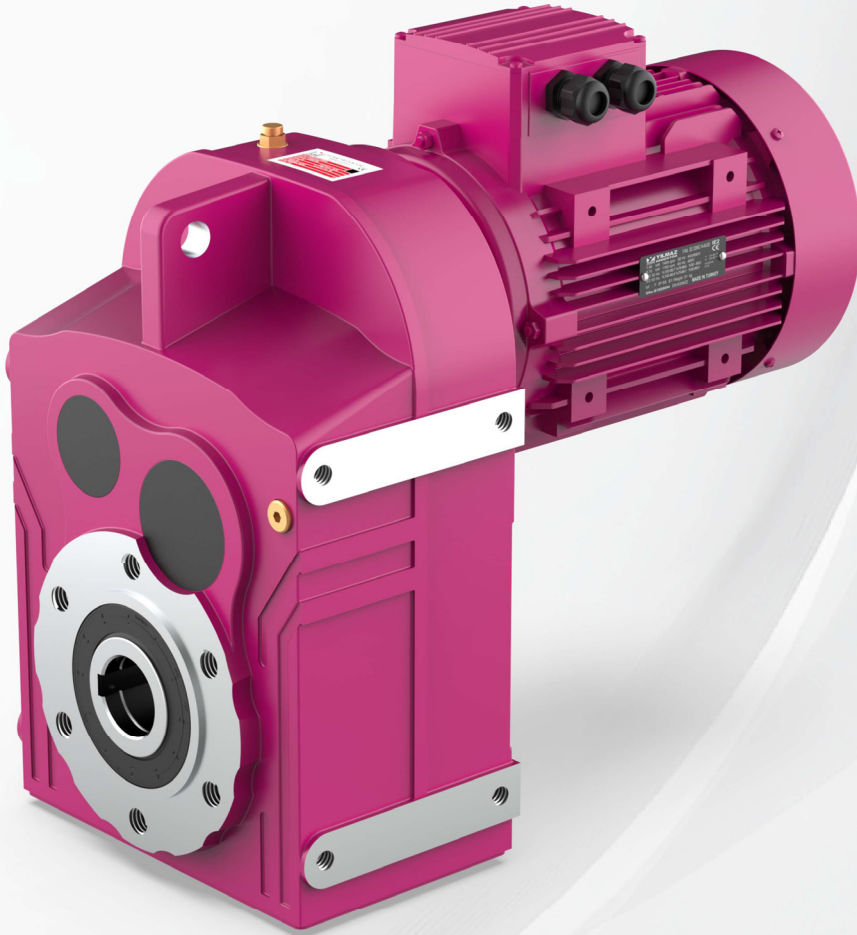


OPERATING INSTRUCTIONS

D Serie





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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 gearbox or environment.



Important Information.

EC Machinery Directive



Within terms of the EC machinery directive 2006/42/EC, the gearboxes are considered as not autonomous machine, but as a component to install in machines.

Operation is prohibited within the area of validity of the 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 D Series gear units and is applicable only for D 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.

Operating Instructions

D Series

Type Designation



2- Unit Designation

2.1- Detailed Unit Designation



Detailed D series gear units designation for ordering

(This Designation is different from the short nameplate designation)

D R 4 7 4 .02-3 E90S / 4C - L02

Brake

L-220V With Fan
P-24V With Fan
S-220V Without Fan
Z-24V Without Fan

01-10 Nm	10-100 Nm
02-25 Nm	20-200 Nm
04-40 Nm	30-300 Nm
05-50 Nm	40-400 Nm

Number of Poles

Motor Size

For DR / DV

E90S / 4

Pole Number
Frame Length
Motor Size
Motor Type

For DN Types

A06 :63 B5	A09 : 90 B5	A13 :132 B5	A25 : 250 B5
B06 :63 B14	B09 : 90 B14	B13 :132 B14	A28 : 280 B5
A07 :71 B5	A10 :100 B5	A16 :160 B5	A31 : 315 B5
B07 :71 B14	B10 :100 B14	A18 :180 B5	
A08 :80 B5	A11 :112 B5	A20 :200 B5	
B08 :80 B14	B11 :112 B14	A22 :225 B5	

Motor Efficiency Class

Output Shaft

00: Hollow Shaft Output
01: Solid Shaft Output
02: Solid Shaft Output With IEC B5 /14 Flange
03: Flanged and Hollow Shaft Output
0S: Shrink Disc Output
0E: Extruder Output
0A: Drywell Gearbox With Hollow Output Shaft
1A: Drywell Gearbox With Solid Output Shaft
SA: Drywell Gearbox With Shrink Disc Output
0K: Splined Hollow Output Shaft (DIN5480)
1K: Splined Solid Output Shaft (DIN5480)

Stage

2 Stages 5 Stages
3 Stages 6 Stages
4 Stages

Revision Number

Housing Size
0...9

Input Type

R : With Motor
N : IEC B5 / B14 Flanged Without Motor
V : IEC B5 / B14 Flanged With Motor
T : Without Motor
RB : Drywell Gearbox With Motor
NB : IEC B5 / B14 Flanged Drywell Gearbox Without Motor
VB : IEC B5 / B14 Flanged Drywell Gearbox With Motor
TB : Drywell Gearbox Without Motor
RE : Extruder Gearbox With Motor
NE : IEC B5 / B14 Flanged Extruder Gearbox Without Motor
VE : IEC B5 / B14 Flanged Extruder Gearbox With Motor
TE : Extruder Gearbox Without Motor

Gearbox Type
D Serie

2.2- Nameplate, Unit Designation



Nameplate unit designation is a short abbreviation from the detailed designation

A sample name plate for D Series

		YILMAZ REDÜKTÖR www.yr.com.tr MADE IN TURKIYE			
Type:	DR673.03-3E100L/4C				
Serial N.:	100524545				
Power:	2,2	kW	Ratio:	197,01	
Speed:	7,4	rpm.	M.Pos.:	M1	
Oil:	MINERAL VG220				
Oil Qty:	21			lt.	

Abbreviations:

Serial N. : Serial Number

M.Pos. : Mounting Position

Type Designation;

DR673.03-3E100L/4C

Type

Output Shaft

Motor Type

Operating Instructions

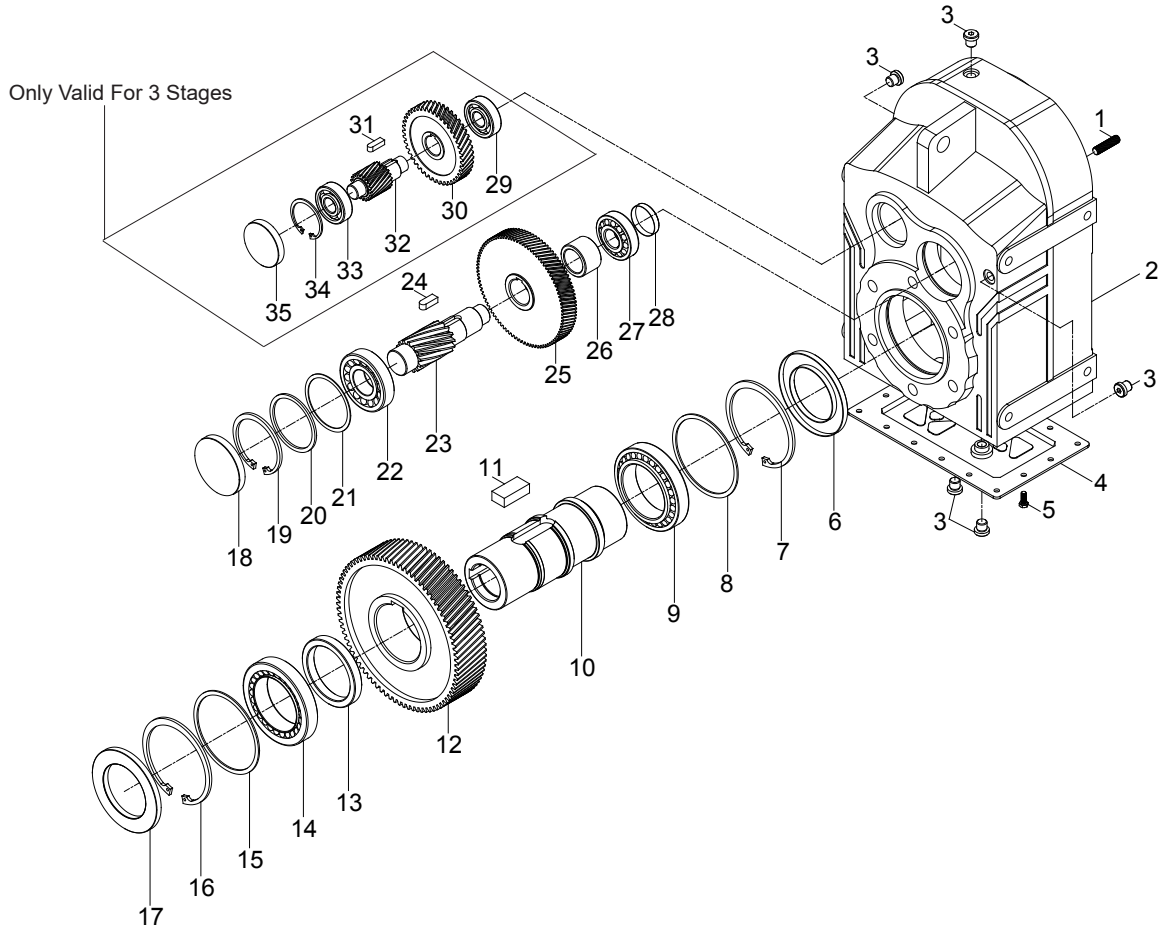
D Series

Part Designation



3- Part List of Standard Type Gear Units

3.1- D.....00 Types for 2 and 3 Staged Gear Units

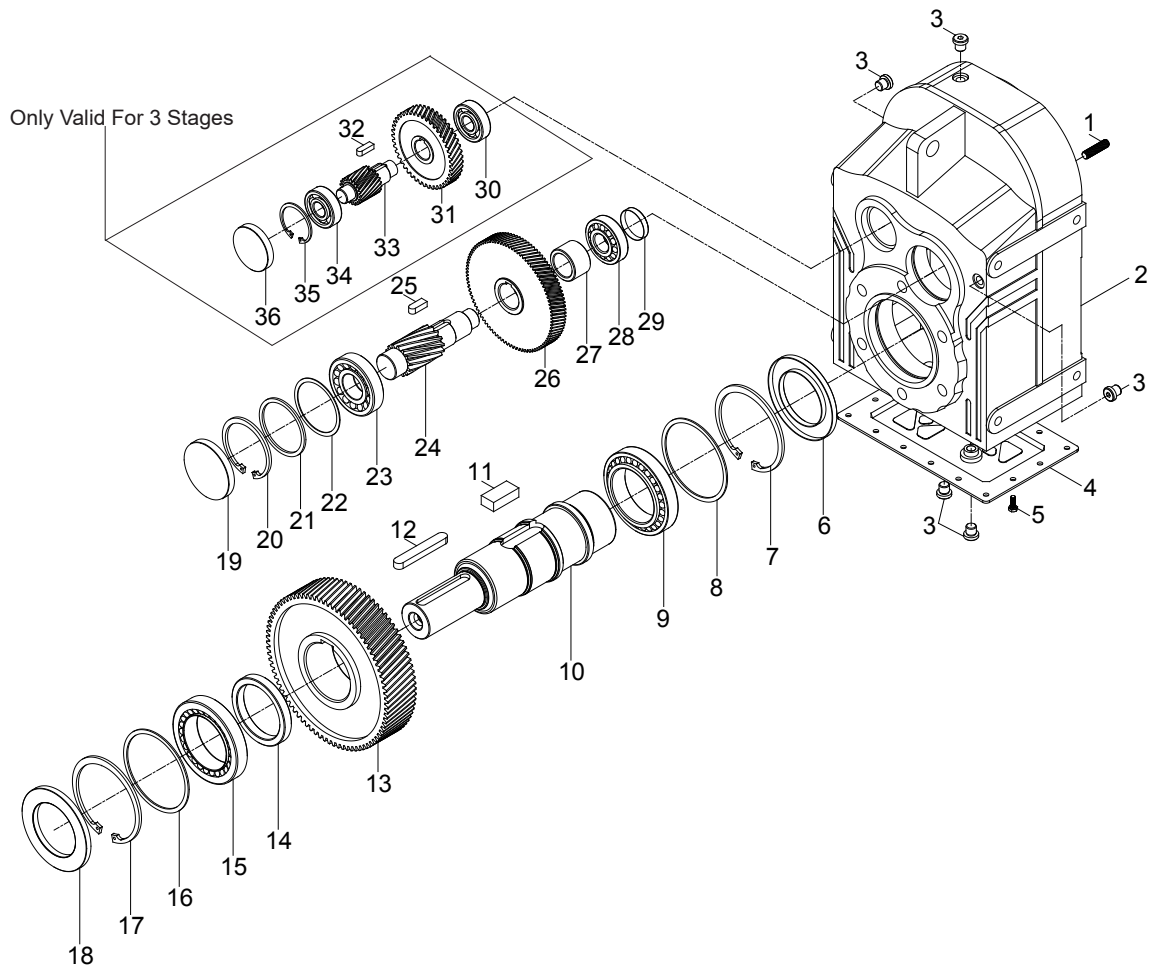


Standard D.....00 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Pin Screw	9- Bearing	17- Seal	25- Gear	33- Bearing
2- Housing	10- Hollow Shaft	18- Closing Cap	26- Spacer	34- Circlip
3- Plug	11- Key	19- Circlip	27- Bearing	35- Closing Cap
4- Cover Plate	12- Gear	20- Spacer	28- Spacer	
5- Screw	13- Spacer	21- Spacer	29- Bearing	
6- Oil Seal	14- Bearing	22- Bearing	30- Gear	
7- Circlip	15- Spacer	23- Shaft Gear	31- Key	
8- Spacer	16- Circlip	24- Key	32- Gear	

3.2- D.....01 Types for 2 and 3 Staged Gear Units

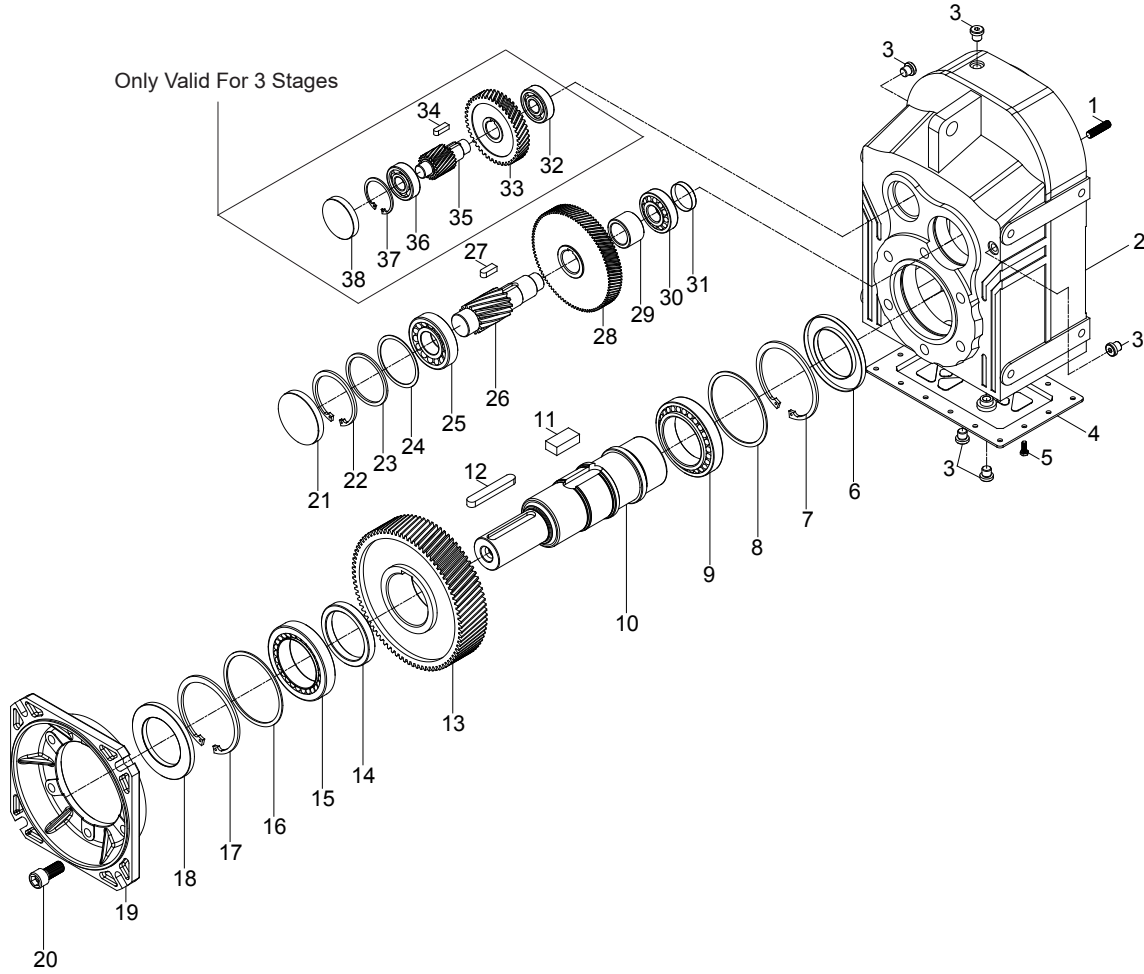


Standard D.....01 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Pin Screw	9- Bearing	17- Circlip	25- Key	33- Shaft Gear
2- Housing	10- Output Shaft	18- Oil Seal	26- Gear	34- Bearing
3- Plug	11- Key	19- Closing Cap	27- Spacer	35- Circlip
4- Cover Plate	12- Key	20- Circlip	28- Bearing	36- Closing Cap
5- Bolt	13- Gear	21- Spacer	29- Spacer	
6- Oil Seal	14- Spacer	22- Spacer	30- Bearing	
7- Circlip	15- Bearing	23- Bearing	31- Gear	
8- Bearing	16- Spacer	24- Shaft Gear	32- Key	

3.3- D.....02 Types for 2 and 3 Staged Gear Units

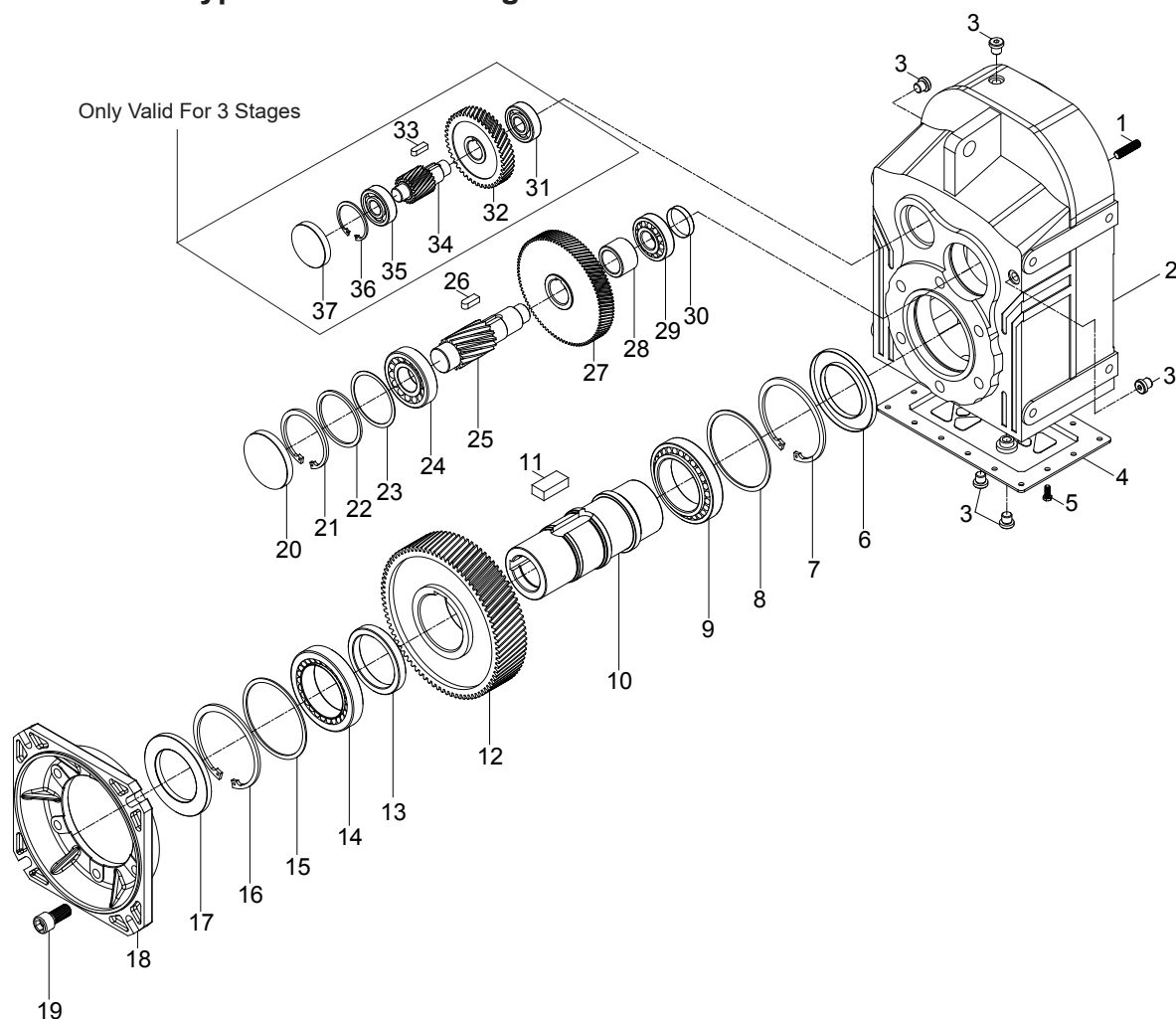


Standard D.....02 type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Pin Screw	10- Solid Shaft	19- Flange	28- Gear	37- Circlips
2- Housing	11- Key	20- Bolt	29- Spacer	38- Closing Cap
3- Plug	12- Key	21- Closing Cap	30- Bearing	
4- Cover Plate	13- Gear	22- Circlip	31- Spacer	
5- Bolt	14- Spacer	23- Spacer	32- Bearing	
6- Oil Seal	15- Bearing	24- Spacer	33- Gear	
7- Circlip	16- Spacer	25- Bearing	34- Key	
8- Spacer	17- Circlip	26- Shaft Gear	35- Shaft Gear	
9- Bearing	18- Seal	27- Key	36- Bearing	

3.4- D.....03 Types for 2 and 3 Staged Gear Units



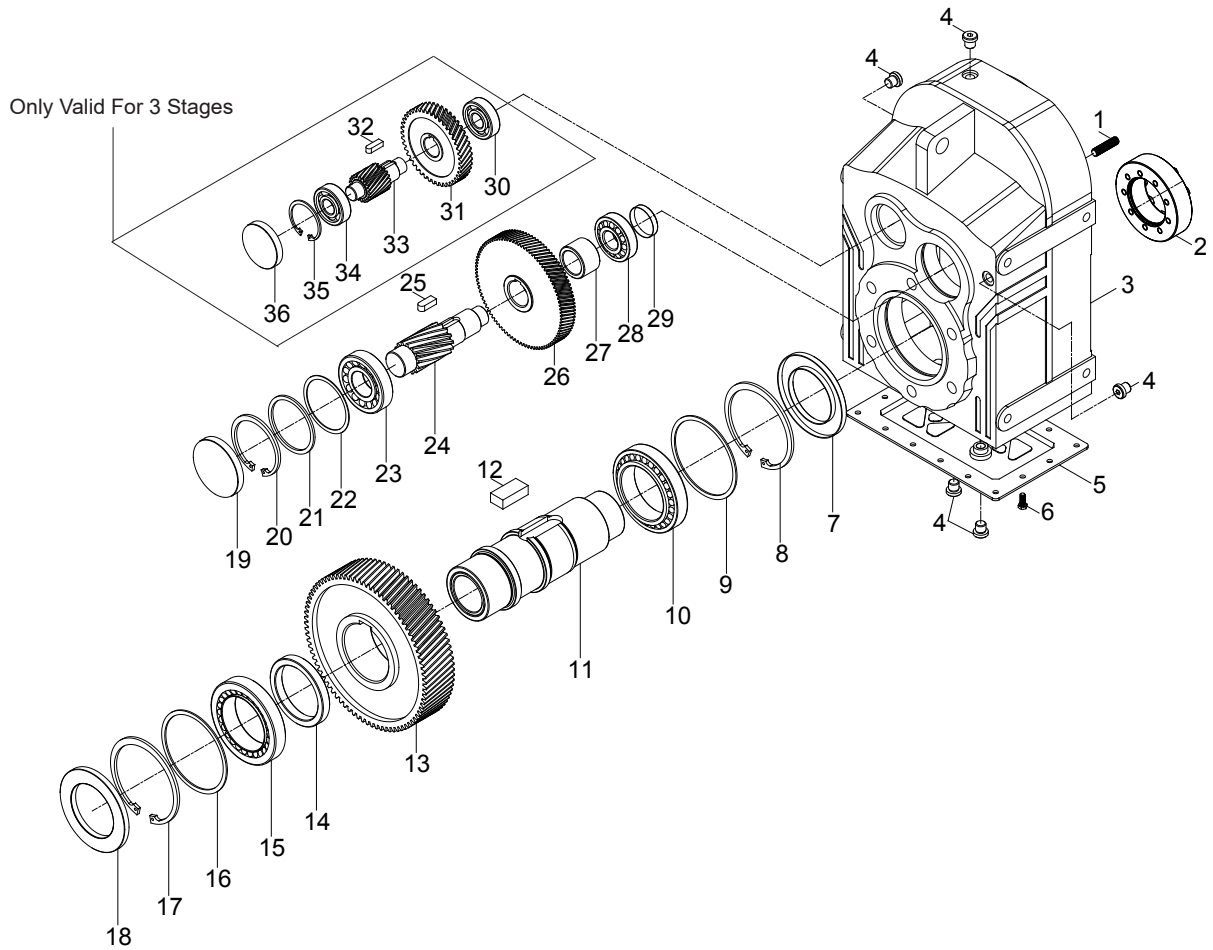
Standard D.....03 type basic part diagram. Parts may differ for special applications.



Standard Part List

1- Pin Screw	9- Bearing	17- Oil Seal	25- Shaft Gear	33- Key
2- Housing	10- Hollow Output Shaft	18- Flange	26- Key	34- Gear
3- Plug	11- Key	19- Bolt	27- Gear	35- Bearing
4- Cover Plate	12- Gear	20- Closing Cap	28- Spacer	36- Circlip
5- Bolt	13- Spacer	21- Circlip	29- Bearing	37- Closing Cap
6- Oil Seal	14- Bearing	22- Spacer	30- Spacer	
7- Circlip	15- Spacer	23- Spacer	31- Bearing	
8- Spacer	16- Circlip	24- Bearing	32- Gear	

3.5- D.....0S Types for 2 and 3 Staged Gear Units

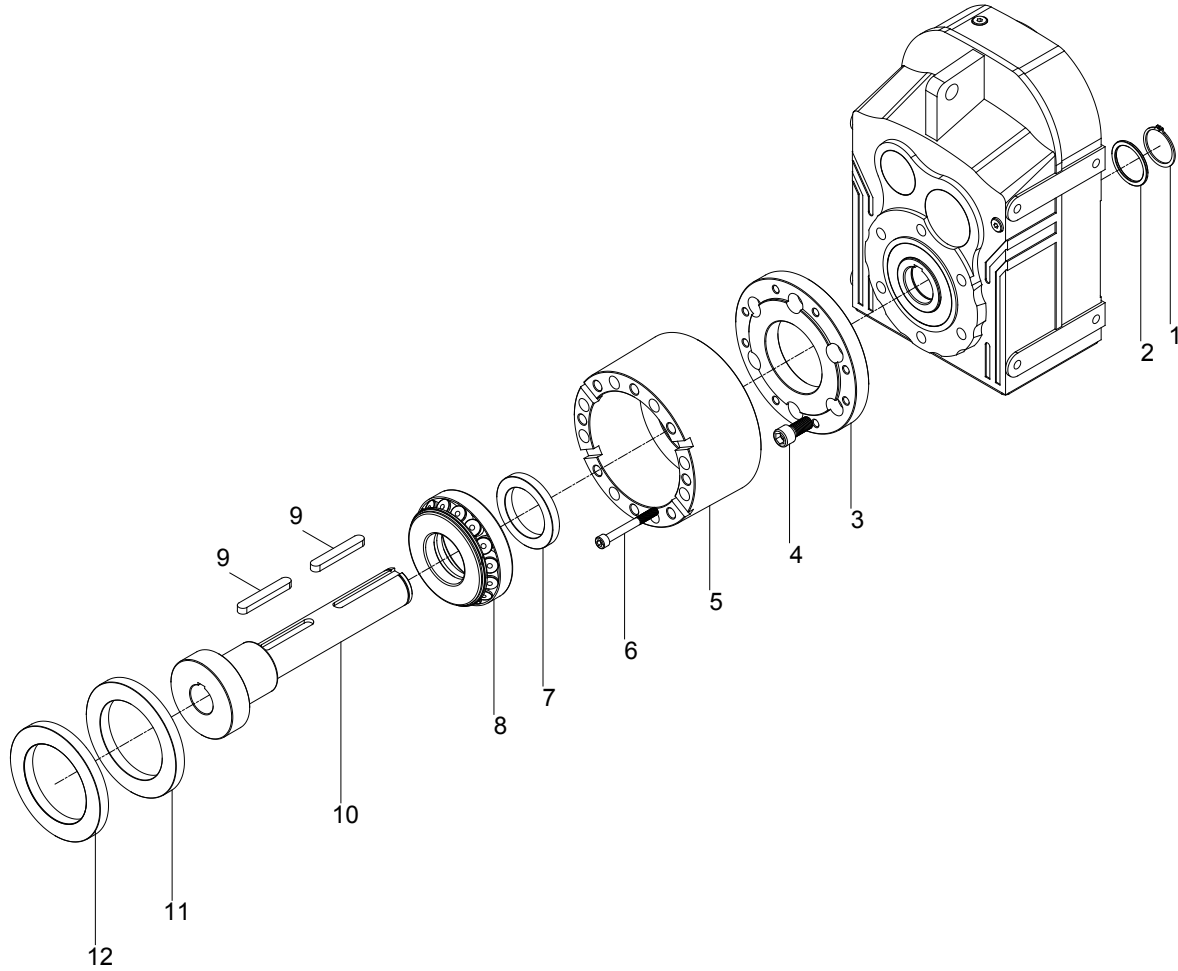


Standard D.....0S type basic part diagram. Parts may differ for special applications.

Standard Part List

1- Pin Screw	9- Spacer	17- Circlip	25- Key	33- Shaft Gear
2- Shrink Disc	10- Bearing	18- Oil Seal	26- Gear	34- Bearing
3- Housing	11- Output shaft	19- Closing Cap	27- Spacer	35- Circlip
4- Plug	12- Key	20- Circlip	28- Bearing	36- Closing Cap
5- Cover Plate	13- Gear	21- Spacer	29- Spacer	
6- Bolt	14- Spacer	22- Spacer	30- Bearing	
7- Oil Seal	15- Bearing	23- Bearing	31- Gear	
8- Circlip	16- Spacer	24- Shaft Gear	32- Key	

3.6- D.E....0E Types Part List



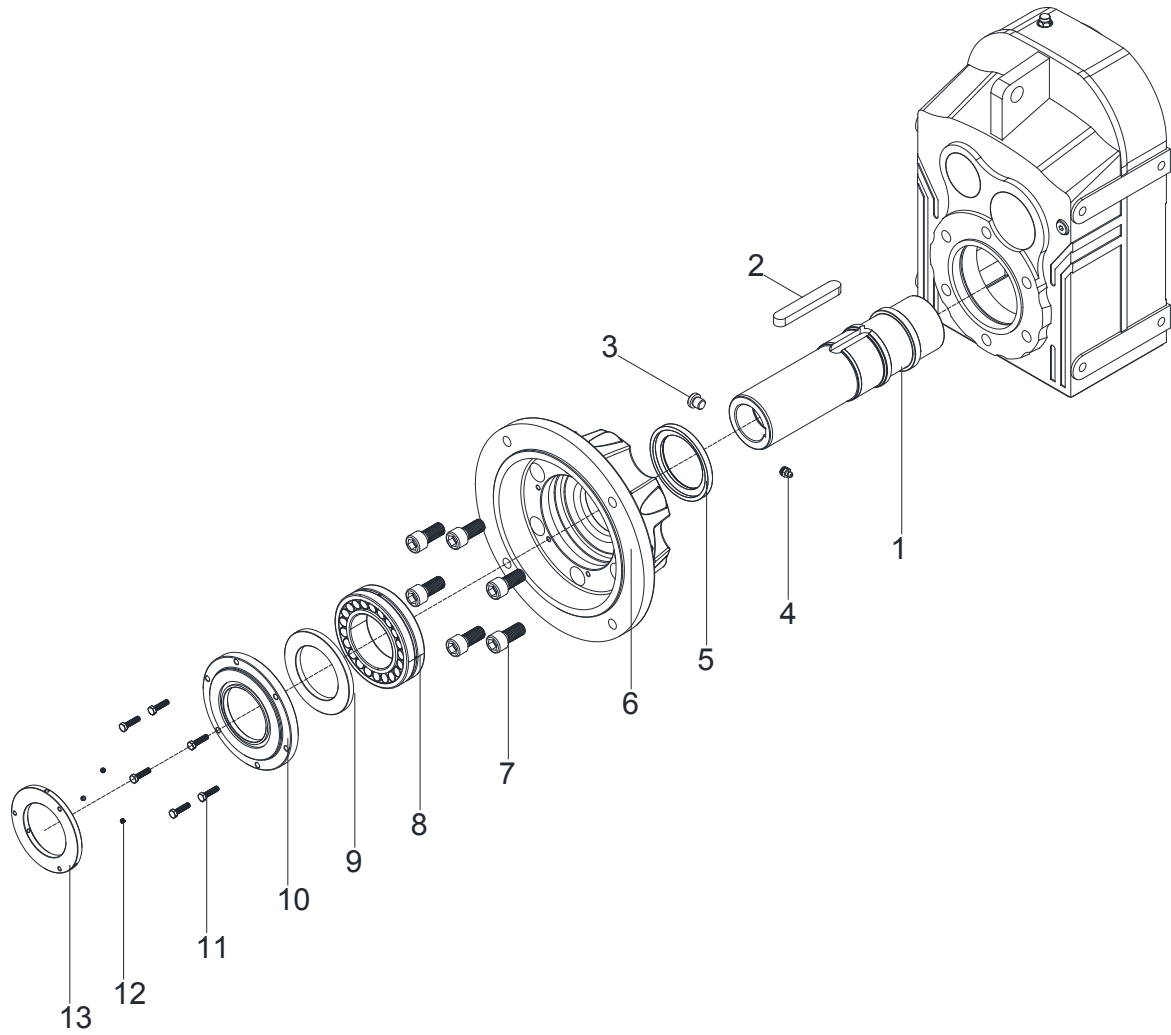
Standard D.E....0E type basic part diagram. Parts may differ for special applications.



Standard Part List

1- Circlip	5- Extruder Neck	9- Key
2- Spacer	6- Bolt	10- Hollow Shaft Output
3- Flange	7- Seal	11- Spacer
4- Bolt	8- Bearing	12- Seal

3.7- D.B....0A Types Part List



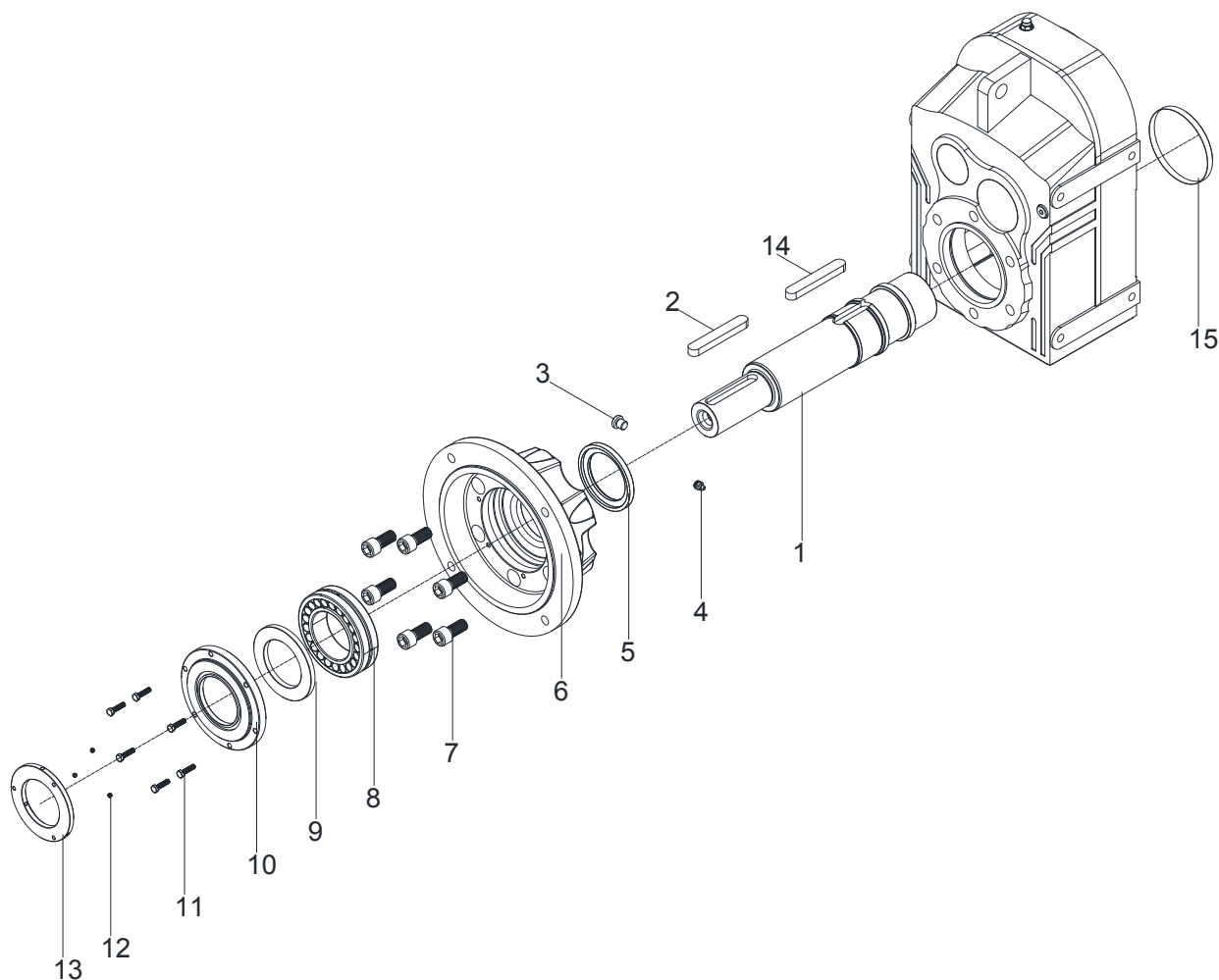
Standard D.B....0A type basic part diagram. Parts may differ for special applications.



Standard Part List

1- Hollow Shaft	5- Oil Slinger Ring	9- Seal	13- Labyrinth Seal
2- Key	6- Drywell Housing	10- Seal Cover	
3- Transparent Oil Plug	7- Bolt	11- Bolt	
4- Greaser	8- Bearing	12- Set Screw	

3.8- D.B....1A Types Part List



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

Standard Part List

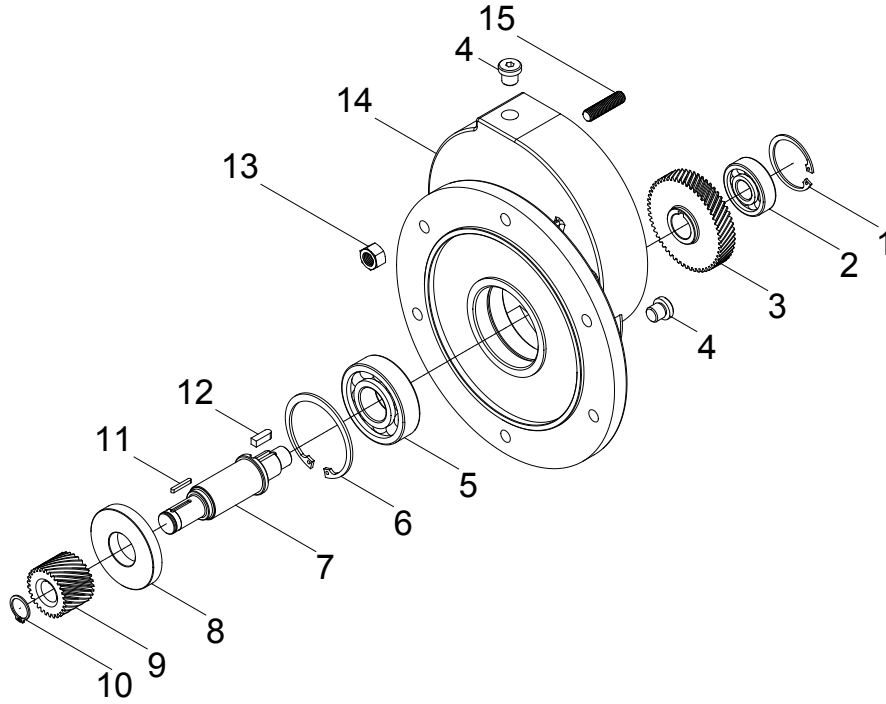
1- Solid Output Shaft	5- Oil Slinger Ring	9- Seal	13- Labyrinth Seal
2- Key	6- Drywell Housing	10- Seal Cover	14- Key
3- Transparent Oil Plug	7- Bolt	11- Bolt	15- Cover
4- Greaser	8- Bearing	12- Set Screw	

This exploded view diagram illustrates the assembly of a mechanical component, likely a pump or valve. The components are numbered 1 through 16. The main housing (1) is the central component. A shaft (2) is inserted into the housing. A coupling (3) is attached to the shaft. A flange (4) is mounted on the shaft. A seal (5) is placed between the flange and the housing. A gasket (6) is used to seal the housing. A nut (7) is used to secure the gasket. A washer (8) is placed between the nut and the gasket. A bolt (9) is used to secure the washer. A flange (10) is mounted on the shaft. A gasket (11) is used to seal the flange. A nut (12) is used to secure the gasket. A washer (13) is placed between the nut and the gasket. A bolt (14) is used to secure the washer. A flange (15) is mounted on the shaft. A gasket (16) is used to seal the flange.



1- Hollow Shaft	5- Oil Slinger Ring	9- Seal	13- Labyrinth Seal
2- Key	6- Drywell Housing	10- Seal Cover	14- Shrink Disc
3- Transparent Oil Plug	7- Bolt	11- Bolt	15- Protection Cover
4- Greaser	8- Bearing	12- Set Screw	16- Bolt

3.10- D Series 4 Stages Types



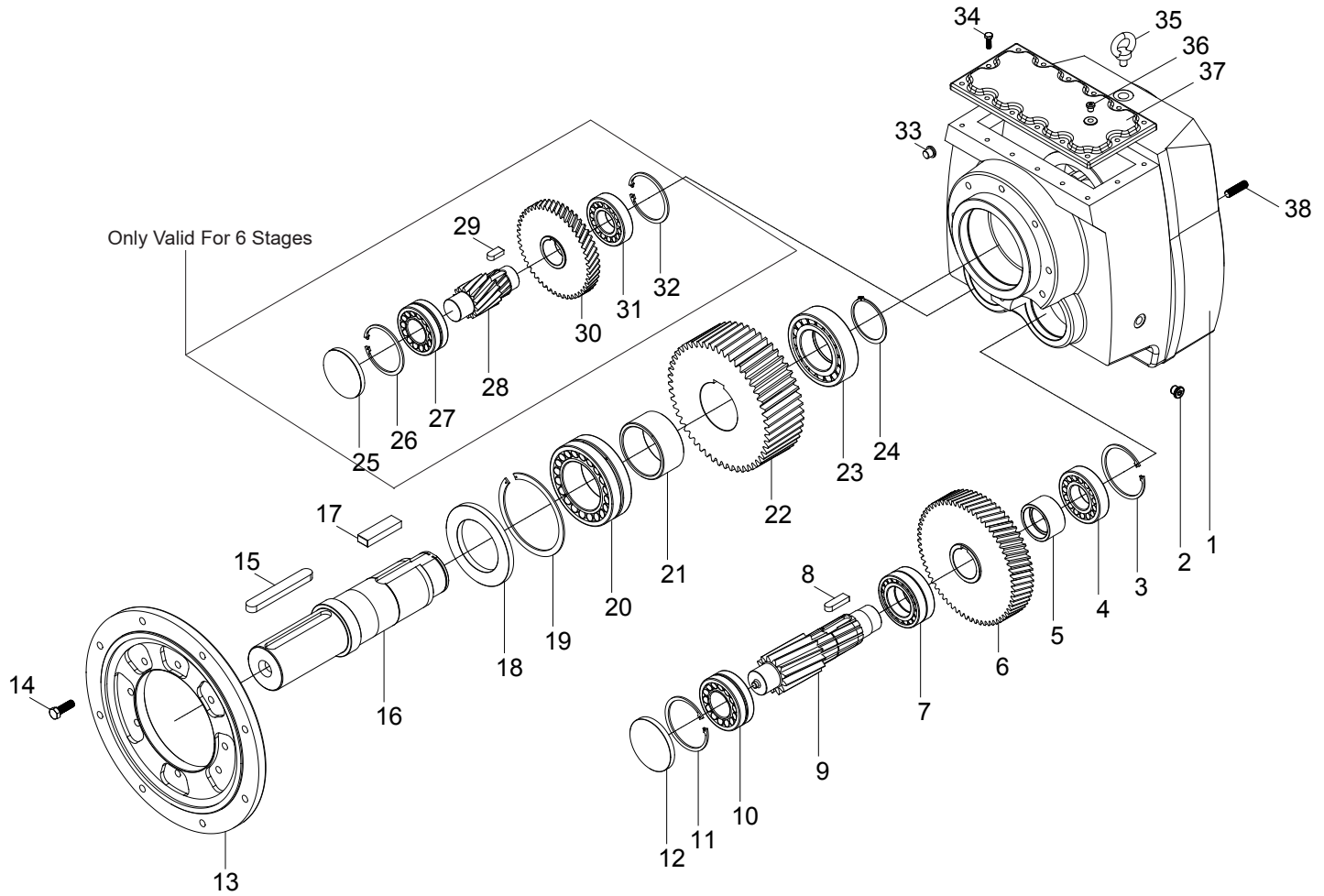
Standard D.. type additional stage basic part diagram. Parts may differ for special applications.

Parts List

1- Circlips	6- Circlips	11- Key
2- Bearing	7- Shaft	12- Key
3- Gear	8- Seal	13- Bolt
4- Oil plug	9- Gear	14- Additional Housing
5- Bearing	10- Circlips	15- Screw Pin

3.11- D Series 5 and 6 Stages Types

N Type 2 and 3 stages are additional housing of D series 5 stages and 6 stages of gear units.



Standard D type 5-6 stages basic part diagram. Parts may differ for special applications.

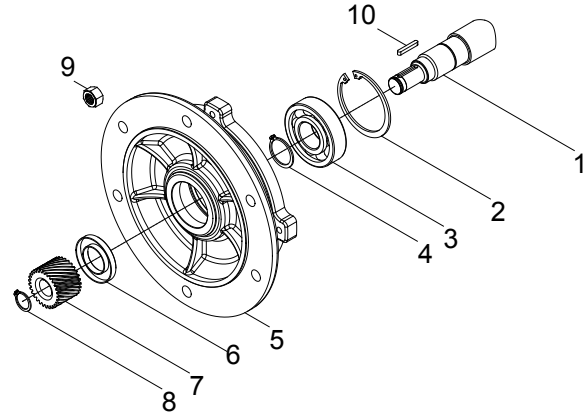
Parts List

1- Housing	9- Gear	17- Key	25- Cover	33- Oil Plug
2- Oil plug	10- Bearing	18- Seal	26- Circlips	34- Bolt
3- Circlips	11- Circlips	19- Circlips	27- Bearing	35- Eye Bolt
4- Bearing	12- Cover	20- Bearing	28- Gear	36- Oil Plug
5- Spacer	13- Output Flange	21- Spacer	29- Key	37- Top Side Cover
6- Gear	14- Bolt	22- Gear	30- Gear	38- Screw Pin
7- Bearing	15- Key	23- Bearing	31- Bearing	
8- Key	16- Output Shaft	24- Circlips	32- Circlips	

3.12- D Series Motor Flange for Direct Coupled Types

Parts List

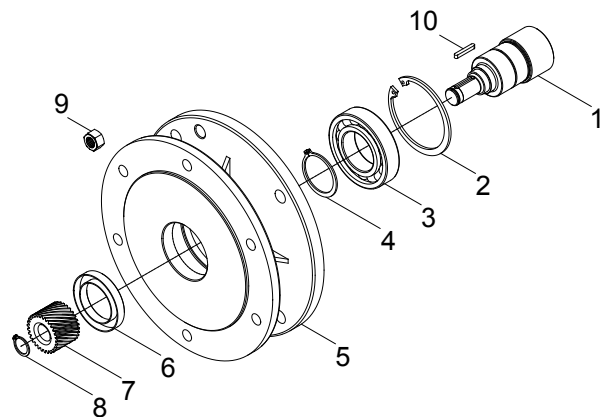
1- Shaft	6- Key
2- Circlips	7- Gear
3- Bearing	8- Circlips
4- Circlips	9- Nut
5- Flange	10- Key



3.13- DN..., DV...Types B5, B14 Motor Flange

Parts List

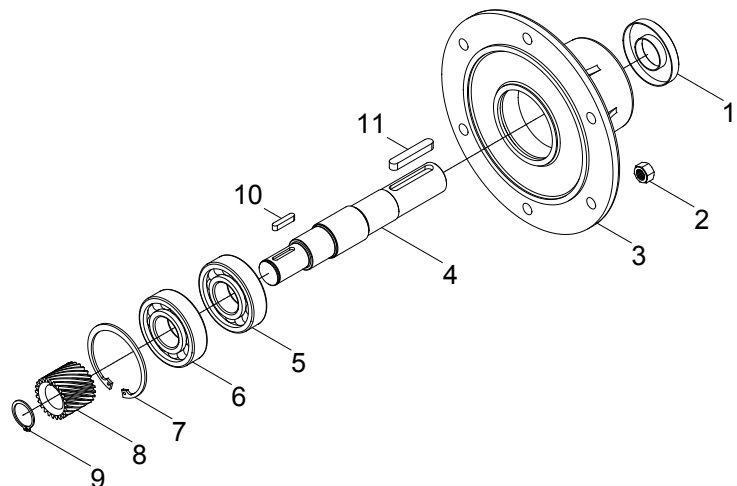
1- Shaft	6- Seal
2- Circlips	7- Gear
3- Bearing	8- Circlips
4- Circlips	9- Nut
5- B5 / B14 Flange	10- Key



3.14- DT... Types Input Bearing Housing With Solid Input Shaft

Parts List

1- Seal	7- Circlips
2- Nut	8- Gear
3- Flange	9- Circlips
4- Shaft	10- Key
5- Bearing	11- Key
6- Bearing	





4- Safety

4.1- Intended Use

The gear reducer is designed for use 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 will not take any responsibility.

The gear units are intended 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 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 gear unit is only allowed to be 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 °C and no abrasive media must attack the paint and seals. If different working conditions this must be informed to YILMAZ before ordering.



The gearbox maintenance (oil change / check) must be done according 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 gear reducer is prohibited if;

- It was not mounted/installed according to regulations and this manual
- The gear reducer is very 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 Gear Reducer



- 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 bodies spinning through the air can cause grave injury.

Before putting the gear reducer into operation, check that there are no foreign bodies or tools near the gear reducer

4.3.1.2- Operation



- Touching hot surfaces can lead to burns.

Do not touch the gear reducer 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, 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 thoroughly.



- Hot oil can cause scalding.

When changing oil, protect yourself against contacting hot oil.

4.3.1.5- Ambient Conditions



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



-If the gear unit will be used in outdoor applications the gear unit must be prevented 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 EN12100:2010.



4.4- Tightening Torques

All screwed connections for which a tightening torque is specified, must on principle 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- $\mu G=0,12$)		
	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

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 usually contains a synthetic or mineral gear oil.

Please observe the following if the gear reducer is situated in a burning environment

4.5.1- Suitable Extinguishing Agents, Protective Equipment

Always keep suitable extinguishing, protective equipment like carbon dioxide, powder, foam, fog easily accessible around the gear unit.



-High temperature produce irritating steam.

Use a protective breathing apparatuses.

4.5.2- Unsuitable Extinguishing Agents

Do not spray with water!





5- Things to Check Before the Gear Unit or Geared Motor is Installed



If geared motors are used, 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. Points 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 our web page

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 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 supplied eyebolts or lifting holes for lifting up the gear unit. The eyebolts are capable to carry the weight of gearboxes only. Do not hang additional loads. Use suitable hoisting equipment which is capable to hold the gear units weight. Refer to the catalogue for various types weights. See drawing bellow for hoisting point.

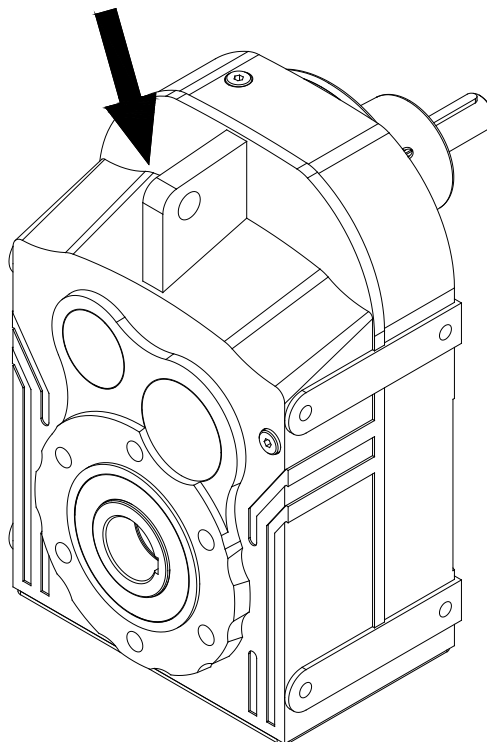


Do not stay beneath / under the lifting/hoisting equipment which may cause serious injuries by falling down objects, accidental movements, unexpected accidents.



Falling or hard placement can damage the gear unit.

Only use hoisting and securing equipment which is permitted for the size / weight of your gear unit. Ensure that the load is slowly and carefully handled and placed.





5.2- Storage

If the geared 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 surface. 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 year with regular check. The ambient temperature should be between -5 to 60 °C.

Without Packing;

-Use protection oil for the output shaft and connection surfaces like flange surface or foot assembling surface. If no packing is used and the gearbox is stored without packing, the ambient temperature should be between 5 to 60 °C. The gearbox must be kept under enclosed roof with constant temperature and constant humidity 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 check during this time is recommended.

If stored in open 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 nameplates 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 Shaft Diameter	Hollow Shaft Tolerance (H8)	Output Shaft Diameter	Output Shaft Tolerance (DIN748) Up to 50mm k6 Over 50mm m6	Flange Centering Shoulder Diameter	Centering Shoulder Tolerance (g6)
D...072/073...	25	+0.03 0	25	+0.02 0	110	-0,01 -0,03
D...172/173...	30	+0.03 0	30	+0.02 0	110	-0,01 -0,03
D...272/273...	35	+0.04 0	35	+0.02 0	130	-0,01 -0,04
D...282/283...	40	+0.04 0	40	+0.02 0	180	-0,01 -0,04
D...372/373...	40	+0.04 0	40	+0.02 0	180	-0,01 -0,04
D...472/473...	50	+0.04 0	50	+0.02 0	230	-0,02 -0,04
D...572/573...	60	+0.05 0	60	+0.03 +0.01	250	-0,02 -0,04
D...672/673...	70	+0.05 0	70	+0.03 +0.01	300	-0,02 -0,05
D...772/773...	90	+0.05 0	90	+0.04 +0.01	350	-0,02 -0,05
D...872/873...	110	+0.05 0	110	+0.04 +0.01	450	-0,02 -0,06
D...972/973...	120	+0.05 0	120	+0.04 +0.01	550	-0,02 -0,07

6.3- Check the Ambient Temperature

The ambient temperature must be between +5 °C to +40 °C for standard type gear units. If different contact YILMAZ REDUKTOR for special solutions.

6.4- Check the Voltage Supply

The standard geared motors are supplied with 230/400 V 50/60 Hz up to 3 kW including 3 kW and 400/690 V 50/60 Hz over 3 kW and is indicated on the motors name plate unless it is differently ordered.

In case of only gear unit is supplied from YILMAZ REDUKTOR please observe the name plate of the electric motor and the instructions of the supplier. Check the basic electric connection diagrams below. Use experienced electric technician.



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

Operating Instructions

D Series

Checking



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

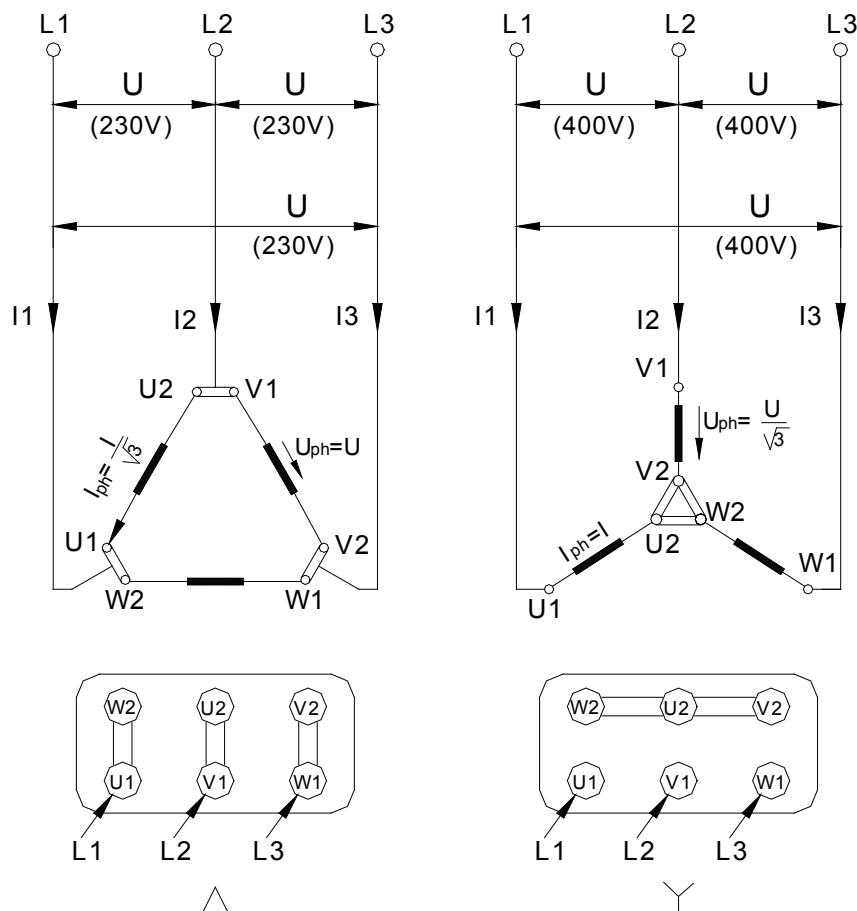


The electric connection must be done by experienced electric technician.

The gearbox, the motor and the brake must be grounded to prevent potential differences of earth and gearbox/motor.

Pole Number	Nominal Powers at 400V, 50Hz	
	230V (D) / 400 V (Y)	400V (D)
2 or 4	$\leq 3 \text{ kW}$	$\geq 4 \text{ kW}$
6	$\leq 2,2 \text{ kW}$	$\geq 3 \text{ kW}$
8	$\leq 1,5 \text{ kW}$	$\geq 2,2 \text{ kW}$
Starting Principle	Direct	Direct or Y/D

Basic Motor Connection Wiring Diagram



Operating Instructions

D Series

Checking



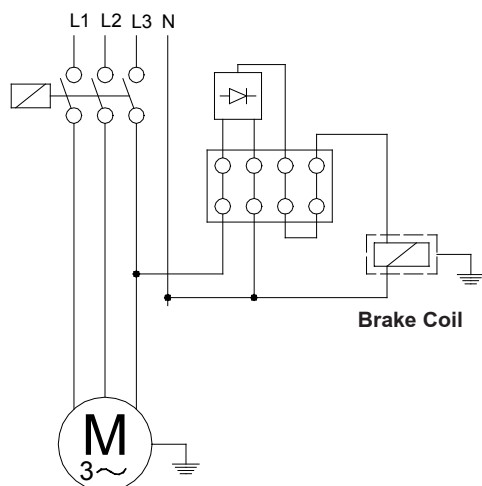
Standard Type Brakes Basic Wiring Diagram



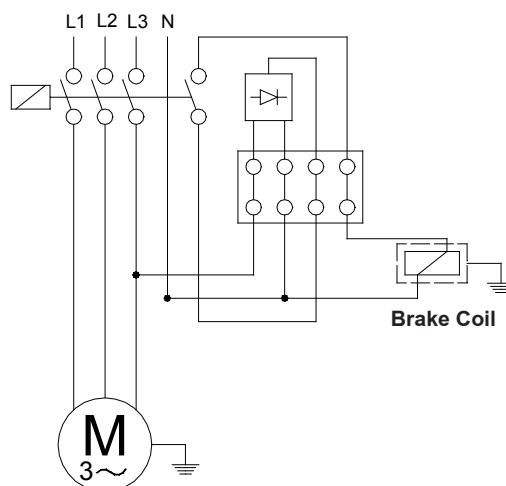
The electric connection must be done by experienced electric technician.

The gearbox and the motor must be grounded to prevent potential differences of earth and gearbox/motor.

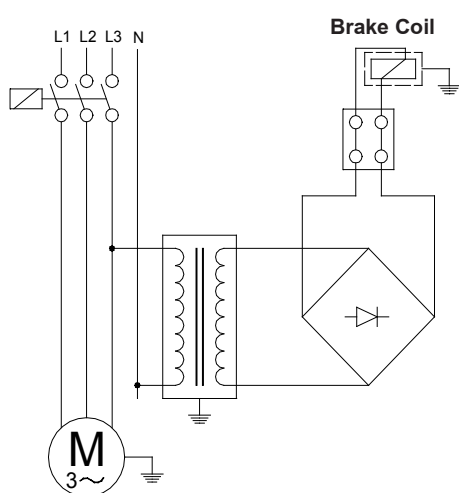
Delayed Running Brake (230V AC-98V DC)



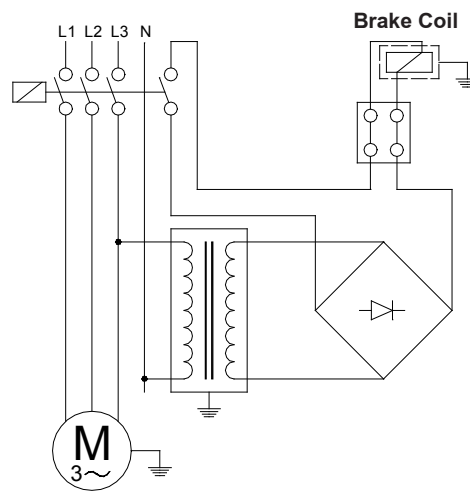
Sudden Brake (230V AC-98V DC)



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 name plate. 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

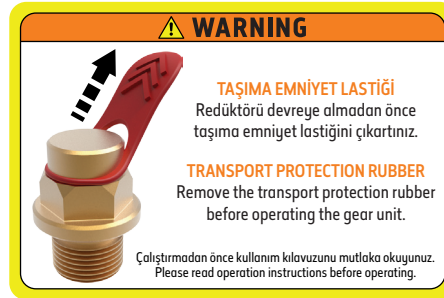
Do not mix synthetic oils with mineral oils which can cause serious damage on the gear unit.

6.6- Use of Breather Plug

Breather plug is delivered with the gearbox together by YILMAZ REDUKTOR. Breather plug must be on the top of the gearbox according to mounting position.



As shown in the label below, the transport protection rubber must be removed before operating the gear unit.



Breather plugs open at 0.2 bar pressure.

6.7- Check the Oil Level

On the mounting position tables the oil level plug is 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.



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

STOP

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

6.8- Check Shaft Ends and Mounting Faces

Before you start to 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 Abrasive Ambient

If the gear unit will be placed on a abrasive ambient be sure that the output seals are covered so that no abrasive material, chemicals or water touches the seals. Any pressure coming from outside over the seals can cause that the out staying 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.



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



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

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 supplied connection points like foot and flange assembling points.



To install the gear unit without the supplied connection points can cause serious injuries by loosening or braking 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 from human entering or touching. Turning parts can cause severe or fatal injuries.

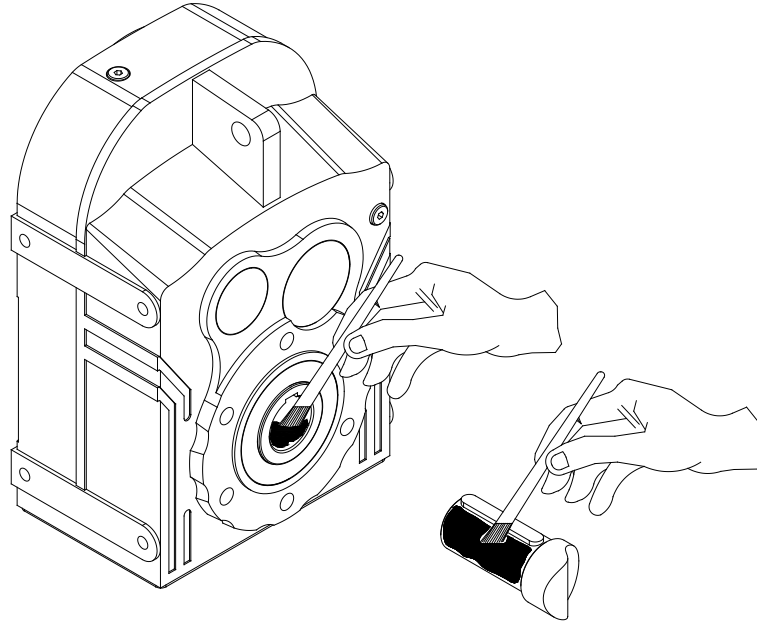


For different kind of basic installations refer to the following illustrations.

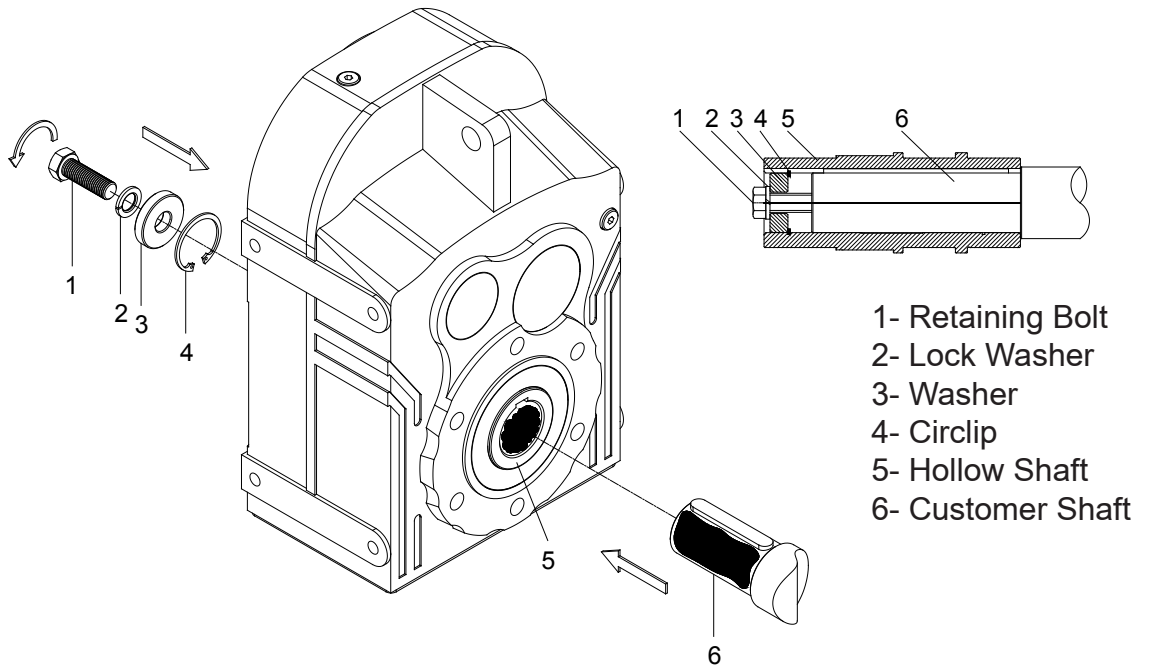


7.1- Installing Customer Shaft With Shoulder

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



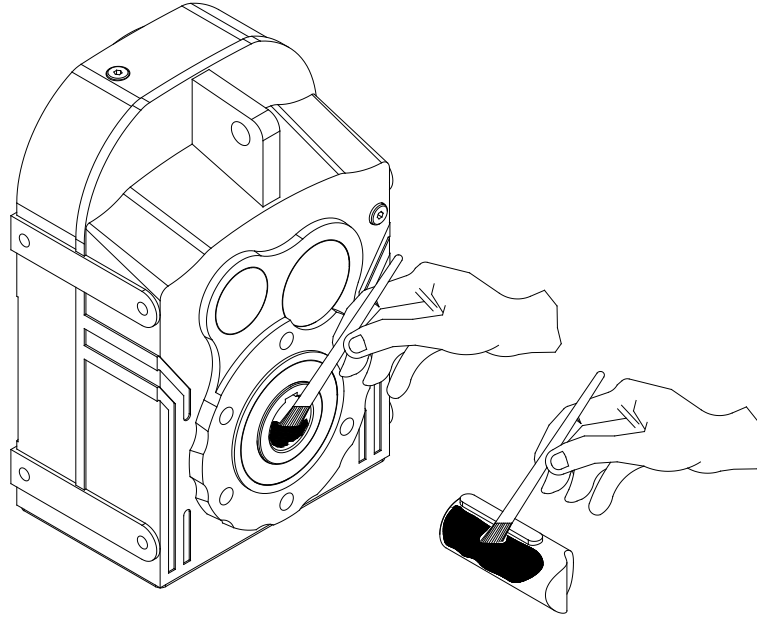
7.1.2 -Fasten the bolt as shown below.



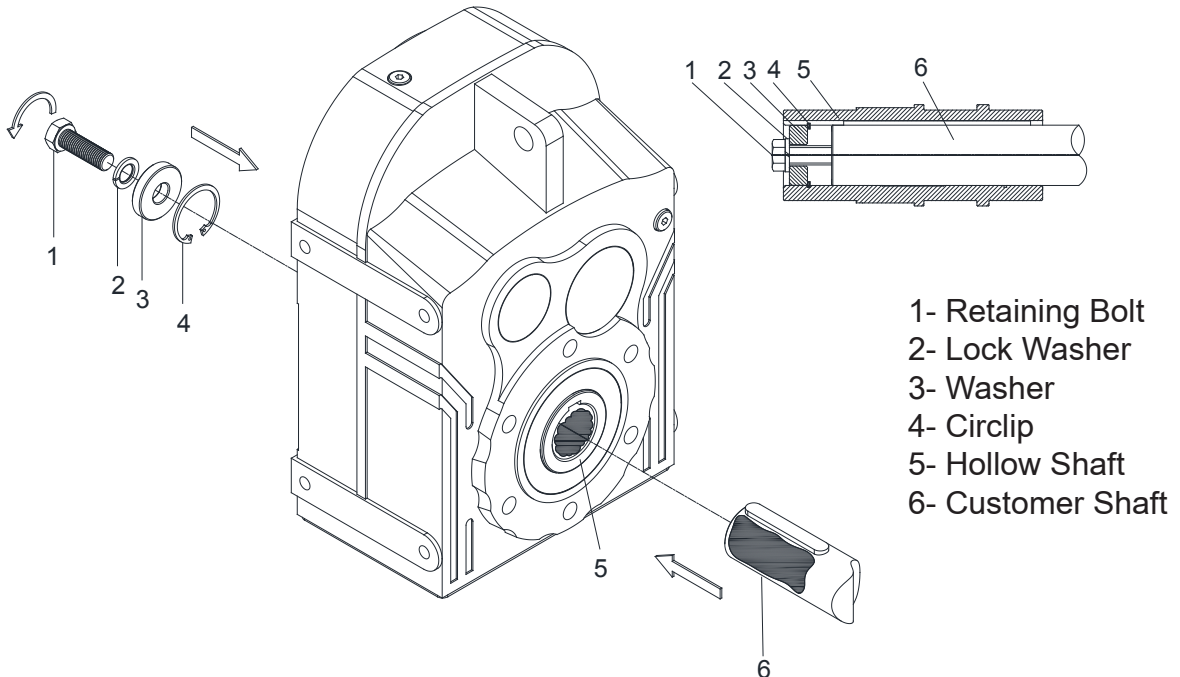


7.2- Installing Customer Shaft Without Shoulder

7.2.1- Use anti-seize mounting paste available on your market. Use a brush to apply the paste.



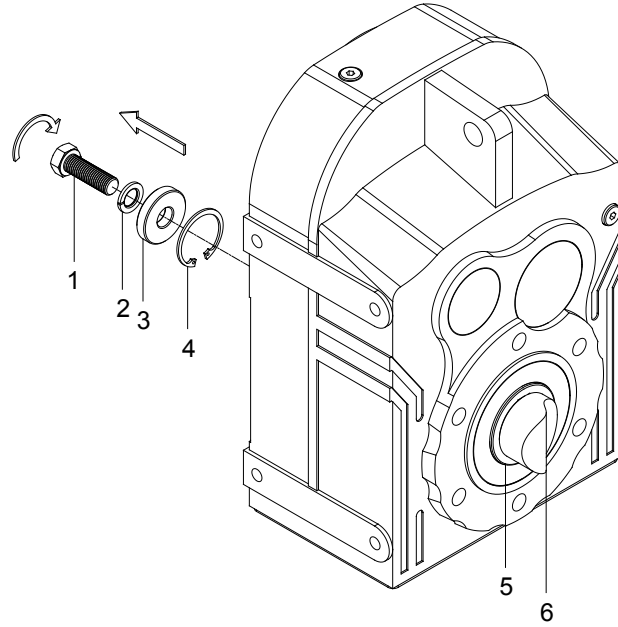
7.2.2- Fasten the bolt as shown below.



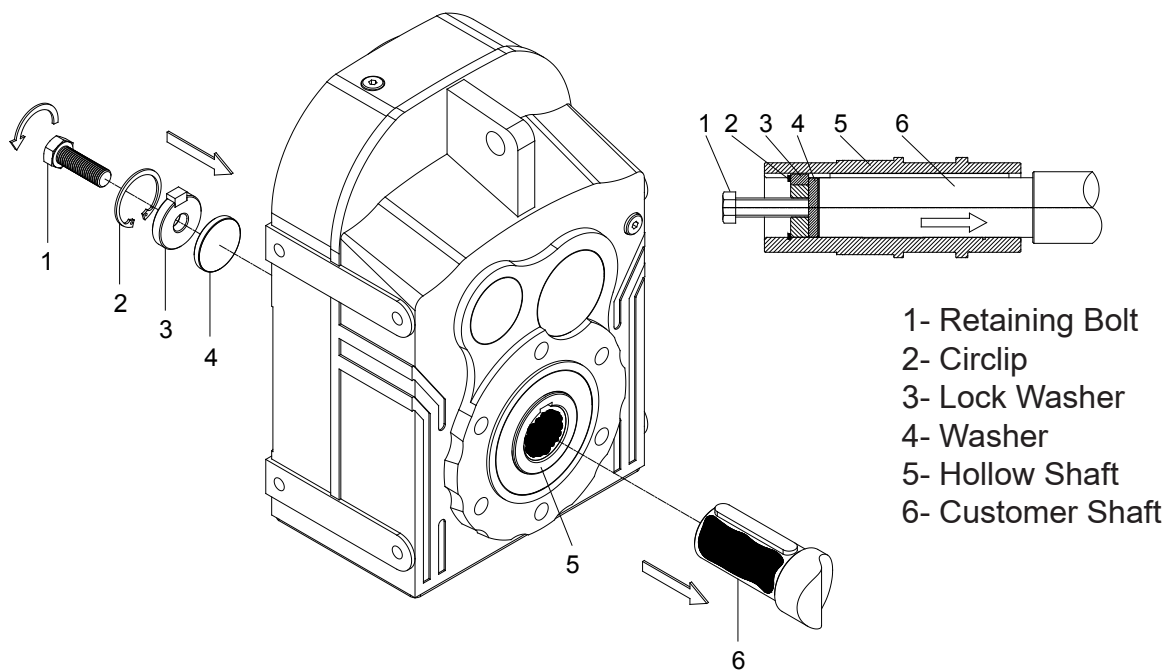


7.3- Disassembling Customer Shaft With Shoulder

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



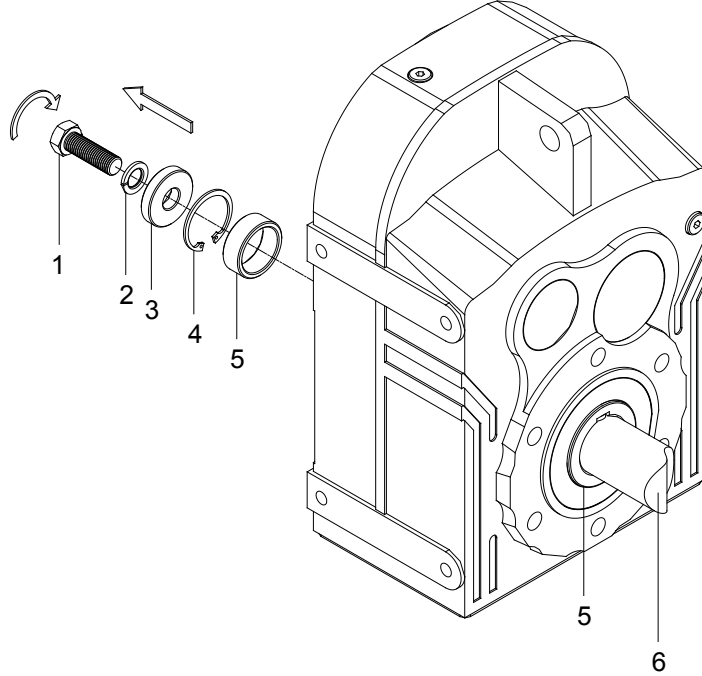
7.3.2- Use the disassemble set from YILMAZ and fasten the bolt as shown bellow to take out the output shaft. For disassemble sets look the following pages.



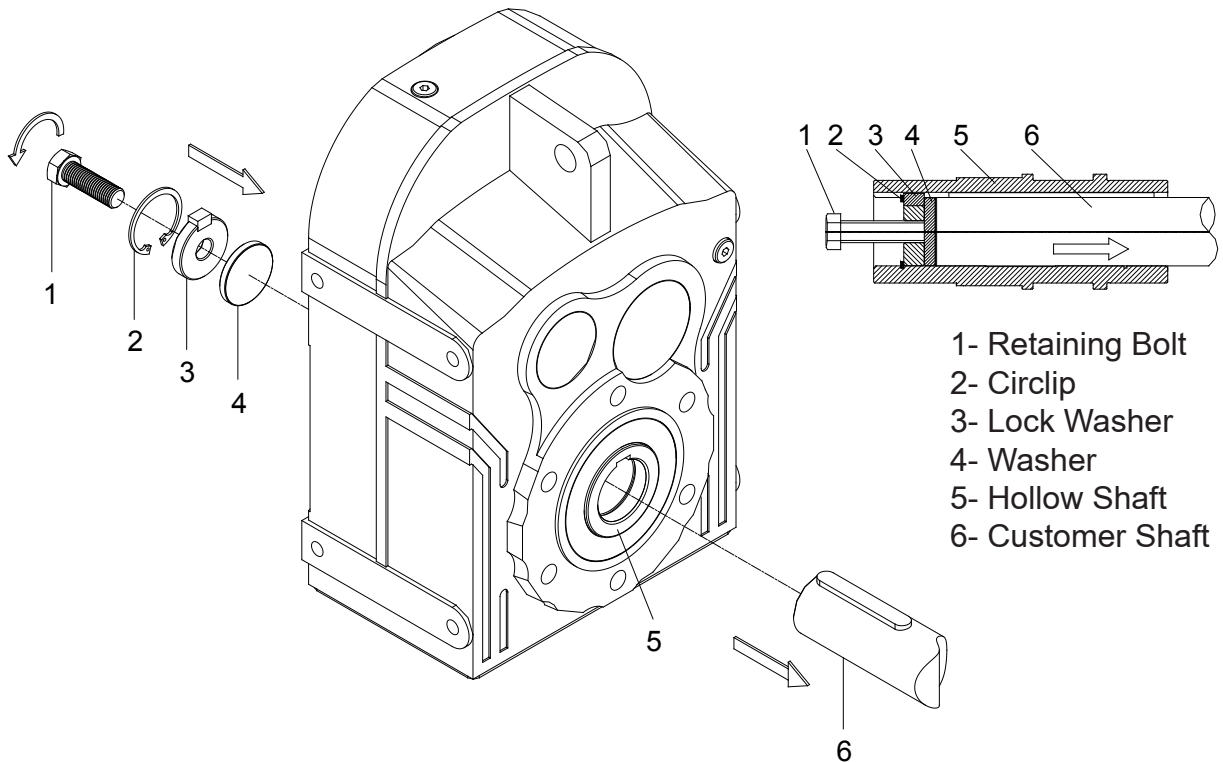


7.4- Disassembling Customer Shaft Without Shoulder

7.4.1- Disassembly the bolt and take out the parts as shown



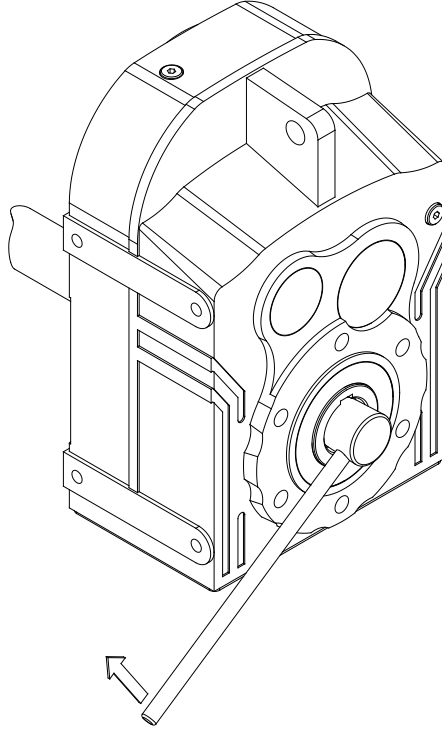
7.4.2 -Use the disassembly set from YILMAZ and fasten the bolt as shown bellow to take out the output shaft. For disassembly sets look the following pages.





7.5- Shaft Tightening Torques

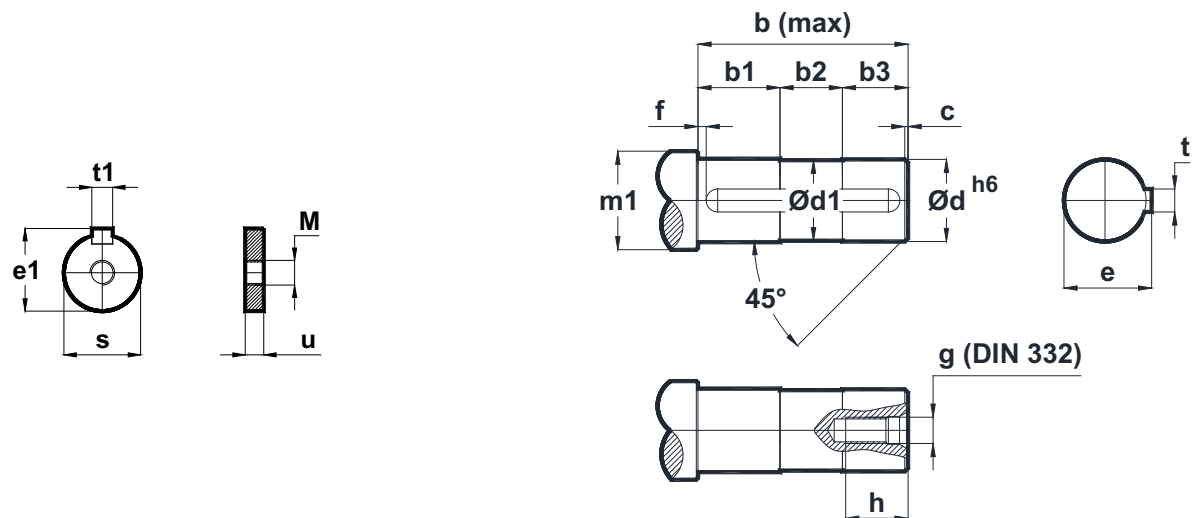
Use the following table for shaft tightening torques.



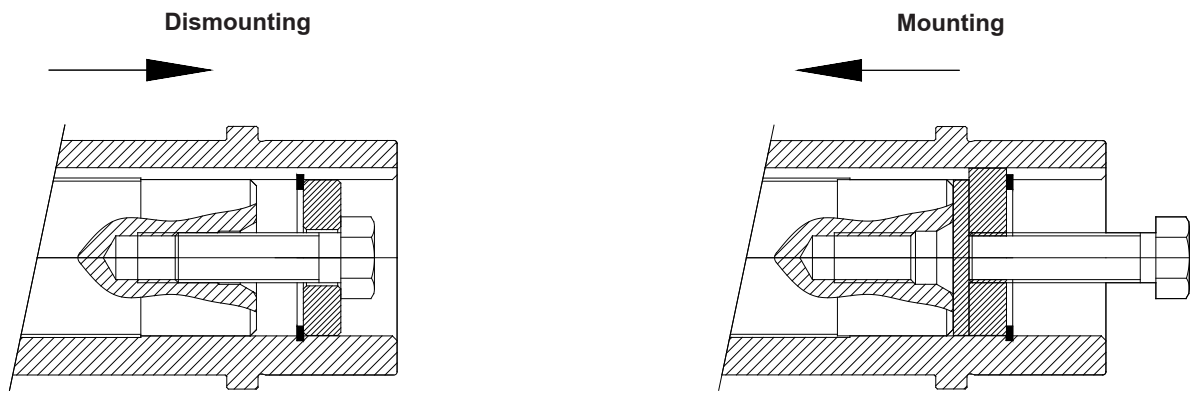
Type	Bolt	Tightning Torque [Nm]
D.072/073	M10	48
D.172/173	M10	48
D.272/273	M12	84
D.282/283	M16	206
D.372/373	M16	206
D.472/473	M16	206
D.572/573	M20	415
D.672/673	M20	415
D.772/773	M24	714
D.872/873	M24	714
D.972/973	M24	714



7.6- Advised Shaft Dimensions and Accessories



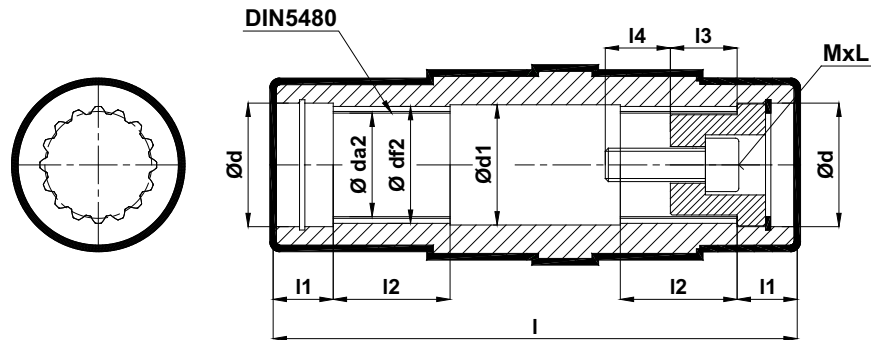
Type	s	u	e1	t1	M	d	d1	m1	f	b	b1	b2	b3	c	g	h	e	t
D.07..	24.7	8	28	7.5	M12	25	24	30	5	82	45	18	19	1	M10	24	28	8
D.17..	29.7	10	33	7.5	M12	30	29	36		89	50	20	19	1	M10	24	33	8
D.27..	34.7	12	38	9.5	M16	35	34	43		114	65	27	22	1	M12	30	38	10
D.28..	39.7	12	43	11.5	M20	40	39	50		124	69	28	27	2	M16	38	43	12
D.37..	39.7	12	43	11.5	M20	40	39	50		138	75	35	28	2	M16	38	43	12
D.47..	49.7	12	53.5	13.5	M20	50	49	60		165	87	41	37	3	M16	38	53.5	14
D.57..	59.7	16	64	17.5	M24	60	59	75		188	101	44	43	3	M20	44	64	18
D.67..	69.7	16	74.5	19.5	M24	70	69	85		248	115	78	55	4	M20	44	74.5	20
D.77..	89.7	20	95	24.5	M30	90	89	110		287	140	83	64	4	M24	52	95	25
D.87..	109.7	20	116	27.5	M30	110	109	130		347	165	98	84	4	M24	52	116	28
D.97..	119.7	20	127	31	M30	120	119	140		434	185	130	119	4	M24	52	127	32



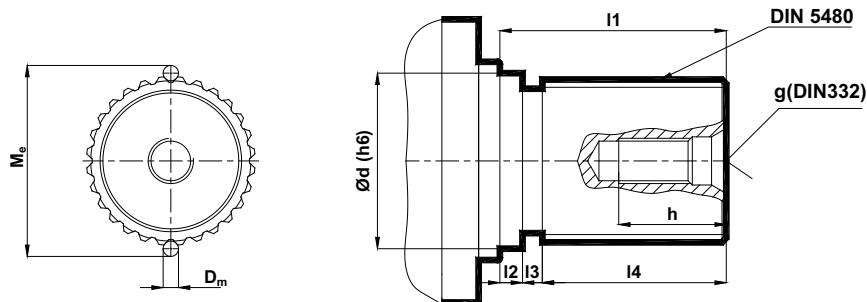
6 Contour Bolt
(DIN ISO 4014 . DIN ISO 4017)
(DIN ISO 8765)



7.7- D.07.. - D.97 Dimensions of Splined Hollow Shaft to DIN 5480



Type	DIN5480	ϕd (H7)	ϕd_1	ϕd_2	ϕda_2	ϕdf_2	l	l_1	l_2	l_3	l_4	MxL
D07	N25x1.25x30x18x9H	27	26	48	22.5	25.25	104	17	22	20	20	M10x60
D17	N30x1.25x30x22x9H	32	31	53	27.5	30.25	120	18	25	20	20	M10x60
D27 D28	N35x2x30x16x9H	37	36	58 63.5	31	35.4	157 166	18	35	20	20	M10x90 M10x100
D37	N45x2x30x21x9H	47	46	74	41	45.4	185	25	45	24	32	M16x110
D47	N50x2x30x24x9H	55	51	84	46	50.4	215	25	55	24	32	M16x130
D57	N65x2x30x31x9H	72	66	104	61	65.4	246	25	65	30	40	M20x150
D67	N70x2x30x34x9H	72	71	119	66	70.4	308	25	75	30	40	M20x210
D77	N85x3x30x27x9H	90	86	139.5	79	85.6	363	26	90	30	40	M20x240
D87	N100x4x30x24x9H	110	101	169	92	100.8	428	30	105	41	50	M24x290
D97	N120x4x30x28x9H	130	121	179	112	120.8	500	35	120	41	50	M24x340

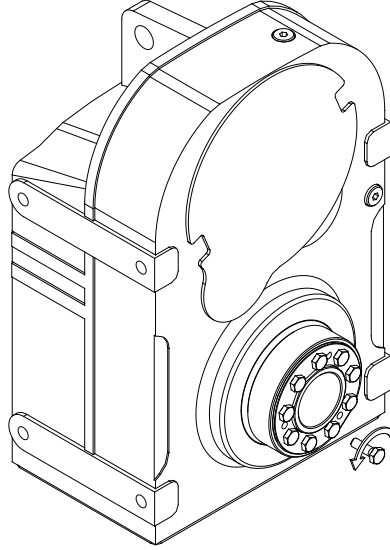


Type	DIN5480	ϕd	l_1	l_2	l_3	l_4	M_e (Tolerances)	D_m	g (DIN332)
D07	W25x1.25x30x18x8f	27	44	10	7	27	28,01 (0/-0,03)	2.75	M10x24
D17	W30x1.25x30x22x8f	32	48	11	7	30	33,05 (0/-0,04)	2.75	M10x24
D27 D28	W35x2x30x16x8f	37	58	11	7	40	38,94 (0/-0,05)	4,00	M10x24
D37	W45x2x30x21x8f	47	75	18	7	50	48,88 (0/-0,05)	4,00	M16x38
D47	W50x2x30x24x8f	55	85	18	7	60	54,16 (0/-0,05)	4,00	M16x38
D57	W65x2x30x31x8f	72	95	17	8	70	68,99 (0/-0,06)	4,00	M20x44
D67	W70x2x30x34x8f	72	105	17	8	80	74,18 (0/-0,06)	4,00	M20x44
D77	W85x3x30x27x8f	90	121	16	10	95	91,02 (0/-0,05)	6,00	M20x44
D87	W100x4x30x24x8f	110	140	20	10	110	108,37 (0/-0,06)	8,00	M24x52
D97	W120x4x30x28x8f	130	160	23	12	125	127,89 (0/-0,06)	8,00	M24x52

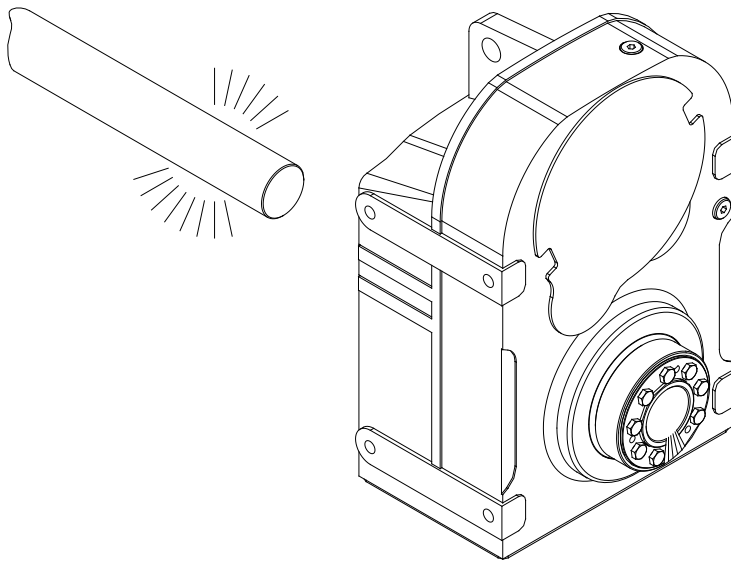


7.8- Assembling Customer Shaft With Shrink Disc

7.8.1- Loosen the bolts of the shrink disc



7.8.2- Use a solvent available in your market to clean all the dirt and oil from the shaft and shrink disc hollow. The surfaces must be free from oil or any dirt. The solvent must be removed from the surfaces as well.



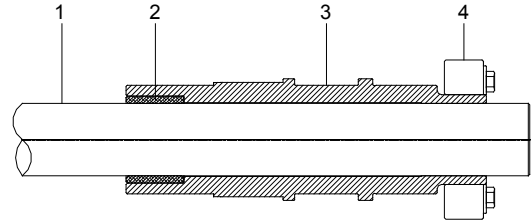
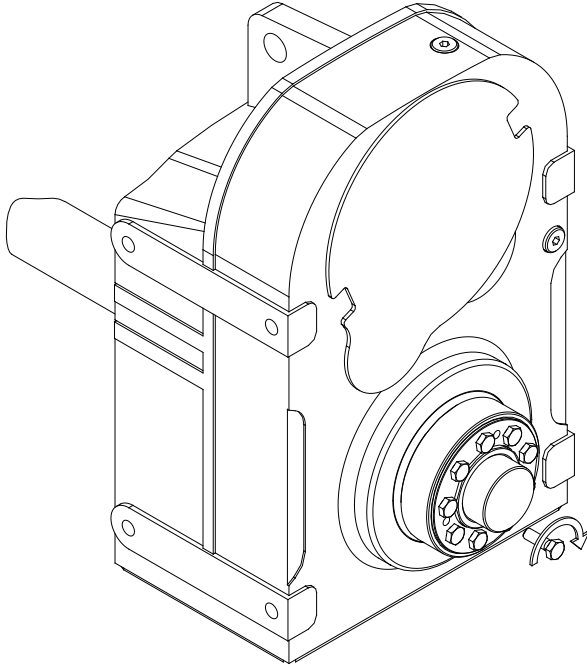
Operating Instructions

D Series

Installing



7.8.3- Insert the shaft and tighten the bolts as shown. Be sure that there is a clearance between the shrink disc shoulder and the hollow shaft shoulder of the gearbox.



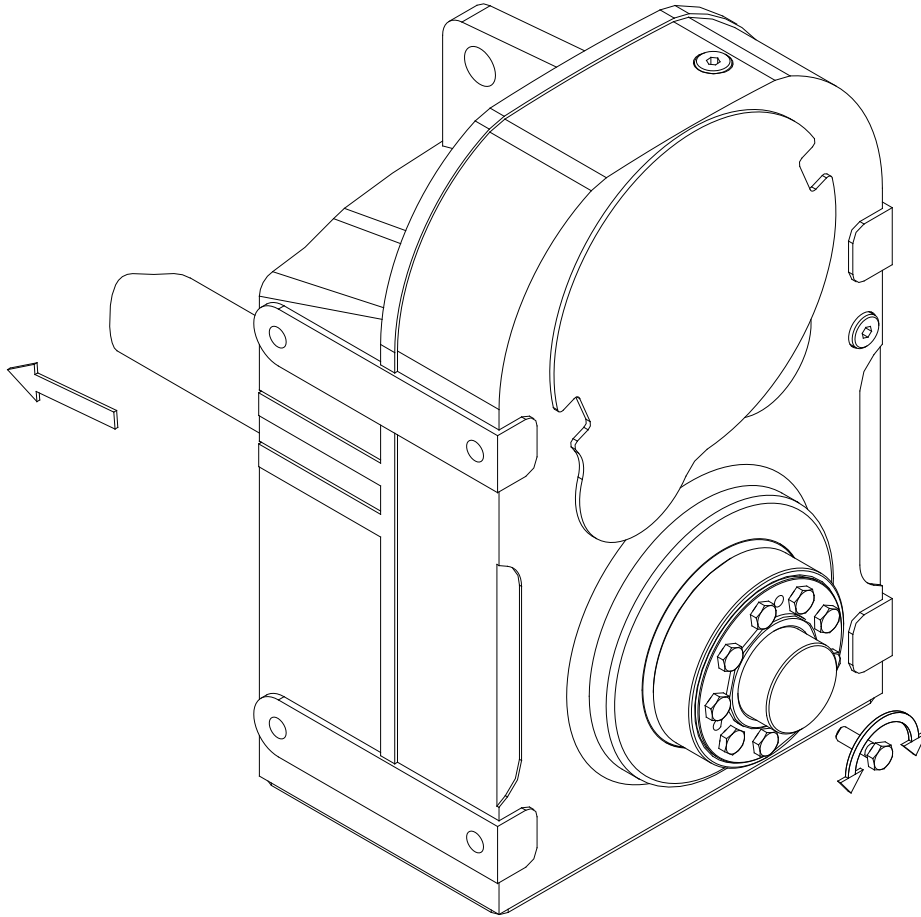
- 1- Customer Shaft
- 2- Bronze Ring
- 3- Hollow Shaft
- 4- Shrink Disc

Type	Bolt	Quantity	Tightening Torque [Nm]
D.07..	M5	6	6
D.17..	M6	5	12
D.27..	M6	7	12
D.28..	M6	8	12
D.37..	M6	8	12
D.47..	M6	10	12
D.57..	M8	7	30
D.67..	M8	7	30
D.77..	M10	9	59
D.87..	M12	10	100
D.97..	M10	11	59



7.9- Disassembling Customer Shaft With Shrink Disc

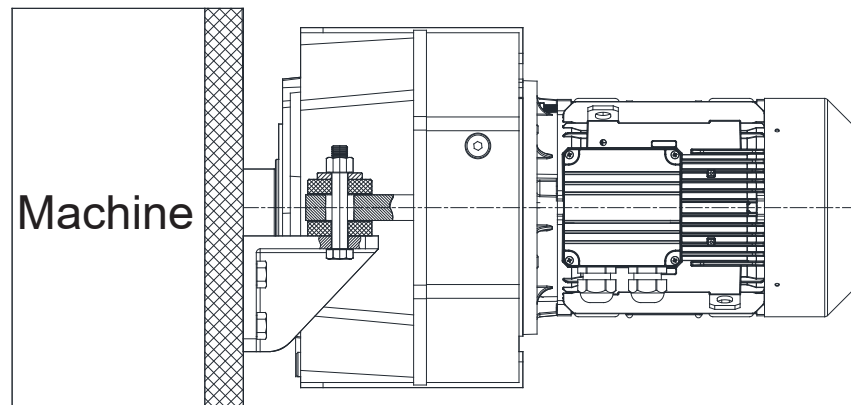
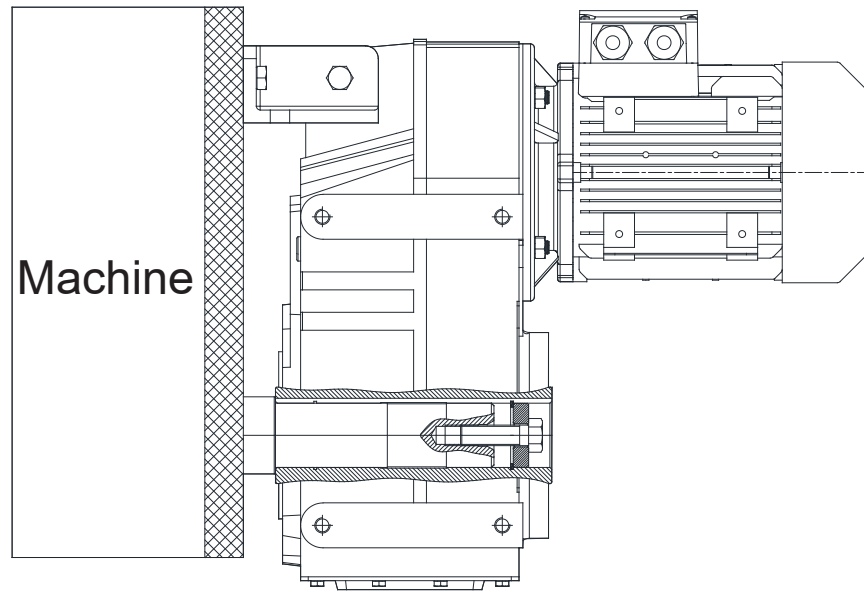
7.9.1- Loosen the bolts of the shrink disc and take out the shaft.





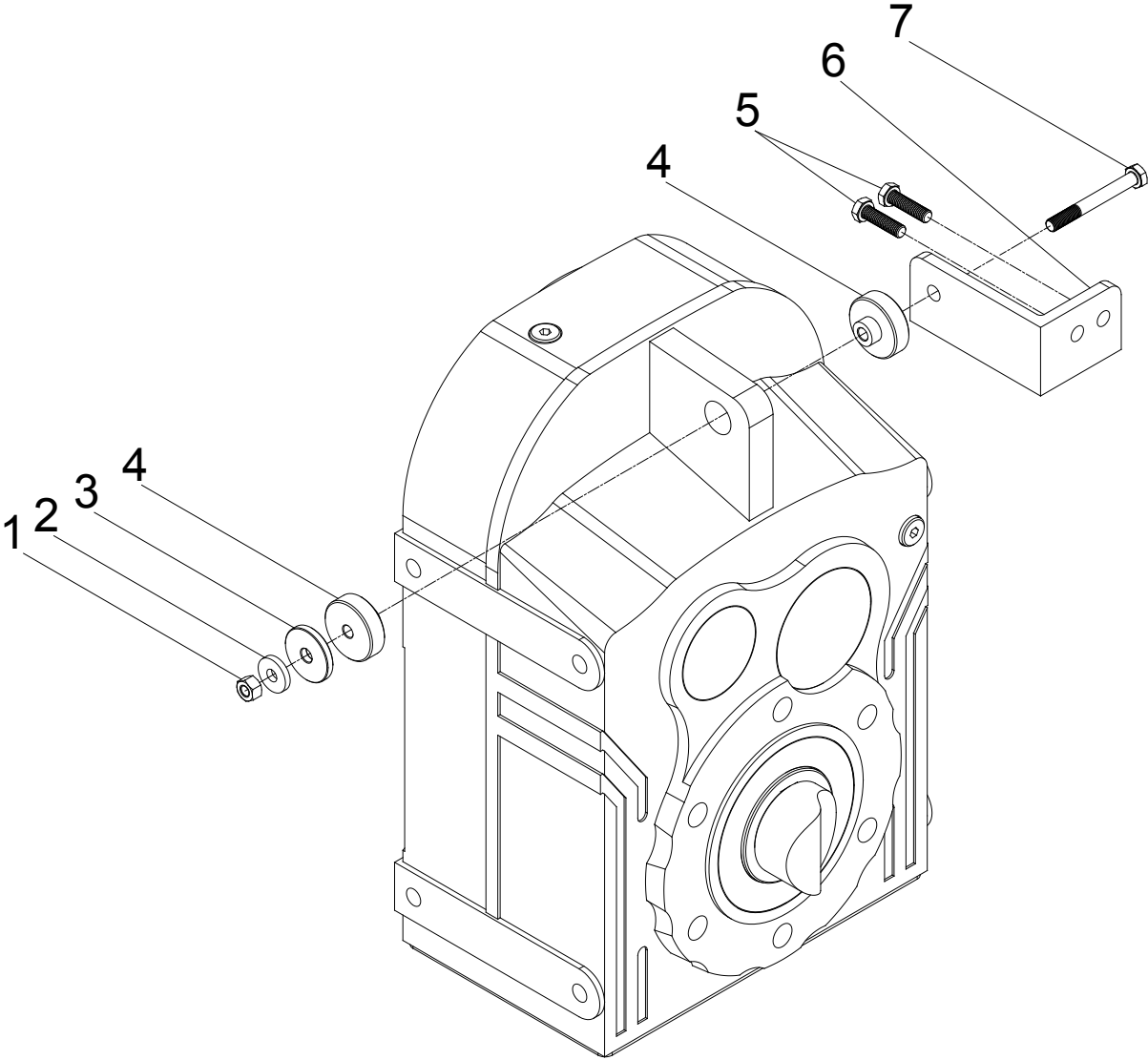
7.10- Assembling Gear Unit With Torque Arm

7.10.1- Use the torque arm connection according the following drawing.





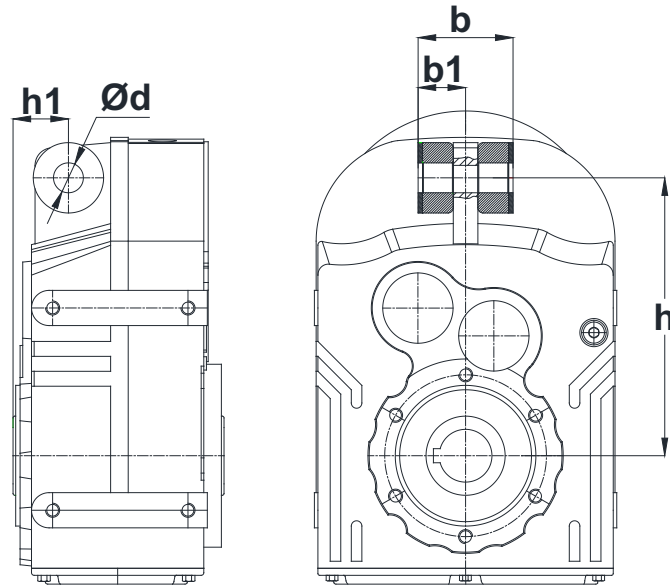
7.10.2- Assemble the parts as shown bellow



1- Bolt	4- Rubber Buffer	7- Bolt
2- Washer	5- Bolt	
3- Washer Ring	6- Fixing Plate	



7.10.3- For the fixing bold position refer to the following dimensions

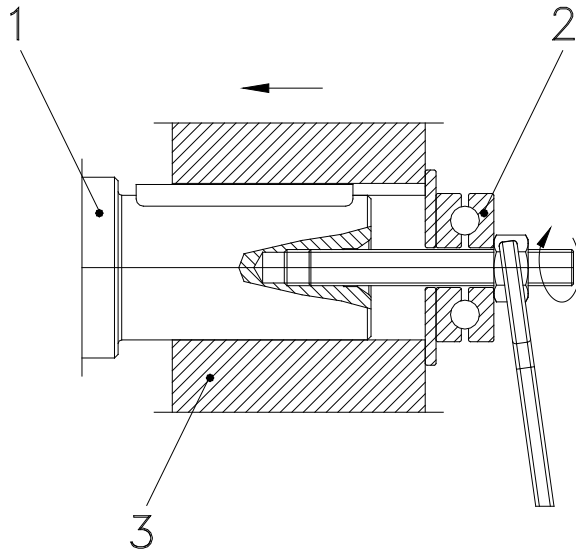


Type	d	b	b1	h	h1
D.07.	14	42	21	147	26.5
D.17.	17	54	27	158	31.5
D.27.	17	54	27	170	32
D.28.	17	54	27	198	40.5
D.37.	17	56	28	218	41
D.47.	22	80	40	278	50
D.57.	22	86	43	346	62
D.67.	26	110	55	395	70
D.77.	26	116	58	485	88
D.87.	32	160	80	550	110
D.97.	32	165	82.5	660	150



7.11- Fitting Outputshaft 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 transmission elements must be balanced after fitting and must not give rise to any impermissible radial or axial forces.

7.12- 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.

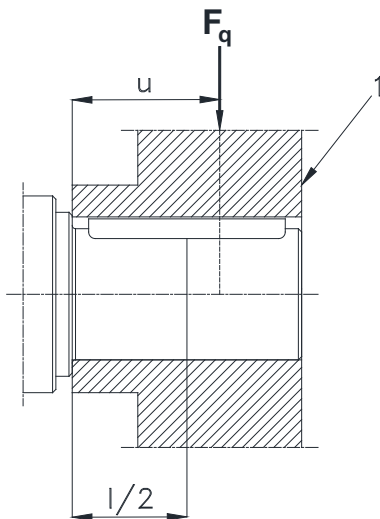


Figure A

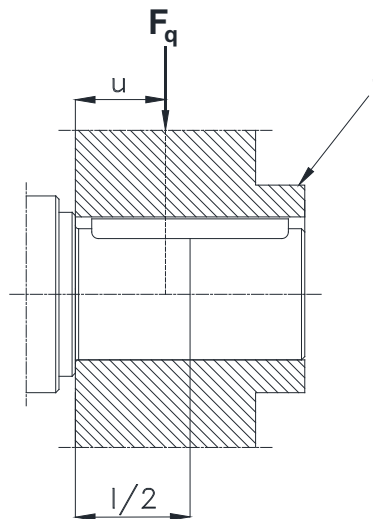


Figure B

1. Machine Element

F_q : Radial Load

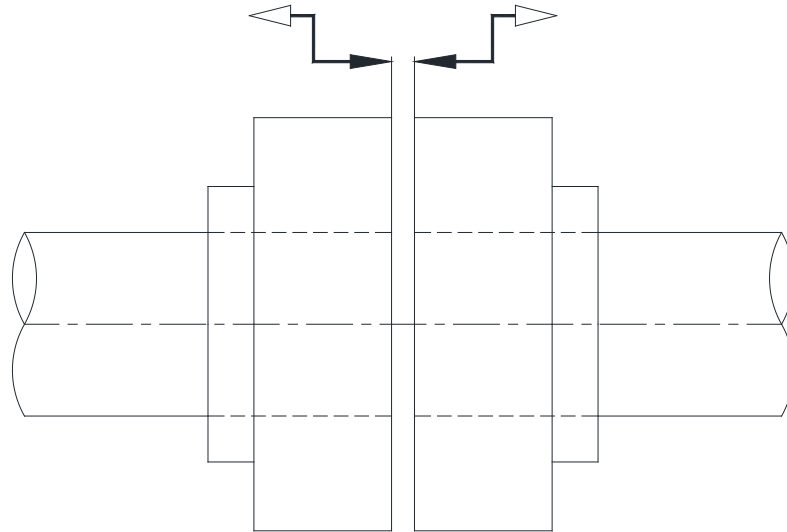
u : Radial Load Acting Distance

l : Shaft Length

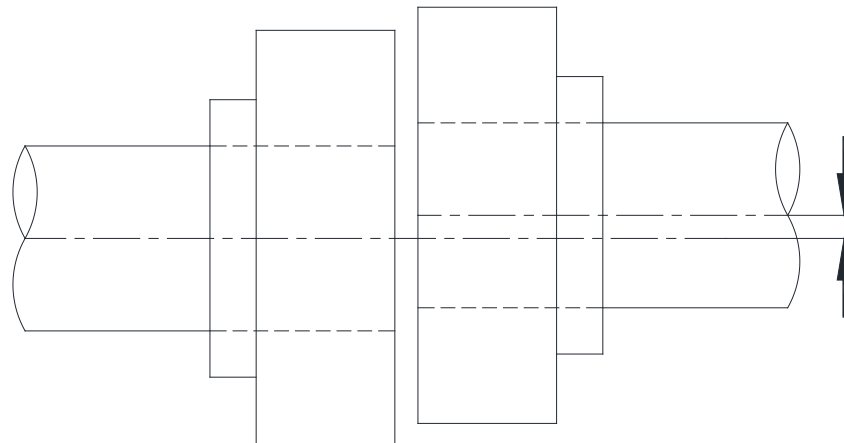


7.13- Fitting Couplings

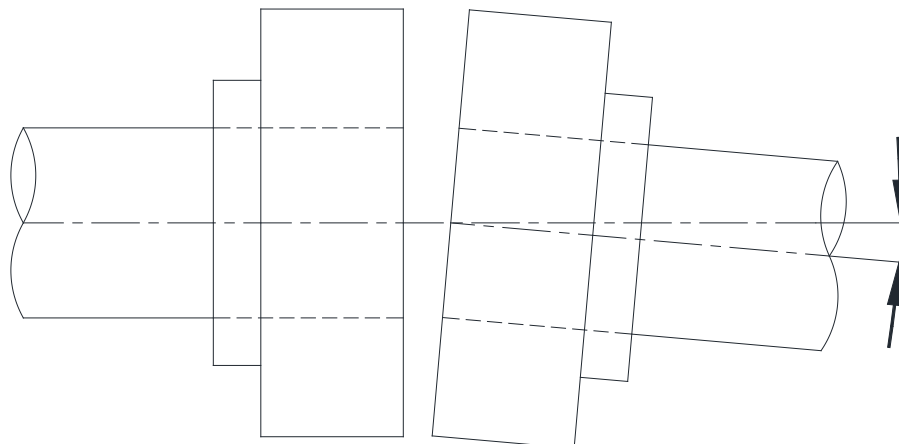
7.13.1- While fitting couplings be sure that there is some clearance between the two shafts



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



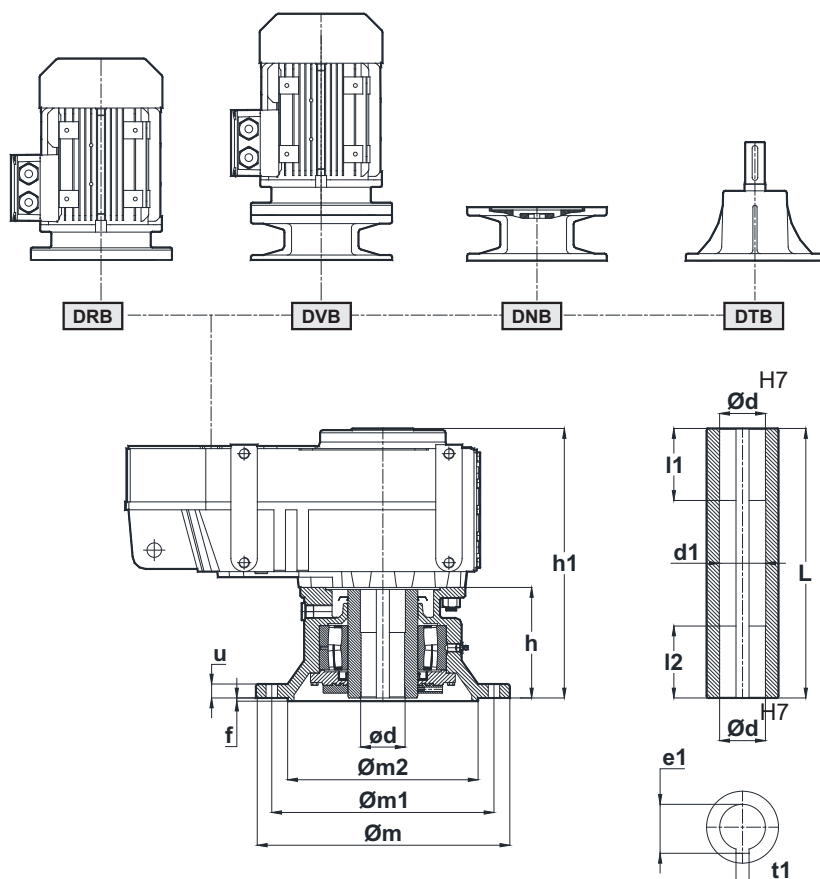
7.13.3- While fitting couplings be sure that the two shafts are not angular miss-aligned.





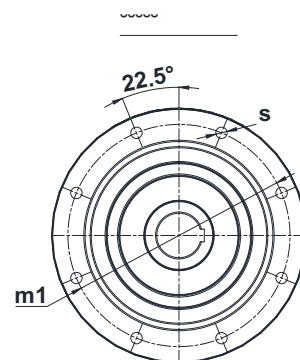
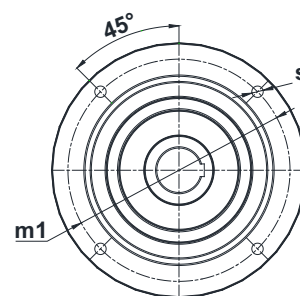
7.14- D.B28.. - D.B97.. Drywell Gearboxes With Hollow Shaft Dimensions

0A Hollow Shaft Option



Output Flange

D.28 - D.67

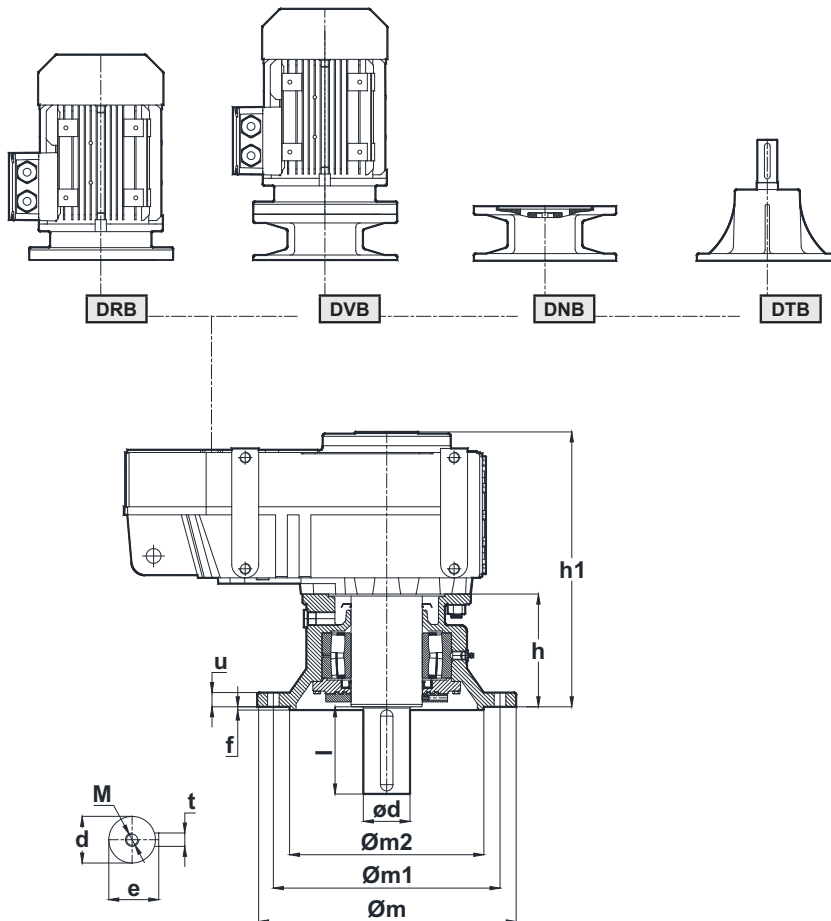


Type	m	m1	m2	h	h1	f	u	s	L	l1	l2	d	d1	e1	t1
D.B 28	250	215	180	96	257	4	16	13,5x4	257	60	60	40	41	43,3	12
D.B 37	250	215	180	96	275,5	4	16	13,5x4	275,5	70	70	40	41	43,3	12
D.B 47	300	265	230	100	309,5	4	20	14x4	309,5	82	82	50	51	53,8	14
D.B 57	350	300	250	124	364,5	5	20	18x4	364,5	96	96	60	61	64,4	18
D.B 67	400	350	300	174	476	5	22	18x4	476	110	110	70	71	79,9	20
D.B 77	450	400	350	194	549,5	5	24	18x8	549,5	135	135	90	91	95,4	25
D.B 87	550	500	450	210	629	5	28	18x8	629	160	160	110	111	116,4	28
D.B 97	660	600	550	227	717	6	28	22x8	722	180	180	120	121	127,4	32



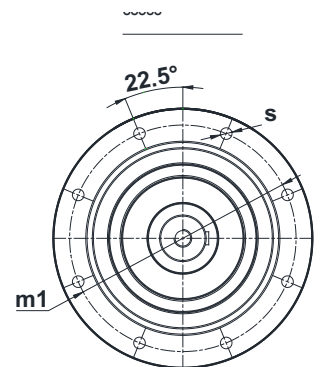
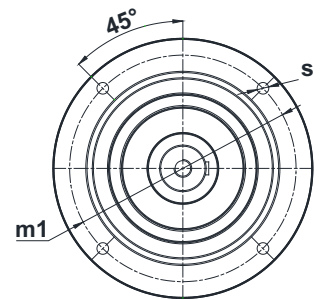
7.15- D.B28.. - D.B97.. Drywell Gearboxes With Solid Shaft Dimensions

1A Solid Shaft Option



Output Flange

D.28 - D.67



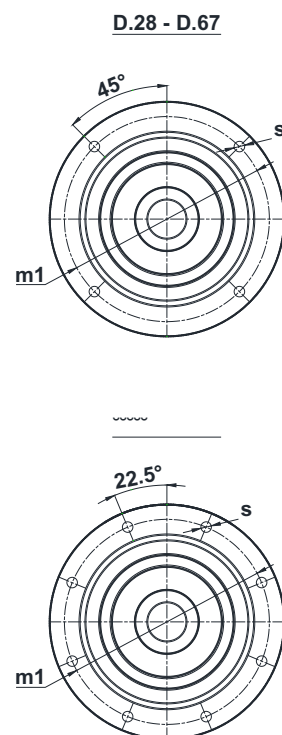
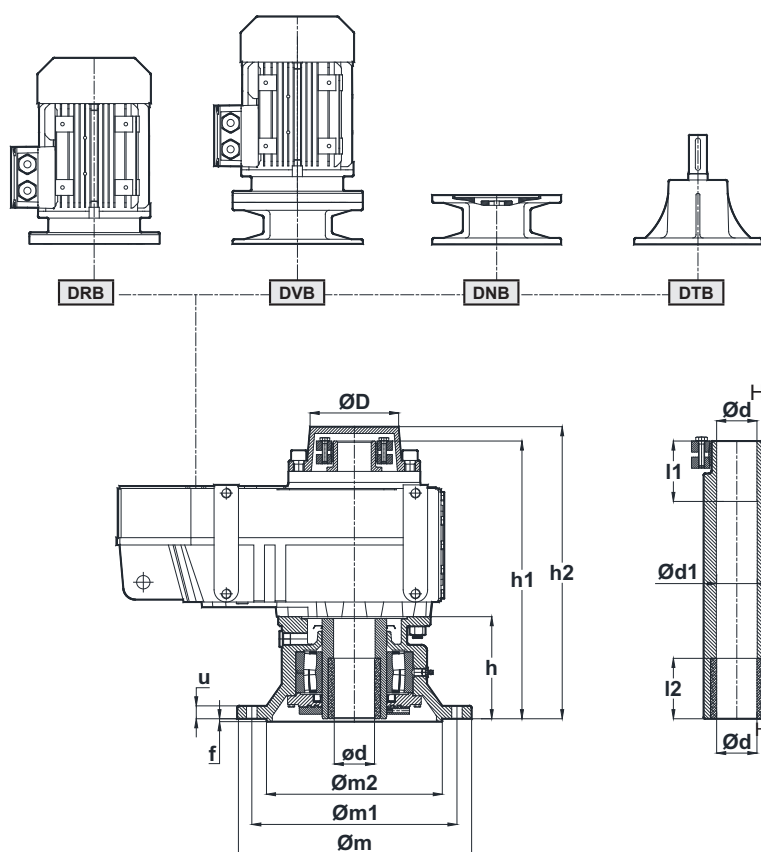
Type	m	m1	m2	h	h1	f	u	s	d	l	e	t	M
D.B 28	250	215	180	96	255	4	16	13,5x4	40	80	43	12	M16
D.B 37	250	215	180	96	272	4	16	13,5x4	40	80	43	12	M16
D.B 47	300	265	230	100	307	4	20	14x4	50	100	53,5	14	M16
D.B 57	350	300	250	124	362	5	20	18x4	60	120	64	18	M20
D.B 67	400	350	300	174	473	5	22	18x4	75	140	79,5	20	M20
D.B 77	450	400	350	194	545	5	24	18x8	90	170	95	25	M24
D.B 87	550	500	450	210	625	5	28	18x8	110	210	116	28	M24
D.B 97	660	600	550	227	711	6	28	22x8	120	210	127	32	M24



7.16- D.B28.. - D.B97.. Drywell Gearboxes With Shrink Disc Dimensions

SA Shrink Disc Option

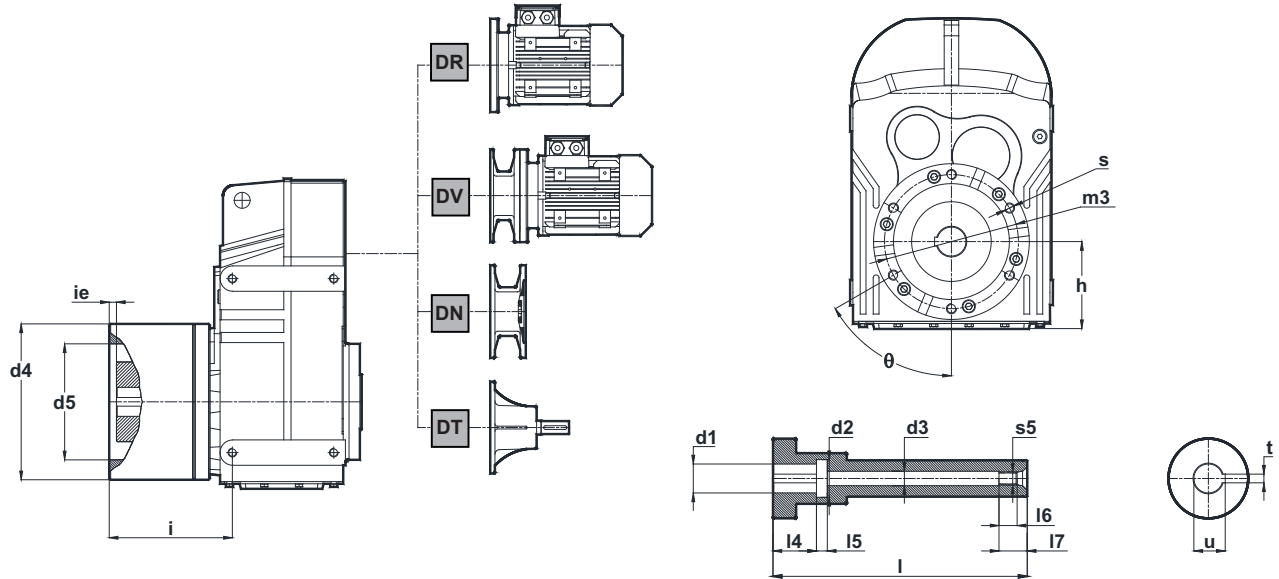
Output Flange



Type	m	m1	m2	h	h1	h2	f	u	s	L	l1	l2	D	d	d1
D.B 28	250	215	180	96	288	304	4	16	13,5x4	288	35	30	104	40	41
D.B 37	250	215	180	96	306.5	325	4	16	13,5x4	306.5	45	50	106	40	41
D.B 47	300	265	230	100	343.5	360	4	20	14x4	343.5	47.5	52.5	120	50	51
D.B 57	350	300	250	124	400.5	423	5	20	18x4	400.5	55	60	159	60	61
D.B 67	400	350	300	174	512	540	5	22	18x4	512	60	65	164	70	71
D.B 77	450	400	350	194	604.5	626	5	24	18x8	604.5	80	80	204	90	91
D.B 87	550	500	450	210	693	720	5	28	18x8	693	85	90	252	110	111
D.B 97	660	600	550	227	787	810	6	28	22x8	787	90	80	288	120	121



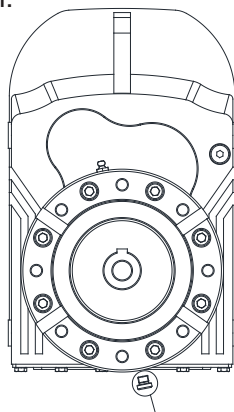
7.17- D.E07.. - D.E97.. Extruder Gearboxes Dimensions



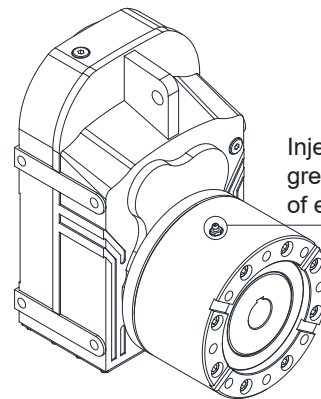
Gearbox Type	Extruder Hollow Shaft											Extruder									Input
	d1 (H8)	d2	d3	l	l4	l5	l6	l7	s5	t	u	d4	d5 (H8)	i	ie	h	m3	s	Quantity	θ	
D.07.0E	15	-	13	184	30	20	20	29,5	M12	5	17,3	135	72	92,5	6	59	92	M10 * 20	6	30	DR DV DN DT
D.17.0E	15	-	13	199	30	20	20	30	M12	5	17,3	135	72	95,5	6	73	115	M10 * 20	6	30°	
D.27.0E	25	34	20	270	50	10	20	32	M16	8	28,3	150	100	139	10	81	130	M10 * 20	6	60°	
D.28.0E	30	39	20	291,5	60	10	30	44	M18	8	33,3	195	135	154	10	90,5	165	M12 * 25	8	45°	
D.37.0E	35	44	20	310	60	10	30	44	M18	10	38,3	195	135	157	10	100	165	M12 * 25	8	45°	
D.47.0E	40	52	20	351	60	15	25	40	M18	12	43,3	215	160	172	10	120	185	M14 * 25	8	45°	
D.57.0E	50	61	26	401	70	15	30	48	M24	14	53,8	265	175	195	10	151	215	M14 * 25	8	45°	
D.67.0E	60	72	26	485	80	15	40	58	M24	18	64,4	305	200	207	10	176	265	M16 * 30	8	22,5°	
D.77.0E	70	88	33	572	120	15	50	67	M30	20	74,9	370	280	252	10	202	325	M20 * 35	8	22,5°	
D.87.0E	80	96	38	663	140	20	60	82	M36	22	85,4	430	310	288	10	233	350	M24 * 40	8	22,5°	
D.97.0E	90	108	38	766	150	20	60	82	M36	25	95,4	475	365	358	10	271	400	M24 * 50	8	22,5°	

7.17.1- Extruder Housing Grease Change

For changing the grease of the extruder housing, first remove the plug located under the housing. Then, inject new grease (Mineral Grease or an equivalent specified in the oil types chart) through the grease nipple on the top of the housing. The process is completed when the new grease is seen coming out from the bottom.



The blind plug located at the bottom of the extruder housing will be removed



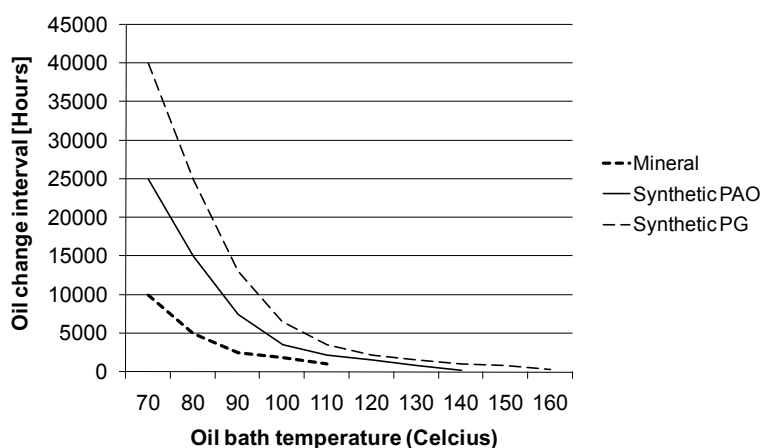
Inject new grease through the grease nipple located at the top of extruder housing



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 °C oil bath temperature should be taken as reference

* For D series mineral oil is used unless it is differently ordered. For oil type and quantities refer to the following table.

Operating Instructions

D Series

Lubrication



9- Lubrication

9.1- Oil Types

Lubricant	DIN 51517-3	Ambient Temp. [°C]	ISO VG	Aral	Beyond Petroleum	Castrol	Klüber Lubrication	Mobil	Shell	Total
		Dip Lubrication								
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	Energol SG-XP 680	–	Klübersynth GH 6 -680	Mobil Glygoyle 680	Omala S4 WE 680	Carter SY 680
		-20 ... +50	460	Degol GS 460	Energol 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	Energol 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	Energol 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	Energol 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	Energol 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	Energol 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	Energol 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	Energol 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 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 in section 9.4.



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

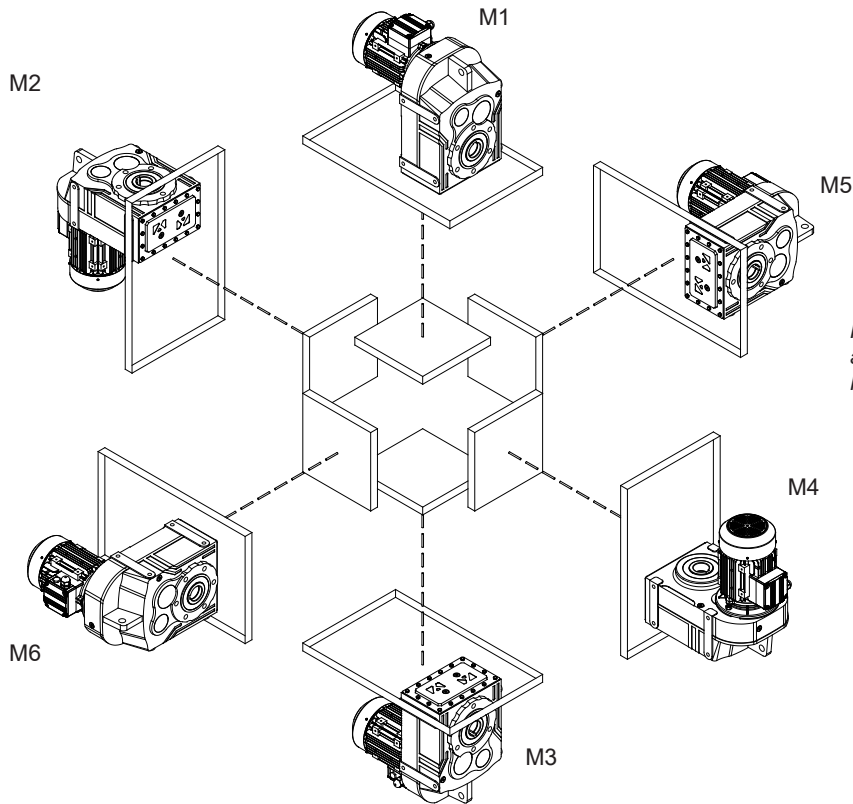


- Hot oil can cause scalding.

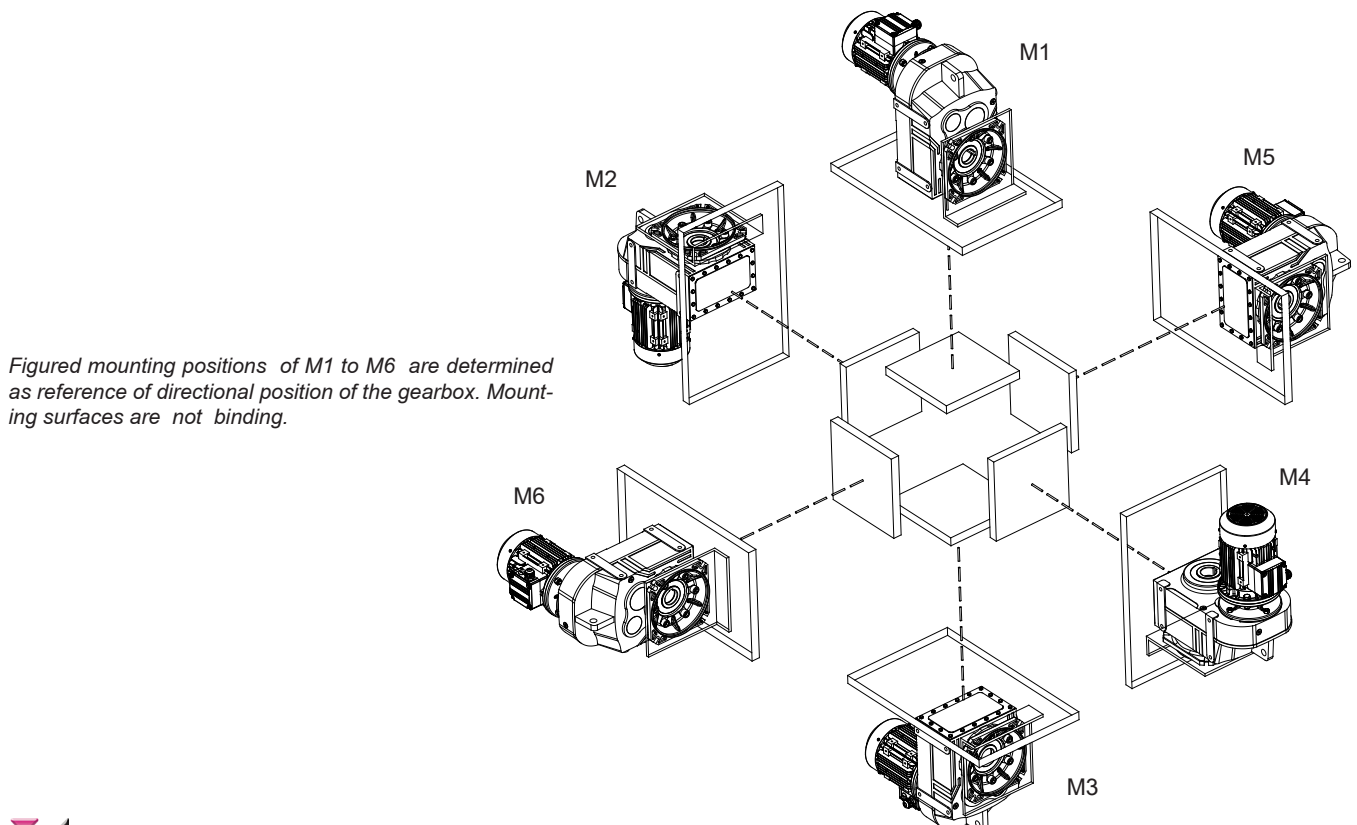
When changing oil, protect yourself against contacting hot oil.



9.3 Mounting Positions



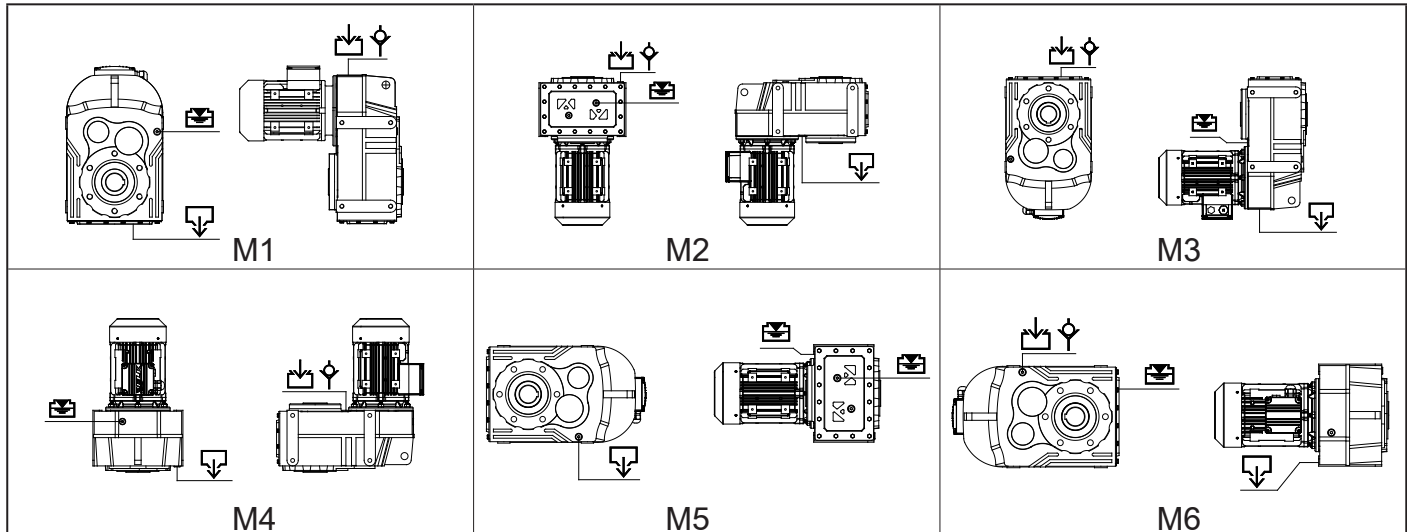
Figured mounting positions of M1 to M6 are determined as reference of directional position of the gearbox. Mounting surfaces are not binding.



Figured mounting positions of M1 to M6 are determined as reference of directional position of the gearbox. Mounting surfaces are not binding.



9.4 Oil Plugs and Oil Quantities: D Series 2 and 3 Stage Oil Level Plugs



Oil Quantities (lt)

Type	M1	M2	M3	M4	M5	M6
DR072	0,95	1,1	0,80	1,1	1,0	1,0
DR073	0,90	1,0	0,70	1,0	0,85	0,85
DR172	1,3	1,5	1,0	1,6	1,4	1,3
DR173	1,0	1,3	0,80	1,6	1,2	1,2
DR272	1,9	2,2	1,3	2,5	2,0	2,0
DR273	1,8	2,0	1,2	2,0	2,0	2,0
DR282	2,4	3,0	2,0	2,9	2,7	2,7
DR283	2,3	2,9	1,8	2,6	2,3	2,5
DR372	3,2	3,7	2,4	3,6	3,5	3,4
DR373	3,0	3,7	2,0	3,5	3,3	3,3
DR472	6,8	7,0	4,6	7,5	6,5	6,5
DR473	6,4	7,0	4,0	6,6	6,5	6,5
DR572	11	13	8,6	15	12	12
DR573	11	12	8,0	13	12	12
DR672	22	27	16	27	23	23
DR673	21	25	14	27	22	21
DR772	34	37	26	44	35	35
DR773	32	35	21	40	33	33
DR872	53	58	43	67	55	58
DR873	48,5	53	39	61	50	49
DR972	87	113	81	117	99	95
DR973	84	110	77	112	93	89

Symbols :

: Drain Plug

: Oil Filling

: Vent Plug

: Oil Level

Operating Instructions

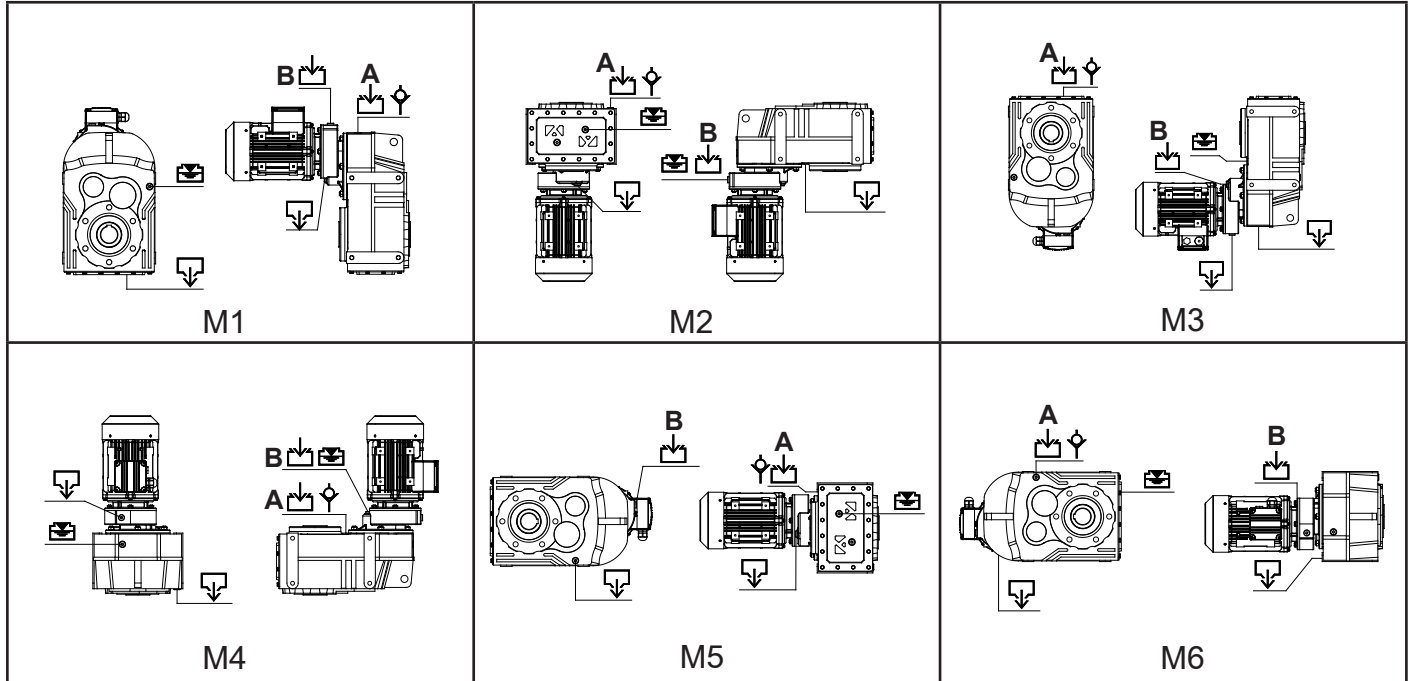
D Series

Lubrication



Oil Plugs and Oil Quantities

D Series 4 Stage Oil Level Plugs



Oil Quantities (lt)

Type	M1 A / B	M2 A / B	M3 A / B	M4 A / B	M5 A / B	M6 A / B
DR474	6,4 / 0,25	7,0 / 0,25	4,0 / 0,25	6,6 / 0,25	6,5 / 0,25	6,5 / 0,25
DR574	11 / 0,40	12 / 0,40	8,0 / 0,40	13 / 0,40	12 / 0,40	12 / 0,40
DR674	21 / 0,50	25 / 0,50	14 / 0,50	27 / 0,50	22 / 0,50	21 / 0,50
DR774	32 / 0,90	35 / 0,90	21 / 0,90	40 / 0,90	33 / 0,90	33 / 0,90
DR874	49 / 3,5	53 / 3,5	39 / 3,5	61 / 3,5	50 / 3,5	49 / 3,5
DR974	84 / 5,0	110 / 5,0	77 / 5,0	112 / 5,0	93 / 5,0	89 / 5,0

Symbols :

: Drain Plug

: Oil Filling

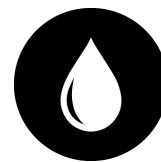
: Vent Plug

: Oil Level

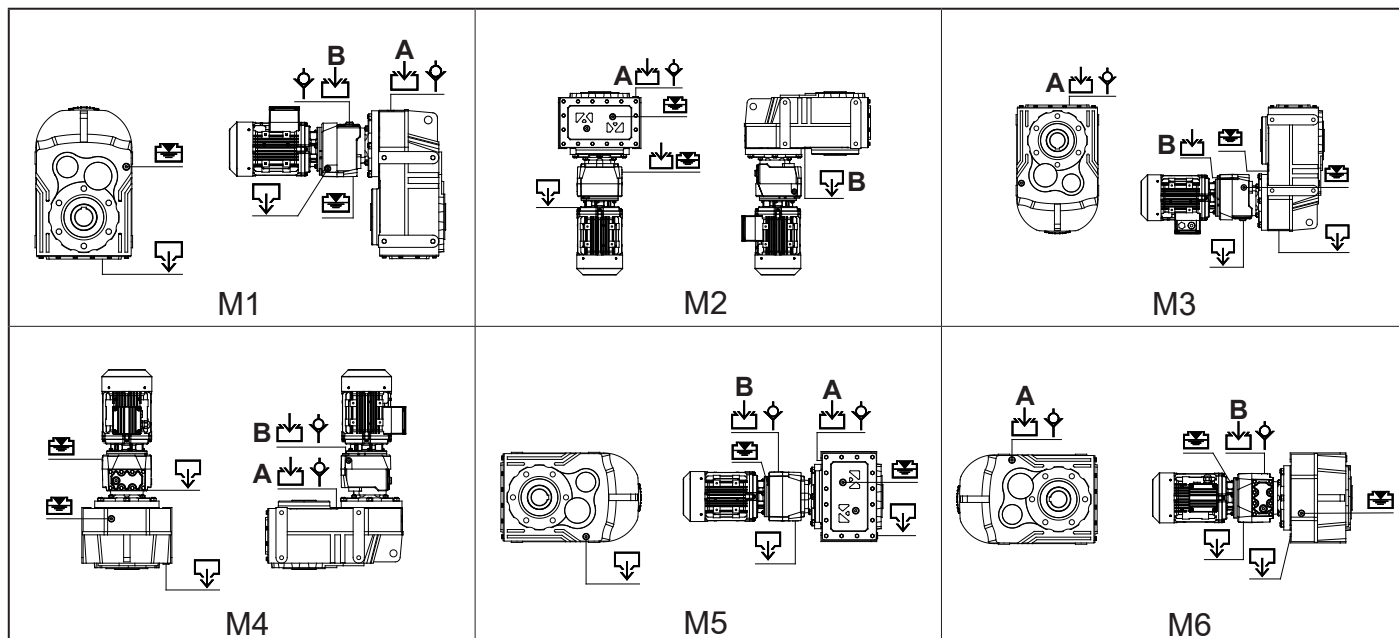
Operating Instructions

D Series

Lubrication



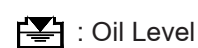
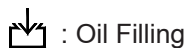
Oil Plugs and Oil Quantities: D Series 5 and 6 Stage Oil Level Plugs



Oil Quantities (lt)

Type	M1 A / B	M2 A / B	M3 A / B	M4 A / B	M5 A / B	M6 A / B
DR275	1,8 / 0,40	2,0 / 0,60	1,2 / 0,50	2,0 / 0,60	2,0 / 0,50	2,0 / 0,50
DR276	1,8 / 0,35	2,0 / 0,55	1,2 / 0,50	2,0 / 0,55	2,0 / 0,40	2,0 / 0,40
DR285	2,3 / 0,40	2,9 / 0,60	1,8 / 0,50	2,6 / 0,60	2,3 / 0,50	2,5 / 0,50
DR286	2,3 / 0,35	2,9 / 0,55	1,8 / 0,50	2,6 / 0,55	2,3 / 0,40	2,5 / 0,40
DR375	3,0 / 0,40	3,7 / 0,60	2,0 / 0,50	3,5 / 0,60	3,3 / 0,50	3,3 / 0,50
DR376	3,0 / 0,35	3,7 / 0,55	2,0 / 0,50	3,5 / 0,55	3,3 / 0,40	3,3 / 0,40
DR475	6,4 / 0,65	7,0 / 0,95	4,0 / 0,70	6,6 / 0,95	6,5 / 0,70	6,5 / 0,70
DR476	6,4 / 0,60	7,0 / 0,80	4,0 / 0,70	6,6 / 0,80	6,5 / 0,65	6,5 / 0,65
DR575	11 / 1,2	12 / 2,1	8,0 / 2,0	13 / 2,1	12 / 1,4	12 / 1,4
DR576	11 / 1,1	12 / 2,0	8,0 / 1,9	13 / 2,0	12 / 1,3	12 / 1,3
DR675	21 / 1,2	25 / 2,1	14 / 2,0	27 / 2,1	22 / 1,4	21 / 1,4
DR676	21 / 1,1	25 / 2,0	14 / 1,9	27 / 2,0	22 / 1,3	21 / 1,3
DR775	32 / 2,0	35 / 3,4	21 / 3,1	40 / 3,4	33 / 2,8	33 / 2,8
DR776	32 / 1,9	35 / 3,3	21 / 3,0	40 / 3,3	33 / 2,6	33 / 2,6
DR875	49 / 2,0	53 / 3,4	39 / 3,1	61 / 3,4	50 / 2,8	49 / 2,8
DR876	49 / 1,9	53 / 3,3	39 / 3,0	61 / 3,3	50 / 2,6	49 / 2,6
DR975	84 / 4,5	110 / 7,5	77 / 7,5	112 / 7,5	93 / 5,5	89 / 5,5
DR976	84 / 4,0	110 / 7,0	77 / 7,0	112 / 7,0	93 / 5,0	89 / 5,0

Symbols :



Operating Instructions

D Series

Troubleshooting Guide



10- 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.

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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. <u>If higher than +120 Celsius and using ATEX conforming gear box immediately stop the system and contact YILMAZ REDUKTOR.</u> 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. <u>If higher than +120 Celsius and using ATEX conforming gear box immediately stop the system and contact YILMAZ REDUKTOR.</u> 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 disk 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

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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

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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

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.

Ataturk Mah. Lozan Cad. No: 17 P.K.:34522 Esenyurt-Istanbul/TURKEY

Phone: +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 warranty 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

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This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin, dark gray lines. There are 20 columns and 20 rows of these squares, creating a total of 400 square units. The background is white, and the grid covers the entire area of the page without any margins or additional markings.



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

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