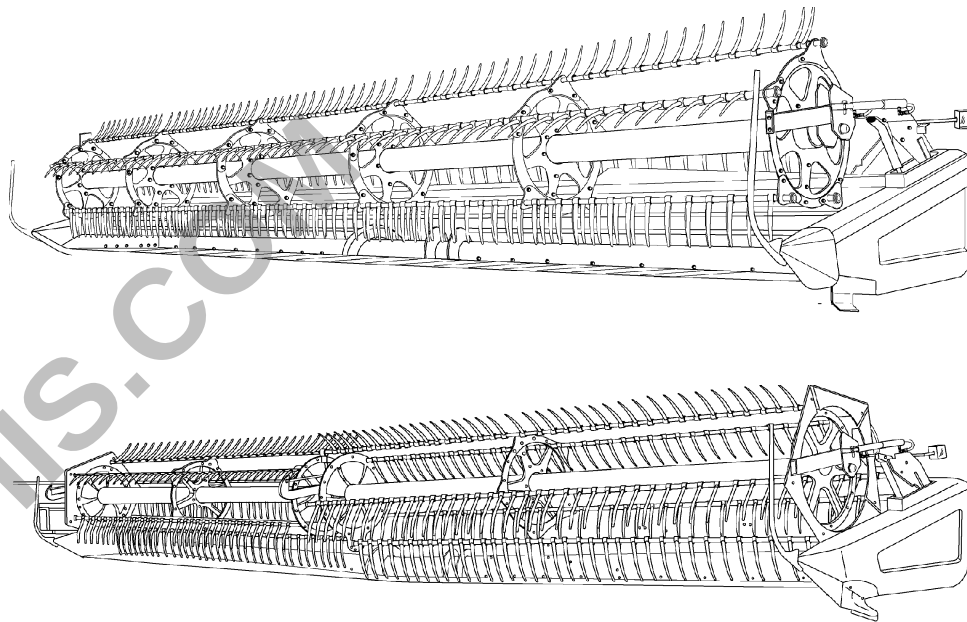




2142, 2152 and 2162 Draper Header CA20 Combine Adapter

Service Manual

84175530
(Replaces 84135858)
Issued April, 2009

CASE II
AGRICULTURE

GENERAL TABLE OF CONTENTS

1 - GENERAL INFORMATION AND SAFETY	1
GENERAL INFORMATION	1
STANDARD BOLT TORQUE	2
U.S. STANDARD	2
METRIC	3
METRIC TORQUE FOR ALUMINUM COMPONENTS	3
HYDRAULIC FITTINGS	4
STEEL HYDRAULIC FITTINGS	5
PRODUCT IDENTIFICATION NUMBERS	6
ENVIRONMENT	7
DISASSEMBLY, DECOMMISSIONING OR SCRAPPING THE MACHINE	7
PLASTIC AND RESIN PARTS	7
SAFETY DECALS	7
LUBRICATION AND MAINTENANCE CHART	8
OIL CAPACITIES	9
GENERAL SAFETY INFORMATION	10
SAFETY RULES	10
SERVICE AREA, FIRE EXTINGUISHER, FIRST AID KIT	13
PERSONAL SAFETY	14
DO NOT OPERATE TAG	15
COMBINE BALLAST	15
TRANSPORTATION SAFETY	16
TIRE SAFETY	17
MAINTENANCE SAFETY	18
DRIVESHAFT SAFETY	19
COMBINE FEEDER SAFETY LOCK	20
2300 / 2500 SERIES COMBINE	20
AFX8010, AXIAL-FLOW® 7010, 8010, 7120, 8120 AND 9120	21
AXIAL-FLOW® 5088, 6088 AND 7088	22
REEL SAFETY LOCK	23
FIRE OR EXPLOSION PREVENTION	24
2 - TROUBLESHOOTING	25
TROUBLESHOOTING	25
3 - GENERAL PROCEDURES	41
TAPER LOCK HUB	41
HOW IT WORKS	41
REMOVAL AND INSTALLATION	41
LOCK COLLAR	44
HOW IT WORKS	44
REMOVAL AND INSTALLATION	44
UNIVERSAL JOINT	45
HOW IT WORKS	45
REBUILDING THE UNIVERSAL JOINT	45
GUARDS	49
HOW IT WORKS	49
POINTED GUARD HEADER	50
DOUBLE KNIFE HEADERS - POINTED GUARDS	51
DOUBLE KNIFE HEADERS - FORGED STUB GUARDS	52
IMPORTANT GUARD INFORMATION	53
GUARD ADJUSTMENTS	53

GENERAL SAFETY INFORMATION

Understand that your safety and the safety of other persons is measured by how you service and operate this machine. Know the positions and operations of all controls before you try to operate. **MAKE SURE YOU CHECK ALL CONTROLS IN A SAFE AREA BEFORE STARTING YOUR WORK.**

Make sure you understand all the controls of the machine. Refer to Operator's Manual. All equipment has limits.

CNH America LLC is continuing to work for your safety: by making machines with better protection and by giving these rules for safe operation and servicing the machine.



DANGER: The Safety Alert Symbol and Safety messages that follow indicate extremely important information in this manual. When you see this symbol, carefully read and understand the messages that follow. Failure to read and understand these messages will cause death or serious injury. M171D



Safety Rules



- Failure to comply to the following messages may result in death or serious injury.
- Always shut OFF engine, remove the key and engage feeder safety lock in position on lift cylinder before working under Header or feeder. Failure to engage feeder safety lock could cause death or serious injury. M184E
- Never make adjustments when machine is running. Failure to comply could result in death or serious injury. M208C
- Never operate the machine with shields remove. Always install shields after servicing the machine. Failure to comply could result in death or serious injury. M423A
- ALWAYS make sure working area is clear of other persons before you start operating this machine. NEVER allow anybody in work area during machine operation or servicing.
- Avoid eye injury when using a drill, hammer, saw, or other tools that may cause chips to fly. Always wear safety glasses when working. Failure to comply could result in death or serious injury. M428B
- NEVER operate the machine with covers, panels or guards removed. Reinstall all covers, panels or guards after servicing or cleaning the machine. Failure to comply could result in death or serious injury. CM115B
- Do Not modify the machine. Unauthorized modifications may cause operational malfunction or safety hazard.
- ALWAYS make sure working area is clear of other persons, pets, tools, etc. before you start operating this machine. NEVER allow anybody in work area during machine operation.
- ALWAYS sound horn before starting the Combine.
- Keep service area clean and dry. Wet or oily floors are slippery. Wet areas can be dangerous when working with electrical equipment. Be sure all electrical outlets and tools are properly grounded.
- ALWAYS disconnect the battery (both terminals) before welding on any part of the machine. Always wash your hands after battery components. Failure to comply could damage sensitive electrical components, death or serious injury. M866A

Metric

Grade 8.8 Bolts, Nuts, and Studs		
		
Size	Pound-Inches	Newton metres
M4	24 to 36	3 to 4
M5	60 to 72	7 to 8
M6	96 to 108	11 to 12
M8	228 to 276	26 to 31
M10	456 to 540	52 to 61
Size	Pound-Feet	Newton metres
M12	66 to 79	90 to 107
M14	106 to 127	144 to 172
M16	160 to 200	217 to 271
M20	320 to 380	434 to 515
M24	500 to 600	675 to 815
M30	920 to 1100	1250 to 1500
M36	1600 to 1950	2175 to 2600

Grade 10.9 Bolts, Nuts, and Studs		
		
Size	Pound-Inches	Newton metres
M4	36 to 48	4 to 5
M5	84 to 96	9 to 11
M6	132 to 156	15 to 18
M8	324 to 384	37 to 43
Size	Pound-Feet	Newton metres
M10	54 to 64	73 to 87
M12	93 to 112	125 to 150
M14	149 to 179	200 to 245
M16	230 to 280	310 to 380
M20	450 to 540	610 to 730
M24	780 to 940	1050 to 1275
M30	1470 to 1770	2000 to 2400
M36	2580 to 3090	3500 to 4200

Metric Torque for Aluminum Components

Bolt Diameter	Grade 8.8		Grade 10.9	
	Nm	Pound Foot	Nm	Pound Foot
M3				1
M4			4	2.6
M5			8	5.5
M6	9	6	12	9
M8	20	14	28	20
M10	40	28	55	40
M12	70	52	100	73

HYDRAULIC FITTINGS

Tube OD Hose ID	Thread Size	Pound- Inches	Newton metres
37 Degree Flare Fitting			
1/4 inch 6.4 mm	7/16-20	72 to 144	8 to 16
5/16 inch 7.9 mm	1/2-20	96 to 192	11 to 22
3/8 inch 9.5 mm	9/16-18	120 to 300	14 to 34
1/2 inch 12.7 mm	3/4-16	180 to 504	20 to 57
5/8 inch 15.9 mm	7/8-14	300 to 696	34 to 79
Tube OD Hose ID	Thread Size	Pound- Foot	Newton metres
3/4 inch 19.0 mm	1-1/16-12	77 to 82	104 to 111
7/8 inch 22.2 mm	1-3/16-12	90 to 100	122 to 136
1.0 inch 25.4 mm	1-5/16-12	110 to 120	149 to 163
1-1/4 inch 31.8 mm	1-5/8-12	140 to 150	190 to 204
1-1/2 inch 38.1 mm	1-7/8-12	225 to 240	305 to 325

Tube OD Hose ID	Thread Size	Pound- Inches	Newton metres
Straight Threads with O-ring			
1/4 inch 6.4 mm	7/16-20	144 to 228	16 to 26
5/16 inch 7.9 mm	1/2-20	192 to 300	22 to 34
3/8 inch 9.5 mm	9/16-18	300 to 480	34 to 54
1/2 inch 12.7 mm	3/4-16	540 to 804	57 to 91
Tube OD Hose ID	Thread Size	Pound- Foot	Newton metres
5/8 inch 15.9 mm	7/8-14	58 to 92	79 to 124
3/4 inch 19.0 mm	1-1/16-12	80 to 128	108 to 174
7/8 inch 22.2 mm	1-3/16-12	100 to 160	136 to 216
1.0 inch 25.4 mm	1-5/16-12	117 to 187	159 to 253
1-1/4 inch 31.8 mm	1-5/8-12	165 to 264	224 to 357
1-1/2 inch 38.1 mm	1-7/8-12	250 to 400	339 to 542

COMBINE FEEDER SAFETY LOCK



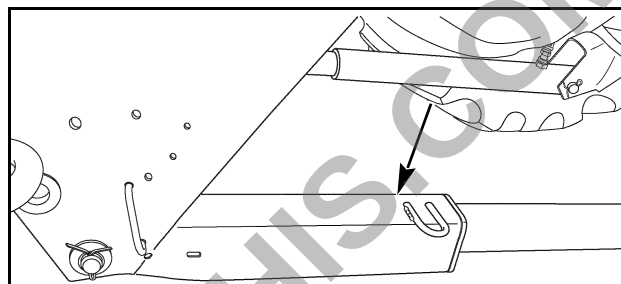
WARNING: Always shut OFF engine, remove the key and engage feeder safety lock in position on lift cylinder before working under Header or feeder. Failure to engage feeder safety lock could cause death or serious injury.

M184E

2300 / 2500 Series Combine

NOTE: The 12 Row Ready Combine feeder safety lock is not shown. Engaging and Disengaging procedure is the same as procedure below.

The Combine feeder Left lift cylinder is equipped with a safety lock. The safety lock is used to prevent accidental lowering of the feeder or Header. ALWAYS engage the feeder safety lock before working under the feeder or Header.



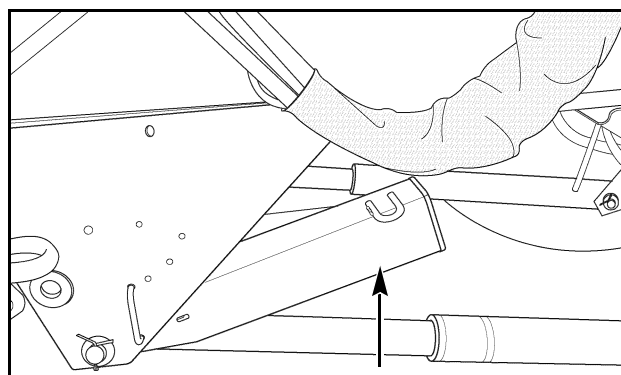
RD01H174

TO ENGAGE THE FEEDER SAFETY LOCK:

1. Raise the feeder to the maximum height.
2. Pull spring loaded latch pin to release feeder lock.
3. Lower the feeder lock over the Left lift cylinder rod.

TO DISENGAGE THE FEEDER SAFETY LOCK:

1. Raise the feeder to maximum height.
2. Rotate the feeder lock up off the lift cylinder rod. Engage spring loaded latch pin to the feeder lock.



RD01H175

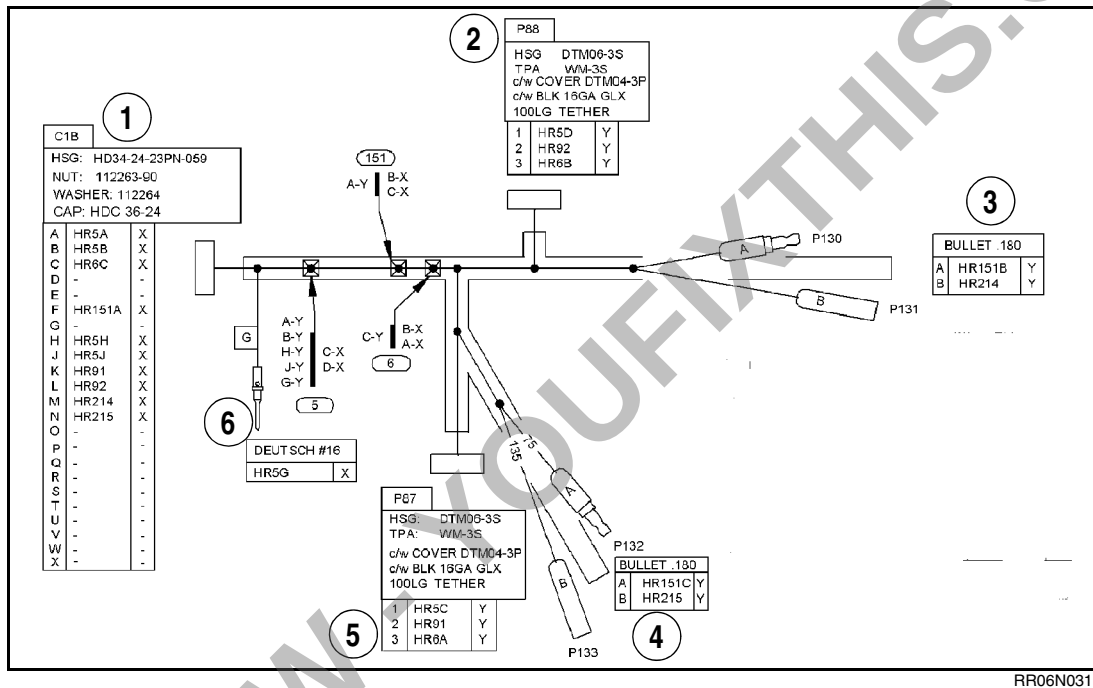
Lighting

Prior to P.I.N. Y8ZN.....

Single Reel - 20 to 25 Foot Rigid Header

Split Reel - 35 Foot Rigid Header

This is the standard wiring harness that is attached to the Rigid Header. This connection attaches to the Combine specific wiring harness adapter that mates to the Combine wiring harness at the feeder housing.

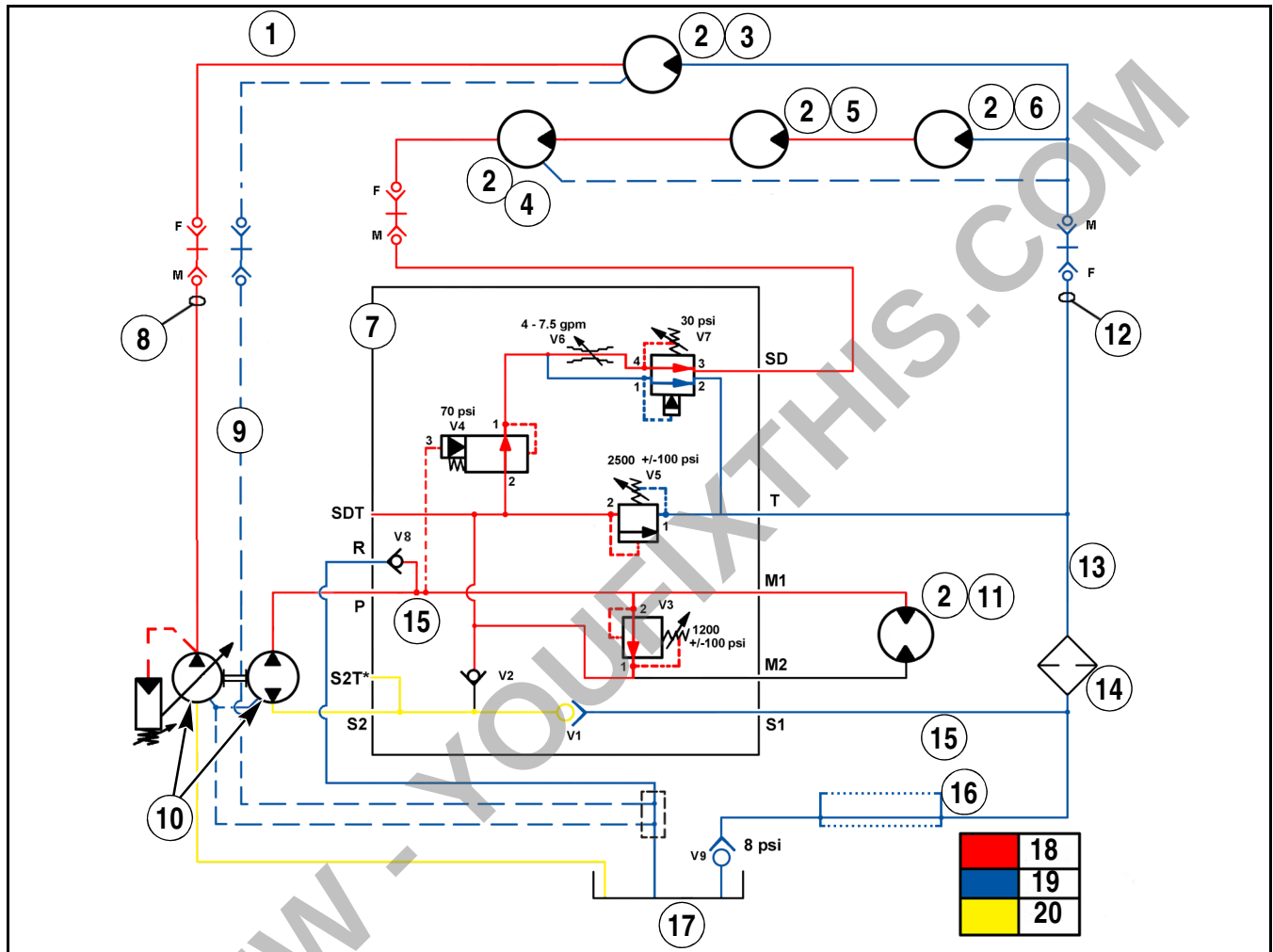


1. HEADER CONNECTION
2. KNIFE SPEED SENSOR
3. LEFT TAIL / TURN LAMP
4. RIGHT TAIL / TURN LAMP
5. REEL SPEED SENSOR
6. NOT USED - 35 FOOT DOUBLE REEL

Continued on Next Page

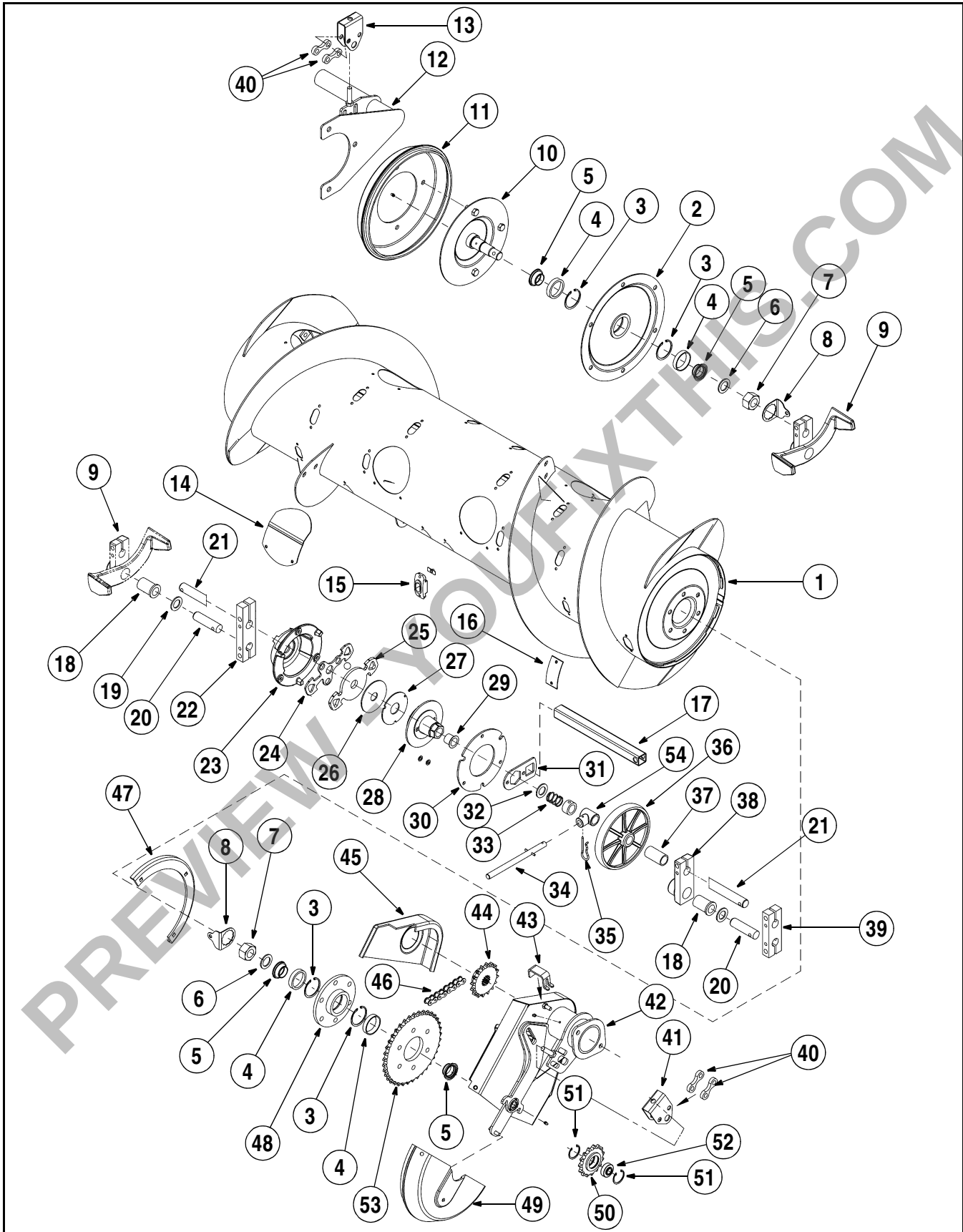
DRAPER DRIVE SYSTEM

Hydraulic Schematic



RR06N241

Drum Auger Internal Repair - Prior to P.I.N. Y9ZN.....

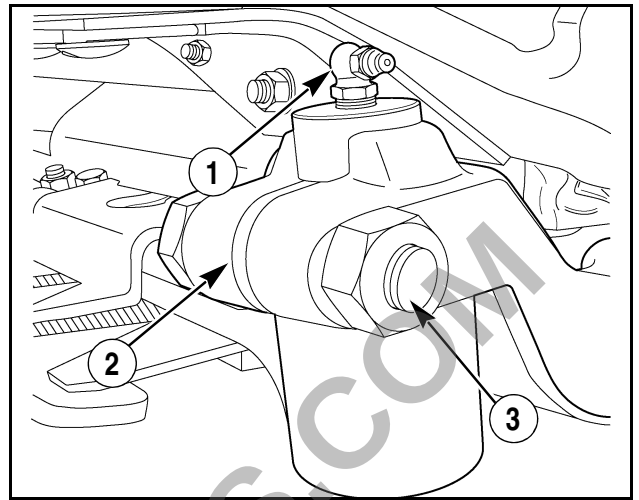


RR07D017

5. Clean area around the sickle head. Stroke sickle to its outer limit and remove bolt (3). When reinstalling the bolt, torque to 217 Nm (160 foot pounds).
6. Remove the grease fitting (1) in the pin. Use a screwdriver or a punch in groove (2) to spread clamp apart to remove sickle head pin.

NOTE: Groove in pin may be used to pry up on pin.

7. By pushing on the end of the sickle head bearing cup push the sickle in until it is clear of the drive arm.
8. Mark drive arm and wobble box shaft to facilitate re-assembly.



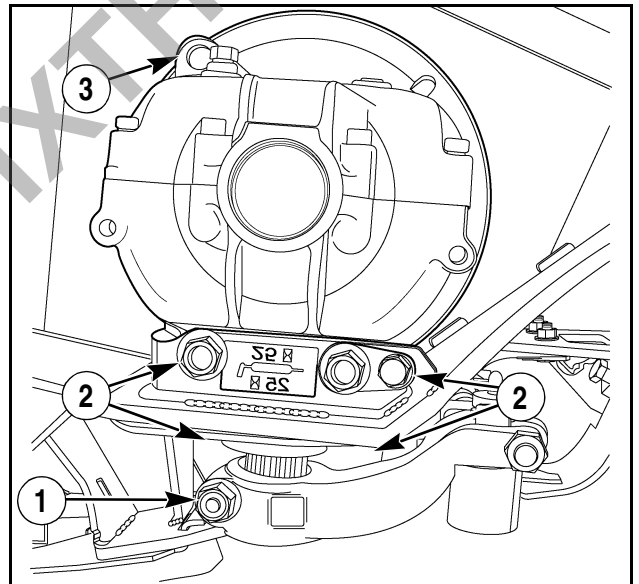
RR06H024

1. GREASE FITTING
2. GROOVE
3. BOLT

9. Loosen and remove bolt (1) clamping the knife drive arm to the wobble box output shaft. remove the pitman arm.
10. Remove the four bolts that hold in the wobble box to the frame.
11. Using a suitable lifting device, lift the wobble box out of the Header and place it on a work bench.
12. Remove the knife drive arm from the wobble box output shaft.
13. Loosen and remove the four wobble box mounting bolts (2).

NOTE: When reinstalling the wobble box bolts (2), snug them up first, then tighten the side two bolts first, then the bottom two. Torque them to 270 Nm (200 foot pounds).

NOTE: Do not remove bolt (1). This is used to align the wobble box.



RR06H025

1. BOLT
2. WOBBLE BOX MOUNTING BOLTS
3. LIFTING LUG

14. Using a suitable lifting device (hoist) and the wobble box lifting lug (3), remove wobble box and place on a bench for disassembly.



CAUTION: Wobble box with pulley weighs 35 kg (65 pounds). Use care and suitable lifting device when lifting the wobble box. Failure to comply may result in minor or moderate injury.

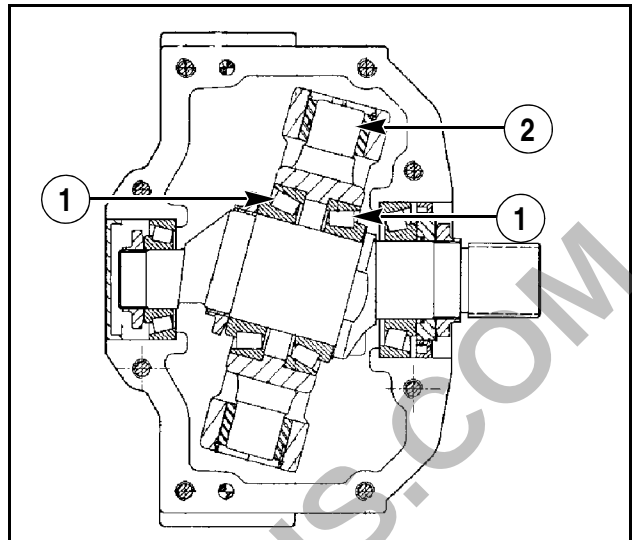
M1286

NOTE: Use a hoist (suitable lift device) to lift wobble box as it weighs over 35 kg (65 pounds).

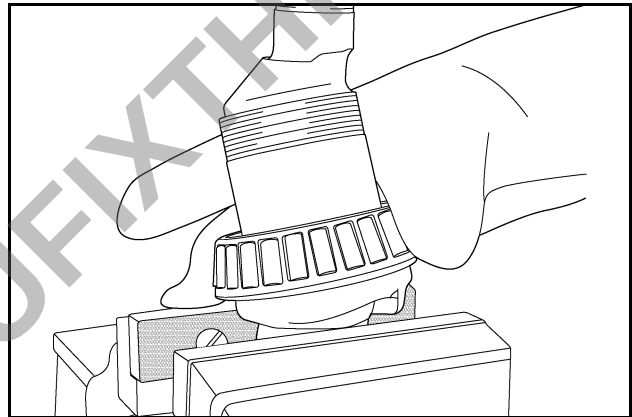
REVERSE OPERATION	186
RELIEF PRESSURE	186
SCHEMATICS	187
COMBINE ADAPTER HYDRAULIC PRESSURE TEST	190
COMBINED REEL FORE / AFT HEADER TILT BLOCK	192
THREE SOLENOID DESIGN SELECTOR VALVE	192
HYDRAFORCE SELECTOR VALVE	192
SELECTOR VALVE SCHEMATIC	193
TWO SOLENOID DESIGN SELECTOR VALVE	199
HYDRAFORCE SELECTOR VALVE	199
SELECTOR VALVE SCHEMATIC	200
COMBINE DATA - OUTPUT SHAFT SPEEDS ON HEADER	201
HYDRAULIC TESTING AND REPAIR	202
MINIMUM TEST EQUIPMENT	202
CHECKING PISTON PUMP (KNIFE DRIVE) FLOW AND COMPENSATOR PRESSURE	203
CHECKING RELIEF AND FLOW - FEED DRAPER FORWARD	208
CHECKING RELIEF AND FLOW - SIDE DRAPERS FORWARD	210
SETTING THE UNLOADER VALVE "V7"	211
TESTING GEAR PUMP EFFICIENCY	212
CHECKING PUMP EFFICIENCY	213
TESTING PISTON PUMP EFFICIENCY	214
CHECKING PUMP EFFICIENCY	214
HYDRAULIC OIL SPECIFICATIONS	215
ADAPTER OIL TEMPERATURE	215
OIL CHANGE PROCEDURE	216
ADDING OIL TO RESERVOIR	218
REEL LIFT CYLINDERS	219
REEL LIFT THEORY	219
REEL DRIVE, LIFT AND FORE / AFT SCHEMATICS	220
DIAGNOSTIC TEST - STATIC	221
DIAGNOSTIC TEST - DYNAMIC	221
STATIC AND DYNAMIC TEST DIAGNOSTIC CHART	222
CYLINDER REPAIR	224
CENTER MASTER REEL LIFT CYLINDER	224
REEL LIFT SECONDARY MASTER LEFT CYLINDER	225
REEL LIFT SLAVE RIGHT CYLINDER	226
FORE / AFT CYLINDER	227
SINGLE REEL - REEL LIFT (LEFT) CYLINDER	228
SINGLE REEL - REEL LIFT (RIGHT) CYLINDER	229
FORE / AFT CYLINDER	230
DOUBLE REEL - CENTER MASTER REEL LIFT CYLINDER	231
DOUBLE REEL LIFT RIGHT CYLINDER	232
DOUBLE REEL LIFT LEFT CYLINDER	233
DOUBLE REEL FORE / AFT CYLINDER	234
HYDRAULIC MOTOR	235
SIDE DRAPERS	235
SIDE DRAPERS	242
DECK SHIFT	245
REEL	255
FEED DRAPER	265
MULTI-LINKS	274

CONDITION/PROBABLE CAUSE	CORRECTION
Condition 11 Cutting Edible Beans	
F. Cutter bar pushing too much dirt in certain locations for length of field	F. Correct as follows:
1. Tire tracks or row crop ridges caused by seeding or spraying operations; Rolling land along length of field due to cultivating	1. Cut at angle to ridges, or perpendicular to them, to allow knife and guards to clean out better. When cutting in line with tracks or ridges, the same guards and sections have to cut in dirt for the whole length of the field. Cutting at an angle shifts the ridges through all guards and prevents pushing dirt.
G. Cutter bar fills up with dirt	G. Correct as follows:
1. Excessive gap between top of front of draper and cutter bar	1. Adjust front deck hooks to obtain proper clearance between cutter bar and draper. If cutter bar still fills up with dirt, raise Header to maximum UP position at each end of field or as required and shift decks back and forth to help clean out cutter bar. Most dirt will fall out without manually having to clean drapers.
H. Plant vines pinched between top of draper and cutter bar	H. Correct as follows:
1. Cutter bar has filled up with trash in excessively dirty conditions with draper to cutter bar gap properly adjusted	1. Raise Header to maximum UP position at each end of field or as required and shift decks back and forth to help clean out cutter bar. Most dirt will fall out without manually having to clean drapers.
2. Shifting of decks with Header raised UP does not clean out cutter bar debris	2. Dirt and trash is too wet to slide out of cutter bar cavity on its own. Wear heavy gloves. Manually remove debris from cutter bar cavity immediately when noticing material between draper and cutter bar or this will damage drapers.
I. Reel carries over odd plants in same location	I. Correct as follows:
1. Reel fingers (steel) bent and hook plants out of the crop flow on drapers	1. Straighten fingers (steel)
2. Dirt accumulation on end of fingers do not let plants to slide off fingers over drapers	2. Reel too low relative to the ground. Adjust reel fore/aft location to move fingers out of the ground. Raise reel
J. Reel carries over excessive amounts of plants	J. Correct as follows:
1. Too much accumulation of crop on drapers (Up to height of reel center tube)	1. Speed up drapers to thin out amount of material on drapers. This is aggravated when double swathing. Higher draper speeds have to be used when double swathing. Increase draper speed.
2. Finger pitch too retarded	2. Increase finger pitch to move finger flip-over point out of the crop flow. Reducing the finger pitch takes the fingers that are starting to flip over lower into crop flow.
3. Excessive amount of vines and plants or weeds cause reel to wrap up	3. Raise reel a slight amount when getting into a patch of vine weeds or green vine crop.

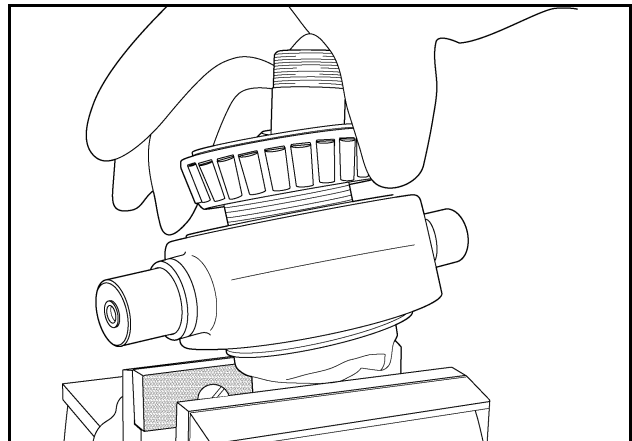
4. Install two bearing cups (1) into the pivot ring (2).



5. Install shims onto shaft. Install bearing cone.

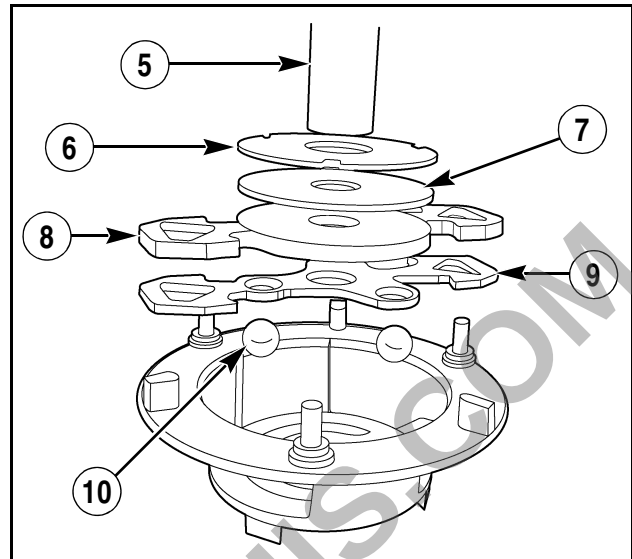


6. Install the pivot ring onto the input shaft making certain the face marked with a machined groove is towards the shoulder (facing shims) of the shaft. Install the second bearing cone onto the shaft.



9. Remove the plastic tube (5), plastic washer (6), friction plate (7), clutch activator arm (8) and the ball cage plate (9).

NOTE: Make sure not to loose the three metal balls (10).



RR06N237

Assembly

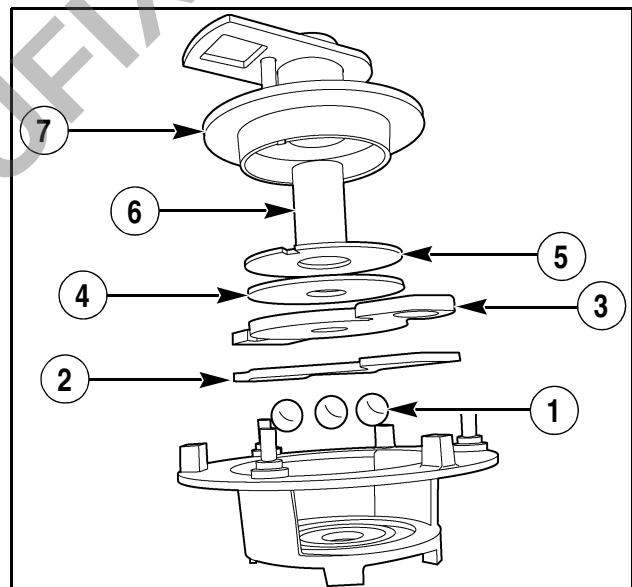
1. Place the three metal balls (1) on the groove that is machined into the clutch housing.
2. Place the ball cage (2) plate over the three balls.

NOTE: If ball cage or metal balls have been changed, make sure the metal balls pass through the holes in the ball cage plate.

3. Place the clutch activator arm (3) on top of the ball cage plate and balls. Make sure to line up the grooves with the clutch housing.

NOTE: Make sure that the diamond shaped hole cut into the clutch activator arm and the ball cage are lined up.

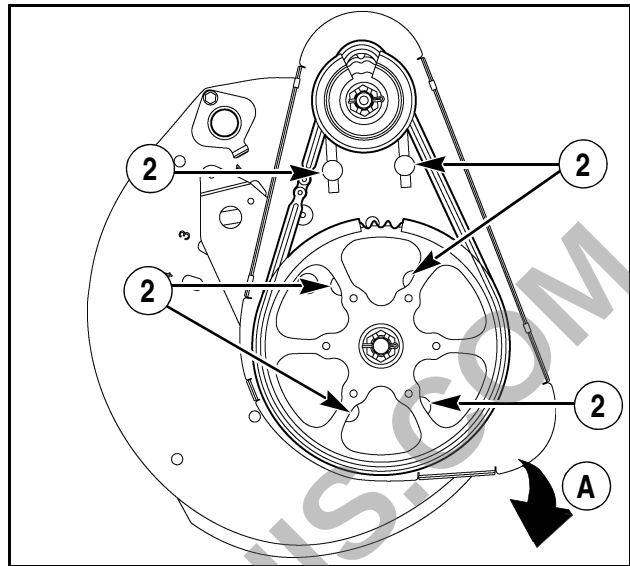
4. Install the friction plate (4), plastic washer (5), and plastic tube (6).
5. Install the disc brake assembly (7).



RR06N238

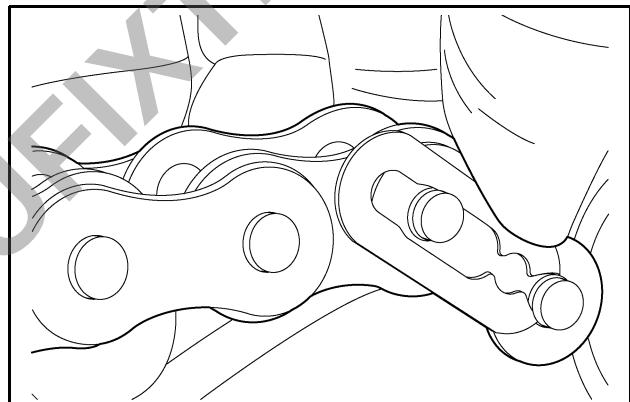
2. Loosen the six bolts (2) that hold the hydraulic motor, then slide the assembly down.
3. Remove the connecting link (If equipped) in the chain, then remove the chain.

NOTE: Note the orientation of the retaining clip. This will be required for reassembly. Install clip as shown in the direction of reel rotation.



RR06N280

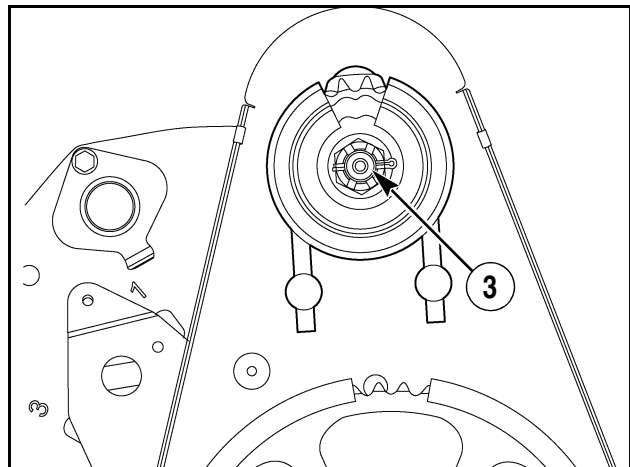
A. REEL ROTATION



RR06N279

CHAIN REMOVAL

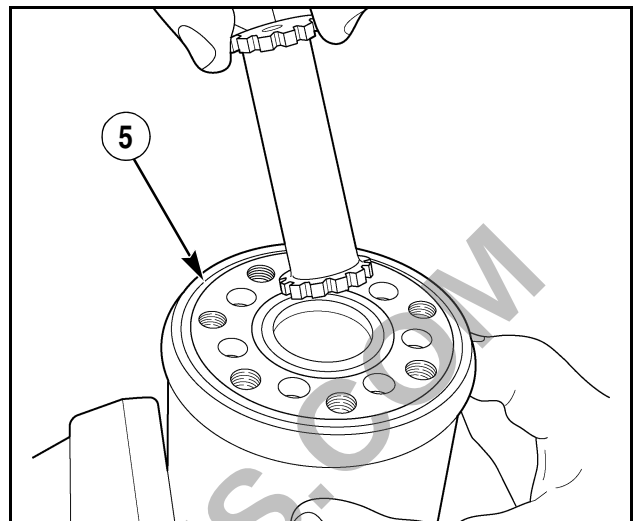
4. Remove the cotter pin (3) from the motor shaft. Remove the nut.



RR06N281

COTTER PIN REMOVAL

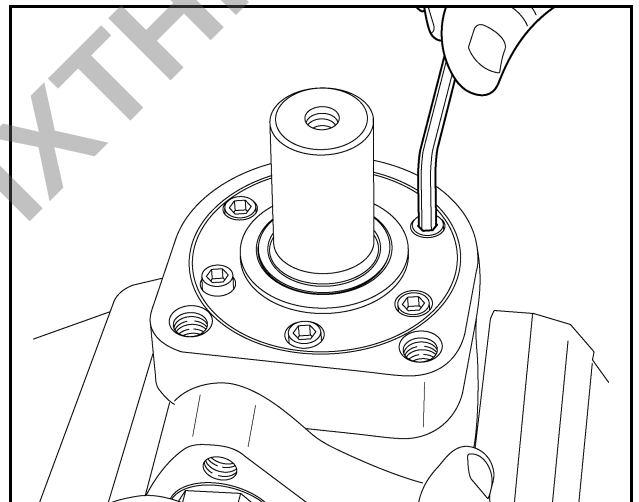
6. Remove and discard the seal from slot (5), Remove the cardan shaft from the motor and place it in a clean location on the work bench.



RR06N359

REMOVE SHAFT

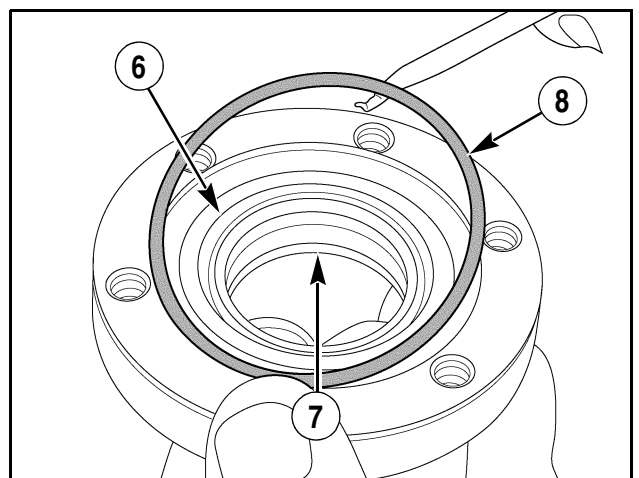
7. Remove the motor from the vise, flip it upside down and drain the excess oil contained in the pump into a suitable drain container.
8. Mount the motor in the vise with the output shaft pointing upward. Remove the six hex head bolts using a hex socket wrench, then remove the spigot flange using a pair of needle nose pliers.



RR06N358

REMOVE FLANGE

9. With the spigot flange separated from the motor body, remove the inner and outer shaft seals (6 and 7) and as well as the spigot flange seal (8) and discard.



RR06N357

REMOVE FLANGE SEALS

ELECTRICAL HARNESSES

Header - General Information

The Draper Headers come equipped with standard amber turn signal / hazard lamps. To adapt these lamps to the Combine lighting system, there are electrical adapters that come with the CA20 Combine Adapter. Adapt the signal lamp wiring harness connector for your application to the Header harness connector.

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