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# TT Series Gear Units

OITCE0100-0410

# Operating Instructions

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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 injuries



Damage Risk; Can damage the drive or environment



Important Information

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 TT Series gear units and is applicable only for TT 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 gear units of YILMAZ REDUKTOR. For special application and modified gear units ask YILMAZ REDUKTOR for validity.

This manual does not cover the ATEX 100a (94/9/EC) compatible gearboxes. For ATEX 100a contact YILMAZ REDUKTOR.



## 2 -Unit Designation

### 2.1- Detailed unit designation



Detailed TT Series gear units designation for ordering

(This Designation is different from the short nameplate designation)

**3,0 kW - 46 rpm - 19,53 - TT37 . 00 . K - H3**

<u>Power (kW)</u>	<u>Output Speed(rpm)</u>	<u>Ratio (i)</u>	<u>Gear unit Size</u>	<u>Output Shaft Spec.</u>	<u>Backstop Option</u>	<u>Mounting Position</u>
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TT17	TT57
TT27	TT67
TT28	TT77
TT37	TT87
TT47	TT97

**00** - Standart hollow shaft diameter  
**0X** - Special hollow shaft diameter  
**0S** - Hollow shaft with shrink disc

**K** : Backstop is available  
 - :Backstop is unavaliable

**H3** : Gear unit is upright and input shaft is over output shaft  
**H4** : Gear unit is upright and input shaft is under output shaft  
**H5** : Input and output shaft is paralel to earth, input shaft is over  
**H6** : Input and output shaft is paralel to earth, input shaft is under  
**H7** : Input shaft is vertical to earth and input shaft points to sky  
**H8** : Input shaft is vertical to earth and input shaft points to earth



## 2.2- Nameplate, unit designation



Nameplate unit designation is a short abbreviation from the detailed designation

A sample name plate for TT Series

	<b>YILMAZ REDÜKTÖR</b> <a href="http://www.yr.com.tr">www.yr.com.tr</a> MADE IN TURKEY	
Type :	TT37.00.K - H6	
Serial N.:	104837	
Power :	3.0 kW	Ratio: 19.53
Speed :	46 rpm.	M. Pos.: H6
Oil :	VG320 Mineral	Oil Qty : 4 lt.

### Abbreviations:

Serial N. : Serial Number

M.Pos. : Mounting Position

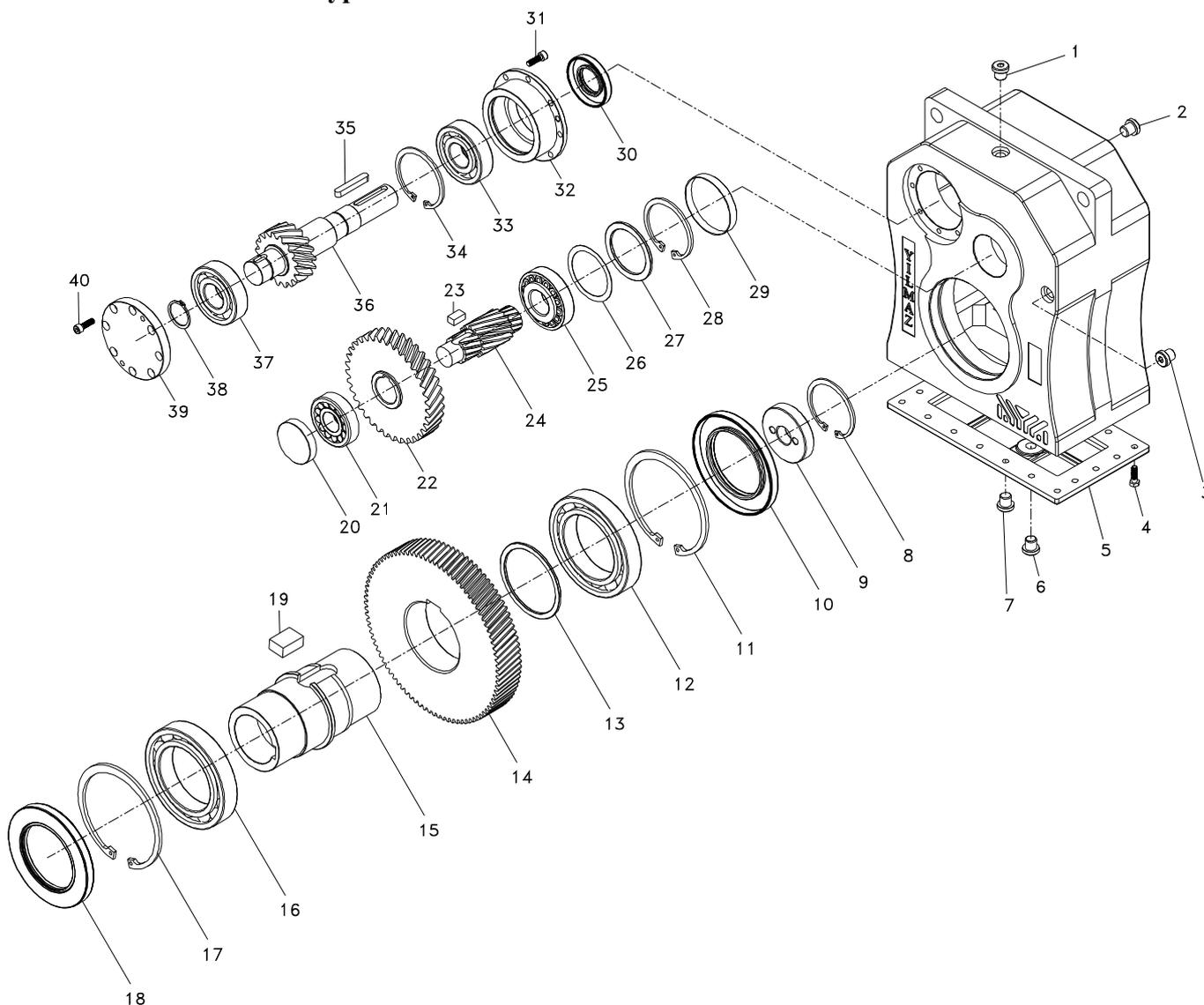
### Serial Number Designation;

10 / 4837  
Year of manufacturing                      Order Number



### 3- Part List of Standard Type Gear Units

#### 3.1- TT...00 Types



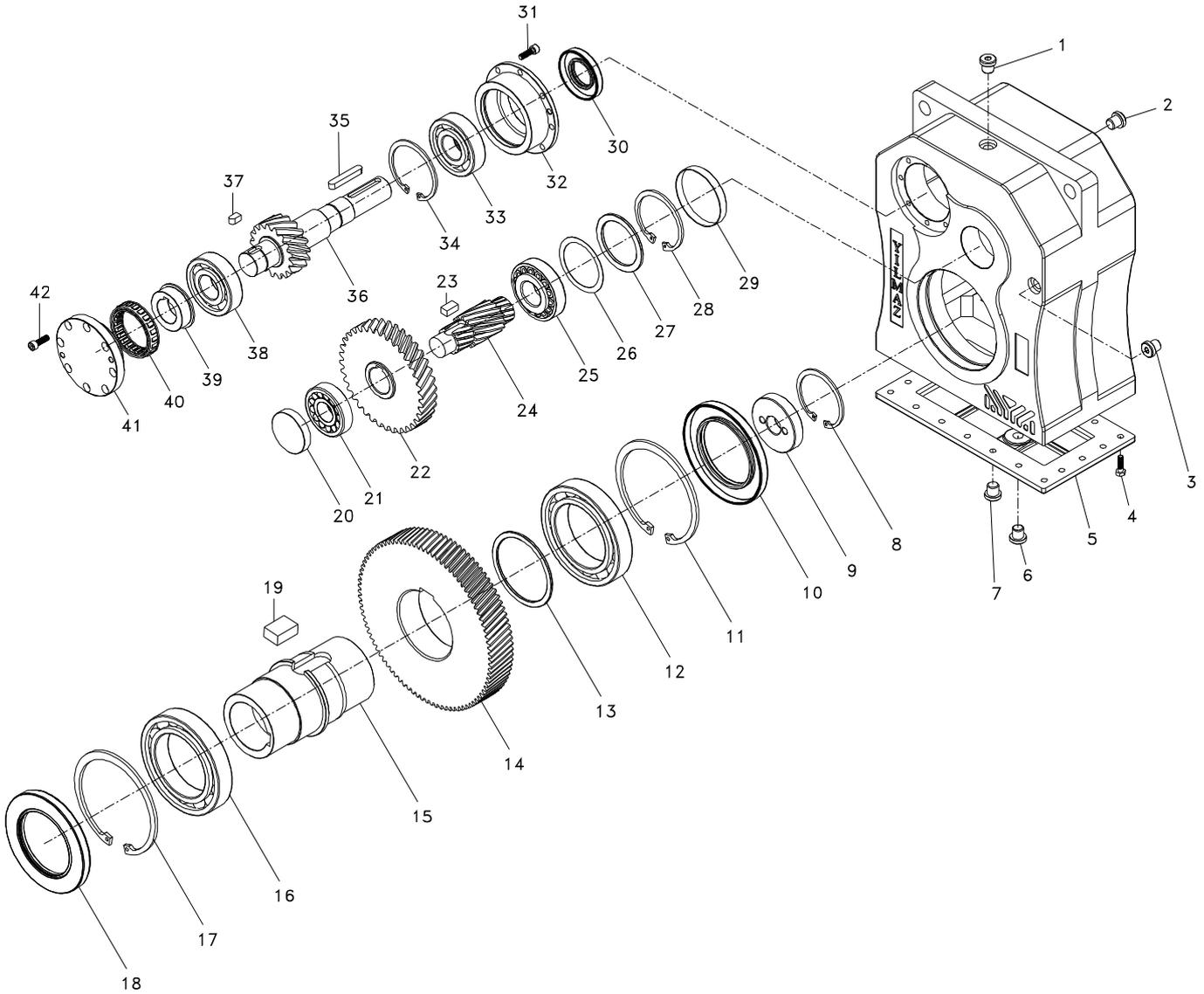
*Standard TT...00 type basic part diagram. Parts may differ for special applications.*

#### Standard Part List

1- Plug	11- Circlip	21- Bearing	31- Bolt
2- Plug	12- Bearing	22- Gear	32- Input Shaft Cover
3- Plug	13- Washer	23- Key	33- Bearing
4- Bolt	14- Gear	24- Pinion	34- Circlip
5- Cover Plate	15- Output Hollow Shaft	25- Bearing	35- Key
6- Plug	16- Bearing	26- Shim	36- Input Pinion Shaft
7- Plug	17- Circlip	27- Washer	37- Bearing
8- Circlip	18- Oil Seal	28- Circlip	38- Circlip
9- Mounting Washer	19- Key	29- Closing Cap	39- Back Cover
10- Oil Seal	20- Closing Cap	30- Oil Seal	40- Bolt



**3.2- TT...00.K Types**



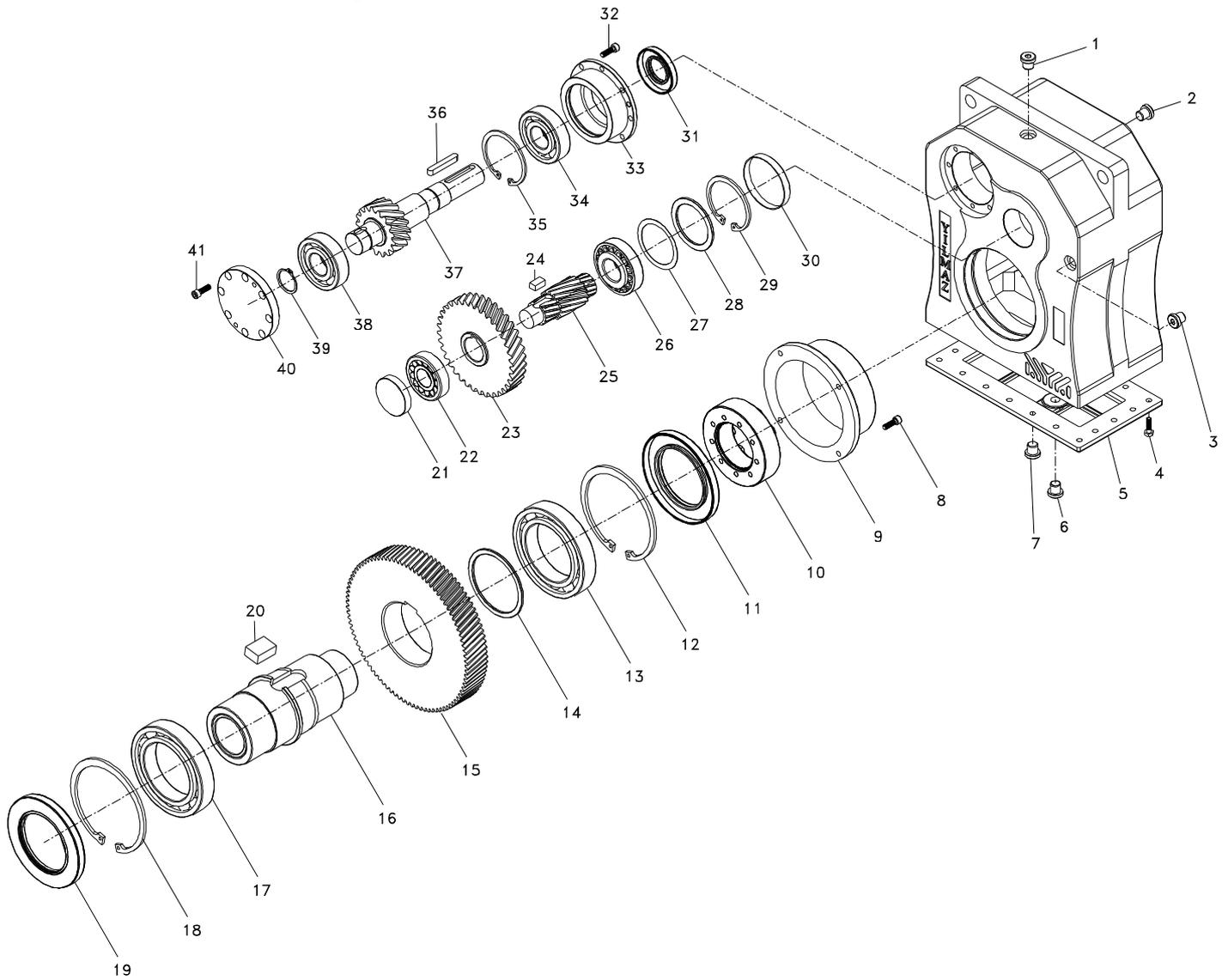
Standard TT...00.K type basic part diagram. Parts may differ for special applications.

**Standard Part List**

1- Plug	12- Bearing	23- Key	34- Circlip
2- Plug	13- Washer	24- Pinion	35- Key
3- Plug	14- Gear	25- Bearing	36- Input Pinion Shaft
4- Bolt	15- Output Hollow Shaft	26- Shim	37- Key
5- Cover Plate	16- Bearing	27- Washer	38- Bearing
6- Plug	17- Circlip	28- Circlip	39- Backstop Inner Bush
7- Plug	18- Oil Seal	29- Closing Cap	40- Backstop
8- Circlip	19- Key	30- Oil Seal	41- Backstop Cover
9- Mounting Washer	20- Closing Cap	31- Bolt	42- Bolt
10- Oil Seal	21- Bearing	32- Input Shaft Cover	
11- Circlip	22- Gear	33- Bearing	



### 3.3- TT...0S Types



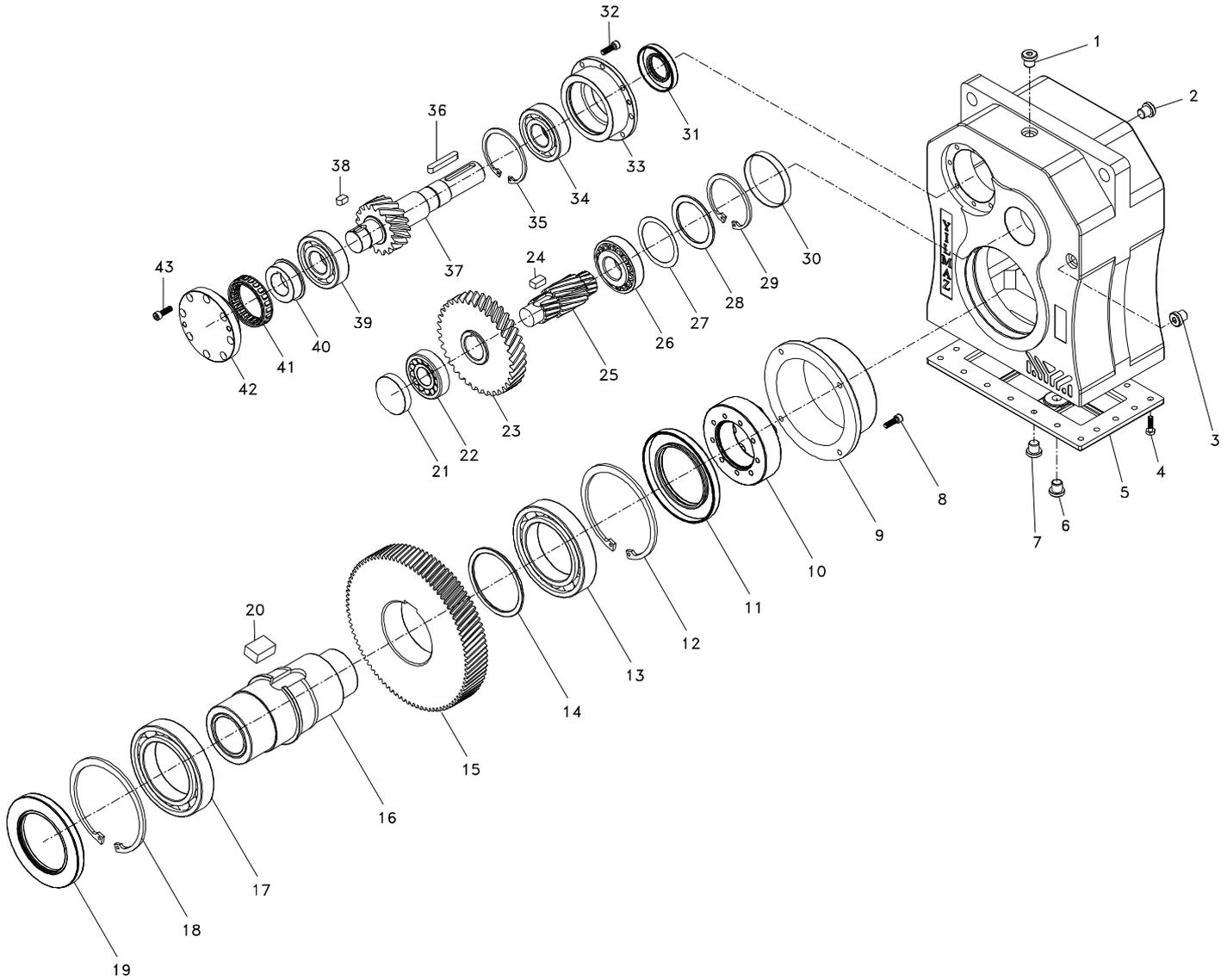
*Standard TT...0S type basic part diagram. Parts may differ for special applications.*

#### Standard Part List

1- Plug	12- Circlip	23- Gear	34- Bearing
2- Plug	13- Bearing	24- Key	35- Circlip
3- Plug	14- Washer	25- Pinion	36- Key
4- Bolt	15- Gear	26- Bearing	37- Input Pinion Shaft
5- Cover Plate	16- Output Hollow Shaft	27- Shim	38- Bearing
6- Plug	17- Bearing	28- Washer	39- Circlip
7- Plug	18- Circlip	29- Circlip	40- Back Cover
8- Bolt	19- Oil Seal	30- Closing Cap	41- Bolt
9- Shrink Disc Protec. Cover	20- Key	31- Oil Seal	
10- Shrink Disc	21- Closing Cap	32- Bolt	
11- Oil Seal	22- Bearing	33- Input Shaft Cover	



**3.4- TT...0S.K Types**



*Standard TT...0S.K type basic part diagram. Parts may differ for special applications.*

**Standard Part List**

1- Plug	12- Circlip	23- Gear	34- Bearing
2- Plug	13- Bearing	24- Key	35- Circlip
3- Plug	14- Washer	25- Pinion	36- Key
4- Bolt	15- Gear	26- Bearing	37- Input Pinion Shaft
5- Cover Plate	16- Output Hollow Shaft	27- Shim	38- Key
6- Plug	17- Bearing	28- Washer	39- Bearing
7- Plug	18- Circlip	29- Circlip	40- Backstop Inner Bush
8- Bolt	19- Oil Seal	30- Closing Cap	41- Backstop
9- Shrink Disc Protec. Cover	20- Key	31- Oil Seal	42- Backstop Cover
10- Shrink Disc	21- Closing Cap	32- Bolt	43- Bolt
11- Oil Seal	22- Bearing	33- Input Shaft Cover	



## **4 -Thinks to Check Before the Gear Unit is Installed**

Before you install the gearbox you have to be sure that the gearbox is arrived with the all necessary equipment and without damage. Thinks 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

### **4.1- 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.

### **4.2- Storage**

If the gearunit 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.

#### **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 Celsius degrees. 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.



## 5- Installing The Gear Unit

### 5.1- 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 ATEX 100a (94/9/EC) conforming gear units. For ATEX 100a (94/9/EC) conforming gear units refer to the ATEX range manual. ATEX 100a 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.*

### 5.2- Check the shaft dimensions to fit;

Type	Input Shaft Diameter	Tolerance	Hollow Shaft Diameter	Tolerance G7	Hollow Shaft Diameter with Shrink Disc	Tolerance H7	Customer Shaft Diameter for Shrink Disc	Tolerance h6
TT17.00	19	+0.02 0	30	+0.03 +0.01	30	+0.02 0	30	0 -0.01
TT27.00	19	+0.02 0	35	+0.03 +0.01	35	+0.03 0	35	0 -0.02
TT28.00	24	+0.02 0	40	+0.03 +0.01	40	+0.03 0	40	0 -0.02
TT37.00	24	+0.02 0	45	+0.03 +0.01	45	+0.03 0	45	0 -0.02
TT47.00	28	+0.02 0	50	+0.03 +0.01	50	+0.03 0	50	0 -0.02
TT57.00	38	+0.02 0	60	+0.04 +0.01	60	+0.03 0	60	0 -0.02
TT67.00	42	+0.02 0	70	+0.04 +0.01	70	+0.03 0	70	0 -0.02
TT77.00	48	+0.02 0	80	+0.04 +0.01	80	+0.03 0	80	0 -0.02
TT87.00	55	+0.03 +0.01	100	+0.05 +0.01	100	+0.04 0	100	0 -0.02
TT97.00	55	+0.03 +0.01	125	+0.05 +0.01	125	+0.04 0	125	0 -0.03

**Note:** All dimensions are in mm.

### 5.3- Check the ambient temperature;

The ambient temperature must be in accordance with the oil tables given on this manual. If different contact YILMAZ REDUKTOR for special solutions.



#### **5.4- 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.



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

#### **5.5 Use of breather plug;**

Breather plugs are not needed for TT Series under normal ambient and working conditions (Up to 30 degree Celsius ambient temperature and up to 8 hours per day) . If heavy ambient conditions and long time working hours then breather plug are recommended by YILMAZ REDUKTOR and delivered with the gearbox together. Replace the breather plug with the most top plug according to your mounting position.

#### **5.6- 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.



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

#### **5.7- Check shaft ends ;**

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.

#### **5.8- 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 for solutions.



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.

#### **5.9- Check accessibility to filling, breather and drain plugs;**

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



## **6- Mechanical Installation**

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.



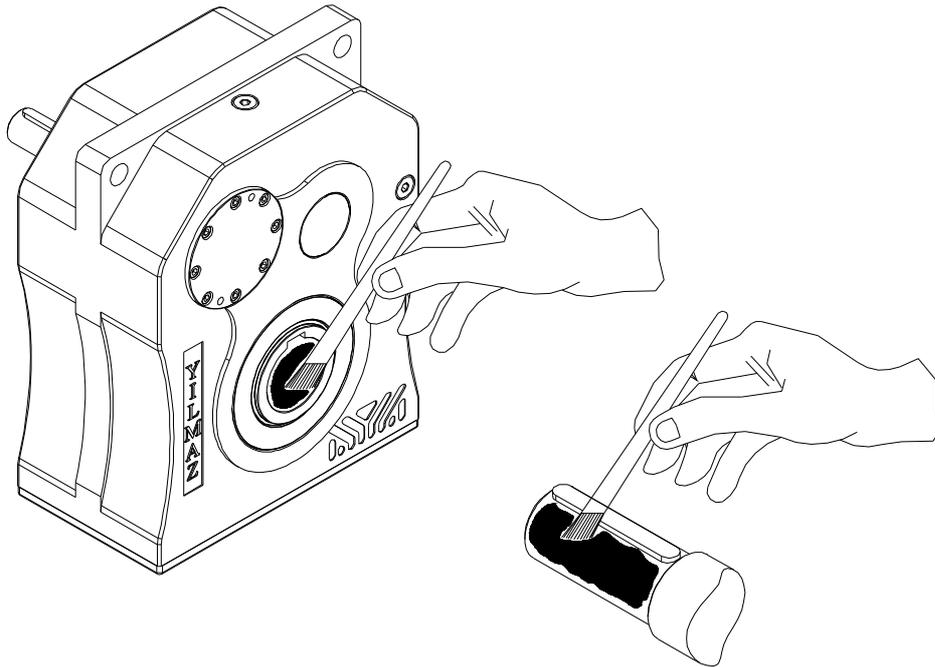
*Cover all the turning parts from human entering or touching. Turning parts can cause severe or fatal injuries.*

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

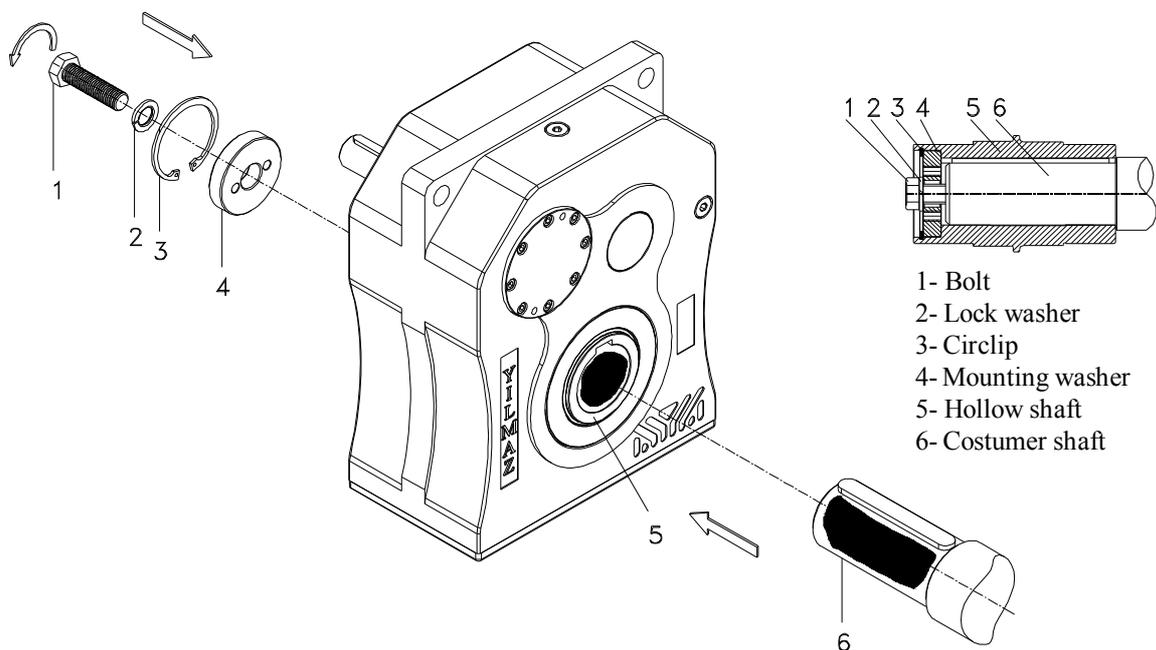


**6.1- Installing customer shaft with shoulder**

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



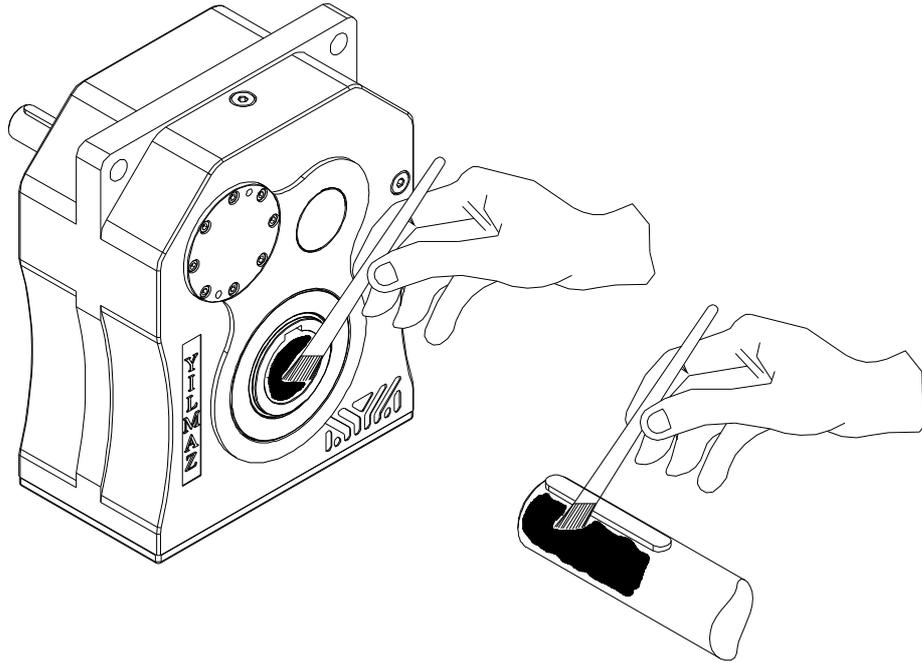
b- Fasten the bolt as shown below.



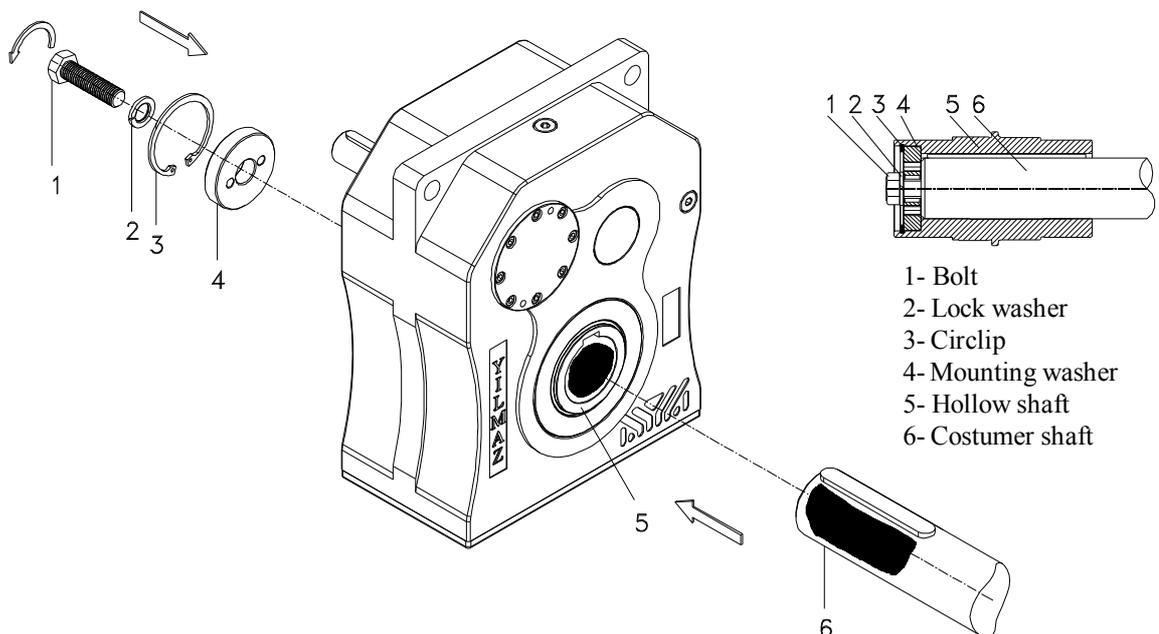


**6.2- Installing customer shaft without shoulder**

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



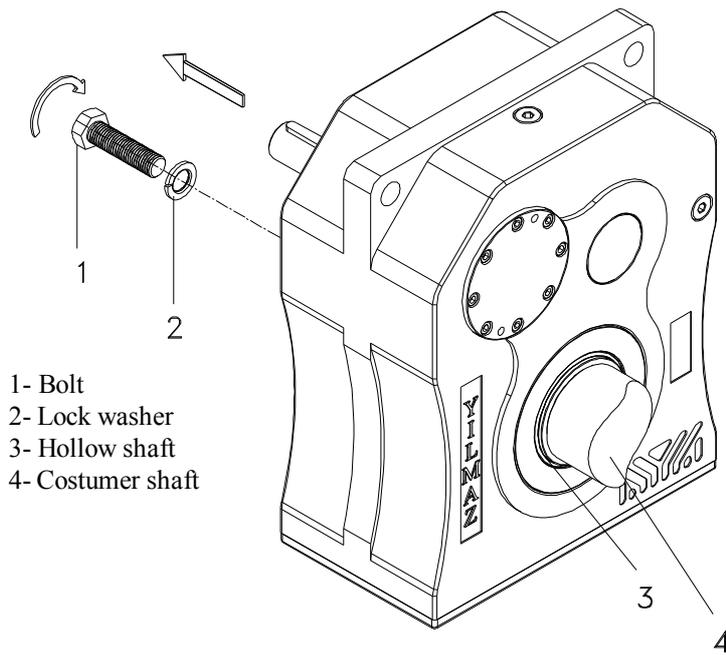
b- Fasten the bolt as shown below.



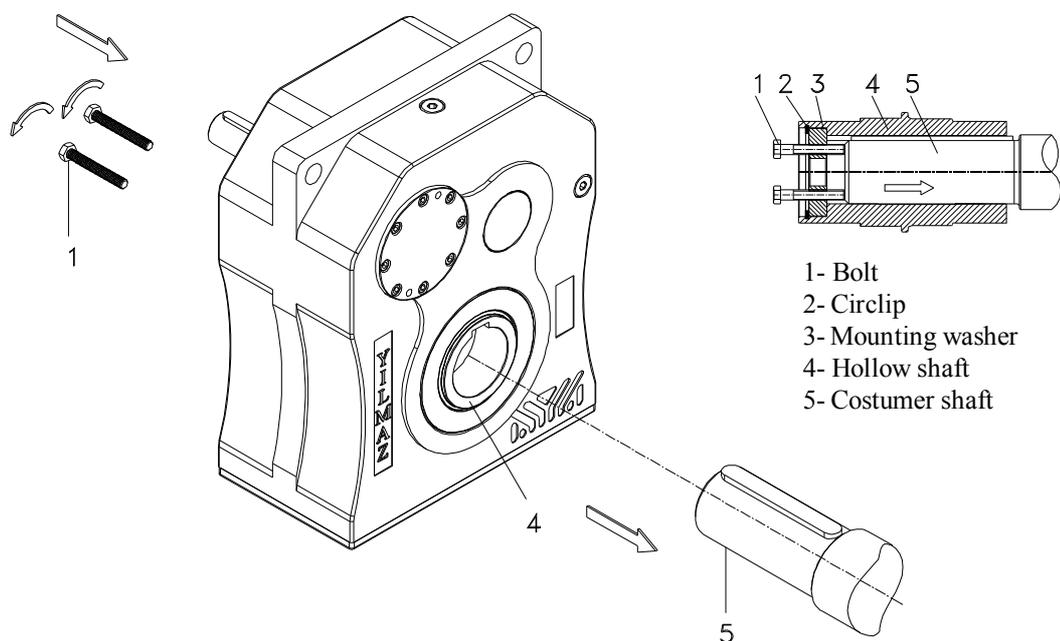


**6.3- Disassembling customer shaft with shoulder**

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

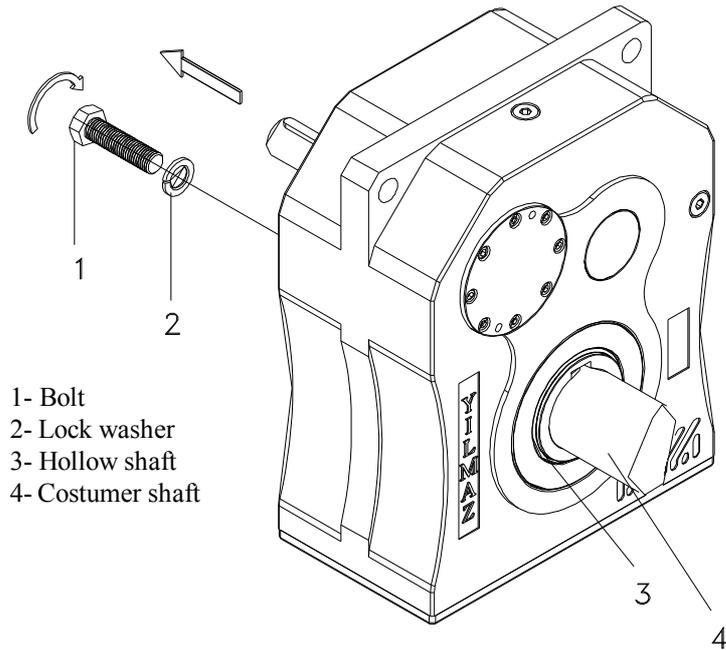


b- Use the disassemble set from YILMAZ and fasten the bolt as shown below to take out the output shaft. For disassemble sets look the following pages.



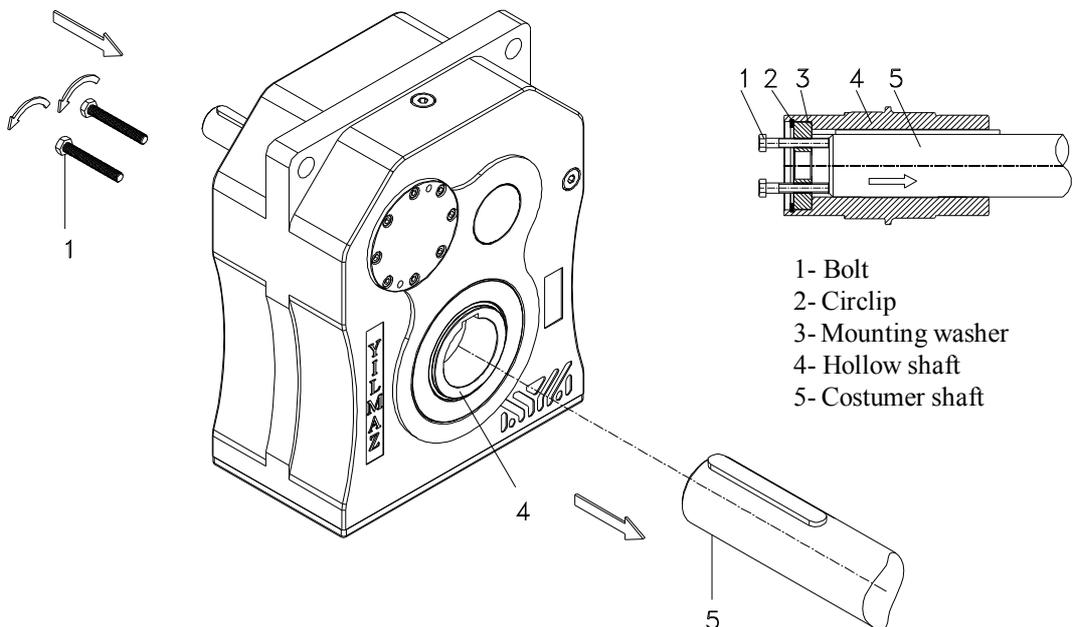


**6.4- Disassembling customer shaft without shoulder**  
a- Disassembly the bolt and take out the parts as shown



- 1- Bolt
- 2- Lock washer
- 3- Hollow shaft
- 4- Costumer shaft

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

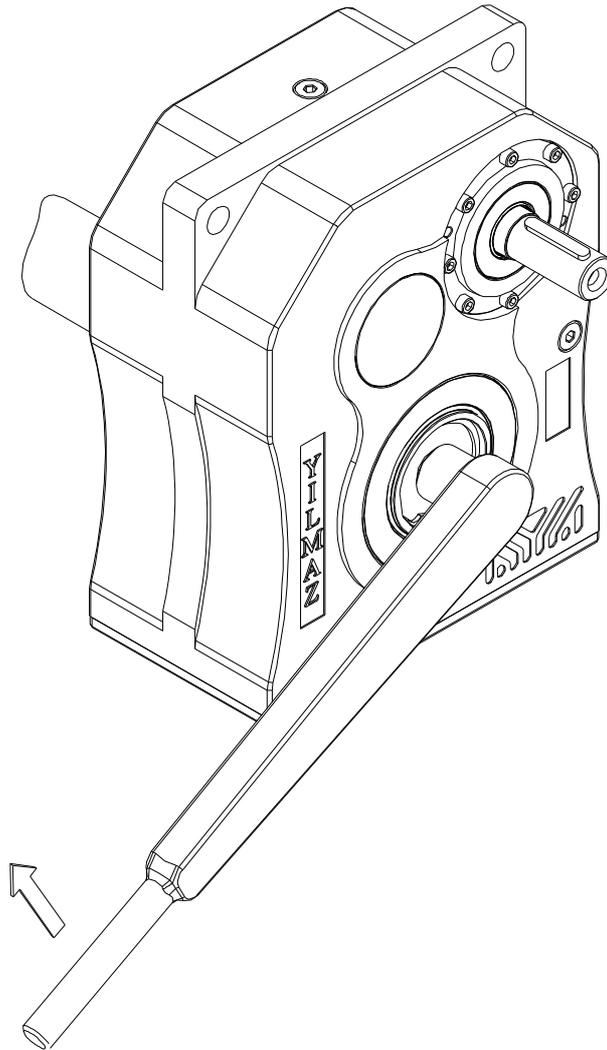


- 1- Bolt
- 2- Circlip
- 3- Mounting washer
- 4- Hollow shaft
- 5- Costumer shaft



### 6.5- Shaft tightening torques

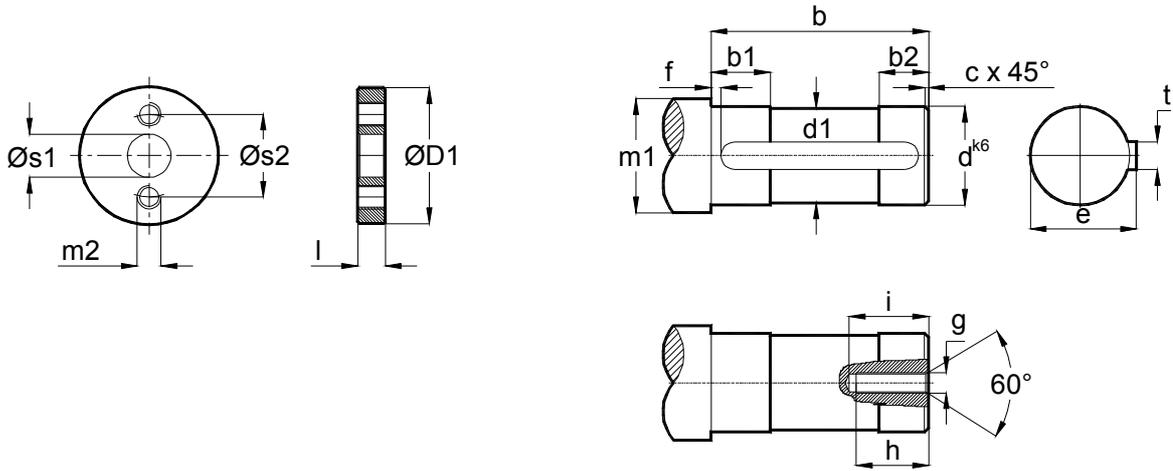
Use the following table for shaft tightening torques.



Type	Bolt	Tightening torque [Nm]
TT17...	M10	36
TT27...	M12	62
TT28...	M16	153
TT37...	M16	153
TT47...	M16	153
TT57...	M20	297
TT67...	M20	297
TT77...	M20	297
TT87...	M24	513
TT97...	M24	513



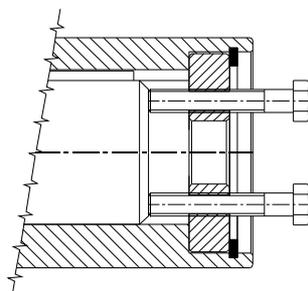
**6.6- Recommended shaft dimensions and mounting washer dimensions**  
 Mounting washer is delivered with gear unit.



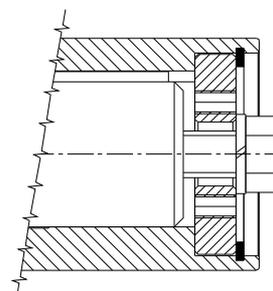
Type	D1	s1	s2	m2	l	d	d1	b	b1	b2	c	m1	f	h	i	g	e	t
TT17	30	11	22	M6	10	30	29,5	95	30	25	1	36	5	25	30	M10	33	8
TT27	35	17	26	M6	12	35	34,5	110	35	30	1	43		30	37	M12	38	10
TT28	40	17	28	M8	12	40	39,5	110	40	35	2	50		38	45	M16	43	12
TT37	45	22	34	M8	12	45	44,5	120	40	35	2	55		38	45	M16	48,5	14
TT47	50	22	36	M8	14	50	49,5	136	45	40	3	60		38	45	M16	53,5	14
TT57	60	22	42	M12	16	60	59,5	171	50	45	3	75		44	53	M20	64	18
TT67	70	22	48	M16	18	70	69,5	189	55	50	4	85		44	53	M20	74,5	20
TT77	80	26	54	M20	20	80	79,5	222	60	55	4	100		44	53	M20	85	22
TT87	100	26	70	M20	20	100	99,5	263	65	60	5	120		52	63	M24	106	28
TT97	125	33	90	M24	20	125	124,5	288	70	65	5	150		52	63	M24	132	32

**Note:** All dimensions are in mm.

*Dismounting*



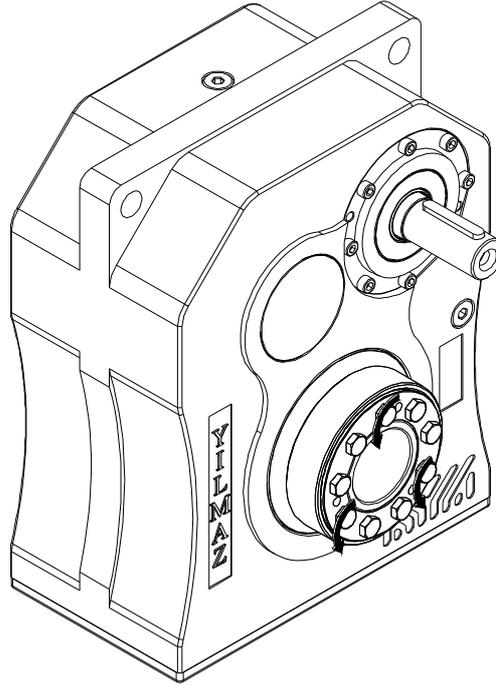
*Pulling Out*



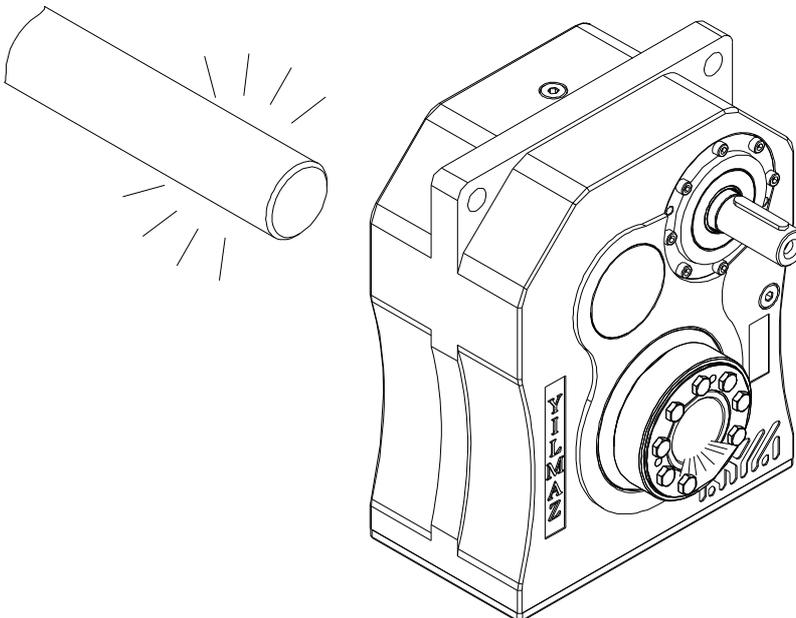


**6.7-Assembling customer shaft with shrink disk**

a- Loosen the bolts of the shrink disk

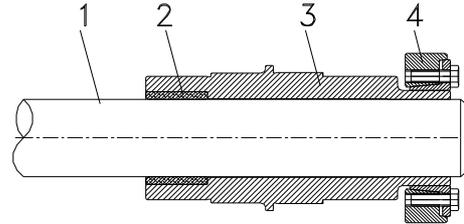
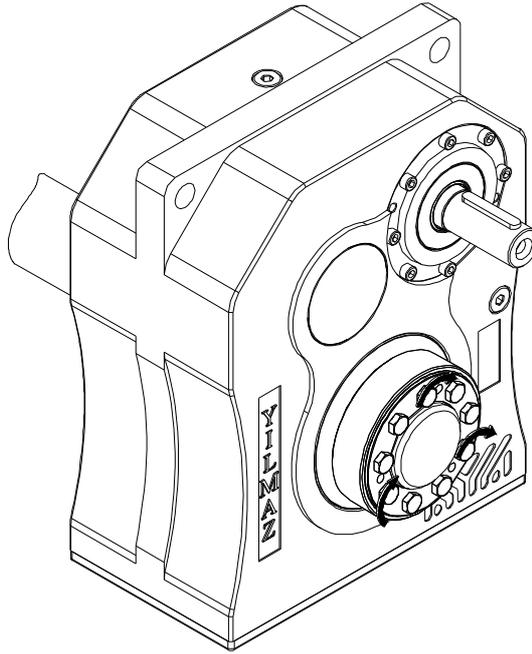


b- Use a solvent available in your market to clean all the dirt and oil from the shaft and shrink disk hollow. The surfaces must be free from oil or any dirt. The solvent must be removed from the surfaces as well.





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



- 1- Customer shaft
- 2- Bronze ring
- 3- Hollow shaft
- 4- Shrink disc

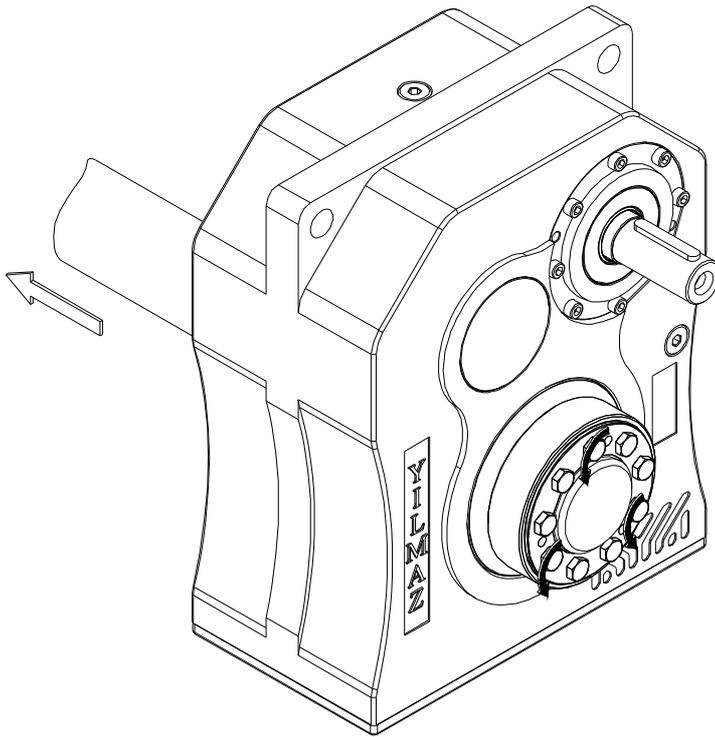
Type	Bolt	Tightening Torque [Nm]
TT17	M8	30
TT27	M8	30
TT28	M8	30
TT37	M8	30
TT47	M8	30
TT57	M10	59
TT67	M10	59
TT77	M12	100
TT87	M14	160
TT97	M14	160

Tightening torques are according to DIN EN ISO 4017-109 and  $\mu = 0,10$ .



**6.8- Disassembling customer shaft with shrink disk**

Loosen the bolts of the shrink disk and take out the shaft.



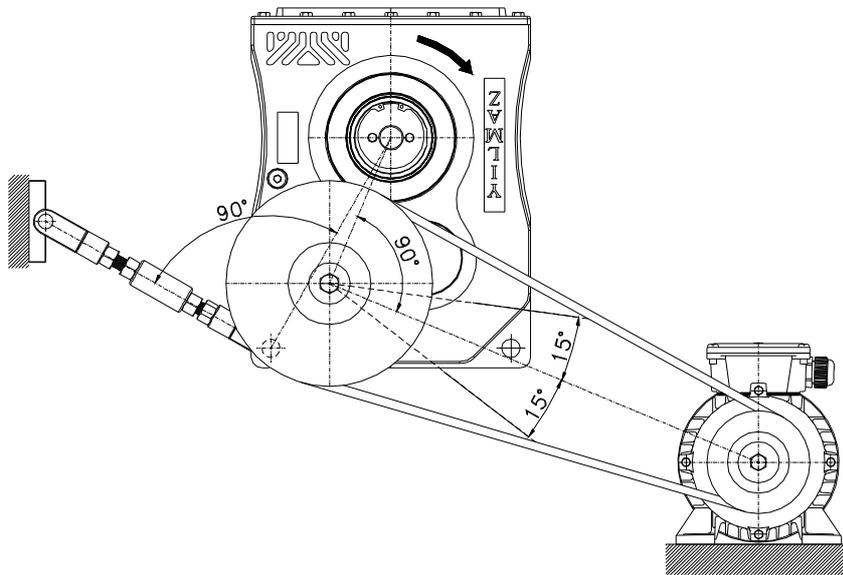


### 6.9- Assembling gear unit with tightening arm

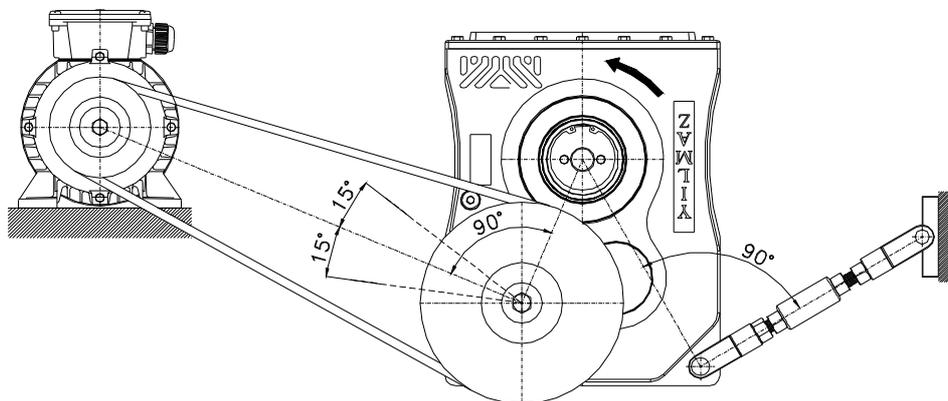
The advised mounting positions are shown below. According to the nature of load and direction of rotation refer to one of the drawings below. It is advised that the motor position is in a range of +/- 15 degree as shown.

For uniform and moderate loads( $f_s \leq 1,6$ ):

If direction of output shaft rotation is cw;



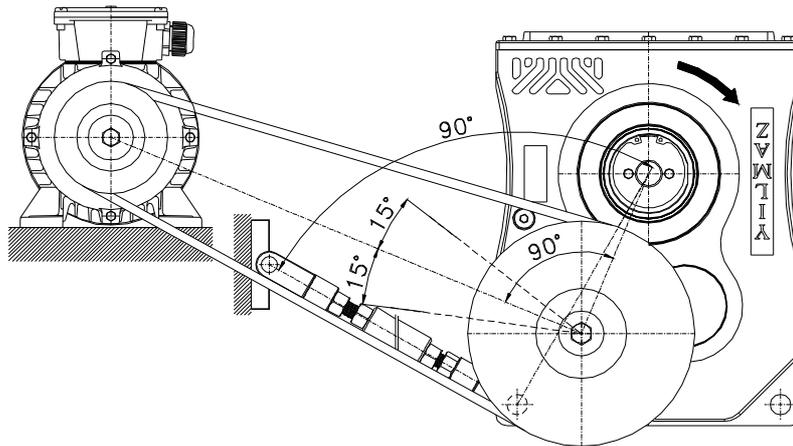
If direction of output shaft rotation is ccw;



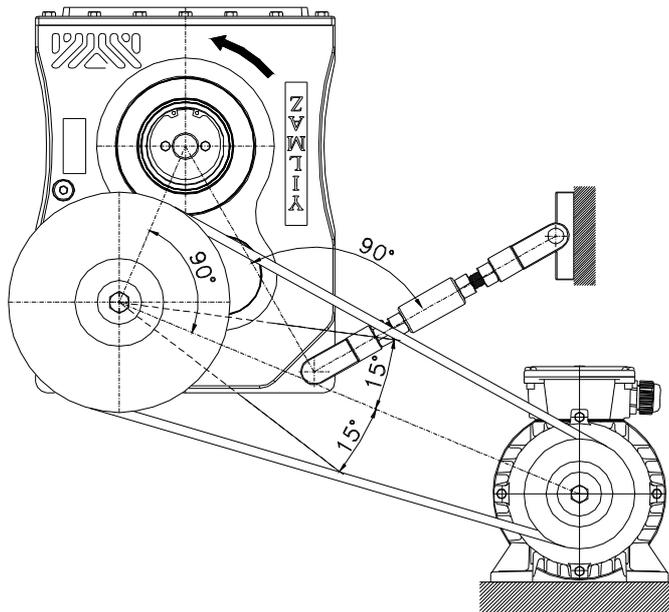


For heavy loads( $f_s > 1,6$ ):

If direction of output shaft rotation is cw;



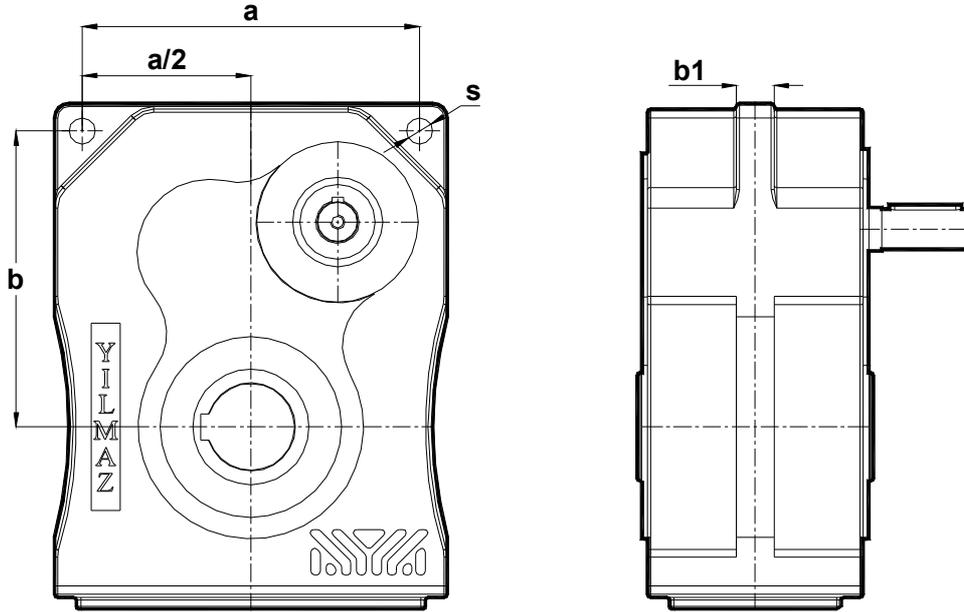
If direction of output shaft rotation is ccw;





**6.10- Fixing holes dimensions**

For the fixing holes refer to the following dimensions



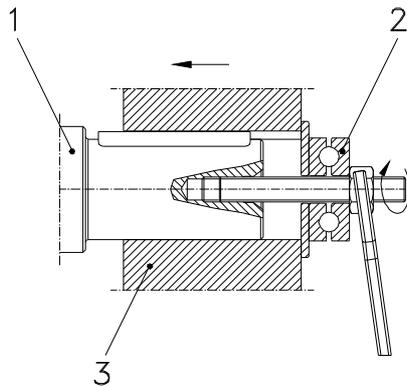
Type	a	b	b1	s
TT17	132	118	16	10
TT27	160	138	20	12
TT28	174	152	20	14
TT37	200	170	24	16
TT47	232	205	26	18
TT57	288	254	30	22
TT67	332	292	34	24
T77	378	344	38	26
TT87	442	395	42	28
TT97	496	462	46	32

**Note:** All dimensions are in mm.



### 6.11- Fitting input shaft elements

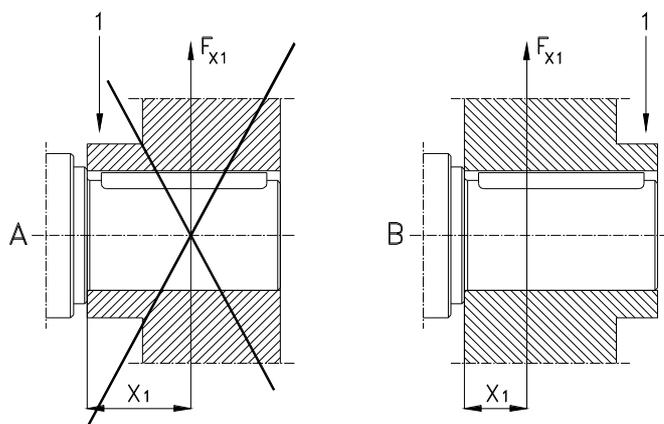
Use the following illustration to assemble input shaft units



- 1) Gear shaft end
- 2) Thrust bearing
- 3) Coupling hub

### 6.12- Correct position of input shaft elements

The input shaft unit (transmission elements) must be placed as close as possible to the gear unit so that the radial load is as closest as possible to the gear unit.

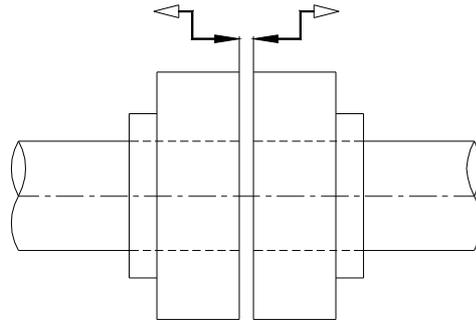


- 1) Hub

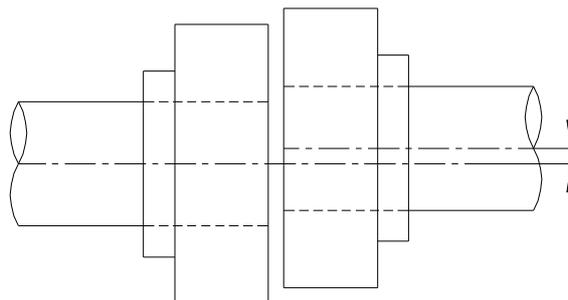


**6.13- Fitting couplings**

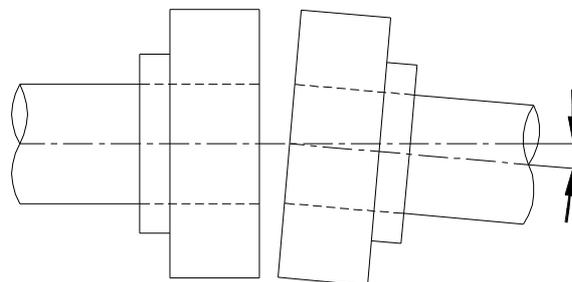
a- By fitting couplings be sure that there is some clearance between the two elements



b- By fitting couplings be sure that there is no eccentricity between the two shaft axis.



c- By fitting couplings be sure that the two shaft axis are not angular missaligned.

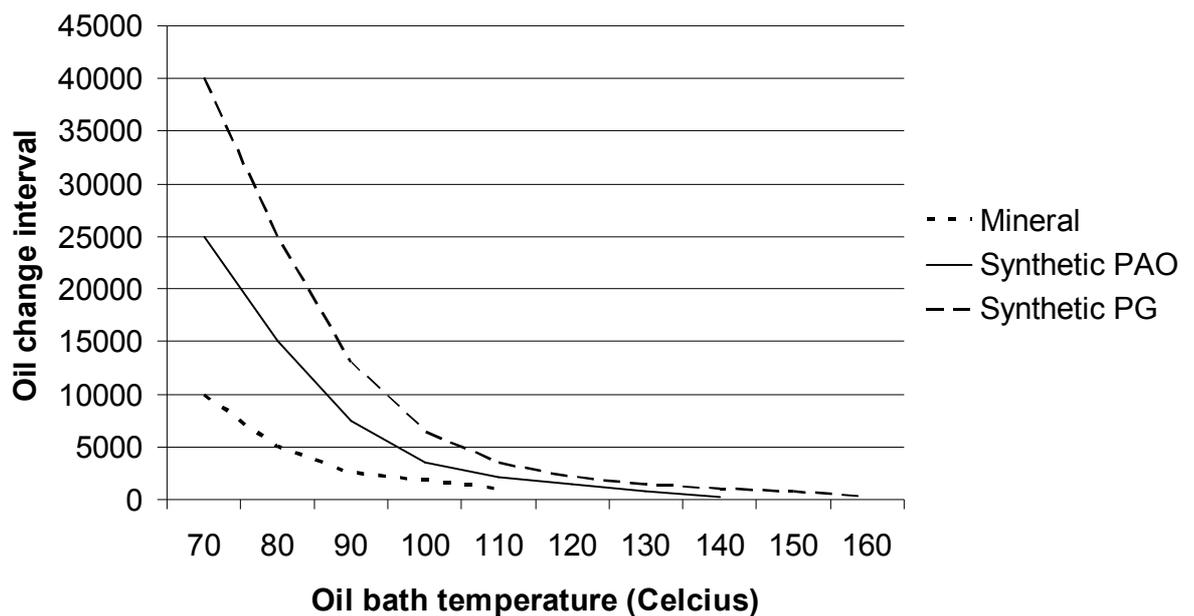




### 7- Inspections

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 3.000 working hours or every 6 months	Every 10.000 working hours or every 3 years	Every 25.000 working hours
Check for oil leakage	x		
Check for oil level	x		
Check oil leakage from seal	x		
Check rubber buffer	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 bearing grease			x
Change bearings			x
Check for noise changes			x



*For normal ambient conditions 70 degrees celcius should be taken as reference*

\* For TT Series mineral oil is used unless it is differently ordered. For oil type and quantities refer to the following tables.



## 8- Lubrication

### 8.1- Oil types

Lubricant	Usage Temperature	ISO Viscosity Class	ARAL	bp	ES&S	KLOBER	Mobil	Shell	Castrol
<b>Mineral Oil</b>	0 ... +100	ISO VG 680	Degol BG 680	Energol GR-XP680	Spartan EP 680	GEM 1 680	Mobilgear 636	Omala 680	Alpha SP 680
	0 ... +100	ISO VG 460	Degol BG 460	Energol GR-XP460	Spartan EP 460	GEM 1 460	Mobilgear 634	Omala 460	Alpha SP 460
	<b>0 ... +100</b>	<b>ISO VG 320</b>	<b>Degol BG 320</b>	<b>Energol GR-XP320</b>	<b>Spartan EP 320</b>	<b>GEM 1 320</b>	<b>Mobilgear 632</b>	<b>Omala 320</b>	<b>Alpha SP 320</b>
	-5 ... +100	ISO VG 220	Degol BG 220	Energol GR-XP220	Spartan EP 220	GEM 1 220	Mobilgear 630	Omala 220	Alpha SP 220
	-5...+100	ISO VG 150	Degol BG 150	Energol GR-XP150	Spartan EP 150	GEM 1 150	Mobilgear 629	Omala 150	Alpha SP 150
	-5...+100	ISO VG 100	Degol BG100	Energol GR-XP100	Spartan EP 100	GEM 1 100	Mobilgear 627	Omala 100	Alpha SP 100
<b>Synthetic Oil</b>	-20 ... +140	ISO VG 680	Degol GS 680	Enersyn SG-XP680		Syntheso D 680 EP	Gylgoyle HE 680		
	-20 ... +140	ISO VG 460	Degol GS 460	Enersyn SG-XP460	Glycolube 460	Syntheso D 460 EP	Gylgoyle HE 460	Tivela SD	Alphasyn PG 460
	-25 ... +140	ISO VG 320	Degol GS 320	Enersyn SG-XP320	Glycolube 320	Syntheso D 320 EP	Gylgoyle HE 320		Alphasyn PG 320
	-25 ... +140	ISO VG 220	Degol GS 220	Enersyn SG-XP220		Syntheso D 220 EP	Gylgole HE 220	Tivela WB	Alphasyn PG 220
	-30 ... +140	ISO VG 150	Degol GS 150	Enersyn SG-XP 150		Syntheso D 150 EP			Alphasyn PG 150
	-30 ... +140	ISO VG 100		Enersyn SG-XP 100		Syntheso D 150 EP			
<b>Mineral Grease</b>	-20 ... +120		Aralup HL 3	Engregrease LS 3	Beacon 3	Centplex 2	Mobilux 2	Alvania R3	Spheerol APT 3
<b>Synthetic Grease</b>	-30 ... +100					ISOFLEX Topas L152	Mobiltemp SHC 100	Cassida RLS 00	

### 8.2- Changing the oil

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



-Do not mix sythetic 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 the following pages.



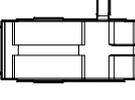
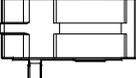
- Extended, intensive contact with oils can lead to skin irritations.  
 Avoid extended contact with oil, and clean oil off skin thoroughly.



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

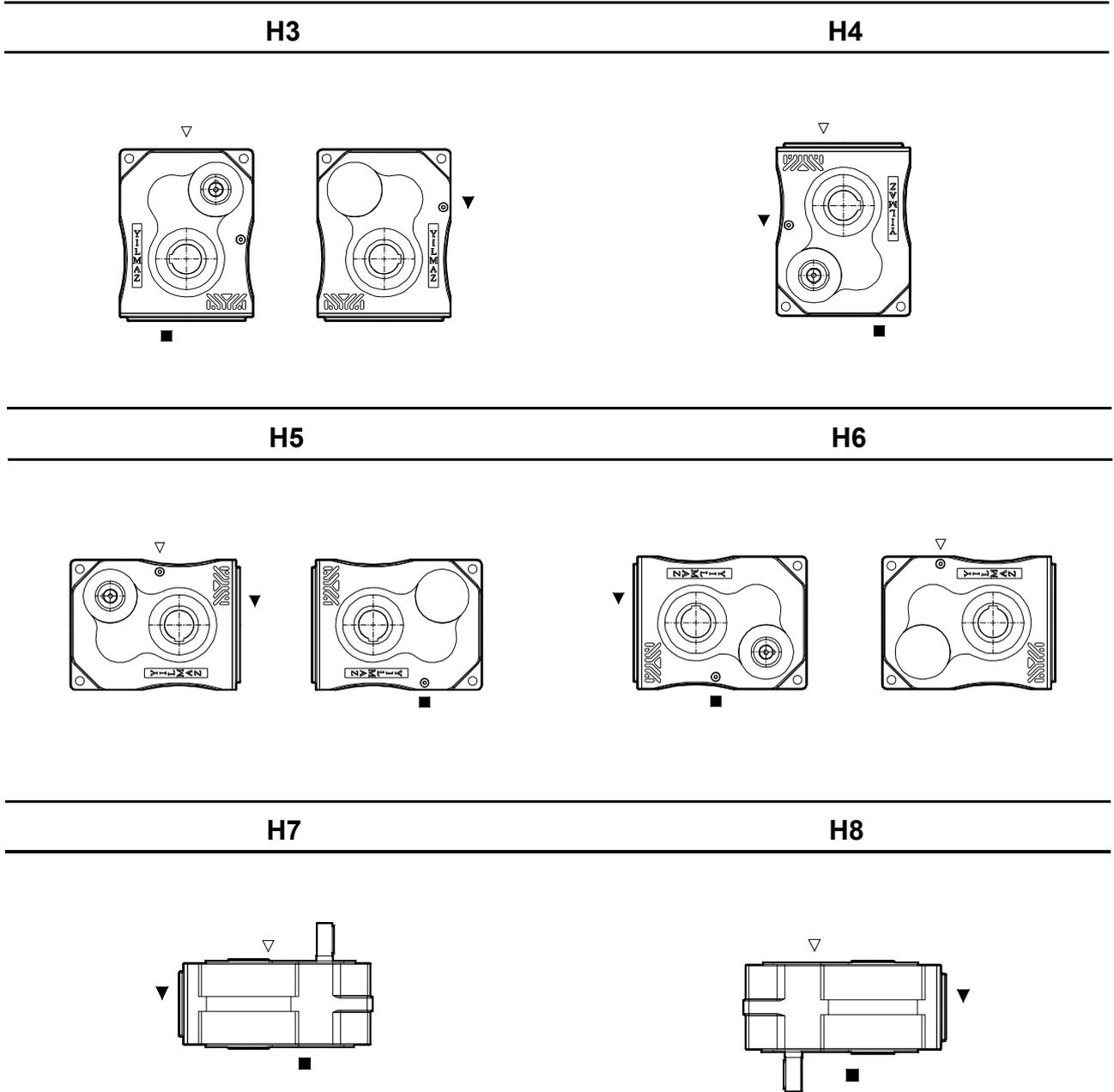


**8.3- Oil quantities (lt)**

<i>Type</i>						
	<b>H3</b>	<b>H4</b>	<b>H5</b>	<b>H6</b>	<b>H7</b>	<b>H8</b>
<b>TT17</b>	1,0	0,9	1,2	1,2	1,1	1,1
<b>TT27</b>	1,7	1,6	2,1	2,1	2,0	2,0
<b>TT28</b>	2,1	1,9	2,5	2,5	2,4	2,4
<b>TT37</b>	3,0	3,3	4,0	4,0	3,7	3,7
<b>TT47</b>	4,0	4,9	5,8	5,8	5,7	5,7
<b>TT57</b>	8,5	9,8	12	12	11	11
<b>TT67</b>	15	18	23	23	22	22
<b>TT77</b>	22	26	33	33	31	31
<b>TT87</b>	32	33	46	46	42	42
<b>TT97</b>	45	50	66	66	62	62



**8.4- Mounting positions and oil plugs**



Symbols :



: Drain plug



: Vent plug



: Oil level



## 9- Troubleshooting Guide



All the operations bellow must be done by authorized and skilled mechanichan/electrician. Inform YILMAZ REDUKTOR before making any change to the gearbox. Only oil change is allowed to change without information. Do not make anythink 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 incerter/driver manual. Chech 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 choosen motor. Loosen the gearbox from the load/torque. If it works than the starting torque is insufficient and higher motor power is needed. For monophaze motors, check the starting up condansator and running condansator as well. If notting 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 198V 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 choosen motor. Goto ID 003.



ID	Problem	Observation	Remedy
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 optimized. 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.
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 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 and standart 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 goto 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 goto ID 100
010	Gearbox is Heating Up too Much	Ambient Temp is over +40 Celsius	Standart 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	Nois is regular continious	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. Goto ID 100
012	Gearbox is noisy	Nois 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



ID	Problem	Observation	Remedy
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. Goto ID 100
014	Gearbox is noisy	Regular up and down noise	Check the output-shaft connection elements for runout. Take out the output shaft element and run without load. If you still hear the noise one of the gears has runout problem. Goto 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. Goto 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 optimized for the frequency range or motor you are using. Observe the frequency inverters manual. If still same problem change the ratio of gearbox. Goto ID 100
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. Goto 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 goto 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 goto ID 018/019. If you are sure oil comes out from housing than housing has some micro split / crack. Goto 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 goto 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 runout 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 runout 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. Goto ID 100
023	Motor is heating up	Ambient is dusty	Check the motor Fan Hub and ribs. 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. Goto ID 100



ID	Problem	Observation	Remedy
024	Motor is running but Gearbox shaft does not turn	Scratchinh noise comes out	Some part (key, gear) may be defect inside gearbox. Goto ID 10
025	Gearbox Housing is Defect	You are using chain drive or pinion gear	The radial load or poligon 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 rigit 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 re-calculate your radyal load and check if this fit to the maximum allowed radial load. Goto ID 100
026	Output Shaft is Defect	You are using chain drive or pinion gear	The radial load or poligon 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 rigit 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 re-calculate your radyal load and check if this fit to the maximum allowed radial load. Goto ID 100
027	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 standart gearbox delivered from our factory is set to delayed braking. For sudden braking check the wiring diagram.
028	Gearbox is starting too late	You are using braked motor	For fast opening of big brakes (over 100Nm), you may need shock transformers which is supplied by YILMAZ. Goto 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 waranty, manufacturer decleration and YILMAZ REDUKTOR will take no responsibility.

## 11- Disposal

If your product is no longer of use and you wish to dispose of 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 manuel.

### 11.1- 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 guidlines.

### 11.2- Disposal of sealings

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

### 11.3- Disposal of metal

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

# Appendix



**Yılmaz Reduktor San. ve Tic. A.S.**

**Head Office:** Maltepe Gumussuyu Cad. Bestekar Medeni Aziz Efendi Sok. No:54 P.K.34020 Topkapi/Istanbul-TURKEY

Tel: +90 (0) 212 567 93 82/83 , Fax: +90 (0) 212 567 99 75

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

Tel: +90 (0) 212 886 90 00 (8 Lines), Fax: +90 (0) 212 886 54 57

**Manufacturer's Declaration  
in accordance with the EC Machinery Directive  
98/37/EC, Anex IIB**

We **YILMAZ REDUKTOR Sanayi ve Ticaret A.S.**  
**Ataturk Mah. Lozan Cad. No: 17 P.K.:34522 Kırac-Esenyurt-Istanbul/TURKEY**

herewith declare, on our own responsibility, that the following products

**Model : TT Series Gear Units**

which this declaration refers to, is to be incorporated into machinery or assembled with other machinery to constitute machinery covered by the Machinery Directive is in conformity with the following standarts

**EN 292-1, 1991**

**EN 292-2, 1991**

**EN 1050, 1996**

\* This declaration is valid only for the gear unit part and does not cover the motor

**The product this declaration refers to must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the relevant European Directives.**

**TURKEY / Istanbul**

**Date : 01.09.2009**

**Authorized Person  
Metin YILMAZ  
Research Dep. Manager**

This declaration is not guarantee of charecteristics in the sense of the product liability law. The safety regulations of the maintenance instructions have to be observed.



## **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.
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.

### **Yılmaz Redüktör San. ve Tic. A.S.**

**Head Office:** Maltepe Gümüşsuyu Cad. Bestekar Medeni Aziz Efendi Sok. No:54 P.K.34020 TOPKAPI-ÝSTANBUL-TURKEY Phone: +90 (0) 212 567 93 82/83 , Fax: +90 (0) 212 567 99 75

**Factory :** ATATÜRK mah. Lozan Cad. No:17 P.K.34522 Esenyurt-Ýstanbul- TURKÝYE Phone: +90 (0) 212 886 90 01 - 8 lines , Fax: +90 (0) 212 886 54 57



## **Warranty Declaration and Instruction Manual Receipt Form**

YILMAZ REDÜKTÖR 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.

**Head Office:** Maltepe Gumussuyu Cad. Bestekar Medeni Aziz Efendi Sok. No:54

P.K.34020 Topkapi/Istanbul-TURKEY

Phone: +90 (0) 212 567 93 82/83 , Fax: +90 (0) 212 567 99 75

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

Phone: +90 (0) 212 886 90 00 - 8 lines , Fax: +90 (0) 212 886 54 57

**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 - Fax:

**Supplier/ End User Stamp and Signature**

## Service Contact Points:

### **Main Service Point:**

YILMAZ REDUKTOR A.S.

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

### **Head Office:**

Tel: +90(0) 212 567 93 82 (2 line)

+90(0) 212 567 06 03

+90(0) 212 567 40 78

+90(0) 212 567 04 11

+90(0) 212 567 45 07

+90(0) 212 567 00 70

Fax: +90(0) 212 567 99 75

e-mail: [yilmaz@yr.com.tr](mailto:yilmaz@yr.com.tr)

web: [www.yr.com.tr](http://www.yr.com.tr)

### **Factory:**

Tel: +90(0) 212 886 90 00 (8 lines)

+90(0) 212 886 50 43

+90(0) 212 886 50 44

+90(0) 212 886 52 82

Fax: +90 (0) 212 886 54 57

e-mail: [yilmaz@yr.com.tr](mailto:yilmaz@yr.com.tr)

web: [www.yr.com.tr](http://www.yr.com.tr)

### **Outside Turkey:**

Please contact the main service point mentioned above. You will be directed to our nearest service point to your location

