BRADCO

POWRBORE

OM574 REV. 3

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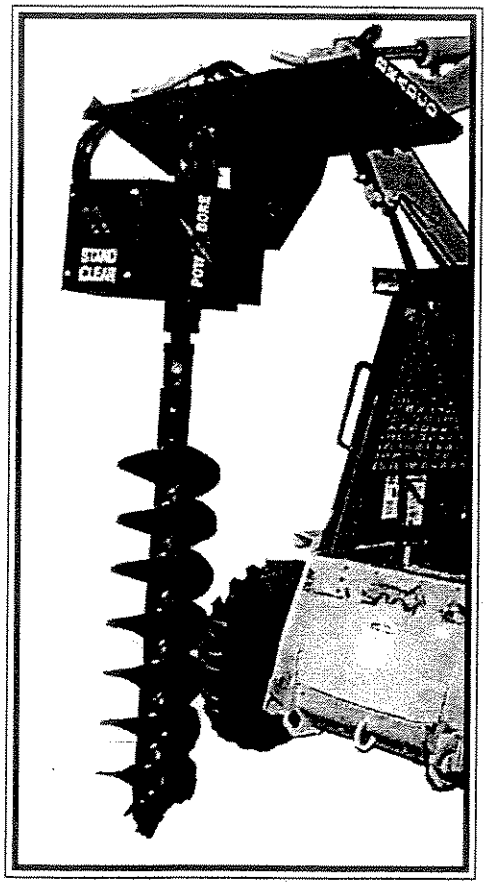
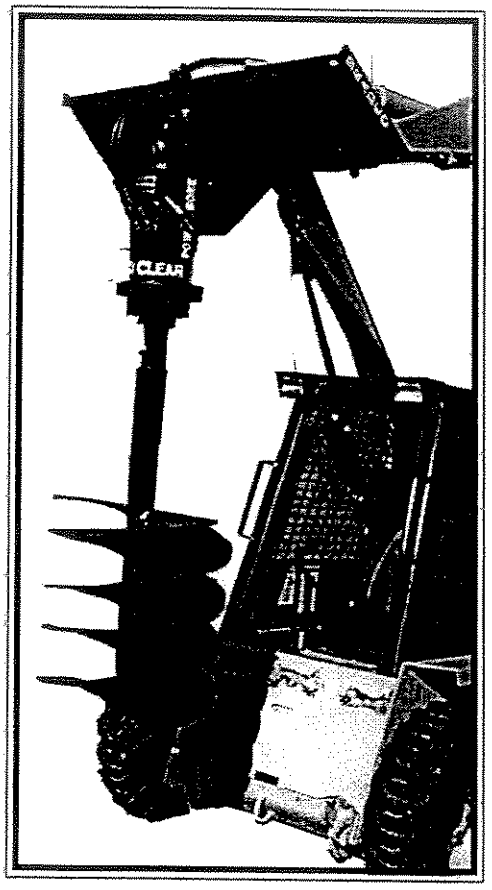


CHAIN DRIVE
MODEL
C1325 & C1825



PLANETARY DRIVE
MODEL
P1355 & P1855

PARTS & OPERATOR'S MANUAL

75474

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A Division of ATI Global Inc.

TABLE OF CONTENTS

TO THE OWNER

BRADCO POW-R-BORE AUGERS

GENERAL COMMENTS

Congratulations on the purchase of your new pow-r-bore auger! Your auger was carefully designed and manufactured to give you many years of dependable service. Your auger will require some minor maintenance (such as cleaning and lubricating) to keep it in top working condition. Be sure to observe all maintenance procedures and safety precautions in this manual and the safety decals located on the auger and on any equipment which the auger is mounted.

ABOUT THIS MANUAL

Read this manual before using your pow-r-bore. This manual has been designed to help you do a better and safer job. Read this manual carefully and become familiar with the operating procedures before attempting to operate your new pow-r-bore. **Remember, never let anyone operate this pow-r-bore without them having read and completely understanding the "Safety Precautions" and "Operating Instructions" section of the manual, or having them be fully trained by an experienced, qualified person who has read and completely understands the "Safety Precautions" and "Operating Instructions" (see sections B and G respectively).**

SERVICE

When servicing your pow-r-bore remember to use only original manufacturer replacement parts. Substitute parts may not meet the standards required for safe, dependable operation.

To facilitate parts ordering, record the model and serial number of your pow-r-bore in the space provided on the page. This information may be obtained from the pow-r-bore identification plate.

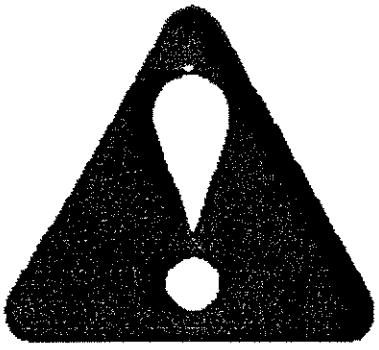
MODEL_____ **SERIAL NO.**_____

Your parts department needs this information to insure that you receive the correct parts or attachments for you specific pow-r-bore auger.

SAFETY ALERT SYMBOL

This is the "Safety Alert Symbol" used by this industry. This symbol is used to warn of possible injury. Be sure to read all warnings carefully. They are included for your safety and for the safety of others working around you.

TAKE NOTE! THIS SAFETY ALERT SYMBOL FOUND THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY OR OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.



THIS SYMBOL MEANS:

ATTENTION!

BECOME ALERT!

YOUR SAFETY IS INVOLVED!

SIGNAL WORDS: Note the use of signal words DANGER, WARNING, and CAUTION with the safety messages. The appropriate signal word for each has been selected using the following guidelines:

DANGER: Indicates an imminently hazardous situation which, if not avoided, will result death or serious injury. This signal word is to be limited to the most extreme situations, typically for machine components which, for functional purposes, cannot be guarded.

WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

SAFETY PRECAUTIONS

BRADCO POW-R-BORE AUGERS

GENERAL INFORMATION

This section is composed of various warnings and safety tips. **READ AND LEARN ALL THE INFORMATION IN THIS SECTION BEFORE YOU ATTEMPT TO USE YOUR BRADCO POW-R-BORE AUGER.** Also read your vehicle owner's manual before using your equipment. This knowledge will help you operate your unit safely. **Do not take this information lightly, it is presented for your own benefit and for the benefit of others working around you.**

The "Safety Alert Symbol" (as described in the beginning of this section) will be used throughout this manual. It will appear with one of the words **DANGER, WARNING, OR CAUTION** above it, and a safety message pertaining to the specific topic being covered. Take the time to read these messages as you come across them.

TO THE OPERATOR

A careful operator is the best operator. Most accidents can be avoided by taking certain precautions. The following precautions are suggested here to help prevent accidents. Make sure the equipment is operated only by responsible individuals with the proper instruction. It is the skill, care, common sense, and good judgement of the operator that will determine how efficiently and safely the job is performed. Know your equipment before you start. Know it's capabilities, dimensions, and how to operate all the controls. Visually inspect your equipment before you start and never operate equipment that is not in proper working order with all safety devices intact.

BEFORE YOU START

Wear the right clothing and gear for the job. Protective equipment such as hard hat, steel toed shoes, leather gloves, or safety glasses may be in order. They can protect you from needless injury.

Do not wear loose clothing, or things such as dangling neckties, scarves, rings, and watches around equipment. They could get caught in moving parts, and lead to serious injury or death.

Know your equipment inside and out. Know how to operate all controls, and know emergency shut down procedures. Make sure all safety devices are in place and working.

Keep equipment clean to help avoid injury from a fall when getting on or off equipment.

BEFORE YOU START (Continued)

Know your work area before you begin. Observe any potential hazard areas such as soft ground, drop-offs, rocks and other obstacles.

Know where all utility lines are. Observe overhead electrical and phone lines. Be sure equipment will safely clear them. Know the location of underground cables, wires, gas and water lines, tanks, etc. Contact with electrical lines could cause electrocution. Hitting a gas line or underground tank could cause an explosion.

Be alert to others in the work area. All bystanders should be kept a minimum or 10 feet (3 meters) away from working area of the auger. Never operate the auger controls from the ground. Always operate the vehicle and auger from the correct operating position.

Always use your seatbelt and safety ROPS (Roll-Over-Protective Structure) that are on the equipment. They could save your life in the event of a mishap.

Never take passengers on your equipment. There is no safe place for riders.

Test all controls before you start. This includes safety equipment and devices.

Never alter or remove any safety decals or shields. Replace all missing or damaged safety decals or safety shields. REPLACE DECALS IMMEDIATELY IF DAMAGED OR ILLEGIBLE.

Whenever changing or installing the auger or attachments, make sure all connections are securely fastened.

This manual covers the safe use, installation, operation and service instructions for the Pow-R-Bore only. Always read the operating and safety manuals prepared for your vehicle and any other attachments before using them.

DURING AUGER OPERATION

Be alert to what is going on around you. Watch for others who may not be watching out for themselves.

Never operate equipment while under the influence of alcohol, or prescription drugs which could inhibit physical and or mental capacity.

DURING AUGER OPERATION (Continued)

Stop the unit and shut off the engine if anyone approaches the equipment while it's in motion. They may not be familiar with the equipment and get in the way of moving parts.

Be alert to changes in the work area. Changes in weather and soil conditions could turn a safe work site into a hazardous area.

Avoid steep hillside operation which could cause the vehicle to overturn. Consult your vehicle operator's and safety manuals for maximum incline allowable.

MAINTAINING THE AUGER

Replace all safety shields and guards when performing maintenance. Do not operate the auger with protective equipment removed.

Lower the auger and shut off the engine before working on the unit. Never perform maintenance on an auger while it is running.

Make sure all operating and residual pressures are relieved before working on a hydraulic system. Shut engine off and operate all the controls to relieve any pressure.

Use only manufacturer recommended replacement parts. Other parts may be substandard in fit and quality.

Do not set any relief valve higher than recommended by the manufacturer. Relief valves should be checked and adjusted only by a trained service technician. Do not remove or block a relief valve.

Observe proper maintenance schedules. Proper maintenance can help prevent a hazardous condition.

Never perform any work on an auger unless you are authorized - and qualified - to do so. Always read the operator service manual(s) before any repair is made. After completing maintenance or repair, check for correct functioning of auger. If NOT functioning properly, always tag "DO NOT OPERATE" until all problems are corrected.

SAFETY PRECAUTIONS

BRADCO POW-R-BORE AUGERS

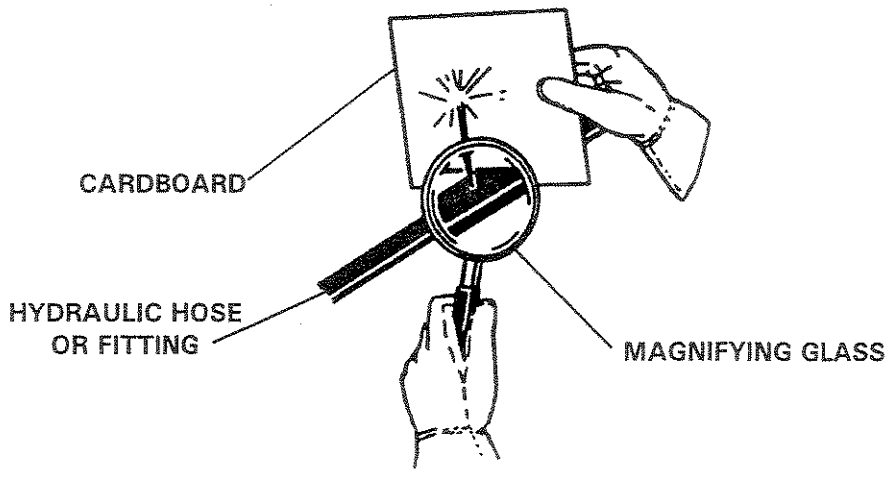
TRANSPORTING

- Travel only with the unit in a safe transport position to prevent uncontrolled movement.
- Drive slowly over rough ground and on slopes.
- Tether auger with a chain, if necessary, to prevent uncontrolled swinging of auger when moving from hole to hole.
- Remove auger from vehicle when transporting to and from job site.
- **Before exiting vehicle, lower auger to ground, turn off vehicle engine and lock vehicle brakes.**

WARNING! **Escaping fluid under pressure can have sufficient force to penetrate the skin causing serious personal injury. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands to search for suspected leaks.**

Keep unprotected body parts, such as face, eyes, and arms as far away as possible from a suspected leak. Flesh injected with hydraulic fluid may develop gangrene or other permanent disabilities.

If injured by injected fluid, see a doctor at once. If your doctor is not familiar with this type of injury, ask him to research it immediately to determine proper treatment.



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INTERNATIONAL SYMBOLS

As a guide to the operation of your equipment, various international symbols have been utilized on the instruments and controls. The symbols are shown below with an indication of their meaning.


Engine speed


Hours recorded


Engine water temperature


Lights


Horn


Engine oil pressure


Hazard warning


Axle connect


Axle disconnect


Continuously variable


Increase

Decrease

Diesel fuel

Creeper range

High range

Low range


Alternator charge


Power take-off (on)


Power take-off (off)


"Tortoise," slow or minimum setting


"Hare," fast or maximum setting


Caution


Control lever operating direction


Rock shaft (raised)


Rock shaft (lowered)


Remote cylinder (extended)


Remote cylinder (retracted)


Remote cylinder (FLOAT)


Differential lock


Read operators manual

Neutral


Forward


Reverse

GENERAL INFORMATION

The purpose of this manual is to assist in operating and maintaining your BRADCO Pow-R-Bore auger. Read carefully. It furnishes information and instructions that will help you achieve years of dependable performance.

The illustrations and data used in this manual were current at the time of printing, however, we reserve the right to redesign and change the augers as may be necessary without notification.

PREPARING THE VEHICLE

WARNING! **Never let anyone operate this skid-steer loader and auger without understanding all of the "Safety Precautions" and "Operating Instructions" sections of the manual. (See Section B and G respectively.) Always choose hard, level ground to park the skid-steer loader on and set the brake so that the unit cannot roll.**

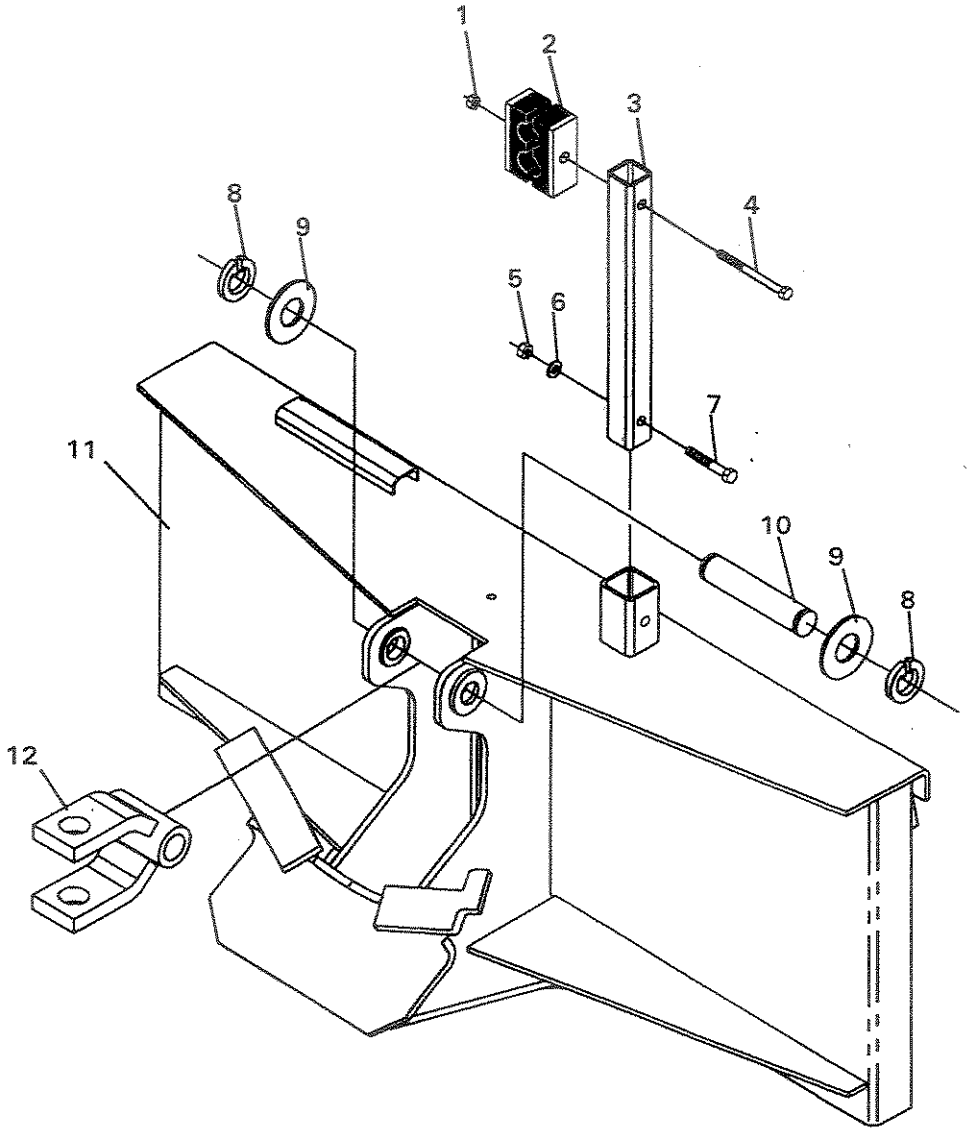
POW-R-BORE MODELS, REQUIREMENTS AND OPTIONS

Your skid-steer must be equipped with a universal hitch and auxiliary hydraulics. The POW-R-BORE models and auger size available for your unit depends on the skid-steer's GPM. See the table below for your options.

MODEL	PART #	GPM REQUIRED MIN.	GPM REQUIRED MAX.	LPM REQUIRED MIN.	LPM REQUIRED MAX.	MAX. AUGER SIZE
P1355 P1855	85905 85906	10 15	20 30	38 67	76 114	30" 36"
C1325 C1825	85945 85959	10 15	20 30	38 57	95 114	30" 36"

MOUNTING KIT INSTALLATION

QUICK ATTACH MOUNTING ASSEMBLY #86680
MUSTANG - SINGLE PIN



MOUNTING KIT INSTALLATION

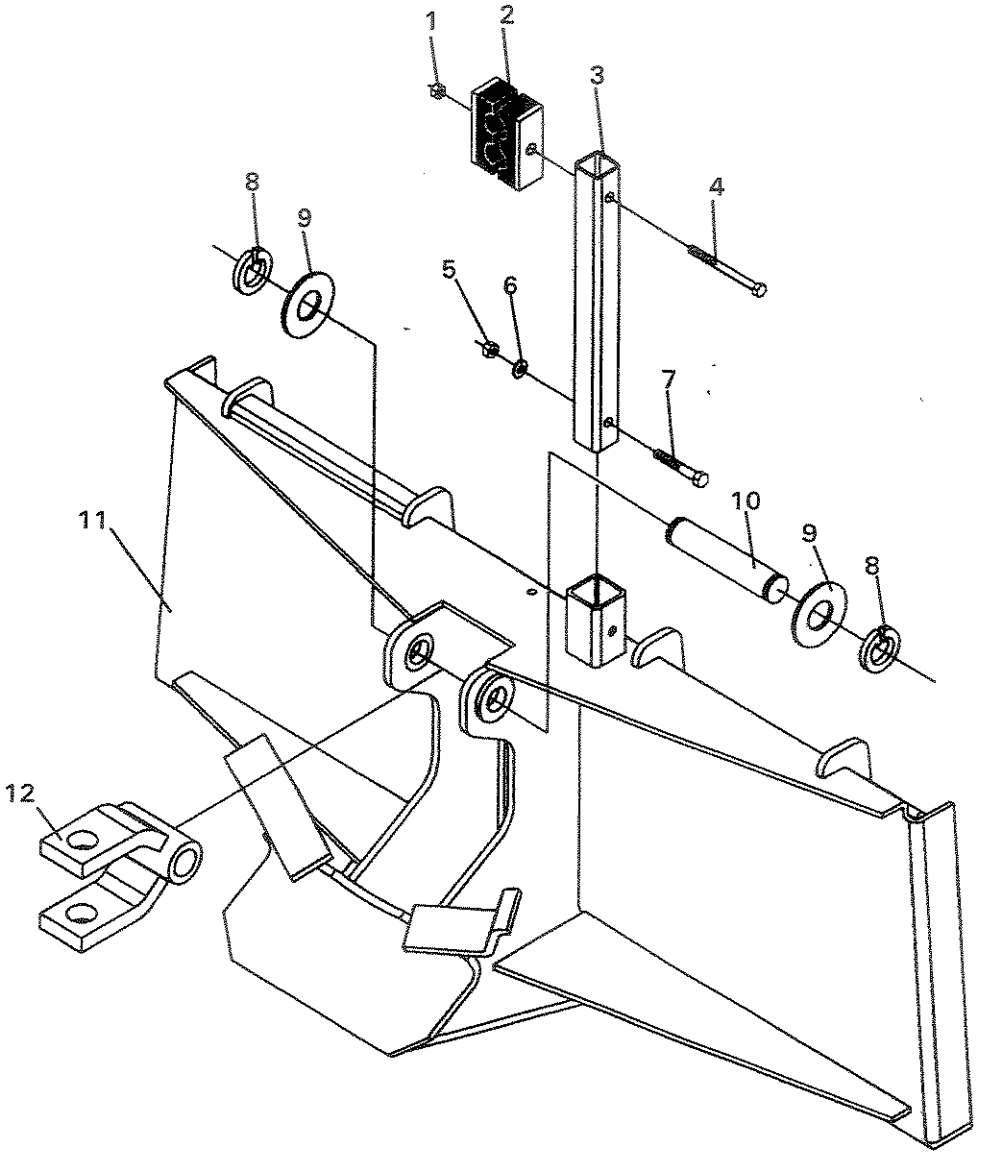
QUICK ATTACH MOUNTING ASSEMBLY #86680
MUSTANG - SINGLE PIN

NO	REQ'D	PART NO.	DESCRIPTION
1	1	1225	.31" UNC Hex Nut
2	1	81358	Twin Tube Hose Clamp
3	1	87062	Hose Clamp Mounting Tube
4	1	1034	.31" UNC X 4.00" Hex Capscrew
5	1	1226	.38" UNC Hex Nut
6	1	1514	.38" Flat Washer
7	1	1049	.38" UNC X 2.50" Hex Capscrew
8	2	1652	Snap Ring
9	2	64728	Thrust Washer 1.25"
10	1	81846	Pivot Pin
11	1	86681	Quick-Attach Loader Frame
12	1	85892	Mounting Swivel

E

MOUNTING KIT INSTALLATION

QUICK ATTACH MOUNTING ASSEMBLY #86870
NEW HOLLAND 500 & 700 SERIES



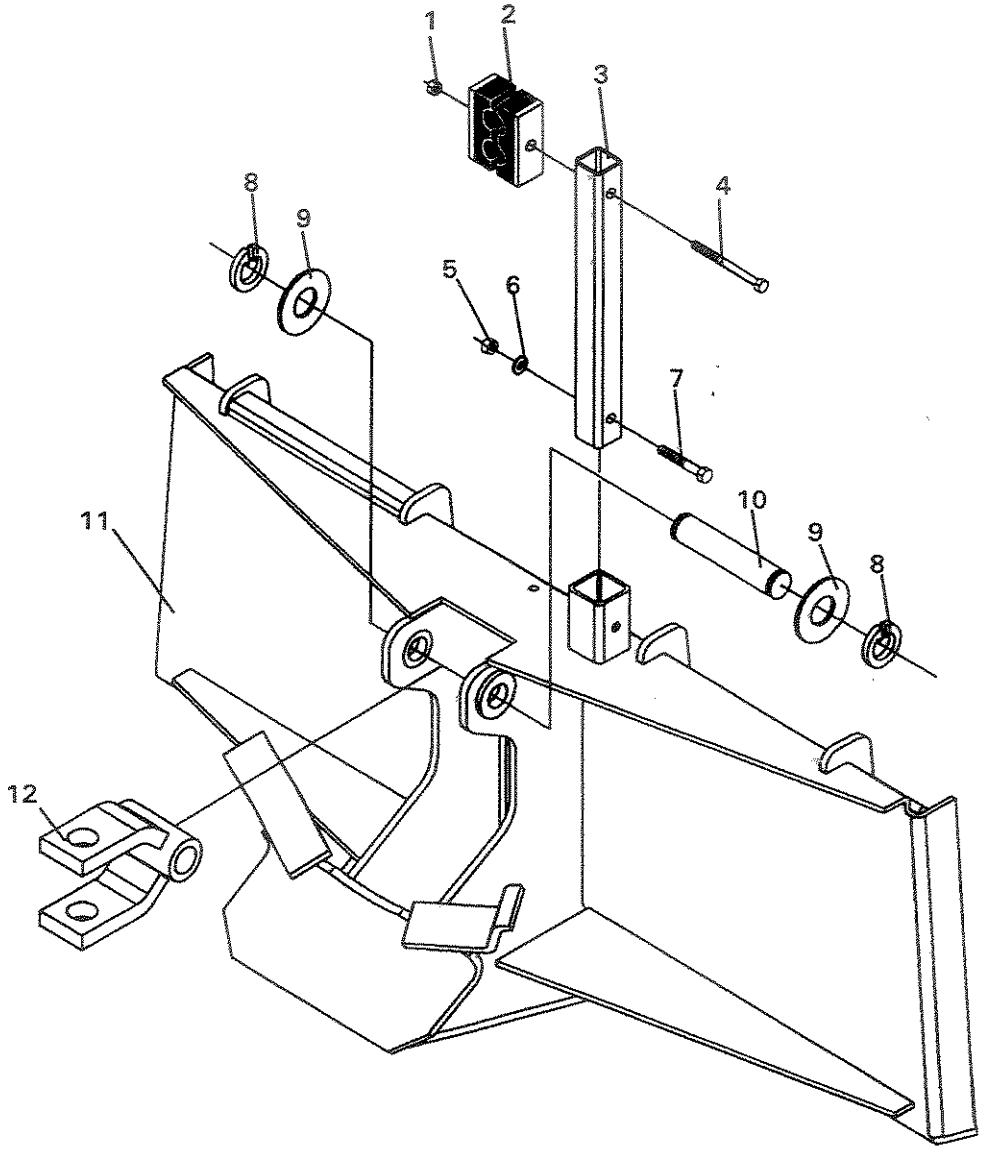
MOUNTING KIT INSTALLATION

QUICK ATTACH MOUNTING ASSEMBLY #86870
NEW HOLLAND 500 & 700 SERIES

NO	REQ'D	PART NO.	DESCRIPTION
1	1	1225	.31" UNC Hex Nut
2	1	81358	Twin Tube Hose Clamp
3	1	87062	Hose Clamp Mounting Tube
4	1	1034	.31" UNC X 4.00" Hex Capscrew
5	1	1226	.38" UNC Hex Nut
6	1	1514	.38" Flat Washer
7	1	1049	.38" UNC X 2.50" Hex Capscrew
8	2	1652	Snap Ring
9	2	64728	Thrust Washer 1.25"
10	1	81846	Pivot Pin
11	1	86866	Quick-Attach Loader Frame
12	1	85892	Mounting Swivel

MOUNTING KIT INSTALLATION

QUICK ATTACH MOUNTING ASSEMBLY #87085
THOMAS T173-T233



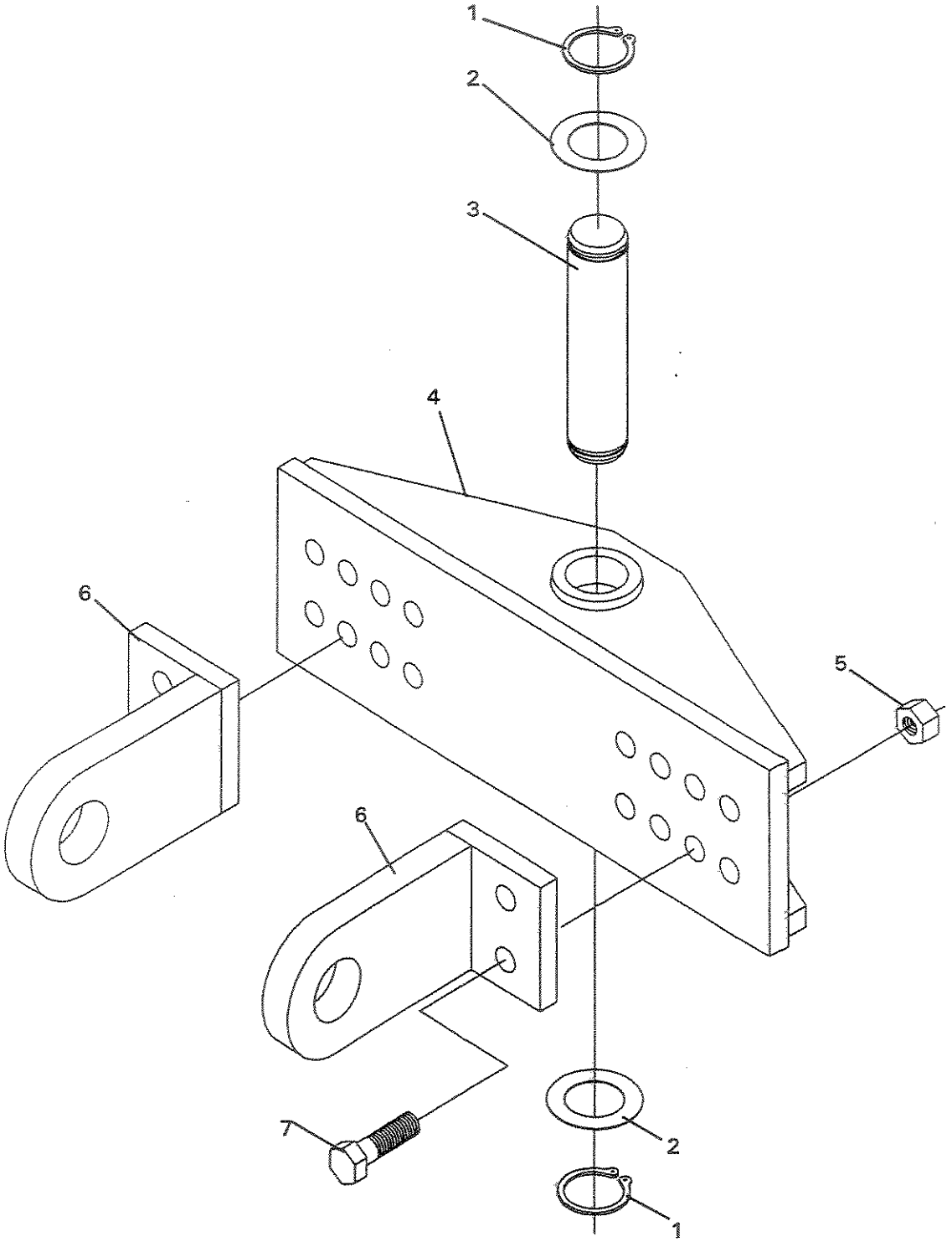
MOUNTING KIT INSTALLATION

QUICK ATTACH MOUNTING ASSEMBLY #87085
THOMAS T173-T233

NO	REQ'D	PART NO.	DESCRIPTION
1	1	1225	.31" UNC Hex Nut
2	1	81358	Twin Tube Hose Clamp
3	1	87062	Hose Clamp Mounting Tube
4	1	1034	.31" UNC X 4.00" Hex Capscrew
5	1	1226	.38" UNC Hex Nut
6	1	1514	.38" Flat Washer
7	1	1049	.38" UNC X 2.50" Hex Capscrew
8	2	1652	Snap Ring
9	2	64728	Thrust Washer 1.25"
10	1	81846	Pivot Pin
11	1	87014	Quick-Attach Loader Frame
12	1	85892	Mounting Swivel

MOUNTING KIT INSTALLATION

EXCAVATOR MOUNTING ASSEMBLY #86600 (Fits Most 1.25" Pin)
EXCAVATOR MOUNTING ASSEMBLY #86711 (Fits Most 1.38" Pin)



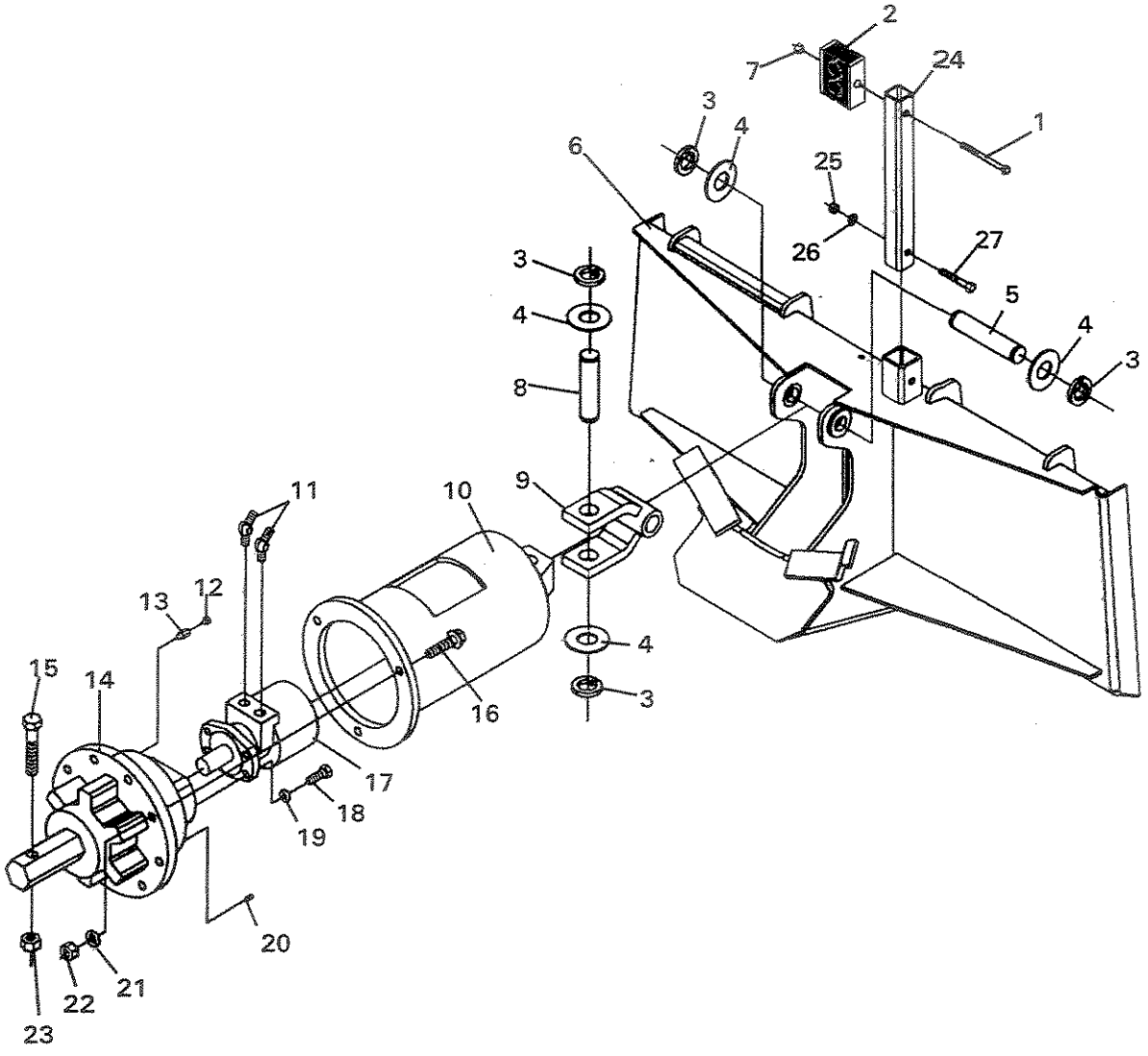
MOUNTING KIT INSTALLATION

EXCAVATOR MOUNTING ASSEMBLY #86600 (Fits Most 1.25" Pin)
EXCAVATOR MOUNTING ASSEMBLY #86711 (Fits Most 1.38" Pin)

NO	REQ'D	PART NO.	DESCRIPTION
1	2	1652	Snap Ring
2	2	64728	Thrust Washer 1.25" X .031"
3	1	85903	Pivot Pin
4	1	86594	Mounting Bracket
5	4	1841	.50" UNC Deformed Lock Nut
6	2	86595	Mounting Ear - 1.25" Pin (Assembly #86600)
	2	86710	Mounting Ear - 1.38" Pin (Assembly #86711)
7	4	1091	.50" UNC X 1.75" Hex Capscrew

MOUNTING KIT INSTALLATION

P1855 HEX DRIVE AUGER ASSEMBLY #85906
P1355 HEX DRIVE AUGER ASSEMBLY #85905
QUICK ATTACH MOUNTING ASSEMBLY #85960



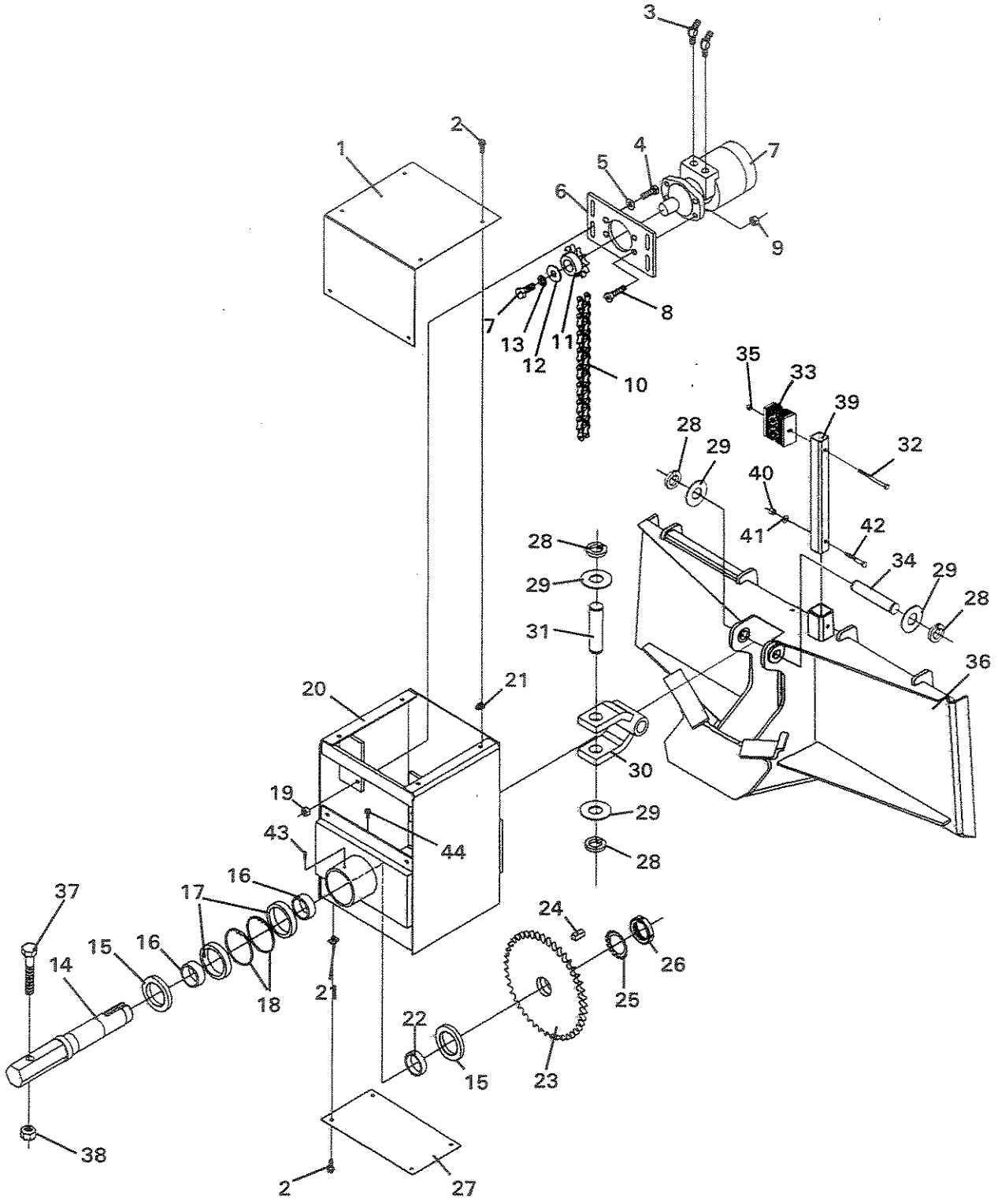
MOUNTING KIT INSTALLATION

P1855 HEX DRIVE AUGER ASSEMBLY #85906
P1355 HEX DRIVE AUGER ASSEMBLY #85905
QUICK ATTACH MOUNTING ASSEMBLY #8596O

NO	REQ'D	PART NO.	DESCRIPTION
1	1	1034	.31" UNC X 4.00" Hex Capscrew
2	1	81358	Twin Tube Hose Clamp
3	4	1652	Snap Ring
4	4	64728	1.25" Thrust Washer
5	1	81846	Pivot Pin
6	1	85902	Quick-Attach Loader Frame
7	1	1225	.31" UNC Hex Nut
8	1	85903	Pivot Pin
9	1	85892	Mounting Swivel
10	1	85889	Drive Housing
11	2	3384	45° Adapter 10MBo-8MJ
12	1	85736	Breather
13	1	85735	Check Valve
14	1	85727	Planetary Drive
	-	45659	Replacement Shaft Seal - Service Part ONLY
15	1	1147	.75" UNC X 4.00" Hex Capscrew
16	3	1826	.56" UNC X 2.50" 12PT Capscrew
17	1	85725	Hydraulic Motor - White #RE12080500 (Used with P1355 Drive Assembly)
	1	85726	Hydraulic Motor - White #RE18080500 (Used with P1855 Drive Assembly)
	1	45412	O'Ring
	-	45456	Seal Kit (Shaft Seal) - Service Parts ONLY
18	4	1090	.50" UNC X 1.50" Hex Capscrew
19	4	1505	.50" Lock Washer
20	-	85969	Magnetic Plug - Service Part ONLY
21	3	1644	.56" Lock Washer
22	3	1229	.56" UNC Hex Nut
23	1	1231	.75" UNC Hex Nut
24	1	87062	Hose Clamp Mounting Tube
25	1	1226	.38" UNC Hex Nut
26	1	1514	.38 Flat Washer
27	1	1049	.38" UNC X 2.50" Hex Capscrew

MOUNTING KIT INSTALLATION

C1325 HEX DRIVE AUGER ASSEMBLY #85945
C1825 HEX DRIVE AUGER ASSEMBLY #85959
QUICK ATTACH MOUNTING ASSEMBLY #85960



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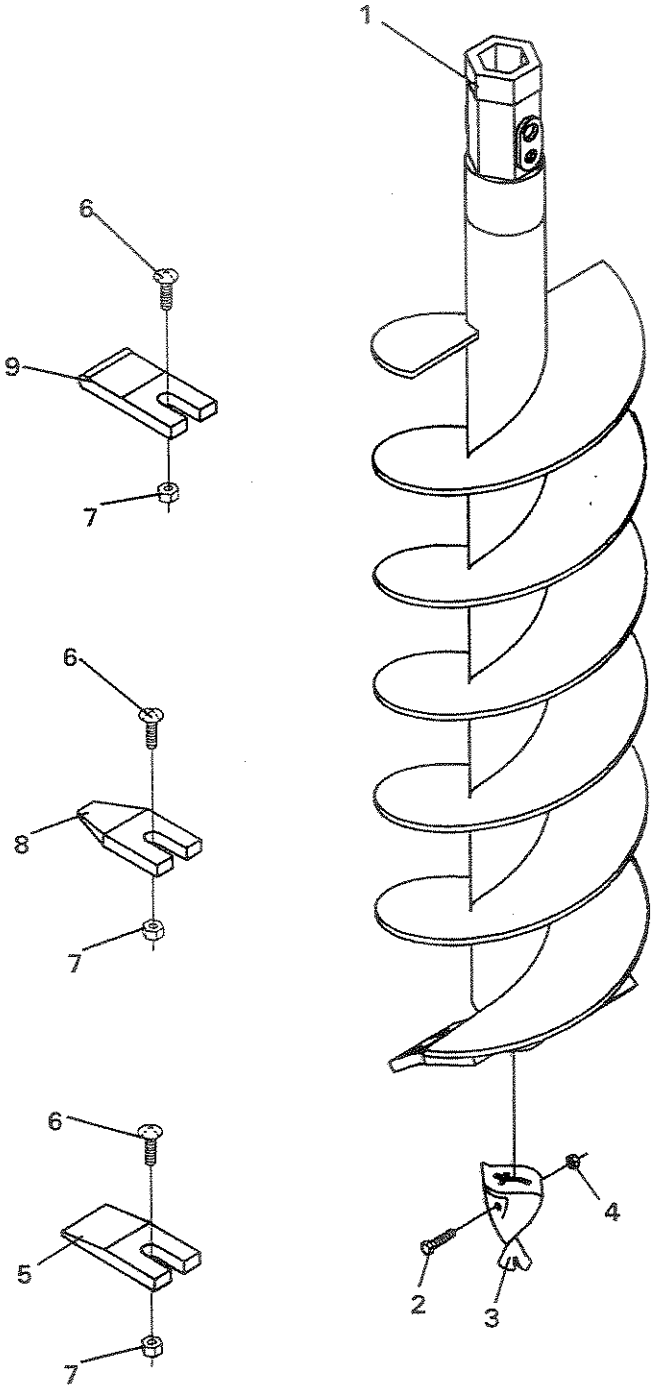
MOUNTING KIT INSTALLATION

C1325 HEX DRIVE AUGER ASSEMBLY #85945
C1825 HEX DRIVE AUGER ASSEMBLY #85959
QUICK ATTACH MOUNTING ASSEMBLY #85960

NO	REQ'D	PART NO.	DESCRIPTION
1	1	85943	Top Cover
2	10	1930	.31" UNC X .75" Flangehead Hex Capscrew
3	2	3384	45° Adapter 10MBO-8MJ
4	4	1090	.50" UNC X 1.50" Hex Capscrew
5	4	1646	.50" Hard Flat Washer
6	1	85936	Motor Mounting Plate
7	1	86056	Hydraulic Motor - White #RE12521600 (Used with C1325 Drive Assembly)
	1	86057	Hydraulic Motor - White #RE18521600 (Used with C1825 Drive Assembly)
	1	1363	.62" UNF X 1.25" Capscrew
8	4	1865	.50" UNC X 1.50" Counter Sunk Hex Capscrew
9	4	1841	.50" UNC Deformed Lock Nut
10	1	85941	Endless Roller Chain - 52 Pitches
11	1	85939	Sprocket - 11 Tooth
12	As Req'd	64728	Thrust Washer 1.25" X .031
	As Req'd	57693	Thrust Washer 1.25" X .078
	As Req'd	64727	Thrust Washer 1.25" X .145
13	1	1517	.62" Washer
14	1	85937	2" Hex Drive Shaft
15	2	45694	Seal
16	2	45692	Bearing Cone
17	2	45693	Bearing Cup
18	2	1681	Snap Ring (Used on Units Built Before 4/01/98)
19	4	1841	.50" UNC Deformed Lock Nut
20	1	85935	Chain Drive Case
21	10	1926	.31" UNC U-Nut
22	1	85942	Output Shaft Sleeve Spacer
23	1	85940	Sprocket - 43 Tooth
24	1	1968	Key .50" SQ X 1.25
25	1	1966	Bearing Lock Washer
26	1	1967	Bearing Lock Nut
27	1	85944	Bottom Cover
28	4	1652	Snap Ring
29	4	64728	Thrust Washer 1.25" X .031
30	1	85892	Mounting Swivel
31	1	85903	Pivot Pin
32	1	1034	.31" UNC X 4.00" Hex Capscrew
33	1	81358	Twin Tube Hose Clamp
34	1	81846	Pivot Pin
35	1	1225	.31" UNC Hex Nut
36	1	85902	Quick-Attach Loader Frame
37	1	1148	.75" UNC X 4.50" Hex Nut
38	1	1534	.75" UNC Nylock Nut
39	1	87062	Hose Clamp Mounting Tube
40	1	1226	.38" UNC Hex Nut
41	1	1514	.38" Flat Washer
42	1	1049	.38" UNC X 2.50" Hex Capscrew
43	1	6616	Grease Zerk (Used on Units Built After 4/01/98)
44	1	86445	Breather Vent (Used on Units Built After 4/01/98)

MOUNTING KIT INSTALLATION

FABRICATED HEAD - HEX DRIVE AUGER ASSEMBLIES



MOUNTING KIT INSTALLATION

FABRICATED HEAD - HEX DRIVE AUGER ASSEMBLIES

6" X 4' FABRICATED HEAD - HEX DRIVE AUGER ASSEMBLY #86793

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	6" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	2	85812	Dirt Tooth
6	2	1962	.62" UNC X 1.50" Carriage Bolt
7	2	1839	.62" UNC Deformed Oval Lock Nut

9" X 4' FABRICATED HEAD - HEX DRIVE AUGER ASSEMBLY #85933

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	9" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	2	85812	Dirt Tooth
6	2	1962	.62" UNC X 1.50" Carriage Bolt
7	2	1839	.62" UNC Deformed Oval Lock Nut

12" X 4' FABRICATED HEAD - HEX DRIVE AUGER ASSEMBLY #85817

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	12" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	4	85812	Dirt Tooth
6	4	1962	.62" UNC X 1.50" Carriage Bolt
7	4	1839	.62" UNC Deformed Oval Lock Nut

15" X 4' FABRICATED HEAD - HEX DRIVE AUGER ASSEMBLY #86788

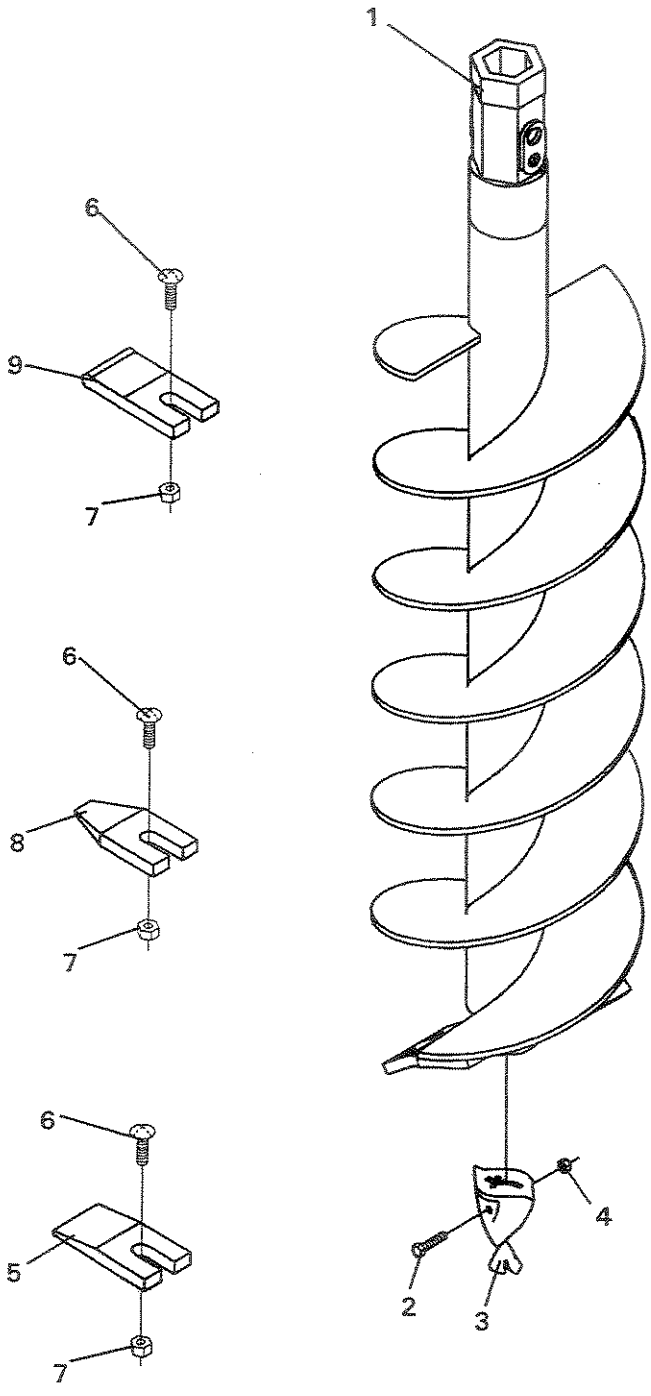
NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	15" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	6	85812	Dirt Tooth
6	6	1962	.62" UNC X 1.50" Carriage Bolt
7	6	1839	.62" UNC Deformed Oval Lock Nut

OPTIONAL TEETH

8	-	85822	Center Cut Tooth
9	-	85908	Carbide Tooth
-	-	86686	Pilot Bit - Carbide Insert
-	-	86687	Pilot Bit - Crushed Carbide

MOUNTING KIT INSTALLATION

FABRICATED HEAD - HEX DRIVE AUGER ASSEMBLIES



MOUNTING KIT INSTALLATION

FABRICATED HEAD - HEX DRIVE AUGER ASSEMBLIES

18" X 4' FABRICATED HEAD - HEX DRIVE AUGER ASSEMBLY #85977

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	18" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	6	85812	Dirt Tooth
6	6	1962	.62" UNC X 1.50" Carriage Bolt
7	6	1839	.62" UNC Deformed Oval Lock Nut

24" X 4' FABRICATED HEAD - HEX DRIVE AUGER ASSEMBLY #85983

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	24" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	8	85812	Dirt Tooth
6	8	1962	.62" UNC X 1.50" Carriage Bolt
7	8	1839	.62" UNC Deformed Oval Lock Nut

30" X 4' FABRICATED HEAD - HEX DRIVE AUGER ASSEMBLY #85985

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	30" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	9	85812	Dirt Tooth
6	9	1962	.62" UNC X 1.50" Carriage Bolt
7	9	1839	.62" UNC Deformed Oval Lock Nut

36" X 4' FABRICATED HEAD - HEX DRIVE AUGER ASSEMBLY #85980

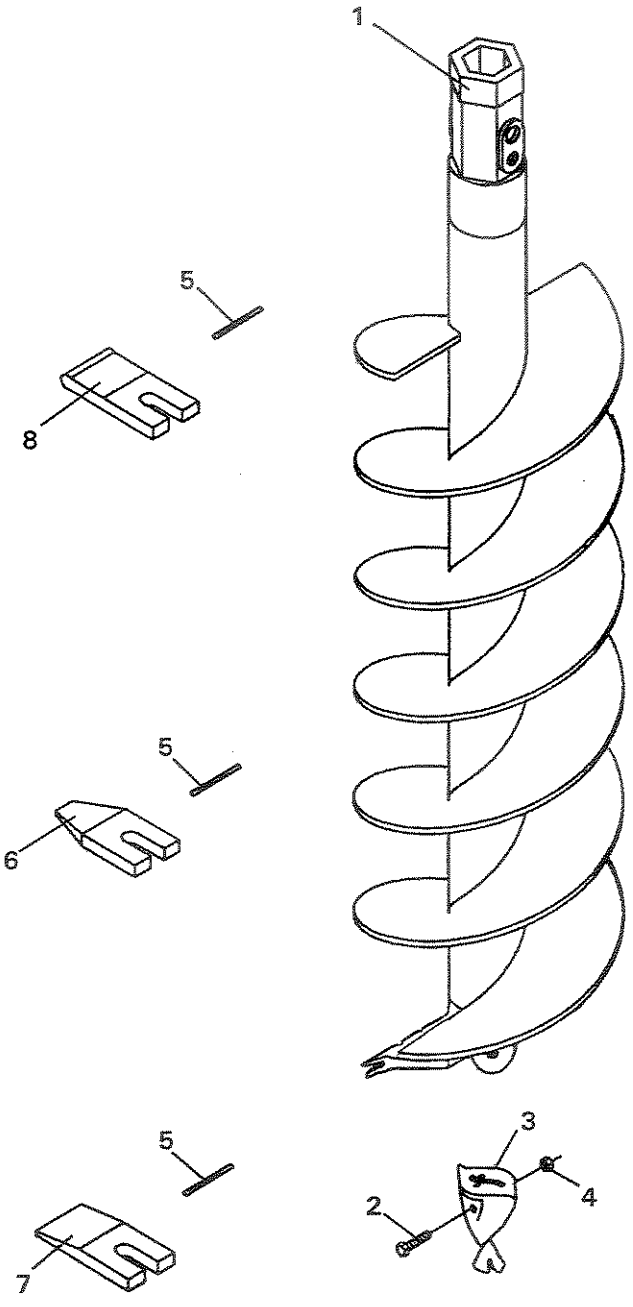
NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	36" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	11	85812	Dirt Tooth
6	11	1962	.62" UNC X 1.50" Carriage Bolt
7	11	1839	.62" UNC Deformed Oval Lock Nut

OPTIONAL TEETH AND PILOT BITS

8	-	85822	Center Cut Tooth
9	-	85908	Carbide Tooth
-	-	86686	Pilot Bit - Carbide Insert
-	-	86687	Pilot Bit - Crushed Carbide

MOUNTING KIT INSTALLATION

CAST STEEL HEAD - HEX DRIVE AUGER ASSEMBLIES



MOUNTING KIT INSTALLATION

CAST STEEL HEAD - HEX DRIVE AUGER ASSEMBLIES

9" X 4' CAST STEEL HEAD - HEX DRIVE AUGER ASSEMBLY #85829

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	9" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	4	85823	Rubber-Lock
6	2	85822	Center Cut Tooth
7	2	85812	Dirt Tooth

12" X 4' CAST STEEL HEAD - HEX DRIVE AUGER ASSEMBLY #85846

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	12" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	4	85823	Rubber-Lock
6	2	85822	Center Cut Tooth
7	2	85812	Dirt Tooth

18" X 4' CAST STEEL HEAD - HEX DRIVE AUGER ASSEMBLY #85853

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	18" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	6	85823	Rubber-Lock
6	4	85822	Center Cut Tooth
7	2	85812	Dirt Tooth

24" X 4' CAST STEEL HEAD - HEX DRIVE AUGER ASSEMBLY #85860

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	24" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	8	85823	Rubber-Lock
6	4	85822	Center Cut Tooth
7	4	85812	Dirt Tooth

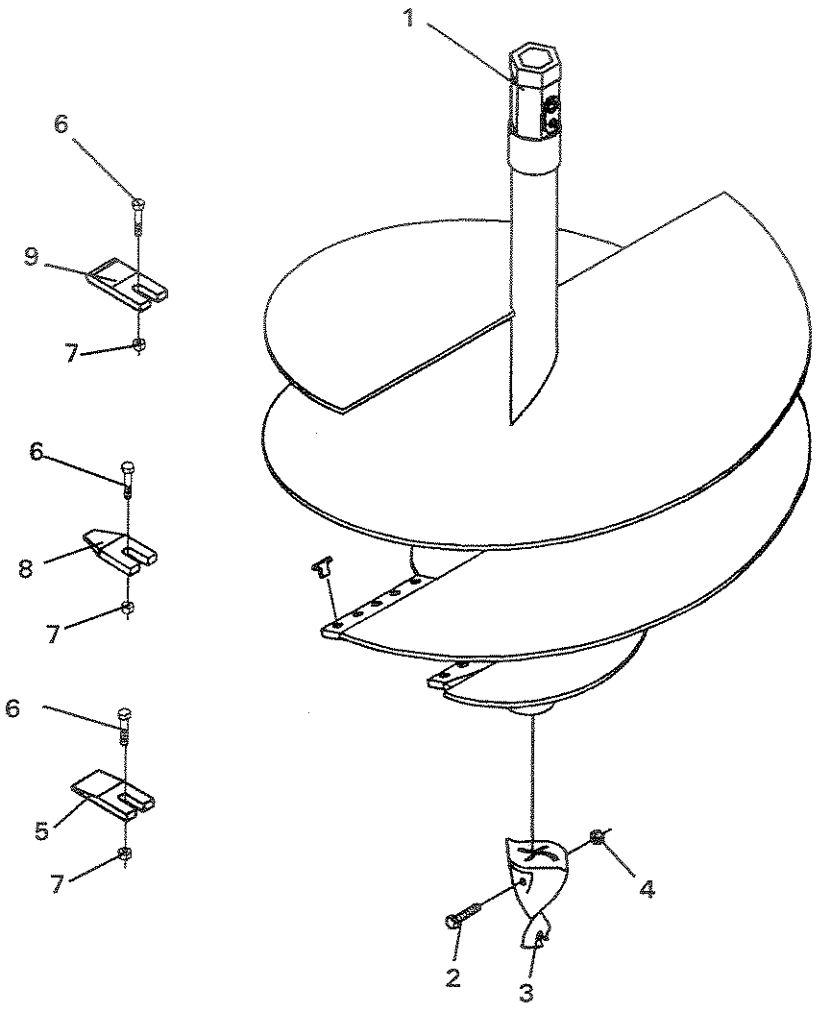
OPTIONAL TEETH

8	-	85908	Carbide Tooth

E

MOUNTING KIT INSTALLATION

HEX DRIVE TREE AUGER ASSEMBLIES



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MOUNTING KIT INSTALLATION

HEX DRIVE TREE AUGER ASSEMBLIES

24" X 4' HEX DRIVE TREE AUGER ASSEMBLY #85866

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	24" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	10	85812	Dirt Tooth
6	10	1962	.62" UNC X 1.50" Carriage Bolt
7	10	1839	.62" UNC Deformed Oval Lock Nut

30" X 4' HEX DRIVE TREE AUGER ASSEMBLY #85873

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	30" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	14	85812	Dirt Tooth
6	14	1962	.62" UNC X 1.50" Carriage Bolt
7	14	1839	.62" UNC Deformed Oval Lock Nut

36" X 4' HEX DRIVE TREE AUGER ASSEMBLY #85879

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	36" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	14	85812	Dirt Tooth
6	14	1962	.62" UNC X 1.50" Carriage Bolt
7	14	1839	.62" UNC Deformed Oval Lock Nut

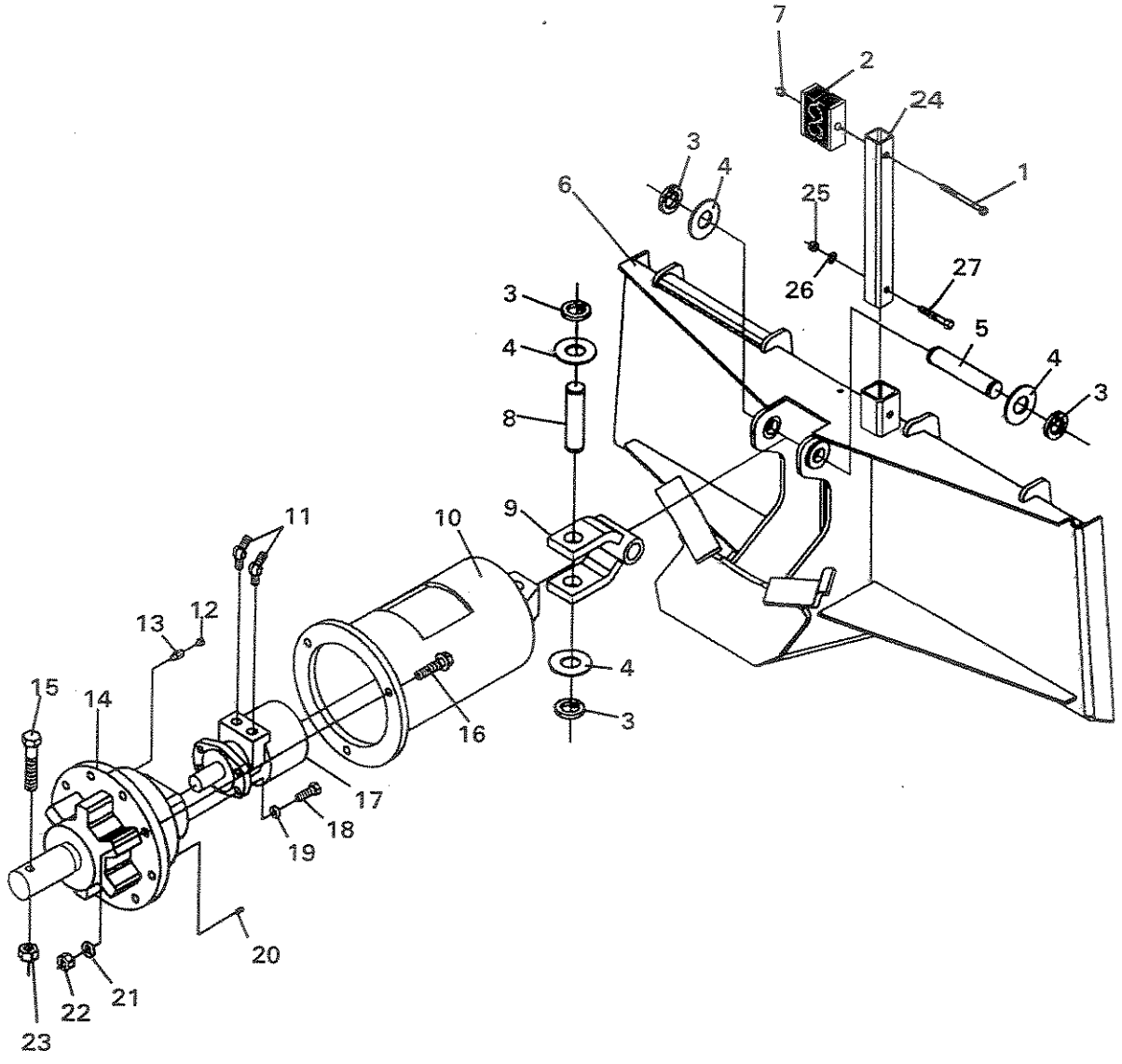
OPTIONAL TEETH

8	-	85822	Center Cut Tooth
9	-	85908	Carbide Tooth

E

MOUNTING KIT INSTALLATION

P1855 ROUND DRIVE AUGER ASSEMBLY #86330
P1355 ROUND DRIVE AUGER ASSEMBLY #86329
QUICK ATTACH MOUNTING ASSEMBLY #85960



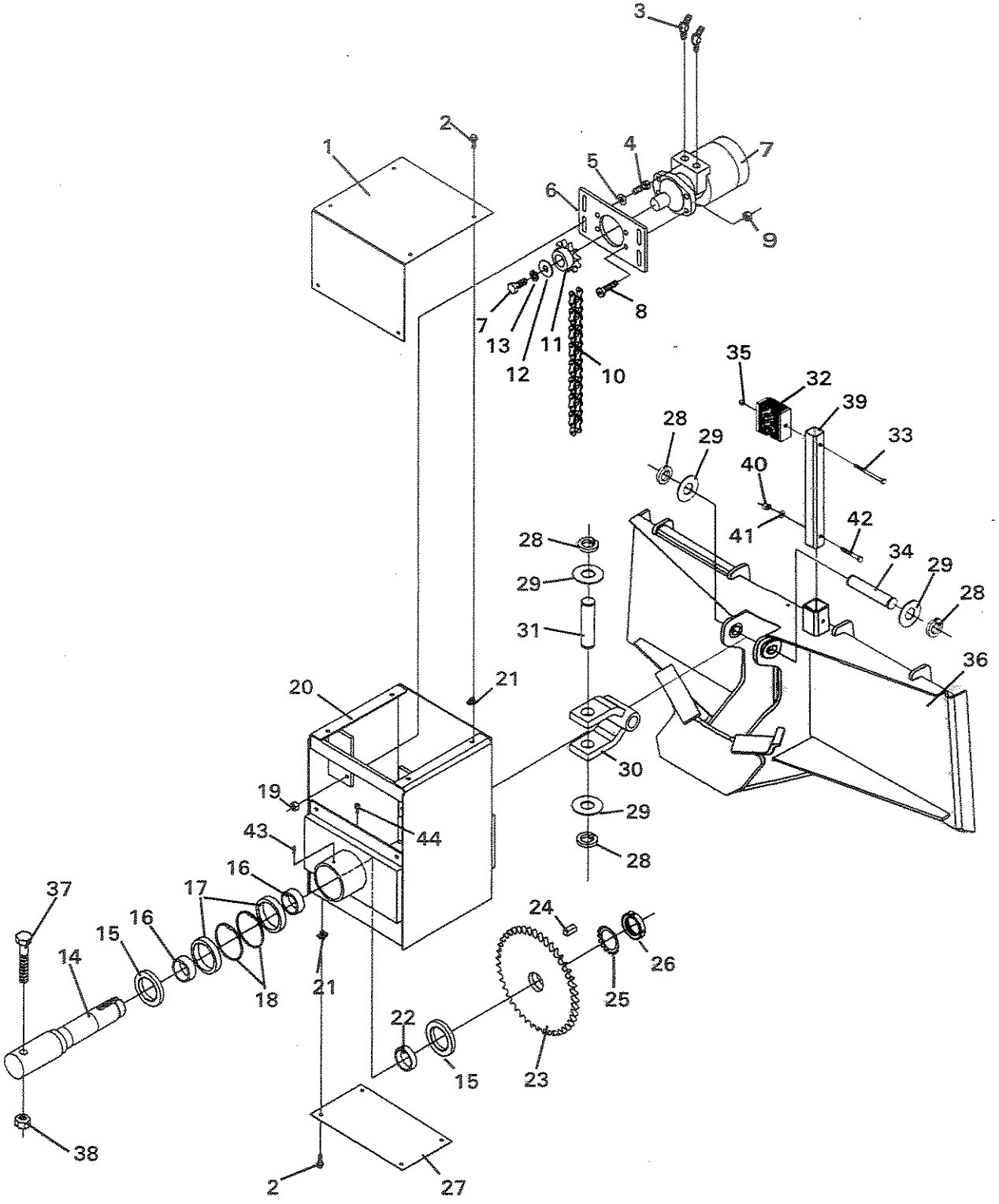
MOUNTING KIT INSTALLATION

P1855 ROUND DRIVE AUGER ASSEMBLY #86330
P1355 ROUND DRIVE AUGER ASSEMBLY #86329
QUICK ATTACH MOUNTING ASSEMBLY #85960

NO	REQ'D	PART NO.	DESCRIPTION
1	1	1034	.31" UNC X 4.00" Hex Capscrew
2	1	81358	Twin Tube Hose Clamp
3	4	1652	Snap Ring
4	4	64728	1.25" Thrust Washer
5	1	81846	Pivot Pin
6	1	85902	Quick-Attach Loader Frame
7	1	1225	.31" UNC Hex Nut
8	1	85903	Pivot Pin
9	1	85892	Mounting Swivel
10	1	85889	Drive Housing
11	2	3384	45° Adapter 10MBo-8MJ
12	1	85736	Breather
13	1	85735	Check Valve
14	1	86328	Planetary Drive
	-	45659	Replacement Shaft Seal - Service Part ONLY
15	1	1147	.75" UNC X 4.00" Hex Capscrew
16	3	1826	.56" UNC X 2.50" 12PT Capscrew
17	1	85725	Hydraulic Motor - White #RE12080500 (Used with P1355 Drive Assembly)
	1	85726	Hydraulic Motor - White #RE18080500 (Used with P1855 Drive Assembly)
	1	45412	O'Ring
	-	45456	Seal Kit (Shaft Seal) - Service Parts ONLY
18	4	1090	.50" UNC X 1.50" Hex Capscrew
19	4	1505	.50" Lock Washer
20	-	85969	Magnetic Plug - Service Part ONLY
21	3	1644	.56" Lock Washer
22	3	1229	.56" UNC Hex Nut
23	1	1231	.75" UNC Hex Nut
24	1	87062	Hose Clamp Mounting Tube
25	1	1226	.38" UNC Hex Nut
26	1	1514	.38 Flat Washer
27	1	1049	.38" UNC X 2.50" Hex Capscrew

MOUNTING KIT INSTALLATION

C1325 AUGER ROUND DRIVE ASSEMBLY #86055
C1825 AUGER ROUND DRIVE ASSEMBLY #86058
QUICK ATTACH MOUNTING ASSEMBLY #85960



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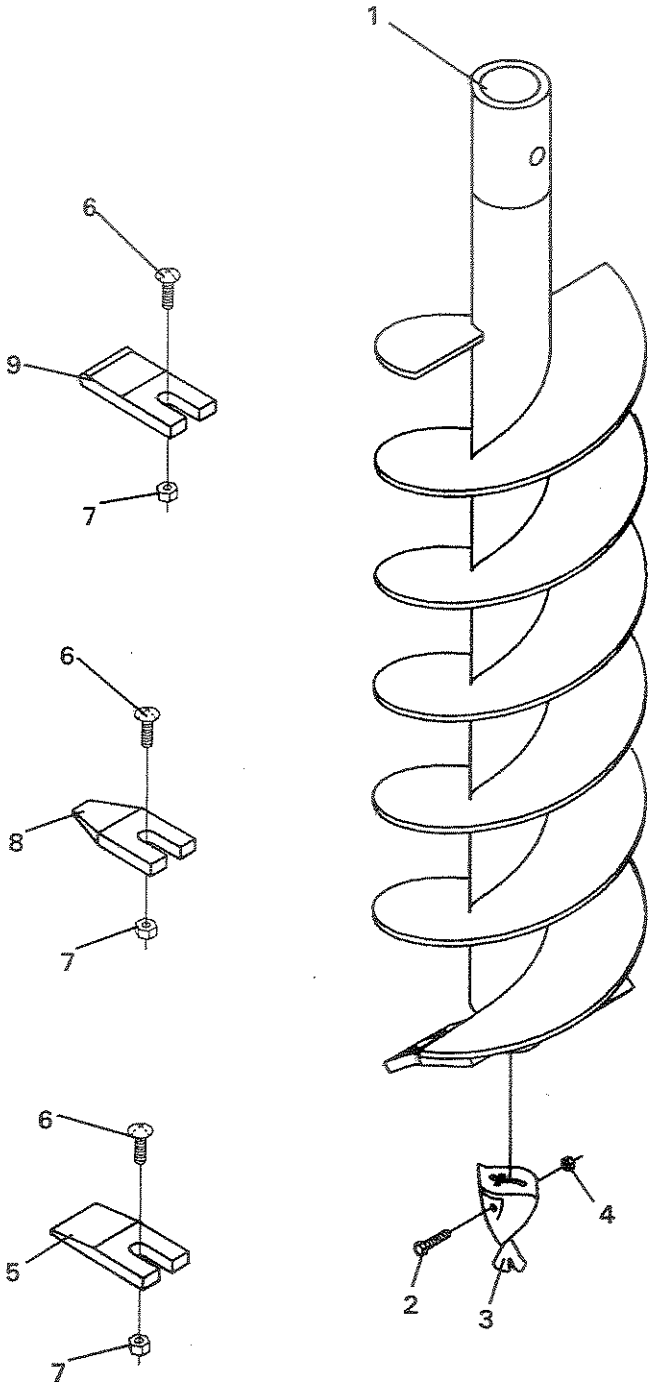
MOUNTING KIT INSTALLATION

C1325 AUGER ROUND DRIVE ASSEMBLY #86055
C1825 AUGER ROUND DRIVE ASSEMBLY #86058
QUICK ATTACH MOUNTING ASSEMBLY #85960

NO	REQ'D	PART NO.	DESCRIPTION
1	1	85943	Top Cover
2	10	1930	.31" UNC X .75" Flangehead Hex Capscrew
3	2	3384	45° Adapter 10MBO-8MJ
4	4	1090	.50" UNC X 1.50" Hex Capscrew
5	4	1646	.50" Hard Flat Washer
6	1	85936	Motor Mounting Plate
7	1	86056	Hydraulic Motor - White #RE12521600 (Used with C1325 Drive Assembly)
	1	86057	Hydraulic Motor - White #RE18521600 (Used with C1825 Drive Assembly)
	1	1363	.62" UNF X 1.25" Capscrew
8	4	1865	.50" UNC X 1.50" Counter Sunk Hex Capscrew
9	4	1841	.50" UNC Deformed Lock Nut
10	1	85941	Roller Chain - 52 Pitches
11	1	85939	Sprocket - 11 Tooth
12	As Req'd	64728	Thrust Washer 1.25" X .031
	As Req'd	57693	Thrust Washer 1.25" X .078
	As Req'd	64727	Thrust Washer 1.25" X .145
13	1	1517	.62" Washer
14	1	86054	2.56" Round Drive Shaft
15	2	45694	Seal
16	2	45692	Bearing Cone
17	2	45693	Bearing Cup
18	2	1681	Snap Ring (Used on Units Built Before 4/01/98)
19	4	1841	.50" UNC Deformed Lock Nut
20	1	85935	Chain Drive Case
21	10	1926	.31" UNC U-Nut
22	1	85942	Output Shaft Sleeve Spacer
23	1	85940	Sprocket - 43 Tooth
24	1	1968	Key .50" SQ X 1.25
25	1	1966	Bearing Lock Washer
26	1	1967	Bearing Lock Nut
27	1	85944	Bottom Cover
28	4	1652	Snap Ring
29	4	64728	Thrust Washer 1.25" X .031
30	1	85892	Mounting Swivel
31	1	85903	Pivot Pin
32	1	1034	.31" UNC X 4.00" Hex Capscrew
33	1	81358	Twin Tube Hose Clamp
34	1	81846	Pivot Pin
35	1	1225	.31" UNC Hex Nut
36	1	85902	Quick-Attach Loader Frame
37	1	1171	.88" UNC X 4.50 Hex Capscrew
38	1	1739	.88" UNC Lock Nut
39	1	87062	Hose Clamp Mounting Tube
40	1	1226	.38" UNC Hex Nut
41	1	1514	.38" Flat Washer
42	1	1049	.38" UNC X 2.50" Hex Capscrew
43	1	6616	Grease Zerk (Used on Units Built After 4/01/98)
44	1	86445	Breather Vent (Used on Units Built After 4/01/98)

MOUNTING KIT INSTALLATION

FABRICATED HEAD - ROUND DRIVE AUGER ASSEMBLIES



MOUNTING KIT INSTALLATION

FABRICATED HEAD - ROUND DRIVE AUGER ASSEMBLIES

6" X 4' FABRICATED HEAD - ROUND DRIVE AUGER ASSEMBLY #86795

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	6" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	2	85812	Dirt Tooth
6	2	1962	.62" UNC X 1.50" Carriage Bolt
7	2	1839	.62" UNC Deformed Oval Lock Nut

9" X 4' FABRICATED HEAD - ROUND DRIVE AUGER ASSEMBLY #86138

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	9" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	2	85812	Dirt Tooth
6	2	1962	.62" UNC X 1.50" Carriage Bolt
7	2	1839	.62" UNC Deformed Oval Lock Nut

12" X 4' FABRICATED HEAD - ROUND DRIVE AUGER ASSEMBLY #86140

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	12" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	4	85812	Dirt Tooth
6	4	1962	.62" UNC X 1.50" Carriage Bolt
7	4	1839	.62" UNC Deformed Oval Lock Nut

15" X 4' FABRICATED HEAD - ROUND DRIVE AUGER ASSEMBLY #86790

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	15" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	6	85812	Dirt Tooth
6	6	1962	.62" UNC X 1.50" Carriage Bolt
7	6	1839	.62" UNC Deformed Oval Lock Nut

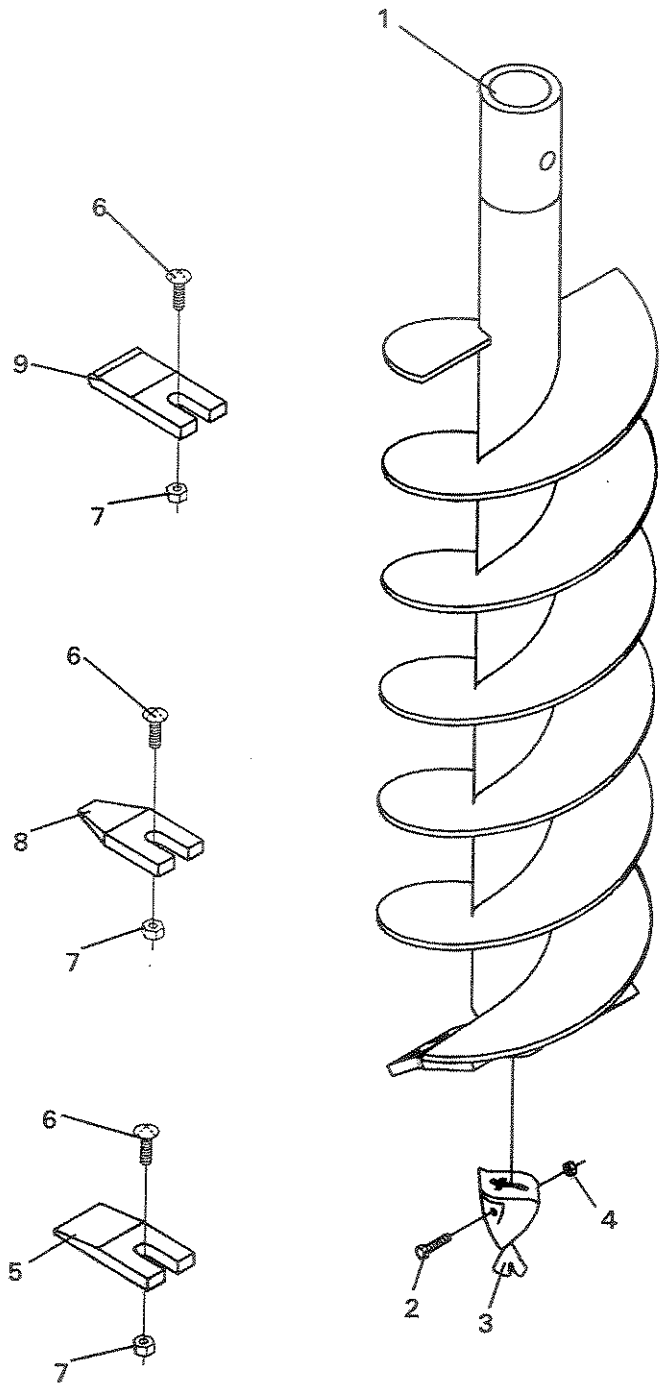
OPTIONAL TEETH

8	-	85822	Center Cut Tooth
9	-	85908	Carbide Tooth
-	-	86686	Pilot Bit - Carbide Insert
-	-	86687	Pilot Bit - Crushed Carbide

E

MOUNTING KIT INSTALLATION

FABRICATED HEAD - ROUND DRIVE AUGER ASSEMBLIES



MOUNTING KIT INSTALLATION

FABRICATED HEAD - ROUND DRIVE AUGER ASSEMBLIES

18" X 4' FABRICATED HEAD - ROUND DRIVE AUGER ASSEMBLY #86142

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	18" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	6	85812	Dirt Tooth
6	6	1962	.62" UNC X 1.50" Carriage Bolt
7	6	1839	.62" UNC Deformed Oval Lock Nut

24" X 4' FABRICATED HEAD - ROUND DRIVE AUGER ASSEMBLY # 86144

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	24" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	8	85812	Dirt Tooth
6	8	1962	.62" UNC X 1.50" Carriage Bolt
7	8	1839	.62" UNC Deformed Oval Lock Nut

30" X 4' FABRICATED HEAD - ROUND DRIVE AUGER ASSEMBLY #86146

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	30" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	9	85812	Dirt Tooth
6	9	1962	.62" UNC X 1.50" Carriage Bolt
7	9	1839	.62" UNC Deformed Oval Lock Nut

36" X 4' FABRICATED HEAD - ROUND DRIVE AUGER ASSEMBLY # 86148

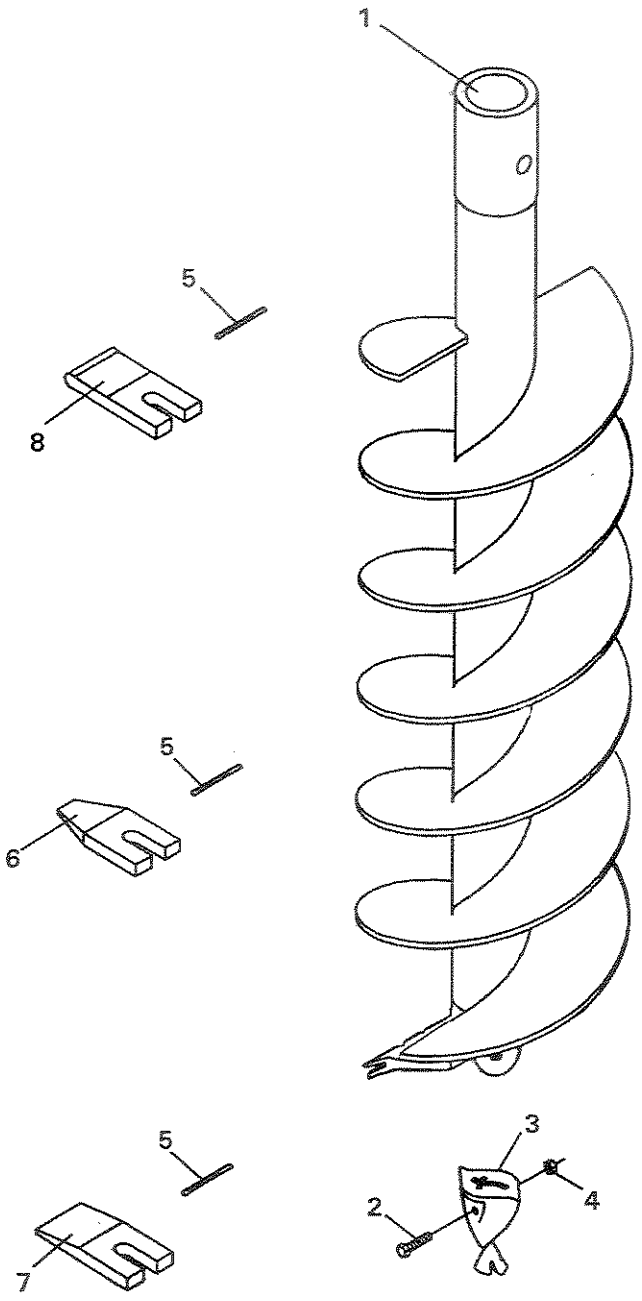
NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	36" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	11	85812	Dirt Tooth
6	11	1962	.62" UNC X 1.50" Carriage Bolt
7	11	1839	.62" UNC Deformed Oval Lock Nut

OPTIONAL TEETH

8	-	85822	Center Cut Tooth
9	-	85908	Carbide Tooth
-	-	86686	Pilot Bit - Carbide Insert
-	-	86687	Pilot Bit - Crushed Carbide

MOUNTING KIT INSTALLATION

CAST STEEL HEAD - ROUND DRIVE AUGER ASSEMBLIES



MOUNTING KIT INSTALLATION

CAST STEEL HEAD - ROUND DRIVE AUGER ASSEMBLIES

9" X 4' CAST STEEL HEAD - ROUND DRIVE AUGER ASSEMBLY #86124

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	9" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	4	85823	Rubber-Lock
6	2	85822	Center Cut Tooth
7	2	85812	Dirt Tooth

12" X 4' CAST STEEL HEAD - ROUND DRIVE AUGER ASSEMBLY #86126

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	12" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	4	85823	Rubber-Lock
6	2	85822	Center Cut Tooth
7	2	85812	Dirt Tooth

18" X 4' CAST STEEL HEAD - ROUND DRIVE AUGER ASSEMBLY #86128

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	18" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	6	85823	Rubber-Lock
6	4	85822	Center Cut Tooth
7	2	85812	Dirt Tooth

24" X 4' CAST STEEL HEAD - ROUND DRIVE AUGER ASSEMBLY #86130

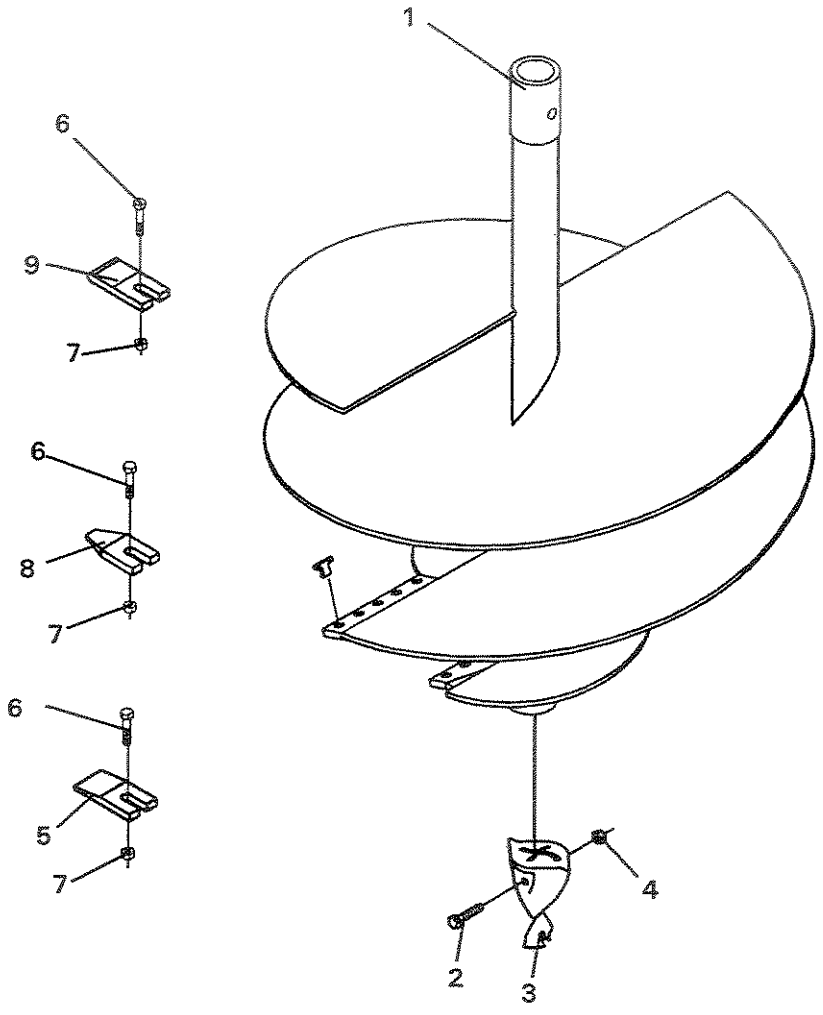
NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	24" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	8	85823	Rubber-Lock
6	4	85822	Center Cut Tooth
7	4	85812	Dirt Tooth

OPTIONAL TEETH

5	-	85908	Carbide Tooth

MOUNTING KIT INSTALLATION

ROUND DRIVE TREE AUGER ASSEMBLIES



MOUNTING KIT INSTALLATION

ROUND DRIVE TREE AUGER ASSEMBLIES

24" X 4' ROUND DRIVE TREE AUGER ASSEMBLY #86132

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	24" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	10	85812	Dirt Tooth
6	10	1962	.62" UNC X 1.50" Carriage Bolt
7	10	1839	.62" UNC Deformed Oval Lock Nut

30" X 4' ROUND DRIVE TREE AUGER ASSEMBLY #86134

NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	30" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	14	85812	Dirt Tooth
6	14	1962	.62" UNC X 1.50" Carriage Bolt
7	14	1839	.62" UNC Deformed Oval Lock Nut

36" X 4' ROUND DRIVE TREE AUGER ASSEMBLY #86136

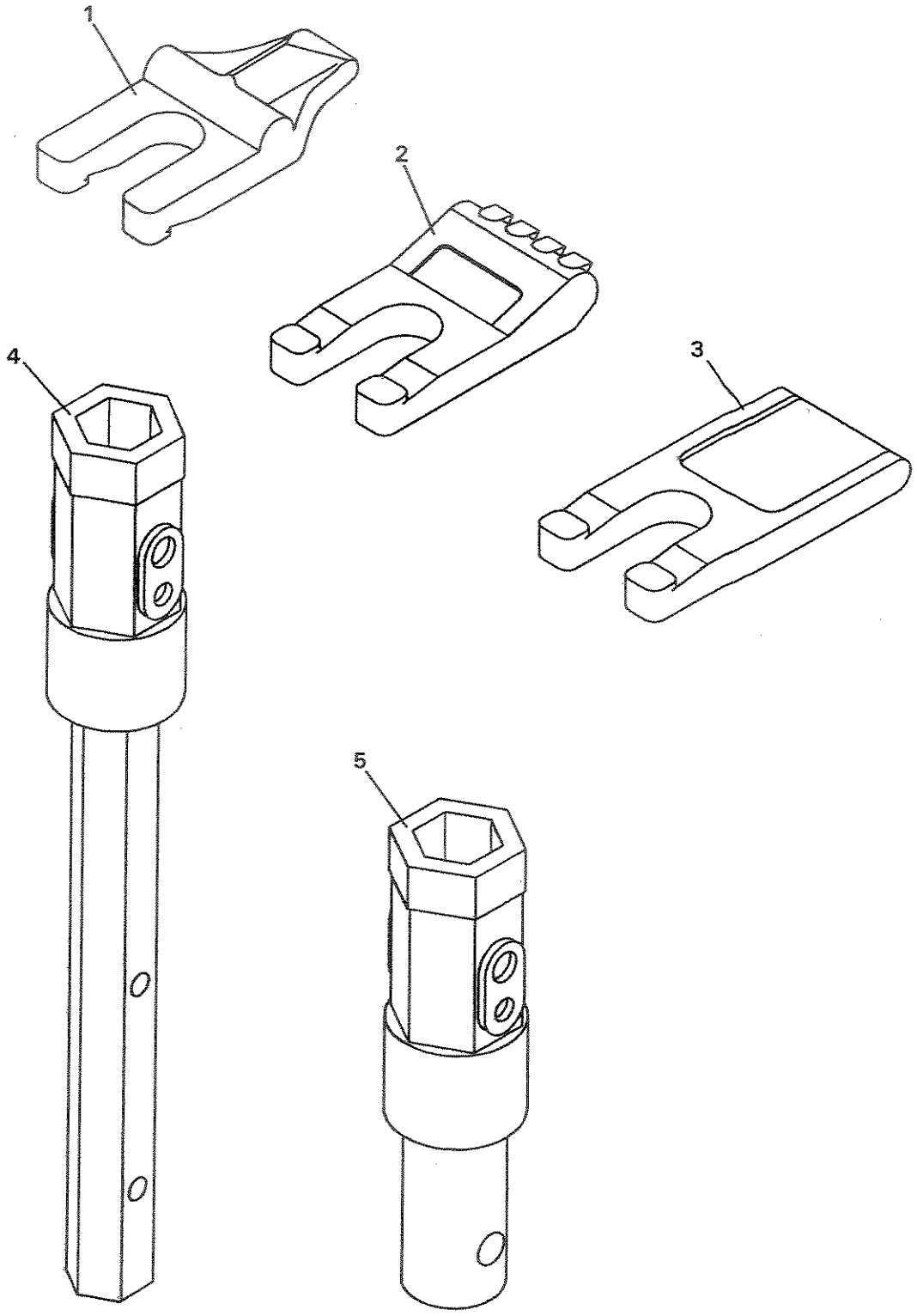
NO	REQ'D	PART NO.	DESCRIPTION
1	1	---	36" X 4' Auger (Not Sold Separately)
2	1	1045	.38" UNC X 1.50" Hex Capscrew
3	1	85811	Pilot Bit
4	1	1226	.38" UNC Hex Nut
5	14	85812	Dirt Tooth
6	14	1962	.62" UNC X 1.50" Carriage Bolt
7	14	1839	.62" UNC Deformed Oval Lock Nut

OPTIONAL TEETH

8	Option	85822	Center Cut Tooth
9	Option	85908	Carbide Tooth

OPTIONS

TEETH, EXTENSIONS & ADAPTERS



OPTIONS

TEETH, EXTENSIONS & ADAPTERS

NO	PART NO.	DESCRIPTION
1	85822	Center Cut Tooth
2	85908	Carbide Tooth
3	85812	Dirt Tooth
4	86004	2" X 12" Hex Extension
	86006	2" X 18" Hex Extension (Shown in Diagram)
	86008	2" X 24" Hex Extension
	86014	2" X 36" Hex Extension
	86010	2" X 48" Hex Extension
5	85996	Adapter 2" Hex to 2-9/16" Round

GENERAL INFORMATION

Simplicity of operation is one of the key features of the BRADCO Pow-R-Bore Augers. The units themselves have no controls, just a few adjustments to check.

When operating the Pow-R-Bore augers, smoothness of technique should be strived for at all times. Smoothness will come with experience and practice. Observe the following points to obtain the best results and to fully utilize the digging force of your unit.

WARNING! Operate the unit only when seated at the controls. Any other method could result in serious personal injury or death.

Check the prospective digging area for hidden utility lines before operating the unit, or when in doubt of their location contact the local utility companies. When operating the unit in an area where utilities are expected to be present, throttle the unit down and proceed with caution. If a utility line has been damaged, contact the affected utility at once.

BEFORE YOU START DIGGING

Before beginning to dig, experiment with auger speed to determine a suitable auger RPM. To increase auger RPM, increase vehicle engine RPM. To decrease auger RPM, decrease vehicle engine RPM. Generally in light and sandy soils a higher RPM is desirable while in hard rocky or frozen soils a slower RPM is recommended.

BASIC DIGGING TECHNIQUE

1. Once you have achieved a suitable auger RPM, return the unit control valve to neutral position to stop the auger.

2. Lower the auger to the ground so that only the center point penetrates the ground approximately two inches (2" or 51mm).

3. Start the auger turning in a forward (clockwise) rotation. Using only enough down pressure to assure positive penetration of the auger into the ground. **NOTE: Excessive down pressure will cause the auger to stall frequently.** Ease up on down pressure if auger rotation slows down drastically or stalls.

G

4. After the auger has penetrated the ground about twenty four inches (24" or 610mm), raise the auger from the hole to clean out the dirt. REPEAT THIS PROCEDURE UNTIL THE DESIRED HOLE DEPTH IS OBTAINED.

5. Allow the auger to turn an extra few seconds once the required depth is reached to clean the hole.
Return the unit control valve to the neutral position to stop the rotation of the auger.
Raise the auger out of the hole and move it to the side, active the unit control valve to spin the loose soil off of the auger.

NOTE: DO NOT REVERSE THE AUGER ROTATION TO REMOVE IT FROM THE HOLE OR LOOSE SOIL ON THE AUGER FLIGHTS WILL FALL BACK INTO THE HOLE.

6. If necessary repeat steps 7 & 8 to obtain a cleaner hole.

EXCESSIVE DOWN PRESSURE APPLIED. . .

In some soil conditions or when excessive down pressure is applied, the auger may "screw" itself into the ground and become stuck causing the unit to stall. If this happens, reverse the auger rotation (counterclockwise) by moving the control valve lever to the reverse position and slowly raise the auger. Once unstuck, return the control valve lever to the forward rotation position and continue digging.

CONTACTING AN OBSTRUCTION. . .

If the auger makes contact with a large obstruction the vehicle hydraulic system will go over relief causing the auger to stall. When this happens, reverse the rotation and raise the auger. Once unstuck you can continue digging. **NOTE: Repeated stalling of the unit will cause overheating of the hydraulic system.**

EXCESSIVE SIDE LOADING. . .

Avoid excess side loading to the auger which can cause drive unit or auger damage.

Keep auger teeth and points in good condition. Check frequently and replace when needed to avoid unnecessary wear on the tooth holders and auger flighting.

LUBRICATION

BRADCO POW-R-BORE AUGERS

GENERAL INFORMATION

Economical and efficient operation of any machine is dependent upon regular and proper lubrication of all moving parts with a quality lubricant. Neglect leads to reduced efficiency, heavy draft, wear, breakdown, and needless replacement parts.

OUTPUT SHAFT BEARING

Grease with Mystik JT-6 or equivalent Hi-Pressure Lithium based grease with EP-2 additive every 1200 hours or 12 months whichever comes first. (Chain Drive units ONLY)

DRIVE CHAIN (Chain Drive Units)

Lubricate drive chain every 100 hours with high quality commercial chain lubricant. Apply lubricant to a warm drive chain. Replace chain if adjustment in not possible and free play exceeds 1/2". Remove and clean as needed.

GEAR BOX (Planetary Drive Units)

Change Gear Box oil using API-GL-5, 80W or 90W lubricant after the first 50 hours of operation and then every 1200 hours or 12 months which ever comes first. Check oil level frequently to maintain proper lubrication.

Change planetary gear reduction lubricant under normal temperature ranges between 0-120°F (-18 to 49°C). Approximate oil capacity is 22 oz. or 5 oz. after half full, excess oil will vent.

CAUTION! Shut off vehicle engine before lubricating equipment.

GENERAL INFORMATION

Your pow-R-bore auger was designed to be virtually maintenance free. Very little effort is needed to keep it in top condition. It is however, important to follow these procedures to get full performance and longevity out of the unit.

WARNING! PERFORM MAINTENANCE ONLY WHEN DRIVE UNIT IS DISCONNECTED FROM THE POWER SOURCE.

LUBRICATION

Grease the output shaft bearings with Mystik JT-6 hi-temperature or equivalent high pressure Lithium based grease every 1200 hours or 12 months, whichever comes first. (Chain Drive units ONLY)

Lubricate the drive chain (if equipped) with a high quality commercial chain lubricant every 100 hours.

Change planetary gear reduction oil (if equipped) with API-GL-5, 80W or 90W lubricate after the first 50 hours of operation and then every 1200 hours or 12 months, whichever comes first.

DAILY INSPECTION

Check hydraulic oil for cleanliness and contamination. Change if necessary.

Check hydraulic hoses for damage, leakage, or signs of excessive heat. Replace if necessary.

Check auger point for excessive wear or loose fit. Replace if necessary.

Check auger teeth for excessive wear or loose fit. Replace if necessary

Check output shaft for excessive wear, damage or leakage. Replace if necessary

Check all bolts and pivot pins for damage, breaks or wear.

CAUTION! EXCESSIVE VENTING OF LUBRICANT FROM PLANETARY MAY INDICATE THAT THE MOTOR SHAFT SEAL IS LEAKING. UNIT SHOULD BE REPAIRED IMMEDIATELY.

PLANETARY SHAFT SEAL REPLACEMENT IS THE <u>ONLY</u> PLANETARY REPAIR THAT CAN BE MADE WHILE THE UNIT IS UNDER WARRANTY. (Seal #45659)

MOTOR SHAFT SEAL REPLACEMENT IS THE <u>ONLY</u> HYDRAULIC MOTOR REPAIR THAT CAN BE MADE WHILE THE UNIT IS UNDER WARRANTY. (Seal Kit #45456)

OUTPUT SHAFT SPROCKET / MOTOR SHAFT SPROCKET

As the chain and sprockets wear it is necessary to adjust the chain to keep it from slipping and/or falling off of the sprockets. The chain is a continuous chain and does not have a master link therefore, when the chain has reached the end of adjustment it is time to replace the output shaft sprocket, chain and/or the motor shaft sprocket. Follow the instructions below for replacing the output shaft sprocket, motor shaft sprockets & chain.

To replace the chain, the hydraulic motor, the output shaft and seals or the output shaft bearings due to the shaft breaking or bearing failure see the instructions on the following pages.

WARNING! PERFORM MAINTENANCE ONLY WHEN DRIVE UNIT IS DISCONNECTED FROM THE POWER SOURCE.

NOTE: USE ONLY ORIGINAL EQUIPMENT AND AUTHORIZED BRADCO PARTS WHEN REPLACING THE OUTPUT SHAFT SPROCKET.

REPLACING OUTPUT AND/OR MOTOR SHAFT SPROCKETS

1. Disconnect the drive unit from the power source.
2. Remove the safety cover by first removing the (10) 5/16" bolts.
3. Remove the (4) 1/2" bolts from the motor mounting plate. Slide the motor forward to free the chain and then remove the motor.
4. Remove the chain.
5. Straighten the tab on the sprocket lock washer and remove the locknut and washer.
6. Remove the sprocket from the output shaft. Be extremely careful when removing the shaft so you do not damage the shaft threads or lose the key(s).
7. Coat the inside of the new sprocket with an anti-seize lubricant.
8. Install the new sprocket with the hub toward the hydraulic motor.
9. Tap the key(s) into position being extremely careful not to damage the shaft threads.
10. Replace and tighten the lock washer and lock nut. Re-bend the tab on the lock washer to lock it into place. **(NOTE: Tighten until there is no end-to-end play in the shaft and moderate force is needed to rotate.)**

NOTE: FOLLOW STEPS 11 & 12 FOR REPLACING THE MOTOR SHAFT SPROCKET. IF NOT REPLACING THE MOTOR SHAFT SPROCKET GO TO STEP 13.

11. Remove the 5/8" bolt, spacer, and the flat washer from the motor shaft. Remove the motor sprocket from the motor shaft.
12. Install the new motor sprocket with the hub side away from the motor. Re-install the 5/8" bolt, spacer, and flat washer.
13. Install the chain and motor, wrapping the chain around the motor sprocket. Re-install and tighten the (4) 1/2" motor bolts.
14. Install the safety cover and secure in place using the (10) 5/16" bolts.

REPLACING THE OUTPUT SHAFT BEARING AND/OR INSTALLING A NEW SHAFT AND SEALS

1. Disconnect the drive unit from the power source.
2. Remove the safety cover by first removing the (10) 5/16" bolts.
3. Remove the (4) 1/2" bolts from the motor mounting plate. Slide the motor forward to free the chain and then remove the motor.
4. Remove the chain.
5. Straighten the tab on the sprocket lock washer and remove the locknut and washer.
6. Remove the sprocket from the output shaft. Be extremely careful when removing the shaft so you do not damage the shaft threads or lose the key(s). NOTE: It may be necessary to use a porta-power or hydraulic jack to assist in the removal of the sprocket.
7. Using a brass hammer, remove the shaft from the bearing housing and remove the output shaft spacer.
8. Remove the (2) seals and the bearing rollers from the bearing housing. Clean all parts of dirt, old grease and corrosion.
9. Repack the bearing rollers with new grease (See Lubrication Section "H" for grease specifications) being sure to work grease thoroughly in-between all rollers. Remove excess grease from the inside diameter.
10. Install the new bearings and then the seals into the housing. Press or drive seal in flush with the end of a tube.
11. Place shaft into the bearing housing.
12. Coat the inside of the sprocket with an anti-seize lubricant.

13. Replace the output shaft spacer and sprocket with the sprocket hub facing the hydraulic motor.
14. Tap the key(s) into position being extremely careful not to damage the shaft threads.
15. Replace and tighten the lock washer and lock nut. Re-bend the tab on the lockwasher to lock it into place. **(NOTE: Tighten until there is no end-to-end play in the shaft and moderate force is needed to rotate.)**
16. Install the new motor sprocket with the hub side away from the motor. Replace the 5/8" bolt and flat washer.
17. Install the chain and motor, wrapping the chain around the motor sprocket. Replace and tighten the (4) 1/2" motor bolts.
18. Install the safety cover and secure in place using the (10) 5/16" bolts.

REPLACING THE CHAIN

1. Disconnect the drive unit from the power source.
2. Remove the safety cover by first removing the (10) 5/16" bolts.
3. Remove the (4) 1/2" bolts from the motor mounting plate. Slide the motor forward to free the chain and then remove the motor.
4. Remove the chain .
5. Install the chain and motor, wrapping the chain around the motor sprocket. Replace and tighten the (4) 1/2" motor bolts.
6. Install the safety cover and secure in place using the (10) 5/16" bolts.

REPLACING THE HYDRAULIC MOTOR

1. Follow Steps "1" through "4" in *"REPLACING THE CHAIN"*.
2. Remove the 5/8" bolt, spacer, and the flat washer from the motor shaft. Remove the motor sprocket from the motor shaft.
3. Install the motor sprocket with the hub side away from the motor onto the new hydraulic motor. Re-install the 5/8" bolt, spacer, and flat washer.
4. Install the chain and motor, wrapping the chain around the motor sprocket. Replace and tighten the (4) 1/2" motor bolts.
5. Install the safety cover and secure in place using the (10) 5/16" bolts.

GEAR BOX (PLANETARY DRIVE UNITS)

Change gear box oil using API-GL-5, 80W or 90W lubricant after the first 50 hours of operation and then every 1200 hours or 12 months, whichever comes first. Check oil level frequently to maintain proper lubrication.

CHECKING THE PLANETARY LUBRICANT

1. Place the planetary in a vertical position. See diagrams below.

2. Remove the vent plug.

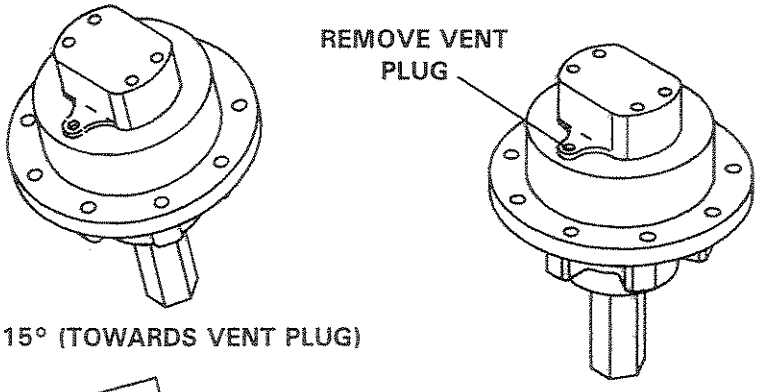
3. Check the lubricant level. Gear lub level should be below the bottom of the housing at the vent plug hole.

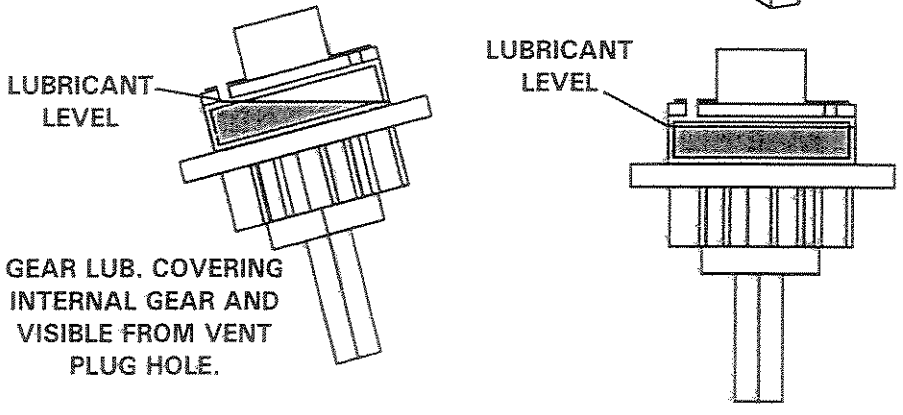
NOTE: Lubricant above the bottom housing will be forced out of the vent when the unit reaches operating temperatures.

4. Tilt the planetary slightly (maximum 15°) towards the vent hole. See diagrams below.

5. With the planetary in this position, lubricant should cover the internal gear and be visible through the vent plug hole. See diagrams below.

NOTE: Add lubricant if Planetary is tilted 15° and lubricant is still not visible through the vent plug hole.





REMOVAL AND STORAGE

BRADCO POW-R-BORE AUGERS

GENERAL INFORMATION

The following storage procedures will help you to keep your unit in top condition. They will also help you get off to a good start the next time your auger is needed. We therefore strongly recommend that you take the extra time to follow these procedures when ever your auger will not be used for an extended period of time.

PREPARATION FOR REMOVAL AND STORAGE

1. Check to insure that hydraulic motor and hoses are full of clean oil.
2. On planetary drive units be sure planetary gear reduction is full (to the recommended capacity for your model number) of clean lubricant.
3. Clean the unit thoroughly, removing all mud, dirt, and grease.
4. Tighten all loose hardware.
5. Touch up unpainted and exposed areas with paint to prevent rust.
6. Coat the chain with a thin covering of chain lubricant. Coat liberally with grease the drive unit output shaft, inside of auger collar, variable auger extension shaft and inside of variable auger extension collar to prevent rust and reduce wear.
7. Store the unit in a dry and protected place. Leaving the pow-R-bore auger outside, exposed to the elements will materially shorten its life.
8. Inspect the unit for visible signs of wear, breakage or damage. Order any parts required and make necessary repairs to avoid delays when starting next season.
9. Replace decals if damaged or in unreadable condition.

REMOVING FROM STORAGE

1. Remove all protective coverings.
2. Check hydraulic hoses for deterioration and replace if necessary.
3. During cold weather, operate the unit slowly for a short time before placing the unit under full load.

TROUBLESHOOTING

POWER BORE AUGERS

PROBLEM	POSSIBLE CAUSE	SOLUTION
EXCESSIVE OIL HEATING	Restricted hydraulic line	Re-install hoses correctly.
	Defective or mismatched coupler	Replace with proper couplers.
	Fluid dirty	Replace hydraulic fluid and filter.
	Insufficient quanity of hydraulic fluid	Fill reservoir to proper lever. Increase reservoir storage capacity.
	Excessive load	Reduce load to within machine specifications.
INSUFFICIENT DIGGING POWER	Excessive wear of auger, teeth or point	Replace
	Low system pressure (BAR)	Check with pressure gauge. If low investigate cause.
	Damaged or setting wrong on relief valve	Adjust or replace as required.
	Excessive load	Reduce load to within machine specifications.
OIL LEAKS	Loose or damaged hoses	Tighten or replace.
	Loose or damaged fittings	Tighten or replace.
	Hydraulic motor seals or planetary reduction seals and gaskets worn or damaged	See Dealer for repair.
REVERSE DIRECTION	Hose reversed	Re-install hoses correctly.
SLOW AUGER SPEED	Low flow (GPM)	Check with flow meter. If low, investigate and correct.
	Defective or mismatched couplers	Replace with proper couplers.
	Restricted hydraulic line	Clear lines
	Fittings or connections to small	Replace with proper sizes.
	Dirty oil filter	Replace
	Worn or damaged hydraulic pump	See dealer for repair.
	Excessive wear of auger, teeth or point	Replace

BOLT TORQUE

BOLT TORQUE SPECIFICATIONS

GENERAL TORQUE SPECIFICATION TABLE

Use the following torques when special torques are not given. These values apply to fasteners as received from suppliers, dry, or when lubricated with normal engine oil. They do not apply if special graphited or moly disulphide greases or other extreme pressure lubricants are used. This applies to both UNF and UNC threads. Remember to always use grade five or better when replacing bolts.

SEE Grade No. Bolt head identification marks as per grade. NOTE: Manufacturing Marks Will Vary		2				5				8*			
Bolt Size		TORQUE Pounds Feet		TORQUE Newton-Meters		TORQUE Pounds Feet		TORQUE Newton-Meters		TORQUE Pounds Feet		TORQUE Newton-Meters	
Inches	Millimeters	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1/4	6.35	5	6	6.8	8.13	9	11	12.2	14.9	12	15	16.3	30.3
5/16	7.94	10	12	13.6	16.3	17	20.5	23.1	27.8	24	29	32.5	39.3
3/8	9.53	20	23	27.1	31.2	35	42	47.5	57.0	45	54	61.0	73.2
7/16	11.11	30	25	40.7	47.4	54	64	73.2	86.8	70	84	94.9	113.9
1/2	12.70	45	52	61.0	70.5	80	96	108.5	130.2	110	132	149.2	179.0
9/16	14.29	65	75	88.1	101.6	110	132	149.2	179.0	160	192	217.0	260.4
5/8	15.88	95	105	128.7	142.3	150	180	203.4	244.1	220	264	298.3	358.0
3/4	19.05	150	185	203.3	250.7	270	324	366.1	439.3	380	456	515.3	618.3
7/8	22.23	160	200	216.8	271.0	400	480	542.4	650.9	600	720	813.6	976.3
1	25.40	250	300	338.8	406.5	580	696	786.5	943.8	900	1080	1220.4	1464.5
1-1/8	25.58	-	-	-	-	800	880	1084.8	1193.3	1280	1440	1735.7	1952.6
1-1/4	31.75	-	-	-	-	1120	1240	1518.7	1681.4	1820	2000	2467.9	2712.0
1-3/8	34.93	-	-	-	-	1460	1680	1979.8	2278.1	2380	2720	3227.3	3688.3
1-1/2	38.10	-	-	-	-	1940	2200	2630.6	2983.2	3160	3560	4285.0	4827.4

* Thick Nuts must be used with Grade 8 bolts

METRIC BOLT TORQUE SPECIFICATIONS

5.6 8.8 10.9

Size of Screw	Grade No.	Coarse Thread Ptich (mm)	Coarse Thread Pounds Feet	Coarse Thread Newton-Meters	Fine Thread Pitch (mm)	Fine Thread Pounds Feet	Fine Thread Newton-Meters
M6	5.6	1.0	3.6-5.8	4.9-7.9	-	-	-
	8.8		5.8-9.4	7.9-12.7		-	-
	10.9		7.2-10	9.8-13.6		-	-
M8	5.6	1.25	7.2-14	9.8-19	1.0	12-17	16.3-23
	8.8		17-22	23-29.8		19-27	25.7-36.6
	10.9		20-26	27.1-35.2		22-31	29.8-42
M10	5.6	1.5	20-25	27.1-33.9	1.25	20-29	27.1-39.3
	8.8		34-40	46.1-54.2		35-47	47.4-63.7
	10.9		38-46	51.5-62.3		40-52	54.2-70.5
M12	5.6	1.75	28-34	37.9-46.1	1.25	31-41	42-55.6
	8.8		51-59	69.1-79.9		56-68	75.9-92.1
	10.9		57-66	77.2-89.4		62-75	84-101.6
M14	5.6	2.0	49-56	66.4-75.9	1.5	52-64	70.5-86.7
	8.8		81-93	109.8-126		90-106	122-143.6
	10.9		96-109	130.1-147.7		107-124	145-168
M16	5.6	2.0	67-77	90.8-104.3	1.5	69-83	93.5-112.5
	8.8		116-130	157.2-176.2		120-138	162.6-187
	10.9		129-145	174.8-196.5		140-158	189.7-214.1
M18	5.6	2.0	88-100	119.2-136	1.5	100-117	136-158.5
	8.8		150-168	203.3-227.6		177-199	239.8-269.6
	10.9		175-194	237.1-262.9		202-231	273.7-313
M20	5.6	2.5	108-130	146.3-176.2	1.5	132-150	178.9-203.3
	8.8		186-205	252-277.8		206-242	279.1-327.9
	10.9		213-249	288.6-337.4		246-289	333.3-391.6

SPECIFICATIONS

CHAIN DRIVE UNITS

DESCRIPTION	MODEL SPECIFICATIONS C1325	C1825
Max. Recommended Auger Diameter	30" (762 mm)	36" (914 mm)
Min. Recommended Hydraulic Flow	10 GPM (38 LPM)	15 GPM (57 LPM)
Max. Recommended Hydraulic Flow	20 GPM (76 LPM)	30 GPM (114 LPM)
Max. Continuous Operating PSI	3000 PSI (207 BAR)	3000 PSI (207 BAR)
Output Shaft	2" Hexagon (51mm)	2" Hexagon (51mm)
Approximate Weight	163 LBS (74 KG)	163 LBS (74KG)
OUTPUT SPEED		
10 GPM (38 LPM)	48 RPM	
15 GPM (57 LPM)	71 RPM	
20 GPM (76 LPM)	95 RPM	65 RPM
25 GPM (95 LPM)		81 RPM
30 GPM (114 LPM)		97 RPM
OUTPUT TORQUE	FT/LBS (NM)	FT/LBS (NM)
2000 PSI (138 BAR)	1286 (1744)	1898 (2574)
2500 PSI (173 BAR)	1607 (2179)	2372 (3216)
3000 PSI (207 BAR)	1929 (2616)	2846 (3859)

SPECIFICATIONS AND DESIGN ARE SUBJECT TO CHANGE WITHOUT NOTICE AND WITHOUT LIABILITY THEREFORE. OUTPUT SPEED AND TORQUE SPECIFICATIONS ARE BASED ON COMPUTED VALUES FOR COMPARATIVE PURPOSES ONLY.

PLANETARY DRIVE UNITS

DESCRIPTION	MODEL SPECIFICATIONS P1355	P1855
Max. Recommended Auger Diameter	30" (762 mm)	36" (914 mm)
Min. Recommended Hydraulic Flow	10 GPM (38 LPM)	15 GPM (57 LPM)
Max. Recommended Hydraulic Flow	20 GPM (76 LPM)	30 GPM (114 LPM)
Max. Continuous Operating PSI	3000 PSI (207 BAR)	3000 PSI (207 BAR)
Output Shaft	2" Hexagon (51mm)	2" Hexagon (51mm)
Approximate Weight	152 LBS (69 KG)	152 LBS (69KG)
OUTPUT SPEED		
10 GPM (38 LPM)	50 RPM	
15 GPM (57 LPM)	74 RPM	
20 GPM (76 LPM)	99 RPM	50 RPM
25 GPM (95 LPM)		88 RPM
30 GPM (114 LPM)		101 RPM
OUTPUT TORQUE	FT/LBS (NM)	FT/LBS (NM)
2000 PSI (138 BAR)	1233 (1672)	1820 (2468)
2500 PSI (173 BAR)	1542 (2091)	2275 (3085)
3000 PSI (207 BAR)	1850 (2509)	2730 (3702)

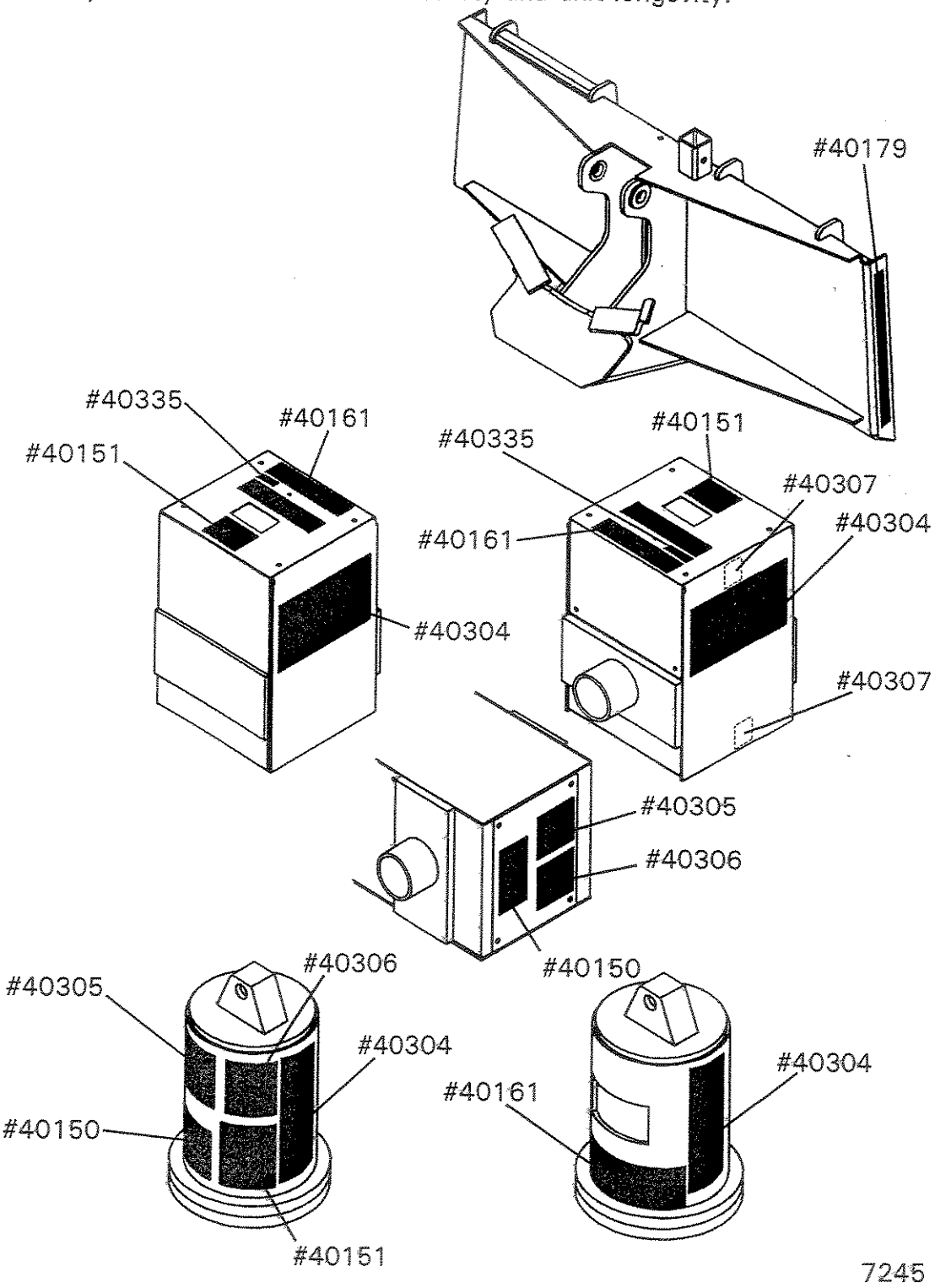
SPECIFICATIONS AND DESIGN ARE SUBJECT TO CHANGE WITHOUT NOTICE AND WITHOUT LIABILITY THEREFORE. OUTPUT SPEED AND TORQUE SPECIFICATIONS ARE BASED ON COMPUTED VALUES FOR COMPARATIVE PURPOSES ONLY.

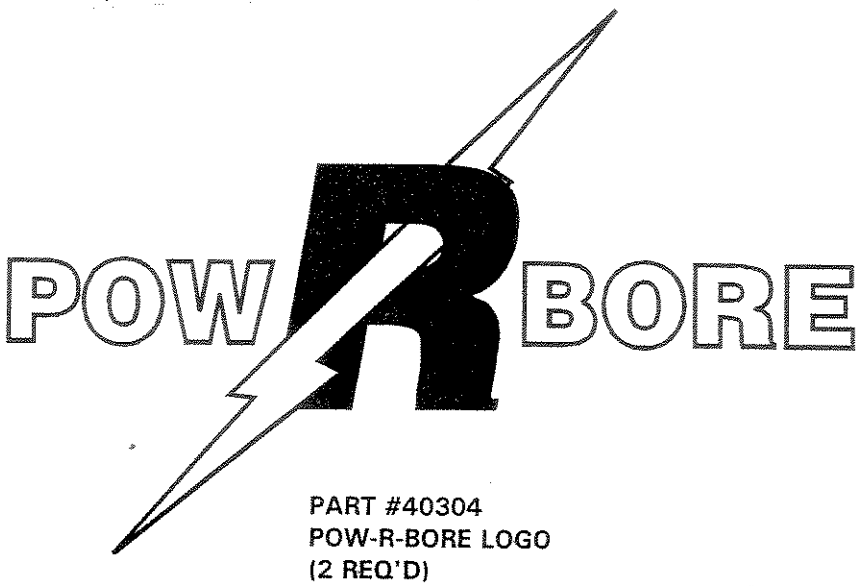
DECALS

DECAL PLACEMENT

GENERAL INFORMATION

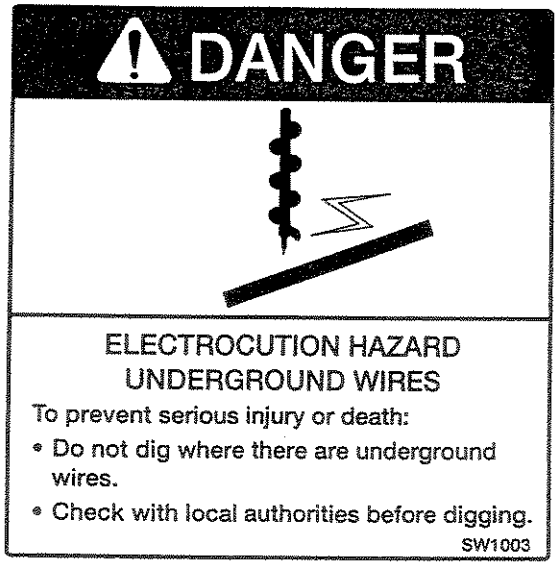
The diagrams on this page show the location of all the decals used on the BRADCO Pow-R-Bores. The decals are identified by their part number, with reductions of the actual decals located on the following pages. Be sure to read all decals before operating the Pow-R-Bore. They contain information you need to know for both safety and unit longevity.



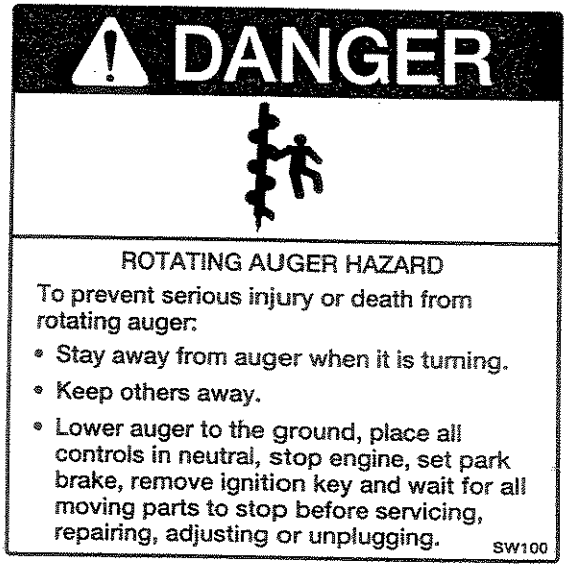


PART #40304
POW-R-BORE LOGO
(2 REQ'D)

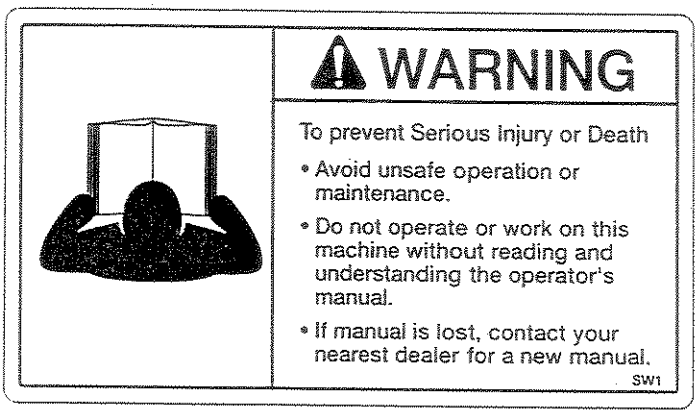
PART #40161
STAND CLEAR



PART #40306
DANGER! ELECTROCUTION HAZARD

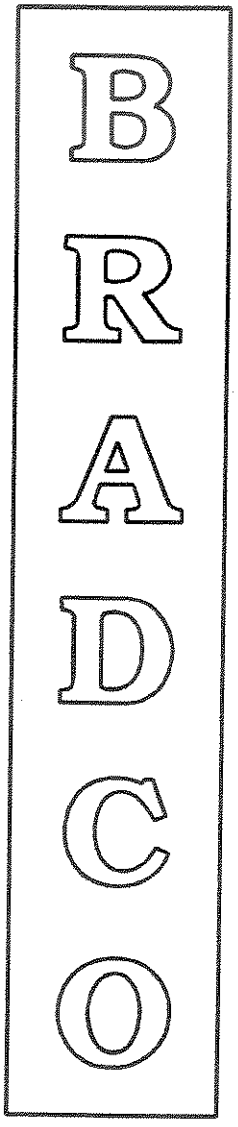


PART #40305
DANGER! ROTATING AUGER HAZARD



PART #40150
WARNING! READ OPERATOR'S MANUAL

PART #40151
WARNING! HIGH PRESSURE FLUID



PART #40179
BRADCO LOGO
(2 REQ'D)

PART #40307
DANGER! GUARD MISSING
(2 REQ'D)

PART #40335
OIL CHAIN

PRE-DELIVERY CHECKLIST

BRADCO POW-R-BORE AUGERS

GENERAL INFORMATION

The following is a list of areas that should be inspected by the dealer prior to delivery of the Pow-R-Bore to the customer. The customer should check the list and make sure that the dealer has completed the inspection. Completion of this check list will help insure that the customer receives the unit in complete working order, ready to install.

PRE-DELIVERY CHECKLIST - CHECK AND ADJUST AS NECESSARY

1. _____ Check the hydraulic systems for correct hydraulic fluid level.

2. _____ Check and lubricate unit. See "Lubrication", Section H

3. _____ Visually inspect the unit for damaged or missing parts. Check for any other irregularities.

4. _____ Check all hydraulic connections for leaks and all hoses for proper positioning to reduce chafing and binding.

5. _____ Check attachment bolts for tightness. See "Bolt Torque", Section O.

6. _____ Make sure decals are not damaged or missing and are in their right location. See "Decals", Section Q.

7. _____ Operator to read the Operator's manual provided before operating unit.

8. _____ Complete and return the manufacturer's "Warranty Validation Form" and sign your dealership pre-delivery checklist.

LIMITED WARRANTY

BRADCO POW-R-BORE AUGERS

EFFECTIVE SEPTEMBER 1, 1997

All new BRADCO products are warranted by ATI GLOBAL Inc. to be free from defects in materials or workmanship which may cause failure under normal usage and service when used for the purpose intended.

The warranty period begins on the date of purchase by the initial retail purchaser, for the warranty period stated below:

		MODEL	
Auger and Mounts:	12 months	ALL	
Chain Drive Units:	18 months	C-1325	C-1825
Planetary Drive Units:	36 months	P-1355	P-1855

If after examination, ATI GLOBAL Inc. determines failure was due to defective material and/or workmanship, parts will be repaired or replaced by ATI GLOBAL Inc. ATI GLOBAL Inc. may request defective parts be returned prepaid to them, for inspection at their place of business at Delhi, Iowa, or to a location specified by ATI GLOBAL Inc. This warranty excludes all ground engaging parts such as auger and point.

Any claims under this warranty must be made within fifteen (15) days after the Buyer learns of the facts upon which such a claim is based. All claims not made in writing and received by ATI GLOBAL Inc. within the time period specified above shall be deemed waived.

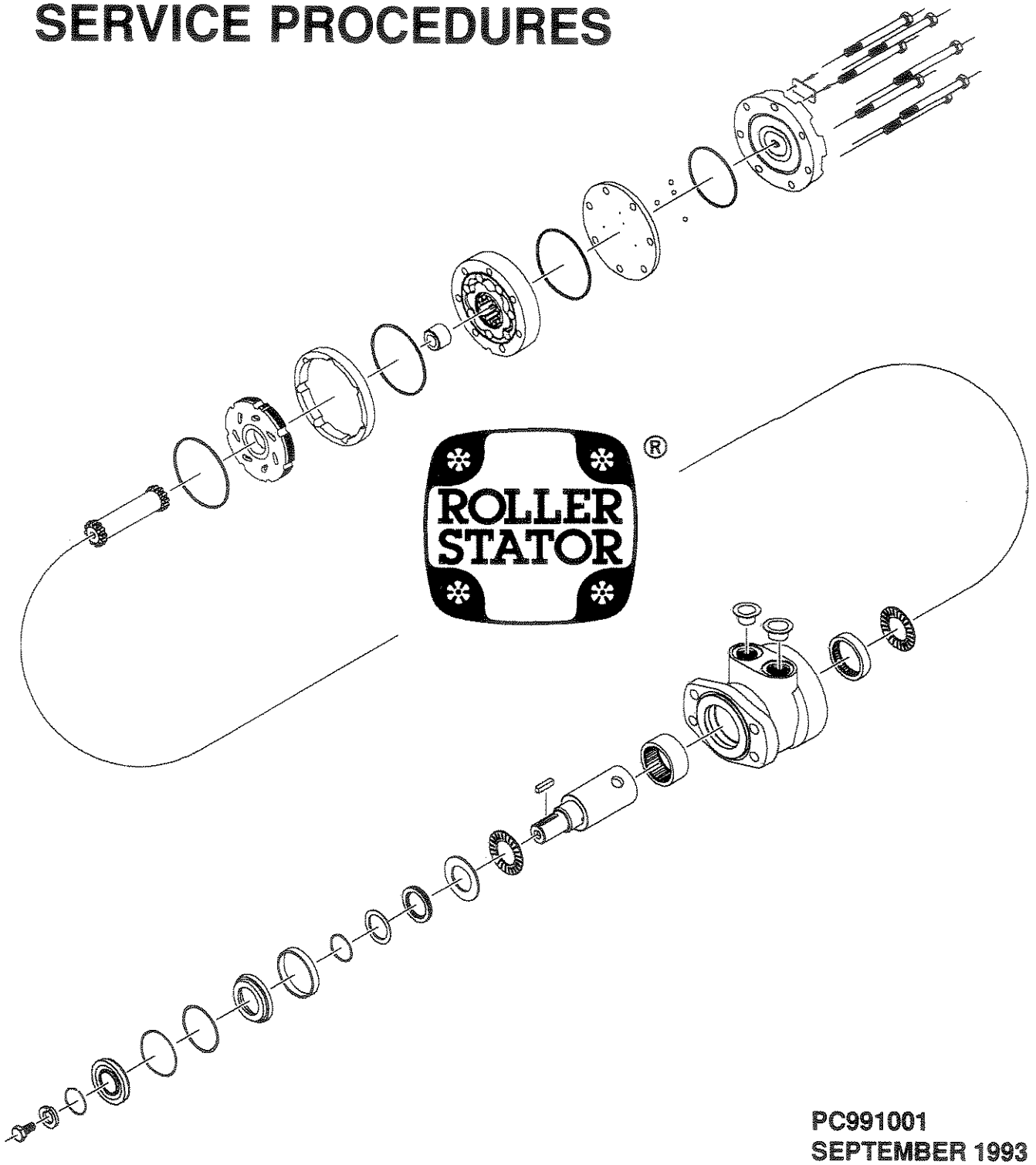
THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED AND THERE ARE NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL ATI GLOBAL INC. BE LIABLE FOR CONSEQUENTIAL OR SPECIAL DAMAGE.

ATI'S LIABILITY FOR ANY AND ALL LOSSES AND DAMAGES TO BUYER, RESULTING FROM ANY CAUSE WHATSOEVER, INCLUDING ATI'S NEGLIGENCE, IRRESPECTIVE OF WHETHER SUCH DEFECTS ARE DISCOVERABLE OR LATENT, SHALL IN NO EVENT EXCEED THE PURCHASE PRICE OF THE PATICULAR PRODUCTS WITH RESPECT TO WHICH LOSSES OR DAMAGES ARE CLAIMED, OR, AT THE ELECTION OF ATI, THE REPAIR OR REPLACEMENT OF DEFECTIVE OR DAMAGED PRODUCTS.

White

HYDRAULICS, INC.

RE SERIES MOTORS SERVICE PROCEDURES



PC991001
SEPTEMBER 1993

INTRODUCTION

IMPORTANT: PLEASE READ THIS SECTION BEFORE ATTEMPTING ANY SERVICE PROCEDURES.

The service procedures given in this section are specifically for any of the RE Series motors listed below. The procedures given are designed as a guide for the replacement or exchange of shaft kits and also for the installation of seal kits and are not intended for trouble-shooting purposes. The service procedures given have been presented as clearly and accurately as possible. However, White Hydraulics makes no guarantees that the directions and descriptions are complete or accurate or that following the procedures will result in a properly functioning motor.

All White Hydraulics' motors are of the highest quality and are guaranteed against defects in workmanship and materials for four years from the date of manufacture (a copy of the warranty can be obtained from the distributor or the factory.). However, any disassembly of the motor voids this warranty. If a motor is suspected of having a warranty problem, the motor should not be disassembled, but should be returned to White Hydraulics for analysis and warranty consideration. Before returning motors to the factory, White Hydraulics must be contacted to obtain a Return Authorization number. No returned motors will be accepted at the factory without the RGA number printed on the outside of the box.

Because of the extremely tight tolerances designed into every White Hydraulics' motor, care should be taken to provide a clean work area when servicing a motor. Before the motor is removed from any machinery, all fittings and the area around the fittings should be thoroughly brushed and cleaned to remove all dirt. Care should be taken to insure that no dirt enters the motor through the ports. Once removed from the machinery, the ports should be plugged and the outside of the motor cleaned in preparation for service. White Hydraulics recommends that a new seal kit be installed anytime that the motor is disassembled. Failure to do so could result in leaks when the motor is returned to service.

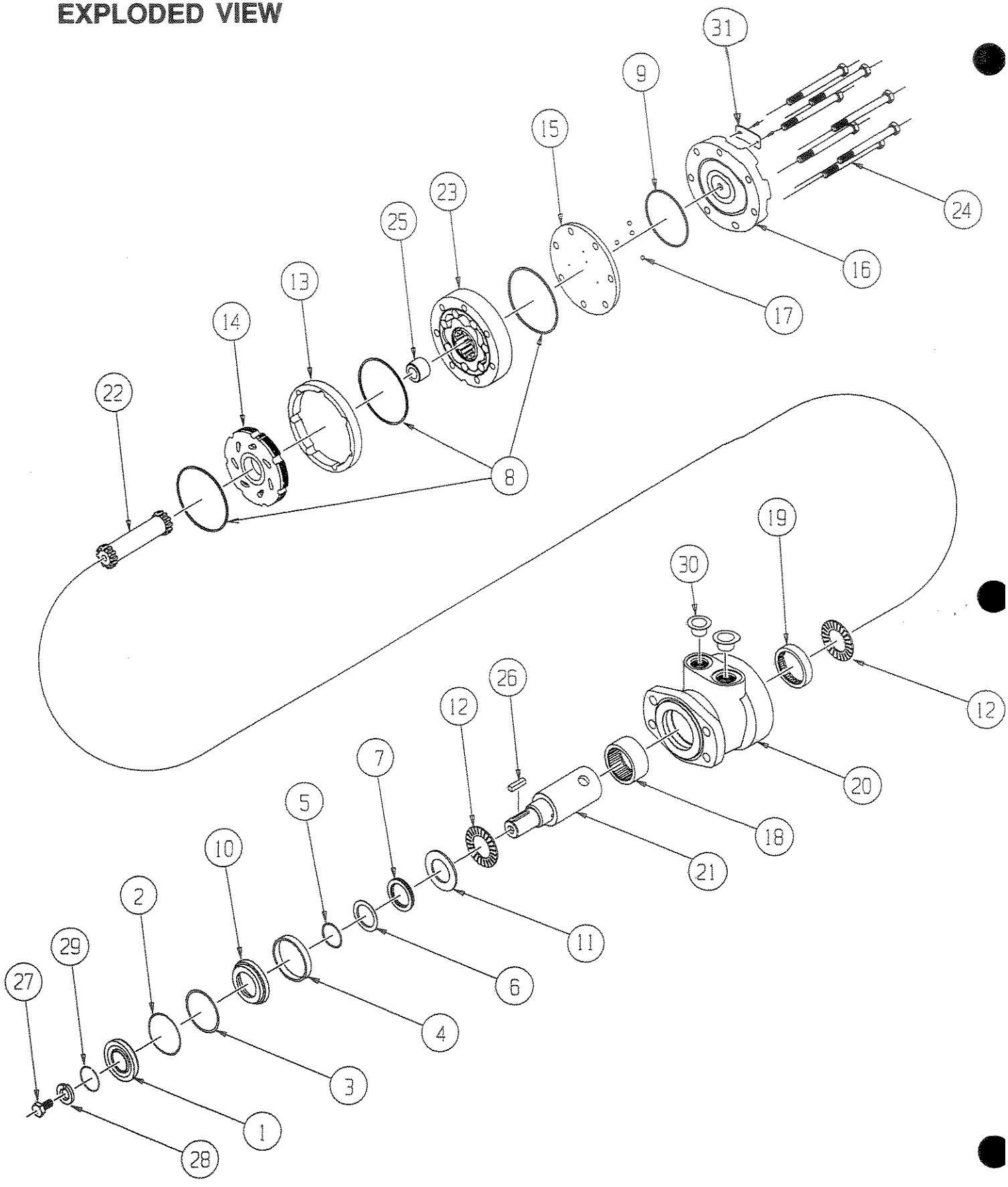
THE SERVICE PROCEDURES IN THIS SECTION ALLOW SERVICE TO BE PERFORMED ON RE SERIES MOTORS WITH THE FOLLOWING HOUSING NUMBERS.

SAE "A" STYLE HOUSINGS- 06,08,16,17,18,19,36,38,48, & 49.

SETBACK STYLE HOUSINGS- 05,07,11,35, & 37.

72mm BEARING HOUSINGS- 09,14,15,22,24,39 & 44.

TYPICAL RE
EXPLODED VIEW



RE SERVICE KITS

ROTORS AND RELATED COMPONENTS KITS

WHEN CHANGING MOTOR DISPLACEMENTS, A MATCHING DRIVE LINK KIT AND BOLT SET KIT MUST ALSO BE ORDERED
DRIVE LINK SPACERS ARE INCLUDED IN DRIVE LINK KITS. BUT MAY ALSO BE ORDERED SEPERATELY BY USING THE DRIVE LINK SPACER KIT NUMBER.

EXPLODED VIEW ITEM #	23	23	22	25	24
DISPLACEMENT	STANDARD ROTOR KIT #	FREETURN ROTOR KIT #	DRIVE LINK KIT #	DRIVE LINK SPACER KIT #	BOLT SET KIT #
07	PE087005	PE087008	PE014009	—	PE445006
10	PE137005	PE137011	PE014009	—	PE445006
12	PE167004	PE167011	PE014009	PE018075	PE445012
14	PE147002	PE147004	PE014009	PE018185	PE445014
16	PE227000	PE227004	PE014009	PE018076	PE445014
18	PE247005	PE247011	PE014007	—	PE445018
20	PE207000	PE207004	PE014008	PE018076	PE445026
24	PE307005	PE307011	PE014008	—	PE445024
26	PE357003	PE357005	PE014008	PE018076	PE445026
32	PE407005	PE407011	PE014008	PE018077	PE445032
45	PE607005	PE607011	PE014008	PE018078	PE445045

HOUSING KITS (EXPLODED VIEW ITEM #20)

STANDARD HOUSING KITS INCLUDE THE FRONT BEARING (#18) AND THE REAR BEARING (#19) INSTALLED IN THE HOUSING.
72MM HOUSING KITS INCLUDE THE REAR BEARING INSTALLED IN THE HOUSING AND A 72MM BEARING, SNAP RING AND DUST SEAL.

DESCRIPTION	KIT NUMBER	DESCRIPTION	KIT NUMBER
#05- SETBACK W/ 1/2" BSP.F	PE130523	#19- 6-HOLE SAE "A" STYLE W/ 1/2" BSP.F	PE131923
#06- 4-HOLE SAE "A" STYLE W/ 1/2" BSP.F	PE130623	#22- 72MM SETBACK W/ "C" FRONT MT. W/ 7/8" O-RING	PE132228
#07- SETBACK W/ 7/8" O-RING	PE130723	#24- 72MM SETBACK W/ "C" FRONT MT. W/ 1/2" BSP.F	PE132428
#08- 4-HOLE SAE "A" STYLE W/ 7/8" O-RING	PE130823	#35- SETBACK W/ RELIEF PORT W/ 1/2" BSP.F	PE133523
#09- 72MM SETBACK W/ 7/8" O-RING	PE130928	#36- 4-HOLE SAE "A" STYLE W/ RELIEF PORT W/ 1/2" BSP.F	PE133623
#11- SETBACK W/ BRAKE MOUNT W/ 7/8" O-RING	PE131123	#37- SETBACK FLANGE W/ RELIEF PORT W/ 7/8" O-RING	PE133723
#14- 72MM SETBACK W/ 1/2" BSP.F	PE131428	#38- 4-HOLE SAE "A" STYLE W/ RELIEF PORT W/ 7/8" O-RING	PE133823
#15- 72MM SETBACK W/ TURNED PILOT W/ 7/8" O-RING	PE131528	#39- 72MM SETBACK W/ RELIEF PORT W/ 7/8" O-RING	PE133928
#16- 2-HOLE SAE "A" STYLE W/ 7/8" O-RING	PE131623	#44- 72MM SETBACK W/ RELIEF PORT W/ 1/2" BSP.F	PE134428
#17- 2-HOLE SAE "A" STYLE W/ 1/2" BSP.F	PE131723	#48- 6-HOLE SAE "A" STYLE W/ RELIEF PORT W/ 7/8" O-RING	PE134823
#18- 6-HOLE SAE "A" STYLE W/ 7/8" O-RING	PE131823	#49- 6-HOLE SAE "A" STYLE W/ RELIEF PORT W/ 1/2" BSP.F	PE134923

SHAFTS AND RELATED COMPONENTS KITS

SHAFT KITS COME WITH RELATED SHAFT COMPONENTS (i.e. keys, nuts, etc.)
TO ORDER INDIVIDUAL SHAFT COMPONENTS (i.e. keys, nuts, bolts, washers or wire rings) USE THE KIT NUMBER FOR EACH INDIVIDUAL PART.

EXPLODED VIEW ITEM #	21	21	26	NOT SHN.	NOT SHN.	NOT SHOWN	NOT SHOWN
DESCRIPTION	STD. SHAFT KIT #	72MM SHAFT KIT #	KEY KIT #	NUT KIT #	BOLT KIT #	WASHER KIT #	WIRE RING KIT #
6B SPLINE	#02- PE011600	#19- PE011602	—	—	—	—	—
1-1/4" TAPERED	#03- PE011300	#10- PE011302	PE449101	PE449304	—	—	—
1-1/4" STRAIGHT	#04- PE011200	#14- PE011204	PE449102	—	PE449301	PE449302	PE449201
14 TOOTH SPLINE	#05- PE011101	#16- PE011107	—	—	—	—	PE449201
1" STRAIGHT	#06- PE011201	#21- PE011206	PE449100	—	—	—	—
25MM STRAIGHT	#07- PE011109	—	PE449104	—	—	—	—
19 TOOTH SPLINE	#08- PE011102	#15- PE011105	—	—	—	—	PE449201
32MM STRAIGHT	#09- PE011203	#17- PE011205	PE449103	—	—	—	PE449201
15 TOOTH SPLINE	#11- PE011103	—	—	—	—	—	—
1" STRAIGHT EXT.	#13- PE011202	—	PE449100	—	—	—	—
12 TOOTH SPLINE	#18- PE011108	—	—	—	—	—	—
13 TOOTH SPLINE	#32- PE011114	#20- PE011110	—	—	—	—	—

MISCELLANEOUS KITS

DESCRIPTION	EXPLODED VIEW ITEM #	KIT #
THRUST BEARING	12	PE018059
FORWARD MANIFOLD (CCW)	14	PE015006
REVERSE MANIFOLD (CW)	14	PE015007
MANIFOLD BOOT	13	PE018041
ENDCOVER	16	PE016001
STEEL BALL	17	PE018048
BALANCE PLATE (4 STEEL BALLS INCLUDED IN KIT)	15	PE012001
72MM BEARING	NOT SHOWN	PE018098
SNAP RING (FOR 72MM HSG.)	NOT SHOWN	PE018141
STD. FRONT BEARING	18	PE018003
STD. REAR BEARING	19	PE018002
DUST SEAL ONLY	1	PE018006
4-PIN SPEED SENSOR	NOT SHOWN	PE018219
2000 PSI RELIEF VALVE	NOT SHOWN	PE018231
3000 PSI RELIEF VALVE	NOT SHOWN	PE018221

FOR SPEED SENSOR KITS, CONSULT THE FACTORY AT (502) 885-1110.

SEAL KIT PE444001

SEAL KIT PE444001 INCLUDES ITEMS #1-11.

DESCRIPTION	EXPLODED VIEW ITEM #	KIT #
DUST SEAL	1	ITEMS #1-9 INCLUDED IN SEAL KIT PE444002
SPLIT WIRE RING	2	
BACKUP SHIM	3	
HIGH PRESSURE SEAL	4	
BACKUP SHIM	5	
TEFLON BACKUP SHIM	6	
SHAFT SEAL	7	
BODY SEAL	8	
ENDCOVER SEAL	9	
SEAL CARRIER	10	ITEMS #10-11 INCLUDED IN SEAL KIT PE444003
THRUST WASHER	11	

TOOLS REQUIRED FOR DISASSEMBLY PROCEDURES

1. bench vise that opens to at least 6"
2. breaker bar
3. 9/16" socket
4. torque wrench capable of at least 50 ft.lbs.
5. seal puller
6. plastic headed hammer
7. small flat-bladed screwdriver
8. compressed air source and safety blow-off nozzle (optional)
9. petroleum-based solvent
10. permanent marker or paint
11. clear tape
12. clean shop towels
13. STP® or equivalent
14. 400 grit wet/dry sandpaper
15. sanding block

Additional tools needed to service 72mm bearing motors:

16. inside snap-ring pliers
17. long punch
18. bearing grease

SAFETY PRECAUTIONS

White Hydraulics recommends that all safety guidelines included but not limited to those contained in **OSHA 29 CFR Part 1910** (General Industry Standards) be observed when performing any service procedures.

1. Protective goggles or safety glasses should be worn when performing any service procedures.
2. Steel toed shoes or boots should be worn when performing any service procedures.
3. If using compressed air to dry parts, set maximum air pressure at 30 psi or less.
4. Dispose of oily rags or towels in closed containers.
5. Keep all oils and cleaning solvents away from sparks or open flames.
6. Keep all tools dry and clean to prevent hands from slipping off of tool and causing possible injury.
7. Excercise extreme caution when handling machined motor parts.

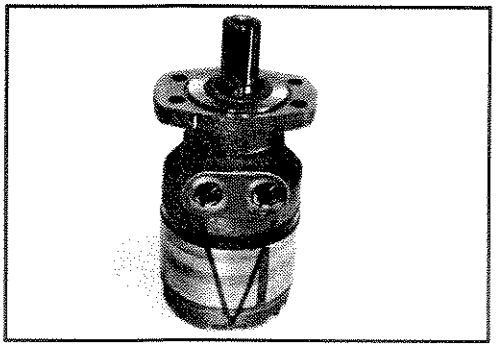
SEAL KIT INSTALLATION

This section contains the service procedures necessary to install a seal kit in most standard White Hydraulics' RE series motors. Standard Re Series motors include those with the SAE "A" style housings and setback housings. For 72mm bearing housings, service begins with step 1, and references to additional steps in Appendix A are given when necessary. The order numbers for each housing style are given below.

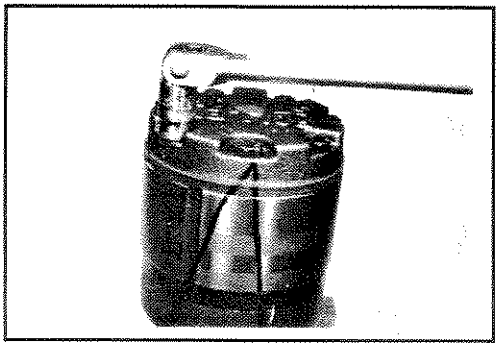
SAE "A" STYLE HOUSINGS- 06,08,16,17,18,19,36,38,48, & 49.

SETBACK STYLE HOUSINGS- 05,07,11,35, & 37.

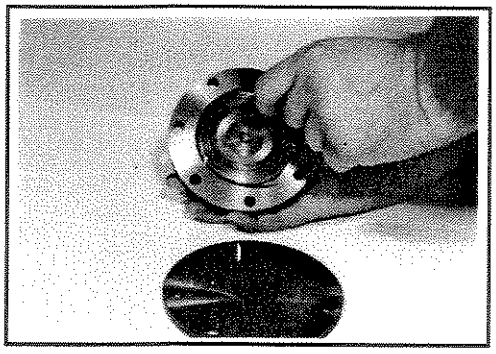
72mm BEARING HOUSINGS- 09,14,15,22,24,39 & 44.



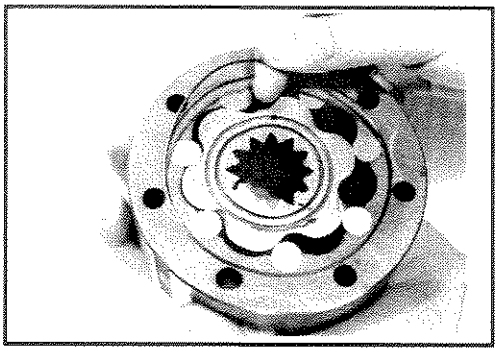
1. Using a marker or paint, make a V-shaped set of lines on the rear assembly of the motor from the housing to the endcover as shown. These lines will aid in part realignment when reassembling the motor. Depending on shaft type, remove any keys or nuts from the shaft.



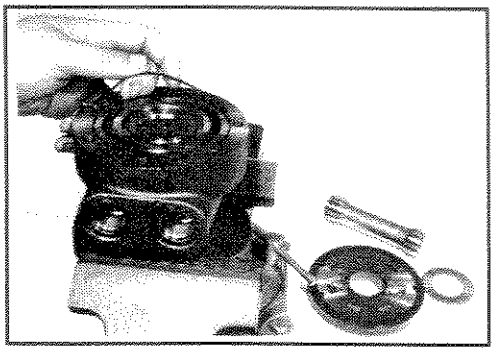
2. With the shaft facing down, securely tighten the motor in a vise by clamping around the ports in the housing. Using a breaker bar and a 9/16" socket, loosen and remove the seven bolts attaching the rear assembly to the housing.



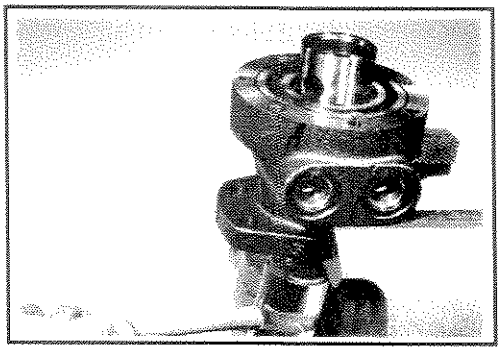
3. Lift the endcover off of the motor and remove and discard the old seal. Remove the balance plate from the motor making sure not to drop the four small steel balls in the balance plate. Lay these components aside.



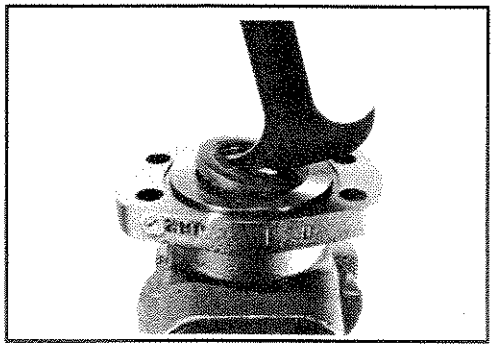
4. Depending upon displacement, there may or may not be a drive link spacer in the motor. If there is, remove it from the center section of the rotor and lay aside. Lift the rotor assembly from the motor making sure not to drop any of the rolls. Remove the old seals from both sides of the rotor and discard. Lay the rotor assembly aside.



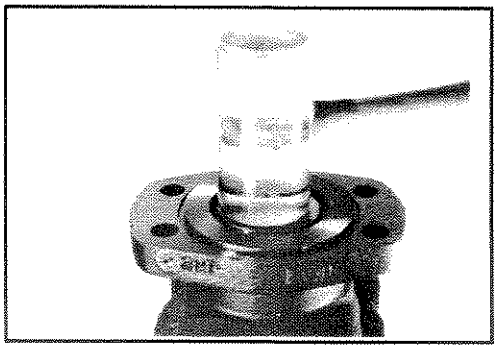
5. Lift the manifold boot and manifold from the motor and lay aside. Remove the drive link from the motor and lay aside. Remove the thrust bearing from the motor and lay aside. Remove the seal from the groove in the housing face and discard.



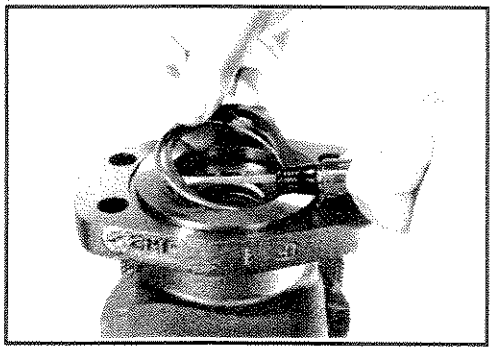
6. Using a plastic headed hammer, tap upwards on the output end of the shaft and force the shaft up through the housing and remove it. Lay the shaft aside.



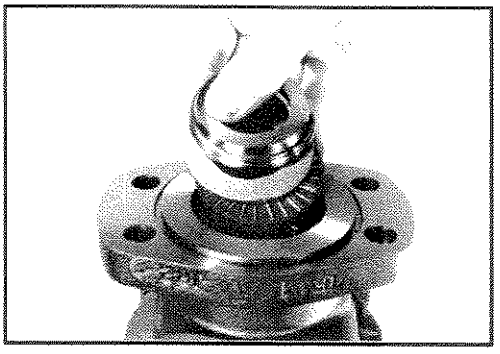
7. Grasping the housing, loosen the vise and rotate the housing 180° and reclamp the housing with the mounting flange side up. Using a seal puller, carefully pull the dust seal from the front face of the motor and discard. For 72mm bearing housings, proceed to step 1 in Appendix A. All others continue to step 8.



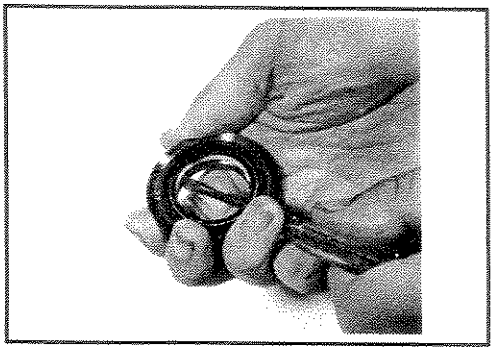
8. Using a plastic headed hammer, lightly tap the seal carrier down until it contacts the needle bearing in the housing.



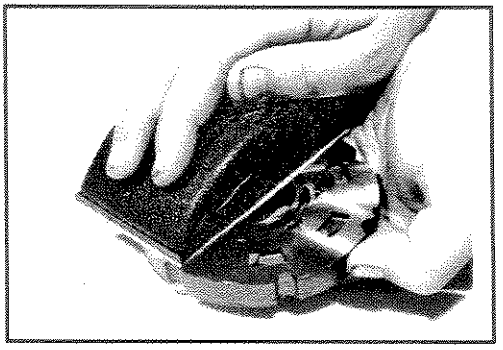
9. Using a small flat-bladed screwdriver, pry the split wire ring from the groove in the front of the housing and discard. Also use the screwdriver to remove the backup shim and high pressure seal from the housing and discard all three items.



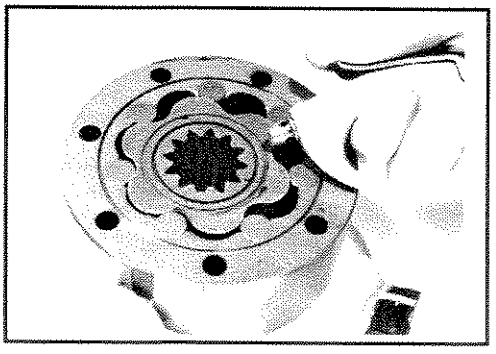
10. Remove the seal carrier, thrust bearing and thrust washer from the housing. If the items are difficult to remove, insert the shaft into the rear of the housing and push the parts out through the front of the housing.



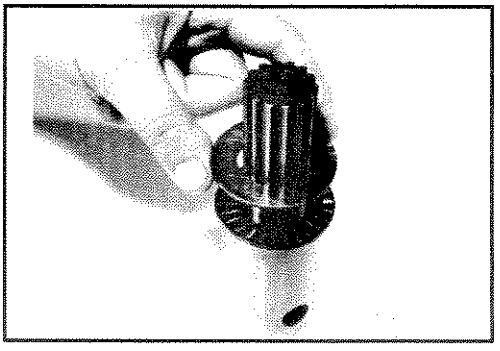
11. If seal kit PE444001 is being used, the seal carrier assembly and thrust washer may be discarded. If seal kit PE444002 is being used, use a small, thin prybar to pry the seals from the seal carrier. Discard the seals and lay the seal carrier and thrust washer aside.



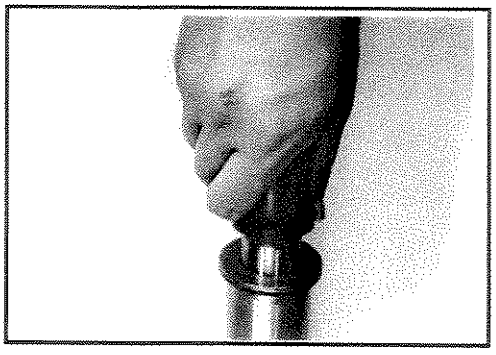
12. Using 400 grit wet/dry sandpaper, a sanding block and an oil based solvent, wet sand all mating surfaces to remove all dirt, grit, paint, nicks and burrs.



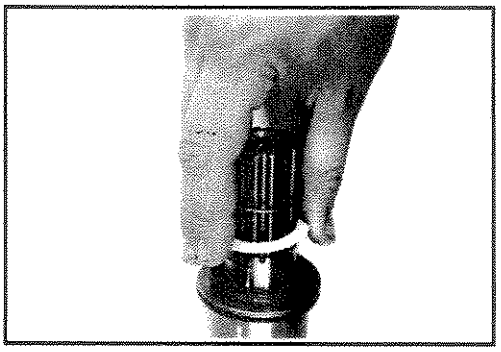
13. At this point, all parts should be cleaned in an oil based solvent. After the parts have been cleaned, use compressed air to carefully dry all parts. Make sure to remove all solvent from the bolt holes in the hosing as failure to do so could result in a cracked housing when the bolts are reinstalled.



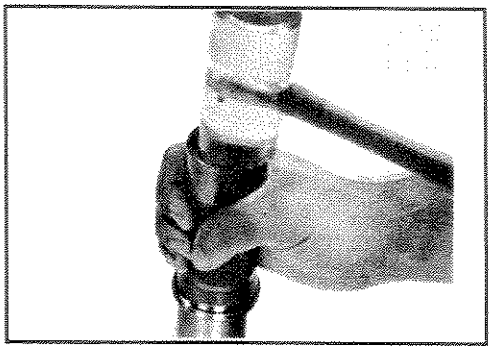
14. Place the shaft on a clean dry surface with the output end of the shaft facing up and apply a light coat of STP® to the seal area of the shaft. Install the thrust bearing and then the thrust washer onto the shaft.



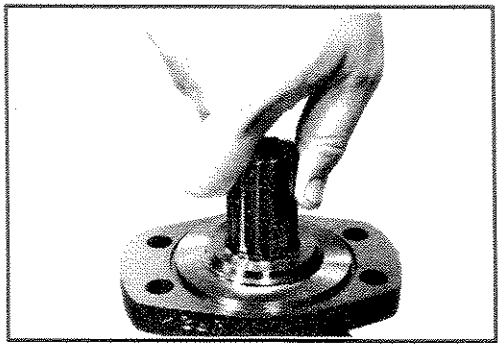
15. Place the plastic installation sleeve (included in seal kits PE444001 AND PE444002) onto the shaft end and push the new shaft seal down onto the shaft. The flat side of the seal should be facing up.



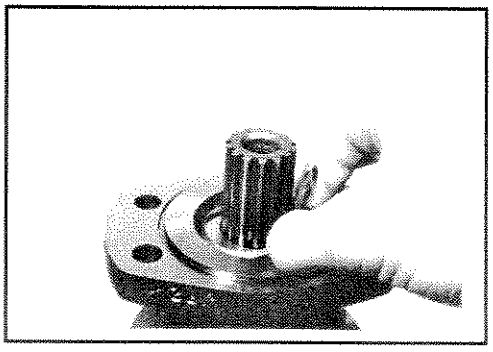
16. Remove the plastic installation sleeve from the shaft and place the white teflon backup seal onto the shaft making sure that the lip on the inside diameter faces the shaft seal. Next, place the new backup shim onto the shaft over the teflon backup seal.



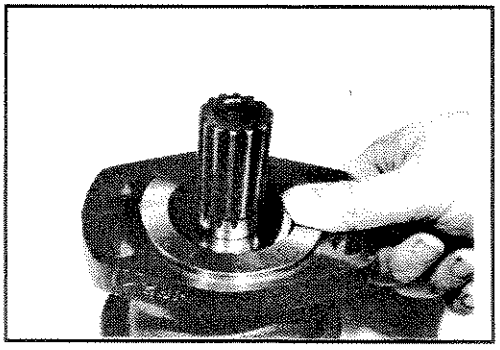
17. Place the seal carrier over the shaft making sure that the side with the recess faces the shaft seal. Center the seal in the recess in the seal carrier and use a press and a sleeve to gently press the seal carrier down until the seal is seated in the seal carrier. A plastic headed hammer and sleeve may be used if necessary.Install wire ring if applicable.



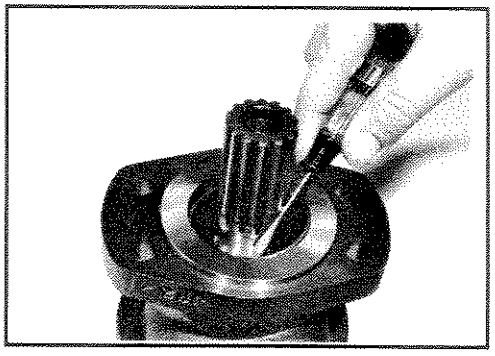
18. On a clean dry surface place the housing, flange side up, onto small blocks to raise it approximately .250 above the work surface. lower the shaft/seal assembly down into the motor output end up.



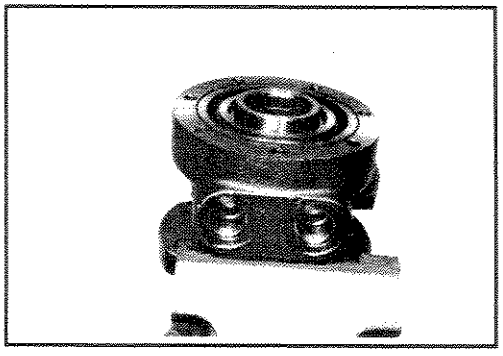
19. After coating the high pressure seal in STP®, install it in the groove in the front of the housing. To install the large backup shim, squeeze the shim until it bows in the middle (do not fold the shim in half). While maintaining the bow, install it above the high pressure seal in the groove in the housing. (Shim installation continued with step 20.)



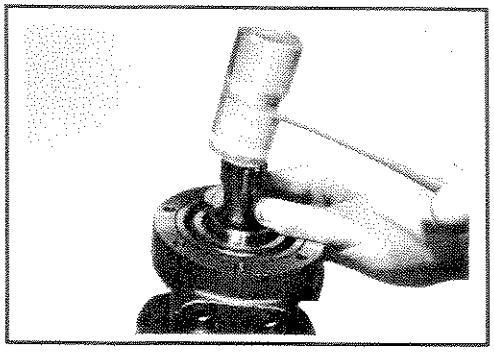
20. A portion of the shim will not want to go into the groove. To this portion of the shim, apply pressure downward and towards the center of the housing to expand the shim into the groove. Use a flat screwdriver to push the remaining portion of the shim into the groove to fully seat the shim.



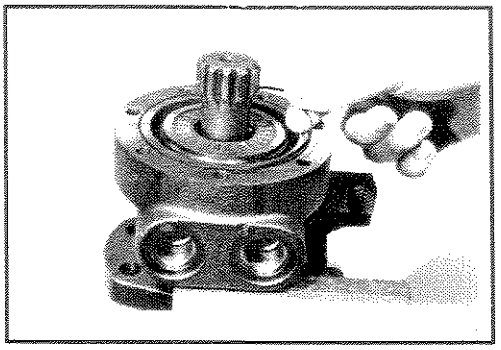
21. Install the split wire ring into the groove in the housing. Run a small screwdriver around the circumference of the split wire ring to make sure it is fully seated in the groove and that the ends are butted together. For 72mm bearing housings, proceed to step 3 in Appendix A. For all other housings, continue to step 22.



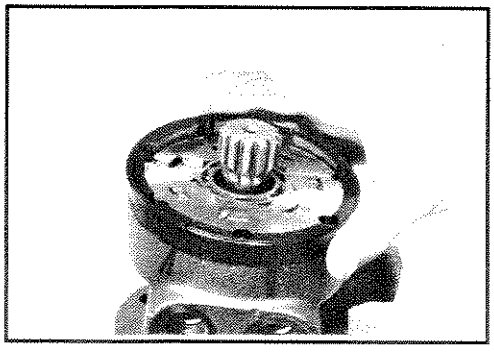
22. Making sure to hold the shaft in the housing, lift the motor from the work surface and clamp the motor in a vise with the shaft end of the motor facing down. The motor should be clamped just below the ports.



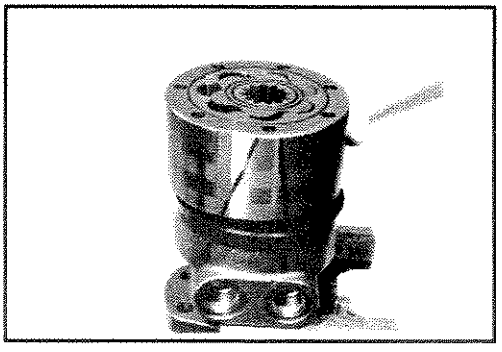
23. Insert the drive link into the shaft end making sure that the end of the drive link with crowned splines is inserted into the splines in the end of the shaft. Use a plastic headed hammer to tap downward on the drive link until the shaft end is approximately .100 inches below the rear housing surface.



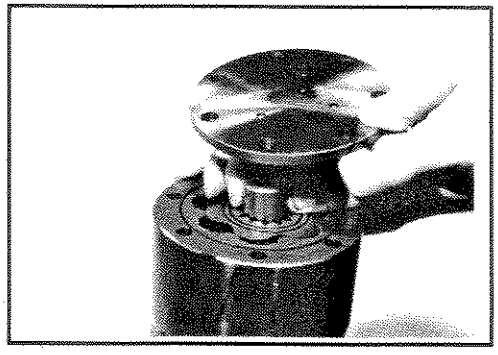
24. Place the thrust bearing over the drive link and onto the shaft end. Lightly coat a new body seal in STP® and place it in the groove in the rear face of the housing.



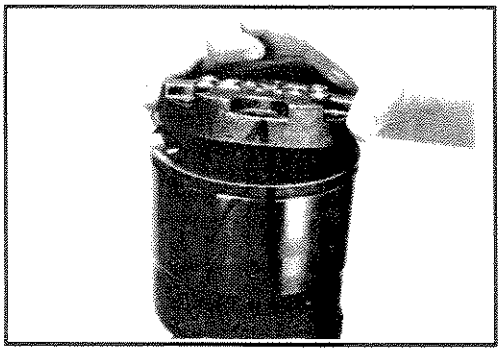
25. Place the manifold onto the housing making sure that the side with only seven holes faces the housing. Using the alignment marks as a guide, place the manifold boot onto the housing.



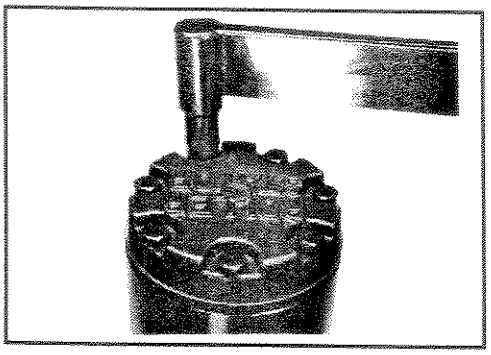
26. Lightly coat two new body seals in STP® and place a new seal in the grooves on both faces of the rotor set. Making sure that the side of the rotor set with the chamfer in the splines faces the manifold, align the marks on the housing and rotor set and place the rotor set onto the housing.



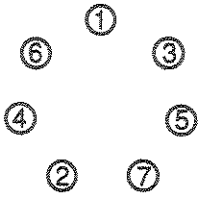
27. If the motor has a drive link spacer, replace it onto the end of the drive link. Using the alignment marks as a guide, place the balance plate onto the motor making sure that the side with the four steel balls faces up.



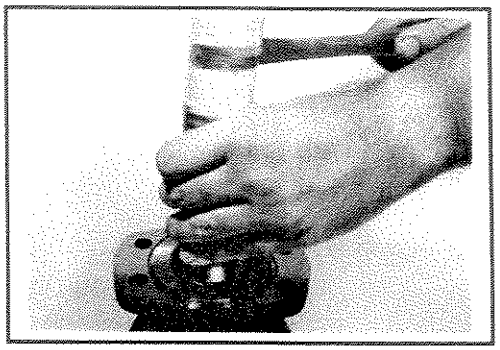
28. Lightly coat the new endcover seal in STP® and place it in the groove in the endcover. Using the alignment marks as a guide, place the endcover onto the motor.



29. Install the seven 3/8-24 bolts and pre-torque to 5-10 ft.lbs using a 9/16" socket and torque wrench. Using the bolt torque sequence shown at right, torque all bolts to 50 ft.lbs.

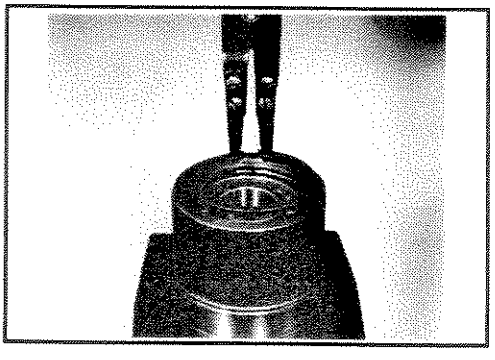


Torque Sequence

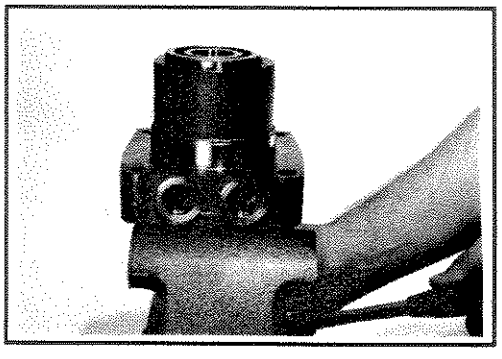


30. Remove the motor from the vise and set on the work surface with the shaft end facing up. Making sure that the flat side of the dust seal faces up, install the dust seal over the shaft and use a sleeve and plastic headed hammer to tap the seal into the front face of the housing. Replace all shaft keys, nuts and wire rings if applicable.

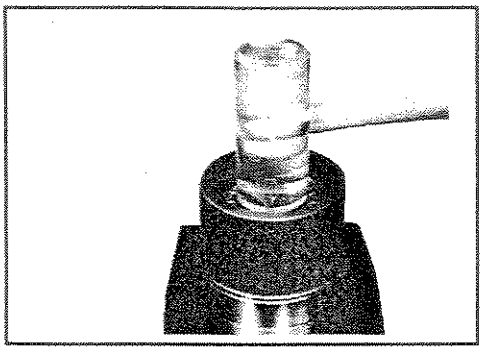
APPENDIX A (RE 72mm Bearing Housing Service Supplement)



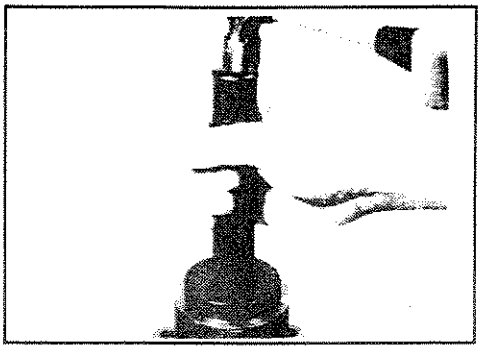
1. Using inside snap ring pliers, remove the snap ring from the groove in the front of the housing and lay aside.



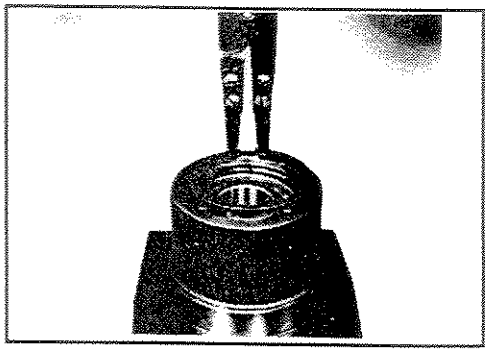
2. From the rear of the housing, use a long punch and a plastic headed hammer to lightly tap the bearing out of the housing. Go to step 8 in standard service procedures and continue.



3. Grease the bearing and install it into the front of the housing making sure that the side with the snap ring against the bearing race faces the seal carrier in the motor. It may be necessary to lightly tap the bearing to seat it in the housing.



5. Lightly coat the dust seal with STP® and install it into the front face of the bearing using a ball peen hammer and a sleeve to evenly drive the seal down until seated. Go to step 22 in standard service procedures and continue.



4. Using inside snap ring pliers, compress the snap ring and install it against the bearing in the groove in the housing.