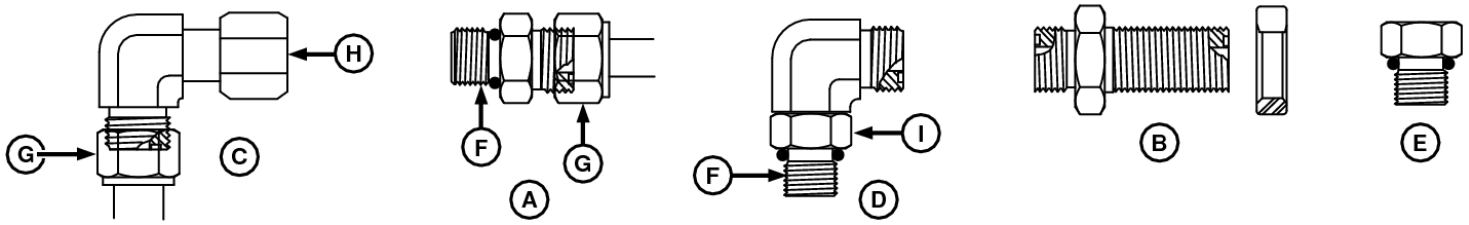
Metric Face Seal and O-Ring Stud End Fitting Torque Chart—Standard Pressures



Fitting

LEGEND:

A	Straight Stud and Tube Nut
B	Bulkhead Union and Bulkhead Jam Nut
C	90° Swivel Elbow and Tube Nut
D	90° Adjustable Stud Elbow
E	Port Plug
F	Stud End
G	Tube Nut
H	Swivel Nut
I	Jam Nut

Face Seal Fittings (Standard Pressure)

Metric Face Seal and O-Ring Stud End Fitting Torque Chart—Standard Pressure-Below 27.6 MPA (4,000 PSI)

Nominal Tube OD Hose ID				O-Ring Face Seal/ Tube Swivel Nut				Bulkhead Jam Nut Torque [A]			O-Ring Straight, Adjustable, and External Port Plug Stud Ends [A]						
Metric Tube OD	Inch Tube OD			Thread Size	Swivel Nut Hex Size	Tube Nut/Swivel Nut Torque		Jam Nut Hex Size	Jam Nut Torque		Thread Size	Straight Hex Size [B]	Adj Lock Nut Hex Size	Steel or Gray Iron Torque		Aluminum or Brass Torque [C]	
mm	Dash Size	in.	mm	in.	mm	N˙m	lb-ft	mm	N˙m	lb-ft	mm	mm	mm	N·m	lb-ft	N˙m	lb-ft
4	-2	0.125	3.18	—	—	—	—	—	—	—	M8 X 1	12	12	8	6	5	4
5	-3	0.188	4.76	—	—	—	—	—	—	—	M10 X 1	14	14	15	11	10	7
6	-4	0.250	6.35	9/16-18	17	16	12	22	32	24	M12 X 1.5	17	17	25	18	17	12
8	-5	0.312	7.92	—	—	—	—	—	—	—	M14 X 1.5	19	19	40	30	27	20
10	-6	0.375	9.53	11/16-16	22	24	18	27	42	31	M16 X 1.5	22	22	45	33	30	22
12	-8	0.500	12.70	13/16-16	24	50	37	30	93	69	M18 X 1.5	24	24	50	37	33	25
16	-10	0.625	15.88	1-14	30	69	51	36	118	87	M22 X 1.5	27	27	69	51	46	34
20	-12	0.750	19.05	1-3/16-12	36	102	75	41	175	129	M27 X 2	32	32	100	74	67	49
22	-14	0.875	22.23	1-3/16-12	36	102	75	41	175	129	M30 X 2	36	36	130	96	87	64
25	-16	1.000	25.40	1-7/16-12	41	142	105	46	247	182	M33 X 2	41	41	160	118	107	79
28	—	—	—	—	—	—	—	—	—	—	M38 x 2	46	46	176	130	117	87
32	-20	1.250	31.75	1-11/16-12	50	190	140	50	328	242	M42 X 2	50	50	210	155	140	103
38	-24	1.500	38.10	2-12	60	217	160	60	374	276	M48 X 2	55	55	260	192	173	128
50	-32	2.000	50.80	—	—	—	—	—	—	—	M60 X 2	65	65	315	232	210	155

[A] Tolerance is +15%, minus 20% of mean tightening torque unless otherwise specified.

[B] The straight hex wrench sizes listed apply to connectors only and may not be the same as the corresponding plug of the same thread size.

[C] These torques were established using steel plated connectors in aluminum and brass.

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Group 15 - Tune-Up and Adjustment

Tune-Up and Adjustment

General Information

Before tuning up engine, determine whether a tune-up will restore operating efficiency. When there is doubt, the following preliminary tests will help determine if the engine can be tuned up. If the condition is satisfactory, proceed with the tune-up. Choose from the following procedures only those necessary to restore the machine.

Preliminary Engine Testing

Test for engine compression (minimum readings at cranking speed). It is very important that all cylinder pressures be approximately alike. There should be less than 172 kPa (1.72 bar) (25 psi) difference between cylinder pressures.

Engine Tune-Up

Air Intake System:

- Check system for leaks.

Exhaust System:

- Check system for leaks. Check for restricted muffler or exhaust pipe.

Crankcase Vent:

- Check for restrictions.

Cooling System:

- Clean rotary screen, radiator core, air conditioning condenser, and charge air cooler.
- Check cooling system cap.
- Inspect all hoses.

Cylinder Head and Valves:

- Set valve clearance.

Fuel System:

- Check fuel tank for water and drain off if necessary.
- Check fuel tank and lines for leaks or restrictions.
- Bleed fuel system.
- Replace fuel filter.
- Replace water separator.

Electrical System

- Clean and tighten battery cables and connections.
- Check alternator belt tension.
- Check alternator output.
- Check neutral safety start switch operation.
- Check safety seat switch operation.
- Check starter draw.
- Check battery voltage.
- Inspect all wiring.

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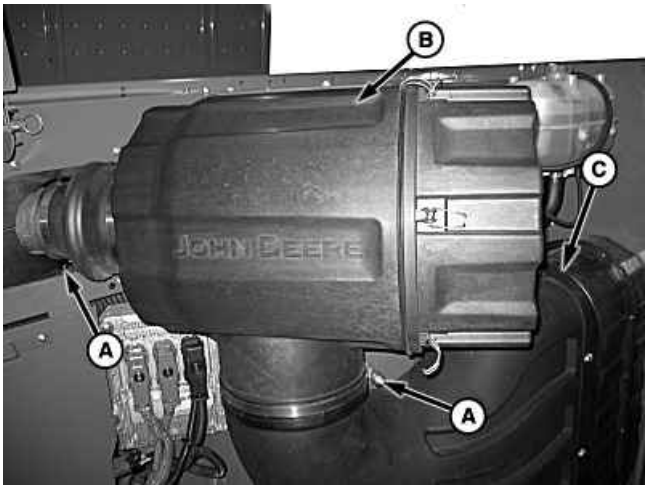
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Specifications

Item	Measurement	Specification
Engine Oil With Filter—6.8 L Engine	Capacity	32 L (8.5 gal.)
Cooling System—6.8 L Engine	Capacity	43 L (11.4 gal.)
Engine Gear Case Coupler Cap Screws—6.8 L Engine	Torque	55 N·m (41 lb.-ft.)
Cooling System—9.0 L Engine	Capacity	53.3 L (14.1 gal.)
Engine Oil With Filter—9.0 L Engine	Capacity	29 L (7.7 gal.)
Engine Gear Case Coupler Cap Screws—9.0 L	Torque	55 N·m (41 lb.-ft.)
Flywheel Pilot Bearing Bore 9.0 L Engine	ID	71.987—72.013 mm (2.834—2.835 in.)
Engine Oil With Filter—13.5 L Engine	Capacity	39.1 L (10.3 gal.)
Cooling System—13.5 L Engine	Capacity	65 L (17.2 gal.)
Engine Gear Case Coupler Cap Screws—13.5 L	Torque	90 N·m (66 lb.-ft.)
Flywheel Pilot Bearing Bore 13.5 L Engine	ID	79.989—80.015 mm (3.149—3.15 in.)
Engine Gear Case-to-Engine Cap Screws	Torque	340 N·m (250 lb.-ft.)
Front Engine Mount-to-Engine Rail Cap Screws	Torque	123 N·m (90 lb.-ft.)
Fan-to-Fan Hub Cap Screws	Torque	80 N·m (60 lb.-ft.)
Variable Drive Sheave Support Jam Nuts	Torque	250 N·m (185 lb.-ft.)
Variable Drive Support-to-Engine Cap Screws	Torque	350 N·m (255 lb.-ft.)
Lifting Strap Cap Screws	Torque	120 N·m (90 lb.-ft.)
Radiator Hose Clamps	Torque	4.5 N·m (40 lb.-in.)
Front Charge Air Cooler Tube to Charge Air Cooler Clamp	Torque	11 N·m (97 lb.-in.)
Charge Air Cooler Tube V-Band Clamps	Torque	20 N·m (177 lb.-in.)
Exhaust Tube Clamps	Torque	20 N·m (177 lb.-in.)
Air Intake Hose Clamp	Torque	11 N·m (97 lb.-in.)
Aftertreatment Device Assembly Mounting Cap Screws	Torque	350 N·m (258 lb.)
Exhaust Pipe Clamps	Torque	20 N·m (177 lb.-in.)
Aftertreatment Device Assembly Clamps	Torque	17 N·m (150 lb.-in.)

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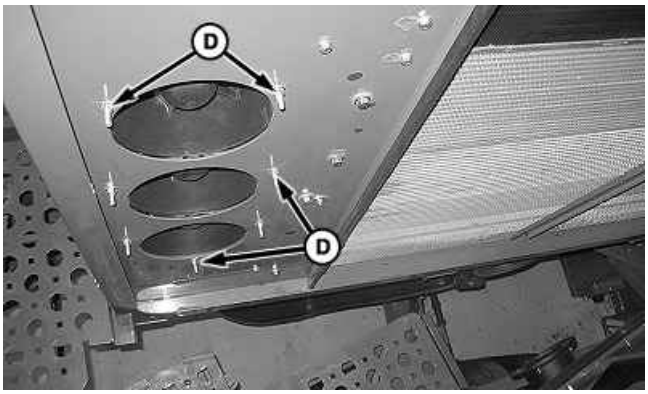
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LEGEND:

A	Clamp (2 used)
B	Air Cleaner Housing
C	Intake Duct
D	Nuts (6 used)

Intake Duct



Intake Duct

Loosen clamps (A) and remove air cleaner assembly (B).

[4] - Remove nuts (D) and intake duct (C).

[5] - Remove engine covers and shields as necessary.

[6] - Drain engine oil into suitable containers. Approximate capacity is 27.5 L (7.25 gal.).

[7] -

CAUTION:

Coolant can be hot. Wait until radiator is cool before draining coolant.

→NOTE:

Radiator drain valve is located near front of radiator.

Drain engine coolant into suitable containers. Approximate capacity is 43 L (11.4 gal.).

[8] -

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Section 40 - ELECTRICAL SYSTEM

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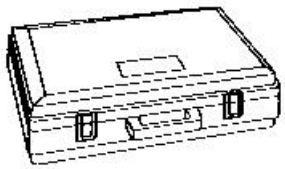
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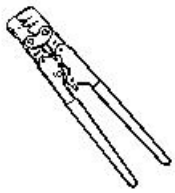


JDG155, Electrical Repair Tool Kit

Repair electrical connectors.

PACKARD Crimping Tool

JDG783



JDG783, PACKARD Crimping Tool

To crimp contacts.

DEUTSCH ™ Electrical Repair Tool Kit

JDG359



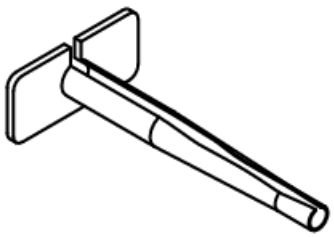
JDG359 Tool Kit

Used to remove and install DEUTSCH terminals from connector housings.

12—14 Gauge Extractor

JDG361

[Included in JDG359 DEUTSCH Electrical Repair Tool Kit]



JDG361, Extractor

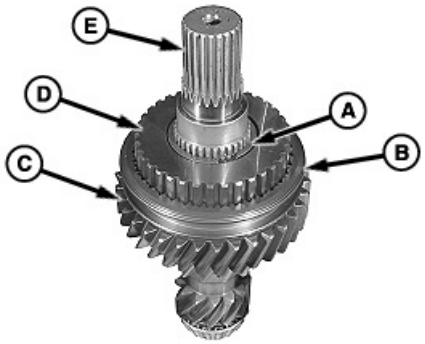
To extract contacts from DEUTSCH connector bodies.

16—18 Gauge Extractor

JDG362

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LEGEND:

A	Snap Ring
B	Shift Collar
C	Gear
D	Shift Gear
E	Input Shaft

Input Shaft

Remove shift collar (B) and snap ring (A) from shift collar end of input shaft (E).

[11] - Remove shift gear (D) and gear (C).

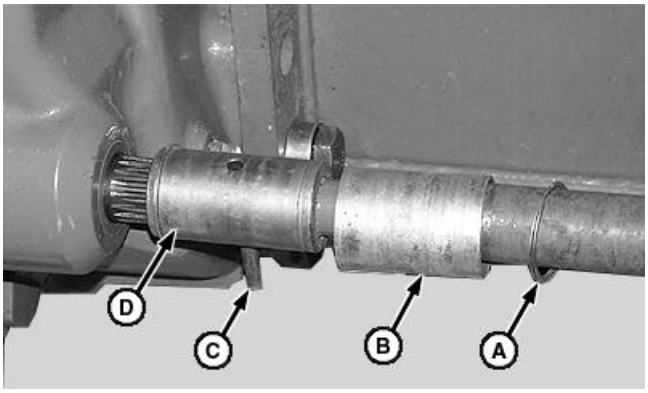
[12] - Inspect parts for damage and wear. Replace parts as necessary.

[13] - Assemble input shaft in reverse order.

Remove and Repair Pinion Shaft

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LEGEND:

A	Spiral Retaining Ring
B	Sleeve
C	Pin
D	Coupler

Final Drive Shaft

Move coupler (D) toward final drive and install pin (C) flush with coupler.

[17] - Slide sleeve (B) on and install spiral retaining ring (A).

[18] - Fill final drive with 80W90 GL5 Gear Lube. Approximate capacity of final drive is 8 L (8.5 qt.).

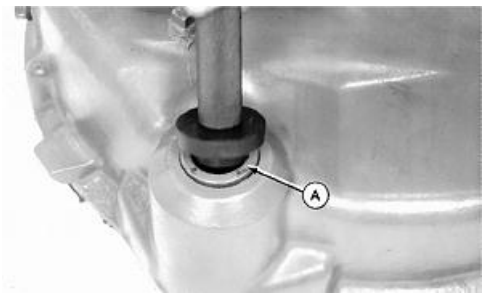
Number	Name	Use
• TY6252 (us)	80W90 GL5 GEAR LUBE	Used to service final drives.

[19] - Install wheel. Tighten bolts to specification.

Item	Measurement	Specification
Front Wheel Bolts	Torque	200 N·m + 1/4 turn
		(150 lb.-ft.) + 1/4 turn

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LEGEND:

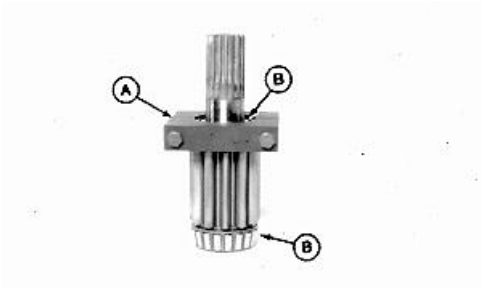
A	Seal

Final Drive

Install seal (A) flush with housing.

[22] - Inspect and replace pinion shaft bearings as necessary. Go to Step 27, if replacement is not necessary.

[23] -



LEGEND:

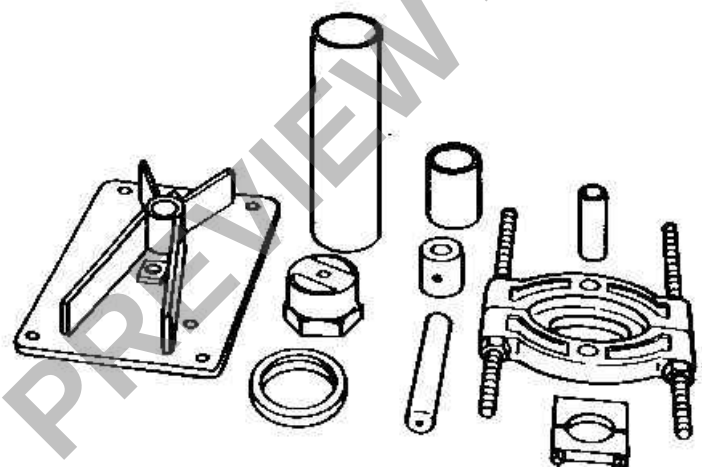
A	Block Bearing Remover
B	Bearing (2 used)

Pinion Gear

Remove bearings (B) from pinion shaft, using JDG1296-3 Block Bearing Remover (A) from JDG1296 Final Drive Repair Kit, and a puller.

Final Drive Repair Kit—Heavy Duty

JDG1296



Final Drive Repair Kit

Used to repair final drive.

[24] - Pack bearings with TY6341 Multi-Purpose SD Polyurea Grease (or equivalent).

Number	Name	Use
• TY6341 (us)	Multi-Purpose, SD Polyurea Grease	Especially effective in rolling contact applications.

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Group 05 - Hydraulic Reservoir

Essential or Recommended Tools

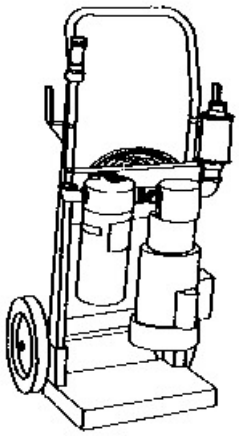
→NOTE:

Order tools from SERVICEGARD ™ .

ESSENTIAL TOOLS listed are required to perform the job correctly and are obtainable **only** from SERVICEGARD ™ .

RECOMMENDED TOOLS , as noted, are suggested to perform the job correctly. Some tools may be available from local suppliers or may be fabricated.

Portable Filter Caddy



Portable Filter Caddy

JT05746

Used to flush hydraulic/hydrostatic system.

Specifications

Item	Measurement	Specification
Hydraulic Reservoir S550 STS™	Approximate Capacity	35 L (9.3 gal.)
Hydraulic Reservoir S550 STS™	Approximate Weight	22.4 kg (49 lb.)
Hydraulic Reservoir Pressure Test	Pressure	27.5 kPa (0.27 bar) (4 psi)
Hydraulic Reservoir S660 STS™ and S670 STS™	Approximate Capacity	30 L (7.9 gal.)
Hydraulic Reservoir S660 STS™ and S670 STS™	Weight	24 kg (53 lb.)
Hydraulic Reservoir S680 STS™, S685 STS™, and S690 STS™	Approximate Capacity	47 L (12.4 gal.)
Hydraulic Reservoir S680 STS™, S685 STS™, and S690 STS™	Approximate Weight	35 kg (77 lb.)
Hydraulic Reservoir Filter Nuts	Torque	11 N·m (97 lb.-in.)

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S	Back-Up Ring
T	Seal
U	Guide
V	Housing

Disassemble parts (A—V). Repair or replace as needed.

[2] - Coat all parts with clean hydraulic oil.

[3] - Tighten relief valve (M) to specification.

Item	Measurement	Specification
APC Spreader Pump Relief Valve	Torque	35 N·m (25.8 lb.-ft.)

[4] - Tighten socket head cap screws (K) to specification.

Item	Measurement	Specification
APC Spreader Pump Socket Head Cap Screws	Torque	65 N·m (48 lb.-ft.)

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Group 05 - Air Conditioning System (R134a)

Essential or Recommended Tools

→NOTE:

Order tools from the U.S. SERVICEGARD or European Microfiche Tool Catalogs.

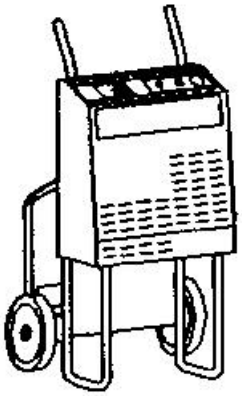
ESSENTIAL TOOLS listed are required to perform the job correctly and are obtainable **only** from SERVICEGARD or European Microfiche Tool Catalogs .

RECOMMENDED TOOLS , as noted, are suggested to perform the job correctly. Some tools may be available from local suppliers or may be fabricated.

HFC134A Recovery/Recycling Station

JT02050

[Used with JT02046 Charging Station. JT02047 Recovery, Recycling, and Charging Station can be substituted for JT02046 and JT02050.]

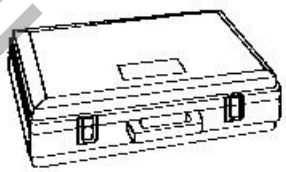


Recovery and Recycling Station

Servicing air conditioning system using R134a refrigerant.

Air Conditioning R12/R134a Fitting Kit

JT02098



Air Conditioning R12/R134a Fitting Kit

Connect flushing, purging and pressure equipment.

Manifold with Gauges

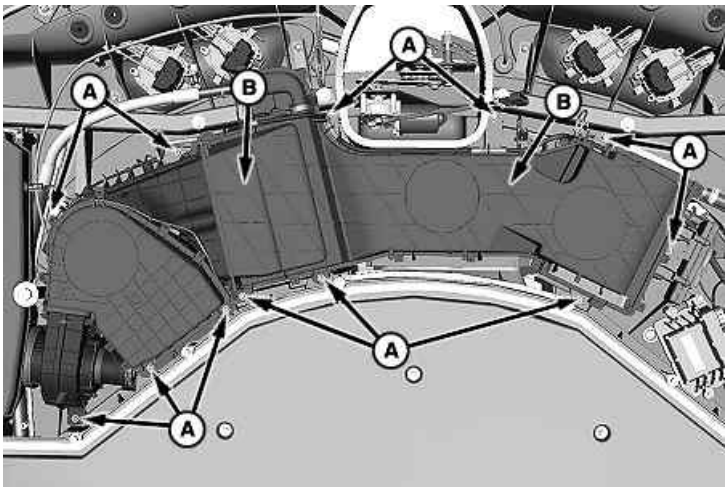
JT02051

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Remove and Install Pressurizer Blower Motor

[1] -



LEGEND:
A TORX Head Screws (12 used)
B HVAC Module

HVAC Module

Remove front portion of cab roof. (See Remove and Install Front Portion of Cab Roof in Section 90, Group 15.)

[2] -

→NOTE:

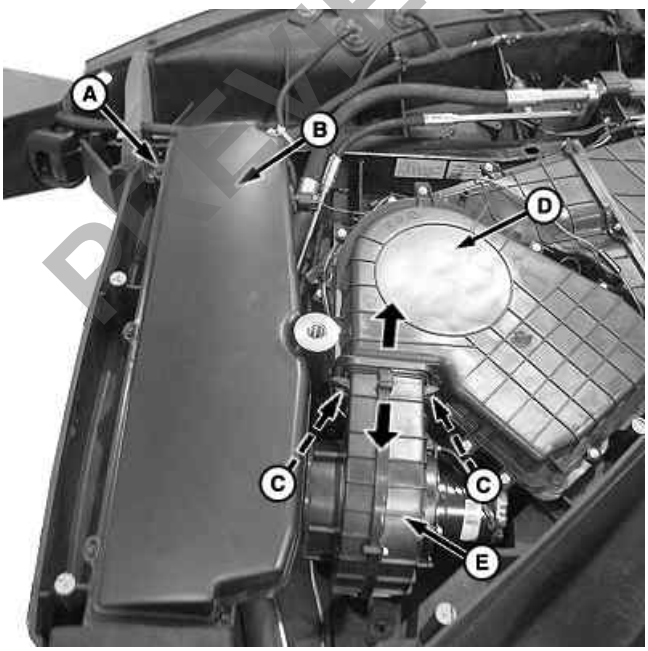
Leave HVAC module in position for only a slight adjustment.

Remove TORX ™ head screws (A) from HVAC module (B).

[3] -

→NOTE:

Leave fresh air filter cover (B) and pressurizer blower housing (E) connected and in position.



LEGEND:
A TORX Head Screw (5 used)
B Fresh Air Filter Cover
C Cap Screw (2 used)
D HVAC Module
E Pressurizer Blower Housing

HVAC Module

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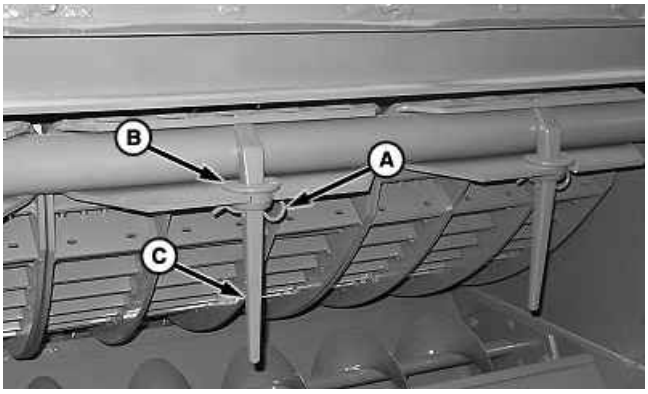
Group 05 - Conveyor

Specifications

Item	Measurement	Specification
Feeder House Pivot Casting Cap Screws	Torque	745 N·m (550 lb.-ft.)
Drum Adjusting Nut	Torque	140 N·m (103 lb.-ft.)
Conveyor Chain Cap Nuts	Torque	25 N·m (18 lb.-ft.)
Conveyor Chain T-Slat Hardware	Torque	30 N·m (22 lb.-ft.)
Conveyor Chain U-Slat Hardware	Torque	73 N·m (54 lb.-ft.)
Arm-to-Mid-Frame Cap Screws	Torque	130 N·m (96 lb.-ft.)

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LEGEND:

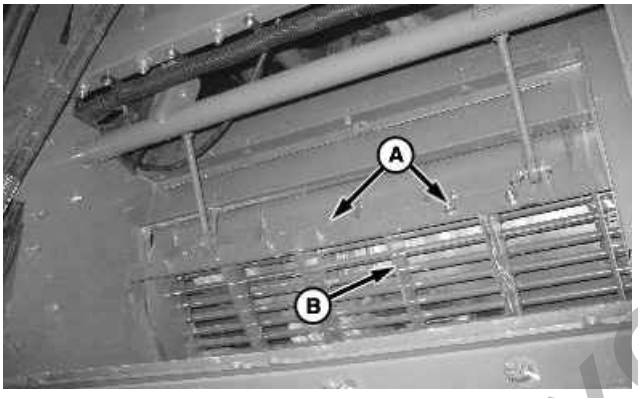
A	Spring Pin
B	Concave Retainer
C	Handle

Concave Retainer

Remove spring pin (A) from concave retainer (B).

[21] - Lift concave retainer (B) and remove handle (C) from each concave section.

[22] -



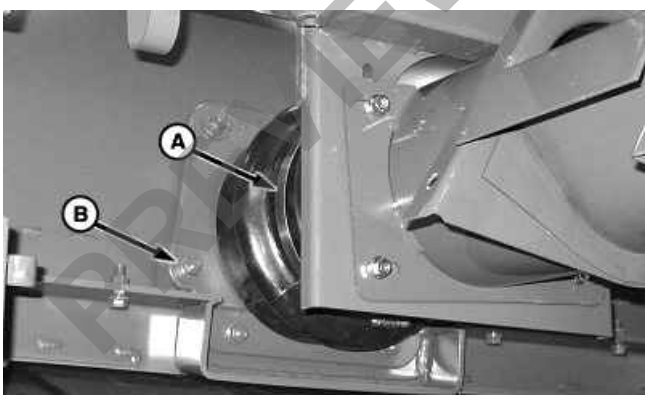
LEGEND:

A	Cap Screw (4 used)
B	Concave

Center Concave

Remove cap screws (A) and center concave (B).

[23] -



LEGEND:

A	Boot
B	Cap Screw (6 used)

Upper Tailings Auger Boot

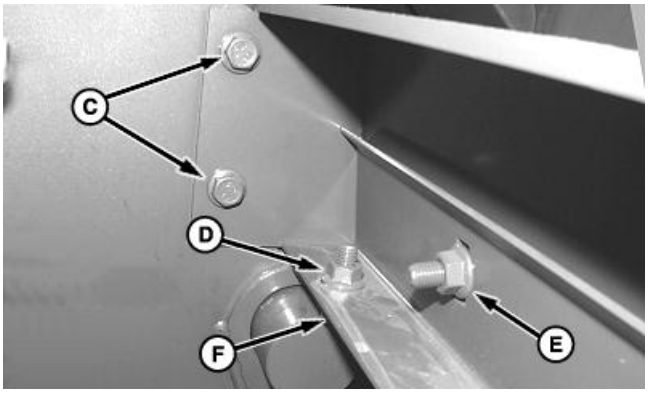
If equipped, loosen clamp and slide boot (A) away from upper tailings auger flange.

[24] - If equipped, remove cap screws (B) and separate flange from middle top cover.

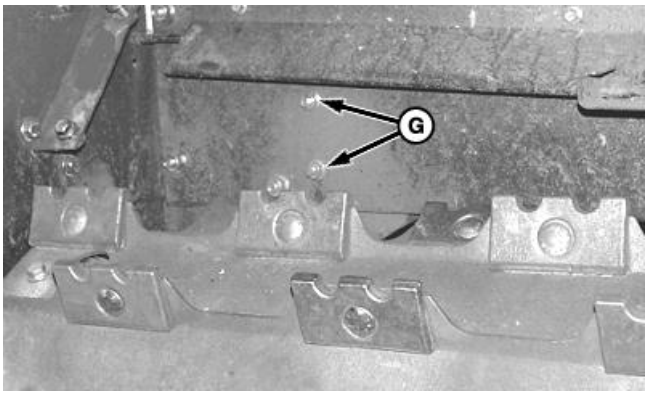
[25] -

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Cap Screws



Cap Screws

Right-hand side: Remove cap screws (A—D) from separator rail.

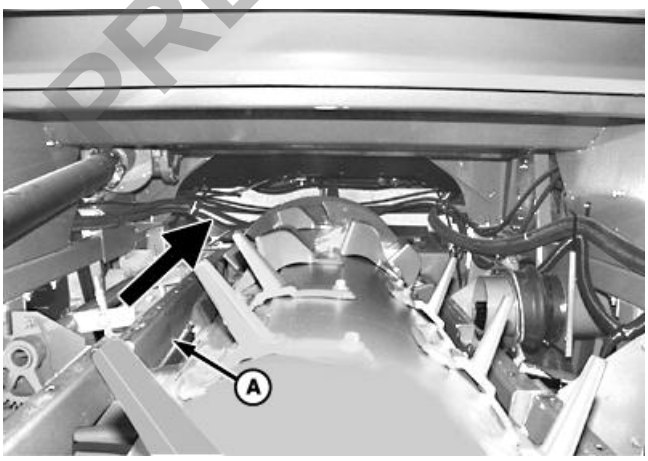
[16] - Remove cap screws (G).

[17] - After rail is removed, remove cap screws (E) and bracket (F) and install onto new right-hand rail.

[18] -

→NOTE:

Once hardware is removed, separator rail will need to be raised approximately 4 inches at front of combine to clear front bulkhead.



LEGEND:
A Separator Rail

Separator Rail

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Section 130 - GRAIN TANK AND UNLOADING SYSTEM

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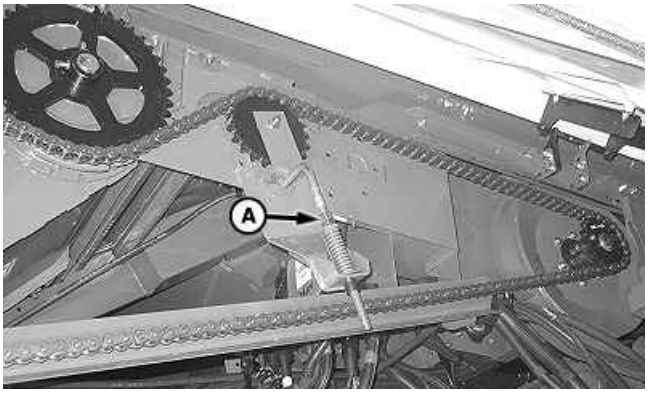
Group 10 - Unloading Auger System Drives

Specifications

Item	Measurement	Specification
Shear Bolts-to-Unloading Auger Hub	Torque	25 N·m (18 lb.-ft.)
Center of Jackshaft-to-Center of Main Engine Gear Case Shaft	Distance	1015 mm (+7/-15 mm)

Remove and Install Unloading Auger Drive Belts

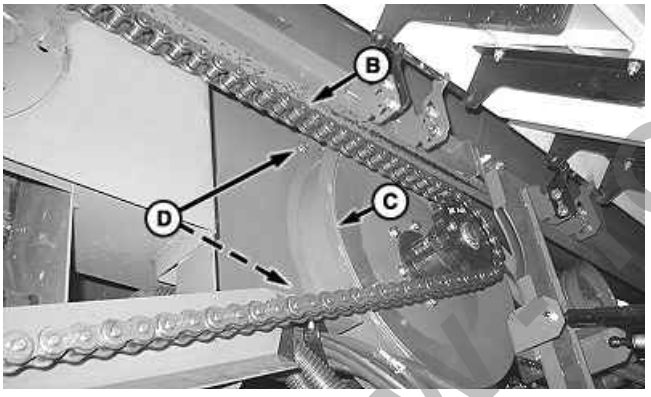
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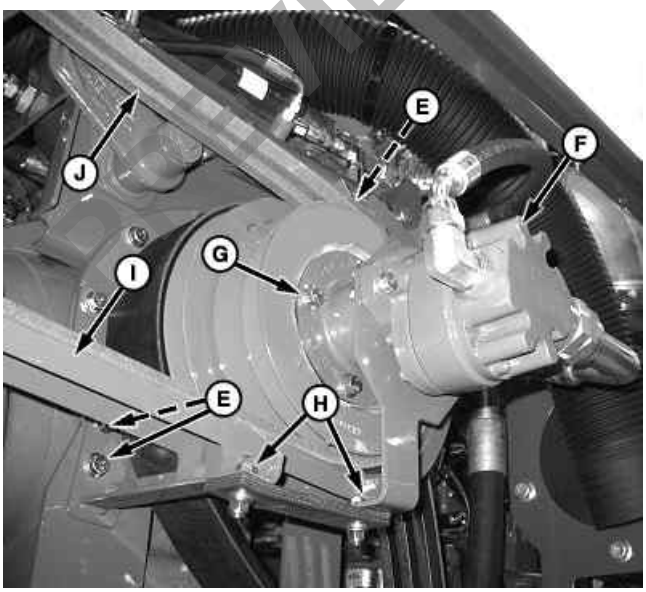
LEGEND:

A	Nuts
B	Drive Chain
C	Belt Trap
D	Cap Screw (2 used)
E	Cap Screw (3 used)
F	Lubrication Pump
G	Cap Screw (4 used)
H	Cap Screw (2 used)
I	Belt Trap
J	Belt (2 used)

Unloading Auger Drive Belts



Unloading Auger Drive Belts



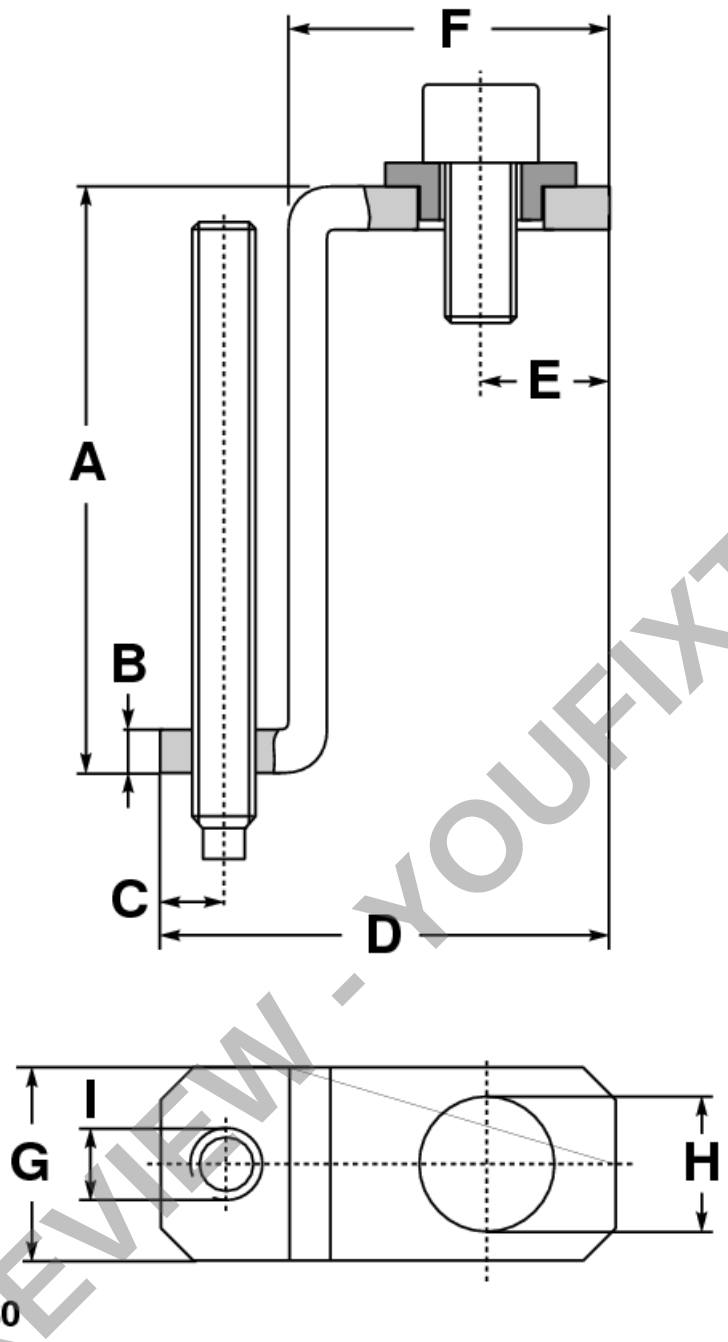
MEG Lube Pump

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DFHXT3—Swash Plate Holding Tool

This tool is used to hold and adjust position of swash plate in hydrostatic drive pump.



DFHXT3 Swash Plate Holding Tool (2 used)

LEGEND:	
A	90 mm (3.55 in.)
B	6 mm (0.25 in.)
C	10 mm (0.40 in.)
D	70 mm (2.75 in.)
E	20 mm (0.80 in.)
F	50 mm (1.95 in.)
G	30 mm (1.20 in.)
H	21 mm (0.80 in.)
I	M10

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