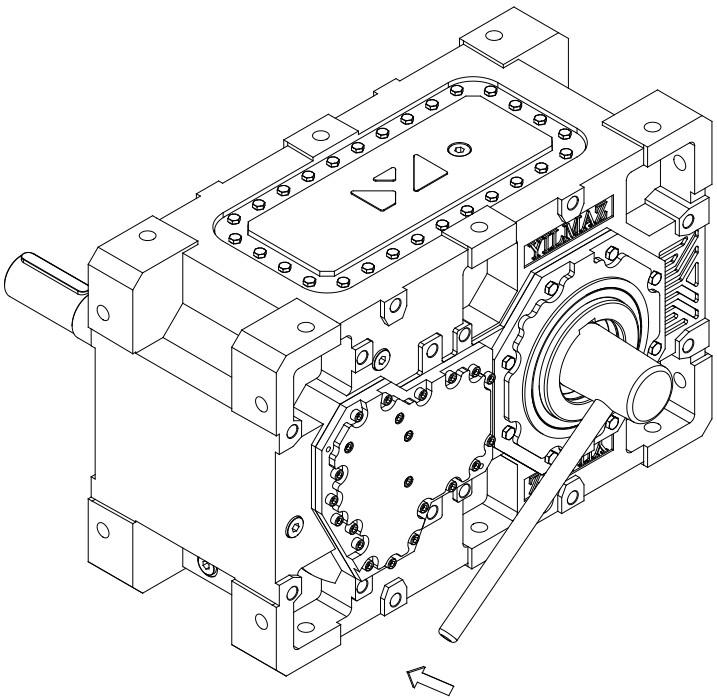


7.2.2- Use the disassemble set from YILMAZ REDUKTOR and fasten the bold as shown bellow to take out the output shaft.



7.3- Shaft Tightening Torques

Use the following table for shaft tightening torques.

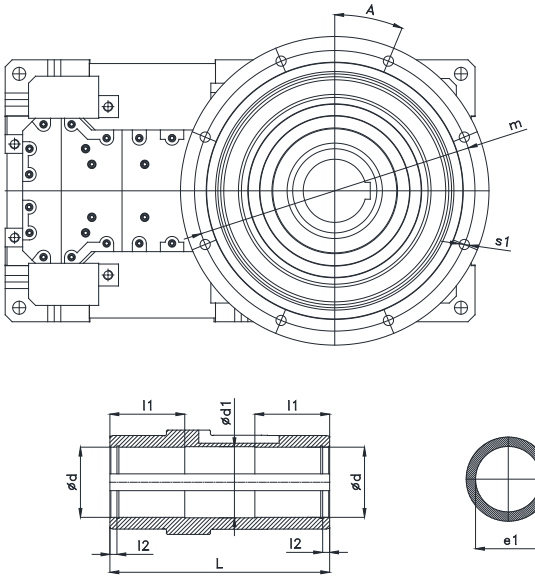


Type	Bolt	Tightening Torques [Nm] Grade: 8.8
H.03 - H.04	M20	415
H.05 - H.06 H.07 - H.08	M24	714
H.09 - H.10 - H.11 H.12 - H.13 - H.14	M30	1428
H.15 - H.16 - H.17 H.18 - H.19 - H.20	M36	2482
H.21 - H.22	M42	3550

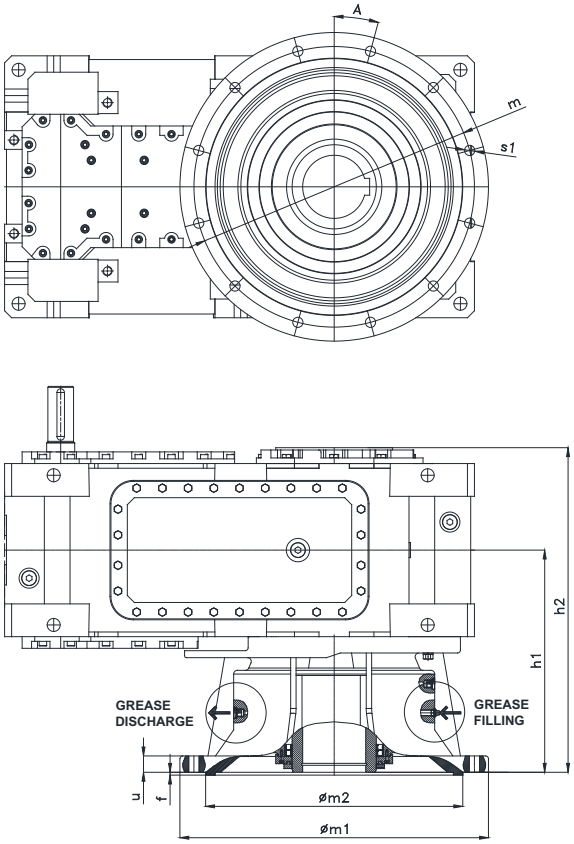
7.4- Drywell Gearboxes With Hollow Shaft Dimensions

0A Hollow Shaft Option

H 06.. / 07.. / 08..



H 09.. / 10.. / 11.. / 12..



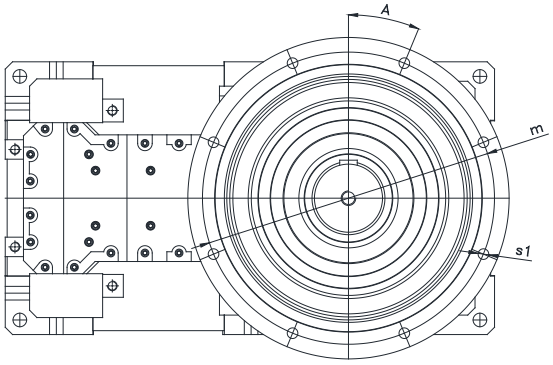
Drywell Housing Grease Replacement:
Remove the plug located opposite the grease nipple on the drywell housing for grease replacement. Then inject new grease, or an equivalent specified in the oil table, through the grease nipple. The procedure is complete once the new grease is observed exiting from the removed plug.

Type	m1	m2	h1	h2	t1	Ød	Ød1	e1	A	m	s1	L	l1	l2	u	f
H 0622 0623	Ø550	Ø450	357,5	522,5	28	Ø105	Ø107	111,4	22,5°	Ø500	Ø18	522,5	110	12	25	5
H 0722 0723 0724	Ø660	Ø550	391	586	32	Ø115	Ø116	122,4	22,5°	Ø600	Ø22	586	130	12	30	6
H 0822 0823 0824	Ø660	Ø550	410	605	32	Ø125	Ø127	132,4	22,5°	Ø600	Ø22	605	130	12	30	6
H 0922 0923 0924	Ø660	Ø550	455	690	36	Ø135	Ø137	143,4	15°	Ø600	Ø22	690	160	15	35	6
H 1022 1023 1024	Ø660	Ø550	475	710	36	Ø150	Ø152	158,4	15°	Ø600	Ø22	710	160	15	35	6
H 1122 1123 1124	Ø800	Ø680	530	800	40	Ø165	Ø166	174,4	15°	Ø740	Ø26	800	180	15	45	6
H 1222 1223 1224	Ø800	Ø680	570	840	45	Ø180	Ø182	190,4	15°	Ø740	Ø26	840	180	15	45	6

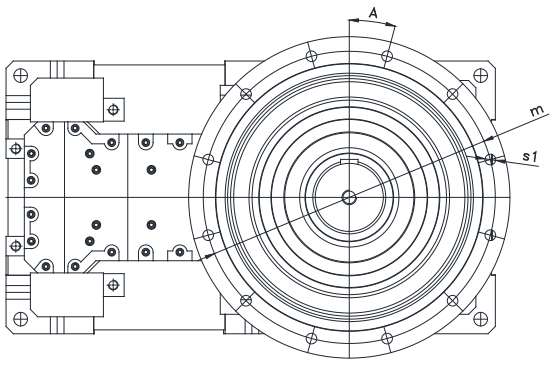
7.5- Drywell Gearboxes With Solid Shaft Dimensions

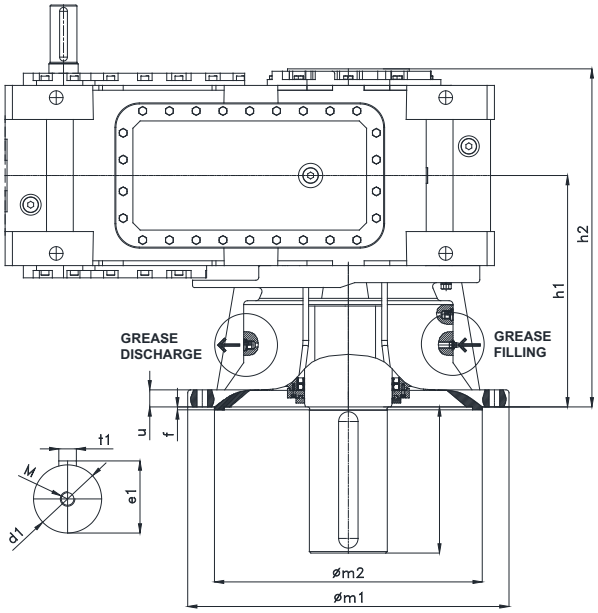
1A Solid Shaft Option

H 06.. / 07.. / 08..



H 09.. / 10.. / 11.. / 12..





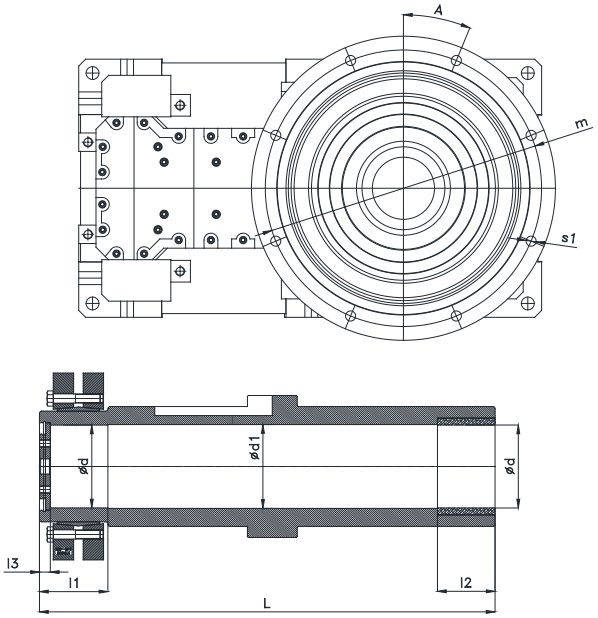
Drywell Housing Grease Replacement:
Remove the plug located opposite the grease nipple on the drywell housing for grease replacement. Then inject new grease, or an equivalent specified in the oil table, through the grease nipple. The procedure is complete once the new grease is observed exiting from the removed plug.

Type	m1	m2	h	l	t1	Ød1	e1	A	m	s1	M	u	f
H 0622 0623	Ø550	Ø450	357,5	210	28	Ø110	116	22,5°	Ø500	Ø18	M24	25	5
H 0722 0723 0724	Ø660	Ø550	391	210	32	Ø120	127	22,5°	Ø600	Ø22	M24	30	6
H 0822 0823 0824	Ø660	Ø550	410	250	32	Ø130	137	22,5°	Ø600	Ø22	M24	30	6
H 0922 0923 0924	Ø660	Ø550	455	250	36	Ø140	148	15°	Ø600	Ø22	M30	35	6
H 1022 1023 1024	Ø660	Ø550	475	300	40	Ø160	169	15°	Ø600	Ø22	M30	35	6
H 1122 1123 1124	Ø800	Ø680	530	300	40	Ø170	179	15°	Ø740	Ø26	M30	45	6
H 1222 1223 1224	Ø800	Ø680	570	300	45	Ø180	190	15°	Ø740	Ø26	M30	45	6

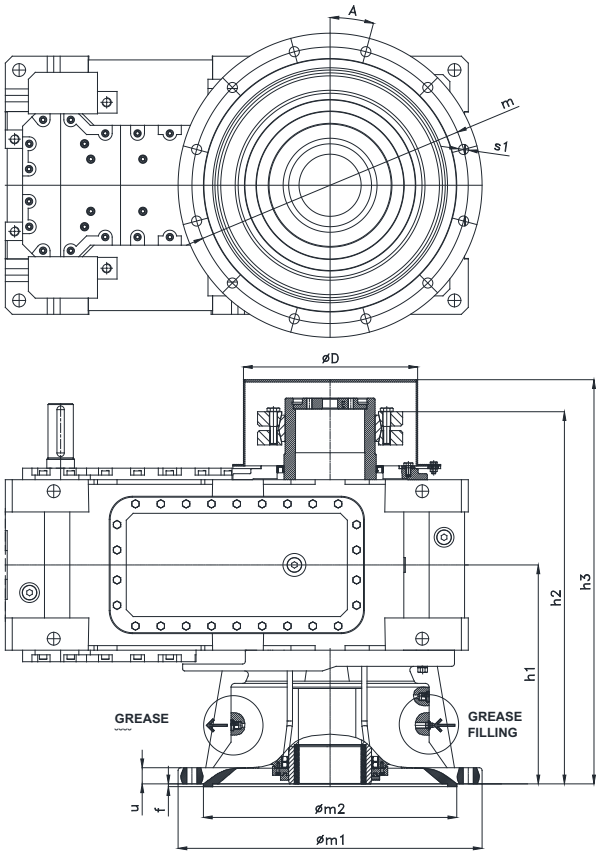
7.6- Drywell Gearboxes With Shrink Disc Dimensions

SA Shrink Disc Option

H 06.. / 07.. / 08..



H 09.. / 10.. / 11.. / 12..

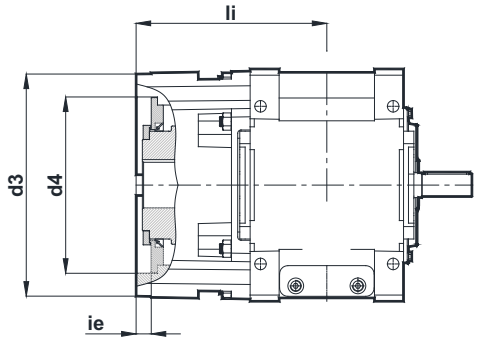


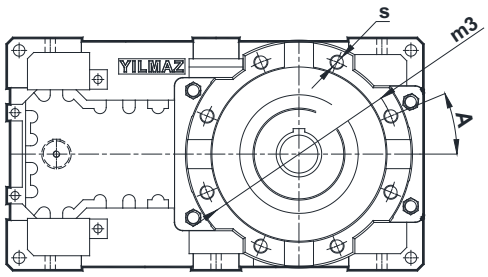
Drywell Housing Grease Replacement:
Remove the plug located opposite the grease nipple on the drywell housing for grease replacement. Then inject new grease, or an equivalent specified in the oil table, through the grease nipple. The procedure is completed once the new grease is observed exiting from the removed plug.

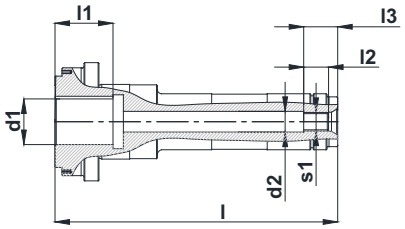
Type	Øm1	Øm2	h1	h2	h3	ØD	Ød	Ød1	A	Øm	Øs1	L	l1	l2	l3	u	f	M	Z	Ta [Nm]
H 0622 0623	550	450	357,5	586,5	630	256	105	107	22,5°	500	18	606,5	80,5	60	20,5	25	5	M12	10	100
H 0722 0723 0724	660	550	391	654	706	280	115	116	22,5°	600	22	676	90	70	20,5	30	6	M12	10	100
H 0822 0823 0824	660	550	410	681	728	310	125	127	22,5°	600	22	705	93	75	20,5	30	6	M12	10	100
H 0922 0923 0924	660	550	455	772	815	320	135	137	15°	600	22	794	110	85	23,5	35	6	M12	11	100
H 1022 1023 1024	660	550	475	801,5	877	378	150	151	15°	600	22	831	118,5	95	23,5	35	6	M12	15	100
H 1122 1123 1124	800	680	530	936	992	420	165	166	15°	740	26	944	157,5	105	23,5	45	6	M16	15	250
H 1222 1223 1224	800	680	570	959	1037	451	180	182	15°	740	26	989	148,5	125	23,5	45	6	M20	12	490

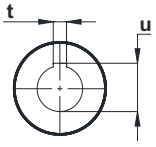
M: **Bolt Dimension**
Z: **Bolt Quantity**
Ta: **Tightening Torque**

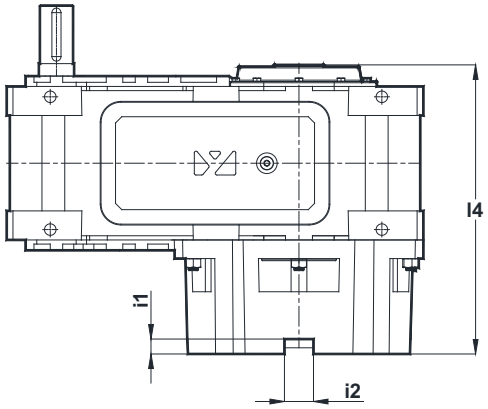
7.7- H Extruder Gearboxes Dimensions





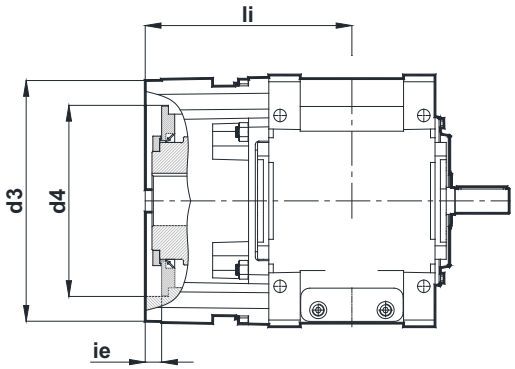


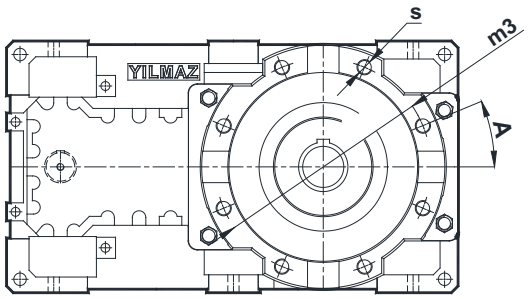


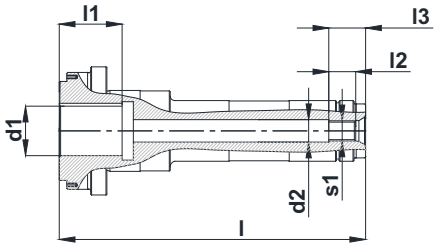


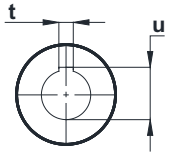
Gearbox Type	Extruder Hollow Shaft									Extruder											Input
	d1	d2	l	l1	l2	l3	s1	t	u	d3	d4	li	l4	i1	i2	ie	m3	s	Qty.	A	
H 0322.0E 0323.0E	50 (H8)	26	406	90	50	65	M20	14	53.8	285	225 (H8)	270	413	24	30	24.5	255	M16*30	8	22.5°	HT HK HV
H 0422.0E 0423.0E	60 (H8)	28	423.5	110	50	68	M24	18	64.4	315	250 (H8)	280	430	24	50	24.5	280	M20*37	8	22.5°	
H 0422.1E 0423.1E	50 (H8)	28	423.5	90	50	68	M24	14	53.8	285	225 (H8)	280	430	24	30	24.5	255	M16*30	8	22.5°	
H 0522.0E 0523.0E	70 (H8)	33	489.5	130	50	73	M30	20	74.9	370	290 (H8)	320	496	27	50	27	325	M20*37	8	22.5°	
H 0522.1E 0523.1E	60 (H8)	33	489.5	110	50	73	M30	18	64.4	315	250 (H8)	320	496	24	50	24.5	280	M20*35	8	22.5°	
H 0622.0E 0623.0E	80 (H8)	40	506	130	60	87	M36	22	85.4	420	340 (H8)	340	513	26	50	27	375	M20*37	8	22.5°	
H 0622.1E 0623.1E	70 (H8)	40	506	130	60	87	M36	20	74.9	370	290 (H8)	340	513	26	50	27	325	M20*40	8	22.5°	
H 0722.0E 0723.0E	90 (H8)	40	570	130	60	87	M36	25	95.4	450	355 (H8)	375	580	26	60	27	400	M24*40	8	22.5°	
H 0722.1E 0723.1E	80 (H8)	40	570	130	60	87	M36	22	85.4	420	340 (H8)	375	580	26	50	27	375	M20*50	8	22.5°	
H 0822.0E 0823.0E	100 (H8)	40	588	140	60	87	M36	28	106.4	490	395 (H8)	392	597	26	70	27	440	M24*40	8	22.5°	
H 0822.1E 0823.1E	90 (H8)	40	588	130	60	87	M36	25	95.4	540	355 (H8)	392	597	26	60	27	400	M24*50	8	22.5°	
H 0922.0E 0923.0E	110 (H8)	50	687	140	60	82	M45	28	116.4	540	425 (H8)	460	697	36	70	36.5	480	M30*64	8	22.5°	
H 0922.1E 0923.1E	100 (H8)	50	692	140	60	82	M45	28	106.4	490	395 (H8)	460	697	26	70	39.5	440	M24*50	8	22.5°	

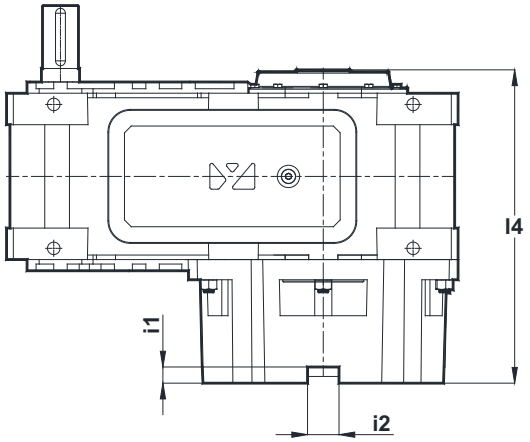
H Extruder Gearboxes Dimensions





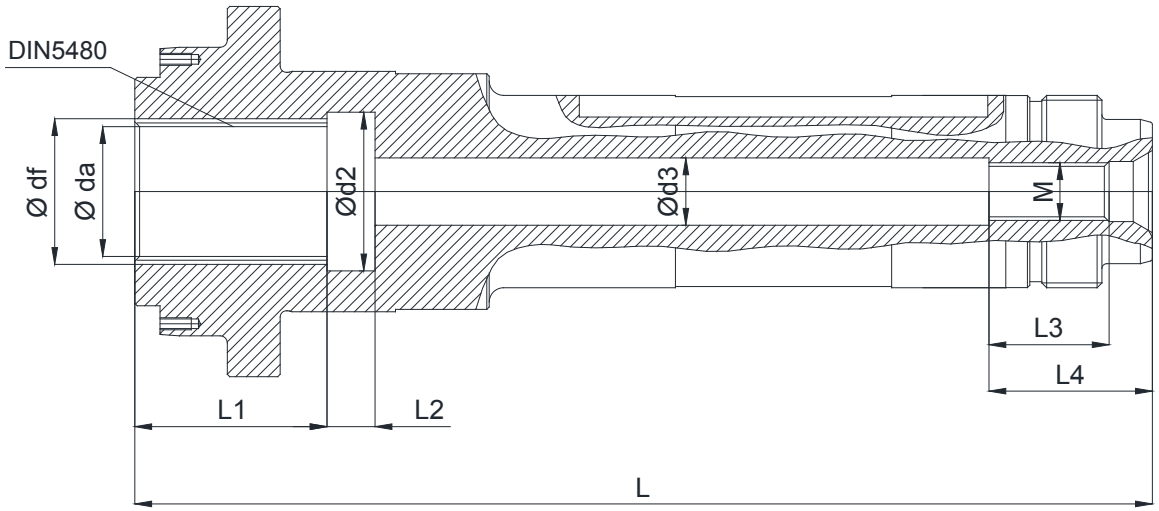






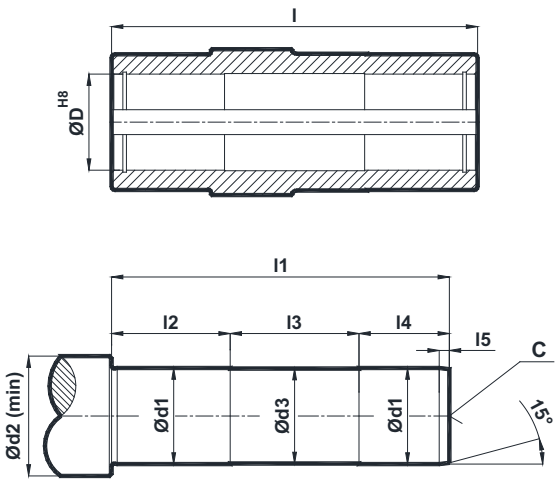
Gearbox Type	Extruder Hollow Shaft									Extruder										Input
	d1	d2	l	l1	l2	l3	s1	t	u	d3	d4	li	l4	i1	i2	ie	m3	s	Qty.	A	
H 1022.0E 1023.0E	120 (H8)	50	696	160	60	82	M45	32	127.4	560	455 (H8)	465	707	36	80	36.5	500	M30*64	8	22.5°	HT HK HV
H 1022.1E 1023.1E	110 (H8)	50	696	140	60	82	M45	28	116.4	540	425 (H8)	465	707	36	70	36.5	480	M30*60	8	22.5°	
H 1122.0E 1123.0E	130 (H8)	50	794	160	60	82	M45	32	137.4	630	500 (H8)	512	803	36	100	36.5	560	M36*64	8	22.5°	
H 1122.1E 1123.1E	120 (H8)	50	794	160	60	82	M45	32	127.4	560	455 (H8)	512	803	36	80	36.5	500	M30*60	8	22.5°	
H 1222.0E 1223.0E	140 (H8)	50	815	190	60	82	M45	36	148.4	680	535 (H8)	526	824	36	100	36.5	600	M36*64	8	22.5°	
H 1222.1E 1223.1E	130 (H8)	50	815	160	60	82	M45	32	137.4	630	500 (H8)	526	824	36	100	36.5	560	M36*60	8	22.5°	
H 1322.0E 1323.0E	160 (H8)	50	949	190	60	82	M45	40	169.4	730	575 (H8)	615	964	36	120	36.5	650	M36*72	8	22.5°	
H 1322.1E 1323.1E	140 (H8)	50	949	190	60	82	M45	40	169.4	680	535 (H8)	615	964	36	120	36.5	650	M36*72	8	22.5°	
H 1422.0E 1423.0E	170 (H8)	50	980	260	60	82	M45	40	179.4	770	635 (H8)	650	995	36	120	36.5	700	M36*72	8	22.5°	
H 1522.0E 1523.0E	180 (H8)	60	1124	280	60	87	M56	45	190.4	820	670 (H8)	733.5	1139	43	150	43.5	730	M42*80	8	22.5°	
H 1622.0E 1623.0E	190 (H8)	60	1124	300	60	87	M56	45	190.4	870	700 (H8)	733.5	1139	43	150	43.5	780	M42*80	8	22.5°	

7.8- H Series Splined Extruder Shaft Dimensions



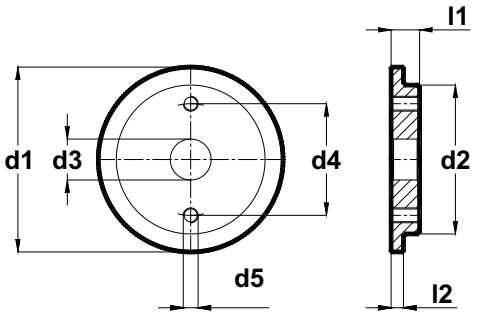
Type	Diameter	Ødf:DIN 5480	Øda	Ød2	Ød3	M	L	L1	L2	L3	L4
HE03.0E	Ø50	m:2 z:24 N50x2x30x24x9H (Ø50,4)	Ø46	Ø55	Ø26	M20x2,5	406	60	10	50	65
HE04.1E	Ø50	m:2 z:24 N50x2x30x24x9H (Ø50,4)	Ø46	Ø55	Ø26	M24x3	423,5	60	10	50	68
HE04.0E	Ø60	m:2 z:28 N60x2x30x28x9H (Ø60,4)	Ø56	Ø65	Ø28	M24x3	423,5	70	10	50	68
HE05.1E	Ø60	m:2 z:28 N60x2x30x28x9H (Ø60,4)	Ø56	Ø65	Ø33	M30x3,5	489,5	70	10	50	73
HE05.0E	Ø70	m:3 z:22 N70x3x30x22x9H (Ø70,6)	Ø64	Ø75	Ø33	M30x3,5	489,5	80	10	50	73
HE06.1E	Ø70	m:3 z:22 N70x3x30x22x9H (Ø70,6)	Ø64	Ø75	Ø40	M36x4	506	80	10	60	87
HE06.0E	Ø80	m:3 z:25 N80x3x30x25x9H (Ø80,6)	Ø74	Ø85	Ø40	M36x4	506	90	10	60	87
HE07.1E	Ø80	m:3 z:25 N80x3x30x25x9H (Ø80,6)	Ø74	Ø85	Ø40	M36x4	570	90	10	60	87
HE07.0E	Ø90	m:3 z:28 N90x3x30x28x9H (Ø90,6)	Ø84	Ø95	Ø40	M36x4	570	100	15	60	87
HE08.1E	Ø90	m:3 z:28 N90x3x30x28x9H (Ø90,6)	Ø84	Ø95	Ø40	M36x4	588	100	15	60	87
HE08.0E	Ø100	m:4 z:24 N100x4x30x24x9H (Ø100,8)	Ø92	Ø105	Ø40	M36x4	588	100	15	60	87
HE09.1E	Ø100	m:4 z:24 N100x4x30x24x9H (Ø100,8)	Ø92	Ø105	Ø50	M45x4,5	692	100	15	60	82
HE09.0E	Ø110	m:4 z:26 N110x4x30x26x9H (Ø110,8)	Ø102	Ø115	Ø50	M45x4,5	687	100	15	60	82
HE10.1E	Ø110	m:4 z:26 N110x4x30x26x9H (Ø110,8)	Ø102	Ø115	Ø50	M45x4,5	696	100	15	60	82
HE10.0E	Ø120	m:4 z:28 N120x4x30x28x9H (Ø120,8)	Ø112	Ø125	Ø50	M45x4,5	696	110	15	60	82
HE11.1E	Ø120	m:4 z:28 N120x4x30x28x9H (Ø120,8)	Ø112	Ø125	Ø50	M45x4,5	794	110	15	60	82
HE11.0E	Ø130	m:4 z:31 N130x4x30x31x9H (Ø130,8)	Ø122	Ø135	Ø50	M45x4,5	794	110	15	60	82
HE12.1E	Ø130	m:4 z:31 N130x4x30x31x9H (Ø130,8)	Ø122	Ø135	Ø50	M45x4,5	815	110	15	60	82
HE12.0E	Ø140	m:4 z:34 N140x4x30x34x9H (Ø140,8)	Ø132	Ø145	Ø50	M45x4,5	815	120	15	60	82

7.9- Recommended Shaft Dimensions for H...00 Types



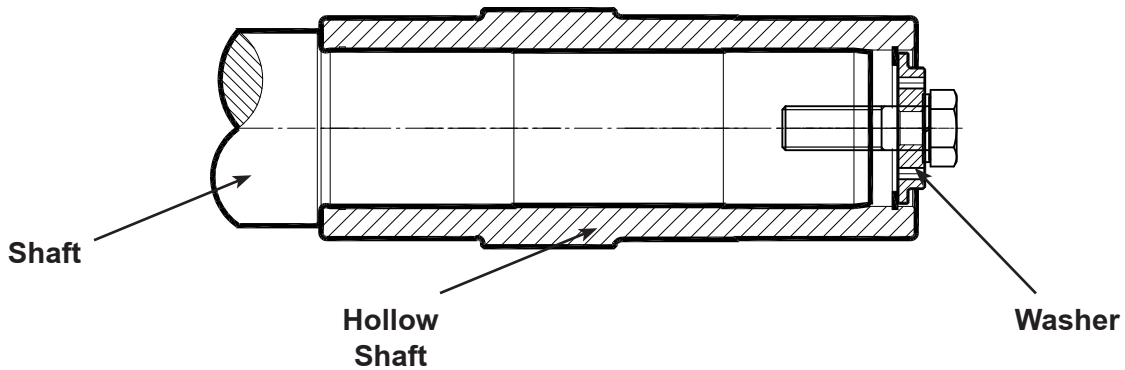
Gearbox Size	ØD	Ød1	Ød2	Ød3	l	l1	l2	l3	l4	l5	c
H0321	60 (H8)	60 (h6)	74	59	270	250	55	160	31	4	M20
H03	60 (H8)	60 (h6)	74	59	280	255	95	90	70	4	M20
H04	80 (H8)	80 (h6)	98	79	280	255	95	90	70	4	M20
H0521	80 (H8)	80 (h6)	98	79	360	340	125	110	101	4	M20
H05	95 (H8)	95 (h6)	118	94	330	301	115	100	86	5	M24
H06	105 (H8)	105 (h6)	128	104	330	301	115	100	86	5	M24
H0721	100 (H8)	100 (h6)	120	99	480	460	165	150	140	5	M24
H07	115 (H8)	115 (h6)	138	114	390	361	135	120	106	5	M24
H08	125 (H8)	125 (h6)	154	124	390	361	135	120	106	5	M24
H09	135 (H8)	135 (m6)	162	134	470	436	165	140	131	6	M30
H10	150 (H8)	150 (m6)	178	149	470	436	165	140	131	6	M30
H11	165 (H8)	165 (m6)	198	164	540	505	185	170	150	7	M30
H12	180 (H8)	180 (m6)	218	179	540	505	185	170	150	7	M30
H13	190 (H8)	190 (m6)	228	189	670	626	225	220	181	8	M30
H14	210 (H8)	210 (m6)	258	209	670	626	225	220	181	8	M30
H15	230 (H8)	230 (m6)	278	229	760	710	255	250	205	8	M36
H16	240 (H8)	240 (m6)	288	239	760	710	255	250	205	8	M36

7.9.1- Assembling Ring for Hollow Shaft Assembly



Gearbox Size	d1	d2	d3	d4	d5	l1	l2
H0321	59	50	22	35	M8	17	7
H03	59	50	22	35	M8	17	7
H04	79	65	22	45	M8	17	7
H0521	79	65	22	45	M8	17	7
H05	94	75	26	55	M10	20	8
H06	104	80	26	55	M10	20	8
H0721	99	75	26	55	M10	20	8
H07	114	85	26	60	M12	20	8
H08	124	95	26	65	M12	20	8
H09	134	105	33	80	M12	23	10
H10	149	120	33	90	M12	23	10
H11	164	130	33	90	M16	23	10
H12	179	140	33	100	M16	23	10
H13	189	160	33	120	M20	25	12
H14	209	170	33	130	M20	25	12
H15	229	185	38	140	M20	25	12
H16	239	185	38	140	M20	25	12

Installing Customer Shaft



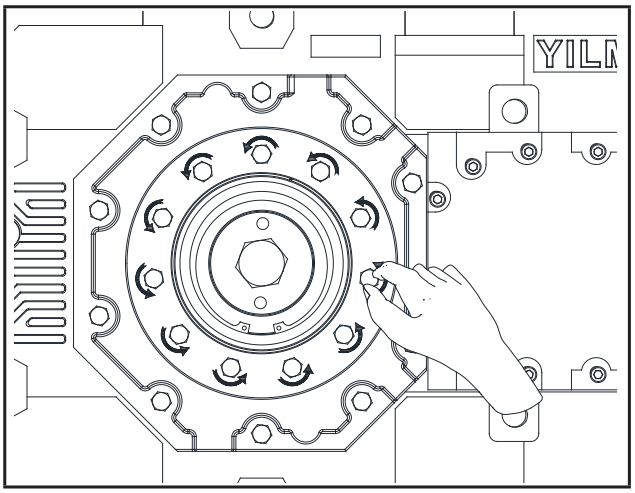
7.10- Assembling Customer Shaft with Shrink Disc

Use a properly sized and calibrated torque wrench during assembly. Tighten the shrink disc bolts evenly in accordance with the torque values specified in the torque table. Do not use impact wrenches, striking tools or uncontrolled power tools for assembly.

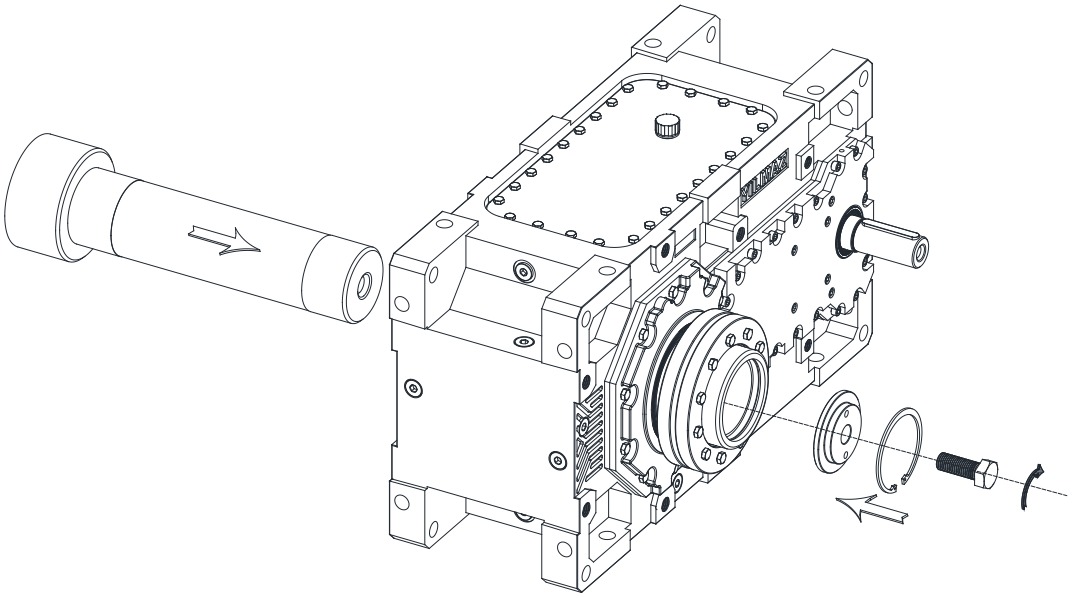
Insert the shaft carefully into the hub and ensure proper alignment during assembly.

If required, Molykote G Rapid Plus paste or an equivalent product (μ = 0.05, CAS No. (RoHS): 1305-62-0) shall be applied **only** to the tapered surfaces of the shrink disc, the bolt threads, and the surfaces under the bolt heads.

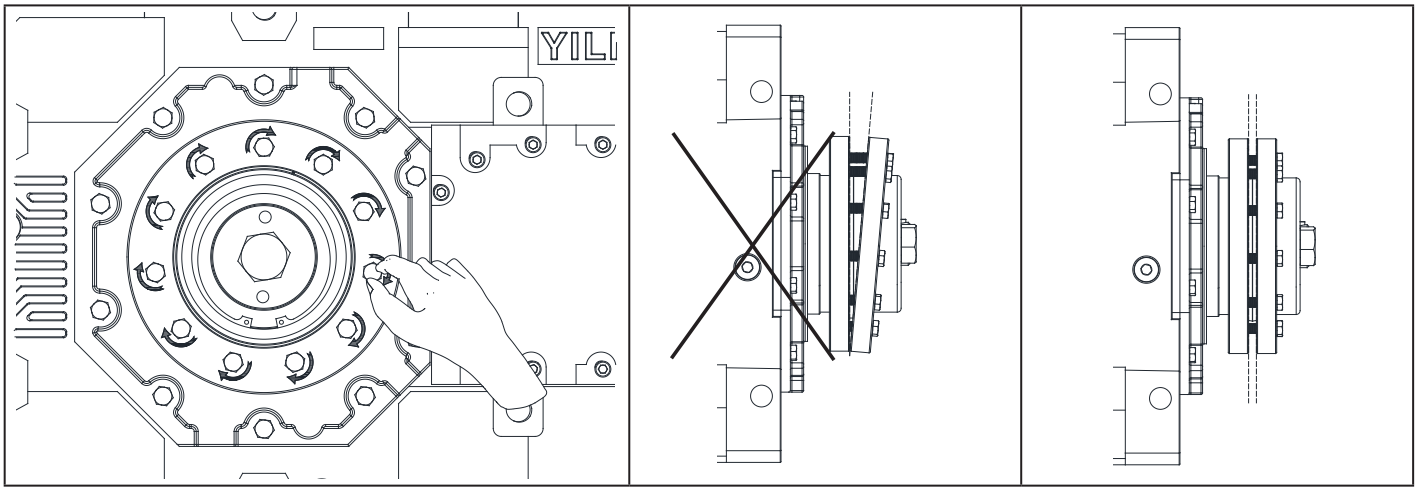
7.10.1- Loosen the shrink disc bolts by turning them counterclockwise.



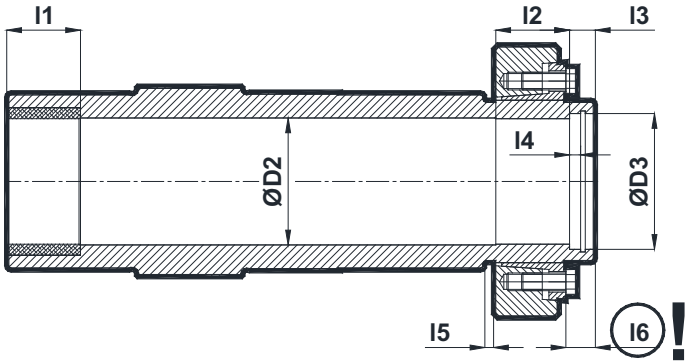
7.10.2- Carefully insert the machine shaft into the gearbox hub while maintaining axial alignment. Assemble the assembling ring and the circlip in the correct order as shown in the figure below. Tighten the bolt on the assembling ring in a controlled manner.



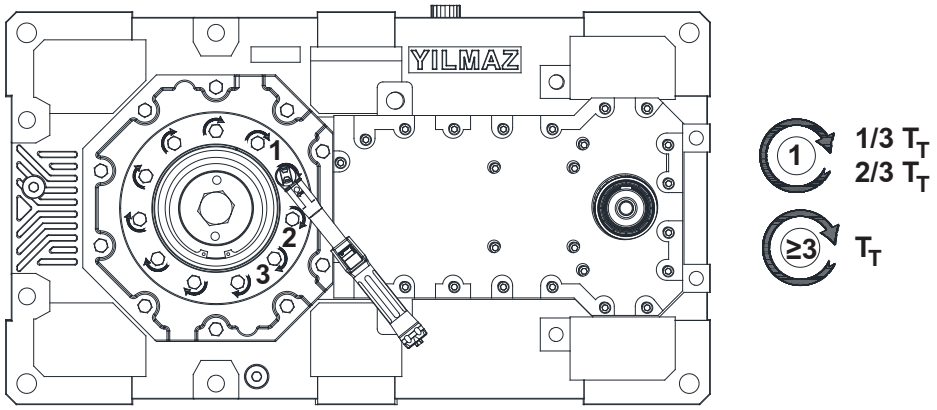
7.10.3- After inserting the machine shaft, tighten the shrink disc bolts by turning them clockwise by hand. Ensure that the components are properly aligned and centered.



7.10.4- Verify that the shrink disc is correctly positioned on the hub. Refer to the dimension table on the “Recommended Shaft Dimensions for Shrink Disc Assembly” page.

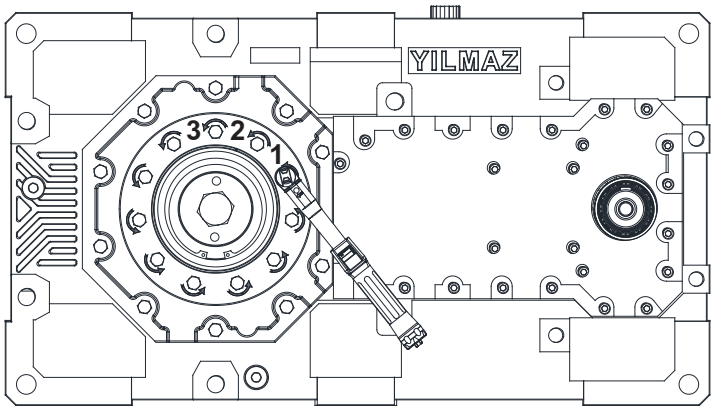


7.10.5- All shrink disc bolts must be tightened clockwise and sequentially using a calibrated torque wrench. First, all bolts must be tightened once in a clockwise direction in stages to 1/3 of the T_T tightening torque value specified in the torque table on the following pages. Then, all bolts must be tightened again in the same manner in stages to 2/3 of the T_T tightening torque value. Finally, all bolts must be tightened in at least three or more passes until at least the T_T tightening torque value is reached.



7.11- Disassembling Customer Shaft With Shrink Disc

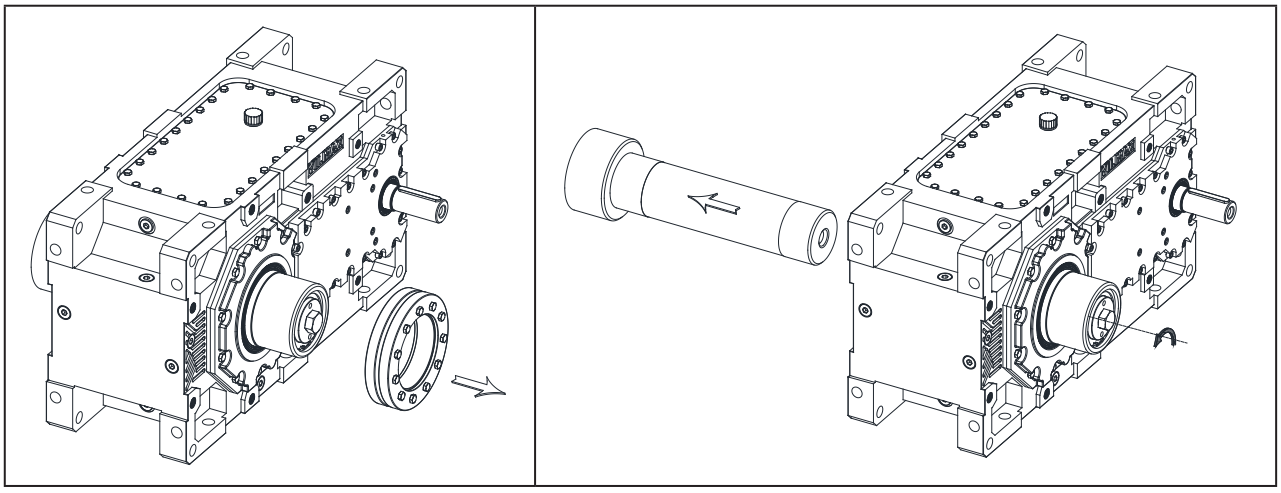
7.11.1- The bolts must be tightened counterclockwise and sequentially. Each bolt must not be fully tightened in a single step; instead, in each pass, it should be tightened by only 1/4 turn, then the next bolt should be tightened, and this process must be repeated in a circular manner at least three times or more.





1/4 Turn per cycle

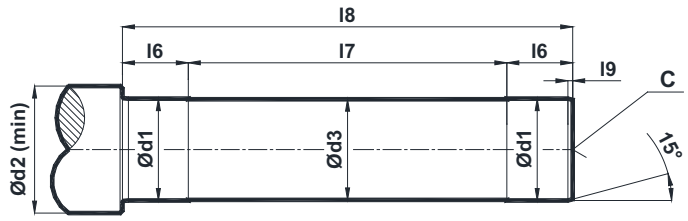
7.11.2- Remove the shrink disc. After removing the shrink disc, the bolt on the assembly ring must be turned counterclockwise to remove the machine shaft from the gearbox.

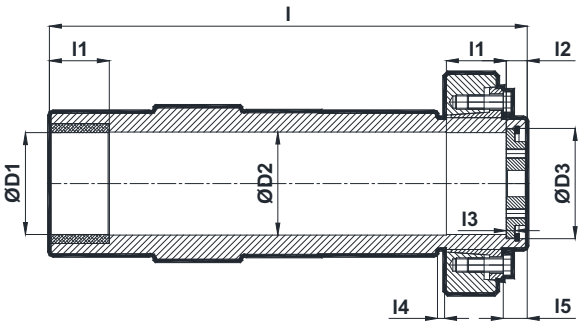


7.12- Tightening Torques of the Shrink Disc Screws

Bolt Size	T_T - Tightening Torque [Nm]
M8	30
M10	59
M12	100
M16	250
M20	490

7.13- Recommended Shaft Dimensions for Shrink Disc Assembly

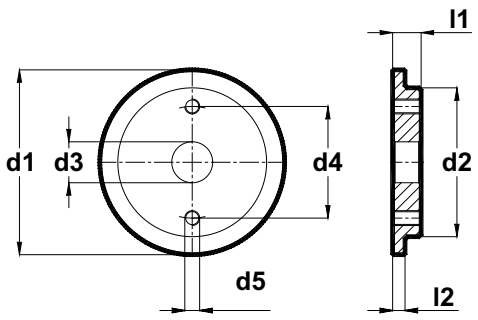




M : Bolt Dimension
Z : Bolt Quantity
Ta: Tightening Torque

Gearbox Size	Ød1	Ød2	Ød3	l	l6	l7	l8	l9	ØD1	ØD2	ØD3	l1	l2	l3	l4	l5	M x z	Ta (Nm)
H0321	60 g6	74	59	333	45	235	325	4	60 H8	61	65	40	17,5	7,5	6	14	M10x7	59
H03	60 g6	74	59	340	45	227	317	4	60 H8	61	70	40	17,5	7,5	-	18	M8x10	30
H04	80 g6	98	79	355	55	222	332	4	80 H8	81	90	50	17,5	7,5	6	20	M8x12	30
H0521	80 g6	98	79	439	55	305	415	4	80 H8	81	90	50	17,5	7,5	6	20	M10x10	59
H05	95 g6	118	94	409	60	263	383	5	95 H8	96	105	55	20,5	8,5	6	20	M10x12	59
H06	105 g6	128	104	414	65	258	388	5	105 H8	106	115	60	20,5	8,5	6	20	M12x10	100
H0721	100 g6	120	99	555	65	435	525	5	100 H8	101	110	60	20,5	8,5	6	20	M10x12	59
H07	115 g6	138	114	480	75	304	454	5	115 H8	116	125	70	20,5	85	8	23	M12x10	100
H08	125 g6	154	124	490	80	304	464	5	125 H8	126	135	75	20,5	8,5	8	23	M12x10	100
H09	135 g6	162	134	574	95	355	545	6	135 H8	136	145	85	23,5	10,5	8	28	M12x11	100
H10	150 g6	178	149	591	105	352	562	6	150 H8	151	160	95	23, 5	10,5	8	28	M12x15	100
H11	165 g6	198	164	684	115	425	655	7	165 H8	166	175	105	23,5	10,5	-	30	M16x15	250
H12	180 g6	218	179	689	135	389	659	7	180 H8	181	190	125	23,5	10,5	10	30	M20x12	490
H13	190 g6	228	189	839	145	514	804	8	190 H8	191	200	130	27,5	12,5	-	30	M20x14	490
H14	210 g6	258	209	850	140	534	814	8	210 H8	211	220	130	27,5	12,5	12	36	M20x14	490
H15	230 g6	278	229	942	170	566	906	8	230 H8	231	240	155	27,5	12,5	12	36	M20x18	490
H16	240 g6	288	239	955	180	558	918	8	240 H8	241	250	165	27,5	12,5	12	36	M20x18	490
H17	250 g6	295	249	1050	185	635	1005	9	250 H8	251	280	170	35	15	-	43	M20x20	490
H18	270 g6	315	269	1070	200	625	1025	9	270 H8	271	280	180	35	15	-	49	M20x24	490
H19	290 g6	340	289	1170	210	699,5	1120	10	290 H8	292	320	190	40,5	17,5	30	48,5	M20x24	490
H20	300 g6	360	299	1170	210	699,5	1120	10	300 H8	302	320	190	40,5	17,5	25	53	M20x24	490
H21	320 g6	380	319	1250	220	754,5	1195	11	320 H8	322	340	200	40,5	17,5	34,5	47,5	M24x24	820
H22	340 g6	395	339	1300	220	814,5	1255	11	340 H8	342	370	200	40,5	17,5	50	48	M24x24	820

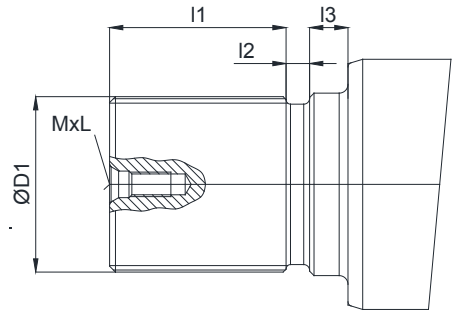
7.13.1-Assembling Ring for Shrink Disc Assembly

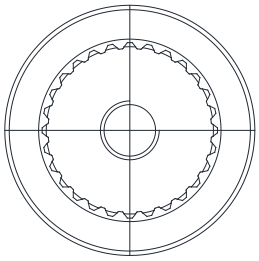


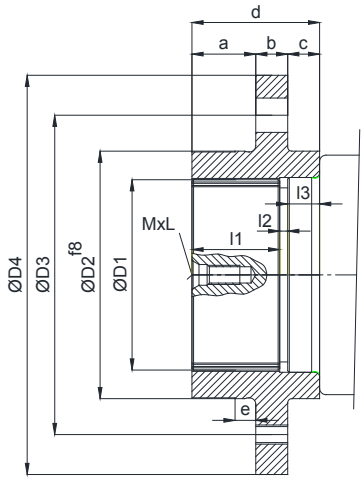
Desired surface roughness value: Rz <=16 µm

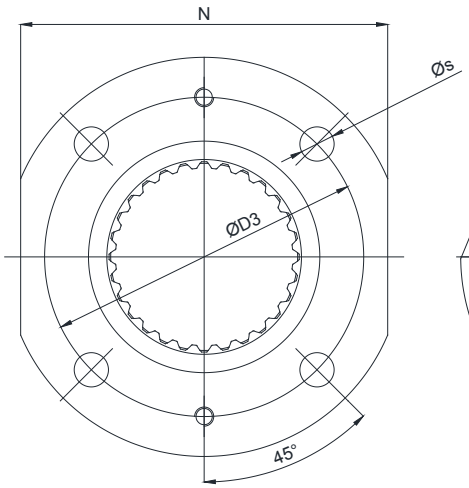
Gearbox Size	d1	d2	d3	d4	d5	l1	l2
H0321	64	50	22	35	M8	17	7
H03	69	50	22	35	M8	17	7
H04	89	65	22	45	M8	17	7
H0521	89	65	22	45	M8	17	7
H05	104	75	26	55	M10	20	8
H06	114	80	26	55	M10	20	8
H0721	109	80	26	55	M10	20	8
H07	124	85	26	60	M12	20	8
H08	134	95	26	65	M12	20	8
H09	144	105	33	80	M12	23	10
H10	159	120	33	90	M12	23	10
H11	174	130	33	90	M16	23	10
H12	189	140	33	100	M16	23	10
H13	199	160	33	120	M20	25	12
H14	219	170	33	130	M20	25	12
H15	239	185	38	140	M20	25	12
H16	249	185	38	140	M20	25	12
H17	280	180	40	120	M24	32	14
H18	280	180	40	120	M24	32	14
H19	318	180	40	120	M24	35	17
H20	318	180	40	120	M24	35	17
H21	338	180	40	120	M24	35	17
H22	364	220	40	120	M24	35	17

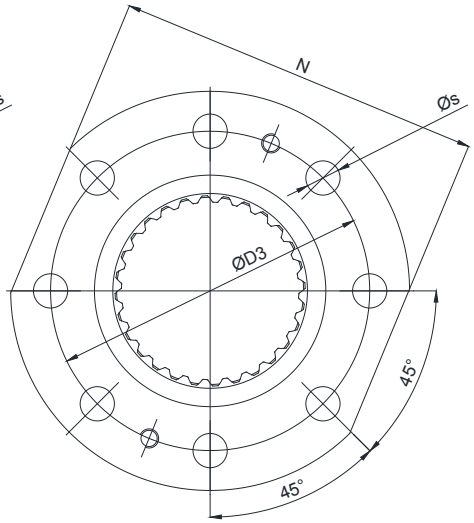
7.14- Splined Shaft and Drum Connection Flange Dimensions





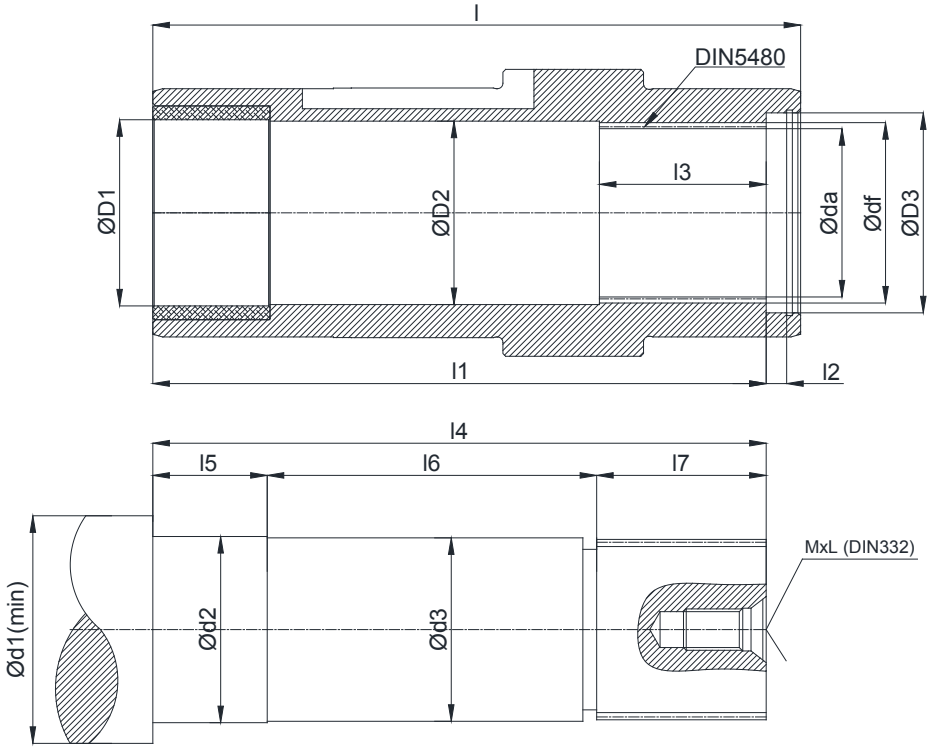






Type	ØD1 (DIN 5480)	ØD2	ØD3	ØD4	MxL	Øs	l1	l2	l3	a	b	c	d	e	N
H03	N60x2x30x28x9H	Ø90 f8	Ø140	Ø180	M20x44	Ø17,5	60	8	20	45	23	20	88	15	160
H04	N80x3x30x25x9H	Ø120 f8	Ø160	Ø200	M20x44	Ø17,5	60	8	20	45	23	20	88	15	180
H05	N100x4x30x24x9H	Ø150 f8	Ø190	Ø240	M24x52	Ø19,5	70	8	20	55	23	20	98	18	220
H06	N110x4x30x26x9H	Ø150 f8	Ø190	Ø240	M24x52	Ø19,5	70	8	20	55	23	20	98	18	220
H07	N120x4x30x28x9H	Ø155 f8	Ø200	Ø250	M24x52	Ø21,5	75	8	20	60	23	20	103	20	230
H08	N130x4x30x31x9H	Ø180 f8	Ø280	Ø355	M24x52	Ø23,5	85	10	30	80	25	20	125	26	315
H09	N130x4x30x31x9H	Ø180 f8	Ø280	Ø355	M24x52	Ø23,5	85	10	30	80	25	20	125	26	315
H10	N150x4x30x36x9H	Ø225 f8	Ø355	Ø450	M30x62	Ø29	110	12	38	103	32	25	160	34	400
H11	N150x4x30x36x9H	Ø225 f8	Ø355	Ø450	M30x62	Ø29	110	12	38	103	32	25	160	34	400
H12	N180x5x30x34x9H	Ø250 f8	Ø400	Ø500	M30x62	Ø32	138	12	30	118	34	28	180	39	450

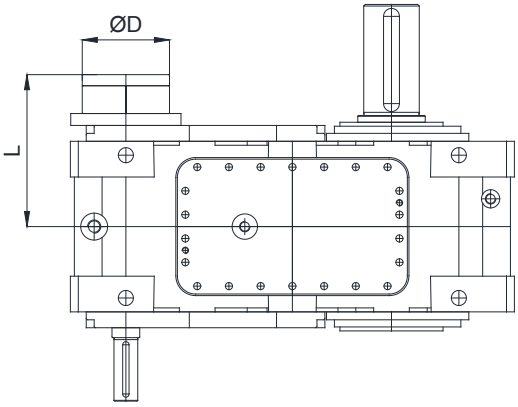
7.15- Splined Hollow Shaft and Recommended Customer Shaft Dimensions



Type	DIN5480	ØD1	ØD2	ØD3	Øda	Ødf	l	l1	l2	l3
H03	N60x2x30x28x9H	60 H7	62	65	56	60,4	280	262,5	7,5	60
H04	N80x3x30x25x9H	80 H7	82	90	74	80,6	280	262,5	7,5	70
H05	N90x3x30x28x9H	95 H7	92	105	82	90,8	330	309,5	8,5	80,5
H06	N100x4x30x24x9H	105 H7	106	102	92	100,8	330	313	7,9	80
H07	N110x3x30x35x9H	115 H7	116	125	104	110,6	390	369,5	8,5	100,5
H08	N120x4x30x28x9H	125 H7	122	135	112	120,8	390	355	20,5	115
H09	N130x4x30x31x9H	135 H7	133	145	122	130,8	470	445	14,9	121
H10	N150x4x30x36x9H	150 H7	152	160	142	150,8	470	446,5	10,5	121
H11	N150x4x30x36x9H	165 H7	162	175	142	150,8	540	516,5	10,5	170
H12	N180x5x30x34x9H	185 H7	182	205	170	181	540	505	20	170

Type	Ød1	Ød2	Ød3	l4	l5	l6	l7	MxL (DIN332)
H03	70	60 m6	59	260	40	160	60	M20x44
H04	90	80 m6	79	260	50	140	70	M20x44
H05	105	95 m6	91	308	55	172,5	80,5	M24x52
H06	115	105 m6	104	310	60	170	80	M24x52
H07	125	115 m6	114	368	70	197,5	100,5	M24x52
H08	135	125 m6	120	352	75	162	115	M24x52
H09	145	135 m6	130	442	85	236	121	M24x52
H10	160	150 m6	148	444	95	228	121	M30x62
H11	175	165 m6	160	514	95	249	170	M30x62
H12	195	185 m6	180	502	95	237	170	M30x62

7.16- H Series Backstop Mounting Dimensions

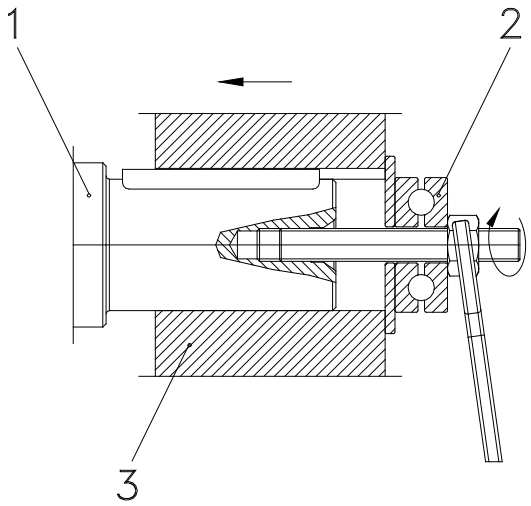


Type	Ratio	ØD	L
HT0322	5,33 - 7,80	150	202.5
	9,05 - 9,79	125	198.5
	11,75 - 14,79	110	191.5
	16,64 - 19,18	95	191.5
HT0323	20,73 - 28,54	95	191.5
	32,76 - 75,08	90	191.5
HT0422	6,05 - 8,85	150	202.5
	10,27 - 11,11	125	198.5
	13,33 - 16,78	110	191.5
	18,88 - 21,76	95	191.5
HT0423	23,52 - 32,38	95	191.5
	37,17 - 85,18	90	191.5
HT0522	6,37 - 8,06	179	242.5
	9,64 - 11,37	150	222.5
	13,69 - 16,79	130	217.5
	18,19 - 20,93	125	218.5
HT0523	24,54 - 32,06	110	210.5
	36,94 - 46,42	100	211.5
	51,42 - 68,22	96	210.5
	73,88 - 86,20	92	210.5
HT0622	7,91 - 10,01	179	242.5
	11,98 - 14,12	150	222.5
	17,00 - 20,85	130	217.5
	22,59 - 25,99	125	218.5
HT0623	30,48 - 39,81	110	210.5
	45,88 - 57,66	100	211.5
	63,87 - 84,72	96	210.5
	91,76 - 107,05	92	210.5
HT0722	6,28 - 8,50	190	267
	9,22 - 14,68	179	267
	16,10 - 18,93	150	247
HT0723	22,59 - 25,09	150	246
	28,70 - 41,46	130	241
	49,76 - 62,65	110	238
	70,49 - 81,25	100	239
HT0724	87,80 - 160,61	96	238
	187,92 - 318,01	92	238
HT0822	7,96 - 10,78	190	267
	11,69 - 18,62	179	267
	20,41 - 24,00	150	247
HT0823	28,64 - 31,81	150	246
	36,39 - 52,57	130	241
	63,09 - 79,44	110	238
	89,37 - 103,02	100	239
HT0824	111,32 - 203,63	96	238
	238,25 - 403,19	92	238
HT0922	6,44 - 11,14	210	317
	12,03 - 16,26	190	305
	17,45 - 20,65	179	307
HT0923	25,06 - 28,08	179	305
	31,70 - 44,71	150	282
	53,85 - 66,05	125	278
	71,53 - 82,31	110	274
HT0924	96,53	110	273
	110,08 - 126,09	100	274
	145,30 - 182,60	96	273
	202,27 - 339,04	92	273
HT1022	7,96 - 13,79	210	317
	14,89 - 20,12	190	305
	21,60 - 25,55	179	307
HT1023	31,01 - 34,75	179	305
	39,23 - 55,32	150	282
	66,63 - 81,72	125	278
	88,51 - 101,84	110	274
HT1024	119,44	110	273
	136,20 - 156,01	100	274
	179,78 - 225,93	96	273
	250,27 - 419,49	92	273

Type	Ratio	ØD	L
HT1122	6,33 - 11,55	245	361
	13,29 - 14,44	210	352
	15,52 - 16,73	210	352
	18,95 - 20,48	190	346
HT1123	24,28 - 30,39	190	340
	32,89 - 49,09	179	342
	56,79 - 73,22	150	320
HT1124	87,37 - 127,77	130	314
	148,28 - 192,45	110	311
	223,60 - 242,29	100	312
	272,58 - 314,22	96	308
HT1222	8,14 - 14,85	245	361
	17,09 - 18,56	210	352
	19,95 - 21,52	210	352
	24,36 - 26,33	190	346
HT1223	31,22 - 39,08	190	340
	42,28 - 63,11	179	342
	73,01 - 94,14	150	320
HT1224	112,33 - 164,28	130	314
	190,64 - 247,43	110	311
	287,49 - 311,52	100	312
	350,46 - 404,00	96	308
HT1322	6,62 - 10,94	245	440
	12,27 - 13,22	245	440
	15,24 - 17,20	245	426
	18,60 - 20,21	245	426
HT1323	24,94 - 28,96	210	407
	33,67 - 40,01	210	407
	43,18 - 46,62	190	395
	54,87 - 80,02	179	397
HT1324	97,17 - 173,25	150	374
	208,68 - 255,93	125	370
	277,20 - 318,93	110	366
HT1422	8,01 - 13,24	245	440
	14,84 - 15,99	245	440
	18,44 - 20,80	245	426
	22,50 - 24,44	245	426
HT1423	30,17 - 35,03	210	407
	40,97 - 48,40	210	407
	52,24 - 56,40	190	395
	66,38 - 96,80	179	397
HT1424	117,49 - 209,57	150	374
	252,44 - 309,60	125	370
	335,32 - 385,80	110	366
HT1522	6,63	412	490
	7,44 - 11,20	322	490
	12,04 - 19,32	290	478
HT1523	24,15 - 27,88	290	475
	32,39 - 37,09	245	461
	40,34 - 44,03	245	461
	50,66 - 63,80	210	452
	72,24 - 78,06	190	440
HT1524	92,57 - 147,93	179	444.5
	161,46 - 215,50	150	422.5
	237,37 - 279,15	130	416.5
HT1622	6,63	412	490
	7,44 - 11,20	322	490
	12,04 - 19,32	290	478
HT1623	26,52 - 30,62	290	475
	35,58 - 40,74	245	461
	44,31 - 48,37	245	461
	55,65 - 70,08	210	452
	79,35 - 85,74	190	440
HT1624	101,68 - 162,48	179	444.5
	177,34 - 237,80	150	422.5
	260,72 - 306,60	130	416.5

7.17- Fitting Output Shaft Elements

Use the following illustration to assemble output shaft units



1) Gear Shaft End
2) Thrust Bearing
3) Coupling Hub

STOP Never strike belt pulleys, coupling, pinions etc. with a hammer when pulling them onto the shaft end. This could result in damage to bearings, the housing and the shaft

STOP Power transmision elements must be balanced after fitting and must not give rise to any impermissible radial or axial forces.

7.18- Correct Position of Output Shaft Elements

Machine elements connected to the gearbox output (such as chain–sprocket systems, belt–pulley systems, etc.) should be positioned as close to the gearbox as possible. The radial load arising from the connection should be applied from the point closest to the gearbox and behind the shaft center, as shown in Figure B.

In cases where the radial load is applied farther from the gearbox and beyond the shaft center, as shown in Figure A, the safety of the shaft and bearings is adversely affected. Therefore, the permissible radial load must be recalculated using the “radial load correction factors” provided in the catalogue.

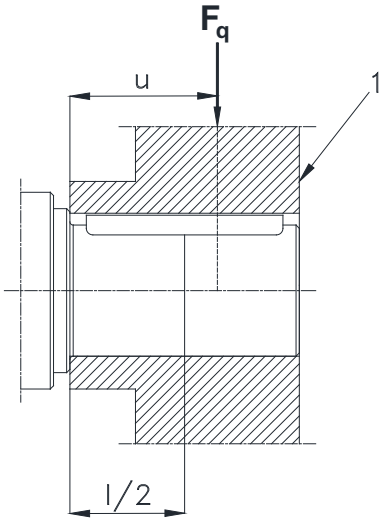


Figure A

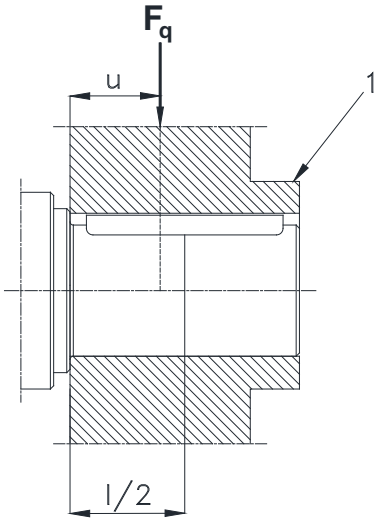


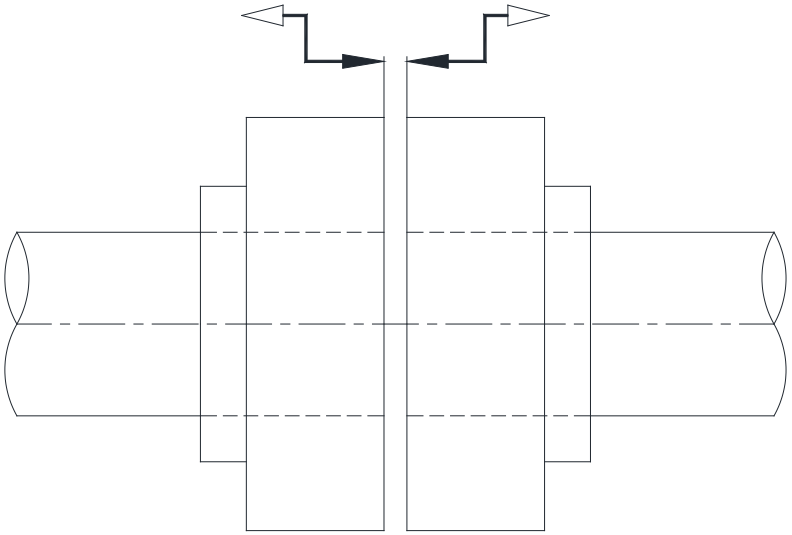
Figure B

1. Machine Element

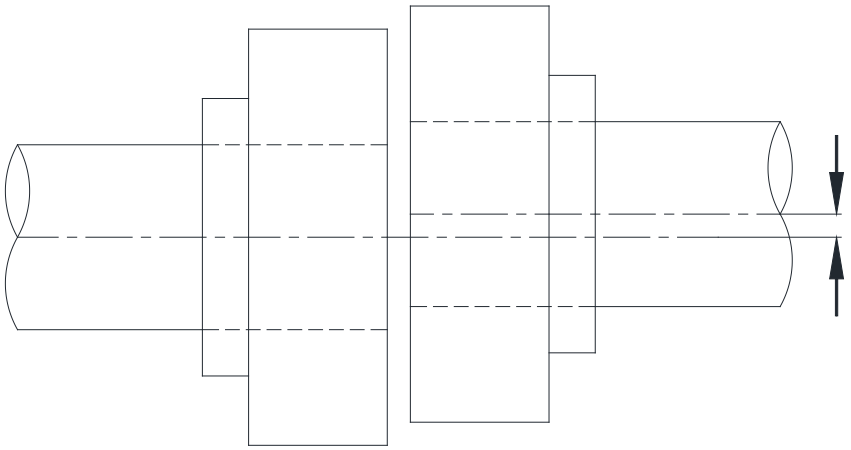
F_q: Radial Load
u : Radial Load Acting Distance
l : Shaft Length

7.19- Fitting Couplings

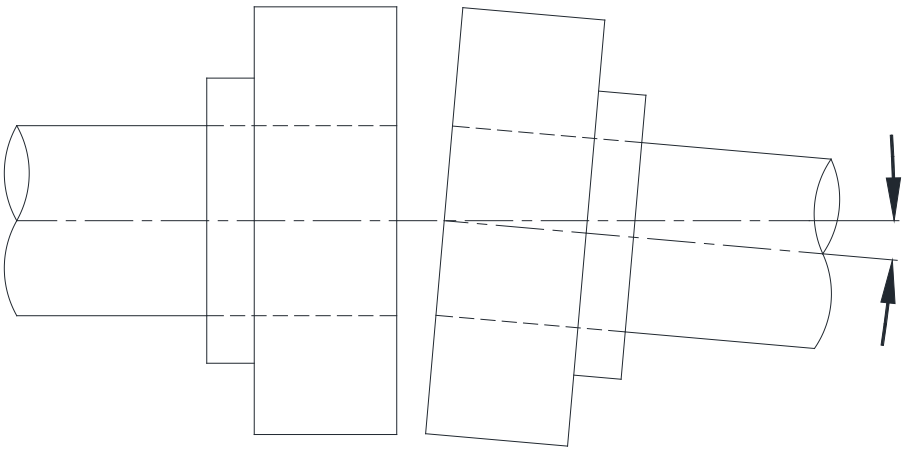
7.19.1- While fitting couplings be sure that there is some clearance between the two shafts



7.19.2- While fitting couplings be sure that there is no eccentricity between the two shafts.



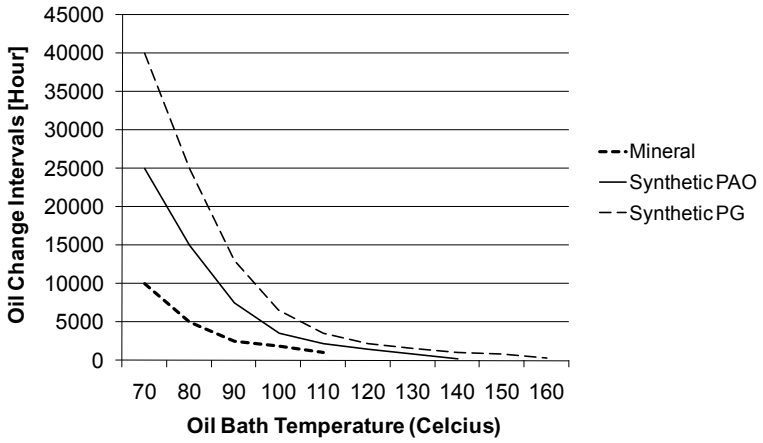
7.19.3- While fitting couplings be sure that the two shafts are not angular miss-aligned.



8- Maintenance and Inspections

Under normal ambient and working conditions the gear unit should be checked according the following intervals. (For definition of normal working conditions refer to the product catalogue: “Selecting Gearbox” section) ;

Item to Check / Replace	Every 3000 Working Hours or Every 6 Months	Every 4000 Working Hours	Every 10000 Working Hours or Every 3 Years	Every 25000 Working Hours
Check for Oil Leakage	x			
Check for Oil Level	x			
Check for Oil Leakage from Seals	x			
Check Bearing’s Noise		x (Change if Necessary)		
Change Mineral Oil			x (See Below for Details)	
Change Synthetic - PAO Oil				x (See Below for Details)
Change Sealing				x
Change Taconite Seal Grease	x			
Change Bearing Grease				x
Change Bearings				x
Check for Noise Changes				x



For normal ambient conditions 70 degrees celsius oil bath temp. should be taken as reference

* For our H series gearboxes mineral oil is used unless it is differently ordered. For oil type and quantities refer to the following tables.

9- Lubrication

9.1- Oil Types

Lubricant	DIN 51517-3	Ambient Temp. [°C] / Dip Lubrication	ISO VG	Aral	Beyond Petroleum	Castrol	Klüber Lubrication	Mobil	Shell	Total
Mineral Oil	CLP	0 ... +50	680	Degol BG 680	Energol GR-XP 680	Alpha SP 680	Klüberoil GEM 1-680 N	Mobilgear XMP 680	Omala S2 GX 680	Carter EP 680
		-5 ... +45	460	Degol BG 460	Energol GR-XP 460	Alpha SP 460	Klüberoil GEM 1-460 N	Mobilgear XMP 460	Omala S2 GX 460	Carter EP 460
		-10 ... +40	320	Degol BG 320	Energol GR-XP 320	Alpha SP 320	Klüberoil GEM 1-320 N	Mobilgear XMP 320	Omala S2 GX 320	Carter EP 320
		-15 ... +30	220	Degol BG 220	Energol GR-XP 220	Alpha SP 220	Klüberoil GEM 1-220 N	Mobilgear XMP 220	Omala S2 GX 220	Carter EP 220
		-20 ... +20	150	Degol BG 150	Energol GR-XP 150	Alpha SP 150	Klüberoil GEM 1-150 N	Mobilgear XMP 150	Omala S2 GX 150	Carter EP 150
		-25... +10	100	Degol BG 100	Energol GR-XP 100	Alpha SP 100	Klüberoil GEM 1-100 N	Mobilgear XMP 100	Omala S2 GX 100	Carter EP 100
Synthetic Oil	CLP PG	-10 ... +60	680	Degol GS 680	Energsyn SG-XP 680	–	Klübersynth GH 6 -680	Mobil Glygoyle 680	Omala S4 WE 680	Carter SY 680
		-20 ... +50	460	Degol GS 460	Energsyn SG-XP 460	Alphasyn PG 460	Klübersynth GH 6 -460	Mobil Glygoyle 460	Omala S4 WE 460	Carter SY 460
		-25 ... +40	320	Degol GS 320	Energsyn SG-XP 320	Alphasyn PG 320	Klübersynth GH 6 -320	Mobil Glygoyle 320	Omala S4 WE 320	Carter SY 320
		-30 ...+30	220	Degol GS 220	Energsyn SG-XP 220	Alphasyn PG 220	Klübersynth GH 6 -220	Mobil Glygoyle 30	Omala S4 WE 220	Carter SY 220
		-35 ... +20	150	Degol GS 150	Energsyn SG-XP 150	Alphasyn PG 150	Klübersynth GH 6 -150	Mobil Glygoyle 22	Omala S4 WE 150	Carter SY 150
		-40 ... +10	100	–	–	–	Klübersynth GH 6 -100	Mobil Glygoyle 100	–	–
	CLP HC	-10 ... +60	680	–	–	–	Klübersynth GEM 4-680 N	Mobil SHC Gear 680	Omala S4 GXV 680	Carter SH 680
		-20 ... +50	460	Degol PAS 460	Enersyn EP-XF 460	Alphasyn T 460	Klübersynth GEM 4-460 N	Mobil SHC Gear 460	Omala S4 GXV 460	Carter SH 460
		-30 ... +40	320	Degol PAS 320	Enersyn EP-XF 320	Alphasyn T 320	Klübersynth GEM 4-320 N	Mobil SHC Gear 320	Omala S4 GXV 320	Carter SH 320
		-40 ... +40	220	Degol PAS 220	Enersyn EP-XF 220	Alphasyn T 220	Klübersynth GEM 4-220 N	Mobil SHC Gear 220	Omala S4 GXV 220	Carter SH 220
		-40 ... +40	150	Degol PAS 150	Enersyn EP-XF 150	Alphasyn T 150	Klübersynth GEM 4-150 N	–	Omala S4 GXV 150	Carter SH 150
		-40 ... +40	100	–	–	–	Klübersynth GEM 4-100 N	–	–	–
Food Grade Oil	CLP NSF H1	-30 ... +25	220	–	–	Optileb GT 220	Klüberoil 4 UH1-220 N	Mobil SHC Cibus 220	–	Nevastane SL 220
Biodegradable Oil	CLP E	-25 ... +40	320	–	–	Tribol BioTop 1418-320	Klübersynth GEM 2-320	–	–	Carter Bio 320

	Product Code	Working Temp. [°C]	NLGI Grade	Base Oil	Colour
Mineral Grease	Mobil XHP 223	-20 ... +140	NLGI 3	ISO VG220	*Blue*
Synthetic Grease	Mobil SHC Grease 460 WT	-30 ... +150	NLGI 1.5	ISO VG460	*Red*
	Mobilith SHC 100	-40 ... +150	NLGI 2	ISO VG100	
Food Grade Grease NSF H1	Mobil SHC Polyrex 222	-30 ... +170	NLGI 2	ISO VG220	*White*
	Klüberlub NH1 222	-15 ... +100	NLGI 2	ISO VG 1220	*Yellow*
Semi-Fluid Grease (Mineral)	Shell Gadus S2 V 220 00	-20 ... +100	NLGI 00	ISO VG220	*Brown*
Semi-Fluid Grease (Synthetic)	Mobilith SHC 007	-50 ... +150	NLGI 00	ISO VG460	*Red*

9.2- Changing the Oil

Refer to the nameplate to find out the correct oil type filled inside the gearbox.



- Do not mix synthetic oils with mineral oils which will cause serious damage to the gear unit. The oil change must be done by using the filling, draining and level plugs according the mounting position illustrated at oil plugs tables.



- Extended, intensive contact with oils can lead to skin irritations. Avoid extended contact with oil, and clean oil off skin immediately.



- Hot oil can cause scalding. When changing oil, protect yourself against contacting hot oil, use protective gloves.

9.3- Oil Quantities

	H Series Oil Quantities (lt)																				
	H0321	**H0322**	**H0323**	**H0422**	**H0423**	**H0521**	**H0522**	**H0523**	**H0622**	**H0623**	**H0721**	**H0722**	**H0723**	**H0724**	**H0822**	**H0823**	**H0824**	**H0921**	**H0922**	**H0923**	**H0924**
M1	4	7,5	7,5	10	11	15	13	14	16	19	28	21	23	23	30	32	32	44	35	40	40
M2	6	10	10	13	15	18	18	19	23	26	35	30	34	42	41	46	46	55	55	57	58
M3	4	8	8	10	10	13	13	14	16	19	28	24	23	23	30	32	32	44	35	40	40
M4	7,5	12	14	13	15	20	20	21	26	27	40	40	46	39	48	52	52	62	62	67	67
M5*	9	10	10	11	12	16	16	17	20	23	34	34	38	38	41	44	44	53	53	58	58
M6*	9	11	11	12	13	17	17	18	21	24	36	36	40	40	43	46	46	56	56	61	61

	H1022	**H1023**	**H1024**	**H1121**	**H1122**	**H1123**	**H1124**	**H1222**	**H1223**	**H1224**	**H1322**	**H1323**	**H1324**	**H1422**	**H1423**	**H1424**	**H1522**	**H1523**	**H1524**	**H1622**	**H1623**
M1	45	55	55	86	58	62	62	85	95	95	128	145	145	135	150	150	190	205	200	190	220
M2	73	85	85	100	100	100	100	125	150	150	180	230	190	215	225	225	270	290	290	280	310
M3	45	55	55	86	58	62	62	85	95	95	128	145	145	135	150	150	190	205	200	190	220
M4	79	87	87	108	108	115	115	150	165	165	190	205	205	234	245	245	290	315	315	300	335
M5*	67	70	70	91	91	100	100	134	141	141	165	178	178	198	209	209	248	265	265	258	282
M6*	70	74	74	96	96	104	104	140	148	148	173	187	187	208	219	219	260	278	278	270	296

	H1624	**H1722**	**H1723**	**H1724**	**H1822**	**H1823**	**H1824**	**H1922**	**H1923**	**H1924**	**H2022**	**H2023**	**H2024**	**H2122**	**H2123**	**H2124**	**H2222**	**H2223**	**H2224**
M1	220	245	260	260	287	317	317	345	440	440	407	450	450	475	531	531	553	615	615
M2	310	340	365	365	400	444	444	518	555	555	608	666	666	715	785	785	813	905	905
M3	220	245	260	260	287	317	317	345	440	440	407	450	450	475	531	531	553	615	615
M4	335	364	387	387	432	475	475	550	600	600	651	713	713	765	840	840	870	960	960
M5*	282	332	350	350	398	432	432	506	546	546	586	656	656	696	773	773	792	883	883
M6*	296	340	359	359	405	440	440	511	552	552	591	661	661	704	780	780	801	891	891

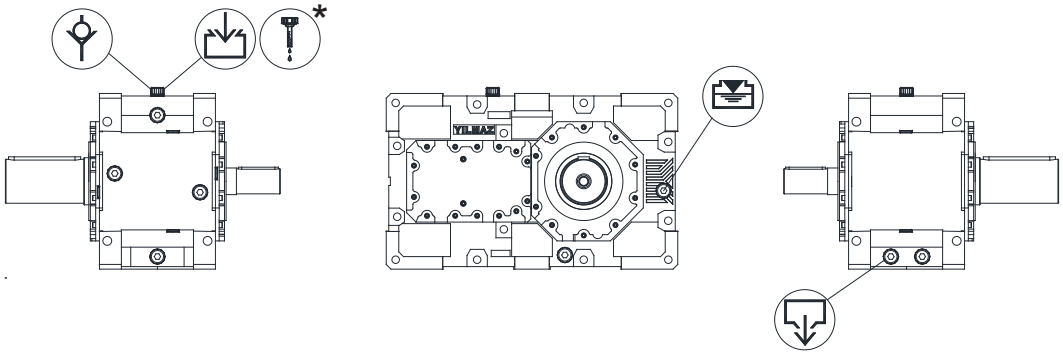
***: The oil quantities for M5 and M6 mounting positions are given as the gearbox is without an additional oil supply option. If the gearbox has an additional oil supply option please contact our company.**

9.4- Oil Plugs

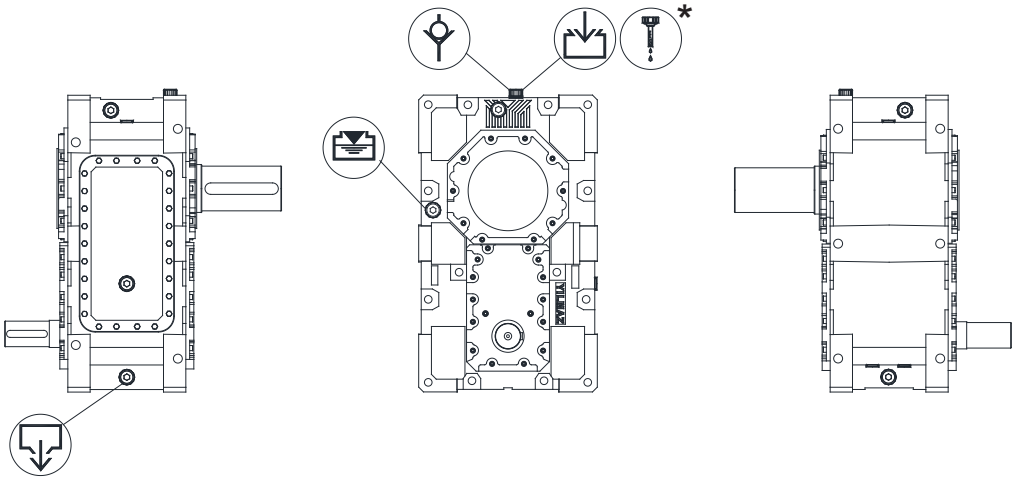
Oil Plugs for H Series

Mounting Positions

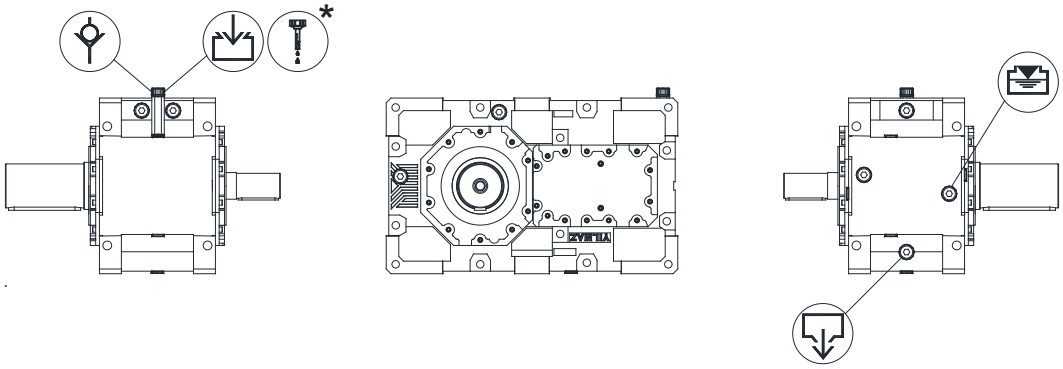
M1



M2



M3



:Oil Filling :Drain Plug :Oil Level :Vent Plug :Oil Dipstick

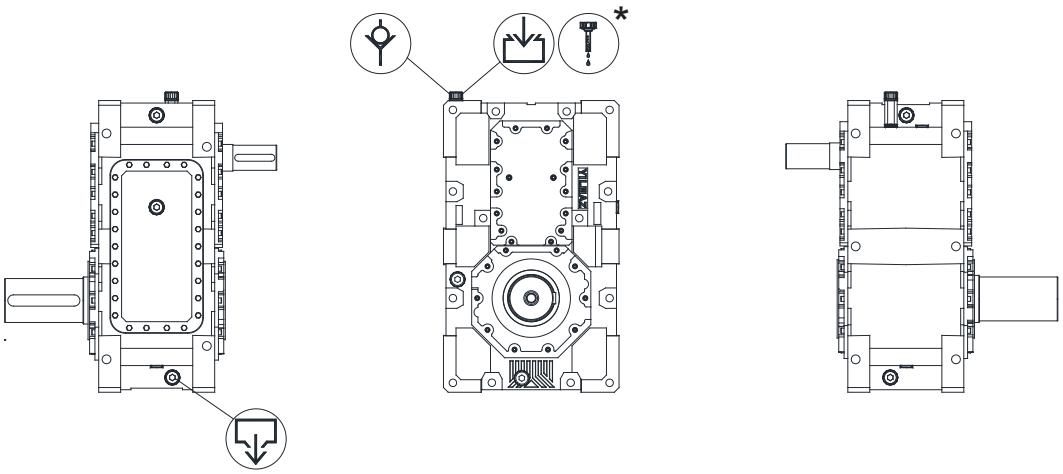
*:Option

Oil Plugs

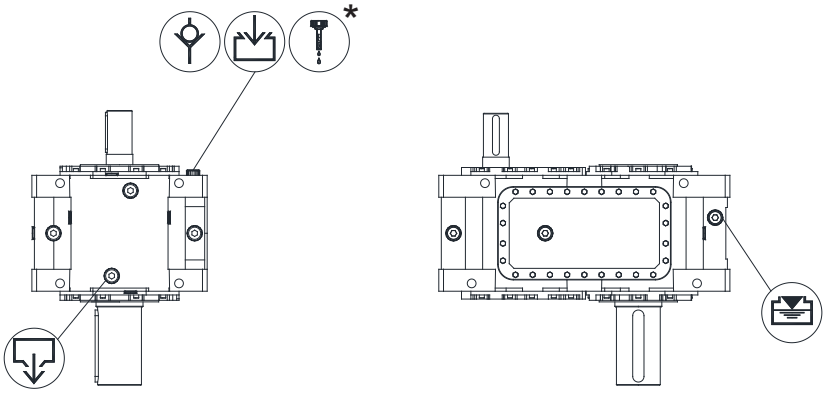
Oil Plugs for H Series

Mounting Positions

M4

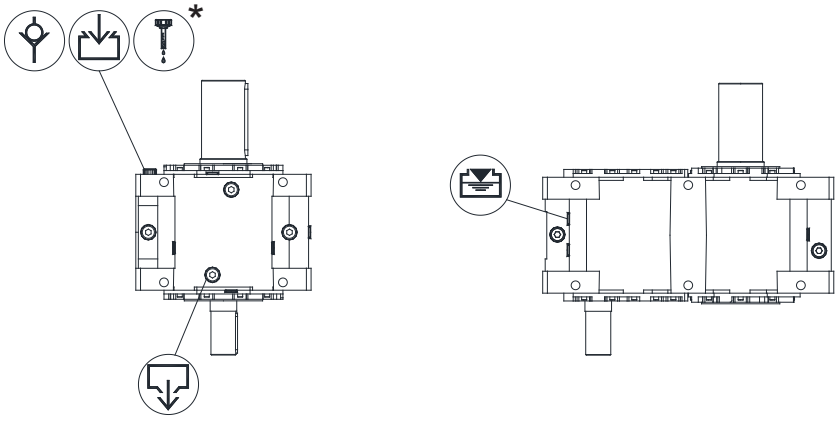


M5



It is given for the gearboxes which are without additional oil supply options and with sealed bearings.

M6

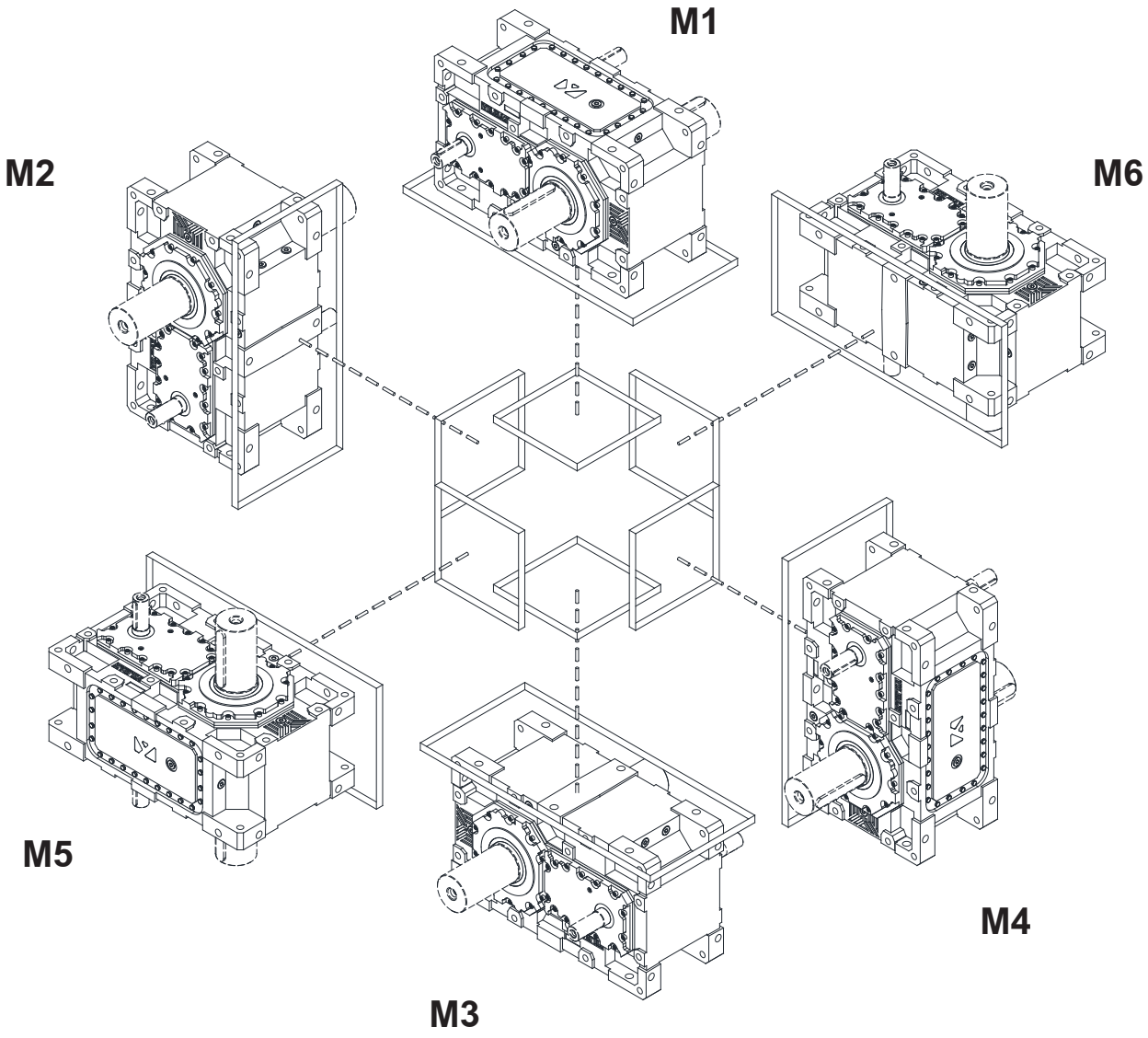


It is given for the gearboxes which are without additional oil supply options and with sealed bearings.

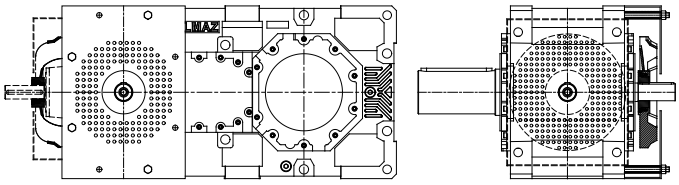
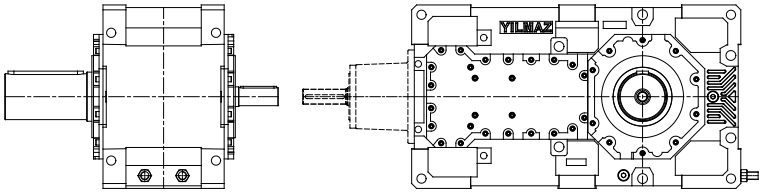
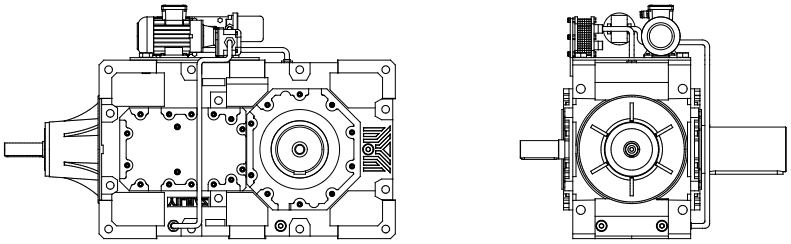
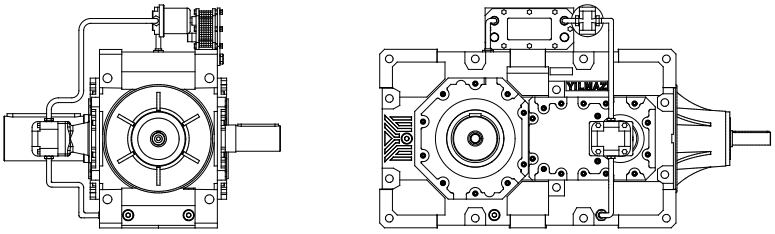
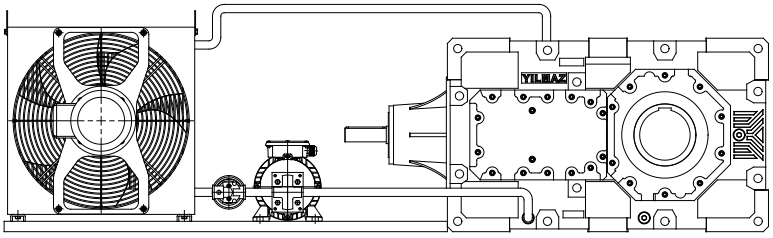
:Oil Filling :Drain Plug :Oil Level :Vent Plug :Oil Dipstick

*:Option

9.5- Mounting Positions



10- Cooling Options

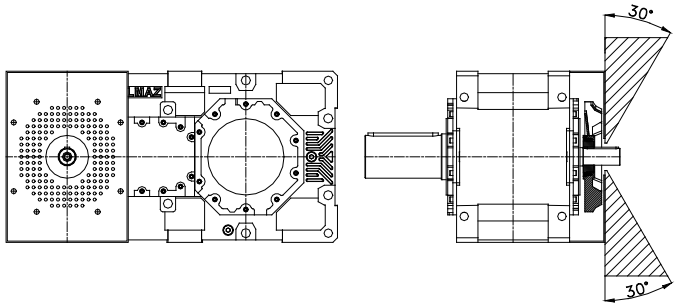
Cooling Options	
F **Fan Cooling**	
S **Cooling Coil**	
HE1 **Heat Exchanger with External Motor Pump**	
HE2 **Heat Exchanger with Shaft End Pump**	
R **Air / Oil Heat Exchanger**	

*: **Maximal water inlet temperature must be** 30ºC. Minimum water flow rate for gear units with cooling coil must be 4 lt/min for H03...H08 and 8lt/min for H09...H16. For gear units with heat exchanger look at its own table.

10.1- Fan Cooling

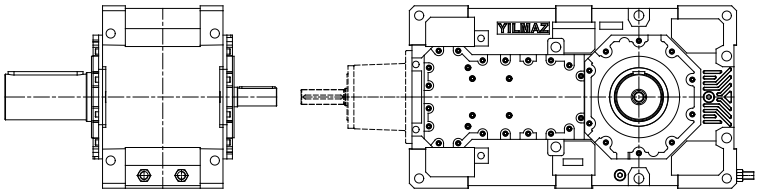
Standart Scope of Delivery ;
- Integrated fan on the input shaft
- Fan cover

The hatched areas shown below on the drawing must be kept free for clean and easy air intake .



10.2- Cooling Coil

Standart Scope of Delivery ;
- Cooling Coil at the bottom of Gearbox
- Inlet and outlet ports for cooling water



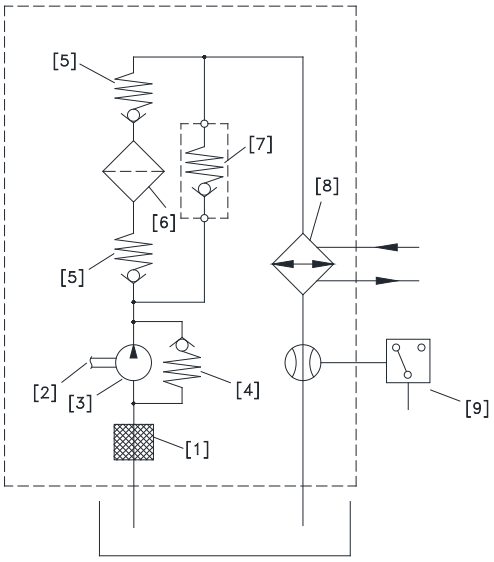
Maximal water inlet temperature must be 30ºC. Minimum water flow rate for gear units with cooling coil must be 4 lt/min for H03....H08 and 8 lt/min for H09....H16.There are inlet and outlet ports for customers. Port sizes can be seen at the below table.

Gearbox Size	Pipe Connection Diameter	Flow Rate (lt/min)	Max. Water Inlet Temperature (C)
H03...-H08	*G 1/2"*	*4....6*	*30*
H09...-H16	*G 3/4"*	*8....10*	*30*

10.3- Cooling with Heat Exchanger

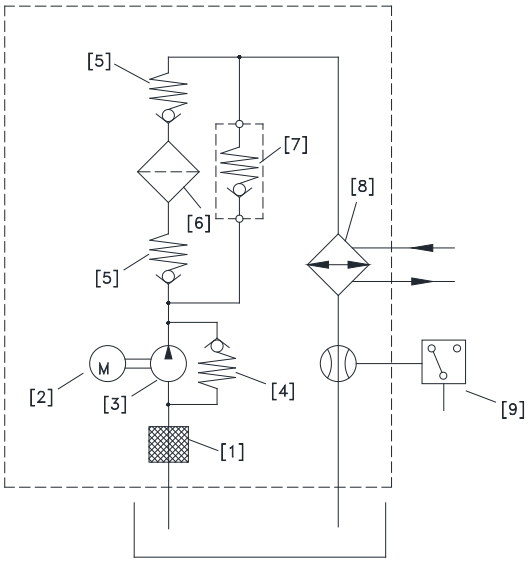
You can see the minimum cooling water flow rate for heat exchanger types below. Maximum cooling water inlet temperature must be 30ºC.

Heat Exchanger Type	Cooling Capacity [kW]	Oil Volume [lt/m]	Pump Motor Power [kW]	Min. Cooling Water Vol. [lt/m]
E1	1,5	6	0,25	2,2
E2	3,0	6	0,25	5,6
E3	5,0	12	0,37	7,2
E4	10	23	1,1	14
E5	20	41	1,5	29
EP6	30	68	3,0	43
EP7	45	94	4,0	65
EP8	60	112	5,5	80
EP9	80	133	5,5	115
EP10	100	170	7,5	140



Flow Diagram
Heat Exchanger (Shaft End Pump)

1 - Strainer
2 - Shaft end of gearbox
3 - Shaft end pump
4 - Pressure valve (optional)
5 - Bypas valve (optional)
6 - Oiil filter (optional)
7 - Bypas valve (optional)
8 - Water / oil plate heat exchanger
9 - Flow switch (optional)



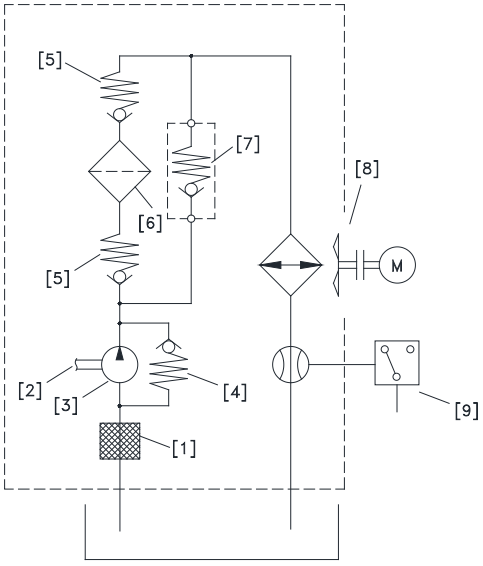
Flow Diagram
Heat Exchanger (External Motor Pump)

1 - Strainer
2 - Pump motor
3 - External pump
4 - Pressure valve (optional)
5 - Bypas valve (optional)
6 - Oil filter (optional)
7 - Bypas valve (optional)
8 - Water / oil plate heat exchanger
9 - Flow switch (optional)

10.4- Cooling with Air / Oil Heat Exchanger

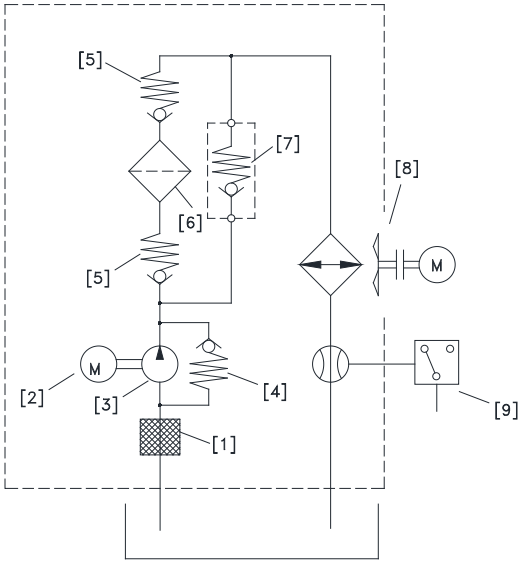
You can find technical informations about air / oil heat exchangers below. Technical informations are valid for 20ºC ambient temperature.

Air / Oil Heat Exchanger Type	Cooling Capacity [kW]	Oil Volume [lt/min]	Pump Motor Power [kW]
R1	5,0	41	1,5
R2	9,5	41	1,5
R3	17,5	68	3,0
R4	25	94	4,0
R5	29,5	94	4,0
R6	45	94	4,0
R7	60	148	7,5
R8	75	148	7,5



Flow Diagram
Air / Oil Heat Exchanger (Shaft End Pump)

1 - Strainer
2 - Shaft end of gearbox
3 - Shaft end pump
4 - Pressure valve (optional)
5 - Bypas valve (optional)
6 - Oil filter (optional)
7 - Bypas valve (optional)
8 - Air / oil heat exchanger
9 - Flow switch (optional)



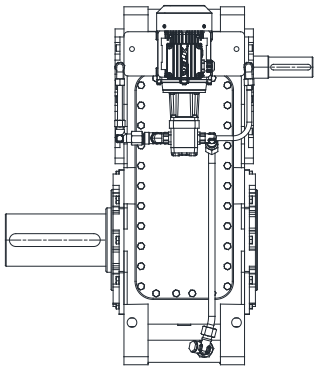
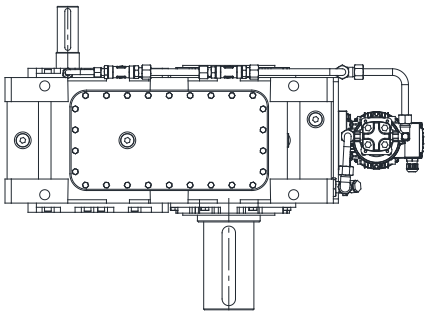
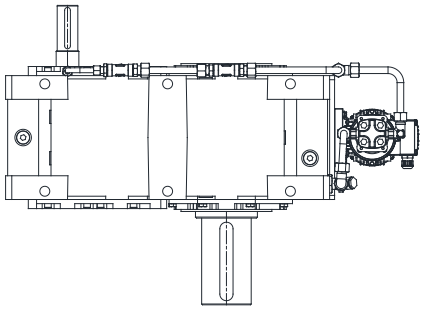
Flow Diagram
Air / Oil Heat Exchanger (External Motor Pump)

1 - Strainer
2 - Pump motor
3 - External pump
4 - Pressure valve (optional)
5 - Bypas valve (optional)
6 - Oil filter (optional)
7 - Bypas valve (optional)
8 - Air / oil heat exchanger
9 - Flow switch (optional)

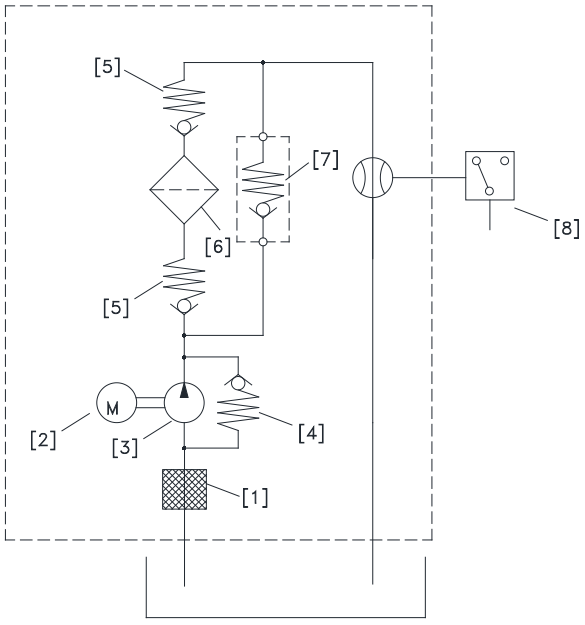
11- Lubrication Options

11.1- Forced Lubrication with External Motor Pump (Standard)

This kind of lubrication is used on gearboxes where the input speed is too low or the gearbox is operating with both side of rotation or the shaft end pump is interfered by assembling. Because the external motor pump can be located on any mounting face of the gearbox and it is independent of rotation speed and rotation direction it can be used easily by many applications. It is available for M4, M5 and M6 mounting positions. Illustrations of the system are shown below.

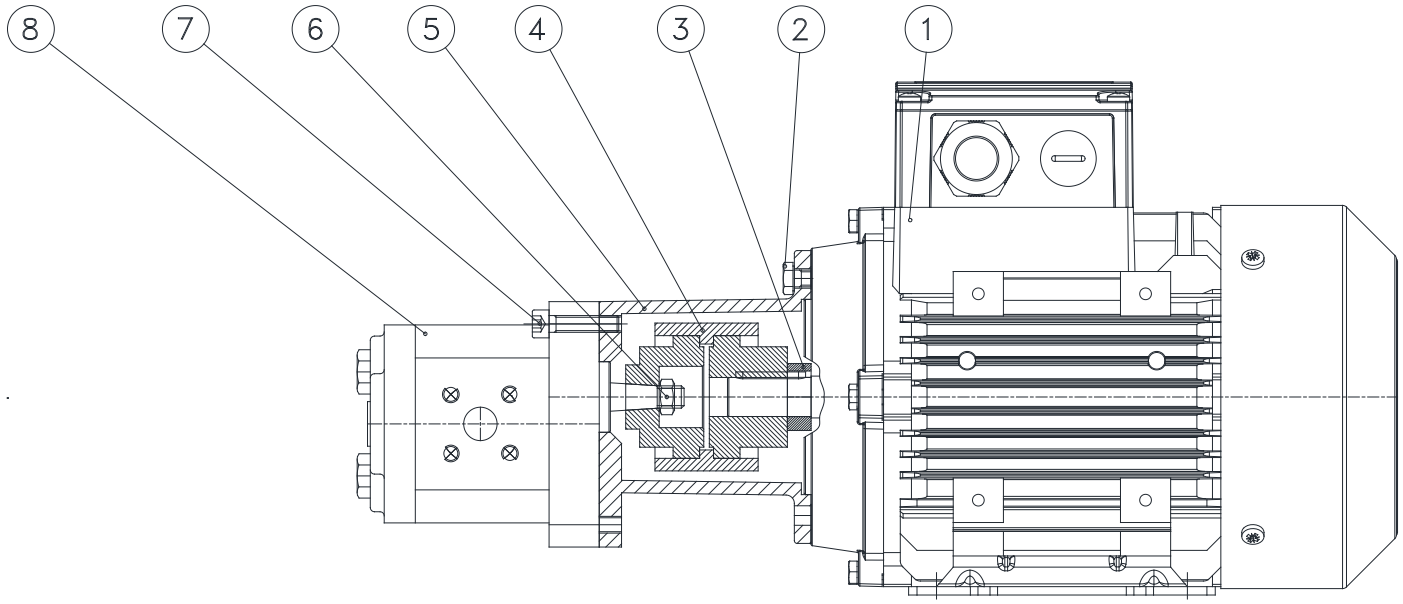
M4	M5	M6
		

Flow Diagram of Motor Pump



1 - Strainer
2 - Pump motor
3 - Pump
4 - Pressure valve (optional)
5 - Bypas valve (optional)
6 - Oil filter (optional)
7 - Bypas valve (optional)
8 - Flow switch (optional)

11.1.1- Standard Type External Motor Pump Part Lists



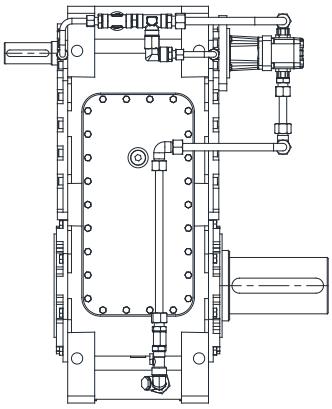
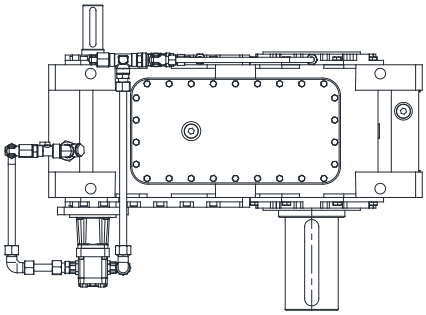
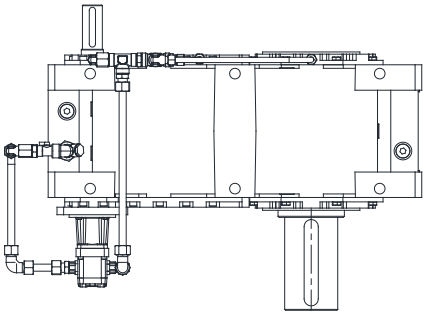
Standard shaft end pump basic part diagram. Parts may differ for special applications.

Standard Part List

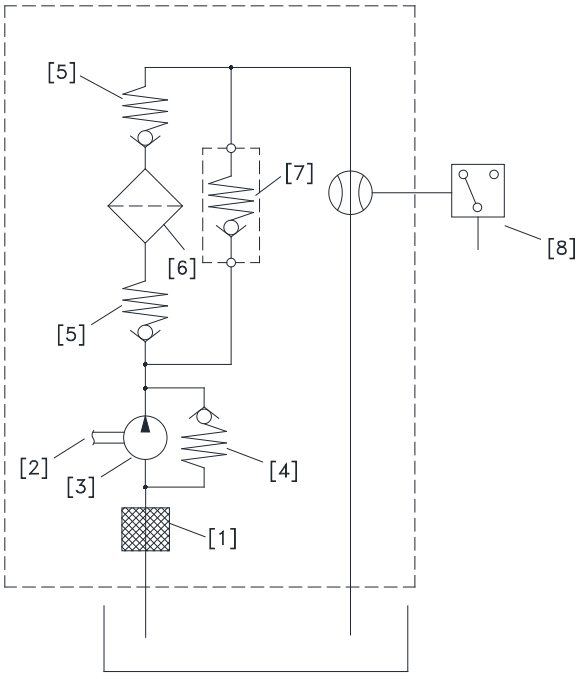
1 - AC Motor	5 - Pump Bell Housing
2 - Hex Head Bolt	6 - Nut
3 - Spacer	7 - Hex Socket Head Screw
4 - Coupling	8 - Pump

11.2- Forced Lubrication with Shaft End Pump (Optional)

This system is a forced lubrication system by using a shaft end pump integrated on the input shaft. This kind of lubrication is only available if the input speed is not low and the rotation of direction is one way. For both direction of rotation or low input speeds we recommend forced lubrication with external pump motor. It can be used in M4, M5 and M6 mounting positions. Sample drawings are shown below. The mounting location should be checked for possible interferences with the pump.

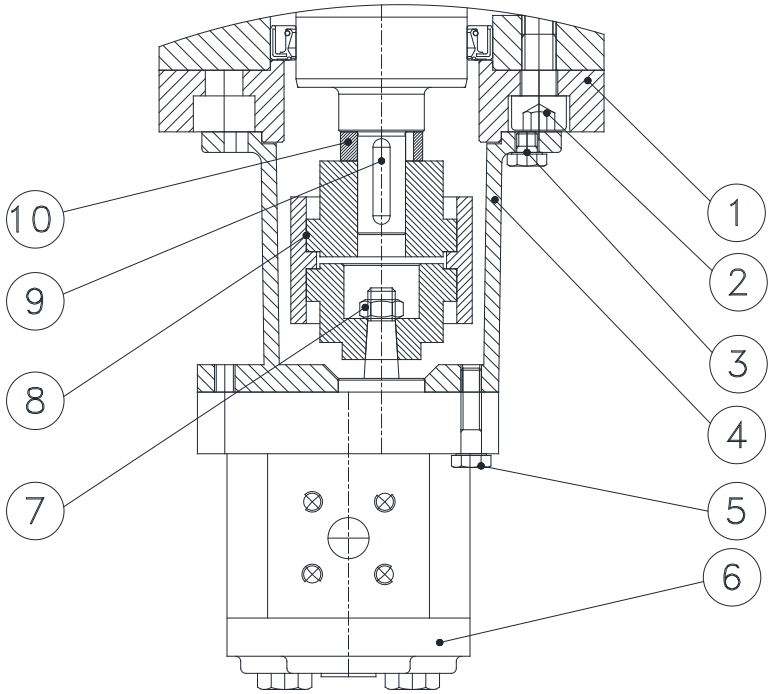
M4	M5	M6
		

Flow Diagram of Shaft End Pump



1 - Strainer
2 - Shaft end of gearbox
3 - Pump
4 - Pressure valve (optional)
5 - Bypas valve (optional)
6 - Oil filter (optional)
7 - Bypas valve (optional)
8 - Flow switch (optional)

11.2.1- Standard Type Shaft End Pump Part Lists



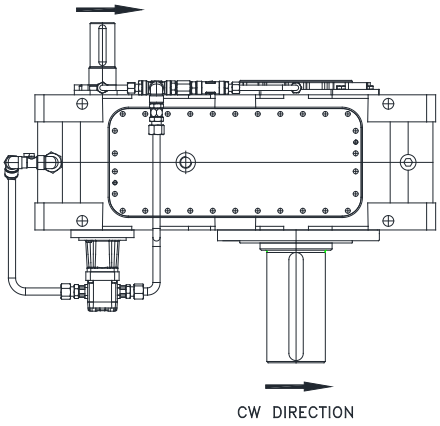
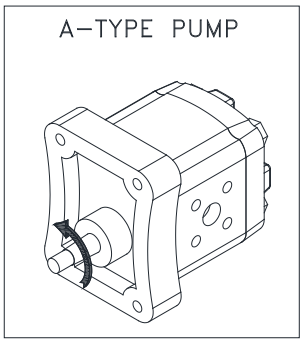
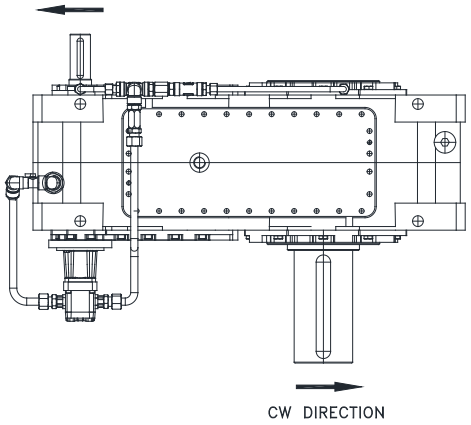
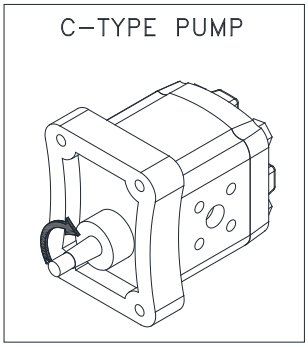
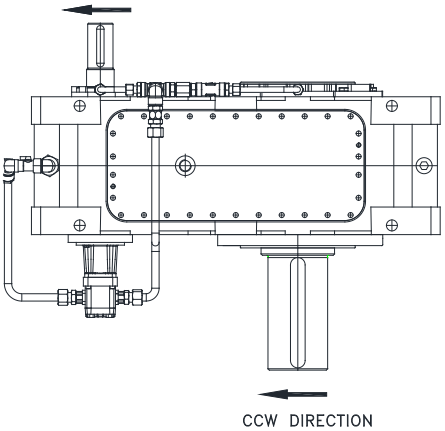
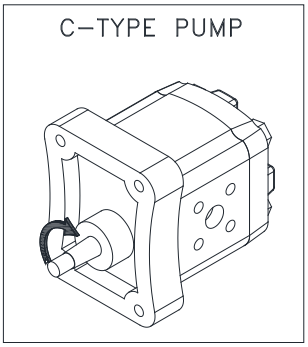
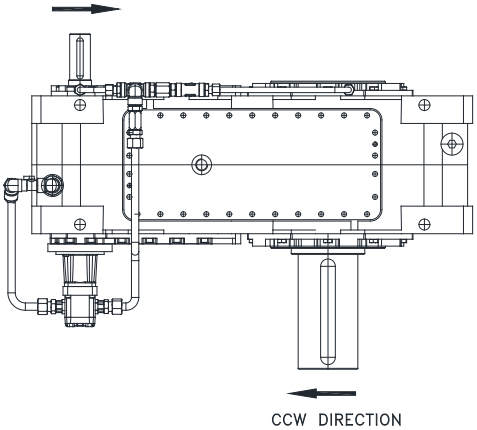
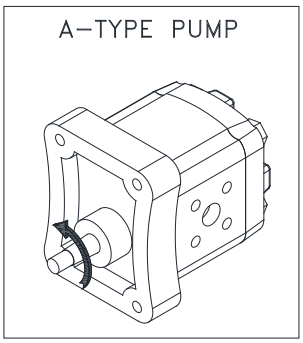
Standard shaft end pump basic part diagram. Parts may differ for special applications.

Standard Part List

1 - Adapter Flange	6 - Pump
2 - Hex Socket Head Screw	7 - Nut
3 - Hex Head Bolt	8 - Coupling
4 - Pump Bell Housing	9 - Key
5 - Hex Head Bolt	10 - Spacer

11.2.2- Rotation Direction of H Series for Forced Lubrication with Shaft End Pump

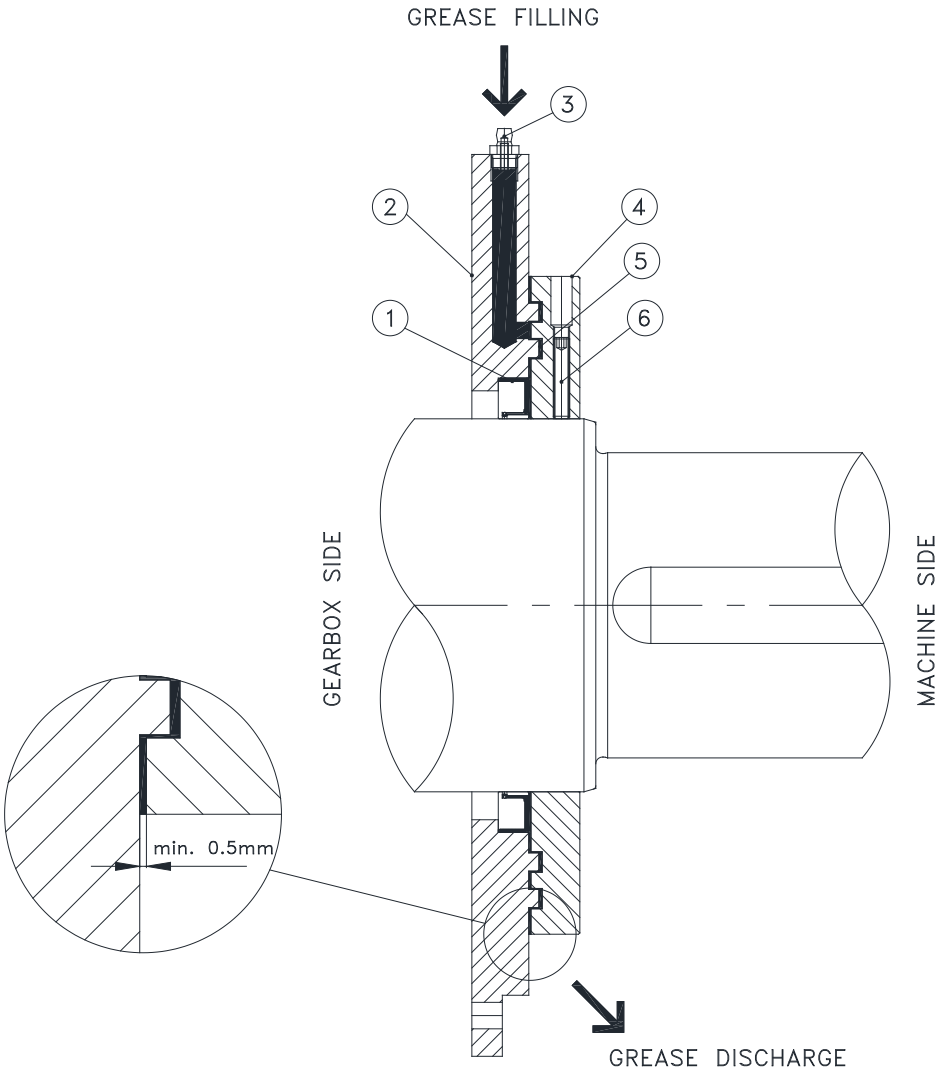
The rotation direction of the H series for forced lubrication with a shaft-end pump for Yılmaz products is defined as follows.

	2 - 4 Stages	1 - 3 Stages
Clockwise CW (Output)	 	 
Counter Clockwise CCW (Output)	 	 

12- Sealing Options

12.1- Taconite Seal Application

It is a labyrinth seal system with a grease fitting, designed to prevent the ingress of contaminants in gearboxes operating in extremely dusty and abrasive environments, by protecting the input and output shaft seals.



Part Number	Part Name
1	Seal
2	Seal Cover
3	Grease Nipple
4	Taconite Cover
5	Grease
6	Set screw

Mineral grease is used in taconite seal applications unless otherwise specified. If the ambient temperature is below 0 °C in the application, a suitable synthetic grease specified in the lubrication table should be used.

New mineral grease, or an equivalent specified in the lubrication table, is injected through the grease nipple located on the seal cover of the gearbox. The procedure is considered complete when new grease is observed emerging from the gap between the seal cover and the taconite cover.

There must be a minimum clearance of 0.5 mm between the seal cover and the taconite cover.

13- Troubleshooting Guide

All the operations below must be done by authorized and skilled mechanician/electrician. Inform YILMAZ REDUKTOR before making any change to the gearbox. Only oil change is allowed to change without information. Do not make anything if you are not sure what you are doing and contact YILMAZ. Any change or operation done without the information of YILMAZ REDUKTOR is in your own risk and responsibility and YILMAZ REDUKTOR does not take any responsibility.

ID	Problem	Observation	Remedy
001	Gearbox Does Not Start Up	You hear no noise and shaft is not turning. You are not using any driver or frequency inverter.	Please Check the voltage supply and frequency of your electric connection. They must be in accordance with the nameplate of the motor. Observe motor manufacturers start up manual. Still does not work go to ID 100
002	Gearbox Does Not Start Up	You hear no noise and shaft is not turning. You are using frequency inverter or driver.	Please observe the frequency inverter/driver manual. Check the motor by supplying direct voltage to see if the problem is on your driver/ frequency inverter. Still does not work go to ID 001.
003	Gearbox Does Not Start Up	You hear some noise but both motor shaft and gearbox shaft is not turning. You are not using any driver /frequency inverter or braked motor.	Please Check the voltage supply and frequency of your electric connection. They must be in accordance with the nameplate of the motor. Observe motor manufacturers start up manual. Still same problem, the load may be too high for the chosen motor. Loosen the gearbox from the load/torque. If it works than the starting torque is insufficient and higher motor power is needed. For mono phase motors, check the starting up condensator and running condensator as well. If nothing helps go to ID 100
004	Gearbox Does Not Start Up	You hear some noise but both motor shaft and gearbox shaft is not turning. You are using driver or frequency inverter.	Please observe the frequency inverters or drivers manual. To see if the problem is on your driver or frequency inverter take out the driver/frequency inverter and make direct voltage supply to the motor according the motors nameplate. Still does not work go to ID 100
005	Gearbox Does Not Start Up	You hear some noise but both motor shaft and gearbox shaft is not turning. You are using braked motor	Please Check the voltage supply and frequency of your electric connection. They must be in accordance with the nameplate of the motor. Observe motor manufacturers start up manual. Be sure that the brake is working. Observe the brake manufacturers manuel. If brake is supplied from YILMAZ observe this manuel for correct brake wiring diagram. If still not work supply the brake with voltage according its nameplate directly. For example 198 V DC. You will hear a clicking noise explaining that the brake is opening. If you hear no noise the brake or rectifier is defect. If you hear the clicking noise the brake is working. You should this clicking noise by your normal electric connection as well. By supplying direct supply to the brake you hear the clicking noise and at same time you supply the motor with direct voltage according to its name plate and still same problem, the load may be too high for the chosen motor. Go to ID 003.
006	Gearbox Does Not Work in Low speeds / Frequencies.	You are using frequency inverter.	For very low speeds the frequency inverters frequency is lowering down. For very low frequencies the inverter parameter and motor parameter must be optimise. Also for low speeds the efficiency of the gearbox may vary too much. Specially for worm-gearboxes. The recommended frequency range is 20-70 Hz for worm-gearboxes and 10-70 Hz for Helical Gear Boxes. Use Higher motor power and Frequency inverter or change ratio of gearbox to work inside the recommended range.

Troubleshooting Guide

ID	Problem	Observation	Remedy
007	Gearbox Does Not Start Mornings or After Long Time Stop.	Ambient Temperature is below +5 Celsius	The oil is not in accordance with your working conditions. Change to lower viscosity oils. Observe this manual for using the correct oil. Working in higher ambient temperatures is an other solution if possible. If still same problem you need higher motor power.
008	Gearbox is Heating Up too Much	You are using Worm Gear Box and ambient temperature is lower than +40 Celsius	Measure the surface temp. using a temperature measuring device under full load. If the temp is under +80 Celsius this will make no harm to the gearbox and is normal. All ATEX conforming gearboxes and standard worm gearboxes are designed to work under max. +120 Celsius. If higher than +120 Celsius and using ATEX conforming gear box immediately stop the system and contact YILMAZ REDUKTOR. Go to ID 100. If not ATEX confirming check the oil type and oil quantity/level according your mounting position and check the nameplate mounting position. If nameplate mounting position does not fit the actual position go to ID 100.
009	Gearbox is Heating Up too Much	You are using Helical Gear Box. Ambient temp is lower than +40 Celsius	Measure the surface temp. using a temperature measuring device under full load. If the temp is under +80 Celsius this will make no harm to the gearbox and is normal. All ATEX conforming gearboxes are designed to work under max. +120 Celsius. If higher than +120 Celsius and using ATEX conforming gear box immediately stop the system and contact YILMAZ REDUKTOR. If not ATEX gearbox the gearbox is designed to work under max. +80 Celsius. If higher than +80 Celsius check the oil type and oil quantity/level according your mounting position and check the nameplate mounting position. If nameplate mounting position does not fit the actual position go to ID 100
010	Gearbox is Heating Up too Much	Ambient Temp is over +40 Celsius	Standard Gearboxes are designed to work under +40 Celsius. ambient temperature. If ambient temp is higher than +40 Celsius special solutions/gearboxes are required. Please contact YILMAZ
011	Gearbox is noisy	Noise is regular continuous	Check Your moving parts for noise. Disassemble the gearbox and run without load. If you still hear the noise motor bearings or gearbox bearings are defect. Change bearings. Go to ID 100
012	Gearbox is noisy	Noise is random	Check Your moving parts for noise. Disassemble the gearbox and run without load. If you hear still the noise the oil may has some particles inside. Change the oil and look for small particles. If metal particles are found the gearbox may have some damage. Goto ID 100
013	Gearbox is noisy	Regular knocking noise	Check Your moving parts for noise. Disassemble the gearbox and run without load. If you still hear the noise one of the gears inside is defect. Go to ID 100
014	Gearbox is noisy	Regular up and down noise	Check the output-shaft connection elements for run out. Take out the output shaft element and run without load. If you still hear the noise one of the gears has run out problem. Go to ID 100
015	Gearbox is noisy	Gearbox is with braked motor and noise is coming from the brake side randomly.	Low randomly clicking noise may come from the brake disc which is normal. If noise level is disturbing the brake may be defect or brake clearance is not adjusted. Go to ID 100
016	Gearbox is noisy	You are using frequency inverter and the noise level is changing according your speed.	The frequency inverter parameters are not optimise for the frequency range or motor you are using. Observe the frequency inverters manual. If still same problem change the ratio of gearbox. Go to ID 100



ID	Problem	Observation	Remedy
017	Oil is Leaking	Oil Leakage from Seal	If ambient Temp is over +40 Celsius or none stop work over 16 hours please change the top plug with a breather plug. Observe this manual for using breather plug. If this is not your case the seal could be damaged. Go to ID 100
018	Oil is Leaking	Oil Leakage from Plug	If you are using breather plug be sure it is in the correct place. This is the most top plug position according your mounting position. The plug may be not tight enough. There are some particles under the plug rubber surface. Clean and tighten the plug. If still same problem go to ID 100
019	Oil is Leaking	Oil Leakage from Housing	Observe exactly where the oil is coming out. It could be seal or plug point where it comes out and leaks over the housing. If this is your case go to ID 018/019. If you are sure oil comes out from housing than housing has some micro split / crack. Go to ID 100
020	Oil is Leaking	Oil Leakage from Cover	The sealing liquid under cover is split/defect. Disassemble the cover and put new sealing liquid. Assemble the cover and tighten the bolts. If still same problem go to ID 100
021	Gearbox is moving regularly on its mounting point	You are using Torque Arm	The movement of gear box is because of the run out of the shaft which you assemble the gearbox. This has no bad affect or harm to the gearbox and is normal unless you are using torque arm.
022	Gearbox is moving randomly on its mounting point	You are using Torque Arm	The movement of gear box is because of the run out and clearance of the shaft which you assemble the gearbox. Check the clearance of the assembling shaft and the clearances on your machine. This has no bad affect or harm to the gearbox unless you are using torque arm.
023	Motor is heating up	Motor is running over its nominal current	The motor power is not enough or some overload to the motor is possible. The motor may be defect. Go to ID 100
024	Motor is heating up	Ambient is dusty	Check the motor Fan Hub and rips. They must be free of dust. If you are using forced external fan, check if it is working. If you are using frequency inverter in low speeds and you do not have forced external fan, you may need forced external fan. Go to ID 100
025	Motor is running but Gearbox shaft does not turn	Scratching noise comes out	Some part (key, gear) may be defect inside gearbox. Go to ID 10
026	Gearbox Housing is Defect	You are using chain drive or pinion gear	The radial load or polygon effect of the chain may have caused the damage. Check also if the assembly bolts are loosened or the plate you assemble the gearbox is rigid enough. Check if you are using the correct diameter of chain drive and you are not exceeding max. allowed radial load. Check the position of your output element and recalculate your radial load and check if this fit to the maximum allowed radial load. Go to ID 100
027	Output Shaft is Defect	You are using chain drive or pinion gear	The radial load or polygon effect of the chain may have caused the damage. Check also if the assembly bolts are loosened or the plate you assemble the gearbox is rigid enough. Check if you are using the correct diameter of chain drive and you are not exceeding max. allowed radial load. Check the position of your output element and recalculate your radial load and check if this fit to the maximum allowed radial load. Go to ID 100

ID	Problem	Observation	Remedy
028	Gearbox is stopping too late	You are using braked motor	Please check the wiring diagram of the brake. There are two different kind of brake wiring diagram. The standard gearbox delivered from our factory is set to delayed braking. For sudden braking check the wiring diagram.
029	Gearbox is starting too late	You are using braked motor	A 24V shock transformer is recommended for fast opening of big brakes (≥ 200 Nm) and shock rectifier is recommended for smaller brakes (< 200 Nm). Go to ID 100.
100	Service Required	No self solution found	Please contact YILMAZ REDUKTOR Service point. See on the back side of this manual. Changing mechanical parts of gearbox can only be done by YILMAZ REDUKTOR or with information of YILMAZ REDUKTOR. Any change without informing YILMAZ REDUKTOR will cancel the warranty, manufacturer declaration and YILMAZ REDUKTOR will take no responsibility.

14- Disposal

14- Disposal

If your product is no longer of use and you wish to dispose it, refer to the instructions here. If you have any questions regarding ecological disposal methods, please consult our service points given on the backside of this manual.

14.1- Disposal of Oil

Lubricants (oil and greases) are hazardous substances, which can contaminate soil and water. Collect drained lubricant into suitable receptacles and dispose of it according to the valid national guidelines.

14.2- Disposal of Sealing

Remove the sealing rings from the gear reducer, and clean them of oil and grease residues. Dispose of the sealing as composite material (metal/plastic)

14.3- Disposal of Metal

Divide up the remainder of the gear reducer into iron, aluminium, non-ferrous heavy metal if possible. Dispose of it according to the valid national guidelines.

Appendix

Warranty Conditions:

1. The geared motors and gear units are warranted for two year except the electric motor. For motor warranty please refer to the manual of the electric motor manufacturer or the warranty document of the motor manufacturer. This warranty is valid only if the gearbox is assembled and started up according our operating instructions and is used under the allowed conditions for the appropriate gearbox type in our catalogue. Special Gearbox parts made according customer request are not covered by this warranty.

2. The warranty time starts from the start up time written on the warranty document and last for two years. If the start-up time is more then three months after the billing time, the total warranty time is limited to 27 months starting from billing time. If the warranty document is not send to our company after start-up, the total warranty time will be limited to 24 months after the billing time.

3. Any time during the warranty for maintenance, repair or change will be added to the warranty time. This time starts from the date which the company or representative was made aware of the problem and ends on the date of the re-start-up.

4. If the product fails to operate because of a manufacturing or assembly failure during the warranty time, the product will be repaired free of charge.

5. If the product fails to operate because of a manufacturing or assembly failure during the warranty time and it is not possible to repair it, the product will be changed with a new one according to the report from our service department mentioning that the hazard can not be repaired.

6. Costumers must inform the manufacturer if there are some problems after the service and repair of the failed product.

7. The extra costs like stopped plant, physical or mental injuries etc. by the costumer side are not covered by this warranty except the product itself.

8. The warranty is not valid if the user makes any modifications to the gear unit. e.g. Removal of namepale, changing of any gear unit parts.

9. Yılmaz Redüktör delivers the repaired gear units to the first customer in the warranty period. Yılmaz Redüktör will charge for delivery to the different addresses

YILMAZ REDUKTOR San. ve Tic. A.S.
Ataturk Mah. Lozan Cad. No: 17 P.K.:34522 Esenyurt - Istanbul / TURKEY
Phone: +90 (0) 212 886 90 00 (8 Lines)

Warranty Decleration
and
Instruction Manual Receipt Form

YILMAZ REDUKTOR products are **warranted for 2 (Two) years** covering all parts and materials used in products and their production errors unless they are started-up and used according our service manual and is not modified or disassembled without an acknowledgement from our company.

The warranty covers all costs like repair, service, spare parts etc. and no charge will be asked under any name. The time for repair, service will be added to the warranty time.

For detailed warranty conditions please refer the back side of this page.

Serial No:
Type:

Manufacturer:
Company : YILMAZ REDUKTOR Sanayi ve Ticaret A.S.
Address : ATATÜRK Mah. Lozan Cad. No:17 P.K.34522 Esenyurt-İstanbul- TURKİYE
Telefon : +90 (0) 212 886 90 00 (8 Lines)

Stamp and Signature

Supplier / End User:

With signing this part and sending this back to our company your waranty period will be started and you are accepting that you have received the operating instruction of the product.

Name:
Billing Date/ Bill No.:
Start-Up Place / Date:
Address:
Phone:

Supplier/ End User Stamp and Signature

Notes

Domestic Service
Tel: +90 212 886 90 00
Int: 1223, 1228, 1287
Whatsapp: +90 554 713 71 02
E-Mail: servis@yr.com.tr

Spare Parts
Tel: +90 212 886 90 00
Int: 1224, 1277
Whatsapp: +90 506 774 44 35
E-Mail: yedekparca@yr.com.tr

International Services
If you call the above service point, you will be directed to our nearest service.

Yılmaz Redüktör Sanayi ve Ticaret A.Ş.
Atatürk Mah. Lozan Cad. No: 17, 34522 Esenyurt - İstanbul / Turkey
Tel: +90 212 886 90 00 | **E-Mail:** yilmaz@yr.com.tr