



AUGER & ANCHOR DRIVE (VARIABLE SPEED) V30K



Instruction Manual
Owners Manual
Safety Precautions

Manual number: PROV30K
Release Date: July 2020

Operating Instructions
Maintenance
Parts Lists

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PREFACE

This manual is used to familiarize you with safety, assembly, operation, adjustment, troubleshooting, and maintenance. Read and follow the recommendations in this manual to ensure safe and efficient operation. The information contained in this manual was current at the time of printing. Some items may change slightly to assure, you the customer, the best performance.

We want you to be completely satisfied with your new product, feel free to contact your local Authorized Service Dealer for help with service, replacement parts or any other information you may require.

Whenever you contact your Authorized Service Dealer or the factory, always have the model number and serial number of your product available. These numbers will help provide exact information about your specific product. You will find the model and serial numbers on an ID plate located on the product.

For your convenience, write the product model number, serial numbers and date of purchase in the spaces below.

MODEL NO: _____

SERIAL NO: _____

DATE OF PURCHASE: _____

TABLE OF CONTENTS

Preface/Table of Contents.....	2
Safety Statements.....	3
General Precautions.....	4-5
Safety Decal Locations/Serial Tag Location.....	5
Specifications/Component and Control Locations.....	6
Motor Start-up Instructions.....	7-9
Set-up Instructions/Operating Procedures.....	10
General Maintenance/Checking and Changing the Gear Oil.....	11
Maintenance Cont./Troubleshooting.....	12
Guarantee/Warranty.....	13
V55K Gearbox Parts Breakdown.....	14-22

SAFETY STATEMENTS

DANGER



THIS STATEMENT IS USED WHERE SERIOUS INJURY OR DEATH WILL RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.

WARNING



THIS STATEMENT IS USED WHERE SERIOUS INJURY OR DEATH COULD RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.

CAUTION



THIS STATEMENT IS USED WHERE MINOR INJURY COULD RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.



THIS SYMBOL BY ITSELF OR USED WITH A SAFETY SIGNAL WORD THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY OR THE SAFETY OF OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.

WARNING



READ MANUAL PRIOR TO INSTALL

Improper installation, operation or maintenance of the equipment could result in serious injury or death. Operators and maintenance personnel should read this manual as well as all manuals related to this equipment. Follow all safety instructions in this manual.

WARNING



READ AND UNDERSTAND ALL SAFETY STATEMENTS

Read all safety decals and safety statements in all manuals prior to operating or working on this equipment. Know and obey all OSHA regulations, local laws and other professional guidelines for your operation. Know and follow good work practices when assembling, maintaining, repairing, mounting, removing or operating this equipment.



KNOW YOUR EQUIPMENT

Know your equipment's capabilities, dimensions and operations before operating. Visually inspect your equipment before you start, and never operate equipment that is not in proper working order with all safety devices intact. Check all hardware to assure it is tight. Make certain that all locking pins, latches, and connection devices are properly installed and secured. Remove and replace any damaged, fatigued or excessively worn parts. Make certain all safety decals are in place and are legible. Keep decals clean, and replace them if they become worn and hard to read.

WARNING



DO NOT MODIFY EQUIPMENT

Modifications may weaken the integrity of the equipment and may impair the functions, safety, life, and performance of the equipment. When making repairs, use only the manufactures genuine parts, following authorized instructions. Other parts may be substandard in fit and quality.

GENERAL PRECAUTIONS



PREPARE FOR EMERGENCIES

- Be prepared if a fire starts.
- Keep a first aid kit near by when operating equipment.

WARNING



OPERATOR SAFETY

- Protective clothing and equipment should be worn at all times.
- Wear protective clothing and equipment appropriate for the job. Avoid loose fitting clothing.
- Prolonged exposure to excessive noise can cause hearing loss. Wear suitable hearing protection such as ear plugs.
- Operating equipment safely requires the full attention of the operator. Avoid distractions.
- Do not operate the unit when you are tired, ill or under the influence of alcohol, drugs or medication.
- Never let a minor or inexperienced person operate the unit.
- Keep hands away from the drilling bit at all times.
- Inspect the area to be drilled before operation. Remove objects which can be thrown or become entangled.

CAUTION



UNIT AND TOOL SAFETY

- Inspect the entire tool before operation.
- Replace parts that are cracked, chipped or damaged in any way before operation.
- Keep others away when making any adjustments to the unit.
- Damage to the PRO-DIG® Auger Drive and auger bit can result if the prime mover moves while the auger is still in the hole.

WARNING



PRACTICE SAFE MAINTENANCE

- Use proper tools and equipment when conducting maintenance, refer to this manual for additional information.
- Work in a clean dry area.
- Inspect all parts. Be sure parts are in good working condition and installed properly.
- Remove build up of grease, oil or any debris.
- Remove all tools and unused parts from equipment before beginning operation.

WARNING



DRILLING SAFETY

Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to machinery and work activity. Never assume that children will remain where you last saw them. BE ALERT and turn the equipment off if children enter the work area. Keep children out of the work area and under supervision of another responsible adult.

GENERAL PRECAUTIONS (cont.)

WARNING



DRILLING SAFETY

- Inspect the area to be drilled before operation. Remove objects which can be thrown or become entangled.
- Keep all parts of your body away from the drilling bit when operating the unit.
- DO NOT operate the PRO-DIG® Auger Drive when the auger bit is more than 12" (305mm) above ground. The auger bit may bind and cause injury to the operator and damage to the equipment.
- While the auger bit is rotating, DO NOT attempt to manually guide the auger to a location.

WARNING



UNDERGROUND HAZARDS

It is the responsibility of the operator to know where buried power, gas, telephone, and other utilities are in the work area. This may lead to shock or an explosion. Have the work area marked for buried lines and do not dig in marked areas set by your local municipalities. Striking a hard object underground with the auger turning can result in the slowing or stopping of the auger.

SAFETY DECAL LOCATIONS



SAFETY DECALS

This unit comes equipped with all safety decals in place. They are designed to help you safely operate your unit. Read and follow all safety decals.

(Locations shown below in figure 1)

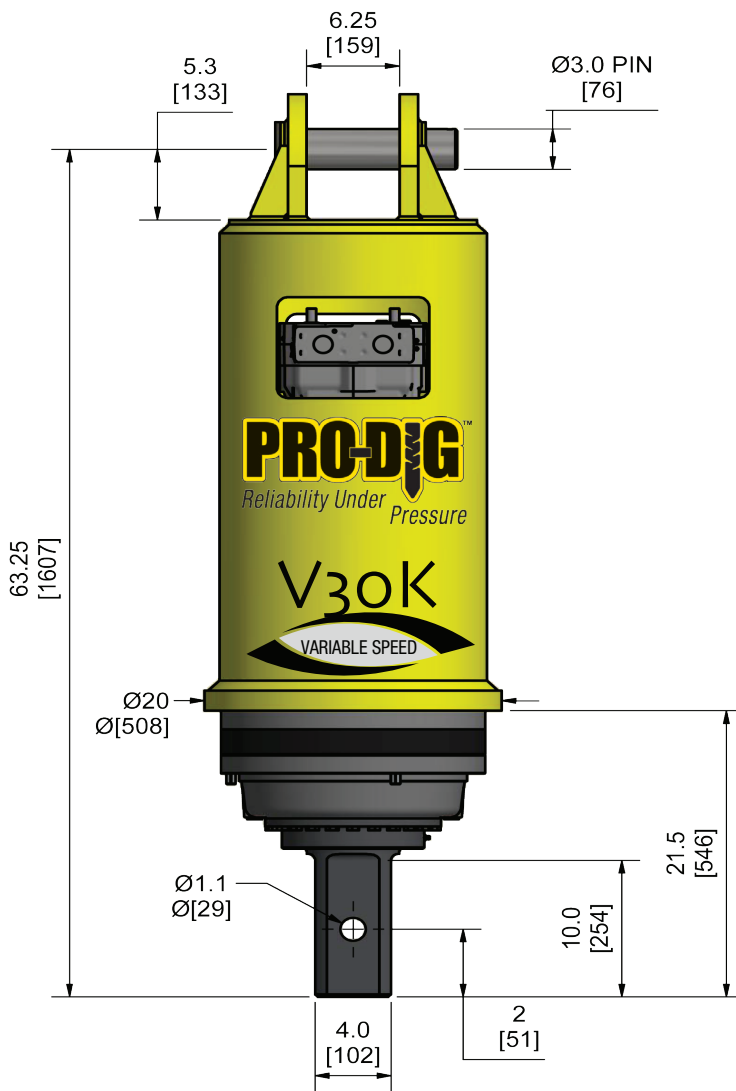
- Keep all safety decals clean and legible at all times
- Replace safety decals that are missing or have become illegible.
- Safety decals are available from your distributor or manufacture.
- Some parts installed during repair may require safety decals to be affixed to the replacement part. When ordering the replacement part(s) be sure the correct safety decal(s) are included in your order.



INSTALLING SAFETY DECALS

- Clean the desired area with warm soapy water.
- Decide on exact position before you remove the backing paper.
- Peel backing paper from decal. Press firmly on the surface.
- Air pockets can be pierced with a pin and smoothed.





Part Number	V30K
Motor Mount	SAE C 2 Bolt
Min. Hydraulic Flow	10 GPM (38 Lpm)
Max. Hydraulic Flow	80 GPM (303 Lpm)
Max. Continuous Pressure	5000 PSI (345 Bar)
Output Shaft	4" square

OUTPUT SPEED

FLOW	RPM
GPM (LPM)	Range
10 (38)	5-10
15 (57)	7-14
20 (76)	10-19
25 (95)	12-24
30 (114)	15-30
35 (132)	17-33
40 (151)	19-38
45 (170)	21-42
50 (189)	24-47
55 (208)	26-52
60 (227)	28-56
65 (246)	31-61
70 (265)	33-66
75 (284)	35-70
80 (303)	38-75

OUTPUT TORQUE

PRESSURE	TORQUE	TORQUE
PSI (BAR)	FT/LBS (Nm)	FT/LBS (Nm)
	LOW	HIGH
1000 (69)	3030 (4108)	6059 (8216)
1200 (83)	3787 (5135)	7574 (10270)
1400 (86)	4545 (6162)	9089 (12324)
1600 (110)	4848 (6573)	9695 (13145)
1800 (124)	5453 (7395)	10906 (14789)
2000 (138)	6059 (8216)	12118 (16432)
2200 (152)	6665 (9039)	13330 (18075)
2400 (166)	7271 (9859)	14542 (19718)
2600 (179)	7877 (10681)	15753 (21362)
2800 (193)	8483 (11503)	16965 (23005)
3000 (207)	9089 (12324)	18177 (24648)
3200 (220)	9695 (13146)	19389 (26291)
3400 (234)	10301 (13967)	20601 (27934)
3600 (248)	10906 (14789)	21812 (29578)
3800 (262)		23024 (31221)
4000 (275)		24236 (32864)
4200 (289)		25448 (34507)
4400 (303)		26660 (36150)
4600 (317)		27871 (37794)
4800 (330)		29083 (39437)
5000 (344)		30295 (41080)

Note: 1 Ft/lb = 1.356 Nm

Note: PRO-DIG® continually looks for new ways to improve its products. Therefore, PRO-DIG® reserves the right to make changes to our products and specifications without notice.

- Installation must be carried out in accordance with the circuit or piping diagram.
- Always cover or cap all motor case drain and high pressure hydraulic lines during the installation of a new or replacement motor.
- Always ensure that all connections to the motor or replacement motor are capped or covered during the initial installation.
- Connect and tighten each hydraulic line one at a time removing caps or covers just before each connection is made.
- Additional care must be taken to vent entrapped air from the motor rear head. If mounted as shown below, connect the “vent line” to the reservoir. **Please note that all PRO-DIG® V Series drives are fitted with a vent valve and thus no extra precautions are required during installation.**

VENTING CASE DRAIN

- Positive venting is essential for the correct operation of the hydraulic system.
- All case drain lines must be mounted continuously rising towards the reservoir. This allows any entrapped air to

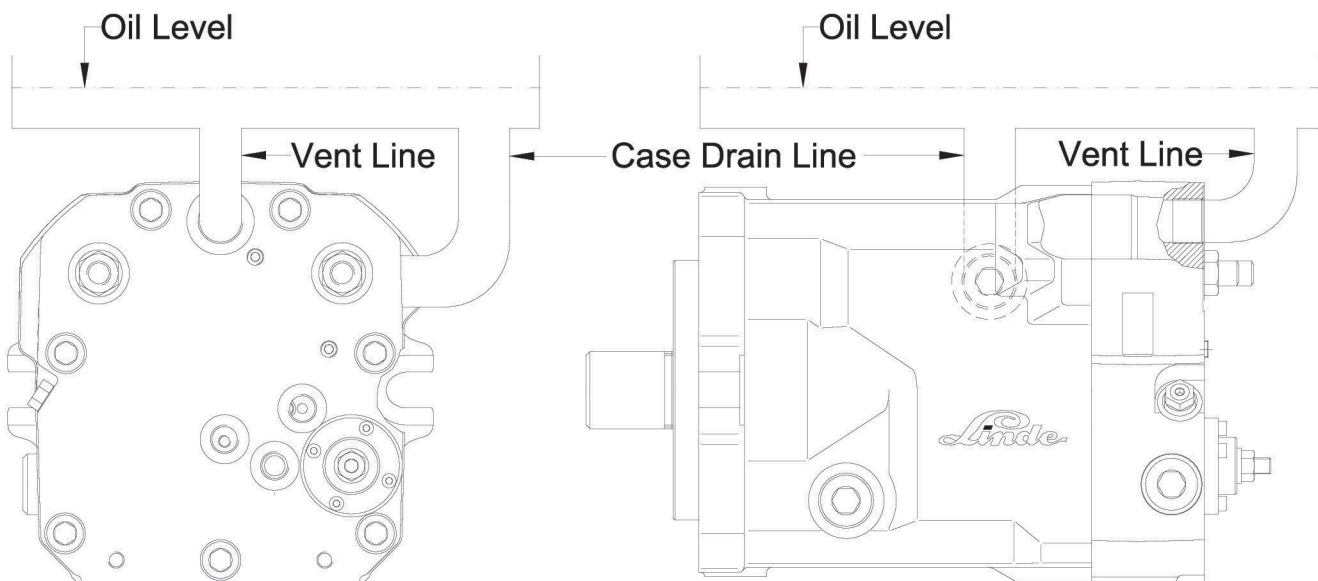
escape freely from the motor housing.

- The PRO-DIG® Auger Drive is supplied with a case drain hose already installed. This hose must be directly connected to the reservoir and should be below the oil level in the reservoir and should be below the oil level in the reservoir, as illustrated below.
- The case drain line pressure is not permitted to exceed 22 PSI.

PIPING

- Pipe work should be seamless drawn precision steel tube or hoses of suitable pressure rating.
- During installation, attention should be paid to cleanliness. The pipes must be de burred, washed and blown through.
- Scaled or rusted pipes must be scoured and then neutralized. Hoses must be brushed and flushed through when contaminated.

IMPORTANT: The cleanliness of the circuit **before** commissioning has a crucial influence on the operation and life expectancy of the hydraulic components.



OPERATING PROCEDURES

V50K HYDRAULIC MOTOR START-UP INSTRUCTIONS, CONT.

FILLING THE HYDRAULIC MOTOR

- The initial filling of the system must be carried out in such a way that all of the air can escape from the high pressure circuit and from the motor housings before the hydraulic units are operated.
- Manually fill the motor housing at the most accessible case drain port with **filtered oil**. Manually fill the high pressure line(s) with **filtered oil**. Fill the oil reservoir to the maximum level with **filtered oil** and fill the motor housing to the maximum level via the most accessible case drain port with **filtered oil**.

INITIAL START-UP

- The initial operation of the drive should permit it to rotate freely **without load**.
- The drive should initially be **operated slowly and under no load for a period of thirty minutes**.
- As the system purges itself of the air and as the hydraulic oil warms up, steadily increase the load on the drive and increase the speed of the motor.

ROUTINE MAINTENANCE

- Maintenance of the hydraulic system is limited to changing the hydraulic fluid and system filtration.
- In order to guarantee the proper function and efficiency of the hydraulic motor, the purity of the hydraulic oil over the entire operating period must comply to at least class 18/13 according to ISO 4406.
- With modern filtration technology, however, much better values can be achieved which contributes significantly to extending the life and durability of the hydraulic motor and the complete system.

CHANGING THE FILTERS

- It is recommended that the filters be changed after the initial start-up or at least 100 hours from the initial operation.
- NOTE: These recommendations are provided for guidance to ensure long service life and proper operation of your PRO-DIG® drive. However, depending on the operating conditions of the drive, it may not be necessary to adhere to these recommendations as long as the oil cleanliness level and oil viscosity specifications are strictly adhered to and monitored.

CHANGING THE HYDRAULIC FLUID

- Oil changes are carried out by first draining the reservoir, cooler and motor housings. The high-pressure fluid must be changed after 1000-2000 hours of operation, dependent on the application.
- High working temperatures and frequent cooling-down phases with low temperatures condense water and will shorten the life of the hydraulic fluid.
- The oil remaining in the high-pressure circuit itself need not be changed. Do not open up the high pressure lines if possible. The instructions regarding initial filling must be adhered to when changing the hydraulic fluid. In some applications, a complete oil change may not be necessary. the oil lost during each filter change must be replaced by fresh filtered oil.

CLEANING

- Cleaning of the hydraulic system when changing oil is normally not necessary. If the system becomes contaminated due to unusual circumstances (defect, etc.), then it must be thoroughly cleaned before recommissioning. Housings and pipelines must be flushed. If necessary, the pipelines and hydraulic units must be disassembled.

SERVICE

- Maintenance and repairs should be undertaken only by skilled personnel who are familiar and trained with the equipment. PRO-DIG® offers an excellent after-sales service capable of carrying out the work of repair and overhaul if required.
- Only spare parts specified in the PRO-DIG® spare parts catalogues should be used. The serial number stamped on the unit type plate is relevant to the configuration of the unit. Therefore, the serial number should be quoted when ordering spare parts.

OIL SELECTION AND VISCOSITY RECOMMENDATIONS

Suitable hydraulic oils are:

- Mineral oil HLP to DIN 51524
- Biodegradeable fluids upon request
- Other pressure fluids upon request

PRO-DIG® recommends only using hydraulic oils which are confirmed by the producer as suitable for use in high pressure hydraulic installations. For the correct choice of suitable hydraulic oils, it is necessary to know the working temperature in the hydraulic circuit. The hydraulic oil chosen must allow the working viscosity to be within the optimum viscosity range (as shown below).

Attention: Due to pressure and speed influences, the temperature of the leakage fluid is always higher than the circuit temperature. The temperature must not exceed 90°b0C in any part of the system. Under special circumstances, if the stated conditions cannot be observed then please consult Linde.

Recommended viscosity range for optimum performance:
15 cSt to 30 cSt

- Maximum allowable working viscosity range:
10 cSt to 80 cSt
- Viscosity limitations: 6 cSt minimum viscosity
1000 cSt maximum viscosity (Intermittent for cold starts)
- Oil temperature limitations: (-20)°b0C to 90°b0C

SET-UP INSTRUCTIONS

Your Pro-dig Planetary Auger Drive receives its hydraulic oil flow and pressure from the parent machine through the auxiliary hydraulic circuit via two quick release couplers near the end of the truck boom or excavator arm.

CAUTION: Alert yourself to the weight of the Auger Drive. Do NOT exceed the recommended lift capacity of the parent machine. Refer to you machines owners manual.

SAFETY DECAL LOCATIONS

This unit comes equipped with all safety decals in place. They are designed to help you safely operate your unit. Read and follow all safety decals.

OPERATING PROCEDURES

Before operating always ensure that the PRO-DIG® Auger Drive and auger or anchor are connected correctly to the parent machine.

DRILLING OPERATIONS

1. To begin drilling, position the auger or anchor on the ground in the desired location. Engage the parent machine's auxiliary hydraulics to rotate the auger or anchor in a clockwise direction.
2. Lower the parent machine's arm(s) to engage the auger or anchor into the ground. Use only enough down pressure to assure positive penetration of the auger. Ease up on the down pressure if the auger rotation slows down drastically or stalls. Excessive down pressure will cause the auger to stall frequently.

Note: Do not continually stall the PRO-DIG® Auger Drive! Continued stalling may cause excessive heating of the hydraulic system and possible damage to the PRO-DIG® Auger Drive.

3. As the auger or anchor digs in the ground, the parent machine's arm(s) or boom may travel through an arc. This means the operator may need to continually reposition the machine to ensure vertical application of the auger or anchor.
4. When the auger has penetrated the ground about 24" (610mm), raise the auger from the hole to clean out the loose material.
5. Once the required hole depth is reached, allow the auger to turn a few seconds at this depth to clean the hole.
6. Stop rotation of the auger and raise the auger out of the hole. Swing the auger away from the newly drilled hole. Spin the loose material off the auger.

Note: Do not reverse the auger rotation while the auger is still in the hole. The loose material will back fill the hole.

7. If necessary, repeat steps 2 through 3 to obtain a cleaner hole.

OPERATIONS TO AVOID

1. In some soil conditions or when excessive down pressure is applied, the auger may screw itself in to the ground. This can cause the auger to become stuck causing the PRO-DIG® Auger Drive to stall. If this situation occurs, reverse the auger rotation and slowly raise the auger from the hole.
 2. If the auger becomes lodged under rocks, tree roots, or other large obstructions, do not attempt to raise the auger out of the ground. See Step 1 of this section to relieve the auger.
 3. Avoid excessive side loading. This can cause damage to both the PRO-DIG® Auger Drive and the auger.
 4. Keep all auger teeth and pilot bits in good condition. Avoid using damaged teeth and holders.
- Following operation, or when unhooking, stop, set brakes, disengage power drives, shut off engine, and remove the ignition key.
 - Store the unit in and away from human activity.
 - Before long term storage, wash the unit with mild detergent and water to remove any debris and grime.
 - Do not permit children to play on or around the stored area.
 - Protect the shafts and ports with a grease or rust-inhibitor.
 - Grease bearing seals.
 - Check and tighten all bolts, nuts and screws. Paint is available from your Authorized Service Dealer.
 - When storing the unit for any length of time be sure the unit is stored with clean gear oil.

GENERAL MAINTENANCE

- Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
- Always use proper tools or equipment for the job at hand.
- Use extreme caution when making adjustments.
- Never use your hands to locate a hydraulic leak on attachments. Use a small piece of cardboard or wood. Hydraulic fluid escaping under pressure can penetrate the skin.
- Hydraulic fluid escaping under pressure can penetrate skin and cause injury.
- Fluid accidentally injected into the skin must be surgically removed within a few hours by a doctor familiar with this form of injury or gangrene may result.
- When disconnecting hydraulic lines, shut off hydraulic supply and relieve all hydraulic pressure.
- Clean hydraulic oil daily for contamination. If contamination is present, determine the source and correct the problem.
- When replacing bolts refer to this manual.
- Clean the exterior of the unit with a mild detergent and water to remove any debris and grime.
- Paint all scratched or bare metal surfaces.
- Check and tighten all bolts, nuts, and screws.
- Repair or replace any cutting head components that are damaged or worn.
- Check the gearbox for sufficient amount of oil.
- Check the PRO-DIG® Auger Drive output shaft for bends, cracks, breaks, or wear. Replace if any of these conditions appear.
- Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore you unit to original specifications. PRO-DIG® will not claim responsibility for use of unapproved parts or accessories and other damages as a result of their use.
- If equipment has been altered in any way from its original design, PRO-DIG® does not accept any liability for injury or warranty.

CHECKING AND CHANGING THE GEAR OIL

The Planetary gearbox used on your PRO-DIG® Drive Head uses a gear oil to keep the internal gears lubricated. To check and or replace the oil, follow these simple steps.

CHECKING THE GEAR OIL:

1. Make sure the PRO-DIG® Auger Drive unit is in an upright position when checking the oil.
2. Slowly loosen the oil fill-drain plug located on the under side of the gearbox. As you reach the end of the threads on the plug, oil should start to come out.
3. If you see oil starting to pour out of the port, quickly retighten the plug. This is an indication that the oil level is adequate, but in order to correctly measure the amount of oil, the gearbox should be drained and the correct amount of oil replenished. See "Changing Gear Oil" section for oil capacity.
3. Remove the drain plug and allow the oil to completely drain out.
4. Position the gearbox for filling by orientating the unit so that the same port used for draining can now be used to fill.
5. Fill the gearbox with 4.2 Gallons/15.8987 Liters of gear oil. See oil specifications below.

CHANGING THE GEAR OIL:

1. Position the PRO-DIG® Auger Drive unit in a position in which the oil can flow freely from the gearbox once the plug is removed.
2. Place a drain pan under the drain port that will hold at least one gallon of oil.

LUBRICATION RECOMMENDATIONS:

Mobil Delvac Synthetic Gear Oil 75W-90

Density @15°C	0.859	Viscosity Index:	140
Viscosity @40°C	138	Flash Point °C:	205
Viscosity @100°C	15.9	Pour Point °C:	-48

LUBRICATION AND MAINTENANCE

The oil should be changed after the first 50 hrs. of use and at 500 hr. intervals thereafter. Geardrives in auger drives require GL-5 grade EP 80/90 gear oil for lubrication. PRO-DIG® recommends that the unit be partially disassembled to inspect gears and bearings at 1000 hr. intervals.



V30K

MAINTENANCE

Below you will find some general maintenance instructions. For further information contact your authorized service dealer.

- Clean the exterior of the unit with a mild detergent and water to remove any debris and grime.
- Check and tighten all bolts, nuts and screws.
- Repair or replace any cutting head components that are damaged or worn.
- Clean the exterior and surrounding area near the hydraulic motor.
- Paint all scratched or bare metal surfaces.

TROUBLESHOOTING

In the event your PRO-DIG® Auger Drive unit malfunctions or does not appear to have enough speed or power, please refer to the section below to identify the cause of the problem and possible remedy. If the problem persists, contact your Authorized service dealer for assistance.

SLOW SPEED (RPM) OR INSUFFICIENT DIGGING POWER:

- Low oil flow. *Check parent machine specifications.*
- PRO-DIG® Auger Drive is too large for machine. *Contact your Authorized Service Dealer.*
- Check auger and teeth for excessive wear. *Replace worn auger components.*

NO OUTPUT ROTATION:

- Quick release couplers not engaged. *Check connections.*
- Quick release coupler is faulty. *Replace faulty coupler.*
- Hydraulic oil tank is low. *Fill oil tank to maximum level.*
- Planetary gear failure. *Contact your Authorized Service Dealer.*
- Machine or hydraulic pump failure. *Refer to parent machine manual.*

BAIL HOUSING LEAKING OIL:

- Hose(s) of fitting(s) leaking. *Tighten or replace.*
- Motor O-ring failure. *Replace damaged O-ring.*

OUTPUT SHAFT LEAKING OIL:

- Oil seal failure. *Contact your Authorized Service Dealer.*
- Hydraulic motor failure. *Contact your Authorized Service Dealer.*

AUGER BIT WILL NOT ENGAGE OR DIG:

- Auger bit is worn or damaged. *Replace cutting head or entire auger bit.*

NO TORQUE:

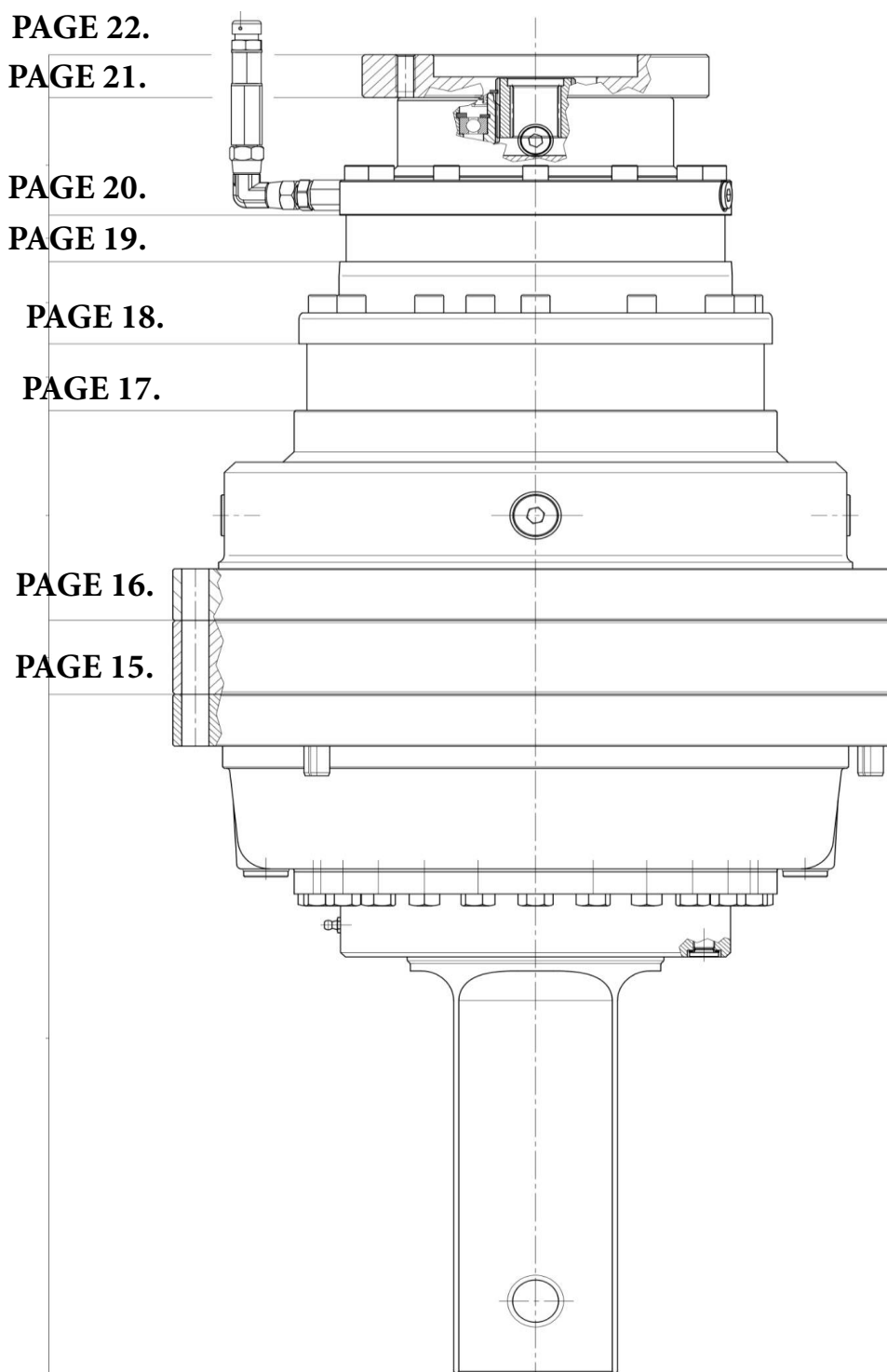
- Oil pressure is too low. *Contact your Authorized Service Dealer.*
- Drive unit is too small for parent machine. *Contact your Authorized Service Dealer.*
- Hydraulic system is overheating. *See the "Oil Overheating" section below.*

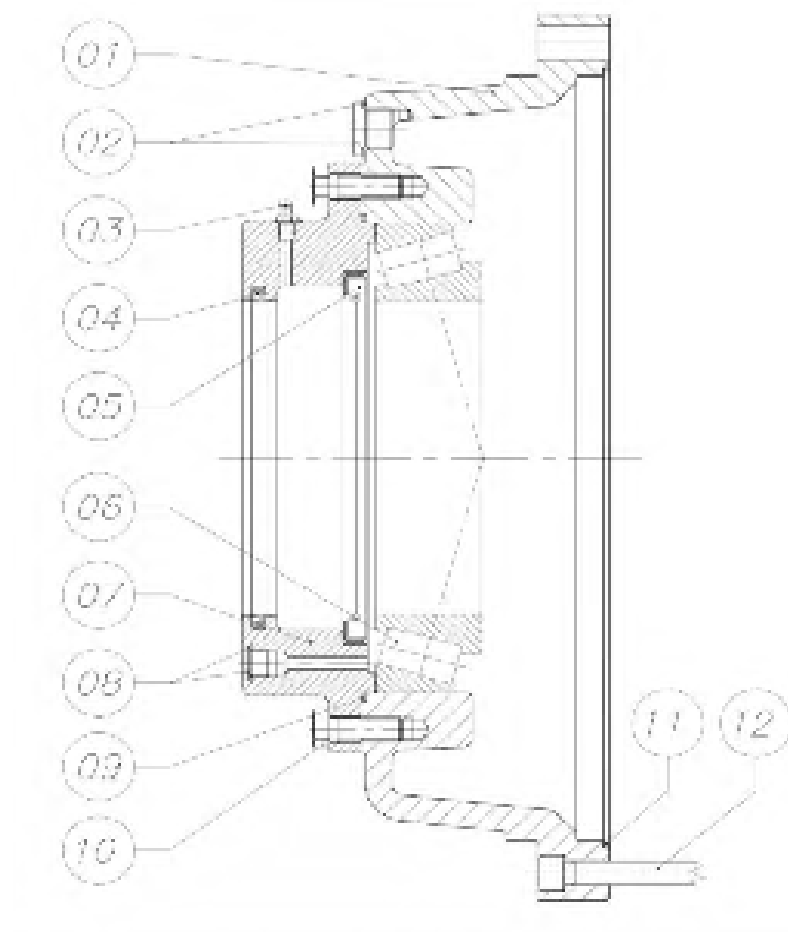
HYDRAULIC OIL OVERHEATING:

- Oil pressure is too low. *Set relief valve to machine specifications.*
- Hydraulic line is restricted. *Inspect and repair.*
- Auger continually stalling. *Limit down pressure level.*
- Hydraulic oil tank is low. *Fill oil tank to maximum level.*
- Insufficient oil capacity. *Check oil cooler.*
- Parent machine is too small. *Couple PRO-DIG® Auger Drive to larger machine.*

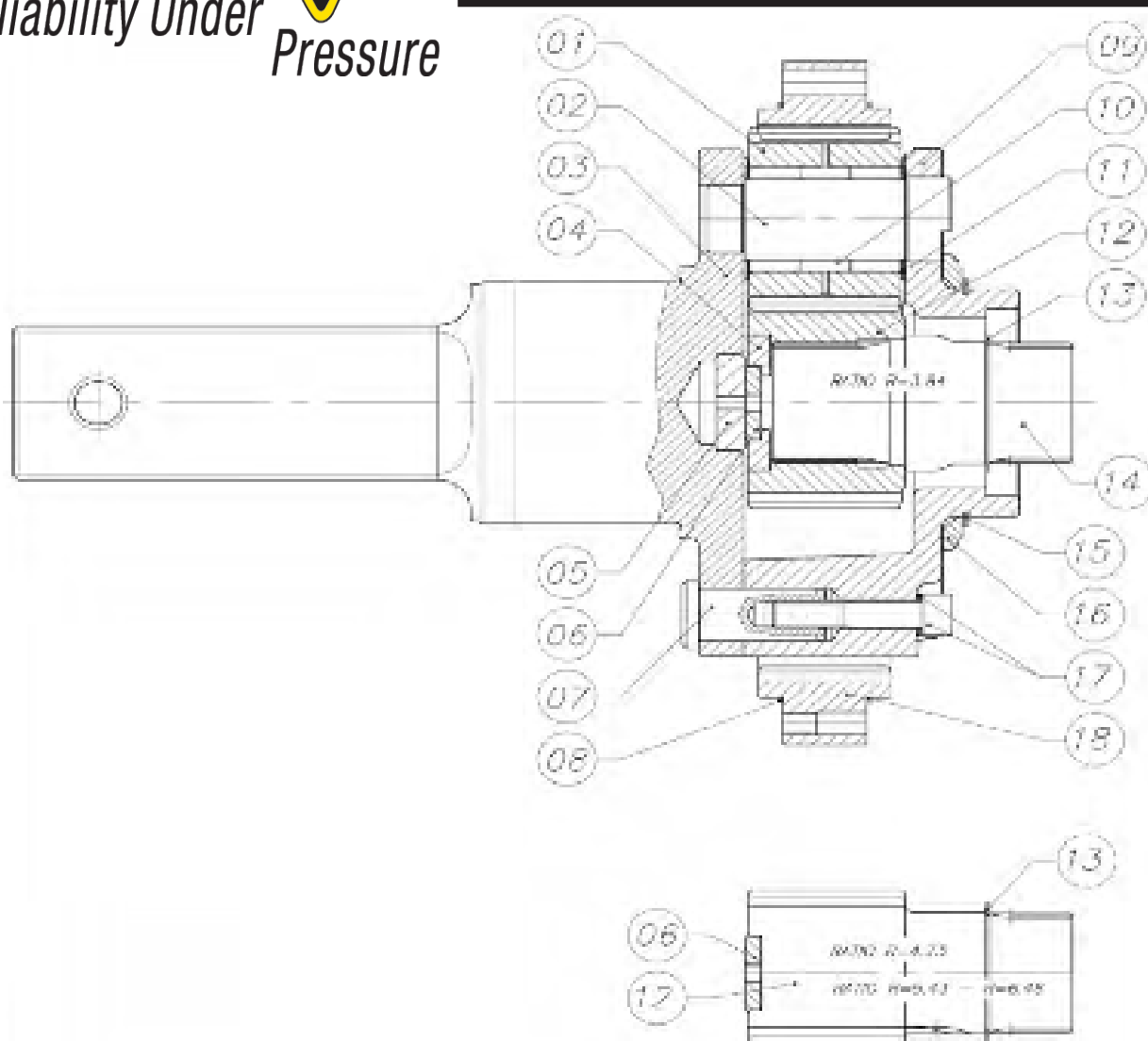
GUARANTEE AND WARRANTY

- 1 Goods manufactured, rebuilt, supplied or installed by the Company are warranted against defects in material or workmanship by the Company or its supplier for twelve months but the Company may transfer to the customer the benefit of any subsisting guarantee which the Company may hold in respect thereof. The Company shall have the option to replace, repair or withdraw any item or authorize the Customer to do so at the Company's expense but so that the Company shall not be obliged to accept any charges from Customers or others for work carried out in the warranty period if such expenditure has not been previously authorized in writing by the company. The Customer is required to return any defective item within ten days after the discovery of any defect, carriage paid, together with the Company's return/warranty form (which be provided on request) fully completed. The warranty period shall operate from the date of sale, even in the event of goods being repaired, or replaced free of charge during the warranty period. Any warranty given by the Company shall not be assignable and shall not extend to any goods which have been processed, treated or mixed or subject to any process after the goods have left the company. Warranties shall not extend to any failure, defect or damage attributable to normal wear and tear, lack of service or maintenance, use outside the scope of the manufacturer's specification, misuse, abuse or accident. In the event that a claim for repair and replacement under warranty is rejected by the Company or its supplier the items returned will be disposed of within ten days of notifying the Customer, if they remain uncollected. No goods which have been installed or used by a customer may be returned for credit or replacement should same prove to be unsuitable for any purpose. Non-warranty goods returned for inspection, report, costing or repair will also be disposed of if after a period of ten days from the Company issuing a Report thereon, the goods remain uncollected, or no written instructions are received in relation thereto.
- 2 The liability of the Company for all goods or services supplied, whether under the terms of any agreement or negligence or otherwise howsoever arising, shall be limited to the price paid and received in respect of the goods or services (as the case may be or where both are supplied the total price for the goods and services) and the liability for any loss or damage to the extent it exceeds such price aforesaid (and in any event any claim for loss of profit, third party liability, loss of production, direct revenue loss and any indirect or consequential loss whatever) is hereby excluded unless;
 - 2.1 The Customer at the time of making an order declares to the Company a special interest in the supply of the goods and agrees to pay a surcharge calculated by reference to the extent of that interest; and
 - 2.2 The Company confirms in writing that it accepts such special interest and the extent to which it may Narrow the scope of the limitation herein contained.
- 3.1 When goods are supplied to the Customer's written or verbal specification or on information Supplied by the Customer, no liability will be accepted for any damages howsoever arising as a result of such instruction or specification being incorrect and all goods are supplied on the basis that the Customer is fully responsible for and aware of the safe and correct usage, installation, security and maintenance thereof.
- 3.2 Where the Customer's written or verbal specification, information or instructions are inaccurate or incorrect in addition to the provisions of the foregoing clause 4.3.1 being applicable, the customer shall moreover make good any loss suffered by the Company and specifically, without prejudice to the generality of the foregoing, shall refund to the Company (apart from any payments required by clause 3.7 hereof) the cost of inspecting, repairing or disposing of any goods returned to the company, or in the event that the goods are of no further value, the price thereof.

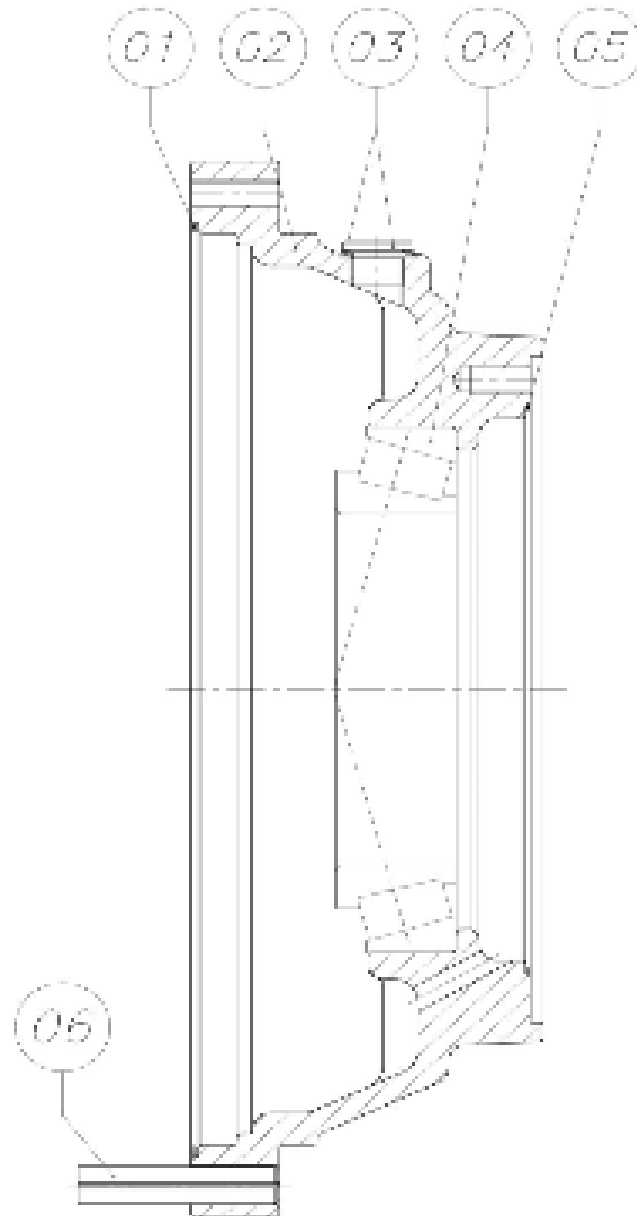




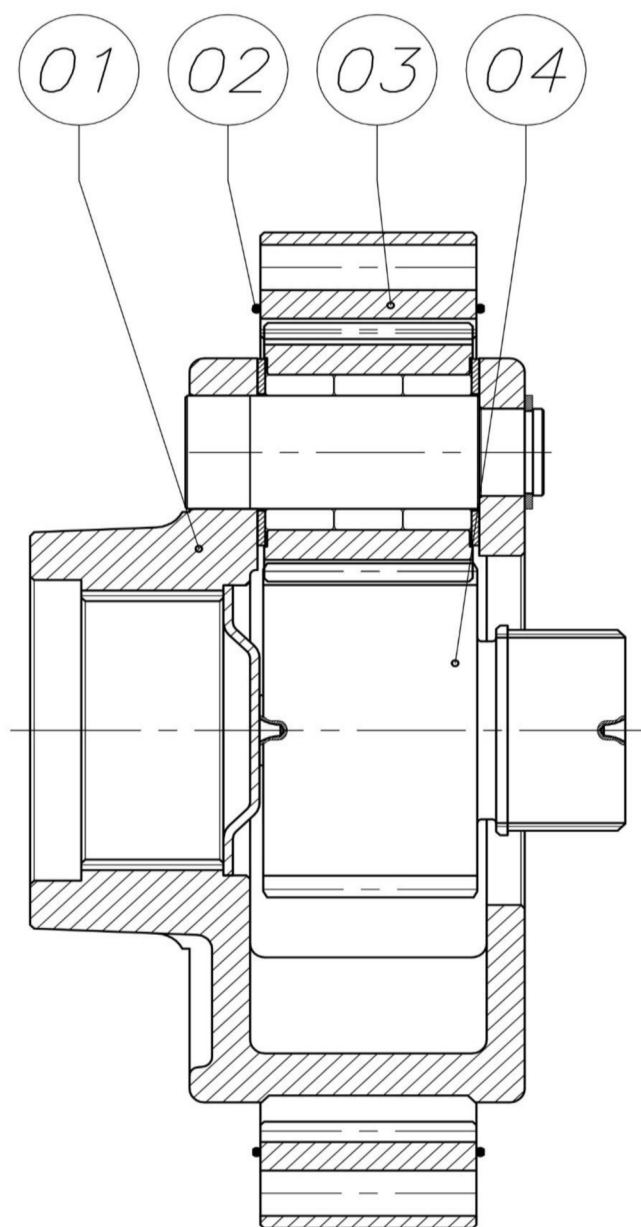
Parts List			
LEV	QTY	PART NUMBER	DESCRIPTION
1	1	1-600-222	HOUSING, LOWER
2	2	1-600-042	SOCKET FLANGE PLUG, 1/2" N
	2	1-600-075	WASHER, COPPER, 1/21N
3	1	1-600-011	LUBRICANT, OR VAXEL STEEL
4	1	1-600-013	ROTO-GLYDE RING S 56123-1600 A-42-N
5	1	1-600-227	SEALING RING, 160 X 190 X 15
6	1	0-500-058	REAR NUT, 370632
7	1	1-600-008	COUPLER COVER
8	1	1-600-022	SOCKET FLANGE PLUG, 1/4" N
	1	1-600-005	WASHER, COPPER, 1/41N
9	1	1-600-010	O-RING, 271 X 7
10	24	3-100-104	BR, M12-1.75 X 35, 10.9, B2
11	1	1-600-225	O-RING, 281 X 2
12	2	3-100-042	SCREW, M12-1.75 X 100, 12.9, B2



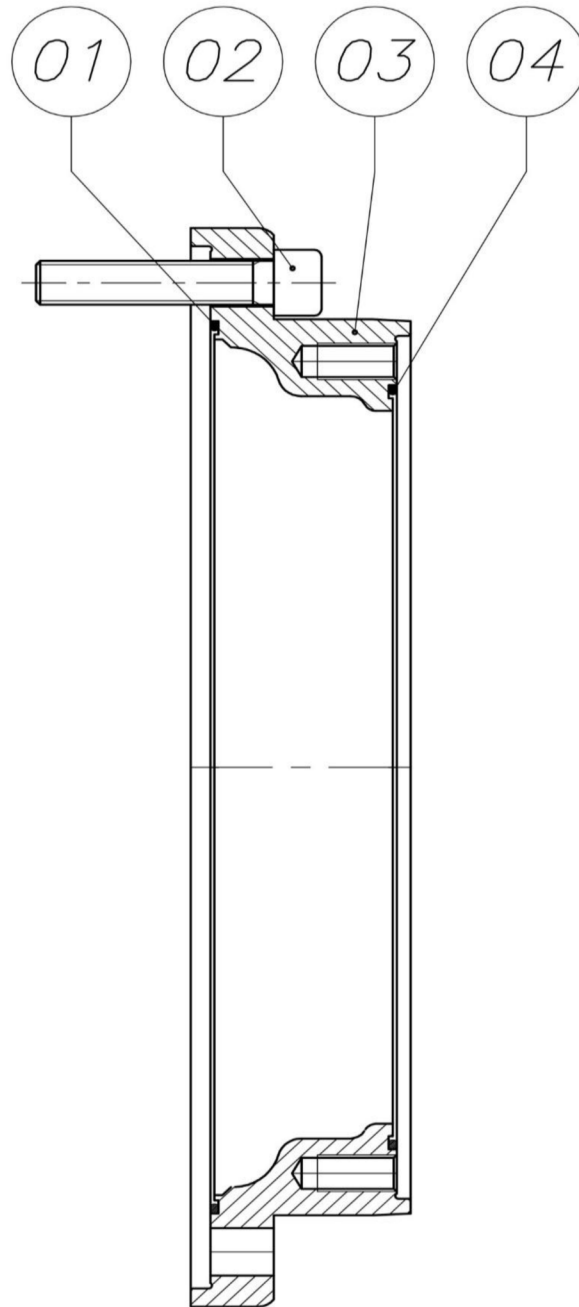
Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	3	1-800-155	PLANET GEAR, LOWER
2	3	1-800-127	PLANET GEAR PIN, LOWER
3	1	1-800-156	OUTPUT SHAFT, SHAFT
4	1	1-800-157	SUN GEAR SPACER
5	1	1-800-130	SUN GEAR SPACER, STEEL PAD
6	1	1-800-131	SUN GEAR SPACER, BRONZE PAD
7	3	1-800-132	CARRIER MOUNTING PIN
8	2	1-800-125	O-RING 281 X 2
9	1	1-800-158	OUTPUT SHAFT, CARRIER
10	9	1-800-134	ROLLER, LOWER
11	6	1-800-135	PLANET WASHER, 80MM OD X 54MM ID X 2.5MM THICK
12	1	1-800-159	SUN GEAR, LOWER
13	1	5-400-010	RET RING, 80MM, EXTERNAL, YZ
14	1	1-800-160	SUN GEAR COUPLING, LOWER
15	1	5-400-011	RET RING, 150MM EXTERNAL, YZ
16	1	1-800-138	PLANET GEAR PIN, LOCKING RING
17	3	5-100-101	SHCS, M18-2.5 X 90, 12.9, BO
	3	5-200-082	FLAT WASHER, M18
18	1	1-800-139	RING GEAR HOUSING, LOWER



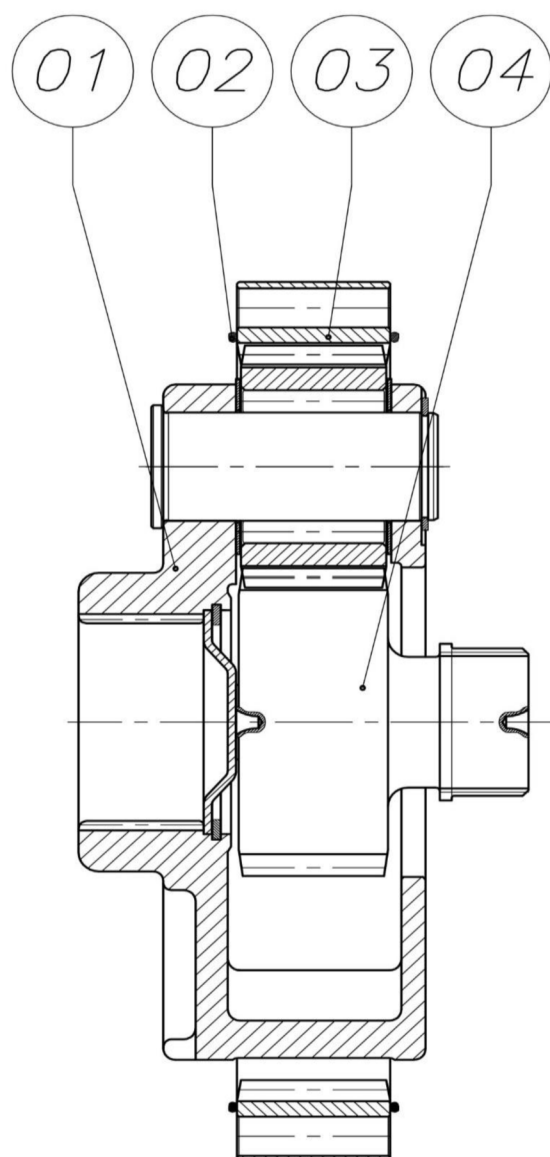
Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	1-800-125	O-RING, 26.1 X 2
2	1	1-800-140	HOUSING, INTERMEDIATE
3	4	1-800-044	SOCKET FLANGE PLUG, 1/2IN
	4	1-800-129	WASHER, COPPER, 1/2IN
4	1	9-900-001	BEARING, 3200CX
5	1	5-400-012	O-RING, 177MM X 2MM
6	2	5-400-013	SPRING PIN, 15MM CD X 60MM LONG
	2	5-400-014	SPRING PIN, 15MM CD X 80MM LONG



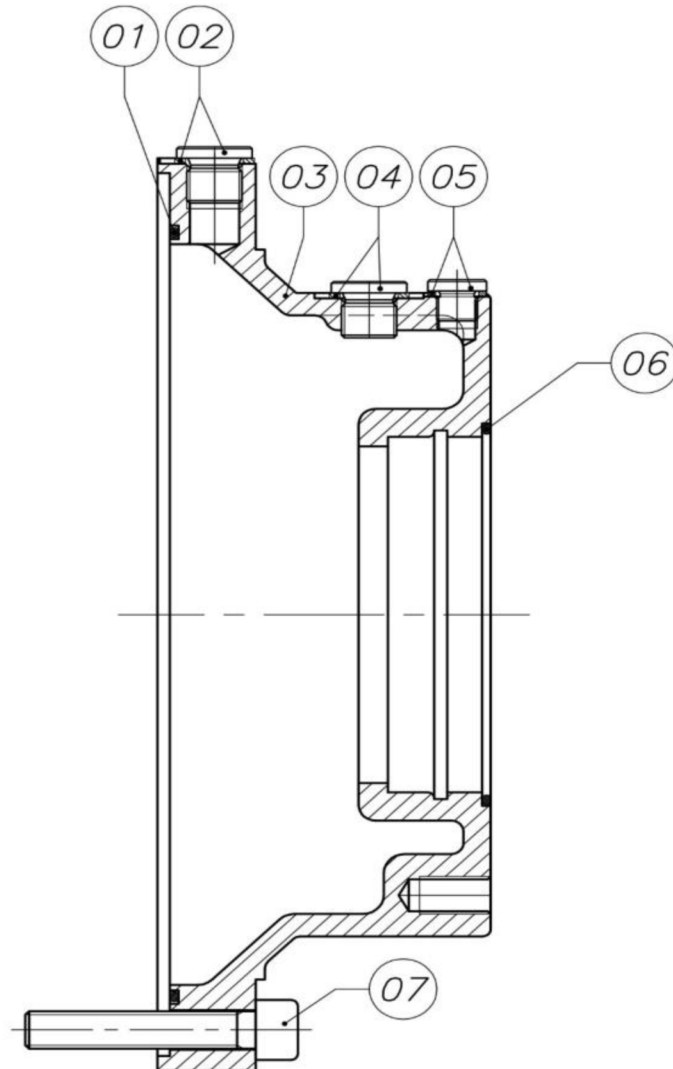
Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	1-800-141	CARRIER, LOWER
2	2	5-400-012	O-RING, 177MM X 2MM
3	1	1-800-142	RING GEAR HOUSING, UPPER
4	1	1-800-143	SUN GEAR, INTERMEDIATE



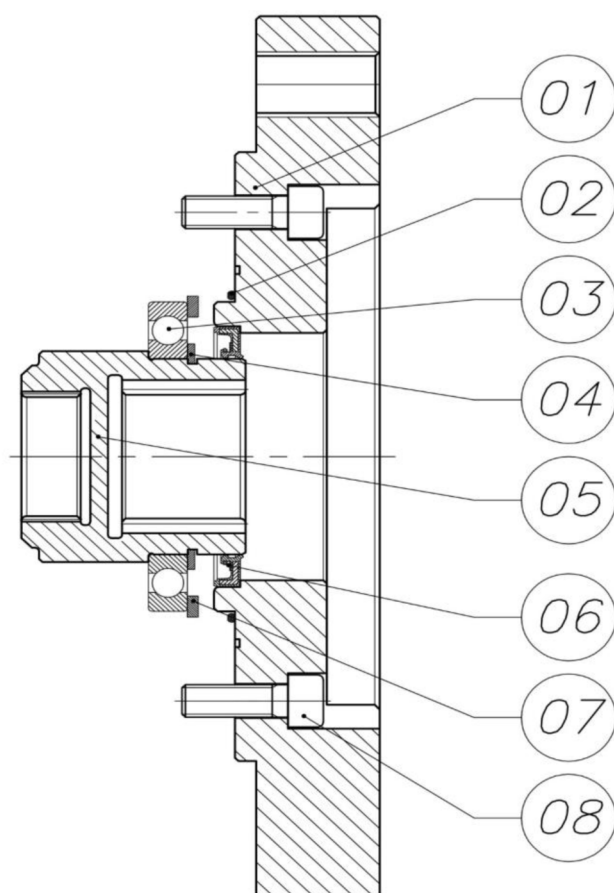
Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	5-400-012	O-RING, 177MM X 2MM
2	16	5-100-102	SHCS, M12-1.75 X 95, 12.9, BO
3	1	1-800-144	HOUSING, UPPER
4	1	5-400-015	O-RING, 171MM X 2MM



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	1-800-161	CARRIER, UPPER
2	2	5-400-015	O-RING, 171MM X 2MM
3	1	1-800-146	PLANET GEAR, UPPER
4	1	1-800-162	SUN GEAR, UPPER



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	5-400-015	O-RING, 171MM X 2MM
2	2	1-800-012	SOCKET FLANGE PLUG, 1/4IN
	2	1-800-006	WASHER, COPPER, 1/4IN
3	1	1-800-148	HOUSING, INPUT SUPPORT
4	2	1-800-012	SOCKET FLANGE PLUG, 1/4IN
	2	1-800-006	WASHER, COPPER, 1/4IN
5	1	1-800-149	SOCKET FLANGE PLUG, 1/8IN
	1	1-800-150	WASHER, COPPER, 1/8IN
6	1	5-400-016	O-RING, 154MM X 2MM
7	12	5-100-103	SHCS, M10-1.5 X 80, 12.9, BO



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	1-800-163	OUTPUT COVER
2	1	5-400-016	O-RING, 154MM X 2MM
3	1	1-800-004	BEARING, 16012
4	1	5-400-017	RET RING, 60MM, EXTERNAL, YZ
5	1	1-800-164	SUN GEAR COUPLING, UPPER
6	1	9-100-005	OIL SEAL, 80MM X 60MM X 7MM
7	1	5-400-018	RET RING, 95MM, INTERNAL, YZ
8	8	5-100-050	SHCS, M10-1.5 X 30, 12.9, BO

NOTES:



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