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PALADIN LIGHT CONSTRUCTION

C-SERIES EARTH AUGER OPERATOR'S & PARTS MANUAL

MODELS C920, C1420, C1920

SERIAL NUMBER: _____

MODEL NUMBER: _____

Manual Number: 22694

Date: June 1, 2005

800-922-2981 | www.paladinbrands.com P.O. Box 266, Delhi, IA 52223-0266, United States of America
M-101 6-1-05-3

TO THE OWNER

GENERAL COMMENTS

Congratulations on the purchase of your new McMillen Earth Auger Attachment. Your earth auger was carefully designed and manufactured to give you many years of dependable service. Your earth 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, on the safety decals located on the attachment, and on any equipment on which the earth auger is mounted.

ABOUT THIS MANUAL

This manual has been designed to help you to do a better, safer job. Read this manual carefully, and become familiar with the operating procedures before attempting to operate your earth auger. Remember, never let anyone operate this earth auger without them having read and completely understand the “Safety Precaution” and “Operating Instructions” sections of this manual, or having them be fully trained by an experienced, qualified person who has read and completely understands the “Safety Precautions” and Operating Instructions”.

After reading this manual, if you have any questions about your attachment please contact us immediately as follows:

NORTH AMERICAN TOLL FREE:	**(800) 922-2981**
Outside North America:	(563) 922-2981
Fax:	(563) 922-2700

SERVICE

When servicing this product, remember to use only 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 unit in the space provided on this page. This information may be obtained from the identification plate located on the product.

MODEL: _____ **SERIAL NO.** _____

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SAFETY INFORMATION

TO THE OPERATOR

Your personal safety is a concern of ours. It should also be of concern to you. It is the responsibility of all operators to read and understand this entire manual before installing, operating or servicing this equipment. Pay particular attention to cautions, warnings and safe operating procedures. Be a safe and qualified operator. Operate your equipment with care and good judgement and see to it that it is properly maintained.

SAFETY ALERT SYMBOL

This Safety Alert Symbol Means:
ATTENTION! BECOME ALERT!
YOUR SAFETY IS INVOLVED!
When you see it pay attention and follow the instructions in the safety message.

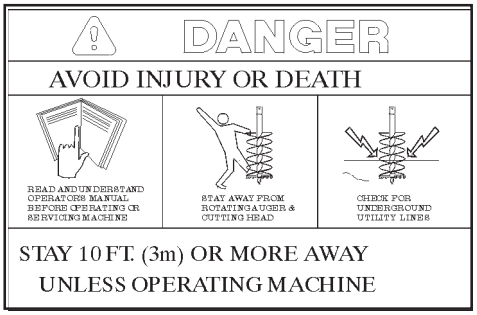
The safety alert symbol is generally used in conjunction with a key signal word to emphasize special information. The signal words listed below carry a specific meaning and should be carefully read and understood:

DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

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.

REPLACEMENT SAFETY DECALS



WORN, DAMAGED OR ILLEGIBLE SAFETY DECALS MUST BE REPLACED.
New safety decals can be ordered from McMillen. Two (2) #22680 (89-P2-237A) Safety Decals must be displayed on each McMillen Hydraulic Earth Auger Drive Unit. Decals should be located on opposite sides of the drive unit from each other.

SAFETY INFORMATION

THE USE OF THIS EQUIPMENT IS SUBJECT TO CERTAIN HAZARDS WHICH CANNOT BE PROTECTED AGAINST MECHANICAL MEANS OR PRODUCT DESIGN. ALL OPERATORS OF THIS EQUIPMENT MUST READ AND UNDERSTAND THIS ENTIRE MANUAL, PAYING PARTICULAR ATTENTION TO SAFETY AND OPERATING INSTRUCTIONS, PRIOR TO USING THE MCMILLEN HYDRAULIC EARTH AUGER. IF THERE IS SOMETHING IN THIS MANUAL YOU DO NOT UNDERSTAND, ASK YOUR SUPERVISOR TO EXPLAIN IT TO YOU. FAILURE TO OBSERVE THESE SAFETY PRECAUTIONS CAN RESULT IN DEATH OR SERIOUS INJURY OR SERIOUS EQUIPMENT DAMAGE.

All bystanders should be kept a minimum of 10 feet (3 meters) away from working area of the earth auger.

Always wear an OSHA approved hard hat and safety eye protection when operating or servicing this equipment. Do not wear loose fitting clothing, flopping cuffs, dangling neckties and scarves, or rings and wrist watches that can catch moving parts.

An operator must not use drugs or alcohol which can change his alertness or coordination. An operator taking prescription or over-the-counter drugs should seek medical advise on whether or not he can safely operate equipment.

Always locate underground electrical wires, telephone cables, gas, water and sewer lines before digging. Maintain safe clearance and avoid contact with any underground or overhead utility lines or electrically charged conductors.

Never alter or remove any safety decals or shields. Replace all missing or damaged safety decals or safety shields. Check this manual for location of these items and replace immediately if damaged or illegible.

Never adjust a relief valve for pressure higher than recommended by vehicle manufacturer.

Whenever changing or installing this or other attachments, make sure all connections are securely fastened.

Travel only with the earth auger in a safe transport position to prevent uncontrolled movement. Drive slowly over rough ground and on slopes. Tether earth auger with a chain, if necessary, to prevent uncontrolled swinging of earth auger when moving from hole to hole. Remove earth auger from vehicle when transporting to and from job site.

Before exiting vehicle, lower earth auger to ground, turn off vehicle engine and lock vehicle brakes.

Never check a pressurized system for leaks with your bare hand. Oil escaping from pinhole leaks under pressure can penetrate skin and could cause serious infection. Hold a piece of cardboard up next to suspected leaks and wear a face shield or safety eye protection. If any fluid is injected into the skin, it must be removed immediately by a doctor familiar with this type of injury.

Before disconnecting hydraulic lines or fittings be sure to relieve all pressure by cycling all hydraulic controls after shutdown. Remember hydraulic systems are under pressure whenever the engine is running and may hold pressure after shutdown. Before applying pressure to the system make sure all connection are tight and that there is no damage to lines, fittings and hoses.

Flow and pressure gauges, fittings and hoses must have a continuous operating pressure rating of at least 25% higher than highest pressures of the system.

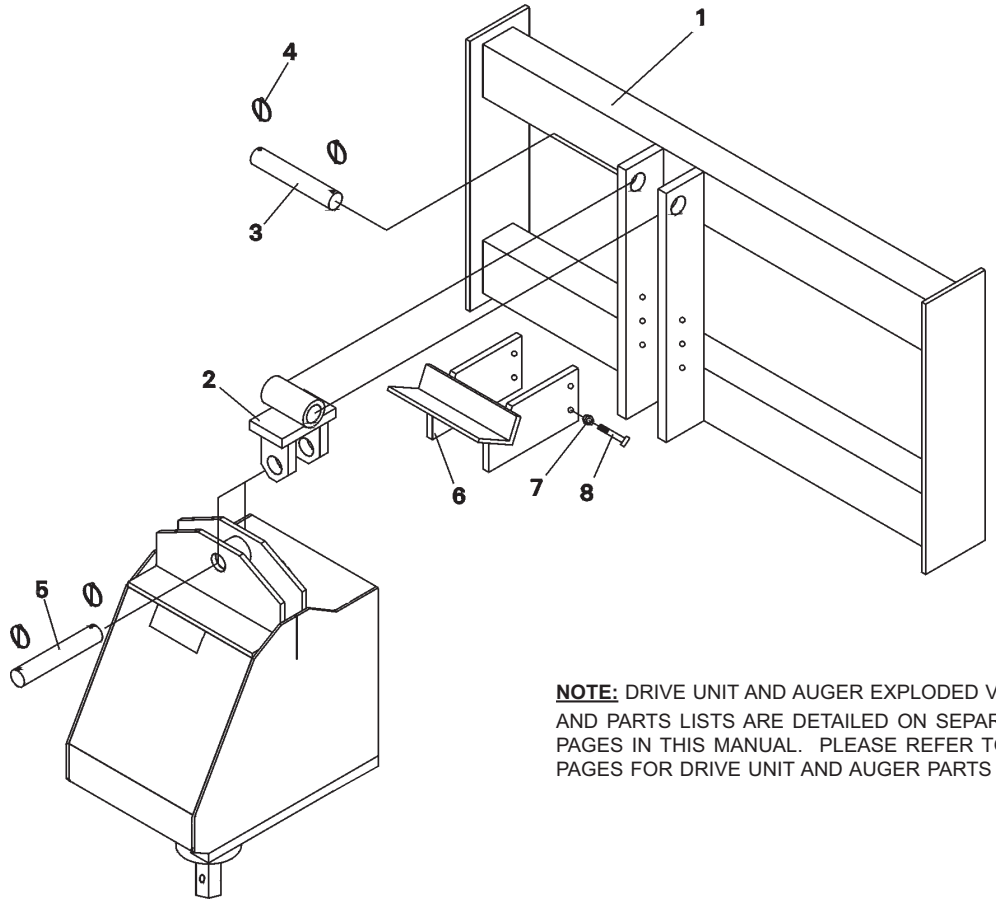
Avoid steep hillside operation which could cause the vehicle to overturn. Consult your vehicle operator's and safety manuals for maximum incline allowable.

Never perform any work on an earth 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 the earth auger. If not functioning properly always tag "DO NOT OPERATE" until all problems are corrected.

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

SKID STEER LOADER & OTHER QUICK ATTACH MOUNTINGS

EXPLODED VIEW, PARTS LIST & INSTALLATION INSTRUCTIONS



NOTE: DRIVE UNIT AND AUGER EXPLODED VIEWS AND PARTS LISTS ARE DETAILED ON SEPARATE PAGES IN THIS MANUAL. PLEASE REFER TO THOSE PAGES FOR DRIVE UNIT AND AUGER PARTS BREAKDOWN.

REF. #	PART #	DESCRIPTION	QTY REQ
1	VARIES	Quick Attach Mounting Bracket	1
2	21694	Swivel	1
3	22255	Pin, 1.25” Dia. x 7.25” Long	1
4	21169	Lynch Pins	4
5	22256	Pin (included with drive unit)	1
6	21666	Mounting Cradle for Models 920 - 1920	1
7	1228	.50” - 13 Hex Nut	4
8	1091	.50” - 13 x 2”, Gr. 5	4

1. READ AND UNDERSTAND ALL SAFETY INFORMATION BEFORE ATTEMPTING INSTALLATION.

2. Remove bucket or other attachment from vehicle quick attach mechanism.

3. Attach quick attach mounting bracket (1) to vehicle quick attach mechanism as per vehicle manufacturer’s recommendations.

4. Attach swivel weldment (2) to the quick attach mounting bracket (1) with pin (3). secure pin (3) with lynch pins (4).

5. Attach and secure drive unit to swivel weldment (2) with pin(5) and lynch pins(4) provided with the drive unit assembly.

6. Attach and secure auger to drive unit with bolt and nut provided with drive unit assembly.

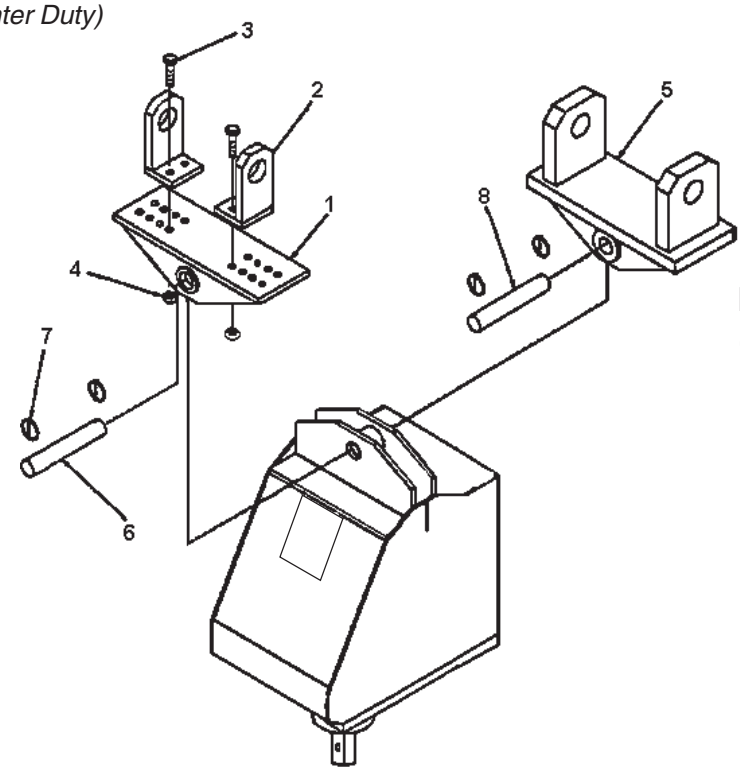
7. Refer to the “HYDRAULIC SYSTEM HOOK-UP” section in this manual for hydraulic connection instructions and recommendations.

BACKHOE & EXCAVATOR MOUNTINGS

EXPLODED VIEW, PARTS LIST & INSTALLATION INSTRUCTIONS

UNIVERSAL

(Lighter Duty)



FIXED

(Heavy Duty)

NOTE: DRIVE UNIT AND AUGER EXPLODED VIEWS AND PARTS LISTS ARE DETAILED ON SEPARATE PAGES IN THIS MANUAL. PLEASE REFER TO THOSE PAGES FOR DRIVE UNIT AND AUGER PARTS BREAKDOWN.

REF.#	PART#	DESCRIPTION	QTY REQ'D
1	21626	Backhoe Base Weldment	1
2	Varies	Backhoe Adaptor Ear	2
3	1091	.50"-13 x 1.75" Gr. 5	4
4	1841	.50" - 13 Locknut	4
5	Varies	Fixed Backhoe Mount	1
6	22256	Pin (included with drive unit)	1
7	21169	Lynch Pins	2
8	22255	1.25" Pin x 7.25" long	1

1. READ AND UNDERSTAND ALL SAFETY INFORMATION PRIOR TO ATTEMPTING INSTALLATION.

2. Remove bucket from dipper arm and curl cylinder pin connections. The dipper arm pin will be used to attach backhoe mounting to backhoe dipper arm. Curl cylinder pin will not be required for earth drill installation.

3. If using a Universal (adjustable width) Backhoe Mounting, assemble by spacing the two ears (2) to the same width as the dipper arm and secure to the backhoe swivel base (1) with four bolts (3). Secure bolts (3) and nuts (4). **After determining correct width, backhoe ears (2) must be welded to backhoe swivel base (1).**

4. Attach backhoe mounting (universal or fixed) to the dipper arm using the dipper arm using the dipper arm pin removed from bucket in step 1. Secure bucket pin as per vehicle manufacturers recommendation.

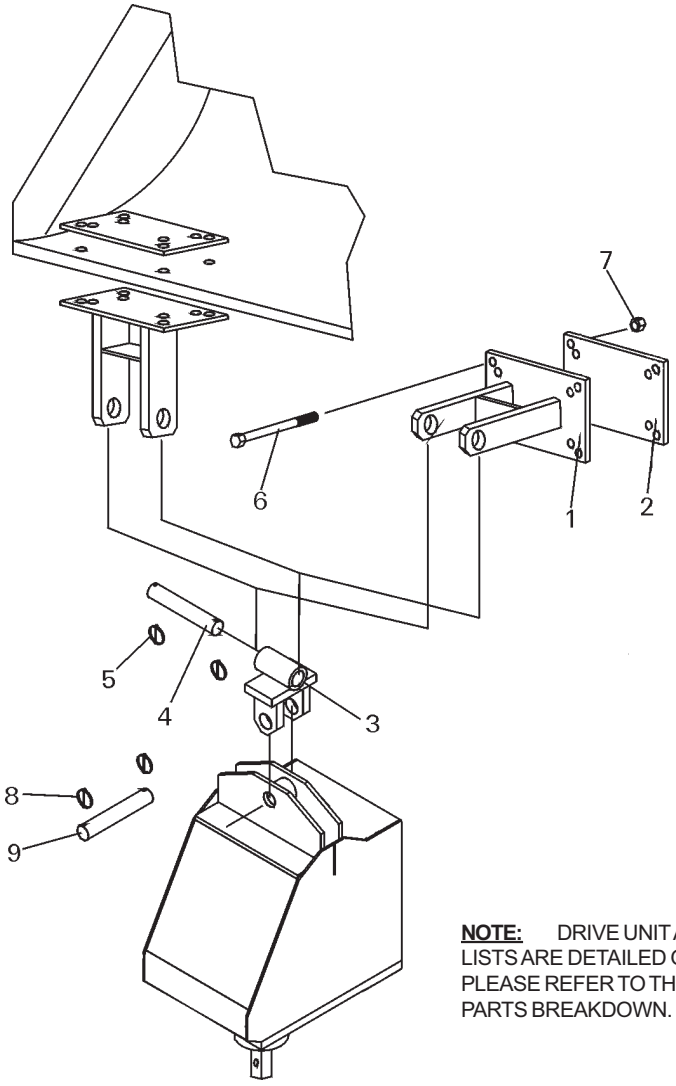
5. Attach and secure drive unit to backhoe mounting with pin (6) and Lynch Pins (7) provided with the drive unit assembly.

6. Attach and secure auger to drive unit with bolt and nut provided with drive unit assembly.

7. Refer to the 'HYDRAULIC SYSTEM HOOK-UP' section in this manual for hydraulic connections instructions and recommendations.

#21235 UNIVERSAL LOADER MOUNTINGS

EXPLODED VIEW, PARTS LIST & INSTALLATION INSTRUCTIONS



NOTE: DRIVE UNIT AND AUGER EXPLODED VIEW AND PARTS LISTS ARE DETAILED ON SEPARATE PAGES IN THIS MANUAL. PLEASE REFER TO THOSE PAGES FOR DRIVE UNIT AND AUGER PARTS BREAKDOWN.

REF.#	PART #	DESCRIPTION	QTY REQ'D
1	21628	Loader Bracket Weldment	1
2	21449	Loader Bracket Pad (Included with Item #1)	1
3	21694	Swivel Weldment	1
4	22255	Pin, 1.25" 0 x 7.25" Long	1
5	21169	Lynch Pins	2
6	1080	.44"-14 x 5.00" Gr. 5 Bolt	4
7	1227	.44"-14 Hex Nut	4
8	21169	Lynch Pins (included with drive unit)	2
9	22256	Pin (included with drive unit)	1

1. READ AND UNDERSTAND ALL SAFETY INFORMATION PRIOR TO ATTEMPTING INSTALLATION.

2. The Universal Loader Mounting part #21235 can be used to adapt your McMillen Hydraulic Earth Drill to the side of the loader arms, lip of bucket or fork lift forks. DO NOT USE ON SKID STEER LOADERS.

3. Place loader bracket pad (2) on the inside of the loader arm, top of bucket lip(for mounting on lip of bucket you'll need to drill two 7/16" diameter holes through bucket), or top of fork lift fork. Opposite side of loader bracket pad (2). Insert four bolts (6) and secure with four nuts(7).

4. Attach swivel Weldment (3) to the loader bracket weldment (1) with pin (4). Secure pin (4) with Lynch Pins (5).

5. Attach and secure drive unit to swivel weldment (3) with pin and pin clips provided with the drive unit assembly.

6. Attach and secure auger to drive unit with bolt and nut provided with drive unit assembly.

7. Refer to the 'HYDRAULIC SYSTEM HOOK-UP' section in this manual for hydraulic connection instructions and recommendations.

HYDRAULIC SYSTEM INSTRUCTIONS

1. Once the installation instructions are complete you are now ready to make the hydraulic connections necessary to operate your earth auger. **READ AND UNDERSTAND SAFETY INFORMATION PRIOR TO MAKING HYDRAULIC CONNECTIONS.**

2. Your equipment dealer is in the best position to advise you as to where the best place on your machine is to make the hydraulic connections to power your earth auger drive unit. The list below shows the most common place to "tap" into the hydraulic system on various types of machines.

SKID STEER LOADERS
Auxiliary hydraulic outlets.

BACKHOES & EXCAVATORS
Auxiliary hydraulic outlets or Bucket Curl Lines.

FORKLIFTS
Auxiliary hydraulic outlets or side shift circuit.

3. Determine length of hydraulic hoses required to plumb drive unit in the place on your machine where you'll be "tapping" into the hydraulics. Be sure the two hydraulic hoses are long enough to perform at the full range of the earth auger's operating capacity.

Models 920, 1420, and 1920 require two 1/2" (12.7mm) ID hydraulic hoses with 1/2" (12.7mm) male N.P.T. fittings on one end of each hose to connect hoses to drive unit fittings.

Fittings on the other end of each hydraulic hose should match the threads on hydraulic quick couplers to be used.

⚠ WARNING! HOSES AND FITTINGS MUST HAVE A CONTINUOUS OPERATING PRESSURE RATING OF AT LEAST 4X HIGHER THAN HIGHEST PRESSURES OF THE SYSTEM YOU ARE "TAPPING" INTO.

4. Once all hydraulic connections have been made and checked for leaks and proper hose lengths, you are now ready to operate your earth auger. **READ AND UNDERSTAND OPERATING INSTRUCTIONS AND SAFETY INFORMATION PRIOR TO OPERATING YOUR EARTH AUGER.**

OPERATING INSTRUCTIONS

1. After all installation instructions have been completed, safety information read and understood and the rest of this operator's manual has been reviewed, your McMillen Hydraulic Earth Auger is now ready for use.

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

3. Return earth auger control valve to neutral position to stop the auger. Lower the auger to the ground so that only the center point penetrates the ground about 2"(51mm).

4. Activate the earth auger control valve so auger is turning in a forward (clockwise) rotation. Use only enough down pressure to assure positive penetration of auger into the ground. Ease up on down pressure if auger rotation slows down drastically or stalls. Excessive down pressure will cause the auger to stall frequently.

5. When the auger has penetrated the ground about 24" (610mm), raise the auger from the hole to clean the dirt out. Repeat this procedure until the desired hole depth is obtained.

6. Once the required hole depth is reached, allow the auger to turn a few seconds at this depth to clean the hole.

7. Return the earth auger control valve to the neutral position to stop the rotation of the auger. Raise the auger out of the hole, move it away from the hole, then activate the earth auger control valve to spin the loose soil off of the auger.

NOTE: Do not reverse the auger rotation to remove from the hole as loose soil on the auger flights will fall back into the hole.

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

9. In some soil conditions or when excessive down pressure is applied, auger may "screw" itself into the ground and become stuck causing earth auger to stall. If this happens, reverse the auger rotation (counter-clockwise) 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.

10. If the auger hits a large obstruction the vehicle hydraulic relief valve will open and bypass the oil to stall (stop) the auger. This does not damage the unit in anyway but serves as a protection device. Whenever this happens simply reverse the auger rotation and raise the auger. Once unstuck you can continue digging.

11. Avoid excessive side loading to earth auger which can cause drive unit or auger damage.

12. Keep auger teeth and points in good condition. Check frequently and always keep spares on hand so they can be replaced when wear is detected to avoid damage to tooth holders and auger flighting.

DAILY INSPECTION

ITEM	INSPECT FOR
Hydraulic Oil	Cleanliness and contamination
Hydraulic Hoses	Damage, Leakage, Cracked or Brittle Covers (a sign of excessive heat)
Auger Point	Excessive wear or loose fit
Auger Teeth	Excessive wear or loose fit
Output Shaft	Bends, cracks, breaks or wear
Output Shaft	Damage or leakage
All Bolts	Cracks, breaks, or other damage
Connecting Pins	Bends, cracks, breaks or wear

MAINTENANCE

ITEM	INTERVAL	DESCRIPTION
Drive Chain	120 Hours	Lubricate with a high quality commercial chain lubricant. Apply to a warm chain if possible. Free play should not exceed 1/2". Replace if excessive. Remove and clean if dirty.
Output Shaft Bearings	1000 Hours or yearly whichever occurs first.	Grease with Amoco Super Permalube or equivalent Lithium based grease with EP-2 additive.
Auger Point	As needed for wear	Replace
Auger Teeth	As needed for wear	Replace
All Bolts	As needed	Replace

WARNING!

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

STORAGE

When storing Drive Unit for any length of time, adhere to the following instructions:

1. Drain drive unit motor and hoses of used hydraulic fluid and replace with new, clean hydraulic fluid.
2. Clean and lubricate chain fully to prevent corrosion, being sure to work lubricant into all joints.
3. Coat ALL exposed unpainted metal surfaces with grease to prevent corrosion.

TROUBLESHOOTING

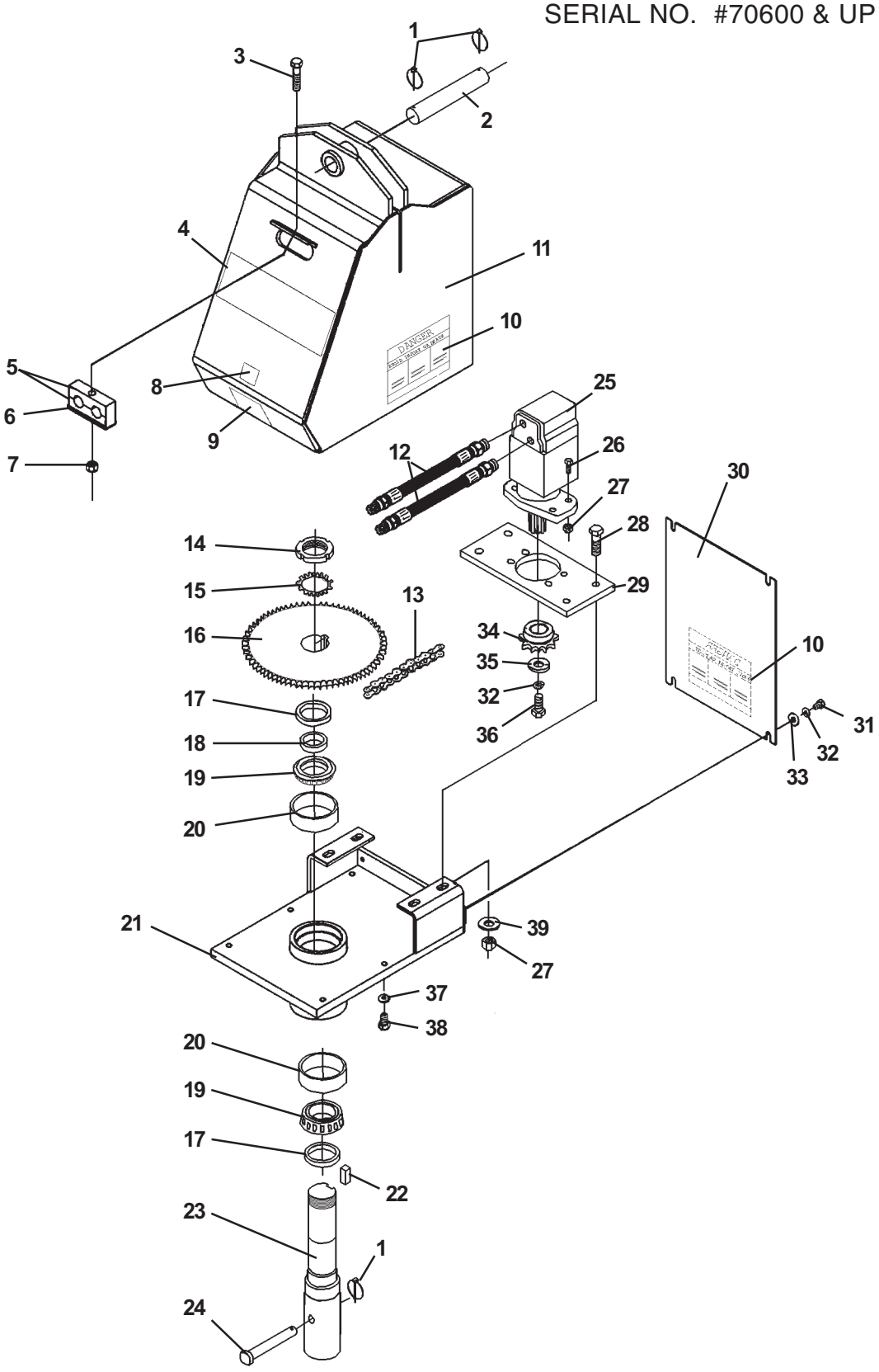
PROBLEM	POSSIBLE CAUSE	SOLUTION
Slow Speed	Low Flow	Check with flow meter. If low investigate cause.
	Line restrictions	Clear lines
	Fittings or connections too small	Replace with proper sizes.
	Oil filter dirty	Replace
	Hydraulic pump worn or damaged	See Dealer for repair
Insufficient Digging Power	Worn teeth or point	Replace
	Low system Pressure (PSI)	Check with pressure gauge. If low, investigate cause.
	Relief Valve damaged or setting wrong	Adjust or replace as required.
	Excessive load	Reduce load to within machine specifications.
Reverse Direction	Hoses reversed	Re-install hoses correctly.
Excessive Oil Heating	Line restrictions	Clear lines
	Fluid dirty	Replace hydraulic fluid and filter.
	Insufficient quantity of hydraulic fluid	Fill reservoir to proper level. Increase reservoir storage capacity.
Oil Leaks	Hoses loose or damaged	Tighten or replace
	Fittings loose or damaged	Tighten or replace
	Hydraulic motor seals worn or damaged	See Dealer for repair.

FOR FURTHER ASSISTANCE PLEASE CALL YOUR DEALER, OR CONTACT OUR SERVICE DEPARTMENT AS FOLLOWS:

NORTH AMERICA TOLL FREE: (800) 922-2981
Outside North America: (563) 922-2981
Fax: (563) 922-2130

MODELS 920, 1420 & 1920 DRIVE UNITS
EXPLODED VIEW

SERIAL NO. #70600 & UP



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MODELS 920, 1420 & 1920 DRIVE UNIT
PARTS LIST

SERIAL NO. #70600 & UP

NO	REQ'D	PART NO.	DESCRIPTION
1	3	21169	Klik Pin
2	1	22256	Pivot Pin
3	1	1096	.50" UNC X 3.00" Hex Capscrew
4	1	40663	C920 Model Decal
	1	40664	C1420 Model Decal
	1	40665	C1920 Model Decal
5	1	22316	Hose Cushion
6	1	22315	Hose Cushion Plate
7	1	1841	.50" UNC Deformed Lock Nut
8	1	4338	Made In U.S.A. Decal
9	1	22677	Serial Number Tag
10	3	22680	Danger Decal
11	1	89431	Chain Box
12	2	38017	Hose Assembly .50" X 11.50" 10MBo-10MJ
13	1	22509	Chain (47 Pitches)
	1	22510	Connector Link
14	1	22359	Bearing Lock Nut
15	1	22360	Bearing Lock Washer
16	1	22506	Sprocket (42 Tooth - 2" Bore)
17	2	22249	Double Lip Bearing Seal
18	1	22242	Output Shaft Spacer
19	2	22247	Bearing Cone
20	-	22248	Replacement Bearing Cup (Included in Drive Mount)
21	1	89379	Drive Mount
22	1	22358	Key
23	1	22243	2" Round Output Shaft
	1	22244	2-9/16" Round Output Shaft
	1	22245	2" Hex Output Shaft
24	1	22261	Clevis Pin .62" X 4" **(2" Round Output Shaft)**
	1	22262	Clevis Pin .88" X 4.50" **(2-9/16" Round Output Shaft)**
	1	22263	Clevis Pin .75" X 4.50" **(2" HexOutput Shaft)**
25	1	21950	C920 Hydraulic Motor
	1	21956	C1420 Hydraulic Motor
	1	21952	C1920 Hydraulic Motor
26	4	1092	.50" UNC X 2.00" Hex Capscrew
27	8	1841	.50" UNC Deformed Lock Nut
28	4	1090	.50" UNC X 1.50" Hex Capscrew
29	1	21522	Motor Mounting Plate
30	1	89432	Cover Plate
31	4	1042	.38" UNC X .75" Hex Capscrew
32	5	1503	.38" Lock Washer
33	4	1514	.38" Flat Washer
34	1	22505	Drive Sprocket (11 Tooth)
35	1	22298	Fender Washer
36	1	1043	.38" UNC X 1.00" Hex Capscrew
37	6	1505	.50" Lock Washer
38	6	1088	.50" UNC X 1.00" Hex Capscrew
39	4	1646	.50" Hard Flat Washer

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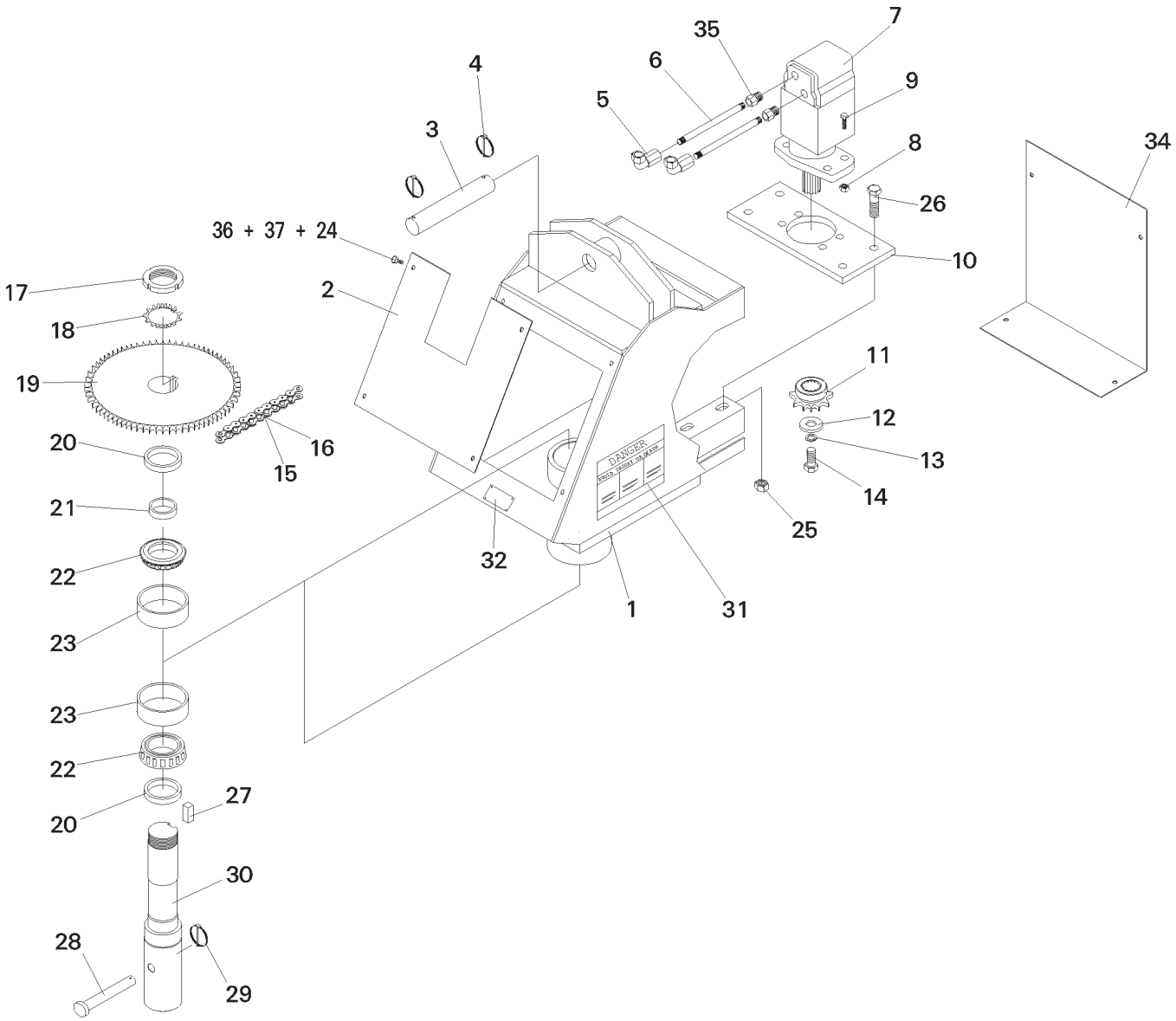
MODELS 920, 1420 & 1920 DRIVE UNIT

EXPLODED VIEW

UP TO SERIAL NO. #70600



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MODELS 920, 1420 & 1920 DRIVE UNIT

PARTS LIST

UP TO SERIAL NO. #70600

REF. #	PART #	DESCRIPTION	QTY. REQ'D	MODELS USED ON
1	21664	Main Frame Weldment	2	All
2	21528	Safety Cover (Front)	1	All
3	22256	Pin, 1.25" Dia. x 6" Long	1	All
4	21169	Lynch Pins	2	All
5	22594	Fitting, .50" NPT Female to #10 JIC Male, 90°	2	All
6	22538	Pipe, .50" x 9" Long	1	All
7	21950	920 Hydraulic Motor	1	920
	21956	1420 Hydraulic Motor	1	1420
	21952	1920 Hydraulic Motor	1	1920
8	1841	.50" - 13 Locknut	4	All
9	1092	Bolt, .50" - 13 x 2.00", Gr. 5 HHCS	4	All
10	21522	Motor Base	1	All
11	22505	Drive Sprocket	1	All
12	22298	.38" x 1.50" Fender Washer	1	All
13	1503	.38" Split Lockwasher	1	All
14	1043	Bolt, .38" - 16 x 1.00" Long, Gr. 5, HHCS	1	All
15	22509	Chain	1	All
16	22510	Connecting Link	1	All
17	22359	Bearing Locknut	1	All
18	22360	Bearing Nut Lockwasher	1	All
19	22506	Drive Sprocket	1	All
20	22249	Bearing Seal	2	All
21	22242	Output Shaft Spacer	1	All
22	22247	Bearing Cone	2	All
23	22248	Bearing Cup	2	All
24	22363	Bolt, .25" - 20 x .50" Long, Gr. 5, HHCS	8	All
25	1841	.50" -13 Locknut	8	All
26	1090	Bolt, .50" - 13 x 1.50", HHCS, Gr. 5, Zinc	4	All
27	22358	.50" x 1.25" Square Key	1	All
28	22261	Clevis Pin .62" x 4" (2" Round)	1	All 2" Rnd.
	22262	Clevis Pin .88" x 4.50" (2-9/16" Round)	1	All 2-9/16" Rnd.
	22263	Clevis Pin, .75" x 4.50" (2" Hex)	1	All 2" Hex
29	21169	Lynch Pin	1	All
30	22243	2" Round Output Shaft	1	All
	22244	2-9/16" Round Output Shaft	1	All
	22245	2" Hex output Shaft	1	All
31	22680	Safety Decal	1	All
32	22677	Serial # Tag	1	All
34	21529	Safety Cover (Back)	1	All
35	22592	Fitting, #10 SAE Male to .50" NPT Female, Straight	2	All
36	1512	.25" Flat Washer, Gr. 5, Zinc	8	All
37	1501	.25" Lock Washer, Gr. 5, Zinc	8	All
38	22539	Pipe, .50" x 11" Long	1	All

INSTALLING A NEW OUTPUT SHAFT SPROCKET

NOTE: ONLY ORIGINAL EQUIPMENT AND AUTHORIZED McMILLEN PARTS MAY BE USED.

1. Disconnect the drive unit from the power source.
2. Remove the safety covers.
3. Remove the (4) bolts from motor base. Push the motor forward to free the chain and remove the motor. Set the motor in a safe place to avoid damage. (Remove the drive mount from the chain box on serial no. #70600 & up.)
4. Remove the chain.
5. Straighten the tab on the sprocket lockwasher. Remove the locknut and lockwasher.
6. Using a gear puller - remove the sprocket from the output shaft being careful not to damage the shaft threads or lose the key(s).
7. Coat inside of new sprocket with an antisieze lubricant.
   Install the new sprocket with the hub toward the bearing Main Frame.
8. Tap the key(s) into position being careful not to damage the threads.
9. Replace and tighten the lockwasher and locknut. Re-bend the tab on the lockwasher to lock it into place - (NOTE: Moderate force with no end-to-end play when rotating the shaft is required. If not - retighten).
10. Replace the chain.
11. Replace the motor, wrapping the chain around the motor sprocket. Replace and tighten the (4) motor bolts.
12. Replace the safety covers. (Replace chain box onto the drive mount on serial no. #70600 and up.)

INSTALLING A NEW MOTOR SHAFT SPROCKET

NOTE: ONLY ORIGINAL EQUIPMENT AND AUTHORIZED McMILLEN PARTS MAY BE USED.

1. Follow Steps 1-3 from the section “Installing a New Output Shaft Sprocket”.
2. Remove the bolt, the lockwasher and the flatwasher from the motor shaft. Remove the sprocket from motor shaft.
3. Install the new sprocket with the hub side toward the motor. Replace the bolt, lockwasher and flatwasher.
4. Replace the motor, wrapping the chain around the motor sprocket. Replace and tighten the (4) motor base bolts.
5. Replace the safety covers and chain box if necessary.

INSTALLING OUTPUT SHAFT BEARINGS & INSTALLING A NEW OUTPUT SHAFT AND SEALS

NOTE: ONLY ORIGINAL EQUIPMENT AND AUTHORIZED McMILLEN PARTS MAY BE USED.

1. Follow steps 1-7 from the section “Installing a New Output Shaft Sprocket”.
2. Using a brass hammer, remove the shaft from the bearing housing.
3. Remove the output shaft spacer.
4. Remove the (2) seals from the bearing housing.
5. Remove the bearing rollers from the bearing housing.
6. Clean all parts of dirt, old grease and corrosion.
7. Repack the bearing rollers with new grease (See Maintenance section for grease specifications) being sure to work grease thoroughly in between all rollers. Remove excess grease from inside diameter.
8. With new shaft standing on end (threads up) slip (1) greased bearing roller (thick side down) over shaft. Press bearing onto shaft until it bottoms out on shoulder.
9. Place new shaft with bearing into main frame weldment.
10. Slip other greased bearing roller (thick side up) over shaft until it seats itself fully in bearing housing.
11. Replace the output shaft spacer.
12. Press both new seals (flat side out) into main frame weldment, being careful not to damage them, until flush with bearing housing face.
13. Follow steps 8-12 from the Section “Installing a New Output Shaft Sprocket”.

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DRIVE UNIT SPECIFICATIONS

MODEL 920

Maximum Auger Diameter:	18” (457mm)
Minimum Hydraulic Flow:	6 gpm (23 lpm)
Maximum Hydraulic Flow:	15 gpm (57 lpm)
Maximum Continuous Operating PSI:	3000 psi (Kg/Cm^2)
Output shaft Options:	2” (51mm) Round
	2-9/16” (65mm) Round
	2” (51mm)Hexagon

OUTPUT SPEED

FLOW			SPEED
GPM	(LPM)	=	RPM
6	(23)	=	38
8	(30)	=	50
10	(38)	=	63
12	(45)	=	75
15	(57)	=	94

OUTPUT TORQUE

PRESSURE			TORQUE	
PSI	(kg/cm^2)	=	Lb•Ft	(N•m)
2000	(141)	=	973	(1319)
2500	(176)	=	1216	(1648)
3000	(211)	=	1460	(1979)

MODEL 1420

Maximum Auger Diameter:	30” (762mm)
Minimum Hydraulic Flow:	10 gpm (38pm)
Maximum Hydraulic Flow:	25 gpm (95 lpm)
Maximum Continuous Operating PSI:	3000 psi (Kg/Cm^2)
Output shaft Options:	2” (51mm) Round
	2-9/16” (65mm) Round
	2” (51mm)Hexagon

OUTPUT SPEED

FLOW			SPEED
GPM	(LPM)	=	RPM
10	(38)	=	41
12	(45)	=	49
14	(53)	=	57
16	(61)	=	64
18	(68)	=	73
20	(76)	=	81
25	(95)	=	101

OUTPUT TORQUE

PRESSURE			TORQUE	
PSI	(kg/cm^2)	=	Lb•Ft	(N•m)
2000	(141)	=	1510	(2047)
2500	(176)	=	1888	(2559)
3000	(211)	=	2265	(3071)

MODEL 1920

Maximum Auger Diameter:	36” (762mm)
Minimum Hydraulic Flow:	15 gpm (57pm)
Maximum Hydraulic Flow:	30 gpm (114 lpm)
Maximum Continuous Operating PSI:	3000 psi (Kg/Cm^2)
Output shaft Options:	2” (51mm) Round
	2-9/16” (65mm) Round
	2” (51mm)Hexagon

OUTPUT SPEED

FLOW			SPEED
GPM	(LPM)	=	RPM
15	(57)	=	48
18	(68)	=	58
20	(76)	=	65
22	(83)	=	71
24	(91)	=	78
26	(98)	=	84
28	(106)	=	91
30	(114)	=	97

OUTPUT TORQUE

PRESSURE			TORQUE	
PSI	(kg/cm^2)	=	Lb•Ft	(N•m)
2000	(141)	=	1895	(2569)
2500	(176)	=	2369	(3212)
3000	(211)	=	2843	(3854)

Output speed and torque specifications are based on theoretical values and are provided for comparative purposes only.

McMillen is continually striving to improve its products. Therefore, we reserve the right to make changes to our products or specifications at any time without notice or obligation.

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HDC STYLE AUGER WEAR PARTS LIST

AUGER DIA.		6"	8"	9"	10"	12"	15"	16"	18"	20"	24"	30"	36"	42"	48"
		152mm	203mm	229mm	254mm	305mm	381mm	406mm	457mm	508mm	610mm	762mm	914mm	1067mm	1219mm
Part #	Description(Standard Components)	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty
22169	Hardened Drive-In Gage Tooth	2	2	2	2	2	2	2	2	2	2	2	2	2	2
22168	Hardened Drive-In Wisdom Tooth	-	2	2	2	2	4	4	4	4	6	8	10	14	18
22190	3.50″ Hardened Fishtail Point (male shaft)	1	1	1	1	1	1	1	1	1	1	1	1	1	1
22154	Rubber Lock	2	4	4	4	4	6	6	6	6	8	10	12	16	20

HDF STYLE AUGER WEAR PARTS LIST

AUGER DIA.		4"	6"	8"	9"	10"	12"	15"	16"	18"	20"	24"	30"	36"
		102mm	152mm	203mm	229mm	254mm	305mm	381mm	406mm	457mm	508mm	610mm	762mm	914mm
Part #	Description(Standard Components)	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty
22169	Hardened Bolt-on Gage Tooth	-	2	2	2	2	2	2	2	2	2	2	2	2
22168	Hardened Bolt-on Wisdom Tooth	-	-	-	1	1	2	3	3	4	4	6	7	9
22190	3.50″ Hardened Fishtail Point (male shaft)	-	1	1	1	1	1	1	1	1	1	1	1	1
22003	4.50″ Hardened Fishtail Point	1	-	-	-	-	-	-	-	-	-	-	-	-
22306	Carriage Bolt	-	2	2	3	3	4	5	5	6	6	8	9	11
1839	Nut	-	2	2	3	3	4	5	5	6	6	8	9	11

HTF STYLE AUGER WEAR PARTS LIST

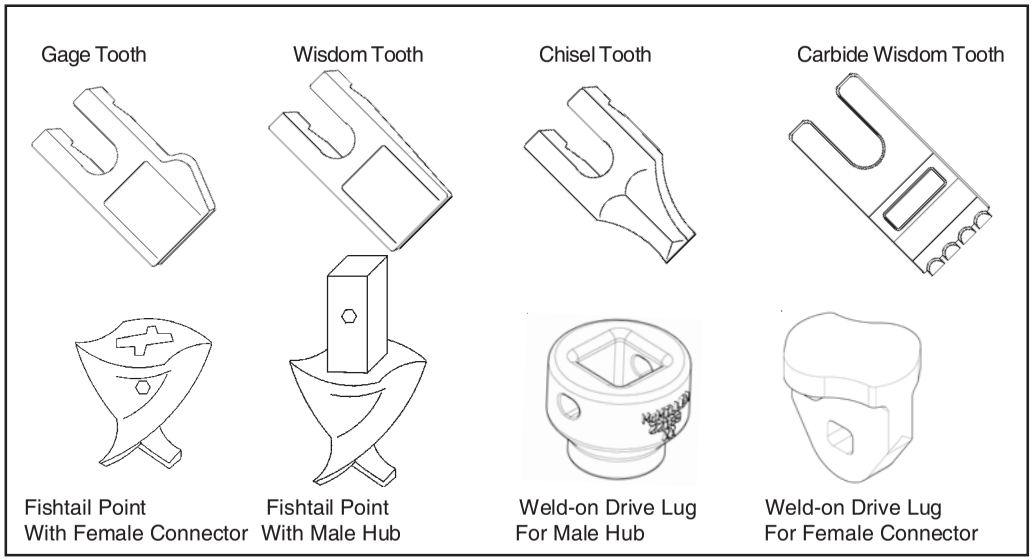
AUGER DIA.		18"	24"	30"	36"	42"	48"
		457mm	610mm	762mm	914mm	1067mm	1219mm
Part #	Description(Standard Components)	QTY	QTY	QTY	QTY	QTY	QTY
22169	Hardened Bolt-on Gage Tooth	4	4	4	4	4	4
22168	Hardened Bolt-on Wisdom Tooth	3	6	7	9	11	13
22190	3.50″ Hardened Fishtail Point (male shaft)	1	1	1	1	1	1
22306	Carriage Bolt	7	10	11	13	15	17
1839	Nut	7	10	11	13	15	17

OPTIONAL HARDFACED & CARBIDE WEAR COMPONENTS

Part #	Description
22170	Hardfaced Wisdom Tooth
22186	Carbide Wisdom Tooth
22181	Hardened Chisel Tooth
22183	Hardfaced Chisel Tooth
22182	Carbide Chisel Tooth
22190	3.50″ Hardened Fishtail Point (Male Hub)
22192	3.50″ Hardfaced Fishtail Point (Male Hub)
22191	3.50″ Carbide Fishtail Point (Male Hub)
22193	3.50″ Hardfaced /Carbide Fishtail Point (Male Hub)
22003	4.50″ Hardened Fishtail Point (Female)
22004	4.50″ Hardfaced Fishtail Point (Female)
22005	4.50″ Hardfaced /Carbide Fishtail Point (Female)
22171	3.50″ Hardened Fishtail Point (Female)
22172	3.50″ Carbide Fishtail Point (Female)
22173	3.50″ Hardfaced Fishtail Point (Female)
22174	3.50″ Hardfaced /Carbide Fishtail Point (Female)

NOTE: *Contact your equipment dealer for wear components not listed above. If you have any special auger needs or applications, feel free to contact McMillen.*

IMPORTANT: McMillen does not recommend augers exceeding 36” diameter for C-Series Drive Units.



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