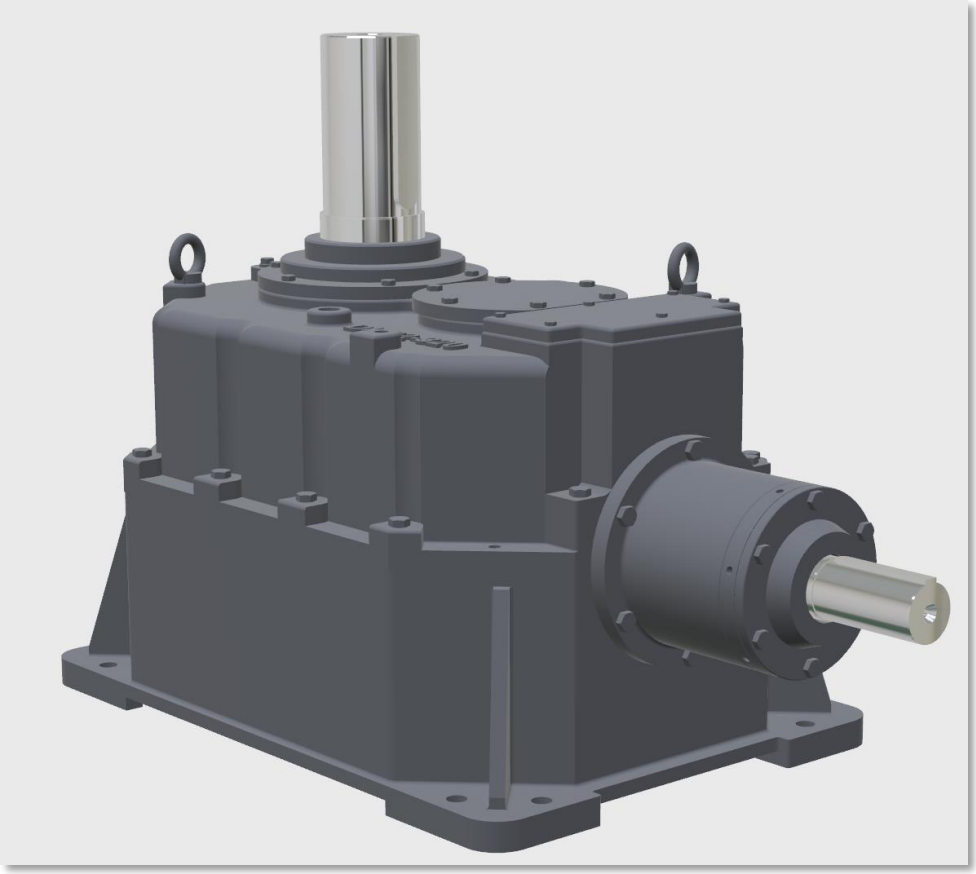
DKS
MODEL GEARBOX
OPERATING MANUAL



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1. How to Use This Manual

1.1 General Information

This operating manual provides general information and safety guidelines. It is the responsibility of the buyer, machine builder, installer and user of the Dişsan product to make sure that all the proper safety rules and operating instructions have been read and understood.

This operating manual should be kept in close proximity to the area where the gearbox operates and should be reachable at all times. Before starting-up the gearbox, please read this manual carefully and follow the instructions strictly. Failure to follow instructions may result in voiding your warranty.

1.2 Safety and Information Symbols

Please pay attention to the safety and information symbols below.

Danger ! - Can cause severe or fatal injuries

Warning ! - Can damage the gearbox or environment

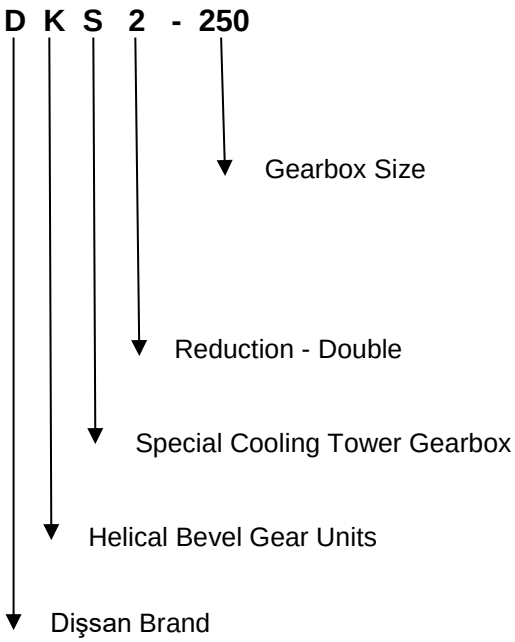
Note ! - Important Information

2. Gearbox Type Definitions

2.1 Type Definitions

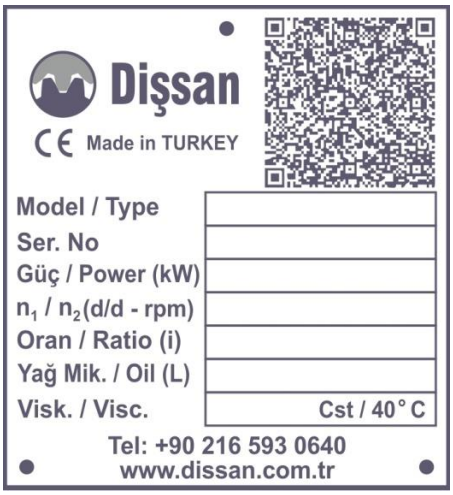
DKS1	Single reduction, with helical bevel gear units, right angle cooling tower gearbox
DKS2	Double reduction, with helical bevel gear and spur gear units, right angle cooling tower gearbox

2.2 Type Definition Example



2.3 Nameplate Definitions

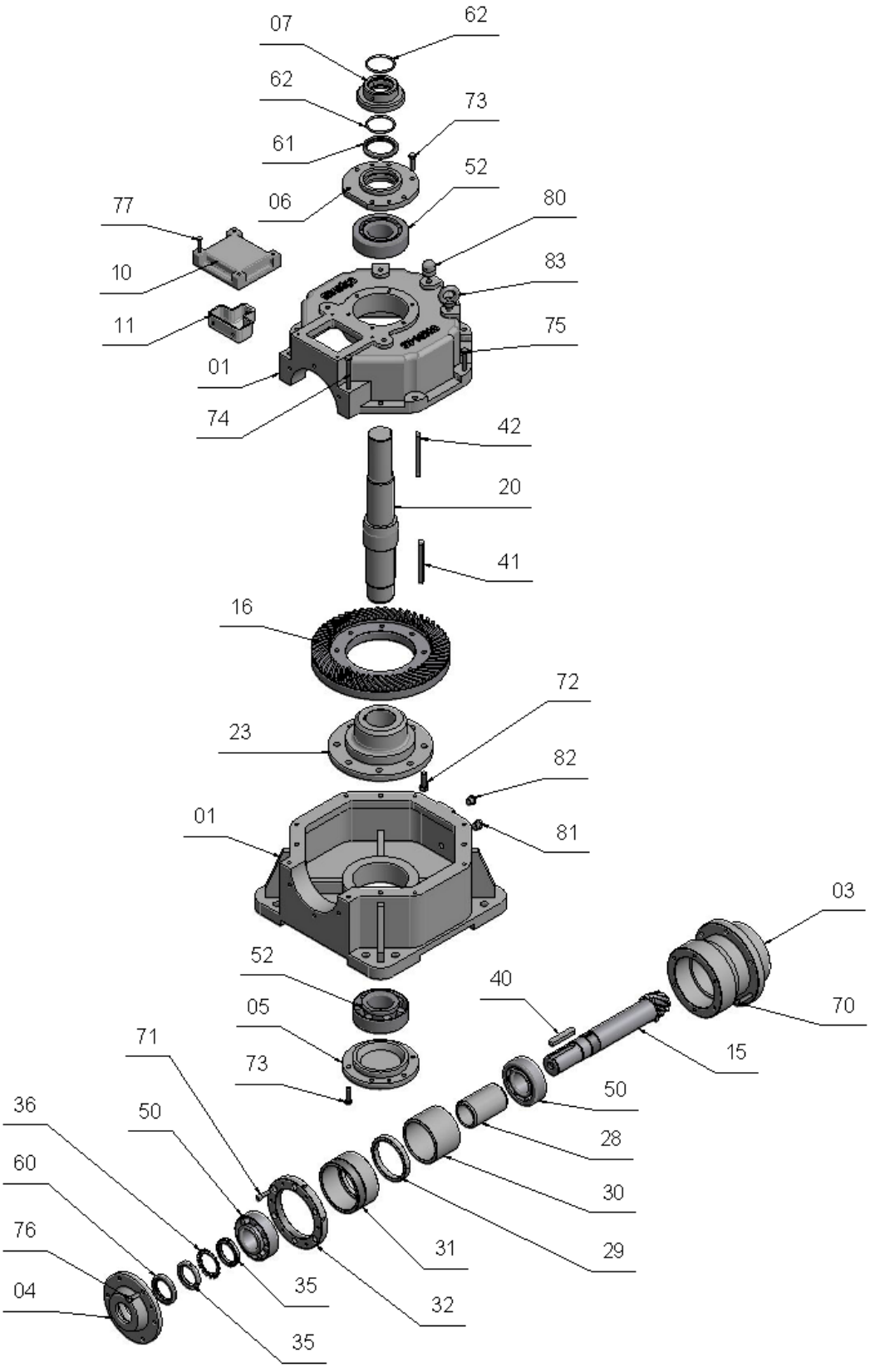
The nameplate identifies the type of product and its features. Therefore, nameplates must not be removed, should be kept intact and legible. Please state the serial number on the nameplate when ordering spare parts for the gearbox.



Type	: Gearbox Type and Size
Ser.No	: Serial Number
Power (kW)	: Motor Power
n_1/n_2 (rpm)	: Input and Output Speeds
Ratio (i)	: Reduction Ratio (n_1: n_2)
Oil (L)	: Oil Amount
Visc	: Oil Viscosity

3. Part Lists

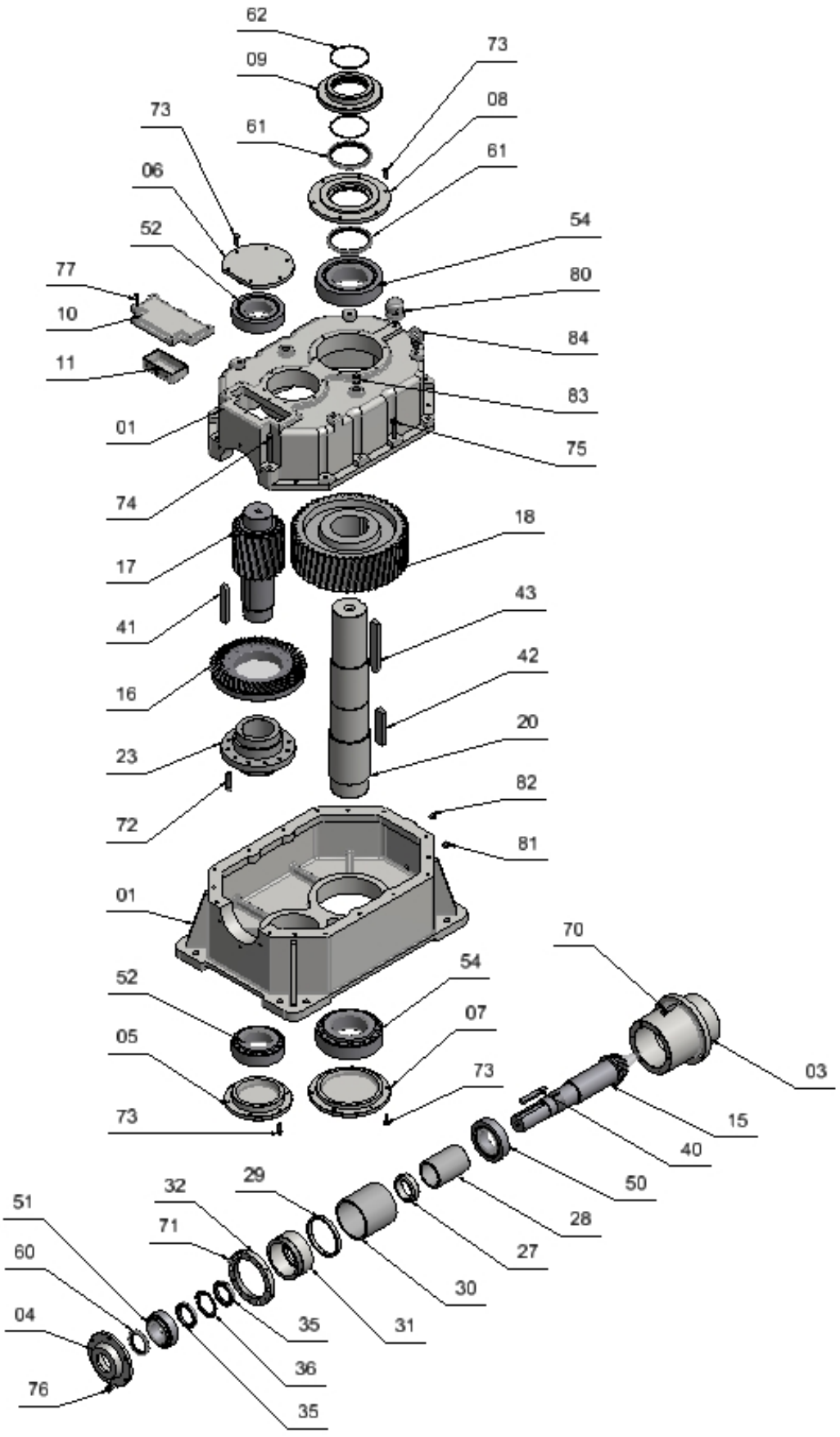
3.1 DKS1 Model



DKS1 Part List

Part No	Pieces	Part Definition
01	2	Housing
03	1	Input Bearing Carrier
04	1	Input Shaft Cover
05	1	Cover
06	1	Output Shaft Cover
07	1	Umbrella
10	1	Upper Cover
11	1	Oil Container
15	1	Bevel Pinion Shaft
16	1	Bevel Gear
20	1	Output Shaft
23	1	Gear Hub
28	1	Ring
29	1	Ring
30	1	Ring
31	1	Bearing Bushing
32	1	Adjustment Flange
35	2	Locknut
36	1	Safety Washer
40	1	Key
41	1	Key
42	1	Key
50	2	Bearing
52	2	Bearing
60	1	Oil Seal – Viton
61	2	Oil Seal - Viton
62	2	O-ring
70	6	Hexagon-Head Bolt
71	6	Countersunk-Head Bolt
72	12	Countersunk-Head Bolt
73	12	Hexagon-Head Bolt
74	2	Hexagon-Head Bolt
75	6	Hexagon-Head Bolt
76	4	Hexagon-Head Bolt
77	4	Hexagon-Head Bolt
80	1	Oil Fill and Breather Plug
81	1	Oil Drain Plug
82	1	Oil Level Indicator
83	4	Eye Bolt

3.2 DKS2 Model



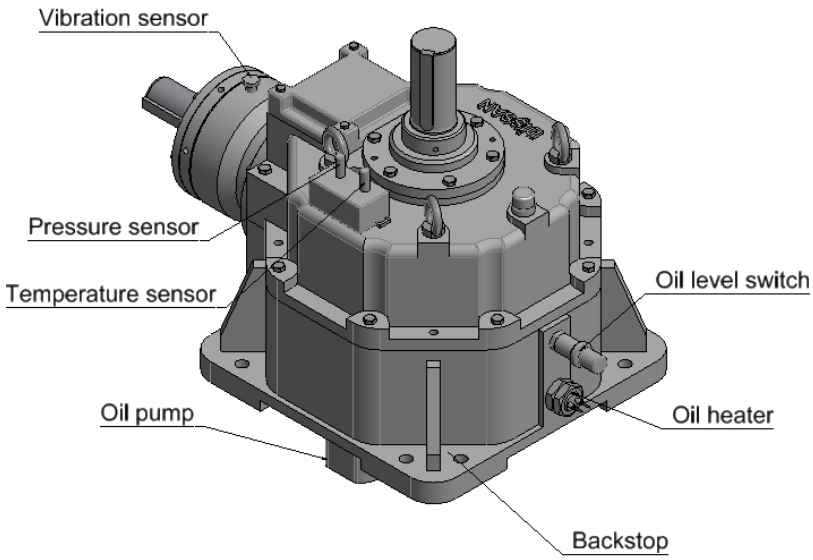
DKS2 Part List

Part No	Pieces	Part Definition
01	1	Housing
03	1	Input Bearing Carrier
04	1	Input Shaft Cover
05	1	Cover
06	1	Cover
07	1	Cover
08	1	Output Shaft Cover
09	1	Umbrella
10	1	Upper Cover
11	1	Oil Container
15	1	Bevel Pinion Shaft
16	1	Bevel Gear
17	1	Helical Pinion Gear
18	1	Helical Gear
20	1	Output Shaft
23	1	Gear Hub
27	1	Ring
28	1	Ring
29	1	Ring
30	1	Ring
31	1	Bearing Bushing
32	1	Adjustment Flange
35	2	Locknut
36	1	Safety Washer
40	1	Key
41	1	Key
42	1	Key
43	1	Key
50	1	Bearing
51	1	Bearing
52	2	Bearing
54	2	Bearing
60	1	Oil Seal – Viton
61	2	Oil Seal – Viton
62	2	O-ring
70	6	Hexagon-Head Bolt
71	6	Countersunk-Head Bolt
72	12	Countersunk-Head Bolt
73	24	Hexagon-Head Bolt
74	2	Hexagon-Head Bolt
75	10	Hexagon-Head Bolt
76	6	Hexagon-Head Bolt
77	7	Hexagon-Head Bolt
80	1	Oil Fill and Breather Plug
81	1	Oil Drain Plug
82	1	Oil Level Indicator
83	4	Blind Plug
84	4	Eye Bolt

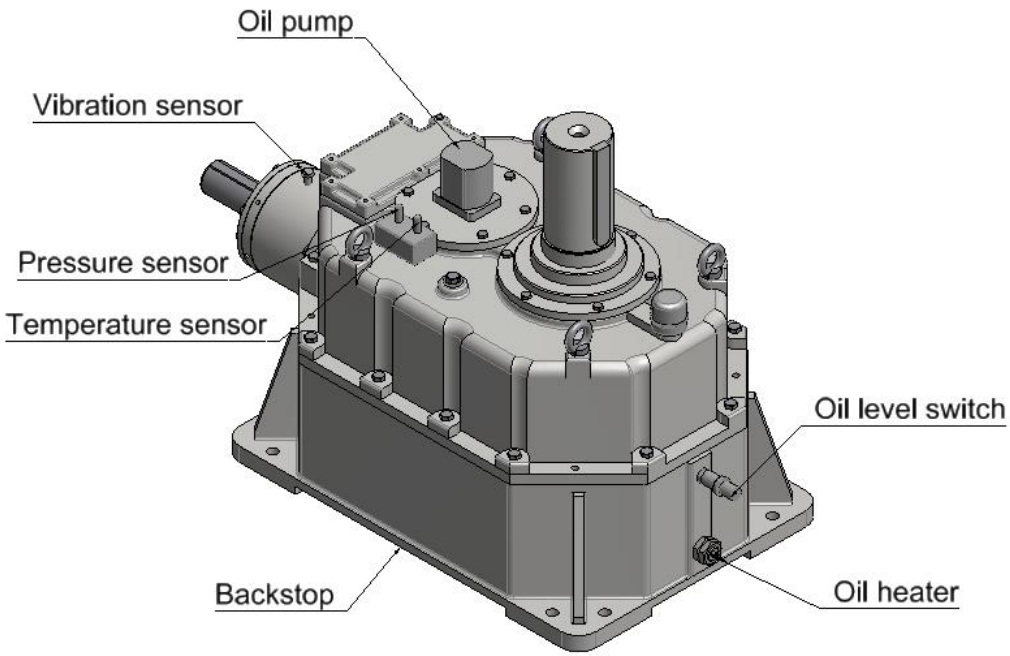
Optional Accessories

- Backstop
- Vibration sensor
- Temperature sensor
- Oil heater
- Oil level switch
- Oil pump
- Pressure sensor (if oil pump is used)

DKS1



DKS2



4. Safety Instructions

The following safety instructions are important to prevent loss of life, injuries and property damage. The operators must ensure that the basic safety rules are read and adhered to.

Incorrect installation, improper use of the product, failure to follow safety warnings, removal of the protective covers of the gearbox can cause serious injuries and property damage.

All work involved in the transportation, connection, commissioning and maintenance of any Dişsan product must be carried out by qualified and responsible technicians that have read the instructions in this manual.

Before starting up the gearbox, objects around the product that may cause injury must be removed. The propeller that is connected to the input shaft of the gearbox can cause injuries. Keep enough distance from the propeller to avoid accidental contact.

If the gearbox is damaged, do not install the product without consulting Dişsan.

Gearboxes are designed for use in industrial machines and applications. The gearbox should only be used within permitted ranges indicated in the catalogue and nameplate of the product. Using the gearbox outside the permitted ranges would result in voiding the warranty.

The gearboxes comply with the requirements of the directive 2006/42/EC. The machines and machine parts that will be connected to the gearboxes should also comply with 2006/42/EC standards.

Standard gearboxes are suitable for operation in ambient temperatures between -5° C and +40° C. If the ambient temperature is outside this range, you should consult Dişsan for necessary measures before ordering.

Touching hot surfaces may cause burns. If the temperature of the gearbox rises above 60° C during operation, do not touch the gearbox housing without appropriate safety equipment such as gloves to prevent burning.

Oils can be harmful to health and environment. Intensive contact with oil can lead to skin irritations. Avoid intensive contact with oil and clean skin thoroughly after contacting. The used oil should be disposed according to local regulations.

The transportation, installation, mounting, de-mounting and maintenance of the gearbox should be performed only when the system is turned off. All necessary precautions should be taken to prevent accidental operation of the gearbox.

5. Transportation and Storage

5.1 Transportation

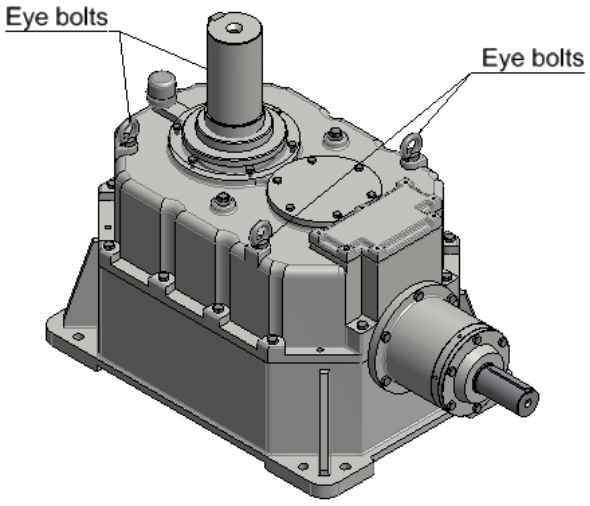
When accepting the delivery of the gearbox, check that the product is complete and undamaged. If damage is detected, you should immediately inform the shipping company and Dişsan. The damaged gearbox should not be operated unless approval is taken from Dişsan that the damage has no effect on the operation.

Ensure that adequate safety measures are taken to protect operators from injury during transportation. The operators should not stay under the lifting equipment and the gearbox during transportation. Standing under the gearbox can lead to death.

When lifting up the gearbox use the eyebolts. Tighten the eyebolts before using. The eyebolts are suitable to handle only the gearbox weight. Do not attach additional loads.

Always use sufficiently rated handling and lifting equipment. The equipment should be appropriate to handle the gearbox weight.

The gearbox should be handled and landed to the ground at low speed. If the gearbox falls or crashes to the ground, the gearbox could be damaged. If the input or output shafts of the gearbox get a knock, this can damage the shafts and gears inside the gearbox.



5.2 Storage

The connection surfaces and shaft ends of the gearboxes are covered with anti-corrosion grease before delivery. If the gearbox is stored with packaging, the anti-corrosion grease will be effective for one year. If the gearbox will be stored longer than one year, the grease should be reapplied.

- Gearboxes should be stored with packaging.
- Avoid direct exposure to sun, rain and snow. Store in a location free from shock and vibration.
- Ambient temperature should be between -10° C and +40° C.
- Temperature changes might cause air pressure to build up inside the gearbox. Breather filter should be fixed on the gearbox to enable the air pressure to be released.
- The packaging should be checked regularly and the anti-corrosion grease should be applied.

6. Installation

6.1 Before Starting Installation

Make sure that the gearbox is not damaged during transportation or storage. If the gearbox is damaged, do not install the gearbox without consulting Dişsan.

The installation must be carried out by qualified and responsible technicians who have read the instructions in this manual.

Make sure that you have all the equipment necessary for installation; set of wrenches, torque wrench, shims, spacing rings, lubricant, bolt fixing compound etc.

Before starting installation make sure that the input and output shafts are free of oil and dust. The anti-corrosion grease that was applied for protection should be removed with an appropriate solvent. **The solvent should not touch the seals and painting of the housing.**

For connecting the gearbox, use bolts with quality class 8.8 or higher.

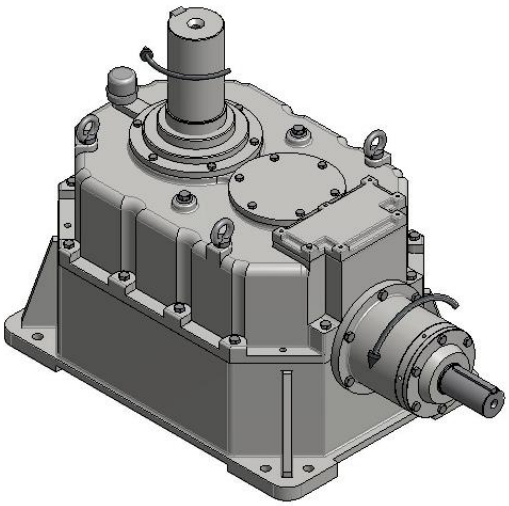
The gearboxes should only be mounted using the foot connection points indicated by Dişsan.

If you would like to paint the gearbox, make sure that no paint or thinner touches the shaft seals, plastic parts, breather plugs, pipes and nameplates. Otherwise, these parts might get damaged and the nameplate might get illegible.

Gearboxes with backstop operate only in one direction which is specified in the order. If the motor rotates in the locked direction, this may damage the backstop and the motor. Make sure that the motor rotates in correct direction.

Looking at the output shaft from above, the output shaft should rotate in clockwise direction. According to this, the required direction of the input shaft, thus of the motor, is indicated on the input shaft with an arrow mark. Please see below drawing.

Check the rotation direction of the motor before connecting the gearbox. If the motor rotates in opposite direction, change the direction by switching the poles.



6.2 Shaft Tolerances

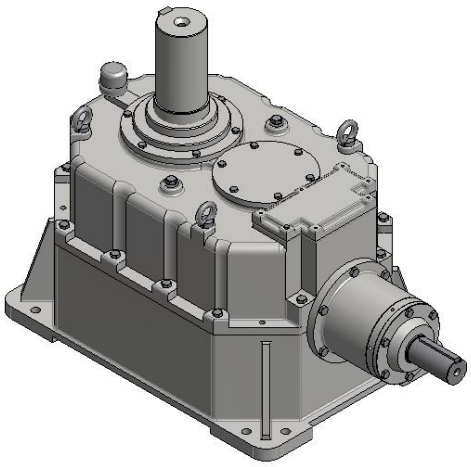
Hole tolerances of input and output shafts:

Solid Shaft (Ø ≤ 50 mm)	ISO k6
Solid Shaft (Ø > 50 mm)	ISO m6
Solid Shaft Centering Hole	DIN 332

6.3 Mounting Position

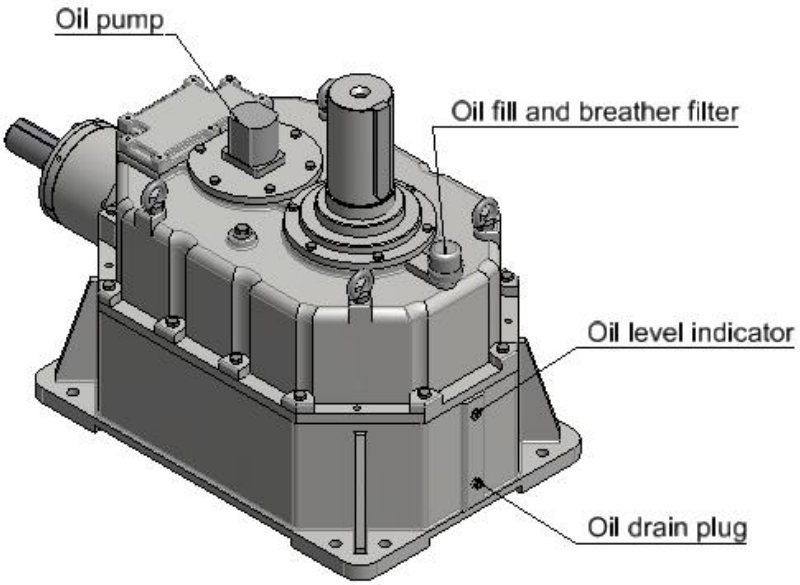
DKS model gearboxes are especially designed for cooling towers. The gearboxes are manufactured to operate in horizontal input; vertical output mounting position. The gearboxes are assembled with the oil level indicator, breather filter and oil drain plug installed in their proper locations according to this specific mounting position.
If the gearboxes will be operated in a different mounting position, this should be specified to Dişsan in the order.

Mounting Position:



If the gearbox is not mounted in the position for which it is designed, it may not receive proper lubrication and may be damaged. Consult Dişsan prior to changing the mounting position of the gearbox in the field.

DKS model gearboxes are supplied with breather filter as shown in below drawing.



Oil level indicator, breather filter and oil drain plug should be reachable at all times for regular controls and maintenance activities.

6.4 Checking the Oil Level

Check if the oil level is suitable for the mounting position as described below.

- After placing a container under the oil level plug / indicator, remove the plug carefully. If the oil level is adequate, there should be small amount of oil leakage.
- If there is no leakage, fill in more oil as described below:
  - Obtain one of the proper oil types recommended in the oil chart in this manual (Page 21)
  - Remove the breather filter and fill in oil through a cone filler, while the oil level plug is open.
  - When oil starts to come out from the opening, affix the plug again.
  - Continue to fill in a small amount of oil, until the oil level reaches approximately the midpoint of the oil level plug / indicator.
  - Put on the breather filter back to its place.

Oil level can be controlled also electronically through an oil level switch. If specified in order, the oil level switch can be mounted to the gearbox.

6.5 Mounting the Coupling

The holes of the coupling which will be mounted to the input shaft of the gearbox should be machined to H7 tolerance.

When mounting the coupling to the gearbox shaft, we recommend heating the coupling up to 80° C. **Do NOT hammer or mechanically force the coupling on the shaft!**

- Make the coupling alignments according to the axial and radial deviations recommended by the coupling manufacturer.
- If shimming is required, take precaution to prevent distortion of the housing.
- Check all connection bolts for tightness.
- Recheck alignments after two weeks of operation.

6.6 Mounting to the Fan Hub

When mounting the cooling tower fan hub to the gearbox, make sure that the tolerances are correct. The fan hub diameter should be machined to H7 tolerance.

We recommend heating the fan hub up to 80° C to avoid any damage to the bearings while putting the gearbox shaft through the fan hub. **Do NOT hammer or mechanically force the fan hub to the shaft!** If you could not get the fan hub through in spite of the heating process, contact Dişsan.

6.7 Foot Connection Bolts and Tightening Torques

Connection Bolts:

Gearbox Size	Bolts
DKS1-16	M12 (8 pieces)
DKS1-18	M14 (8 pieces)
DKS1-20	M16 (8 pieces)
DKS1-22	M16 (8 pieces)
DKS1-25	M20 (8 pieces)

Gearbox Size	Bolts
DKS2-180	M14 (8 pieces)
DKS2-200	M16 (8 pieces)
DKS2-220	M16 (8 pieces)
DKS2-250	M20 (8 pieces)
DKS2-280	M20 (8 pieces)
DKS2-320	M24 (8 pieces)
DKS2-360	M24 (8 pieces)
DKS2-400	M27 (8 pieces)

Tightening Torque:

Bolt / Nut	Tightening Torque - Nm (Class 8.8)
M12	58
M14	94
M16	140
M20	270
M24	480
M27	700

6.8 Starting Operation

Before starting operation make sure that the oil level is sufficient according to the mounting position (see 6.4).

At initial operation, if there is excessive noise or vibration, stop the system and check possible reasons indicated below:

- Imbalance of fan or other rotating parts
- Improperly adjusted fan blades
- Unstable mounting. Check the connection bolts.

If the problem persists after fixing above points, consult Dişsan.

7. Maintenance and Inspections

Below maintenance instructions must be followed to ensure efficient and long-life operation of the gearbox.

7.1 Preparing for the Maintenance and Inspections

Before starting any maintenance work, disconnect the gearbox from power supply and take necessary precautions to prevent un-intentional re-start. Inform all responsible parties and operators about the maintenance.

Hot gearbox surfaces and hot oil may cause burns. Let the gearbox cool down before starting your work.

7.2 Maintenance and Inspection Periods

Item for Maintenance & Inspection	Period
Oil level check	Daily
Oil quality check	Every 3,000 hours of operation (at least every six months)
Oil change*	For mineral oils; every 5,000 hours of operation (at least every year) For synthetic oils; every 15,000 hours of operation (at least every three years)
Visual inspection of the seals for oil leakage from breather filter, covers, housing and lubrication system	Daily

Bearing noise check	Every 3,000 hours of operation (at least every six months)
Replace oil seal	Every 25,000 hours of operation (at least every five years)

- For normal working conditions, +70° C oil temperature is taken as reference. Oil change intervals depend on the oil temperature in operation.

If the gearbox will be inactive in excess of one week, the gears will not be lubricated continuously and will be subject to corrosion risk. To prevent this, we recommend following:

- After turning off the system, let the gearbox cool for about four hours.
- After it is cooled, run the system for five minutes. The inside of the gearbox will be covered with cool oil.
- Run the system for five minutes once a week during the system inactivity period.

It is recommended that the gearbox be completely filled with oil, if the gearbox will be inactive in excess of one month.
Temperature changes might cause air pressure to build up inside the gearbox. Breather filter should be fixed on the gearbox to enable the air pressure to be released.

Before returning the gearbox to service, drain the excess oil.

7.3 Checking the Oil Level

- After placing a container under the oil level plug / indicator, remove the plug carefully. If the oil level is adequate, there should be small amount of oil leakage.
- If there is no leakage, fill in more oil as described below:
  - Obtain one of the proper oil types recommended in the oil chart in this manual (Page 21)
  - Remove the breather filter and fill in oil through a cone filler, while the oil level plug is open.
  - When oil starts to come out from the opening, affix the plug again.
  - Continue to fill in a small amount of oil, until the oil level reaches approximately the midpoint of the oil level plug / indicator.
  - Put on the breather filter back to its place.

7.4 Checking Oil Quality

- Open the oil drain plug carefully and let some amount of oil pour out.
- Visually check if there is extreme contamination.

7.5 Changing the Oil

Hot oil may cause burns. Let the gearbox and oil cool down before starting your work. Avoid intensive contact with oil and clean skin thoroughly after contacting.

- Place a container under the oil drain plug.
- Remove the oil drain plug, breather filter and oil level plug.
- Drain the oil fully.
- Put the oil drain plug back to its place.
- Obtain one of the proper oil types recommended in the oil chart in this manual (Page 21)
- Fill in fresh oil through the opening after the removal of the breather filter, with the help of a cone filler.
- When oil starts to come out from the oil level plug, affix the plug again.
- Continue to fill in a small amount of oil, until the oil level reaches approximately the midpoint of the oil level plug / indicator.
- Put on the breather filter back to its place.

8. Lubrication

8.1 Oil Types

Gear Oils

Only CLP-type lubricants conforming to DIN 51 517-3 standards can be used in Dişsan gearboxes. The lubricant must contain additives that provide corrosion protection, oxidation resistance and wear prevention.

Poly-Alpha-Olefin (PAO) Based Synthetic Gear Oils

PAO-based synthetic gear oils have very high viscosity indices. A very low pour point means they can be used effectively in cold climates where mineral lubricants cannot be deployed, while a high oxidation resistance means they are also viable for use in tropical climates unlike mineral lubricants. They can be used in gearboxes with helical spur gears or helical bevel gears. These are recommended for all gearboxes whether vertical or horizontal, pressure-lubricated or oil bath-lubricated. These lubricants are also recommended for slide and ball bearing mechanisms.

Contrary to PAG-based synthetic lubricants, PAO-based synthetic lubricants may be mixed with mineral lubricants. They are compatible with all paints, oil gaskets and seals used in gearboxes. Gearboxes that have been filled with mineral oils before may be drained and refilled with PAO-based oils without any cleaning necessary. Viscosity grade must be selected based on gearbox type and ambient conditions. The viscosity grade is indicated on the plate affixed to the gearbox.

The minimum requirements of the PAO-based synthetic gear oil to be used are indicated in the table below.

Properties	Standards
Viscosity Index	ASTM D 2270
Pour Point, °C	ASTM D 97
Flash Point, °C	ASTM D 92
Rust Protection	ASTM D 665
FZG Friction Wear	ISO 14635-1 A/8.3/90
4 Ball EP Test, kgf	ASTM D 2783

Mineral Gear Oils

These are high-quality paraffinic lubricants that contain extreme pressure additives as well as additives to protect against rust, corrosion, wear, foaming and oxidation. They may be used in gearboxes with helical spur gears or helical bevel gears that work under extreme pressure and loads. These are recommended for all gearboxes whether vertical or horizontal, pressure-lubricated or bath-lubricated, as well as for slide and ball-bearing mechanisms.

The minimum requirements of the mineral oil to be used are indicated in the table below.

Properties	Standards
Viscosity Index	ASTM D 2270
Pour Point, °C	ASTM D 97
Flash Point, °C	ASTM D 92
Rust Protection	ASTM D 665
FZG Friction Wear	ISO 14635-1 A/8.3/90
4 Ball EP Test, kgf	ASTM D 2783

8.2 Oil Temperatures

PAO-based synthetic gear oils have a wider operating temperature range and higher viscosity index values than mineral oils.

Operating temperature range of mineral oils: -20°C and +60°C (burst: +80°C)
Operating temperature range of PAO-based synthetic oils: -45°C and +80°C (burst: +100°C)

8.3 Oil Life Guideline

The cleanliness of the oil affects the reliability of the operation and the life of the oil and the gearbox. Therefore you must ensure that the oil in the gearbox is clean. If there are any doubts about gear oil cleanliness, conduct an oil analysis and decide whether the oil must be replaced depending on its results.

- PAO-based synthetic gear oil change interval: 3 years or 15,000 hours of operation
- Mineral gear oil change interval: 1 year or 5,000 hours of operation

Note: The above values assume an average oil temperature of 70°C. Actual oil lives may be shorter or longer. As a general rule, oil life decreases by half for every additional 10°C of operating temperature above 70°C.

All Dişsan gearboxes are factory-filled with Mobil-branded gear oils. Changing between oil brands is not recommended as different brand oils may not be compatible. If changing the brand is unavoidable, the gearbox must be thoroughly flushed. Dişsan shall accept no liability for incompatibility between oil brands.

8.4 Recommended Oils

PAO Based Synthetic Gear Oil Chart

Oil Name /Type	Viscosity Class	Brand
Mobil SHC Gear 150	ISO VG 150	Mobil
Mobil SHC Gear 220	ISO VG 220	
Omala S4 GX 150	ISO VG 150	
Omala S4 GX 220	ISO VG 220	
Alphasyn T 150	ISO VG 150	Castrol
Alphasyn T 220	ISO VG 220	
Enersyn EP – XF 150	ISO VG 150	bp
Enersyn EP – XF 220	ISO VG 220	

Mineral Gear Oil Chart

Oil Name /Type	Viscosity Class	Brand
Mobilgear 600 XP 150	ISO VG 150	Mobil
Mobilgear 600 XP 220	ISO VG 220	
Omala S2 G 150	ISO VG 150	
Omala S2 G 220	ISO VG 220	
Alpha SP 150	ISO VG 150	Castrol
Alpha SP 220	ISO VG 220	
Energol GR- XP 150	ISO VG 150	bp
Energol GR- XP 220	ISO VG 220	

8.5 Oil Fill Quantities

Model	Oil Fill Amount (LT)*
DKS1-16	5
DKS1-18	10
DKS1-20	17
DKS1-22	20
DKS1-25	30

Model	Oil Fill Amount (LT)*
DKS2-180	15
DKS2-200	26
DKS2-220	34
DKS2-250	48
DKS2-280	55
DKS2-320	78
DKS2-360	135
DKS2-400	180

* The oil fill amounts in above table are approximate values. Gearbox should be filled with oil up to the midpoint of the oil level indicator.

9. Troubleshooting Guide

All operations must be carried out by qualified and responsible technicians who have read the instructions in this manual. During warranty period, Dişsan should be informed before any operation on the gearbox. Any operation conducted without priorly consulting Dişsan will void the warranty of the gearbox. Only oil changes can be carried out without informing Dişsan.

If any malfunction is detected, system must be stopped and should not be restarted before the problem is eliminated.

Malfunction	Possible Causes	Remedies
Gearbox gets extremely hot (Ambient temperature is below 40°C) Running temperature of the gearbox varies according to the transmitted power and speed. Max. allowed running temperature is up to 70°C.	It can be due to inadequate oil type usage and oil level. Oil may be contaminated Bearings might be damaged when mounting the coupling or the fan hub.	Check the oil level. Change the oil. Send the gearbox to service.
Gearbox gets extremely hot (Ambient temperature is above 40°C)		Standard gearboxes are suitable for operation in ambient temperatures up to +40°C. If the ambient temperature is outside this range, you should consult Dişsan for necessary measures.
Noise comes from the gearbox	- Bearings may be damaged due to insufficient oil. -The gears may be broken or damaged. - Imbalance at the fan connected to the gearbox output shaft. - The coupling mounted to the input shaft or the fan hub mounted to the output shaft may be loose	- Check oil level. If the problem persists after correcting the oil level, send the gearbox to service - Send the gearbox to service. - Balance the fan. - Check the coupling and fan hub mounting.
Oil leakage – from seals	Seals may be damaged.	Change the damaged seals.
Oil leakage – from breather filter	Oil level may be too much.	Check and correct the oil level.

	Oil may be expanded due to extreme heat.	If extreme heat persists, send the gearbox to service.
Oil leakage – from oil drain or oil level plugs	The plugs may not be tight enough. Plugs may be crushed and damaged.	Tighten the plugs. If oil leakage persists, change the damaged plugs and wrap with teflon and tighten.
Oil leakage – from housing	Housing may be broken or cracked.	Send the gearbox to service.
Oil leakage – From covers	Cover bolts may be loose. Sealing liquid may be damaged.	Check and tighten the bolts. Disassemble the cover, clean and put new sealing liquid. Assemble the cover and tighten the bolts.
Motor is running but the gearbox input or output shaft is not turning	The key may be slipped or gears may be damaged. There is mechanical disconnection.	Send the gearbox to service.

Instructions for Changing the Oil Seals:

- Place a suitable container under the oil drain plug of the gearbox housing.
- Unscrew the oil drain plug and allow the oil to drain into the container.
- After the oil is fully drained, remove the cover of the oil seal.
- While taking out the seal avoid any damage to metal surfaces.
- Check if there is any damage on the metal surfaces of the cover where the seal is placed. If there is no damage, you may continue the process. If there is damage, change the cover with a new one.
- After taking out the seal, clean up the area. Make sure there is no dust or silicon residuals left on the metal surfaces.
- Check the new seal to ensure it has no damage.
- Place the new seal with the help of a ring with the same size as the seal. Hammer the four corners of the ring to put the seal in its place thoroughly.
- If you cannot find a suitable ring, you can use a metal stick to help you place the seal. Be careful not to damage the seal.
- Put the cover back in place. Avoid any damage to the seal spring. While placing the cover, apply grease oil to the gearbox shaft to ease the process
- Refill the gearbox with the same oil or with fresh oil up to the level suitable according to the mounting position. Make sure to use correct oil type as indicated on the gearbox nameplate or the oil chart in this manual (Page 21).

DİŞSAN REDÜKTÖR SANAYİ VE TİCARET A.Ş.

İstanbul Tuzla Organize Sanayi Bölgesi (İTOSB) 9. Cadde No:12
Tepeören 34959 ISTANBUL – TÜRKİYE

Tel: 0 216 5930640
Fax: 0 216 5930650

Web: www.dissan.com.tr
Email: info@dissan.com.tr