

McMILLEN

CONSTRUCTION EQUIPMENT ATTACHMENTS

**MODEL
X14K2**

PATENT PENDING

**HYDRAULIC EARTH AUGER ATTACHMENT
OPERATOR'S MANUAL**

SERIAL NUMBER _____

CAUTION!
Maximum Pressure
2,400 PSI

Part No. 22674
Rev. 8/00

⚠ WARNING!

AVOID INJURY OR DEATH

**READ AND UNDERSTAND THIS ENTIRE MANUAL BEFORE
INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT**

M-209
8-18-00



**Attachment
Technologies
Incorporated**

To the Owner,

We would like to take the opportunity to thank you for purchasing your McMillen Earth Auger Attachment. You have invested in a quality piece of equipment backed by years of experience and thousands of units in the field. But only by proper installation, operation and maintenance can you expect to receive the dependable performance and long life for which the earth auger was designed.

This operator's manual contains information regarding the installation, operation, safe use, care and maintenance of your McMillen Hydraulic Earth Auger Attachment. **Please be sure all operators study this manual carefully** and keep it on file for future reference.

After reading this manual, if you have any questions about your McMillen Hydraulic Earth Auger Attachment please contact us immediately as follows:

NORTH AMERICAN TOLL FREE: (800) 234-0964
Outside North America: (319) 922-2981
Fax: (319) 922-2700

Once again, we would like to thank you for putting your trust in our product. If we may be of further assistance to you in the future, please feel free to contact us or your nearest McMillen dealer at your convenience.

Yours for better digging,

McMillen

P.S. McMillen is continually striving to improve its products. We'd like to hear from you with your ideas and suggestions on ways we can improve our products for the future.

McMILLEN® Division of Attachment Technologies Incorporated

P.O. Box 266 • Delhi, Iowa 52223 • Phone (319) 922-2981 • Fax (319) 922-2700
North American Toll Free (800) 234-0964

M-102
7-10-00

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**McMILLEN
WARRANTY REGISTRATION**

DATE PURCHASED _____

MODEL NO. _____ SERIAL# _____

OWNER INFORMATION

OWNER'S NAME _____ PHONE _____

COMPANY NAME _____

ADDRESS _____

CITY _____ STATE/PROVIDENCE _____

ZIP CODE _____ COUNTRY _____

DEALER INFORMATION

DEALER SALESMAN _____ PHONE _____

DEALER NAME _____

ADDRESS _____

CITY _____

STATE/PROVIDENCE _____

ZIP CODE _____ COUNTRY _____

INSTALLATION & APPLICATION INFORMATION

This McMillen Hydraulic Earth Auger Attachment will be mounted on: _____

MAKE (Brand) _____ MODEL _____

APPLICATION _____ AUGER SIZE _____

This McMillen Hydraulic Earth Auger Attachment has been accepted in good condition and I have been instructed by the dealer and/or read and understand the entire Operator's Manual for proper installation, proper and safe operation, preventative maintenance and service, warranty and all other information covered in the Operator's Manual. I also understand that all operators must read and understand the entire Operator's Manual.

OWNER'S SIGNATURE _____ DATE _____

DEALER'S SIGNATURE _____ DATE _____

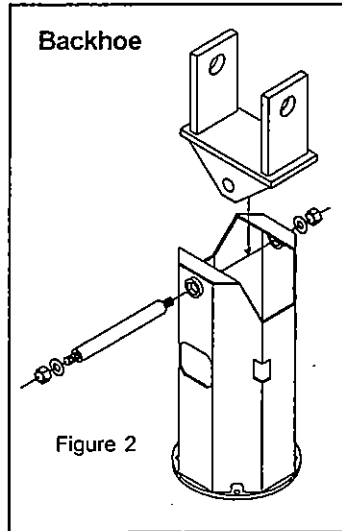
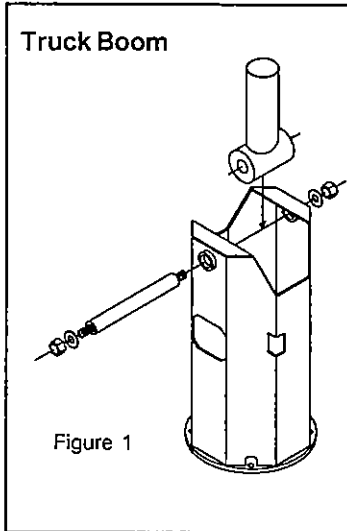
THIS PAGE MUST BE RETURNED WITHIN 10 DAYS OF PURCHASE TO VALIDATE WARRANTY

RETURN TO: Attachment Technologies Incorporated
P.O. Box 266
Delhi, Iowa 52223 U.S.A.

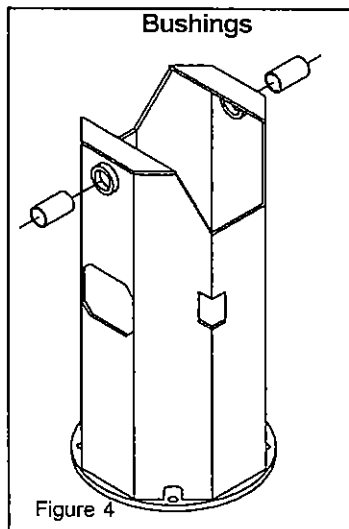
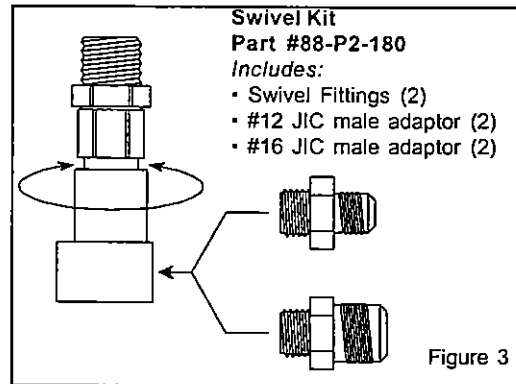
Extreme[™] DUTY X14K2 HYDRAULIC DRIVE UNIT

Hook-up Procedures

1. Pin the Hydraulic Drive Unit to your vehicle (See Figures 1 & 2).



NOTE: A Utility Swivel Fitting Kit is available for the X14K2 (Figure 3). For details, contact your Equipment Dealer, or McMillen's Sales department at the numbers listed on the first page of this manual.



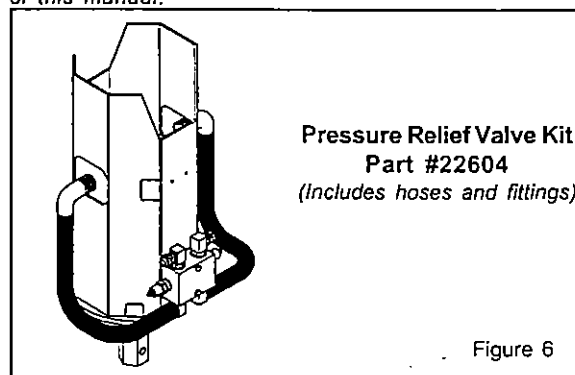
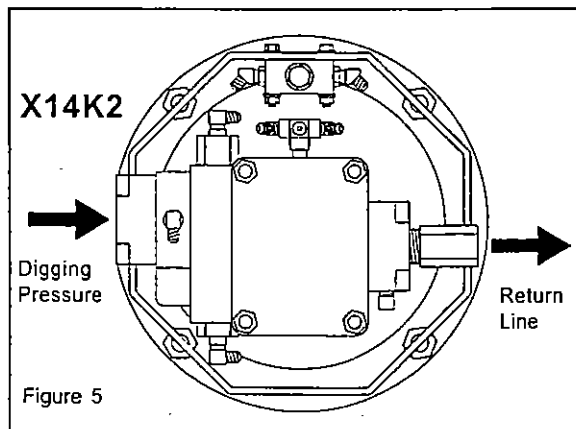
Both 1-1/2" diameter and 1-1/4" dia. pins are supplied with the drive unit. When the 1-1/4" diameter pin is used, insert one of the supplied bronze bushings into each of the pivot holes on the Hydraulic Drive Unit (Figure 4).
Note: No bushing is necessary when the 1-1/2" diameter pins are used.

NOTE: A variety of Backhoe Adaptors are available through McMillen. For details, contact your Equipment Dealer, or McMillen's Sales department at the numbers listed on the first page of this manual.

2. Attach the Hydraulic Hoses to the Drive Unit (Figure 5).

The X14K2 Hydraulic Drive Unit is supplied with 1-1/4" female pipe thread ports. Attach the adaptors to fit your hoses. In order for the X14K2 Drive Unit to function properly, the digging pressure hose must be connected to the valve side of the motor (Figure 5).

CAUTION! Model X14K2 is designed for a maximum pressure of 2,400 psi. A Pressure Relief Valve Kit is available for pressures over 2,400 psi (Figure 6). For details, contact your Equipment Dealer, or McMillen's Sales department at the numbers listed on the first page of this manual.



Extreme[™] DUTY X14K2
HYDRAULIC DRIVE UNIT
Specifications

MODEL X14K2					
Maximum Auger Diameter:	48" (1219 mm)				
Minimum Hydraulic Flow:	30 gpm (114 lpm)				
Maximum Hydraulic Flow:	60 gpm (227 lpm)				
Maximum System PSI:	2400 psi (211 kg/cm ²)				
Maximum Back Pressure:	500 psi (35 kg/cm ²)				
Output Shaft Options:	2-1/2" (64mm) Hexagon 2-5/8" (67mm) Hexagon				
OUTPUT SPEED			OUTPUT TORQUE		
FLOW	LOW SPEED	HIGH SPEED	PRESSURE	HIGH TORQUE	LOW TORQUE
GPM (LPM)	≡ RPM	RPM	PSI (kg/cm ²)	≡ Lb·ft (N·m)	Lb·ft (N·m)
30 (114)	= 13	28	1800 (127)	= 10,830 (14,680)	5270 (7143)
40 (151)	= 18	38	2100 (148)	= 12,640 (17,133)	6149 (8335)
60 (227)	= 28	59	2400 (169)	= 14,000 (18,978)	6600 (8946)

Extreme[™] DUTY X14K2
HYDRAULIC DRIVE UNIT
Operation Tips

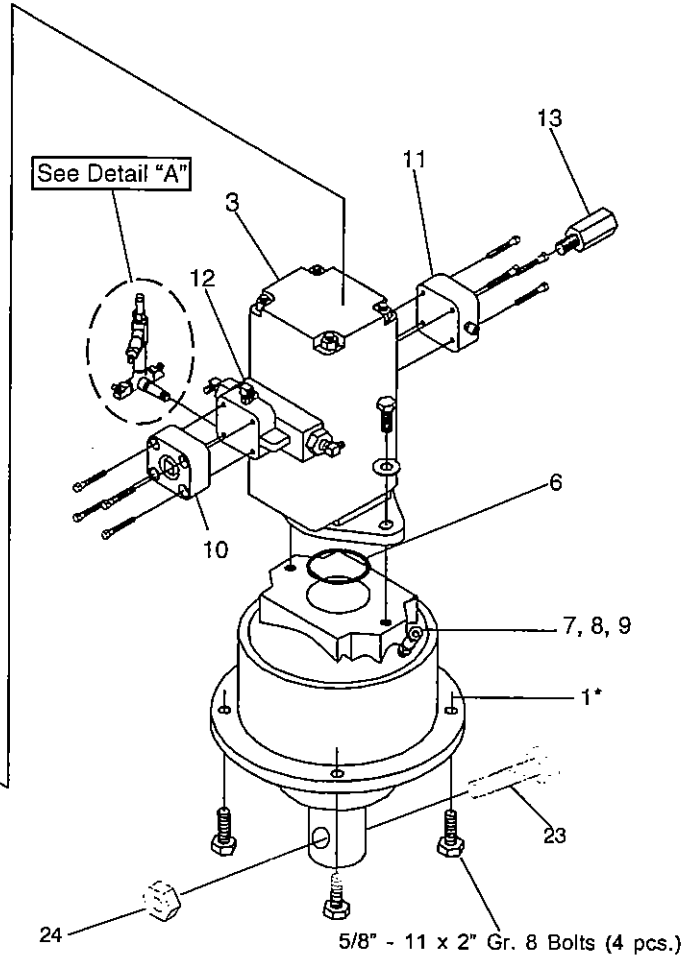
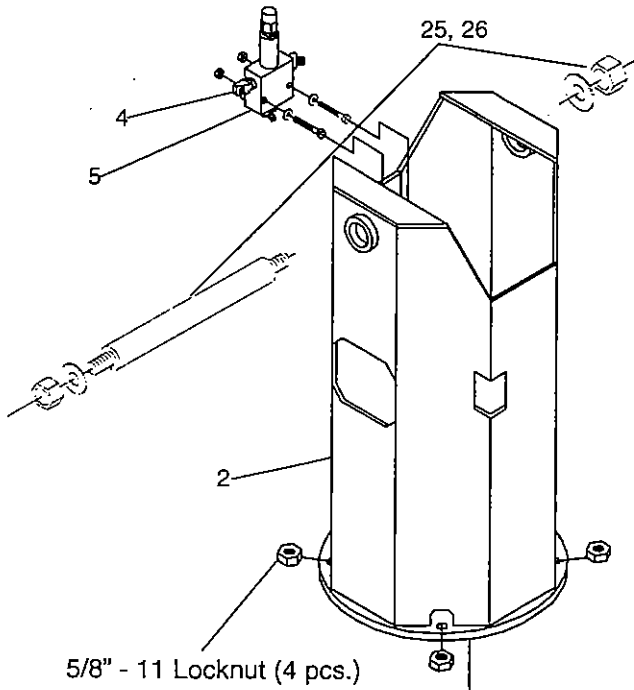
The X14K2 Hydraulic Drive Unit is designed to automatically shift to a higher torque/lower rpm upon sensing a certain degree of pressure from the augering function.

The motor will always start in Low Torque/High rpm. When tough ground conditions are encountered, the hydraulic pressure will rise and at a pre-set point, the motor will shift to High Torque/Low rpm. The motor will remain at this speed until the line pressure drops below 200 psi or the motor stops, at which time it will return to Low Torque/High rpm.

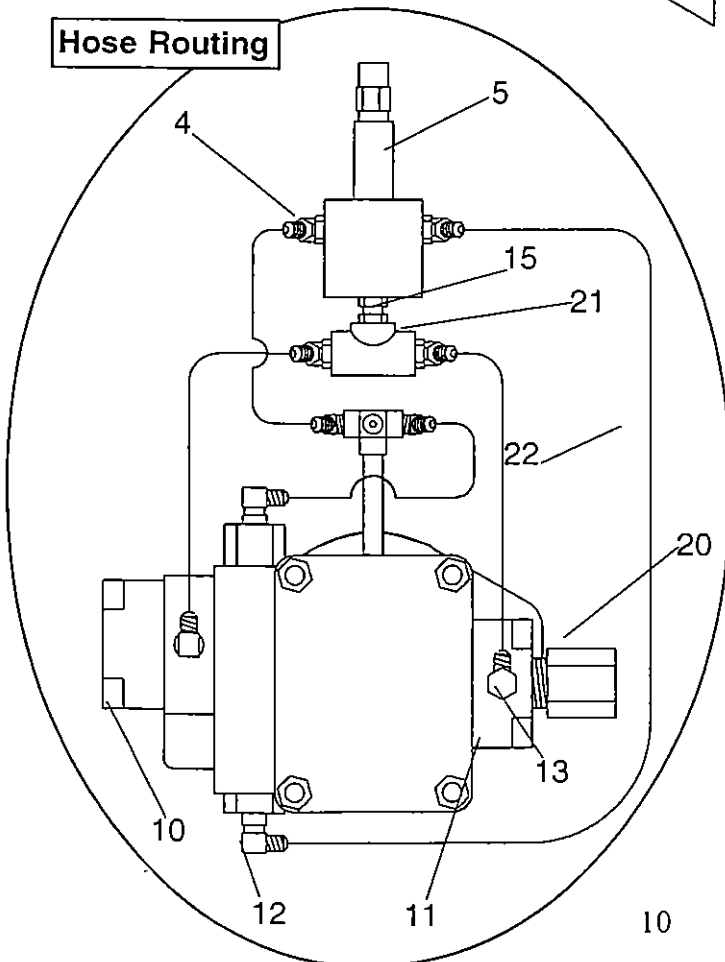
The point at which the motor shifts to High Torque/Low rpm has been factory pre-set. It can be changed by adjusting the pressure sensing valve on the inside edge of the motor housing. To cause the motor to shift sooner, loosen the set screw in the pressure sensing valve. To cause the motor to shift later, tighten the set screw more than 1/2 turn at a time.

2- SPEED HYDRAULIC DRIVE UNIT

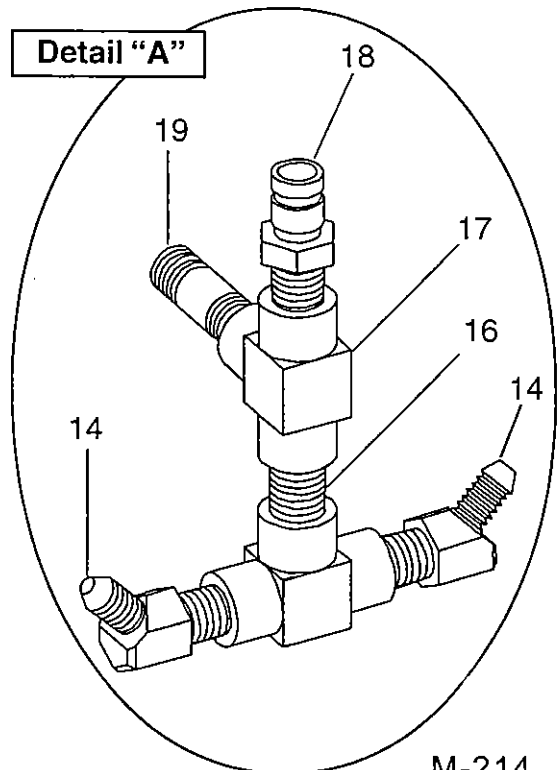
Exploded View



Hose Routing



Detail "A"



2-SPEED HYDRAULIC DRIVE UNIT

Parts List

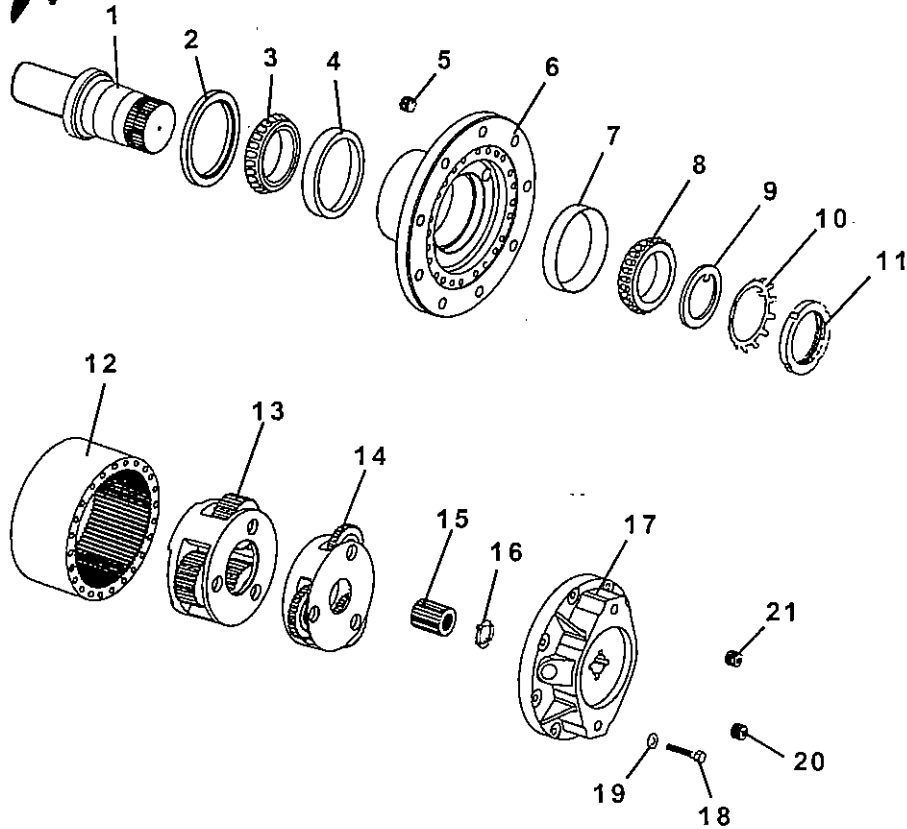
<u>REF.#</u>	<u>PART #</u>	<u>DESCRIPTION</u>	<u>QTY. REQ'D</u>
* 1	1	22499	#9 Planetary, 2-1/2" Hex for X14K2H250 Unit
* 1	1	22500	#9 Planetary, 2-5/8" Hex for X14K2H263 Unit
2	1	21686	Utility Housing Weldment
3	1	21947	2-Speed 14000 Utility Motor
4	4	22551	#6 SAE / #4 JIC 45° Fitting
5	1	22548	Pressure Sensing Valve
6	1	22609	"O" Ring
7	1	22610	Reducer Fitting, 1/2" NPT - 1/4" NPT
8	1	22589	Check Valve
9	1	22588	Breather, 1/4" NPT
10	1	22549	#20 Flange Block Kit, Plain
11	1	22550	#20 Flange Block Kit, 1/4" NPT Female Port
12	3	22556	#4 SAE Male / #4 JIC Male 90° Fitting
13	1	22557	1/4" NPT Male / #4 JIC Male 90° Fitting
14	2	22558	1/4" NPT Male / #4 JIC Male 45° Fitting
15	1	22546	#6 SAE Male / #6 SAE Male Straight Fitting
16	1	22559	1/4" NPT Close Nipple
17	2	22560	1/4" NPT Female Tee Fitting
18	1	22561	1/4" NPT Male / PD342 Quick Disconnect
19	1	22562	1/4" NPT Nipple, 1-1/2" long
20	1	22563	1-1/4" NPT Extension, Male/Female
21	1	22547	Shuttle Valve
22	5	22565	Hose, #4 JIC Female ends, 17" long
23	1	1151	3/4 -10 x 6" ,HHCS, Z, Gr. 5 Bolt
24	1	1231	3/4 - 10 Hex Nut, Z, Gr.2
25	1	21219	1-1/2" Drive Unit Pin Kit
26	1	21220	1-1/4" Drive Unit Pin Kit
(Not Shown)	2	22680	Safety Decal (Danger Avoid Injury)
(Not Shown)	1	22683	McMillen Extreme™ Decal
(Not Shown)	2	22661	Caution Decal, Max Pressure 2400 psi

Extreme[™]
DUTY

X14K2

PLANETARY GEAR REDUCTION

Exploded View and Parts List



<u>REF.#</u>	<u>PART #</u>	<u>QTY. REQ'D</u>	<u>DESCRIPTION</u>
1	22474	1	Output Shaft, Model 9/ 2-1/2" Hex
	22475	1	Output Shaft, Model 9/ 2-5/8" Hex
2	22445	1	Oil Seal
3	22476	1	Outer Bearing Cone
4	22477	1	Outer Bearing Cup
5	22478	1	Pipe Plug
6	22479	1	Hub
7	22480	1	Inner Bearing Cup
8	22481	1	Inner Bearing Cone
9	22482	1	Thrust Washer
10	22483	1	Lock Washer
11	22484	1	Bearing Nut
12	22485	1	Ring Gear
13	22486	1	Secondary Carrier Assembly
14	22487	1	Primary Carrier Assembly
15	22488	1	Primary Sun Gear
16	22439	1	Thrust Washer
17	22489	1	Cover
18	22490	24	Hex Head Bolt (Grade 8)
19	22432	24	Flat Washer
20	22457	1	Magnetic Plug, 1/2"
21	22458	1	Pipe Plug, 1/2"
Not shown	22491	1	Bearing Locknut Tool 593RR
Not shown	22492	1	Bearing Cone Driver 598F
Not shown	22493	1	Spindle/Shaft Drive Tool 598FF

Extreme[™] X14K2
PLANETARY GEAR REDUCTION
Service Procedures

DISASSEMBLY OF PLANETARY:

1. Remove twenty four hex head bolts (18) and flat washers (19) from cover (17). Lift cover (17) from assembly. Thrust washer (16) usually remains with the cover (17).
2. Lift sun gear (15) from primary carrier assembly (14).
3. Remove primary carrier assembly (14).
4. Remove secondary carrier assembly(13). If difficulty is encountered in removing the carrier assembly (13), remove the ring gear(12) first.
5. If not previously removed (step 4) remove the ring gear (12) from hub (6). It may be necessary to strike ring gear (12) with a rubber mallet to loosen from hub (6).
6. One tab of lockwasher (10) will be engaged in the slot of bearing nut (11); bend back to release. Remove the bearing nut (11), lock washer (10) and thrust washer (9). Note: A special locknut wrench, 593RR is required for the removal of the bearing locknut. Contact McMillen for procurement of wrench and other service tools.
7. Bolt spindle/shaft drive tool, 598FF, to hub (6). Drive output shaft (1) from hub (6) by turning bolt in center of spindle/shaft drive tool. Care should be taken to avoid damaging splines and threads on output shaft. Note: Bearing cone (8) has been designed with a press fit with respect to output shaft (1). Considerable force will be required to remove cone from shaft.
8. Remove oil seal (2) and bearing cones (3 & 8) from hub (6). Inspect bearing cups (4 & 7) in hub (6) and remove only if replacement is required.

ASSEMBLY OF PLANETARY:

1. Press new bearing cups (4 & 7) into each side of hub (6). It is recommended that bearing cups (4 & 7) and cones (3 & 8) be replaced in sets.
2. Assemble bearing cone (3) into cup (4) at seal end of hub (6) and press a new seal (2) into hub (6).
3. Lubricate lips of oil seal (2) and lower hub (6) onto output shaft (1). Keep hub (6) centered to prevent damage to oil seal (2).
4. Assemble bearing cone (8) over output shaft (1). Press bearing cone (8) over output shaft bearing journal using press and cylindrical bearing cone driver 598F. Press bearing cone (8) down until rollers just touch cup (7). Take care to avoid pressing cone(8) too far. Note: If a press is not available, place tool 598F over splined end of output shaft (1) on the edge of bearing cone(8) and drive into place with hammer or mallet. If this method is used, care must be taken to avoid damage to bearing cone and spindle.
5. Install thrust washer (9) and bearing nut (11). DO NOT install lock washer (10) at this time.
6. Place spindle/shaft drive tool, 598FF, over output shaft (1) and bolt or pin to hub (6).



X14K2

PLANETARY GEAR REDUCTION

Service Procedures

7. Check initial rolling torque by installing a lb.-in. torque wrench (arm or dial type) on center nut of spindle/shaft drive tool and turning hub (6) slowly and steadily with the torque wrench. An initial bearing rolling torque of greater than 52lb.-in. with boot seal installed or 48 lb.-in. without boot seal means that the cone(8) was pressed on too tightly(step 4). In this case, back off bearing cone (8) until initial preload is relieved (step 7 of disassembly procedure).
8. Torque bearing nut (11) with bearing nut wrench 593RR until a bearing rolling torque of 44 - 52 lb.-in., with a boot seal installed, or 40 - 48 lb.-in. without a boot seal, is reached. This may require several trials of pressing the cone (8) by torquing the nut (11) and then checking the rolling torque. Rotate the hub (6) by hand as nut is being tightened in order to seat bearings. Note: Up to 250lb.-ft. of torque may have to be applied to bearing nut (11) in order to press cone (8) into position.
9. Remove bearing nut (11) and install lock washer (10). Replace bearing nut (11).
10. Re-torque bearing nut (11) to 65-75 lb.-ft. (88 - 100 Nm).
11. Secure bearing nut (11) by bending a lock washer (10) tab into one of four bearing nut slots. If no tab aligns with a slot, the nut may be tightened until one of the slots aligns with a lock washer tab.
12. Apply a bead of silicone sealant to face of hub (6) that mates with ring gear (12). See instructions on sealant package.
13. Assemble ring gear (12) to hub (6) being careful to align all the bolt holes.
14. Place secondary carrier assembly (13) into ring gear (12) aligning the gear teeth. Carrier splines mesh with splines on output shaft (1).
15. Lower primary carrier assembly (14) into assembly. Align sun gear teeth with secondary carrier planetary gears and primary planetary gears with ring gear (12).
16. Install primary sun gear (15) into primary carrier assembly. Sun gear (15) should turn freely by hand when assembled.
17. Apply a bead of silicone sealant to cover face of ring gear (12). Secure thrust washer (16) with tangs engaged in cover (17). Note: Washer (16) can be secured to cover (17) with a small amount of grease or silicone sealant. Assemble cover (17) to ring gear (12). Align cover (17) with hub (6) such that pipe plug holes on cover (17) align with mounting holes in hub (6).
18. Install twenty four 3/8-16 x 6 1/2 inch Grade 8 bolts (18) and flat washers (19) and torque to 45 - 50 lb. -ft. (61 - 67 Nm.).
19. Position filler opening horizontally and fill unit to oil level hole in hub (6). Install pipe plugs (5), (20), and (21).