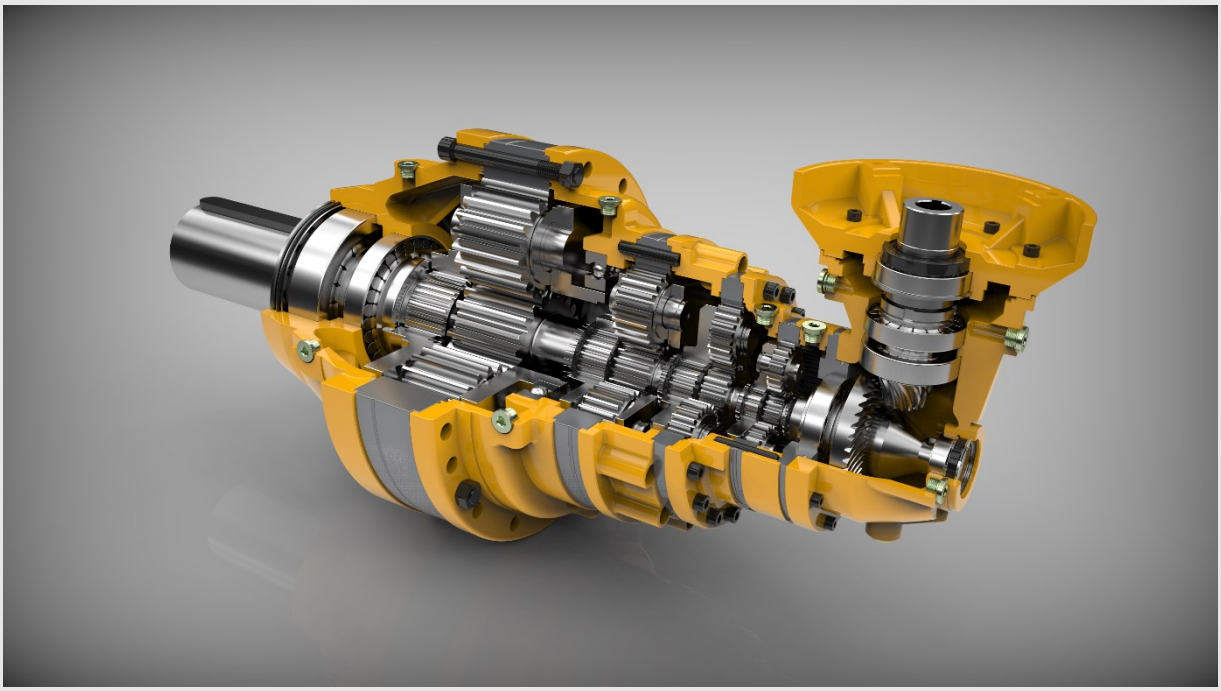
1.1.1.1 PDS PLANETARY GEARBOX ISO 9001-14001-45001

USER MANUAL



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1 MANUAL OPERATING INSTRUCTIONS

Pay attention to the following safety and warning signs before installing and operating the planetary gear unit.

Mechanical Risk: Do not put your hand on the gearbox while it is running. Fatal can cause injuries.

Electrical Risk: Electrical hazard can cause severe or fatal injuries may be the cause.

May Pose a Risk: May cause minor or fatal injuries.

Recommendations and important information for the user

1.1 GEARBOX ORDER INFORMATION

- Planetary gearboxes are delivered without oil filling and with an oil-free label.
- Gearboxes labeled as oil-free do not contain any oil. Gearboxes should never be operated without oil. Otherwise, failures that will occur in the gearbox will not be covered by the warranty.
- If it is desired to add oil in the gearboxes, our sales representative should be notified at the order stage.
- The operating conditions of the gearbox must be notified to our sales representative at the order stage.
- Important technical information is available on the gear unit label.
- The mounting position may only be changed after consultation with PDS Planetary Gearbox. If it is changed without any information and approval, the warranty given is void.
- The warranty is invalid if PDS Planet Gearbox is not informed because the oil quantity of the gearboxes changes when the mounting position is changed.
- If the mounting position of the gearbox is changed, the filling quantity and the position of the air vent also change.
- Use of the product outside the catalog values is not covered by the warranty.
- The product is out of the scope of warranty in case of repair and maintenance or replacement of parts other than PDS Planet Gear.
- Gearboxes should add the instructions in the PDS Planetary Gearbox operating instructions to their own operating instructions to the devices to which they will be mounted according to the working place.
- During damage to the gearbox, damage detection should be carried out after the machine is stopped.
- If a different situation is encountered in the gearbox during operation, the main motor

- should be turned off, the cause should be determined and PDS Planetary Gearbox should be consulted.

IMPORTANT INFO;

EC Machinery Directive: According to the terms of the European Union Machinery Directive 2006/42/EC, gearboxes are not machine parts that are operated alone, but are components used in machines. In regions where this directive applies, it is forbidden to operate the gear unit on the machine on which the gear unit is installed unless the requirements of the directive are met. This user manual has been prepared by our company in accordance with the European Union Machinery Safety Directive 98/37/EC in order to provide information for the safe transportation, storage, assembly, connection, commissioning, maintenance and repair of the gear unit.

The operating instructions contain important information for the following purposes:

- Smooth operation
- Fulfillment of warranty conditions

This user manual is written for all our gearbox models. Please consult PDS Planet Redüktör for the validity of this manual for specially made gearboxes or products revised according to customer request. Compliance with the instructions in the User Manual is a prerequisite for perfect operation and warranty coverage in case of damages that may occur. Use contrary to this User Manual constitutes a risk to human health and safety as well as economic damage.

For this reason, this Operator's Manual must be read carefully before operating the gearbox!

The operating manual must be kept close to the operating area of the gear unit and must be accessible when needed.

2 GEARBOX TYPE IDENTIFICATION

2.1 GEARBOX CONNECTION OPTIONS

Output Types and Accessories

1-FS	7-FVS	13-PA/PB
2-FC	8-FVC	14-FL
3-HS	9-SF	15-FK
4-HC	10-S	16-FM
5-MS	11-SDF	17-SB
6-MC	12-SD	18-SP

19-S1	24-Adapter	29-Electric motor	34-Modular brake adapter
20-S2	25-Infinite screw	30-Hydro motor adapter	35-Hydromotor adapter
21-S3	26-Mirror mahruti	31-Orbit engine	36-Axial piston engine
22-S4	27-Input shaft	32-Post brake adapter	
23-S5	28-Motor adapter	33-Radial piston engine	

2.2 ORDER CODING

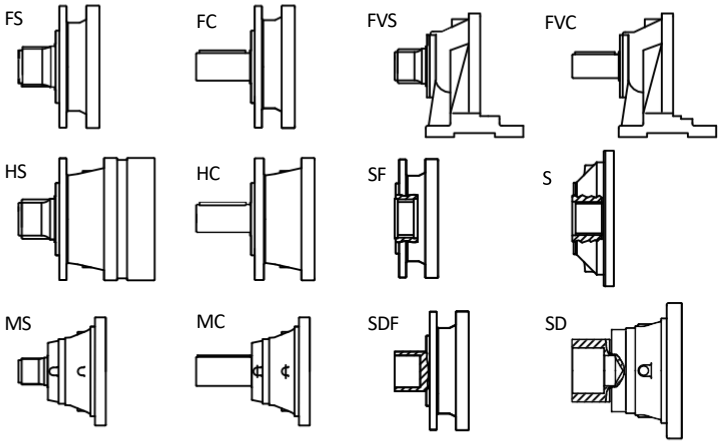
GEARBOX

P	D			1	0	1		S1		F	V	S		1	5	.	2	0

Reduction Ratio

See technical pages.

OUTPUT TYPE



Reduction Stage

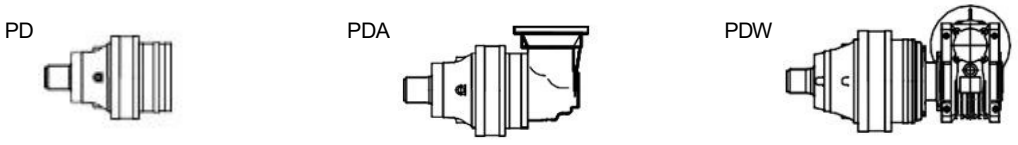
S1 , S2 , S3 , S4 , S5 , …

GEARBOX SIZE

101,103,105,107,109,111,113,115,117,119,121,123,125,127,129,

131,133,135,137,139,141,143,145,147,149

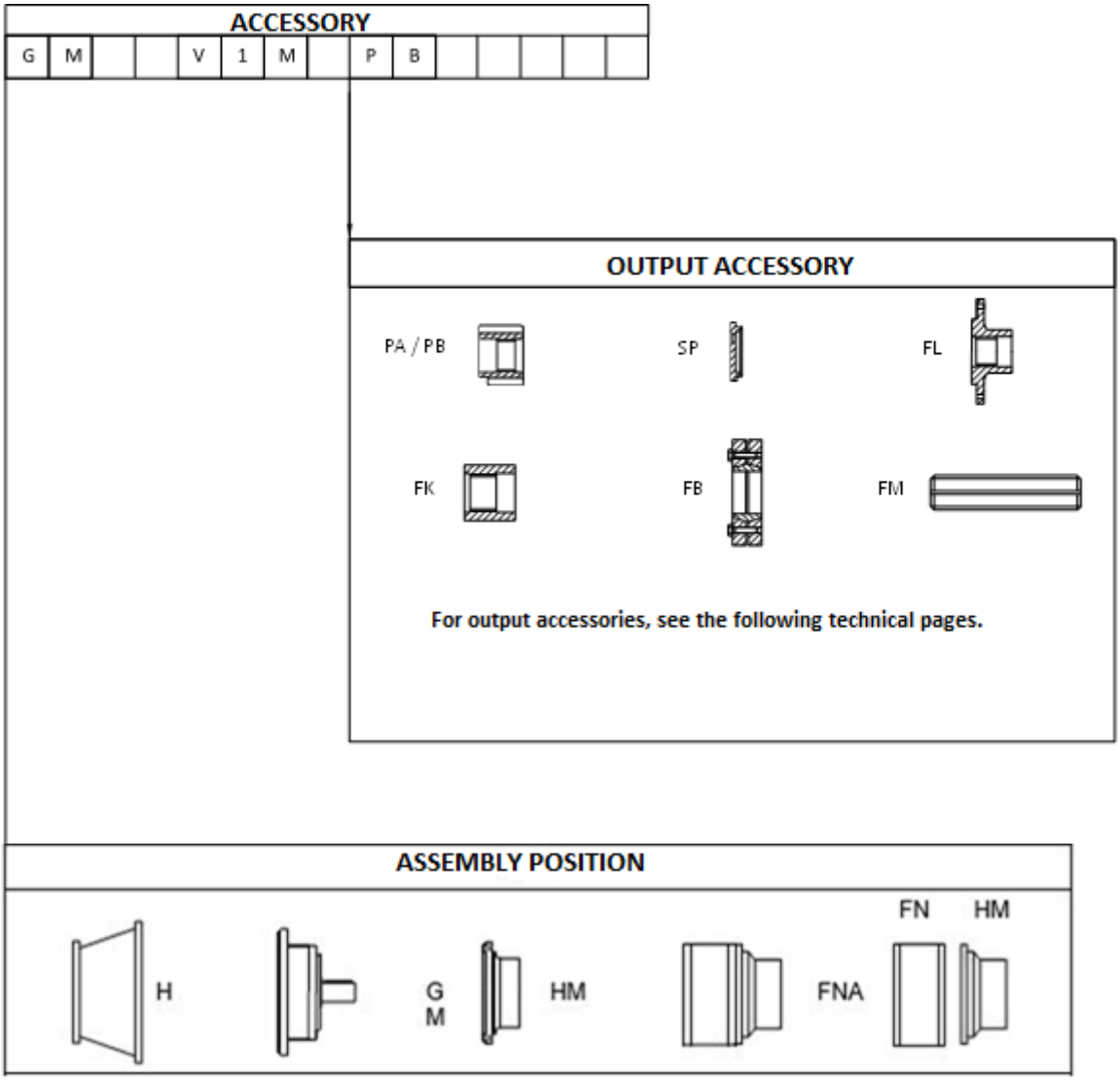
Gearbox type



Planetary Gearbox

Bevel Stages Planetary Gearbox

Worm Gear Stages Planetary Gearbox

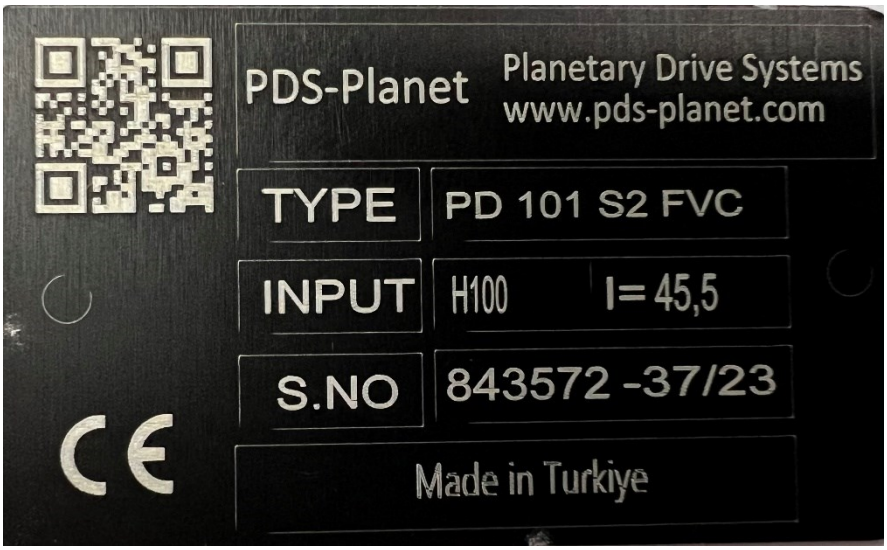


2.3 ABBREVIATIONS

• PA/PB: Pinyon	• FVS: FV pedestal body male spline shaft
• SP: Fixing Washer	• FVC: FV pedestal housing male splined shaft
• FL: Fl Fan	• HS: H (flanged) body male spline shaft
• FK Milled Coupling	• HC: H (flanged) housing male splined shaft
• SB Clamping Collar	• SF: S body (flanged) female spline shaft
• FM Frezeli Mil	• Q: Female shaft
• EMA: Electric Motor Adapter	• MS: M (without flange) body male spline shaft
• GM Input shaft	• MC: M (without flange) housing male splined shaft
• HMA: Hydromotor adapter	• SDF Flanged crimp ring
• FNA: Brake	• SD Clamping Collar
• FS: F (flanged) body male spline shaft	• DKM Female Splined Shaft
• FC: F (flanged) body male splined shaft	• DT: Upright Tarrim Body

3 LABEL TYPE IDENTIFICATION

Sample label for our gearboxes.



Type: Gearbox Type

Serial no / Date: Gearbox serial number / Week-Year

Input : Motor input adapter

İ : Bonds

4 SAFETY

4.1 PURPOSE OF USE

Planetary Gearboxes are designed to be used in marine, energy, mobile group, recycling, construction, crane, agriculture and animal husbandry, industry, mining. For maximum permissible torque and speed values, please refer to our product catalog or our web page.

The maximum permissible value can be obtained from our catalog based on the gearbox code on the product label. Other detailed information is also available in our product catalog. Use of the product outside the maximum values specified in our catalog will invalidate the product warranty and CE manufacturer's declaration. The manufacturer responsibilities of PDS PLANET GEARBOX on the product will be removed.

Gearboxes are intended for use in industrial machinery and our product must only be used in accordance with the conditions specified in the catalog and this manual. The products are manufactured according to the machinery directive 2006/42/EC. The product must be operated and maintained as

specified in this manual. The products can only be installed with machines and/or parts that comply with the 2006/42/EC standard.

The motor installed or to be installed in the gearbox can only be operated at frequencies that will give the label or catalog revolutions of the gearbox. The planetary gearbox label contains only one fixed speed and only this speed is permitted. The electric motor must comply with 2006/42/EC.

If the input of the gearboxes is to be used with belt/pulley, sprocket, chain gear, coupling, etc. fasteners, the product can only be used at the speed given on the label or at the speed values specified in the catalog. Different speed, different motor power, high input / output radial loads other than catalog or label values, etc. are not permissible.

The ambient temperature should be -20~+40 ºC and the interaction of abrasive material with seals and paint should be prevented. Consult PDS PLANET GEARBOX for different operating conditions.

Maintenance of the gearbox (oil change and inspection) must be carried out according to this manual.

Misuse Any use outside the limits stated above and outside the label/catalog values (especially use at high torque and different speeds) is considered as misuse by PDS PLANET GEARBOX and PDS PLANET GEARBOX's responsibilities on the product will be removed.

We do not recommend the use of a planetary gearbox under the following conditions;

- ✓ Installation/commissioning other than described in this user manual
- ✓ If the gearbox is excessively dirty and poorly maintained
- ✓ Oil-free use
- ✓ Use outside product catalog / label values

4.2 GENERAL SECURITY INSTRUCTIONS

- ✓ Irregular and uncontrolled work may cause injuries. Make sure that the gearbox is assembled, disassembled and maintained by trained technicians.
- ✓ Foreign objects in the air or in the environment can cause serious injury. Before operating the gear unit, make sure that there are no foreign objects or tools around the gear unit.
- ✓ Hot surfaces may cause burns. Do not touch the surface of the gear unit if the operating temperature is high or use suitable gloves.
- ✓ Rotating elements may cause injuries. There is a risk of being swung or pulled into a hug. Keep a sufficient distance from rotating elements and cover all rotating elements securely. Refer to the relevant standards EN349 + A1 and EN13857.
- ✓ Unintentional (accidental) operation during gearbox maintenance can cause serious accidents. To make sure that the gearbox is not operated before maintenance, make sure that no one can operate the gearbox with **tagging and locking equipment** (**see LOTO EKED applications**).

- ✓ Hot oil, which is heated by the operation of the gearbox, may cause burns in contact with the skin. Make sure that the gearbox is not running and the oil has cooled down before changing the oil.
- ✓ Unless otherwise specified on the label, standard gearboxes are suitable for operation at temperatures between -20 ºC and +40 ºC. Using the gearbox outside these limits may damage the gearbox.
- ✓ Above temperatures of +40ºC, the gearbox surface temperature can cause burns when touched.
- ✓ Intense contact with oil may cause skin irritation. For this reason, oil should be changed with nitrile gloves or suitable gloves that will prevent oil contact with your skin. Oil contact with the skin should be avoided.

4.3 DESCRIPTION OF FIRST AID MEASURES IN CASE OF OIL INHALATION - INGESTION - SKIN CONTACT - EYE CONTACT

- ✓ **Inhalation;** Immediately remove the victim to fresh air. Wash nose and mouth with water. If discomfort persists, seek medical advice.
- ✓ **Ingestion;** Never give anything by mouth to an unconscious person. Do not induce vomiting. Rinse mouth thoroughly with water. If discomfort persists, seek medical advice.
- ✓ **Skin contact;** Remove the victim from the source of contamination. Remove contaminated clothing. Wash skin thoroughly with soap and water. If discomfort persists, seek medical advice.
- ✓ **Eye contact;** Remove any contact lenses and open the eyelids wide. Continue washing for at least 15 minutes. Continue flushing for at least 15 minutes. If discomfort persists, seek medical advice.

5 MATTERS TO BE CONSIDERED BEFORE MOUNTING THE GEARBOX

If motorized gearboxes are used, please also refer to the motor manufacturer's manual. Before assembling the gearbox, make sure that the gearbox arrives complete and undamaged. Points to be considered before mounting the gearbox;

You must have the correct user manual for the product.

Take delivery of the gearbox and its accessories (Clamping ring, Expansion Tank, Pinion gear etc. ....) complete and undamaged.

Ensure that the gearbox is stored and transported under the storage and transportation conditions specified in this manual.

If you do not have the current catalog of the product, you can access our catalog at www.pds-planet.com/katalog.

5.1 TRANSPORT

Transportation When you receive the products, first check whether there is any damage. If any damage is detected on the gearbox, call our company and inform us about the damage. You should operate the gearbox after receiving confirmation from our company that the damage has no effect on the operation of the gearbox.

5.2 TRANSPORT

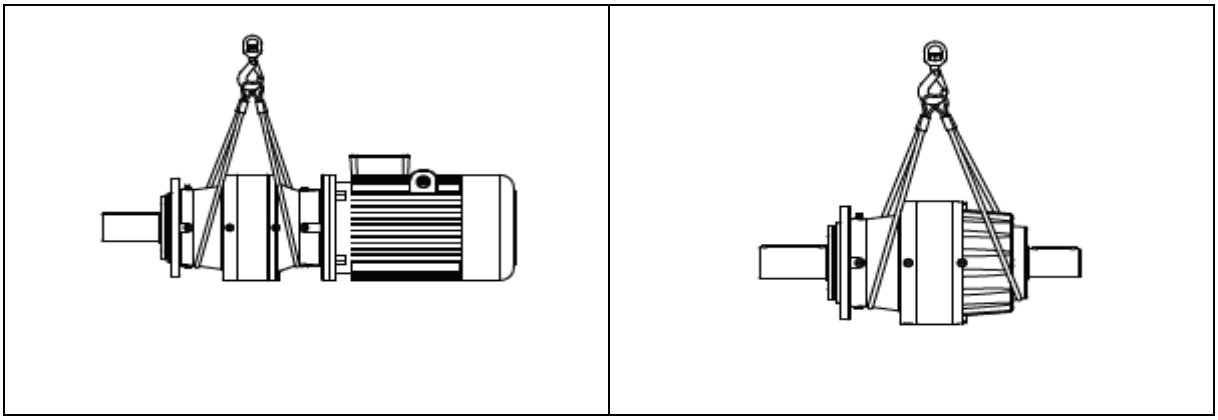
Use a rope or carrying hook for lifting and transporting gearboxes. If you cannot find a picture suitable for the transportation of your gearbox on pages 11 and 12 of the user manual, please contact PDS PLANET GEARBOX. Do not hang additional loads on the gearbox hooks during lifting and transportation of the gearbox. Use lifting equipment (rope or transportation hook) suitable for the weight of the gearbox. Please get information from our company for the weights of different product types.

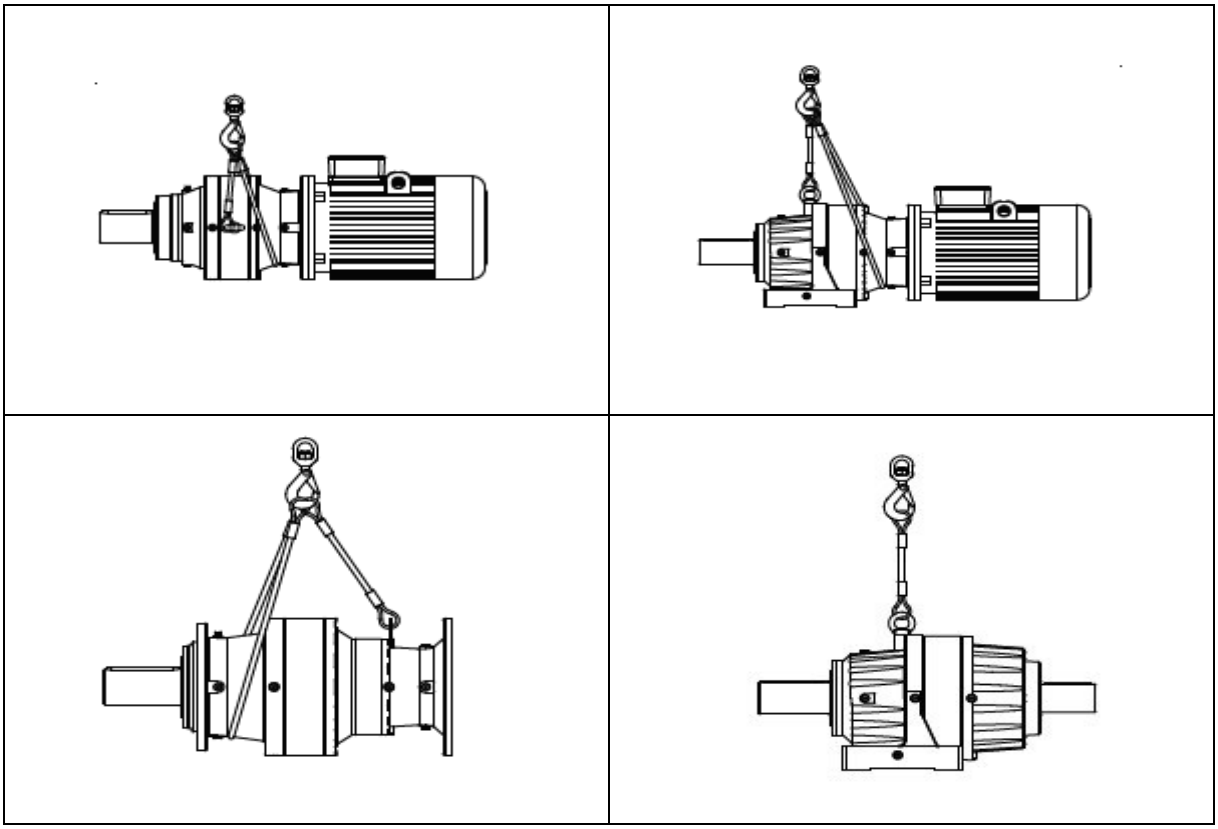
Pay attention to the center of gravity when connecting the gearboxes with rope or transport hook. Carry the gearbox in accordance with the "**Regulation on Health and Safety Conditions in the Use of Work Equipment".**

Dropping or hitting the gearbox on the ground quickly will cause damage to the gearbox. Use a crane or lifting system capable of lifting the gear unit. Make sure that the gear unit is transported and put down with slow movements. Avoid sudden movements and sudden lifting load speeds in all transportation.

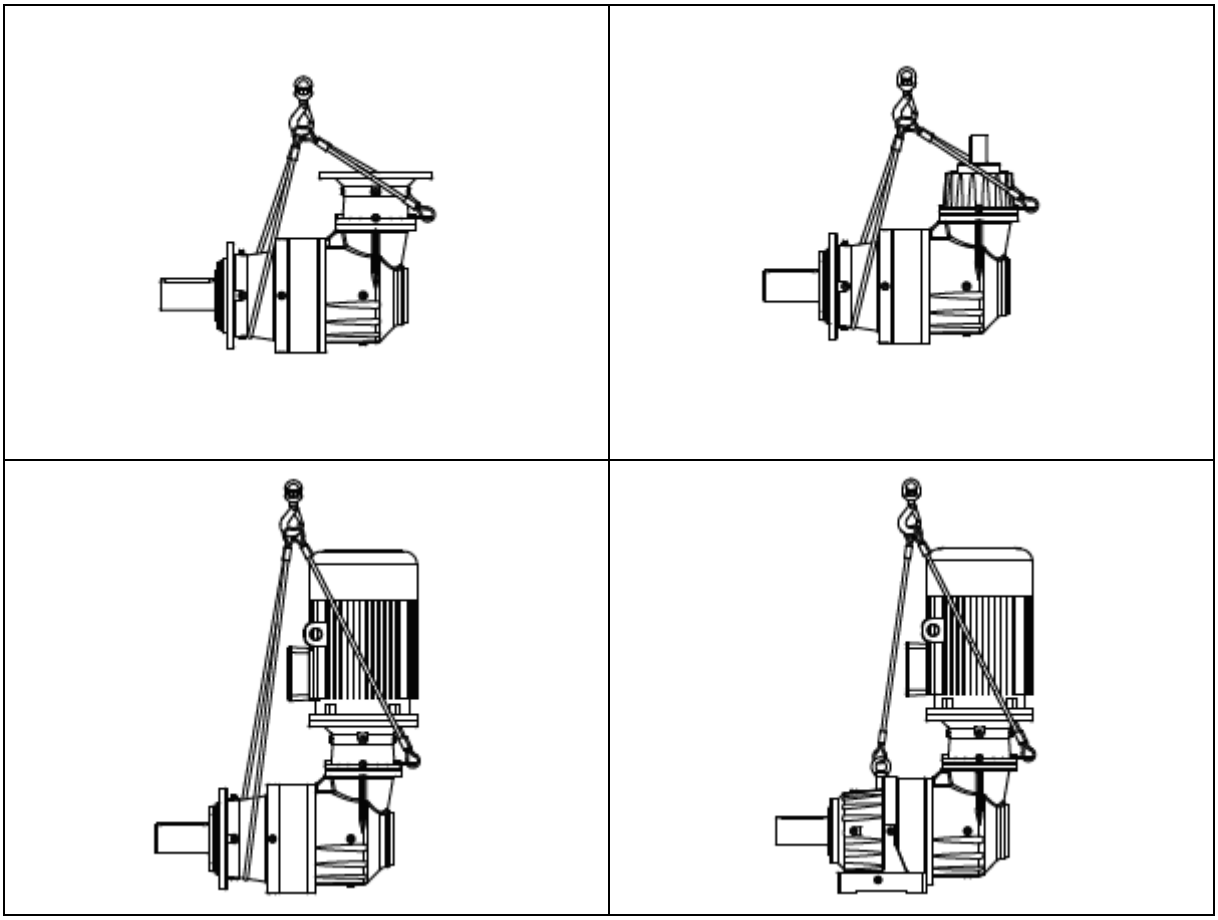
6 MODES OF TRANSPORT AND STORAGE

6.1 PD TYPE TRANSPORTATION MODES





6.2 PDA TYPE TRANSPORT MODES



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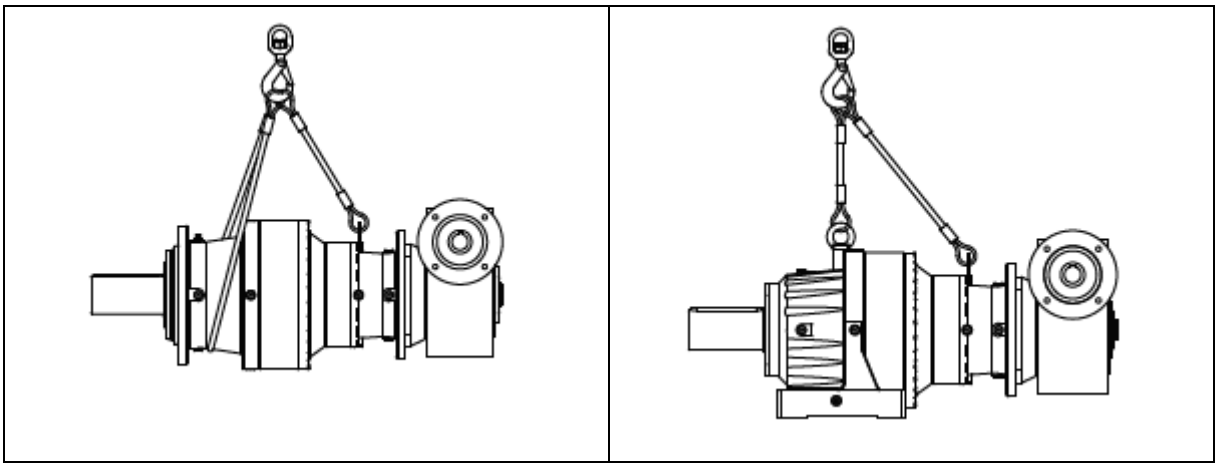


6.4 STORAGE

If gearboxes are to be stored for up to 3 years, read the instructions below.

6.4.1 PACKAGED

Apply anti-rust oil to the output shaft and standard connection surfaces. Wrap the gearbox with a nylon casing. After placing one of the silica gel dehumidifiers in the nylon casing, close the open mouth part of the nylon to prevent contact with air. Keep it in the box/package. Make sure that the humidity of the warehouse where the package is stored does not exceed 50%. It is recommended to check the humidity level of the warehouse periodically by measuring it with a moisture meter. The box or package must be kept in a shelter protected from rain and snow and the ambient temperature must be between +5 and +40ºC.

If these conditions are met and regular checks are carried out, gearboxes can be stored for up to 3 years.

6.4.2 WITHOUT PACKAGE

Apply rust preventive oil to the output shaft and standard connection surfaces. If the gearbox is not to be packed, the ambient temperature should be between +5 and +40ºC. The gearbox should be stored in a room with constant humidity and temperature. Humidity should not exceed 50%. The room must be free from dust and dirt, ventilated with a filter and necessary precautions must be taken against pests. If the gearbox is to be stored in this way, it must be checked regularly and the storage period must not exceed 2 years.

7 ASSEMBLY OF THE GEARBOX

7.1 BEFORE WE START

Check whether the gearbox has been damaged during storage or transportation. If there is any damage, call PDS PLANET GEARBOX and the transportation company. Make sure that you have the necessary equipment for assembly (wrenches, torque wrench, shims, layners, input and output shaft fasteners, oil, bolt freezer, etc.).

7.2 MOUNTING POSITION

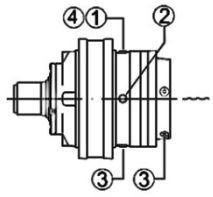
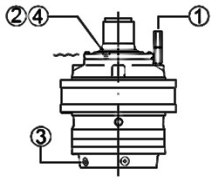
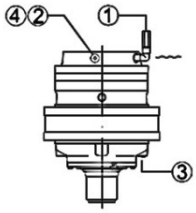
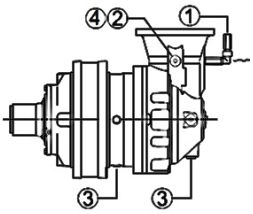
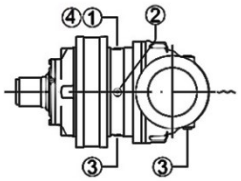
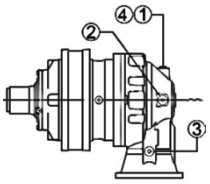
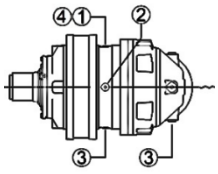
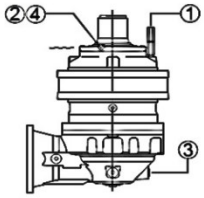
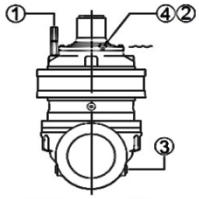
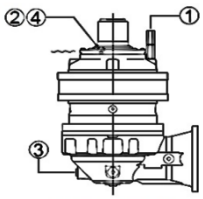
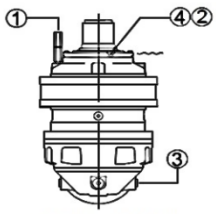
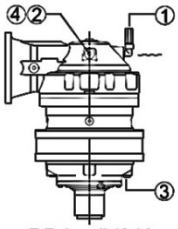
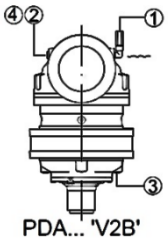
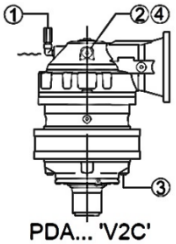
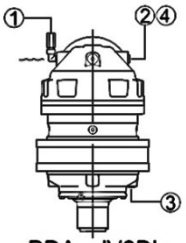
The mounting position must be the same as the mounting position indicated on the green label of the gear unit. Please inform our sales representative about the mounting position at the order stage. If the planetary gearbox will be mounted in a different mounting position than the mounting position indicated on the green label, please consult our company. Since the amount of oil to be put into the gearbox changes in case of mounting position differences, make sure to put oil according to the mounting position specified in the user manual.

7.3 VENTILATION PLUG USE

Under normal operating conditions (temperature between +2ºC - +30ºC and operating time between 0-8 hours), there is no need for a vent plug. In cases where the thermal power affecting the oil temperature of the gearbox is high and at high ambient temperatures, it is necessary to use a vent plug (air purge) since the pressure will increase due to the expansion of the oil inside the gearbox. It is shipped by PDS Planetary Gearbox as mounted on the gearbox according to the mounting position of the gearbox. In case of mounting position changes, in horizontal positions, the blind plug at the top should be removed and replaced with the vent plug.

If installation position information is not given at the order stage, vent plug installation will be made according to **PD...H / PDA...H1** positions.

8 MOUNTING POSITIONS

 PD... 'H'	 PD... 'V1'	 PD... 'V2'	1	BREATHLESSNESS
			2	LEVEL
			3	DISCHARGE
			4	FILLING
 PDA... 'H1'	 PDA... 'H2'	 PDA... 'H3'	 PDA... 'H4'	
 PDA... 'V1A'	 PDA... 'V1B'	 PDA... 'V1C'	 PDA... 'V1D'	
 PDA... 'V2A'	 PDA... 'V2B'	 PDA... 'V2C'	 PDA... 'V2D'	

Check the accessibility of the Filling, Draining and Level Plugs;

Fill, drain and level plugs must be accessible for subsequent maintenance or servicing.

8.1 OIL LEVEL CONTROL

The locations of the oil level plugs are shown in the mounting positions table. Check whether oil comes out of the plug by opening the filling plug number 2 (oil level plug), which you have located according to the installation method by looking at these tables. If oil is coming out, tighten this plug back to its place and fix it. If oil is not coming out, fill the appropriate oil given in the oil tables by using the oil filling plug number 4 until the oil comes out of the level plug and tighten both plugs. Make sure that you use the appropriate oil given in the tables.

8.2 CORROSIVE ENVIRONMENTAL CONDITIONS

If the Planetary Gearbox is to be installed in an environment with abrasive materials or water, protect the seals to prevent water, abrasives or chemicals from getting on the seals. Any additional pressure that may come from outside the gearbox and liquids and substances that may enter the gearbox may cause serious damage to the gearbox. If pressure or abrasive materials cannot be avoided, call PDS PLANET GEARGOX for special solutions. Abrasive materials, chemicals, water, plus or minus pressures exceeding 0.2 bar can damage the seals or exposed shafts.

9 LUBRICATION

If the operating temperature of the Planetary Gearboxes is continuously between -º15 ºC / +10 ºC, it is recommended to use ISO VG 220 viscosity, if between +º10 ºC / +60 ºC, it is recommended to use ISO VG 320 viscosity and EP additive mineral oil.

Correct lubrication is essential for efficient gear unit operation. The following criteria must therefore be checked during operation.

- Check that all oil plugs are properly installed according to the recommended working position.
- Oil should be filled up to the level level number 2 by considering the assembly positions diagrams. Before operation, the oil level is checked visually by loosening the level plug.
- In ninety degree PDA type gearboxes, in order to fill the oil homogeneously, the plug on the top closest to the gearbox outlet should be opened together with the plug number 4.
- Special care should be taken with models that need to be installed upright. In this case the unit must be completely filled. In such cases it is recommended to use an oil expansion tank, which is available on separate request. This tank is mounted at the extreme end of the gear unit to reserve the amount of oil that expands. When the gear unit starts to cool down, this oil goes back into the gear unit and prevents possible damage over time by preventing oil loss. If the expansion tank is not installed, the oil will expand and increase the pressure inside the gear unit, destroying the sealing elements and causing oil leakage failure.
- Under cold weather operating conditions, lower viscosity oils should be used in the gearbox.
- In the initial operation of gearboxes, metal fragments may be encountered depending on the contact surfaces. Undoubtedly, these metal pieces may cause some problems for both gear groups and bearings in the gearbox. To prevent this, the gearbox oil should be changed after the first 100 hours.
- The oil temperature of the gearbox should not exceed 90ºC. In operating conditions above 60ºC, synthetic oil should be used.
- Synthetic oil and mineral based oil should never be mixed. This mixture will cause the oil in the gearbox to lose its lubricating properties and may cause serious damage to the gearbox.

9.1 OIL TABLE

Oil Type	ISO Viscosity Class	Oil Office	Bp	Esso	Klubber	Mobil	Shell
Synthetic Oils	ISO VG 680	SP 460	ENERGOL GR-XP460	---	SYNTHESO D680 EP	---	TIVELA S 680
	ISO VG 460	SP 220	ENERGOL GR-XP460	---	SYNTHESO D460 EP	GYLGOLE 80	TIVELA S 460
	ISO VG 320	---	---	---	SYNTHESO D320 EP	GYLGOLE 30	TIVELA S 320
	ISO VG 220	---	---	---	SYNTHESO D220 EP	---	TIVELA S 220
Mineral Oils	ISO VG 680	GRAVIS MP 680	ENERGOL GR-XP680	SPARTAN EP 680	LAMORA 680	MOBILGEA R 636	OMALA F 680
	ISO VG 460	GRAVIS MP 460	ENERGOL GR-XP460	SPARTAN EP 460	LAMORA 460	MOBILGEA R 634	OMALA F 460
	ISO VG 320	GRAVIS MP 320	ENERGOL GR-XP320	SPARTAN EP 320	LAMORA 320	MOBILGEA R 632	OMALA F 320
	ISO VG 220	GRAVIS MP 220	ENERGOL GR-XP220	SPARTAN EP 220	LAMORA 220	MOBILGEA R 630	OMALA F 220
Greases	---	---	ENERGRE ASERLS3	BEACON 3	STABURAGS NMU8 EP	MOBILUX 2	ALVANI A RL3

10 CARE

Under normal environmental and operating conditions, the gearbox should be checked at the following intervals. (For a description of normal operating conditions, see "Gearbox Selection" in the product catalog)

To be checked / Element to be replaced	Every 3000 working hours or every 6 months	Every 4000 working hours	Every 10000 working hours or every 3 years	Every 25000 operating hours
Oil leakage control	X			
Oil level control	X			
Checking for oil leakage through the seal	X			

Bearing noise control		X (change if necessary.)		
Mineral oil change			X (see below for details)	
Synthetic-PAO oil change				X(see below for details)
Felt replacement				X
Bearing grease replacement				X
Bearing replacement				X
Voice change				X

Periodic maintenance of gearboxes is required. It is important to pay attention to the following points during maintenance in terms of the life and efficient operation of the gearbox.

Check the oil level and quantity of the gearboxes. Select the type of oil from the oils in the given chart. Change the oil completely after 100 hours from the time the gearbox is put into operation. Then change the oil every 2000 hours or once a year (whichever condition occurs first).

Do not use oils other than the recommended oils or mix different types of oils.

Check the ventilation plugs (air pruges). The air trapped as a result of the increase in internal pressure due to the expansion of the oil is discharged through the vent plug.

Check the gearbox connection bolts, tighten any loose ones.

For special operating conditions, please contact PDS PLANET GEARBOX for technical assistance.

11 MECHANICAL ASSEMBLY

Gearboxes must only be connected using the supplied foot connection or flange connection.

Connecting the gear unit other than at the intended connection points can cause serious damage by unhooking or breaking the gear unit. Even if the gear unit is connected completely correctly at the prescribed connection points, precautions must be taken to prevent accidental loosening or breakage.

The mounting plate must be strong enough not to allow torsion, planar enough not to create additional stresses when the bolts are tightened and solid enough not to create vibration. Depending on the fastener you are using, the radial and axial loads resulting from your application must be within the limits given in the catalog for the gearbox size you are using.

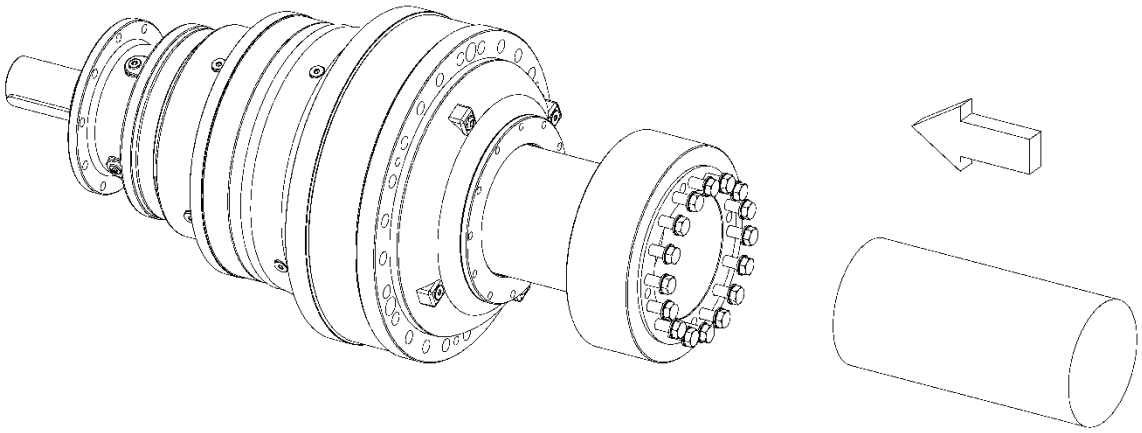
If the gearbox output shaft is loaded radially and axially above the permissible values, serious damage to the gearbox may occur. Connect the gear units with 8.8 or higher quality bolts.

Protect all rotating elements from human contact. Rotating elements can cause serious or fatal injury.

11.1 CRIMP RING SHAFT ASSEMBLY

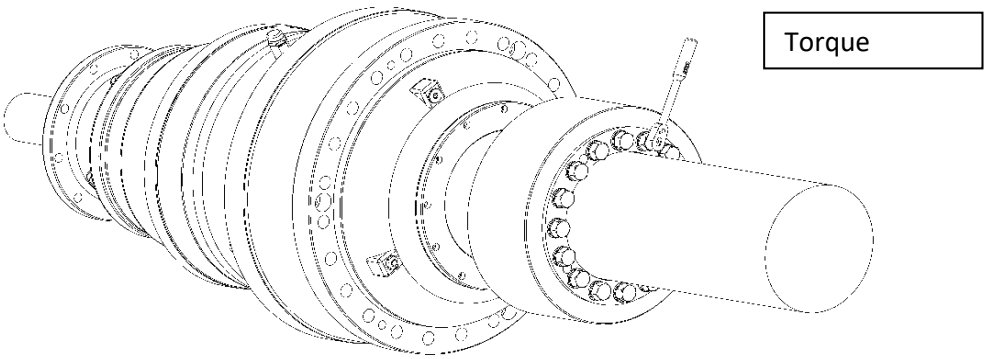
[redacted]

Using solvent, wipe off all oil and dirt from the clamping ring and shaft. Make sure that no solvent rei



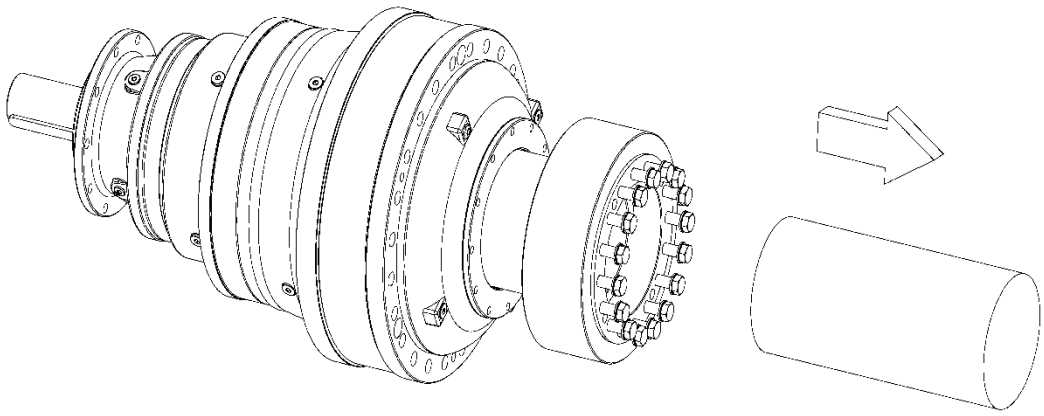
een

the invoice of the gearbox sleeve shaft and the clamping collar.



11.2 DISASSEMBLY OF A CRIMP RING SHAFT

Unscrew the bolts and remove the shaft.



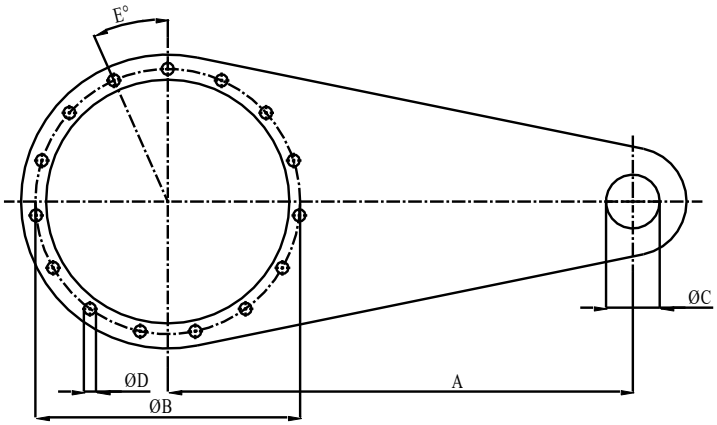
11.3 TIGHTENING MOMENTS

In principle, all bolt connections for which tightening torques are given should be tightened and checked with a calibrated torque wrench. Tighten or check all bolts entering the gearbox housing to the tightening torques given below.

Bolt Type	**Tightening Torque (Nm)**		
	8.8	**10.9**	**12.9**
M8	23	31,5	38,5
M10	45	63	76
M12	76,5	108	130
M14	122,5	172	205
M16	190,5	268,5	322
M20	372,5	523,5	628,5
M24	644	905	1087

11.4 MOMENT HANDLE

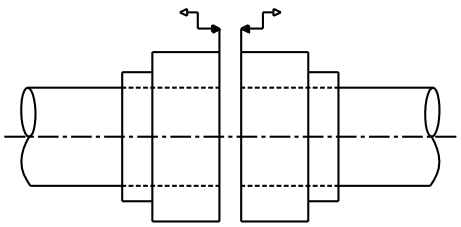
Moment arm dimensions according to planetary gearbox housings are given below.



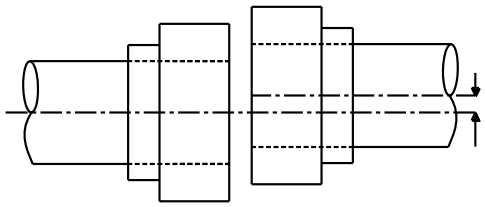
	A	B(Ø)	C(Ø)	D(Ø)	E (°)	Bolt Type	Tightening Torque(Nm)
PD 101/103	300	165	35	10,5	45	M10 8.8	50,1
PD 105-107	400	195	40	13	36	M12 10.9	119
PD 109	400	250	50	15	30	M14 10.9	190
PD 111/113	550	295	60	17	36	M16 12.9	323
PD115	550	314	65	15	30	M14 12.9	207
PD117/119/121	650	370	75	17	12	M16 12.9	323
PD123/125	800	445	90	19	7,5	M18 12.9	546
PD127	1000	565	112,5	25	7,5	M24 10.9	971
PD129	1300	560	112,5	25	15	M24 10.9	971
PD131/133	1300	660	130	29	10	M27 12.9	1590
PD 135/137	1500	810	157,5	32	10	M30 12.9	2160
PD139/141	2000	1020	200	39	10	M36 12.9	3780
PD143/145	2650	1450	280	43	9	M39 12.9	4890

11.5 COUPLING CONNECTION

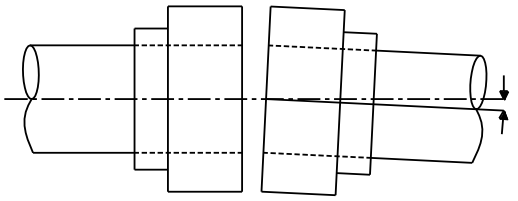
When coupling connection is made, make sure that there is a gap between the two couplings.



When assembling the coupling, make sure that there is no eccentricity between the two shafts.



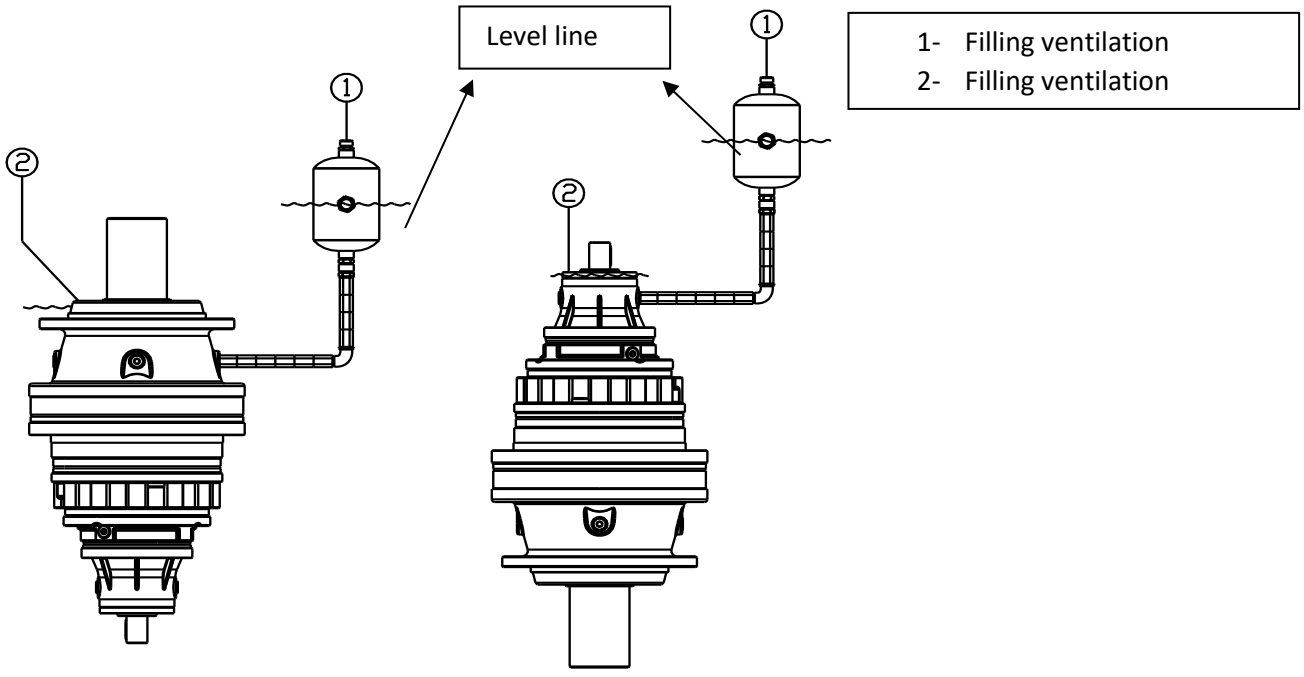
When assembling the couplings, make sure that there is no angular misalignment between the axes of the two shafts.

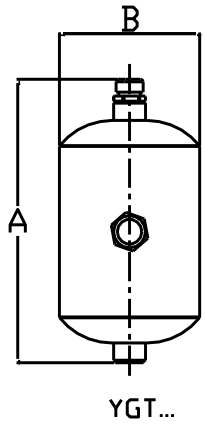


11.6 EXPANSION TANK

For vertical mounting applications, it is recommended to use an expansion vessel to collect the expanding oil. This device is available upon request.

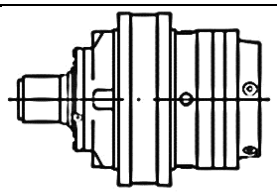
The expansion tank must be positioned on the gearbox in such a way that the oil level is visible from the small gauges on the tank, at the top level relative to the installation position and always below the breather plug.





Tip	A (mm)	B (mm)	CAPACITY(LT)
YGT 100	100	102	0,724
YGT 150	150	102	1,086
YGT 250	200	102	1,810

11.7 OIL QUANTITIES



Mounting Positions "H" (Liter)

		MS-MC	FS-FC	HS-HC	SD	SF	S	FVS-C	DKM
PD 101	S1	-	0,8	0,8	0,8	0,8	-	1,6	0,8
	S2	-	1,1	1,1	1,1	1,1	-	1,9	1,1
	S3	-	1,3	1,3	1,3	1,3	-	2,1	1,3
	S4	-	1,5	1,5	1,5	1,5	-	2,4	1,5
PD 103	S1	-	0,9	0,9	0,9	0,9	-	1,7	0,9
	S2	-	1,2	1,2	1,2	1,2	-	2	1,2
	S3	-	1,4	1,4	1,4	1,4	-	2,2	1,4
	S4	-	1,7	1,7	1,7	1,7	-	2,5	1,7
PD 105	S1	-	1,4	1,6	1,2	1,4	1,4	3,8	1,4
	S2	-	1,7	1,9	1,5	1,7	1,7	4,1	1,7
	S3	-	1,9	2,1	1,7	1,9	1,9	4,3	1,9
	S4	-	2,2	2,4	2	2,2	2,2	4,6	2,2
PD 107	S1	-	1,5	1,7	1,3	1,5	1,5	3,9	1,5
	S2	-	1,9	2,1	1,7	1,9	1,9	4,3	1,9
	S3	-	2,1	2,3	1,9	2,1	2,1	4,5	2,1
	S4	-	2,4	2,6	2,2	2,4	2,4	4,8	2,4
PD 109	S1	-	-	2,5	2,5	2,5	-	7,6	2,5
	S2	-	-	3	3	3	-	8	3
	S3	-	-	3,2	3,2	3,2	-	8,3	3,2
	S4	-	-	3,5	3,5	3,5	-	8,5	3,5
PD 111	S1	-	3	-	3	2,9	2,3	11,2	3
	S2	-	3,5	-	3,5	3,5	2,8	11,7	3,5
	S3	-	3,9	-	3,9	3,8	3,2	12,1	3,9
	S4	-	4,1	-	4,1	4,1	3,4	12,3	4,1

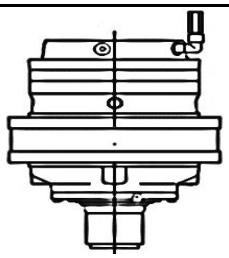
PD 113	S1	3,2	2,6	-	2,6	3,3	2,6	11,5	2,6
	S2	3,8	3,2	-	3,2	3,8	3,2	12,1	3,2
	S3	4,1	3,5	-	3,5	4,2	3,5	12,4	3,5
	S4	4,4	3,8	-	3,8	4,4	3,8	12,7	3,8
PD 115	S2	4,3	3,7	-	3,7	4,4	3,7	12,6	3,7
	S3	4,8	4,2	-	4,2	4,8	4,2	13,1	4,2
	S4	5	4,4	-	4,4	5,1	4,4	13,3	4,4
PD 117	S1	6,6	6,5	-	4,2	-	4,1	6,6	4,2
	S2	7,6	7,5	-	5,2	-	5,1	7,6	5,2
	S3	8,1	8	-	5,7	-	5,5	8,1	5,7
	S4	8,3	8,2	-	5,9	-	5,8	8,3	5,9
PD 119	S2	7,5	7,4	-	5,1	-	5	7,5	-
	S3	8,1	8	-	5,7	-	5,5	8,1	-
	S4	8,4	8,3	-	5,9	-	5,9	8,4	-
PD 121	S1	5,7	-	-	3,7	-	3,7	5,7	-
	S2	7,2	-	-	5,3	-	5,3	7,2	-
	S3	7,8	-	-	5,8	-	5,8	7,8	-
	S4	8,1	-	-	6,2	-	6,2	8,1	-
PD 123	S1	9,2	9,2	-	7,8	-	7,8	9,2	-
	S2	10,8	10,8	-	9,3	-	9,3	10,8	-
	S3	11,3	11,3	-	9,9	-	9,9	11,3	-
	S4	11,7	11,7	-	10,2	-	10,2	11,7	-
PD 125	S1	10,6	10,6	-	9,2	-	9,2	10,6	-
	S2	13,6	13,6	-	12,1	-	12,1	13,6	-
	S3	14,6	14,6	-	13,1	-	13,1	14,6	-
	S4	15	15	-	13,6	-	13,6	15	-
PD 127	S1	14,8	-	-	14,8	-	14,8	14,8	-
	S2	17,8	-	-	17,8	-	17,8	17,8	-
	S3	18,8	-	-	18,8	-	18,8	18,8	-
	S4	19,2	-	-	19,2	-	19,2	19,2	-
PD 129	S1	15,2	-	-	15,2	-	15,2	15,2	-
	S2	19,7	-	-	19,7	-	19,7	19,7	-
	S3	21,2	-	-	21,2	-	21,2	21,2	-
	S4	21,8	-	-	21,8	-	21,8	21,8	-
PD 133	S1	27,9	-	-	27,9	-	27,9	27,9	-
	S2	32,4	-	-	32,4	-	32,4	32,4	-
	S3	34	-	-	34	-	34	34	-
	S4	34,5	-	-	34,5	-	34,5	34,5	-

*If the inlet body is any of the following GM28-GM42-GM65-GM80-GM90-GM100 bodies, the following values are added to the oil amount selected from the table above.

GM28-GM42	GM65	GM80	GM90-GM100
0,3	0,7	1	1,4

**All values given in the user manual are in liters (L).

***Planet gearboxes will be shipped without oil unless requested.



Mounting Positions "V" (Liter)

		MS-MC	FS-FC	HS-HC	SD	SF	S	FVS-C	DKM
PD 101	S1	-	1,6	1,6	1,6	1,6	-	2,4	1,6
	S2	-	2,1	2,1	2,1	2,1	-	3,4	2,1
	S3	-	2,6	2,6	2,6	2,6	-	3,4	2,6
	S4	-	3,1	3,1	3,1	3,1	-	3,9	3,1
PD 103	S1	-	1,8	1,8	1,8	1,8	-	2,6	1,8
	S2	-	2,3	2,3	2,3	2,3	-	3,1	2,3
	S3	-	2,8	2,8	2,8	2,8	-	3,6	2,8
	S4	-	3,3	3,3	3,3	3,3	-	4,1	3,3
PD 105	S1	-	2,8	3,2	2,4	2,8	2,8	4,9	2,8
	S2	-	3,3	3,7	2,9	3,3	3,3	5,4	3,3
	S3	-	3,8	4,2	3,4	3,8	3,8	5,9	3,8
	S4	-	4,3	4,7	3,9	4,3	4,3	6,4	4,3
PD 107	S1	-	3	3,4	2,6	3	3	5,1	3
	S2	-	3,7	4,1	3,3	3,7	3,7	5,8	3,7
	S3	-	4,2	4,6	3,8	4,2	4,2	6,3	4,2
	S4	-	4,7	5,1	4,3	4,7	4,7	6,8	4,7
PD 109	S1	-	-	5	5	5	-	10,5	5
	S2	-	-	5,9	5,9	5,9	-	11,4	5,9
	S3	-	-	6,4	6,4	6,4	-	11,9	6,4
	S4	-	-	6,9	6,9	6,9	-	12,4	6,9
PD 111	S1	-	5,9	-	5,9	5,8	4,5	15,3	5,9
	S2	-	7	-	7	6,9	5,6	16,4	7
	S3	-	7,7	-	7,7	7,6	6,3	17,1	7,7
	S4	-	8,2	-	8,2	8,1	6,8	17,6	8,2
PD 113	S1	6,4	5,2	-	5,2	6,5	5,2	16	5,2
	S2	7,5	6,3	-	6,3	7,6	6,3	17,1	6,3
	S3	8,2	7	-	7	8,3	7	17,8	7
	S4	8,7	7,5	-	7,5	8,8	7,5	18,3	7,5
PD 115	S2	8,6	7,4	-	7,4	8,7	7,4	18,2	7,4
	S3	9,5	8,3	-	8,8	9,6	8,8	19,1	8,8
	S4	10	8,8	-	4,15	10,1	4,15	19,6	4,15

P 117	S1	13,2	13	-	8,4	-	8,1	13,2	8,4
	S2	15,2	15	-	10,4	-	10,1	15,2	10,4
	S3	16,1	15,9	-	11,3	-	11	16,1	11,3
	S4	16,6	16,4	-	11,8	-	11,5	16,6	11,8

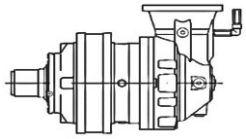
PD 119	S2	15	14,8	-	10,2	-	9,9	15	-
	S3	16,1	15,9	-	11,3	-	11	16,1	-
	S4	16,8	16,6	-	12	-	11,7	16,8	-
PD 121	S1	11,3	-	-	7,4	-	7,4	11,3	-
	S2	14,4	-	-	10,5	-	10,5	14,4	-
	S3	15,5	-	-	11,6	-	11,6	15,5	-
	S4	16,2	-	-	12,3	-	12,3	16,2	-
PD 123	S1	18,4	18,4	-	15,5	-	15,5	18,4	-
	S2	21,5	21,5	-	18,6	-	18,6	21,5	-
	S3	23,3	23,3	-	19,7	-	19,7	23,3	-
	S4	11,40	11,40	-	20,4	-	20,4	11,40	-
PD 125	S1	21,2	21,2	-	18,3	-	18,3	21,2	-
	S2	27,1	27,1	-	24,2	-	24,2	27,1	-
	S3	29,1	29,1	-	26,2	-	26,2	29,1	-
	S4	30	30	-	27,1	-	27,1	30	-
PD 127	S1	29,6	-	-	29,6	-	29,6	29,6	-
	S2	35,5	-	-	35,5	-	35,5	35,5	-
	S3	37,5	-	-	37,5	-	37,5	37,5	-
	S4	38,4	-	-	38,4	-	38,4	38,4	-
PD 129	S1	30,3	-	-	30,3	-	30,3	30,3	-
	S2	39,3	-	-	39,3	-	39,3	39,3	-
	S3	42,4	-	-	42,4	-	42,4	42,4	-
	S4	43,5	-	-	43,5	-	43,5	43,5	-
PD 133	S1	55,8	-	-	55,8	-	55,8	55,8	-
	S2	64,8	-	-	64,8	-	64,8	64,8	-
	S3	67,9	-	-	67,9	-	67,9	67,9	-
	S4	69	-	-	69	-	69	69	-

*If the inlet body is any of the following GM28-GM42-GM65-GM80-GM90-GM100 bodies, the following values are added to the oil amount selected from the table above.

GM28-GM42	GM65	GM80	GM90-GM100
0,6	1,4	2	2,8

**All values given in the user manual are in liters (L).

***Planet gearboxes will be shipped without oil unless requested.



Mounting Position "H1-V1-V2"

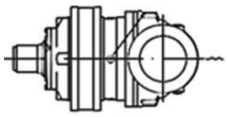
		MS-MC	FS-FC	HS-HC	SD	SF	S	FVS-C	DKM
PDA 101	S2	-	2,9	2,9	2,9	2,9	-	3,7	2,9
	S3	-	3,4	3,4	3,4	3,4	-	4,2	3,4
	S4	-	3,9	3,9	3,9	3,9	-	4,7	3,9
PDA 103	S2	-	3,1	3,1	3,1	3,1	-	3,9	3,1
	S3	-	3,6	3,6	3,6	3,6	-	4,4	3,6
	S4	-	4,1	4,1	4,1	4,1	-	4,9	4,1
PDA 105	S2	-	4,1	4,5	3,7	4,1	4,1	6,2	4,1
	S3	-	4,6	5	4,2	4,6	4,6	6,7	4,6
	S4	-	5,1	5,5	4,7	5,1	5,1	7,2	5,1
PDA 107	S2	-	6,2	6,6	5,8	6,2	6,2	8,3	6,2
	S3	-	5	5,4	4,6	5	5	7,1	5
	S4	-	5,5	5,9	5,1	5,5	5,5	7,6	5,5
PDA 109	S2	-	-	11,3	11,3	11,3	-	16,8	11,3
	S3	-	-	7,2	7,2	7,2	-	12,7	7,2
	S4	-	-	7,7	7,7	7,7	-	13,2	7,7
PDA 111	S2	-	13,5	-	13,5	13,4	12,1	22,9	13,5
	S3	-	10,2	-	10,2	10,1	8,8	19,6	10,2
	S4	-	9	-	9	809	7,6	18,4	9
PDA 113	S2	14	12,8	-	12,8	14,1	12,8	23,6	12,8
	S3	10,7	9,5	-	9,5	10,8	9,5	20,3	9,5
	S4	9,5	8,3	-	8,3	9,6	8,3	19,1	8,3
PDA 115	S3	14,9	13,7	-	13,7	15	13,7	24,5	13,7
	S4	10,8	9,6	-	9,6	10,9	9,6	20,4	9,6
PDA 117	S2	26,2	26	-	21,4	-	21,1	26,2	21,4
	S3	21,5	21,3	-	16,7	-	16,4	21,5	16,7
	S4	19,3	19,1	-	14,5	-	14,2	19,3	14,5
PDA 119	S3	22,6	22,4	-	17,8	-	17,5	22,6	-
	S4	19,3	19,1	-	14,5	-	14,2	19,3	-
PDA 121	S2	24,3	-	-	20,4	-	20,4	24,3	-
	S3	22	-	-	18,1	-	18,1	22	-
	S4	18,2	-	-	14,8	-	14,8	18,7	-
PDA 123	S2	45,4	45,4	-	42,5	-	42,5	45,4	-
	S3	29,1	29,1	-	26,2	-	26,2	29,1	-
	S4	25,8	25,8	-	22,9	-	22,9	25,8	-
PDA 125	S2	48,2	48,2	-	45,3	-	45,3	48,2	-
	S3	40,1	40,1	-	37,2	-	37,2	40,1	-
	S4	35,4	35,4	-	32,5	-	32,5	35,4	-
PDA 127	S3	48,5	-	-	48,5	-	48,5	48,5	-
	S4	43,8	-	-	43,8	-	43,8	43,8	-
PDA 129	S3	66,3	-	-	66,3	-	66,3	66,3	-
	S4	50	-	-	50	-	50	50	-
PDA 133	S3	91,8	-	-	91,8	-	91,8	91,8	-
	S4	75,5	-	-	75,5	-	75,5	75,5	-

*If the inlet body is any of the following GM28-GM42-GM65-GM80-GM90-GM100 bodies, the following values are added to the oil amount selected from the table above.

GM28-GM42	GM65	GM80	GM90-GM100
0,6	1,4	2	2,8

**All values given in the user manual are in liters (L).

***Planet gearboxes will be shipped without oil unless requested



Mounting Position "H2-H4"

		MS-MC	FS-FC	HS-HC	SD	SF	S	FVS-C	DKM
PDA 101	S2	-	1,5	1,5	1,5	1,5	-	2,3	1,5
	S3	-	1,7	1,7	1,7	1,7	-	2,5	1,7
	S4	-	2	2	2	2	-	2,8	2
PDA 103	S2	-	1,6	1,6	1,6	1,6	-	2,4	1,6
	S3	-	1,8	1,8	1,8	1,8	-	2,6	1,8
	S4	-	2,1	2,1	2,1	2,1	-	2,9	2,1
PDA 105	S2	-	2,1	2,3	1,9	2,1	2,1	4,5	2,1
	S3	-	2,3	2,5	2,1	2,3	2,3	4,7	2,3
	S4	-	2,6	2,8	2,4	2,6	2,6	5	2,6
PDA 107	S2	-	3,1	3,3	2,9	3,1	3,1	5,5	3,1
	S3	-	2,5	2,7	2,3	2,5	2,5	4,9	2,5
	S4	-	2,6	3	2,6	2,6	2,6	5,2	2,6
PDA 109	S2	-	-	5,7	5,7	5,7	-	10,7	5,7
	S3	-	-	3,6	3,6	3,6	-	8,7	3,6
	S4	-	-	3,9	3,9	3,9	-	8,9	3,9
PDA 111	S2	-	6,8	-	6,8	6,7	6,1	15	6,8
	S3	-	5,1	-	5,1	5,1	4,4	13,3	5,1
	S4	-	4,5	-	4,5	4,5	3,8	12,7	4,5
PDA 113	S2	7	6,4	-	6,4	7,1	6,4	15,3	6,4
	S3	5,4	4,8	-	4,8	5,4	4,8	13,7	4,8
	S4	4,8	4,2	-	4,2	4,8	4,2	13,1	4,2
PDA 115	S3	7,5	6,9	-	6,9	7,5	6,9	15,8	6,9
	S4	5,4	4,8	-	4,8	5,5	4,8	13,7	4,8
PDA 117	S2	13,1	13	-	10,7	-	10,6	13,1	10,7
	S3	10,8	10,7	-	8,4	-	8,2	10,8	8,4
	S4	9,7	9,6	-	7,3	-	7,1	9,7	7,3
PDA 119	S3	11,3	11,2	-	8,9	-	8,8	11,3	-
	S4	9,7	9,6	-	7,3	-	7,1	9,7	-
PDA 121	S2	12,2	-	-	10,2	-	10,2	12,2	-
	S3	11	-	-	9,1	-	9,1	11	-
	S4	9,4	-	-	7,4	-	7,4	9,4	-
	S2	22,7	22,7	-	21,3	-	21,3	22,7	-

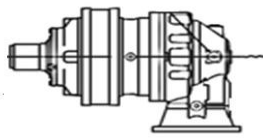
PDA 123	S3	14,6	14,6	-	13,1	-	13,1	14,6	-
	S4	12,9	12,9	-	11,5	-	11,5	14,5	-
PDA 125	S2	24,1	24,1	-	22,7	-	22,7	24,1	-
	S3	20,1	20,1	-	18,8	-	18,8	20,1	-
	S4	17,7	17,7	-	16,3	-	16,3	17,7	-
PDA 127	S3	24,3	-	-	24,3	-	24,3	24,3	-
	S4	21,9	-	-	21,9	-	21,9	21,9	-
PDA 129	S3	33,2	-	-	33,2	-	33,2	33,2	-
	S4	25	-	-	25	-	25	25	-
PDA 133	S3	45,9	-	-	45,9	-	45,9	45,9	-
	S4	37,8	-	-	37,8	-	37,8	37,8	-

*If the inlet body is any of the following GM28-GM42-GM65-GM80-GM90-GM100 bodies, the following values are added to the oil amount selected from the table above.

GM28-GM42	GM65	GM80	GM90-GM100
0,3	0,7	1	1,4

**All values given in the user manual are in liters (L).

***Planet gearboxes will be shipped without oil unless requested.



		Mounting Positions "H3"							
		MS-MC	**FS-FC**	**HS-HC**	**SD**	**SF**	**S**	**FVS-C**	**DKM**
PDA 101	S2	-	2	2	2	2	-	2,8	2
	S3	-	2,2	2,2	2,2	2,2	-	3	2,2
	S4	-	2,5	2,5	2,5	2,5	-	3,3	2,5
PDA 103	S2	-	2,1	2,1	2,1	2,1	-	2,9	2,1
	S3	-	2,3	2,3	2,3	2,3	-	3,1	2,3
	S4	-	2,6	2,6	2,6	2,6	-	3,4	2,6
PDA 105	S2	-	2,6	2,8	2,4	2,6	2,6	5	2,6
	S3	-	2,8	3	2,6	2,8	2,8	5,2	2,8
	S4	-	3,1	3,3	2,9	3,1	3,1	5,5	3,1
PDA 107	S2	-	3,7	3,9	3,5	3,7	3,7	6,1	3,7
	S3	-	3	3,2	2,8	3	3	5,4	3
	S4	-	3,3	3,5	3,1	3,3	3,3	5,7	3,3

PDA 109	S2	-	-	6,6	6,6	6,6	-	11,6	6,6
	S3	-	-	4,1	4,1	4,1	-	9,2	4,1
	S4	-	-	4,4	4,4	4,4	-	9,4	4,4
PDA 111	S2	-	8,7	-	8,7	8,2	8	16,9	8,7
	S3	-	5,7	-	5,7	5,6	5	13,9	5,7
	S4	-	5	-	5	5	4,3	13,2	5
PDA 113	S2	9	8,4	-	8,4	9	8,4	17,3	8,4
	S3	5,9	5,3	-	5,3	6	5,3	14,2	5,3
	S4	5,3	4,7	-	4,7	5,3	4,7	13,6	4,7
PDA 115	S3	8,4	7,8	-	7,8	8,4	7,8	16,7	7,8
	S4	5,9	5,3	-	5,3	6	5,3	14,2	5,3
PDA 117	S2	15,4	15,3	-	13	-	12,8	15,4	13
	S3	11,7	11,6	-	9,3	-	9,1	11,7	9,3
	S4	10,2	10,1	-	7,8	-	7,7	10,2	7,8
PDA 119	S3	13,3	13,3	-	10,9	-	10,7	13,3	-
	S4	10,2	10,2	-	7,8	-	7,7	10,2	-
PDA 121	S2	14,4	-	-	12,5	-	12,5	14,4	-
	S3	13	-	-	11	-	11	13	-
	S4	9,9	-	-	8	-	8	9,9	-
PDA 123	S2	23,6	23,6	-	22,1	-	22,1	23,6	-
	S3	16,5	16,5	-	15,1	-	15,1	16,5	-
	S4	15,4	15,4	-	13,9	-	13,9	15,4	-
PDA 125	S2	25	25	-	23,5	-	23,5	25	-
	S3	22,3	22,3	-	20,9	-	20,9	22,3	-
	S4	18,6	18,6	-	17,2	-	17,2	18,6	-
PDA 127	S3	26,5	-	-	26,5	-	26,5	26,5	-
	S4	22,8	-	-	22,8	-	22,8	22,8	-
PDA 129	S3	34	-	-	34	-	34	34	-
	S4	27	-	-	27	-	27	27	-
PDA 133	S3	46,8	-	-	46,8	-	46,8	46,8	-
	S4	39,7	-	-	39,7	-	39,7	39,7	-

*If the inlet body is any of the following GM28-GM42-GM65-GM80-GM90-GM100 bodies, the following values are added to the oil amount selected from the table above.

GM28-GM42	GM65	GM80	GM90-GM100
0,6	1,4	2	2,8

**All values given in the user manual are in liters (L).

***Planet gearboxes will be shipped without oil unless requested.

12 TROUBLESHOOTING GUIDE

NO	PROBLEMS	OBSERVATION	SOLUTION
1	The gearbox is not working.	You hear a noise but neither the gearbox shaft nor the motor shaft rotates.	Motor nameplate and supply values must match. Check the user manual of the motor manufacturer. If it does not work despite all attempts, the load may be too much for the selected motor. Disconnect the output shaft of the gearbox from the load. If it works in this state, the motor power may not be enough. If the problem persists, refer to sequence number 21.
2	The gearbox is not working.	Ambient temperatures drop below -5 degrees Celsius.	The gearbox oil is not suitable for the operating environment. Use a lower viscosity oil. Check the user manual to find the appropriate oil. Working at higher ambient temperatures is another solution. If the same problems still exist, it may be necessary to increase the motor power. If the problem persists, refer to sequence number 21.
3	The gearbox is not working.	Constant buzzing sound.	Check your moving machine elements. Disconnect the gearbox from the machine and run it without load. If you hear similar sounds again, there may be some foreign substances in the oil. Change the oil and check the substances in the waste oil. If metal parts are visible, the gearbox may be damaged. If the problem persists, refer to sequence number 21.
4	The gearbox does not start after long periods of waiting or in the morning.	Ambient temperatures drop below -5 degrees Celsius.	The gearbox oil is not suitable for the operating environment. Use a lower viscosity oil. Check the user manual to find the appropriate oil. Working at higher ambient temperatures is another solution. If the same problems still exist, it may be necessary to increase the motor power. If the problem persists, refer to sequence number 21.
5	Gearbox Audio.	Regular knocking sound.	Check your moving parts. Disconnect the gearbox from the machine and run it without load. If you hear similar sounds again, the gearbox may be damaged. If the problem persists, refer to sequence number 21.

6	The gearbox gets very hot.	The ambient temperature is above +40 degrees.	Standard gearboxes are designed to operate at max. +90 degrees Celsius. Special gearboxes are required for ambient temperatures above +90 degrees Celsius. If the problem persists, refer to row no. 21.
7	Gearbox noise.	Regular knocking sound.	Check your moving parts. Disconnect the gearbox from the machine and run it without load. If you hear similar sounds again, the gearbox may be damaged. If the problem persists, refer to sequence number 21.
8	Gearbox noise.	Regular rising and falling sound.	Check the runout of the fasteners connected to the output shaft. Disconnect the element connected to the output shaft and run without load. If the problem persists, refer to sequence number 21.
9	There's an oil leak.	There is oil leakage from the seal.	If the ambient temperature is above +40 degrees Celsius and there is continuous operation for more than 16 hours, remove the top plug according to the installation position and use a vent plug. If this is not the case, the seal may be damaged. If the problem persists, refer to row 21.
10	There's an oil leak.	The oil is escaping from the plug.	If you are using a vent plug, make sure it is in the correct position. The correct position is the plug at the highest level relative to the mounting position of the gearbox. The gearbox plug may not be tightened sufficiently Clean the surface where the gearbox plug fits and the plug. Tighten it again. If the problem persists, see sequence number 21.
11	There's an oil leak.	The oil comes from the body.	Observe exactly where the gearbox oil is coming from. Oil may be leaking from the plug or seal and flowing onto the housing. If this is the case, refer to numbers 13, 14 and 16. If you are sure that the oil is coming from the housing, there may be micro cracks or fractures in the housing. If the problem persists, refer to row number 21.
12	There's an oil leak.	The oil comes from the hatch.	The O-ring under the cover is torn or not functioning. Remove the cover. Clean underneath and install a new o-ring. If the problem persists, refer to sequence number 21.
13	The engine gets very hot.	The motor is running above its rated amperage; The environment is clean.	Motor power is insufficient or overloaded. The motor may be defective. If the problem persists, refer to sequence number 21.

14	The gearbox gets very hot.	You are using a planetary gearbox. The ambient temperature is below +40°C.	Measure the surface temperature of the gearbox with a thermometer under full load. If the measured temperature is below 80°C, this is normal and does not harm the gearbox. All ATEX certified gearboxes are designed to operate at max. +90°C. If the temperature is above +90°C and the gearbox is ATEX compliant, stop the gearbox operation immediately and inform PDS PLANET GEARBOX. Non-ATEX compliant gearboxes are designed to operate at max. +90°C. If it is above +90°C, check the oil level according to the mounting position. Make sure that the mounting position written on the label is compatible with the mounting position you are using. If the problem persists, refer to row number 21.
15	The gearbox makes regular oscillations while running at the installation site.	You're using the moment arm.	The reason for the oscillation of the gearbox is the clearance between the shaft runout and the shaft/sleeve to which you connect the gearbox. Check your shaft bore fit tolerance. As long as the torque arm is used, this does not harm the gearbox and is normal for the gearbox. If the problem persists, refer to row number 21.
16	The motor shaft rotates and the gearbox shaft does not.	There is a friction noise or just engine noise.	The gearbox may be damaged. If the problem persists, refer to sequence number 21.
17	Motor shaft rotates, gearbox shaft does not.	There is a friction noise or just engine noise.	The gearbox may be damaged. If the problem persists, refer to sequence number 21.
18	The gearbox housing is broken.	You use a chain gear or pinion gear on the gearbox output shaft.	The damage may be caused by the polygonal effect of the sprocket or radial load. The foot connections of the gearbox may be loose or the plate to which it is attached may not be rigid enough. Make sure you are using the correct sprocket/pinion gear diameter. Check the maximum permissible radial load. Check the position of the fastener on the output shaft and recalculate the radial load accordingly. If the problem persists, refer to row 21.

19	Output shaft is broken.	You use a sprocket or pinion gear.	The damage may be caused by the polygon effect or radial load created by the sprocket. The foot connections of the gearbox may be loose or the plate to which it is attached may not be rigid enough. Make sure you are using the correct sprocket/pinion gear diameter. Check the maximum permissible radial load. Check the position of the fastener on the output shaft and recalculate the radial load accordingly. If the problem persists, refer to row 21.
20	The gearbox stops too late.	You are riding a motorcycle with brakes.	Check the connection diagram of the brake. There are two types of brake connection. The gearbox is shipped from the factory with delayed braking. For immediate braking, refer to the electrical connection diagram. If the problem persists, refer to sequence number 21.
21	Service required.	It is not a problem you can solve yourself.	Please contact PDS PLANET GEARBOX. Company details are given at the back of this manual. Mechanical parts may only be replaced by or with the knowledge of PDS PLANET GEARBOX . Any modification made without the knowledge of PDS PLANET GEARBOX voids the warranty and CE manufacturer's declaration of the product and PDS PLANET GEARBOX's responsibilities on the product are eliminated.

13 DISPOSAL

13.1 DISPOSAL OF THE GEARBOX

If the gearbox is no longer usable and is to be disposed of, read the instructions here.

13.2 OIL DISPOSAL

Lubricants (oils and greases) are harmful substances that can enter the soil and water. Dispose of the discharged oil in suitable closed containers in accordance with the applicable national laws of your country.

13.3 DISPOSAL OF FELTS

Remove the seals from the gearbox, wipe off the oil and dispose of them in composite materials (metal/plastic) waste treatment centers or bins.

13.4 DISPOSAL OF METAL PARTS

If possible, separate the remaining metals into iron, aluminum, alloys and dispose of them in accordance with the applicable national laws of your country.

As Gearbox Service, the above mentioned information is enlightening information and we are not responsible for any problems that may arise due to use outside of this information.

14 PARTS LIST OF STANDARD GEARBOXES

14.1 FS-FC BODY TYPE

SERIES NO.	EXPLANATION
1	BODY
2	BEARING
3	FS MILE
4	FC MIL
5	ZODIAC SIGN
6	BEARING
7	NUT
8	KEEK
9	COVER
10	SEGMAN
11	O-RING
12	O-RING
13	TAPA
14	KAMA

14.2 FVS-FVC BODY TYPE I

SERIES NO.	EXPLANATION
1	BODY
2	BEARING
3	BEARING
4	FVS MIL
5	FVC MIL
6	NUT
7	KEEK
8	O-RING
9	SEAL COVER
10	O-RING
11	TAPA

14.3 HS-HC BODY TYPE

SERIES NO.	EXPLANATION
1	BODY
2	BEARING
3	HS MIL
4	HC MILE
5	ZODIAC SIGN
6	BEARING
7	NUT
8	KEEK
9	O-RING
10	COVER
11	O-RING
12	TAPA
13	KAMA

14.4 MS-MC BODY TYPE

SERIES NO.	EXPLANATION
1	BODY
2	BEARING
3	MS MIL
4	MC MILE
5	ZODIAC SIGN
6	BEARING
7	NUT
8	KEEK
9	O-RING
10	COVER
11	O-RING
12	TAPA
13	KAMA

14.5 AYM BODY TYPE

SERIES NO.	EXPLANATION
1	BODY
2	BEARING
3	SEGMAN
4	CORE SHAFT
5	KAMA
6	MIRROR
7	BEARING
8	MAHRUTI
9	BEARING
10	OUTER ARIES
11	INNER MIDDLE SIGN
12	BEARING
13	NUT
14	O-RING
15	COVER
16	BOLT
17	PLASTIC TAPE
18	SEGMAN
19	O-RING
20	TAPA

14.6 S BODY TYPE

SERIES NO.	EXPLANATION
1	BODY
2	BEARING
3	SEGMAN
4	CAGE
5	TAPA
6	SEGMAN
7	SEGMAN
8	KEEK
9	O-RING

14.7 SD BODY TYPE

SERIES NO.	EXPLANATION
1	BODY
2	KEEK
3	BEARING
4	MILE
5	O-RING
6	TAPA
7	TAPA

14.8 SDF BODY TYPE

SERIES NO.	EXPLANATION
1	BODY
2	BEARING
3	MILE
4	ZODIAC SIGN
5	BEARING
6	NUT
7	KEEK
8	COVER
9	O-RING
10	O-RING
11	TAPA

14.9 SF BODY TYPE

SERIES NO.	EXPLANATION
1	BODY
2	MILE
3	BEARING
4	BEARING
5	SEGMAN
6	KEEK
7	O-RING
8	TAPA

15 WARRANTY TERMS

1. Gearboxes are guaranteed for two years except electric motor and hydromotor. For motor warranty, please refer to the manufacturer's warranty certificate and user manual. This warranty is valid if the gear unit is installed and operated as described in the user manual and used within the conditions specified in the product catalog.
2. The warranty period starts with the invoice date and lasts for two years.
3. If the product malfunctions or fails to operate during the warranty period due to manufacturing or assembly defects, the product shall be repaired under warranty.
4. During the warranty period, if the product malfunctions or fails to operate in a way that cannot be repaired due to manufacturing or assembly defects, the product shall be replaced with a new one within the scope of the warranty based on the report of the Service Department stating that the product cannot be repaired.
5. Customers must inform the manufacturer of any problems that occur after service or repair.
6. These warranty terms do not cover any damages caused by stoppage of machinery or plant in which the product is used.
7. Without label producers are out of warrantly
8. If the gear box opened by customer without news PDS planet out of warrantly

16 SALES AND SERVICE POINTS

Sales and Technical Support

MERT Teknik Fabrika Malzemeleri Tic. ve San. A.S.

Address: Organized Industrial Zone 1st Cad. No:9 34776 Yukarı Dudullu/Istanbul

T: +90 (216) 526 43 40

F: +90 (216) 526 43 45

info@mert.com

Factory

P.D.S Planetary Gear Systems

Address: Atatürk Bulvarı Çelik Yenal Endüstri Merkezi No:60 34490 Başakşehir/İstanbul

T: +90 (212) 671 40 21-22

F: +90 (212) 671 27 55 info@pds-planet.com