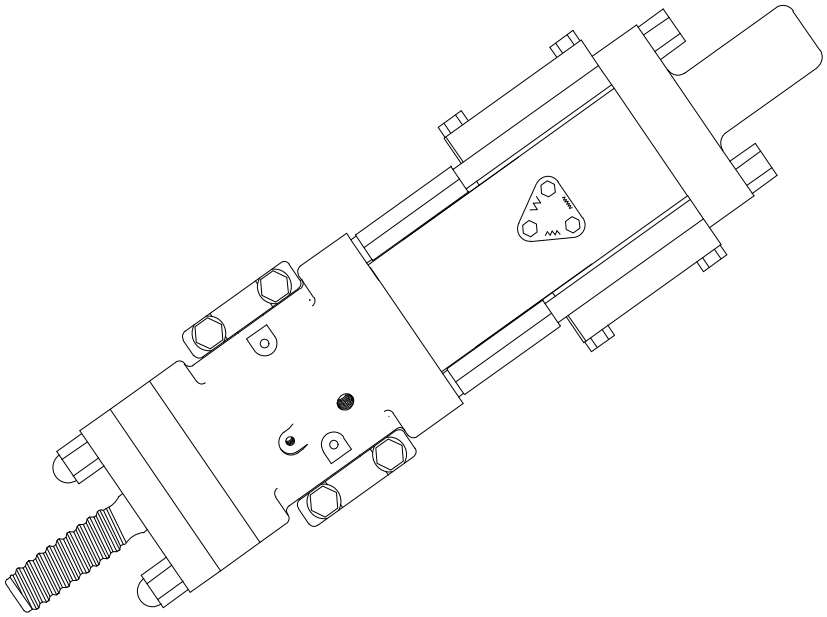
SERVICE AND MAINTENANCE MANUAL

TE500

HYDRAULIC ROCK DRILL

Blasthole and Foundation Drilling



TEI ROCK DRILLS
MONTROSE, COLORADO

January 1998

SERVICE MANUAL
FOR TE500 HYDRAULIC DRILL

This manual contains instructions for the maintenance, troubleshooting, and field repair of the TEI Rock Drill TE500. It is intended to help you maintain the drill and perform on-site repairs. Read and understand this manual before operating or servicing this machine. Keep this manual handy for future reference.

☐ WARNING

BOTH OPERATOR AND SERVICE PERSONNEL MUST READ THIS SERVICE MANUAL, PARTICULARLY THE WARNINGS AND CAUTIONS IN SECTION 2, BEFORE OPERATING THIS EQUIPMENT. YOUR FAILURE TO DO SO MAY RESULT IN DANGEROUS PRACTICES WHICH CAN CAUSE SERIOUS PERSONAL INJURY.

TEI ROCK DRILLS

The Hydraulic Drill described in this literature is manufactured to TEI Rock Drill's exacting standards.

For maximum utilization and efficiency in operating this equipment, we urge you to thoroughly read the entire contents of this manual before you begin to drill.

ADDITIONAL MANUALS AND MAINTENANCE VIDEO AVAILABLE

Additional copies of this manual are available for purchase from TEI Rock Drills. To order please specify equipment model and serial number, quantity desired, type of manual, and remit $25.00 per manual with the order. Make check payable to TEI Rock Drills and mail to:

TEI Rock Drills
P.O. Box 1309
Montrose, Colorado 81402

TE500 SERVICE MANUAL

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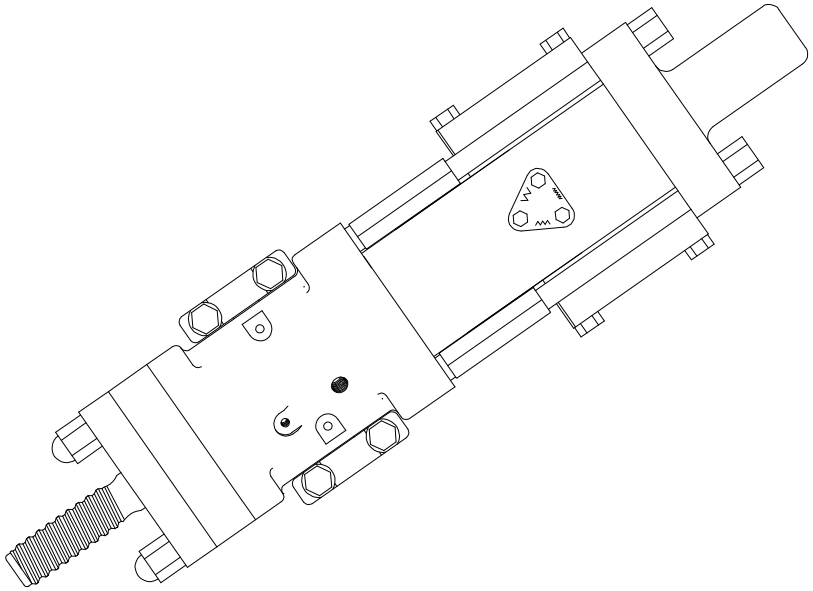
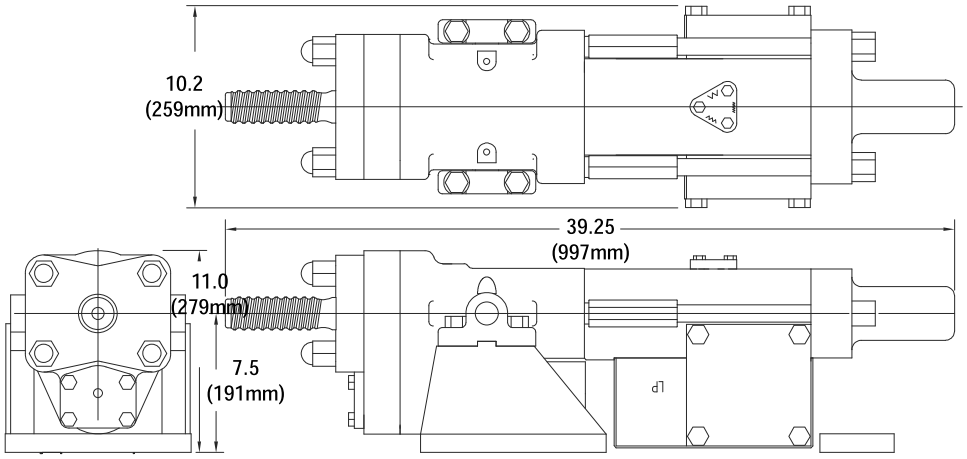
INTRODUCTION
Section 1



BEFORE ATTEMPTING MAINTENANCE OR REPAIR OF ANY COMPONENTS ON THIS MACHINE, READ THE WARNINGS AND CAUTIONS LISTED IN SECTION 2

TE500 Hydraulic Drill Specifications



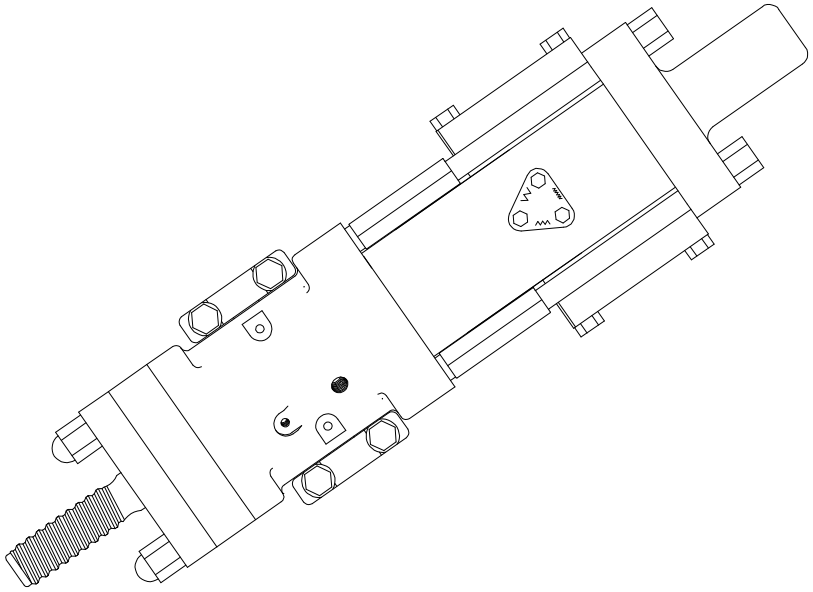
Specifications and Performance

	U.S.	Metric
Supply Pressure	2500 PSI	172 bar
Impact Energy	160-300 ft/lbs	218-408 J
Impact Frequency	2500-4000 BPM	2500-4000 BPM
Rotation Speed	0-250 RPM	0-250 RPM
Rotation Torque	0-550 ft/lbs	0-750 nM
Drill Steel Size	T-38 or T-45	T-38 or T-45
Total Weight	406 lbs.	185 kg.

Recommended Use

Primary and Secondary hole drilling of 2 ½"ø (64mm) to 3 ½"ø (90mm) holes in all rock formations including fractured overburden, foundations, and earth anchors.

PRECAUTIONARY NOTICES
Section 2



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OPERATOR WARNINGS

Your first consideration, when servicing your TE500, must be your personal protection and that of others. Correct servicing is a matter of being completely familiar with your machine and the job it is intended to do. Carefully read and understand the warnings listed below, and most of all remember to apply good common sense at all times.

1. DO NOT OPERATE DRILLING CONTROLS UNLESS YOU ARE THOROUGHLY FAMILIAR WITH FUNCTIONS.

2. DO NOT OPERATE THE TE500 HYDRAULIC DRILL UNTIL ACCUMULATORS HAVE BEEN CHARGED.

3. WEAR A PROTECTIVE HELMET AND EYE PROTECTION WHEN ON OR NEAR THE DRILL CARRIER.

4. WEAR NOISE-REDUCING EAR PROTECTORS WHEN NEAR THE MACHINE FOR EXTENDED PERIODS WHILE THE MACHINE IS RUNNING.

5. DO NOT ATTEMPT LUBRICATION OR SERVICE WHILE MACHINE IS RUNNING.

6. BE SURE THE HYDRAULIC AND PNEUMATIC SYSTEMS ARE NOT PRESSURIZED BEFORE LOOSENING ANY CONNECTIONS OR PARTS.

7. REMOVE DRILL STEEL AND LOWER THE DRILL TO CENTRALIZER BEFORE TRAMMING.

8. BEFORE STARTING THE ENGINE, BE SURE ALL HYDRAULIC CONTROLS ON THE DRILL AND CARRIER ARE IN THE OFF OR NEUTRAL POSITION.

9. BE SURE ALL HYDRAULIC HOSE CONNECTIONS ARE TIGHT, AND HOSE RETAINERS IN PLACE.

10. KEEP ALL PERSONNEL AWAY FROM THE HOLE WHILE DRILLING IS IN PROGRESS.

11. BEFORE REDRILLING ANY BLASTHOLE, MAKE SURE NO EXPLOSIVES HAVE BEEN LEFT IN THE OLD HOLE.

12. DO NOT STRIKE THE DRILL STEEL TO DISLODGE IT WHILE THE DRILL IS OPERATIONING. FRAGMENTATION OF THE DRILL STEEL MAY RESULT.

13. BE SURE THE DRILL STEEL COUPLING DOES NOT UNTHREAD TOTALLY FROM BOTH DRILL STEEL AND SHANK.

14. IF BIT BECOMES PLUGGED, DETACH BIT FROM STEEL TO REMOVE OBSTRUCTION. NEVER HAMMER ON BIT OR STEEL. FRAGMENTS CAN PRODUCE SERIOUS INJURY.

15. BEFORE ATTEMPTING TO REMOVE DRILL FROM FEED, RELIEVE STANDING PRESSURE.

16. USE CAUTION WHEN CHECKING FOR LEAKS. FLUID UNDER PRESSURE MAY PENETRATE THE SKIN.

17. DRILL AND FEED MUST BE IN HORIZONTAL POSITION FOR DISASSEMBLY.

18. IF RIG IS TO BE OPERATED WITH DRILL DISMOUNTED, SECURE AND CAP ALL LOOSE HOSES.

19. DO NOT REMOVE THE ACCUMULATOR COVERS BEFORE COMPLETELY BLEEDING OFF THE GAS CHARGE IN THE ACCUMULATOR.

20. THOROUGHLY TEST ALL REPAIRS BEFORE PUTTING EQUIPMENT INTO SERVICE.

EQUIPMENT CAUTIONS

The following are good practices to observe for protecting the equipment and drills from damage, and to provide maximum life of the machine:

1. MAINTENANCE OF TE500 HAMMER, BEARINGS, ACCUMULATORS, VALVE ASSEMBLY OR STROKE CONTROL MUST BE PERFORMED IN A CLEAN SHELTERED AREA. THE ONE OVERRIDING RULE IN MAINTAINING HYDRAULIC EQUIPMENT IS CLEANLINESS. PREVENTION OF CONTAMINATION IN HYDRAULIC FLUID IS THE MOST IMPORTANT FACTOR IN MAINTAINING HIGH PERFORMANCE IN TODAYS HYDRAULIC EQUIPMENT. AT ONE TIME WHEN MACHINES OPERATED AT LOW SPEEDS AND LOW TEMPERATURES, CLEANLINESS WAS A VIRTUE, TODAY IT IS A NECESSITY.

2. KEEP THE DRILL LUBRICATED. APPLY GREASE DAILY, OR WHEN INDICTED (MORE OFTEN IN HOT CLIMATES) TO THE GREASE FITTINGS AT THE CHUCK END OF THE DRILL.

3. PERIODICALLY INSPECT HOSE RETAINERS AND HOSES FOR INDICATION OF WEAR, LOOSENESS, CRACKING, OR FRAYING.

4. FREQUENTLY CHECK ALL BOLTS, NUTS AND ADJUSTMENTS FOR PROPER TENSION.

5. BE SURE THE HYDRAULIC RESERVOIR IS ALWAYS FILLED TO THE RECOMMENDED LEVEL WITH THE PROPER TYPE HYDRAULIC FLUID. DO NOT MIX TYPES OF FLUID.

6. KEEP ALL BITS SHARP AND PERIODICALLY CHECK FOR BROKEN OR LOOSE CARBIDES.

7. EXCESSIVELY WORN THREADS ON THE DRILL STRING CAN CAUSE PREMATURE WEAR AND BREAKAGE OF NEW PARTS MATED WITH THE STRING.

8. DO NOT OPERATE THE DRILL ROTATION AND FEED AT FULL THROTTLE UNTIL SURE OF ROCK CONDITIONS. OVER FEEDING AND OVER ROTATION CAN CAUSE BREAKAGE OF DRILL ROTATION PARTS AND THE DRILL STRING.

9. BEFORE REMOVING ANY LINES OR HOSES, TAG EACH TO FACILITATE REASSEMBLY.

10. CAP OR PLUG ALL HYDRAULIC AND PNEUMATIC CONNECTIONS AFTER DISASSEMBLY TO PREVENT CONTAMINATION OF THE SYSTEM.

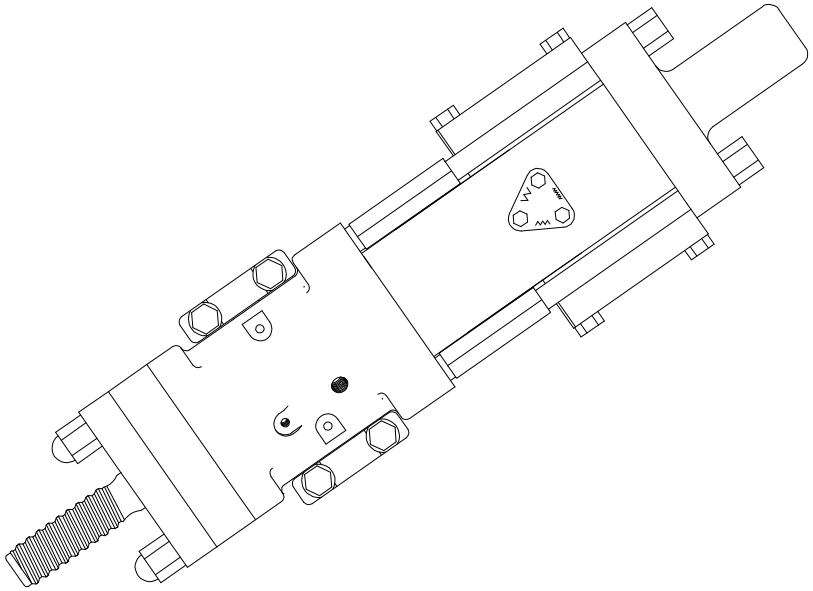
11. CLEAN THE EXTERIOR OF ALL PARTS AND HOSE CONNECTIONS BEFORE REMOVING.

12. DO NOT OPERATE THE TE300 HYDRAULIC DRILL UNTIL ACCUMULATORS HAVE BEEN CHARGED.

13. BEFORE REASSEMBLING HYDRAULIC COMPONENTS, CLEAN ALL METAL PARTS IN A NONFLAMMABLE CLEANING FLUID.

14. THOROUGH CHECKS MUST BE MADE OF ALL REASSEMBLIES TO BE SURE THEY ARE ASSEMBLED PROPERLY ACCORDING TO INSTRUCTIONS. DO NOT DRILL UNTIL ALL CHECKS HAVE BEEN MADE.

MAINTENANCE
Section 3



BEFORE ATTEMPTING MAINTENANCE OR REPAIR OF ANY COMPONENTS ON THIS MACHINE, READ THE WARNINGS AND CAUTIONS LISTED IN SECTION 2

GENERAL TIPS ON DRILL MAINTENANCE

These general instructions will be helpful when using the maintenance and adjustment procedures outlined on the following pages.

1. Cover all hydraulic or air openings with an appropriate dust cover whenever any hydraulic or air openings are exposed. A clean part in a dirty opening does little good.

2. Carefully examine all filters for evidence of metal or rubber particles. Replace the filters as necessary.

3. Before servicing the drill or any part of the hydraulic system, neutralize the pressure in the complete hydraulic system.

4. Before reassembling hydraulic components, clean all metal parts in a nonflammable cleaning fluid. Carefully lubricate all components to aid in reassembly.

5. Thorough checks must be made of all reassemblies to be sure they are assembled properly according to instructions. Do not drill until all checks have been made.

6. Frequent inspection of the TE500 is very good practice. A minor adjustment can many times prevent costly repairs later on.

7. Maintenance of hammer, bearings, accumulators, valve assembly or stroke control must be performed in a clean and sheltered area.

8. Maintenance of chuck end or rotation assemblies may be performed on a mounted drill.

9. It is not necessary to bleed off nitrogen charge in accumulators unless maintenance is performed on accumulator assemblies themselves.

IMPORTANT

All TEI Rock Drill parts are manufactured with care and precision. Each part is heat treated for strength and carefully inspected before and after assembly. Every step has been taken to provide you with the quality product you expect. Eventually some parts of your drill will become worn. The description of damaged parts in this section is general, and is intended to help the serviceman in the field to service and repair the TE500. It is not meant to imply that all such parts will fail in the described manner, or that damage is due to faulty manufacture.

DAILY MAINTENANCE

Normal operation of the TE500 requires daily greasing of the front rotation housing every 2 percussion hours using a moly disulfide high temperature type grease. This is most important to prevent galling and failure of the rotation gears and bearings. During the first week of operation or after replacement of the accumulator diaphragm, the charge pressure must be checked daily. In addition, all hydraulic hoses must be inspected for chafing and pinched or damaged sections. The hydraulic oil must be checked for proper level and color. A white or milky appearance indicates water contamination. Continued operation with contaminated oil will damage both the drill and pump. Hydraulic oil must be equivalent to Mobil DTE-24 through DTE-26 depending on ambient operating temperature.

WEEKLY MAINTENANCE

During the weekly check, the front end cap (TE50234) or water swivel (TE50234WSX) must be removed to check the chuck. Pull the shank from the front housing. Remove the chuck (TE507) and thrust block (TE50161). Check for burning of the splines indicating lack of lubrication. The thrust block (TE50161) must be checked for cracks and deformation at the shank spline contact surface. Replace if worn more than 1/16"(2mm) into face. Charge pressure of the accumulator must also be checked weekly. Excessive cab vibration and/or hose jumping and overheating of the hydraulic oil indicates a blown or uncharged accumulator. The high pressure accumulator should be charged between 900 to 1050 psi using nitrogen gas. The low pressure accumulator requires 95 to 125 psi charge pressure depending on the system back pressure.

CAUTION: Remember that disassembly beyond the removal of the chuck end cap or removal of the rotation motor should be done in a clean, dust-free area. It is essential that no dirt particles enter the internal part of the drill and especially in the hydraulic fluid.

MONTHLY MAINTENANCE

With the shank removed as above, remove the 4 bolts retaining the front retaining plate (TE50557) to the rotation housing. The front plate is then removed. Check the pinon thrust bearings (RB352610) for wear and breakage. Replace if necessary. Push the chuck driver and pinion gear sideways to check bearing wear, if motion is greater than 1/32"(1mm) it requires replacement of the chuck driver and pinion bearings. Check the inner bearings as above.

SIX MONTH CHECK

Every six months or 1000 percussion hours, the drill must be inspected for hammer and bearing/seal wear. This is accomplished by first cleaning dirt and rock dust from the cylinder area. Make certain that all contamination is removed from the side rods and the cylinder surface. Remove the high and low pressure hoses at the rear and plug. Remove the nuts from the side rods. Slide the backhead (TE502) toward the rear away from the cylinder (TE501). This exposes the rear hammer seal housing (TE50299R). Now slide the cylinder away from the rotation housing (TE5017). Using a brass hammer, tap the hammer (TE509) on the impact face to drive the rear seal housing from the cylinder. When this is done, reverse the process, taping on the rear of the hammer to drive the front seal housing (TE50299F) out. At this time, the hammer is free in the cylinder and can be removed. Check for cracks and galling on the hammer surface. The bearing/seal area should be highly polished. Check the front and rear bearings for galling and wear. Inspect the hammer seals for deformation and erosion. Extrusion of the seal material way from the pressure side indicates overheated operation. Erosion of the seal surface indicates high pressure failure as when operated at full pressure when not drilling. Replace the hammer if over 1/16"(2mm) wear is observed on the hammer face or .002"(.05mm) wear is measured where the seals and bearings ride. Unbolt the front cover (TE50281) after removing the shank and front housing. Slide the front cover off of the pinion and chuck driver. Check for side clearance wear of the chuck driver (TE50275) to the bearing (TE50163). Replace bearing if more than 1/32"(1mm) radial clearance is measured. Remove the chuck driver (TE50275), pinion gear (TE50442), and bearings (RB352610). Check for wear and galling of the bearing surfaces. Replace bearings if case is damaged or rollers fall out. Pull the thrust bearing (TE50295) from the housing. Inspect for wear and replace if any surface is worn more than 1/32"(1mm). Reassemble is reverse order.

YEARLY INSPECTION

In addition to the above inspections, the shuttle valve (TE5016) should be inspected every year or 2000 percussion hours. Clean the valve body and remove the tie bolt (TE5098). Then remove the front (TE50234F) and rear (TE50234R) valve caps. Using a brass drift, tap the valve out of the valve body. Remove the front (TE50756F) and rear (TE50756R) bushing. Inspect the valve for wear and galling. Check for deformation of the valve ends where it contacts the caps. Replace if any parts are galled or deformed.

COMPLETE INSPECTION AND REBUILD

Further disassembly of the drill requires removal of the accumulator assemblies. First bleed the charge pressure by opening the gas valve. Next remove the 12 bolts retaining the accumulator bodies to the cylinder and valve body. The accumulator base (TE5019) is attached to the cover (TE5023) with 12 socket head cap screws. Separation of the two halves exposes the diaphragm. Replace the diaphragm.

The valve body (TE5015) is attached to the cylinder (TE501) with four bolts. Remove the bolts and separate the two parts, retaining the o-ring seals. The rotation motor (TE50538) is removed by unbolting the two retaining bolts and sliding rearward. This motor is replaced as a unit but the shaft seal can be replaced separately.

The most critical step in reassembling the drill is the alignment of the valve body (TE5015) on the cylinder (TE501). This is accomplished by first lightly tightening the four bolts (BH9U1244) retaining the cylinder to the valve body (make sure that the o-ring seals are in place). At this time the cylinder and valve body are together but not securely clamped. Reassemble the accumulator halves with new diaphragms. Install the accumulator assemblies on the cylinder/valve body. Partially tighten the accumulators to align the cylinder with the valve body. Loosen the four attaching bolts if necessary. The cylinder and valve body sides should be in-line with no gap between them and the accumulator bases. Tighten attaching bolts and accumulator bolts (BH12U1024). The rest of the drill is now ready for assembly.

Slide the hammer (TE509) into the cylinder bore with the large diameter toward the front, checking for free motion (no edges or interference). Next, aligning the oil relief holes with the drain holes in the cylinder, slide the front bearing/seal carrier (TE50299F) onto the hammer and tap into the cylinder using a brass hammer or wood block. Again check for free motion of the hammer in the bearing and cylinder. Finally, slide the rear bearing/seal carrier (TE50299R) over the rear of the hammer and tap into place aligning the oil relief holes in the carrier housing with the drain holes in the cylinder. Check the hammer for free motion in the cylinder bore. With new seals, the hammer will require tapping with the brass hammer in order to move. A final check will be made after assembly on the feed when oil pressure is available.

With the o-ring seals lightly greased, stick the cylinder o-ring end seals (OR240H) in place. Check the o-ring seals on the bearing/seal housings. Slide the cylinder assembly into the rotation housing. Next slide the backhead (TE502) over the rear bearing/seal housing. Install both side rods (TE503) with hex flats inward. Check that the o-ring seal (OR240H) between the rotation housing or backhead and cylinder did not slip down. Tighten the side rod nuts (TE50548) evenly, making sure that the rotation housing and backhead ground surfaces are flat on the ends of the cylinder. Using a drift or screwdriver, push the hammer to make sure that it is free and not in a bind.

The rotation housing can then be assembled by replacing the rotation motor (TE50538) and gearing. The seal carrier (TE50717) with a new seal is pushed in place. The shank seal faces the inside of the housing to retain the grease. Press the chuck driver bearing (TE50163) into the rotation housing (TE5017). Push the thrust plate (TE50295) into the bore.

Install new bearings as needed for the chuck driver (TE50275) and pinion gears (TE50442). Push the chuck driver and pinion gears into the housing. Place the front plate (TE50281) over the chuck driver and pinion to align the bearings. Bolt into place with the 8 cap screws. At this time the drill can be pinned to the mounting slide and the hydraulic hoses replaced. Turn on the rotation circuit to check for free rotation of the chuck driver. Insert a thrust block (TE50161) and chuck (TE507) into the chuck driver with the beveled edge of the thrust block facing out. Then insert the shank (TE5S49T38), thrust block (TE50161), water swivel (TE50234WSX) or end cap (TE50234), tightening the front side rod nuts evenly. Again check for free rotation of the shank.

With the hammer hoses connected, charge the accumulators to 900 to1050 psi high pressure and 95-125 psi low pressure. Ease the hammer lever forward to check free oscillation of the hammer. The initial start with new seals may require 300 psi to start motion. After the hammer has worked, free oscillation should start at 150-200 psi. Connect the flushing air hose and run the drill to check full operation.

For further assistance contact TEI Rock Drills at 1-800-777-3745 U.S.A. or fax us at (970)249-1999. Response to your inquiry will be made within 24 hours.

TE500 FACTORY RECOMMENDED PARTS REPLACEMENT SCHEDULE

PART #	DESCRIPTION	QTY	HRS W/GOOD CONDITIONS	HRS W/SEVERE CONDITIONS
TE30960F	Seal, Water Swivel	3 EA	400 HRS.	200 HRS.
TE50350	Diaphragm	2 EA	800 HRS.	400 HRS.
TE50161	Block, Thrust	2 EA	800 HRS.	400 HRS.
TE50778	Seal Kit	1 EA	1600 HRS.	800 HRS.
TE507	Chuck	1 EA	1600 HRS.	800 HRS.
TE50299F	Housing	1 EA	1600 HRS.	800 HRS.
TE50299R	Housing	1 EA	1600 HRS.	800 HRS.
TE50295	Bearing, Thrust	1 EA	1600 HRS.	800 HRS.
TE50163	Bearing	2 EA	1600 HRS.	800 HRS.
TE509	Hammer	1 EA	1600 HRS.	800 HRS.
RB352610	Roller Bearing	4 EA	1600 HRS.	800 HRS.
TE5016	Valve, Automatic	1 EA	3200 HRS.	1600 HRS.
1050094	Valve, High Pressure	2 EA	800 HRS.	400 HRS.
TE503	Side Rod	2 EA	1600 HRS.	1200 HRS.
TE5098	Bolt, Valve	1 EA	1600 HRS.	1200 HRS.
TE50548	Nut, Side Rod	2 EA	1600 HRS.	1200 HRS.
NL9U18	Nut	1 EA	1600 HRS..	1200 HRS.
TE50275	Chuck Driver	1 EA	3200 HRS.	2400 HRS.
TE50717	Seal Housing	1 EA	1600 HRS.	1200 HRS.
TE50442	Pinion Gear	2 EA	3200 HRS.	2400 HRS.
TE50538	Hydraulic Motor	2 EA	3200 HRS	1600 HRS.

HYDRAULIC OIL SPECIFICATIONS

	Mobil DTE 24	Mobil DTE 25	Mobil DTE 26
Product Number	60262-3	60263-1	60264-9
Gravity, API	30.4	28.4	27.5
Specific Gravity	0.874	0.885	0.890
Pour Point, ºC (ºF), max	-23 (-10)	-23 (-10)	-23 (-10)
Flash Point, ºC (ºF), min	202 (395)	202 (395)	204 (400)
Viscosity, cSt at 40ºC cSt at 100ºC SUS at 100ºF SUS at 210ºF	32 5.3 165 44	46 6.7 238 49	68 8.5 335 55
ISO Viscosity Grade	32	46	68
Viscosity Index	95	95	95
Rust Protection, ASTM D 665, A B	Pass	Pass	Pass
Color, ASTM D 1500, max	3.5	4.0	4.0

SYNTHETIC GREASE SPECIFICATIONS

Product:	Mobil 1 Synthetic Grease	Drop Pt. °F, min.:	550
Product Number:	53201-0	SUS @ 100°F:	1100
NLGI Grade:	2	SUS @ 210°F:	114
Soap Type:	Lithium Complex	cSt @ 40°C:	220
Penetration @ 77°F Wrked:	280	cSt @ 100°C:	23.8
Struct:	Smooth/Slight Tack	Color Visual:	Red

TE500 TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	REMEDY
A. Drilling rate falls off quickly, supply hoses pulsate excessively, hoses heat up, drill vibrates excessively	High pressure accumulator has lost pressure	Recharge or replace high pressure accumulator diaphragm or fill valve
B. Drill bounces and vibrates excessively	Too little feed pressure	Adjust feed compensator relief valve
	High pressure accumulator has lost pressure	Replace high pressure accumulator diaphragm or fill valve
C. Rotation speed rapidly drops or rotation fails to work	Hydraulic lines blocked	Check hoses for obstructions, kinking; replace
	Failure of rotation motor or drill rotation assembly	Check rotation motor and rotation assembly; replace worn parts
	Broken shank	Replace shank; check related parts for damage
	Loss of pressure due to leakage	Check hoses and fittings for leaks; replace
D. Loss of blowing air	Plugged drill bit	Detach bit from steel and remove obstrution ☐ WARNING: DO NOT HAMMER BIT OR STEEL
	Air line to drill has been interrupted	Check blowing system
E. Drilling rate decreases slowly but steadily	Dull or broken drill bits	Sharpen bits; periodically check for broken or loose carbides
	Accumulators not charged to correct pressures	Check charging pressures; charge if necessary
	Oil temperature too high	Check hydraulic system
	Hydraulic pump not maintaining pressure	Check pump; replace if necessary

PROBLEM	PROBABLE CAUSE	REMEDY
F. Drilling rate falls off quickly	Hydraulic lines have been torn or crushed	Check hydraulic system
	Severe hydraulic leakage	Check and replace faulty part
	Shank failure	Replace shank and check related parts for damage
G. Hammer oscillation stops immediately or won't start	Hammer or bearings inside cylinder are damaged	Inspect cylinder and hammer; replace assembly if necessary
	Stuck or broken shuttle valve	Remove tie rod and check shuttle valve
	Stuck or broken hammer (Oil will leak from rotation housing and backhead if hammer is broken)	Disassemble drill to check hammer and bearings
	Supply or return hose damaged or clogged	Check for drill supply pressure at console
H. Drill Hammers, but won't rotate	Hose to rotation collapsed or kinked	Replace
	Coupling failure	Replace
	Rotation motor fouled with foreign material	Clean and inspect; replace worn parts
	Broken shank	Replace
	Worn chuck (splines completely gone)	Replace
	Hydraulic control valve failure	Repair or replace valve
	Rotation gear failure	Replace worn parts

TE500 TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	REMEDY
I. Drill rotates, but won't hammer	Leaky oil hose	Replace
	Broken hammer	Replace complete cylinder and hammer assembly
	Lines are backwards	Check supply and return lines
	Hose to drill collapsed or kinked	Check and replace hose
J. Drill operates inefficiently	Improper feed adjustment	Adjust
	Leaking oil hose	Replace
	Worn bit	Sharpen bit; check for loose or broken carbides
	Hydraulic supply system out of adjustment	Check pump pressure and flow
	Poor hole cleaning	Check bit and steel for plugged air passage; detach bit from steel and remove obstructions
		☐ WARNING: DO NOT HAMMER BIT OR STEEL
	Hole misalignment (bent drill rod)	Align feed properly
	Low drill pressure	Set high pressure compensator to 2500 psi
	Low feed pressure	Adjust pressure
	Broken shank or drill rod	Replace broken parts
	Thrust collar broken	Replace thrust collar. [Check for 1/2"-1" (13-25mm) exposure of shank guiding diameter beyond front seal with shank pushed into drill and against the stop.]
	Accumulator not charged correctly	Charge accumulator

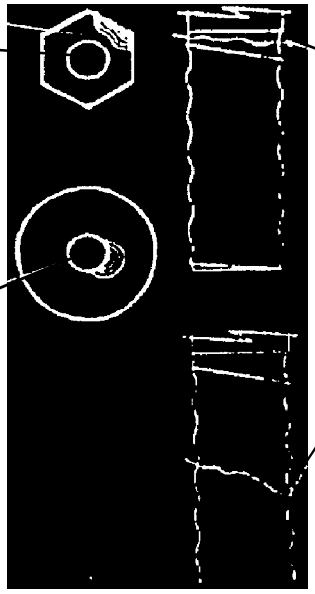
PROBLEM	PROBABLE CAUSE	REMEDY
K. Rapid chuck driver bushing wear	Worn or scored shank	Replace
	Improper feed pressure	Adjust
	Insufficient lubrication	Grease chuck end more frequently
	Contamination in chuck end of drill	Make sure pipe plugs are inserted in rotation housing
L. Rapid failure of rotation bearings	Bearings dirty	Clean parts; blow all hoses before assembly
	Dull bit	Sharpen bit
	Mis-application	Attempting too large a hole for ground conditions and equipment
M. Oil leak around shank	Shank seals in chuck end worn or ruptured	Remove chuck end cap and chuck end; replace shank seals, ruptured and worn parts
	Front bearing seal	Replace
N. Oil leak around backhead	O ring on hammer bearing leaking	Replace
	Hammer seal failure	Replace
O. Oil leaking from accumulator charge valve	Accumulator diaphragm ruptured	Replace diaphragm and recharge accumulator
	Valve worn	Replace
	Leak in hammer seals	Replace seals
P. Hydraulic oil in blowing air	Check hydraulic and air system of rig for leaks	Repair or replace as necessary

PROBLEM	PROBABLE CAUSE	REMEDY
Q. Supply and return hoses to drill are shaking or bouncing excessively	Accumulators not charged properly	Charge low pressure accumulator to 125 psi; high pressure to 1050 psi
	Accumulator diaphragm is ruptured (Oil will leak from charging valve when checking pressure.)	Change accumulator diaphragm
R. Water leaking from under water swivel housing (water flushing only)	Blown water seals	Replace water seals
	Backhead fitting loose or packing missing	Tighten fitting; replace packing
S. Rotation housing overheating	Insufficient grease in rotation housing	Add grease to rotation housing using zerk fitting
	Shank bearing failed	Check shank for sideways motion and replace bearings if required
	Chuck driver broken or bearings worn	Check and replace worn chuck driver and bearings
T. Rapid chuck wear	Over rotation; over feeding	Reduce rotation and feed load
	Misalignment	Replace worn parts in drill string
	Dull bit	Sharpen bit
	Insufficient lubrication	Grease chuck end more frequently

Common Causes of Failure

Drill Steel

Surface damage caused by hammering or careless use of drill steels



Off-line drilling

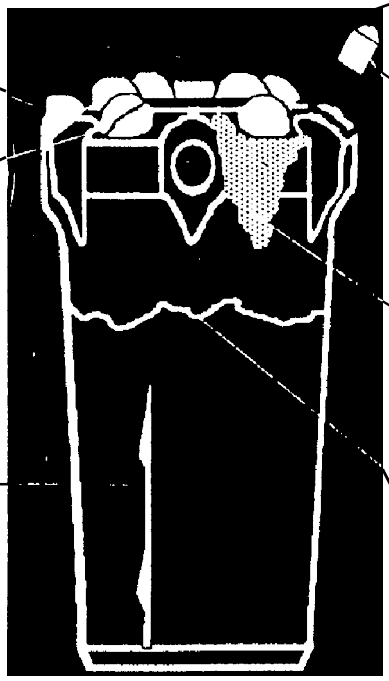
Corrosion originating in bore, accelerated by high stress conditions

Fatigue from surface irregularity, caused by excessive heat and welding
action between coupling and steel

Button Bits

Outer Gage Wear:
Pinching of bit in hole. Over rotation,
Reduce down feed
Resharpen immediately

Flattened Carbide Top:
Normal wear, Resharpen immediately



Loose or Lost Button:
Loose Chucking/Rattling the String

Fractured/Cracked Button:
Improper sharpening

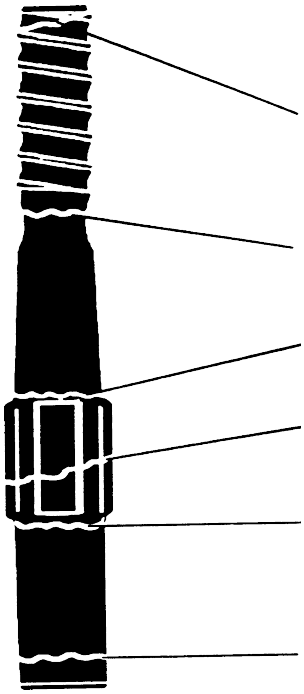
Body Deterioration:
Not enough air/water pressure
for proper flushing of bit face.

Skirt Split/Fracture:
Off-Line Drilling
Worn Threads
(Often caused when fishing for bit)
(check thread on steels and bits)

Ring off or Broken Skirt:
Improper steel chamfer
Off-line Drilling

Common Causes of Failure

Striking Bars



Chipped rod end; damaged coupling

Off-Line Drilling

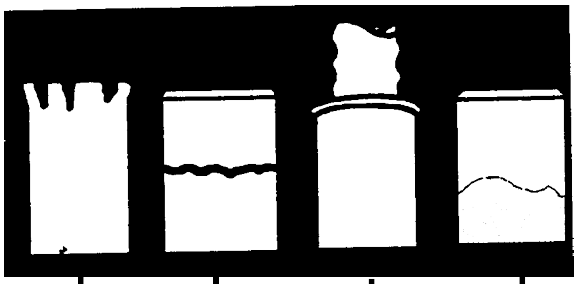
Too much rotation when pulling rods out of hole

Worn chuck; heavy rotation loads.

Worn chuck-driver bushing.
Severe overfeeding.

Fatigue from water seal recess.

Couplings



Scalding/Blueing.
Improper chamfering of drill steel.
Steels not seating together in coupling.

Operating machine with coupling touching centralizer.

Off line drilling.

Drilling with rod not firmly screwed into coupling. "Off line drilling"

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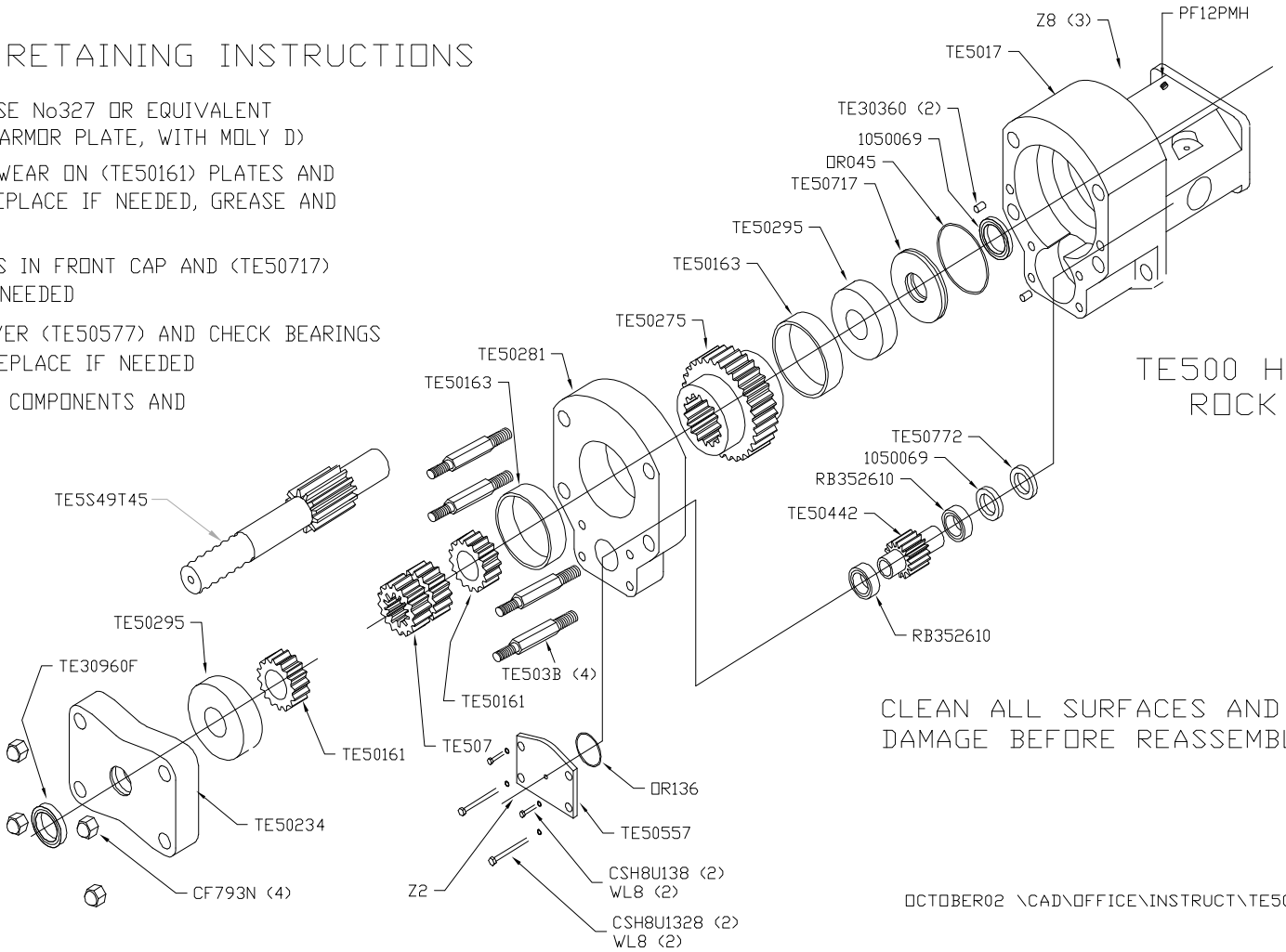
GREASE RETAINING INSTRUCTIONS

1. USE PRIMROSE No327 OR EQUIVALENT (HIGH TEMP. ARMOR PLATE, WITH MOLY D)
2. CHECK FOR WEAR ON (TE50161) PLATES AND (TE50295) REPLACE IF NEEDED, GREASE AND REASSEMBLE.
3. CHECK SEALS IN FRONT CAP AND (TE50717) REPLACE IF NEEDED
4. REMOVE COVER (TE50577) AND CHECK BEARINGS FOR WEAR REPLACE IF NEEDED
5. GREASE ALL COMPONENTS AND REASSEMBLE



TE500 HYDRAULIC ROCK DRILL

CLEAN ALL SURFACES AND CHECK FOR DAMAGE BEFORE REASSEMBLING.

OCTOBER02 \CAD\OFFICE\INSTRUCT\TE500GREASE

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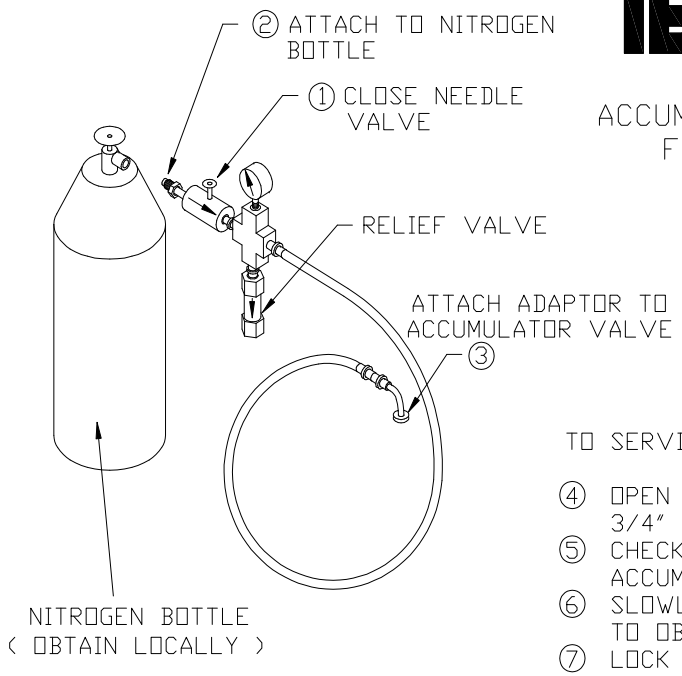
ACCUMULATOR CHARGING INSTRUCTIONS FOR TE300 and TE500 SERIES HYDRAULIC DRIFTER



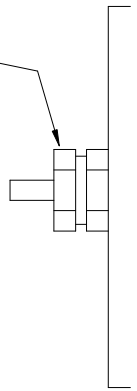
NOTE: IF THE NEEDLE VALVE IS OPENED RAPIDLY, THE RELIEF VALVE WILL OPEN AT 1000 psi AND NITROGEN WILL BLOW OUT THE BOTTOM OF THE RELIEF VALVE.

NORMAL SERVICING PRESSURES

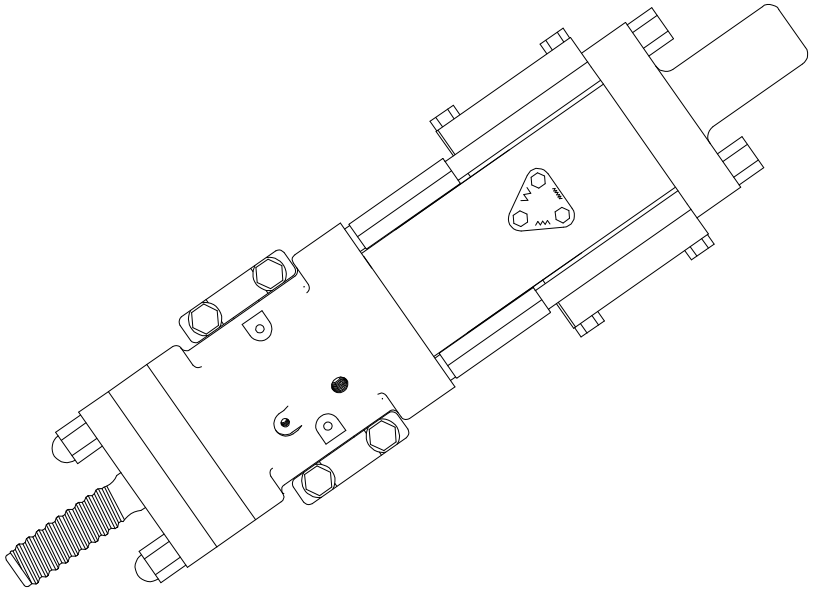
HIGH PRESSURE ACCUMULATOR 800-900 psi
(40% OF OPERATING PRESSURE)
LOW PRESSURE ACCUMULATOR 80-100 psi
(5% OF OPERATING PRESSURE)

TO SERVICE ACCUMULATORS

④ OPEN ACCUMULATOR VALVE USING 3/4" END WRENCH
⑤ CHECK FOR OIL COMING OUT THE ACCUMULATOR VALVE
⑥ SLOWLY OPEN THE NEEDLE VALVE TO OBTAIN DESIRED PRESSURE
⑦ LOCK THE ACCUMULATOR VALVE WHEN THE PRESSURE IS CORRECT
⑧ SHUT OFF THE NEEDLE VALVE AND REMOVE THE ADAPTOR FITTING
⑨ SHUT OFF THE NITROGEN BOTTLE AND REMOVE THE CHARGING KIT.
⑩ REPLACE THE NITROGEN BOTTLE SAFETY CAP AND STORE THE BOTTLE



PARTS BOOK
Section 4



BEFORE ATTEMPTING MAINTENANCE OR REPAIR OF ANY COMPONENTS ON THIS MACHINE, READ THE WARNINGS AND CAUTIONS LISTED IN SECTION 2

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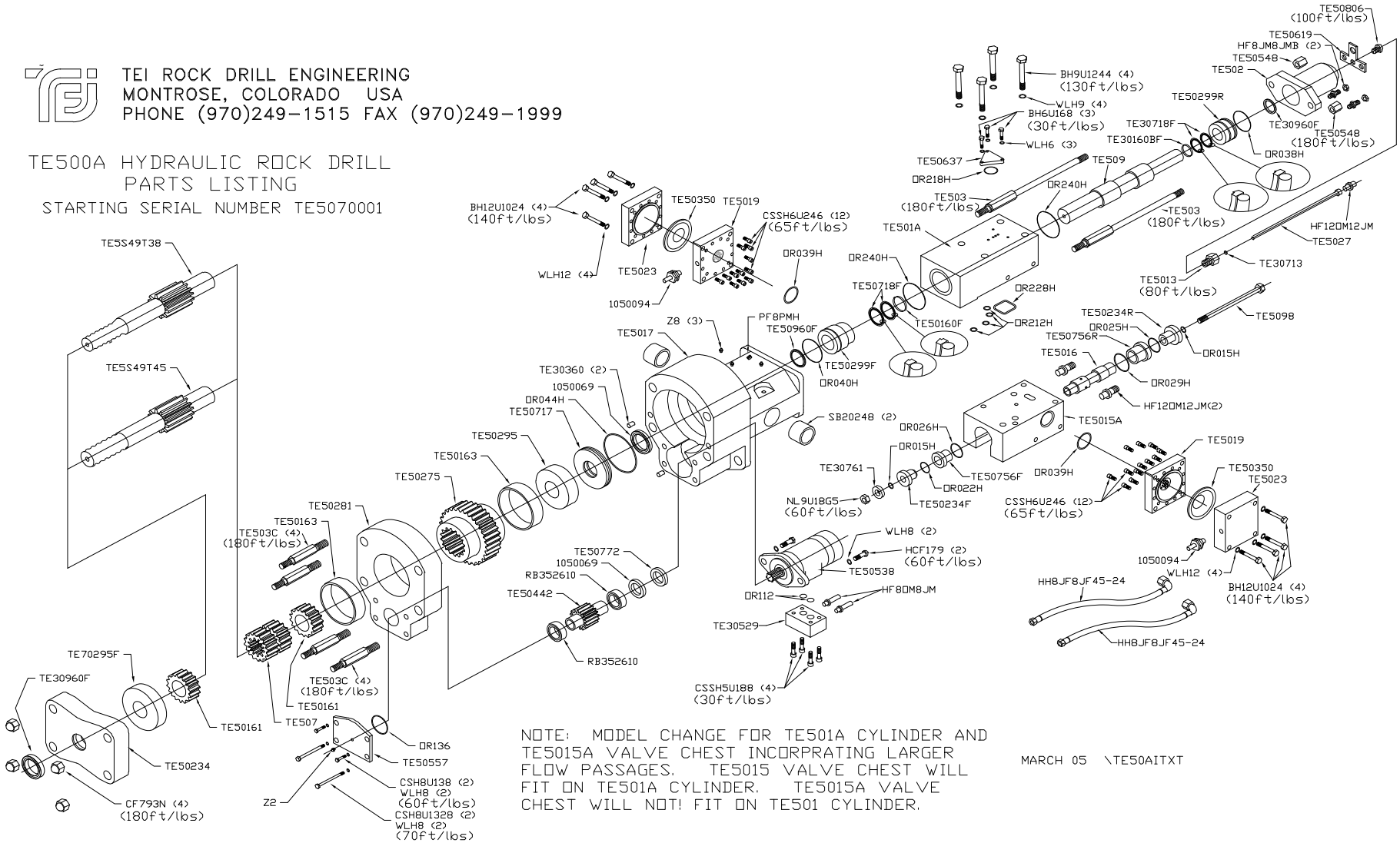
TE500A HYDRAULIC ROCK DRILL PARTS LISTING

STARTING SERIAL NUMBER TE5070001



NOTE: MODEL CHANGE FOR TE501A CYLINDER AND TE5015A VALVE CHEST INCORPRATING LARGER FLOW PASSAGES. TE5015 VALVE CHEST WILL FIT ON TE501A CYLINDER. TE5015A VALVE CHEST WILL NOT! FIT ON TE501 CYLINDER.

MARCH 05 \TE50AITXT

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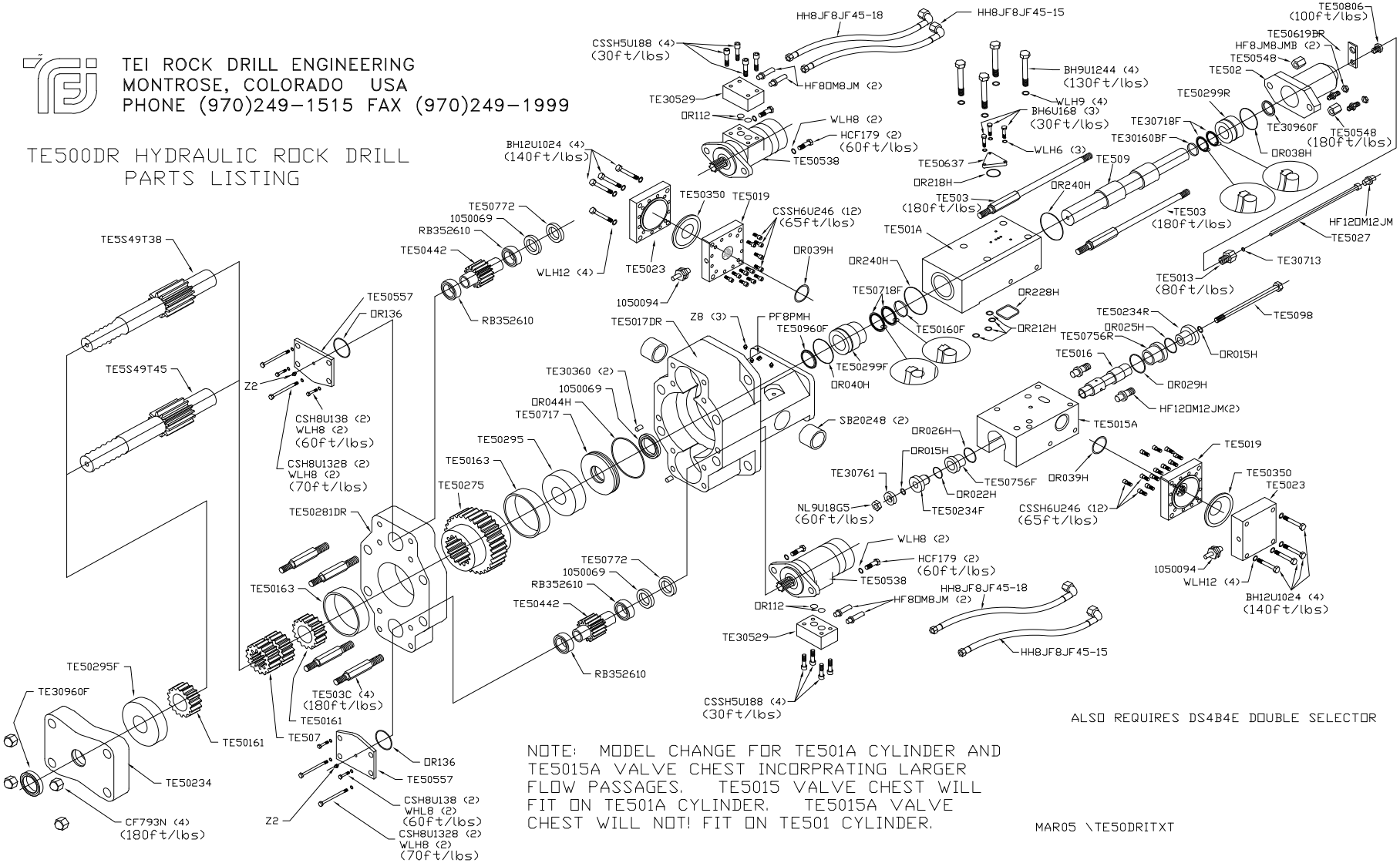
TE500DR HYDRAULIC ROCK DRILL PARTS LISTING



ALSO REQUIRES DS4B4E DOUBLE SELECTOR

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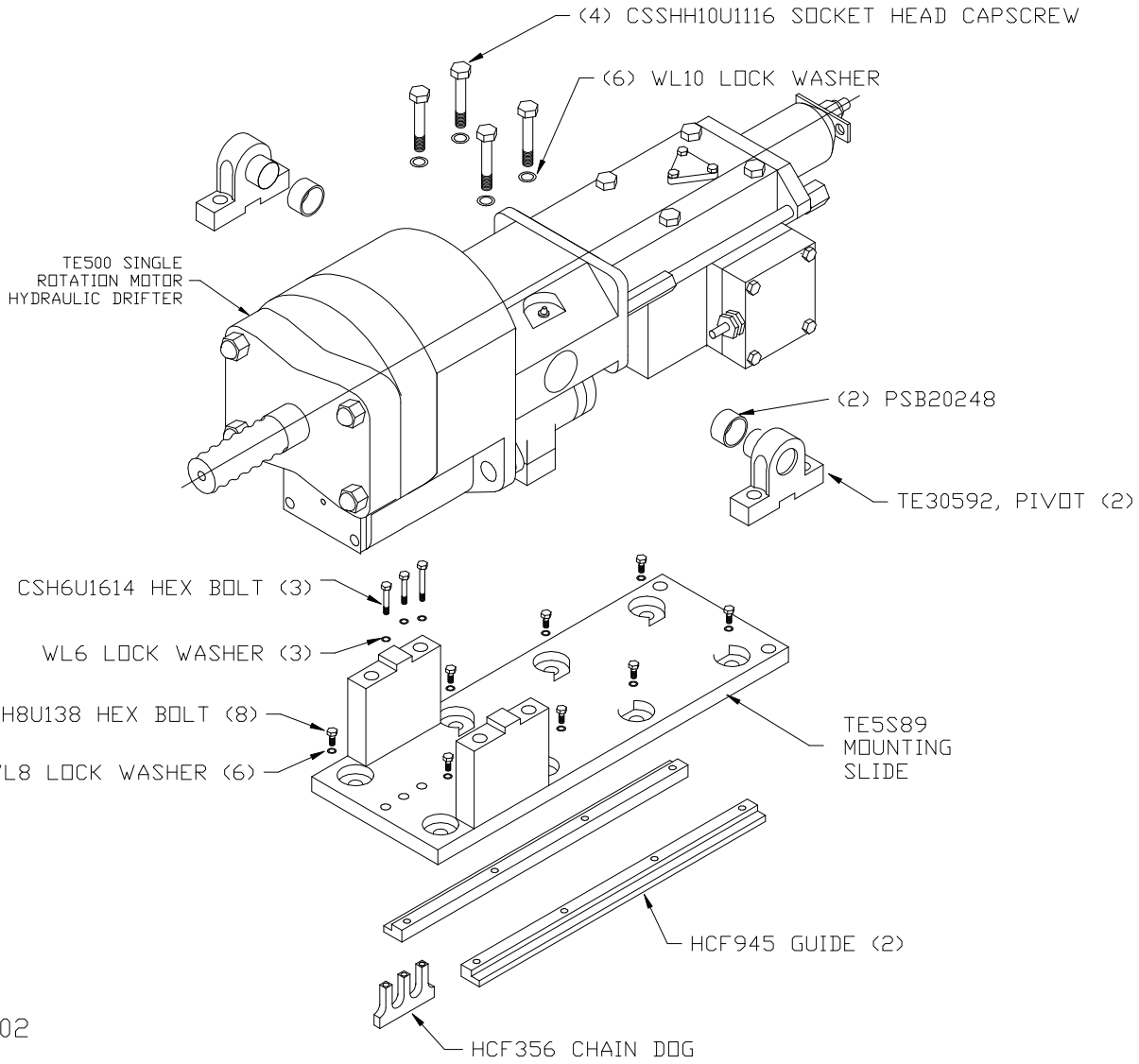

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TE500 HYDRAULIC ROCK DRILL MOUNTING PARTS LISTING HCF and PCF SERIES FEEDS

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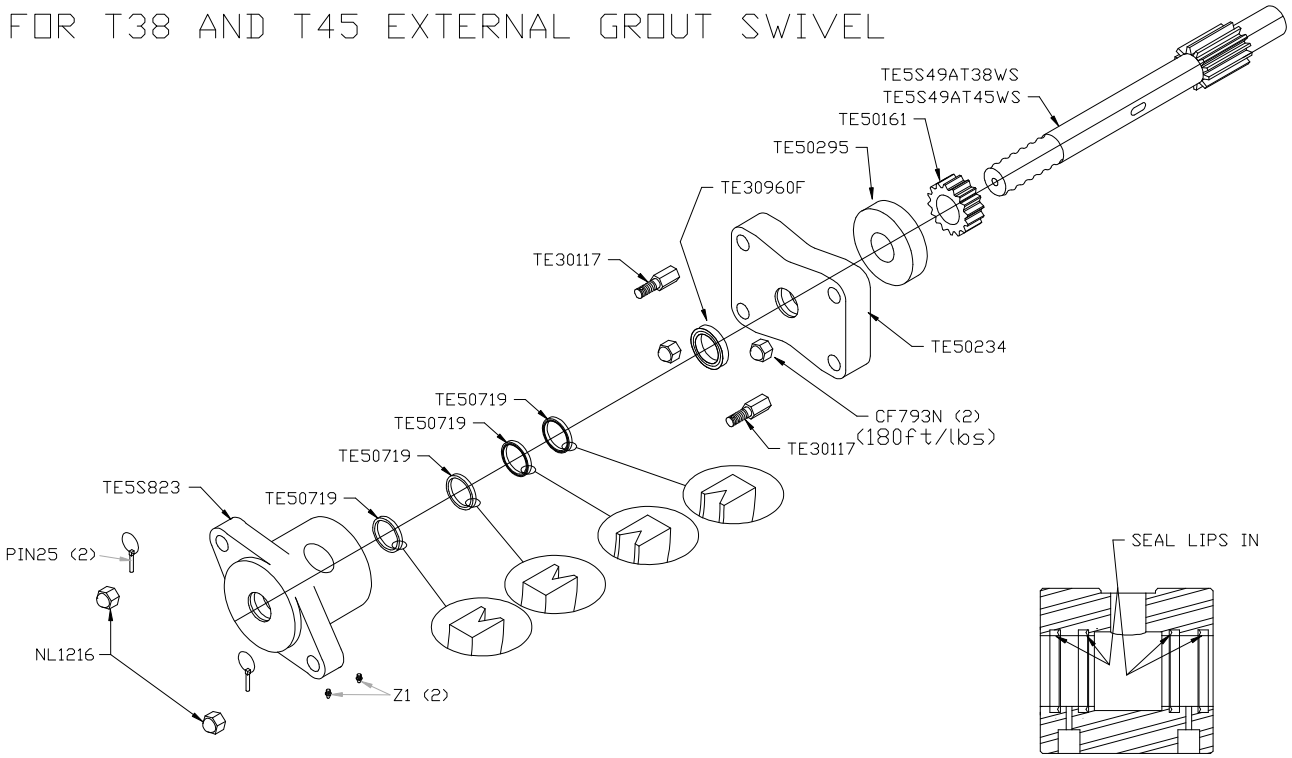
TE500 HYDRAULIC ROCK DRILL

PARTS LISTING

FOR T38 AND T45 EXTERNAL GROUT SWIVEL



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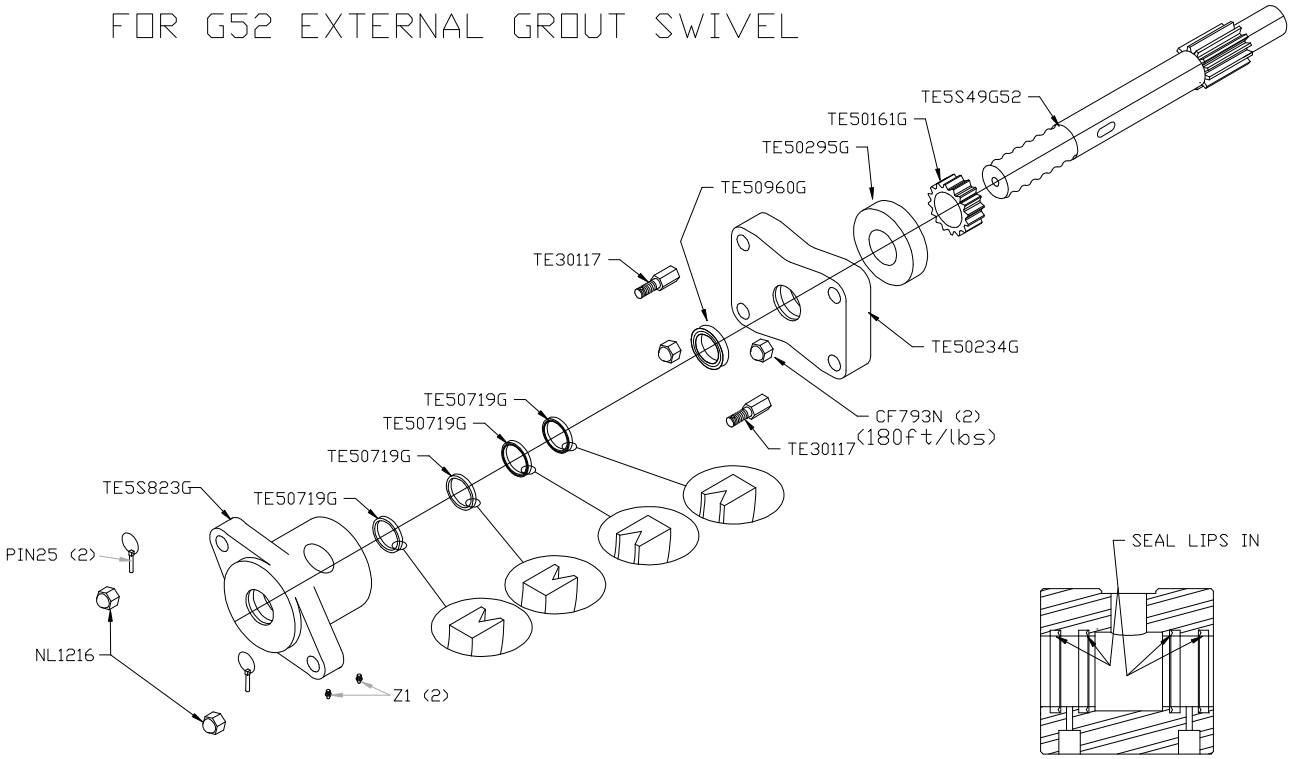
TE500 HYDRAULIC ROCK DRILL

PARTS LISTING

FOR G52 EXTERNAL GROUT SWIVEL



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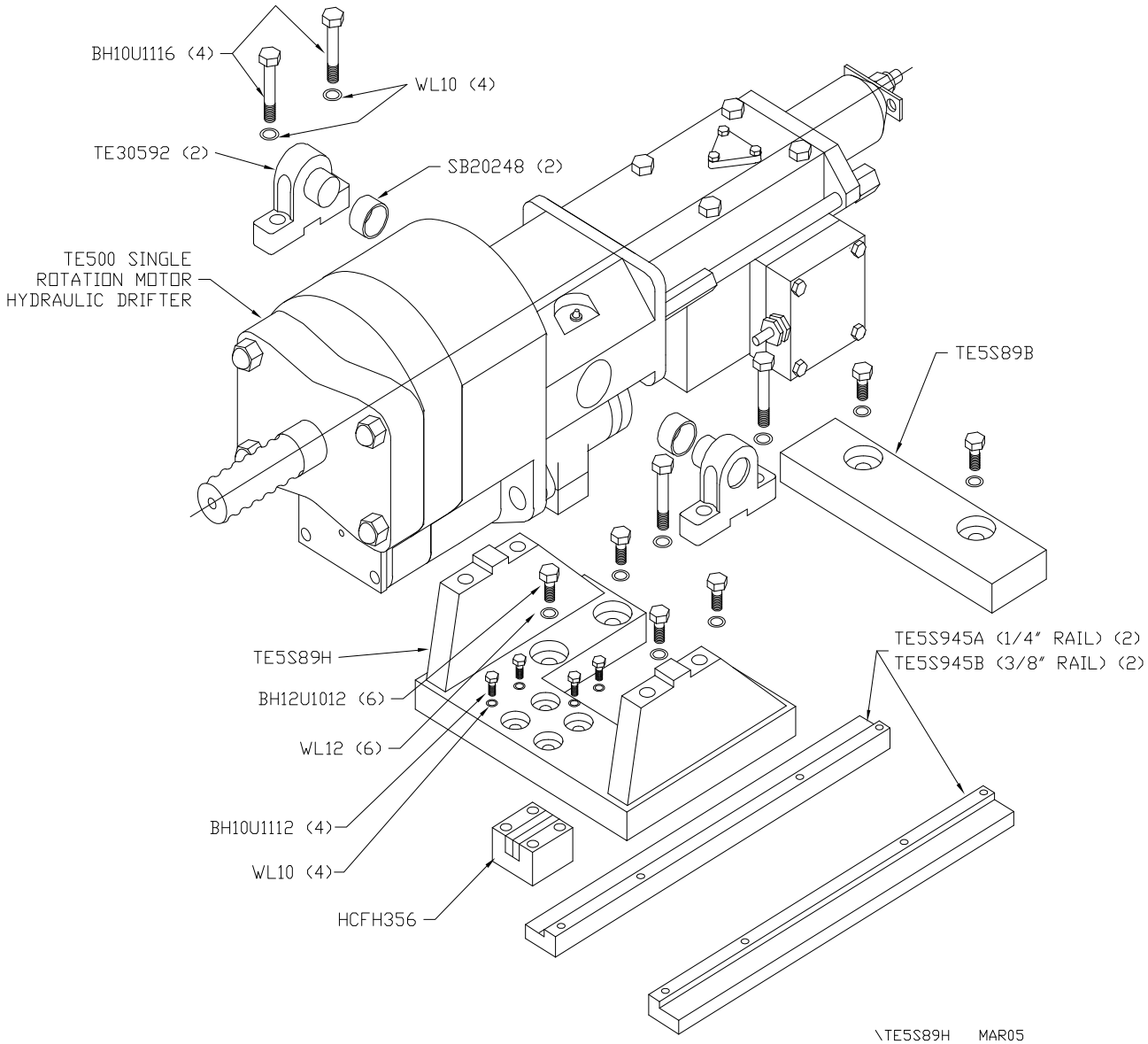

TE500 HYDRAULIC ROCK DRILL
HCFH-PCFH MOUNTING PARTS LISTING

LIMITED WARRANTY FOR TEI ROCK DRILLS

TEI ROCK DRILLS' limited warranty is only for products that are manufactured by TEI and only for operational failure caused by defective materials or workmanship. Said limited warranty is for normal and customary use within (12) twelve months from the date of invoice.

TEI's limited warranty obligation is limited only to a replacement of any and all parts for any product that upon inspection by TEI shows that it was defective. This limited warranty excludes all transportation costs from any TEI customers, and any and all other ancillary costs including but not limited to removal or installation of the parts or materials and any other costs directly or indirectly related to the operational failure caused by defective materials or workmanship.

TEI ROCK DRILLS' limited warranty does not include liability for any loss of time, manufacturing cost, labor, material, loss of profits, personal injury, consequential damages because of defective materials or workmanship. TEI ROCK DRILLS' limited warranty does not cover other manufacturers equipment.

If You have to make a claim within the terms of TEI ROCK DRILLS' Limited Warranty, You must write to Your TEI ROCK DRILLS supplier within 15 (fifteen) days from the date of defect or fault. You are to give TEI ROCK DRILLS' staff every facility for inspecting and remedying the claimed defect or fault.

This limited warranty shall not extend to any other damages the customer may experience, including but not limited to any torts or product liability claims.

Prior to the return of any defective materials, written permission must be secured from authorized TEI personnel and, upon return, must include a complete written explanation of the claimed defects and the circumstances relating to the operational failure.

ONLY PRODUCTS MANUFACTURED BY TEI ARE WARRANTED FOR THE LIMITED PURPOSES AS SET FORWARD HEREIN AND ARE LIMITED TO A FITNESS FOR A PARTICULAR PURPOSE FOR THE NORMAL AND CUSTOMARY USE OF SAID PRODUCT.

Effective March 1, 2005
Previous warranties no longer apply.

DISCLAIMER

TEI ROCK DRILLS does not accept responsibility for any misprints in this booklet. Prices or numbers may change without written notice to anyone. This manual is not intended to create a contract.

Drill head (red)

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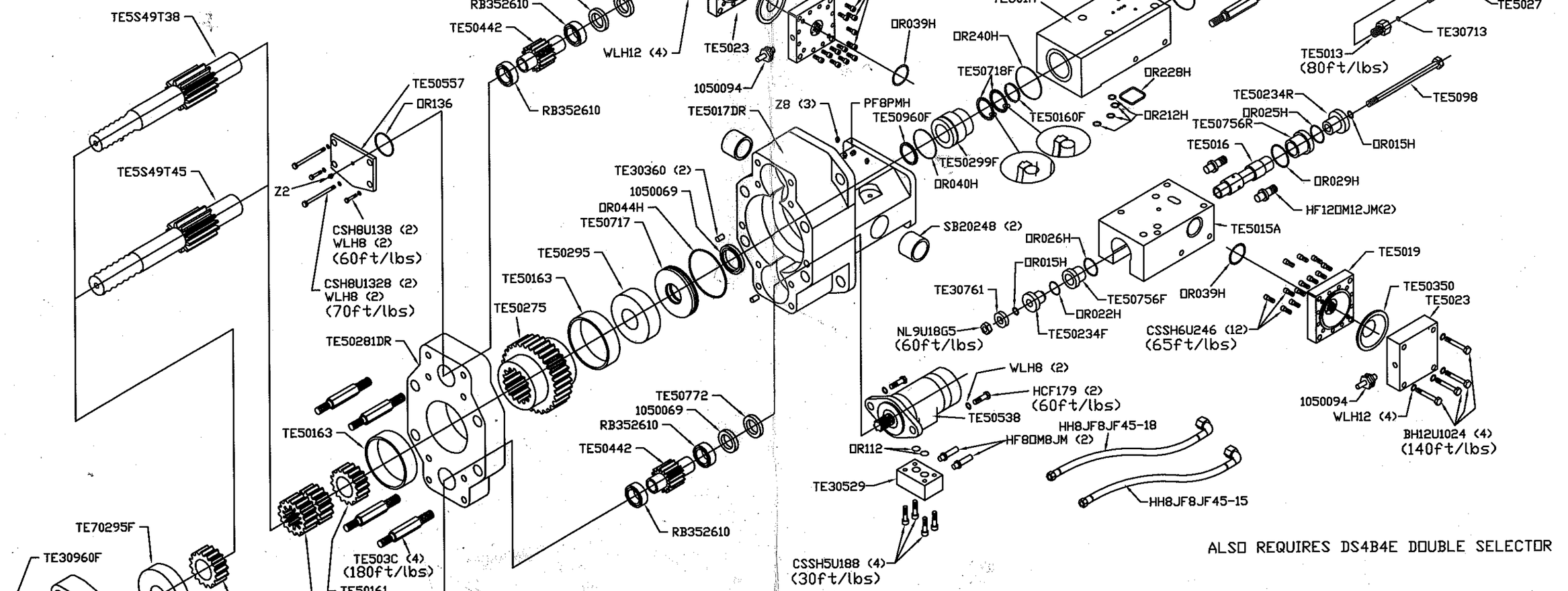
TE500DR HYDRAULIC ROCK DRILL PARTS LISTING



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ALSO REQUIRES DS4B4E DOUBLE SELECTOR

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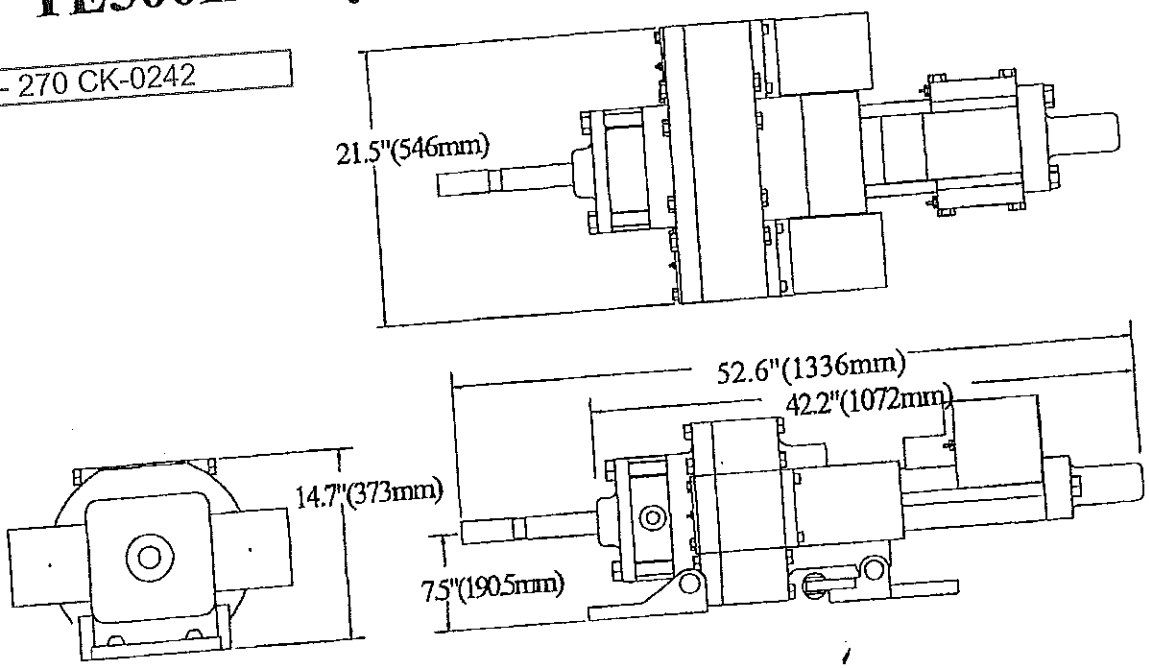
MONTROSE, COLORADO 81402
Phone: 970/249-1515 -- Fax 970/249-1999
1-800-777-3745 USA
E-Mail tei@teirockdrills.com

TE500HT Hydraulic Drill Specifications

s/n - 270 CK-0242



Specifications and Performance

	U.S.	Metric
Supply Pressure	2500 PSI	170 bar
Impact Energy	160-300 ft/lbs	218-408 J
Impact Frequency	2500-4000 BPM	2500-4000 BPM
Rotation Speed	0-250 RPM	0-250 RPM
Rotation Torque	0-10,000 ft/lbs	0-13,605 kg-M
Drill Steel Size	T-38 or T-45	T-38 or T-45
Total Weight	1050 lbs.	476 kg.

Recommended Use

Primary and Secondary hole drilling of 2 ½"ø (64mm) to 4 ½"ø (114mm) holes in all rock formations including fractured overburden, foundations, and earth anchors.