

Contents

SECTION 05—SAFETY

Group 05—Safety Measures

SECTION 10—GENERAL INFORMATION

Group 05—Specifications

Group 10—Tune-Up

Group 15—Predelivery Inspection

SECTION 20—ENGINE

Group 00—Engine Removal and Installation

SECTION 30—FUEL, AIR INTAKE, COOLING AND EXHAUST SYSTEMS

Group 05—Speed Control Linkage

Group 10—Fuel System

Group 15—Air Intake System

Group 20—Cooling System

Group 25—Cold-Weather Starting Aids

Group 30—Exhaust System

SECTION 40—ELECTRICAL SYSTEM

Group 05—Connectors

Group 10—Wiring Harnesses

Group 15—Charging Circuit

Group 20—Starter Motor Circuit

Group 25—Fuses, Relays and Switches

Group 30—Monitoring Systems

Group 40—Electrical Components

SECTION 50—SYNCRPLUS TRANSMISSION

Group 00—Removal and Installation of
Transmission Components

Group 05—Transmission Shift Controls

Group 10—Perma Clutch II Module

Group 15—Gear Transmission

SECTION 51—POWER REVERSER TRANSMISSION

Group 00—Removal and Installation of Power
Reverser Module

Group 05—Transmission Shift Controls

Group 10—Power Reverser Module

Group 15—Gear Transmission

SECTION 53—AUTOPOWR/IVT TRANSMISSION

Group 00—Removing and Installing the

AutoPowr/IVT Transmission

Group 05—Transmission Shift Controls

Group 10—Input Housing

Group 15—Output Housing

Group 20—Assembling the Differential Drive Shaft

SECTION 55—POWRQUAD, POWRQUAD PLUS AND AUTOQUAD TRANSMISSIONS

Group 00—Removal and Installation of Components

Group 05—Transmission Shift Controls

Group 10—PowrQuad Module

Group 15—Creeper Transmission

Group 20—Option Transmission

Group 25—Range Transmission

SECTION 56—DRIVE SYSTEMS

Group 00—Removal and Installation of Components

Group 05—U-Jointed Shafts and Torsion Damper

Group 10—Front-Wheel Drive Clutch

Group 15—Differential

Group 20—Hydraulic Pump Drive

Group 25—Final Drives

Group 30—Rear PTO Options

Group 35—Front PTO

Group 40—Front Implement Drive

SECTION 60—STEERING AND BRAKES

Group 05—Hydrostatic Steering

Group 10—Steering Cylinder(s)

Group 15—Brake Valve

Group 20—Rear Brakes

Group 25—Handbrake

Group 30—Hydraulic Trailer Brake

Group 35—Air Brakes

SECTION 70—HYDRAULIC SYSTEM

Group 05—Controls

Group 10—Hydraulic Pump and Charge Pump (PFC
Hydraulic System)

Group 11—Hydraulikpumpe (PC-Hydrauliksystem)

Group 15—Valves

Continued on next page

05

- Group 20—Rockshaft
- Group 25—Selective Control Valves and Couplers
- Group 30—Independent Control Valve

SECTION 80—MISCELLANEOUS

10

- Group 00—Removal and Installation of Components
- Group 05—Main Frame
- Group 10—Front Axle
- Group 15—Front and Rear Wheels
- Group 20—Trailer Mounting and Swinging Drawbar
- Group 25—Triple Link Suspension (TLS) of
Front-Wheel Drive Axle
- Group 30—Pick-Up Hitch

20

SECTION 90—OPERATOR'S CAB

30

- Group 00—Removal and Installation of Components
- Group 05—Controls and Instruments
- Group 10—Air-Conditioning System
- Group 15—Heating System
- Group 20—Seats
- Group 25—Operator's Cab
- Group 30—Cab Suspension

40

SECTION 99—SPECIAL TOOLS

(DEALER-FABRICATED)

- Group 05—Special Tools (Dealer-Fabricated)

50

51

53

55

56

Engine

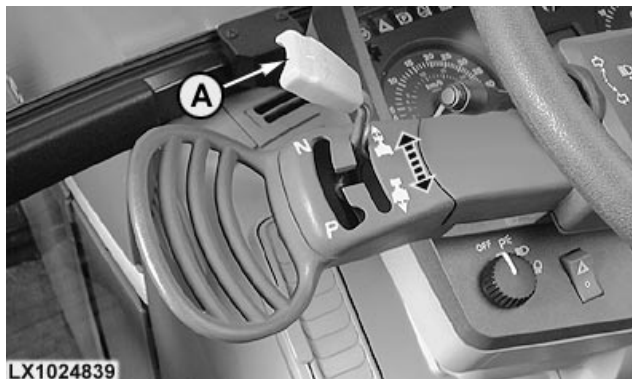
Type	
- 6020, 6120, 6220, 6320, 6420, 6420S, 6520, 6620	turbocharged diesel engine
Number of cylinders	
- 6020, 6120, 6220, 6320, 6420, 6420S	4
- 6520, 6620	6
Bore	106.5 mm (4.19 in.)
Stroke	127.0 mm (5.00 in.)
Displacement	
- 6020, 6120, 6220, 6320, 6420, 6420S	4530 cm ³ (276 cu.in.)
- 6520, 6620	6790 cm ³ (414 cu.in.)
Firing order	
- 4-cylinder tractors	1-3-4-2
- 6-cylinder tractors	1-5-3-6-2-4
Compression ratio	16.8:1
Valve clearance (engine hot or cold)	
- Intake valves	0.35 mm (0.014 in.)
- Exhaust valves	0.45 mm (0.018 in.)
Slow idle	
- mechanical actuation	875±50 rpm
- electronic actuation at an ambient temperature	
above 20°C (68°F)	850±10 rpm
between 0°C (32°F) and 20°C (68°F)	875±50 rpm
below 0°C (32°F)	1050±10 rpm
Fast idle	
- mechanical actuation	2460+50 rpm
- electronic actuation	2460-10/+20 rpm
with AutoQuad activated	max. 2300 rpm
Rated engine speed	2300 rpm
Working speed range	
- 6020, 6120, 6220, 6320, 6420, 6420S	1500 - 2300 rpm
- 6520, 6620	1300 - 2300 rpm

Continued on next page

LX25458,0000004 -19-01JUL02-1/2

Tractors with AutoPowr/IVT transmission

1. Move reverse drive lever (A) to "forward" or "reverse".
2. Turn key in main switch as far as it will go to the right. The starter motor must NOT turn over. If it does, see reference 240-10-003, SE1-Starting Motor and Charging Circuit and see reference 240-15-001, SE01 — Starting Motor and Charging Circuit.



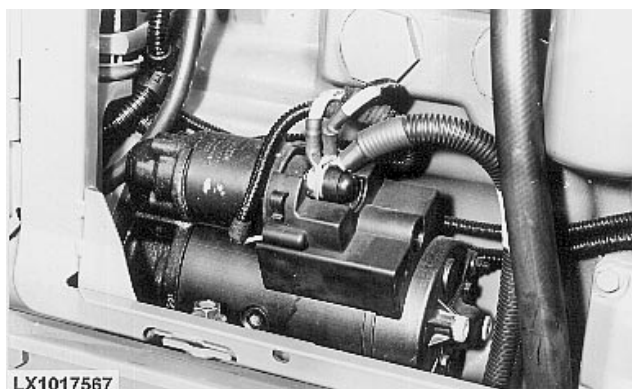
LX25458,000017C -19-01AUG02-2/2

10
10
19

Check operation of starting motor

IMPORTANT: Do not operate starting motor for more than 20 seconds at a time. Turn key in main switch to "zero". Wait at least one minute before attempting to start again.

Refer to Technical Manual "Operation and Tests" in the event of malfunctions.



AG,LX25458,213 -19-11JAN00-1/1

Checking the lighting circuit

Check setting of headlights, and adjust if necessary.

When equipped, check lights on cab frame and adjust, if necessary.

Refer to Technical Manual "Operation and Tests" in the event of malfunctions.



LX25458,000008D -19-02OCT01-1/1

Final Engine Check

Use a dynamometer to check engine horsepower. See "Dynamometer Test", Section 220, Group 10.

NOTE: Compare performance with test carried out before tune-up.

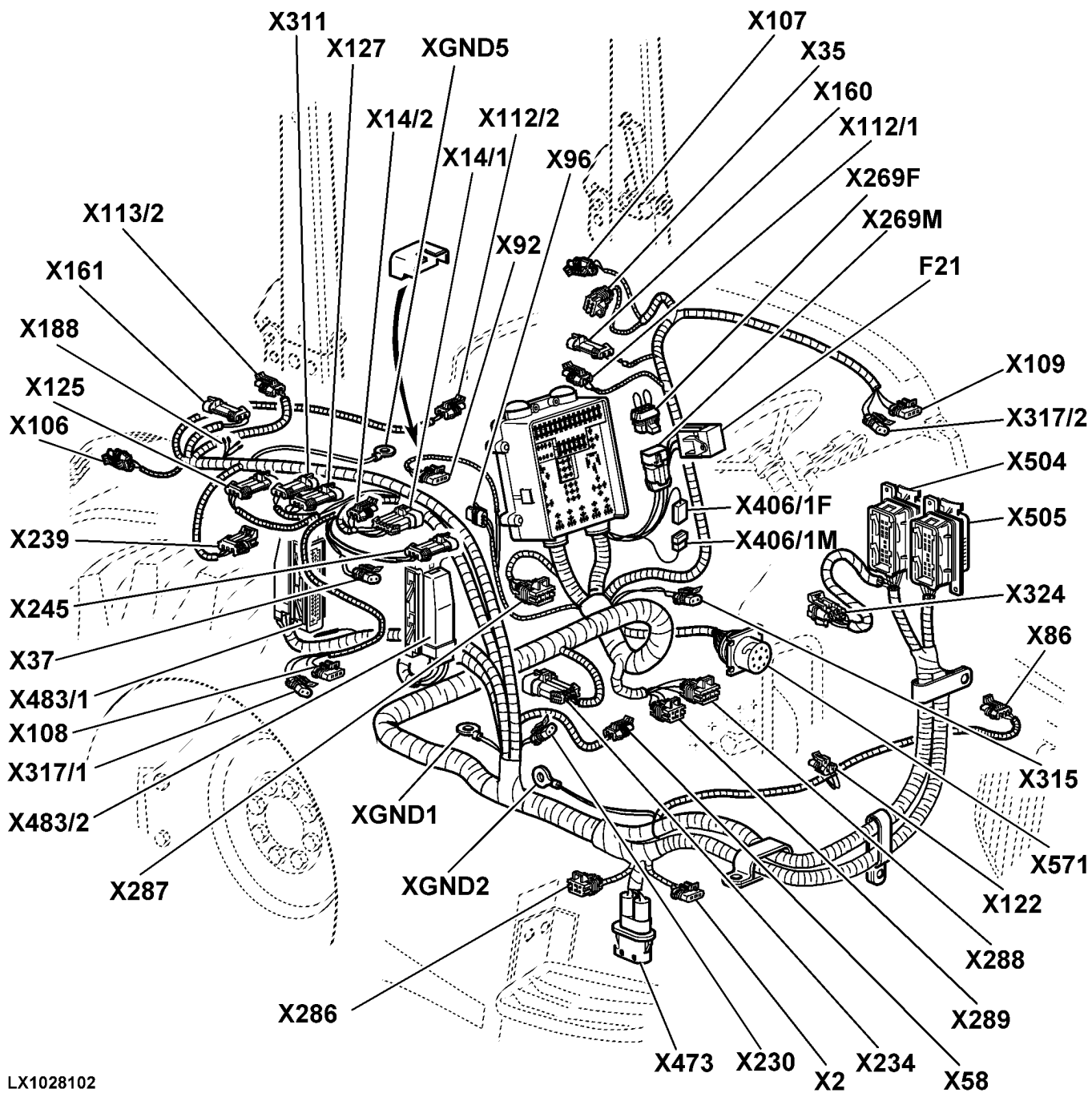


LX25458,000008E -19-01OCT01-1/1

Wiring Harnesses for 6320, 6420 and 6520 Tractors with AutoQuad Transmission and Stage I Engine to 97/68/EC — Summary of References

- "Disconnecting the Electrical Circuit"
- "Ground Point Locations"
- "Removing and Installing Harness W01 — Power Supply"
- "Removing and Installing Harness W02 — Engine Wiring Harness for Stage I Engine to 97/68/EC (without Engine Control or with Level 1 ECU)".
- "Removing and Installing Harness W03 — Wiring Harness - Starting Aid for Stage I and II Engines to 97/68/EC (without Engine Control or with Level 1 or 12 ECUs)".
- "Removing and Installing Harness W04 — Headlights"
- "Removing and Installing Harness W06 — Front-Wheel Drive Axle with TLS"
- "Removing and Installing Harness W07 — Front PTO"
- "Removing and Installing Harness W08 — Cab, with Stage I Engine to 97/68/EC"
- "Removing and Installing Harness W09 — Cowl, with Stage I Engine to 97/68/EC"
- "Removing and Installing Harness W10 — Shift Console"
- "Removing and Installing Harness W11 — Transmission Shift and Hand Throttle"
- "Removing and Installing Harness W13 — Clutch Sender"
- "Removing and Installing Harness W14 — 3-Terminal Power Outlet Socket"
- "Removing and Installing Harness W15 — ECU for Stage I Engines to 97/68/EC (ECU Level 1)"
- "Removing and Installing Harness W16 — SIC with Stage I Engine to 97/68/EC"
- "Removing and Installing Harness W17 — Multifunction Unit"
- "Removing and Installing Harness W18 — Windshield Wiper Switch (without intermittent wiper)"
- "Removing and Installing Harness W18 — Windshield Wiper Switch (with intermittent wiper)"
- "Removing and Installing Harness W19 — Cab Roof, with Stage I Engine to 97/68/EC"
- "Removing and Installing Harness W20 — Turn Signal and Clearance Lights"
- "Removing and Installing Harness W21 — Worklights on Front of Cab Roof"
- "Removing and Installing Harness W22 — Worklights on Rear of Cab Roof"
- "Removing and Installing Harness W22 — Xenon Worklights on Rear of Cab Roof"
- "Removing and Installing Harness W23 — Windshield Wiper Switch (without switch for windshield)"
- "Removing and Installing Harness W23 — Windshield Wiper (with switch for windshield)"
- "Removing and Installing Harness W24 — Rear Window Wiper"
- "Removing and Installing Harness W25 — Rear Window Wiper Switch"
- "Removing and Installing Harness W26 — Fan and Air Conditioner"
- "Removing and Installing Harness W28 — Front End of Transmission"
- "Removing and Installing Harness W30 — Rear End of Transmission"
- "Removing and Installing Harness W31 — 7-Terminal Power Outlet Socket"
- "Removing and Installing Harness W32 — Stepper Motors, with Stage I Engine to 97/68/EC"
- "Removing and Installing Harness W33 — Service"
- "Removing and Installing Harness W34 — Electric Rear-View Mirrors"
- "Removing and Installing Harness W35 — Access Step Lighting and Battery Cut-off Switch"
- "Removing and Installing Harness W36 — 60-amp GreenStar Power Outlet Socket"
- "Removing and Installing Harness W37 — GreenStar Port"
- "Removing and Installing Harness W39 — GreenStar (Cab)"
- "Removing and Installing Harness W39 — GreenStar with Tractor Equipment Interface Controller (Cab)"
- "Removing and Installing Harness W40 — GreenStar (Cab Roof)"
- "Removing and Installing Harness W41 — JDLINK"

Removing and Installing Harness W08 — Open Operator's Station, with Stage I Engine to 97/68/EC



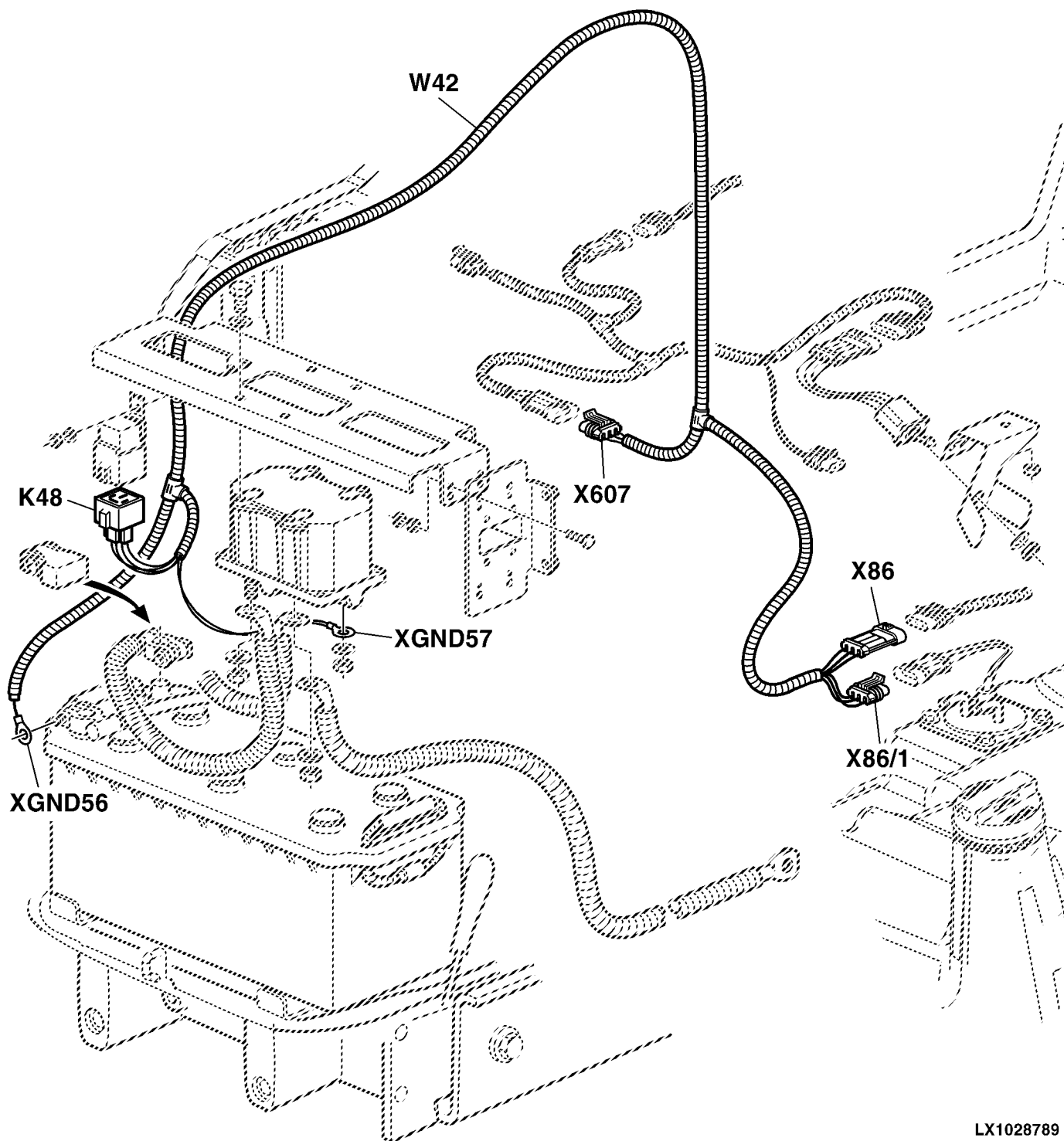
LX1028102

LX1028102 -UN-16MAY02

Continued on next page

LX25599,0000388 -19-01NOV02-1/2

Removing and Installing Harness W42 — Battery Cut-off Switch



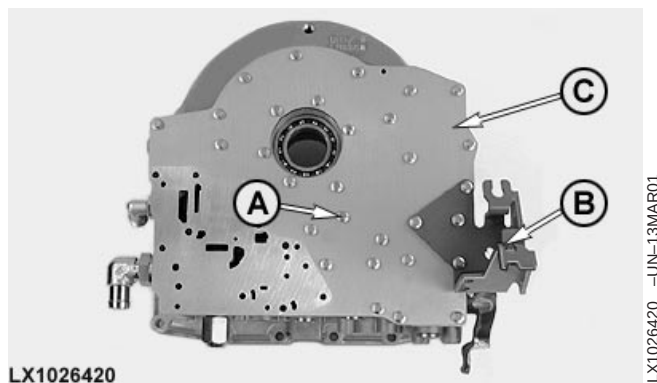
LX1028789

LX1028789 -UN-11JUN02

Continued on next page

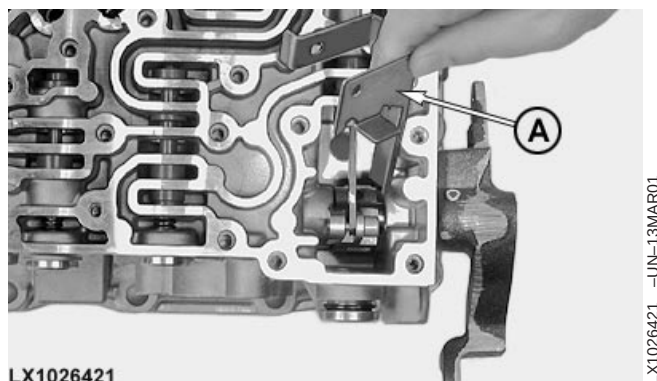
LX25599,0000399 -19-01MAY02-1/2

4. Remove attaching screws (A).
5. Take off mounting (B; for the clutch cable).
6. Remove front cover (C) and gasket.



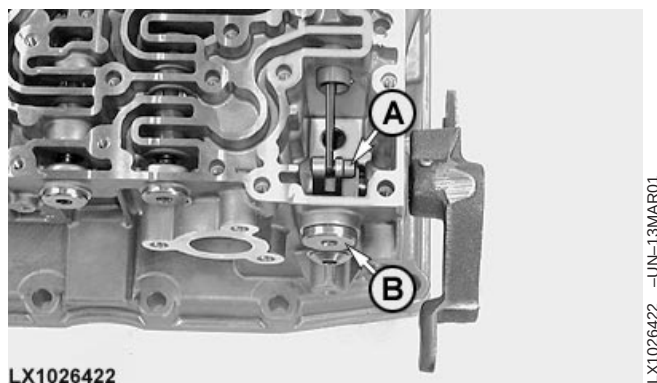
LX25601,0000277 -19-01JUN01-4/19

7. Remove the metal retainer (A).



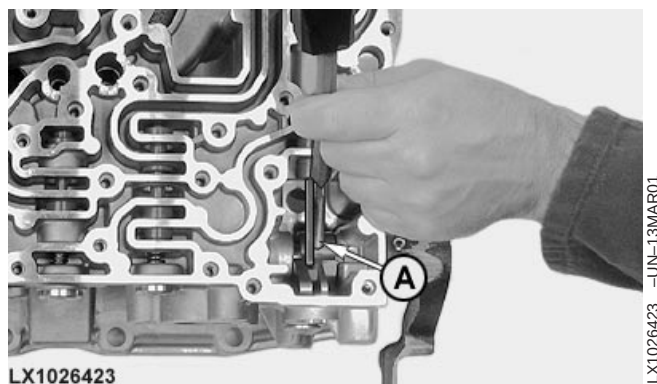
LX25601,0000277 -19-01JUN01-5/19

8. Take out pin (A).
9. Unscrew plug (B).



LX25601,0000277 -19-01JUN01-6/19

10. Drive out spring pin (A).



Continued on next page

LX25601,0000277 -19-01JUN01-7/19

Installing the AutoPowr/IVT Transmission

1. Thoroughly clean the flanges on the housing and install a new gasket.

NOTE: Use multi-purpose grease to stick the gasket to the flange.

OULXBER,0000883 -19-25OCT01-1/8

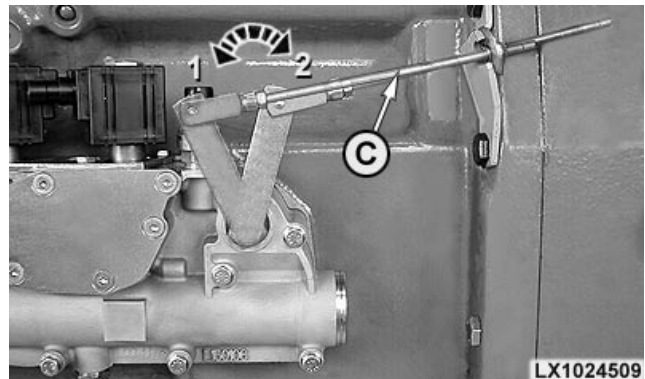
2. Install special tool (C; dealer-fabricated) and **disengage** the park lock. Do this by tightening the hex. nut on the device until the lever reaches the position shown in the illustration (2).

CAUTION: The disengaging lever is subject to great tension. Inappropriate usage may result in personal injury.

C—Special tool (dealer-fabricated)

1—Park lock engaged

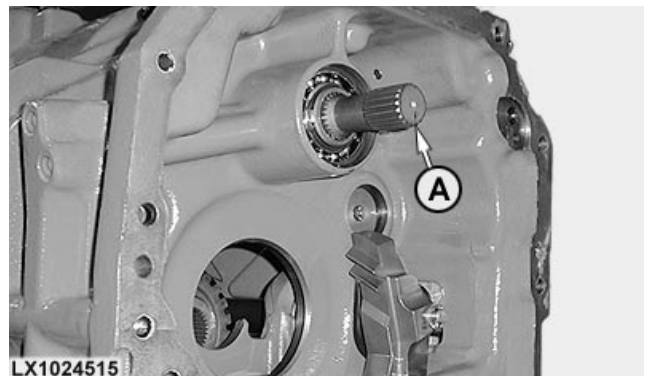
2—Park lock disengaged



Disengaging the park lock

OULXBER,0000883 -19-25OCT01-2/8

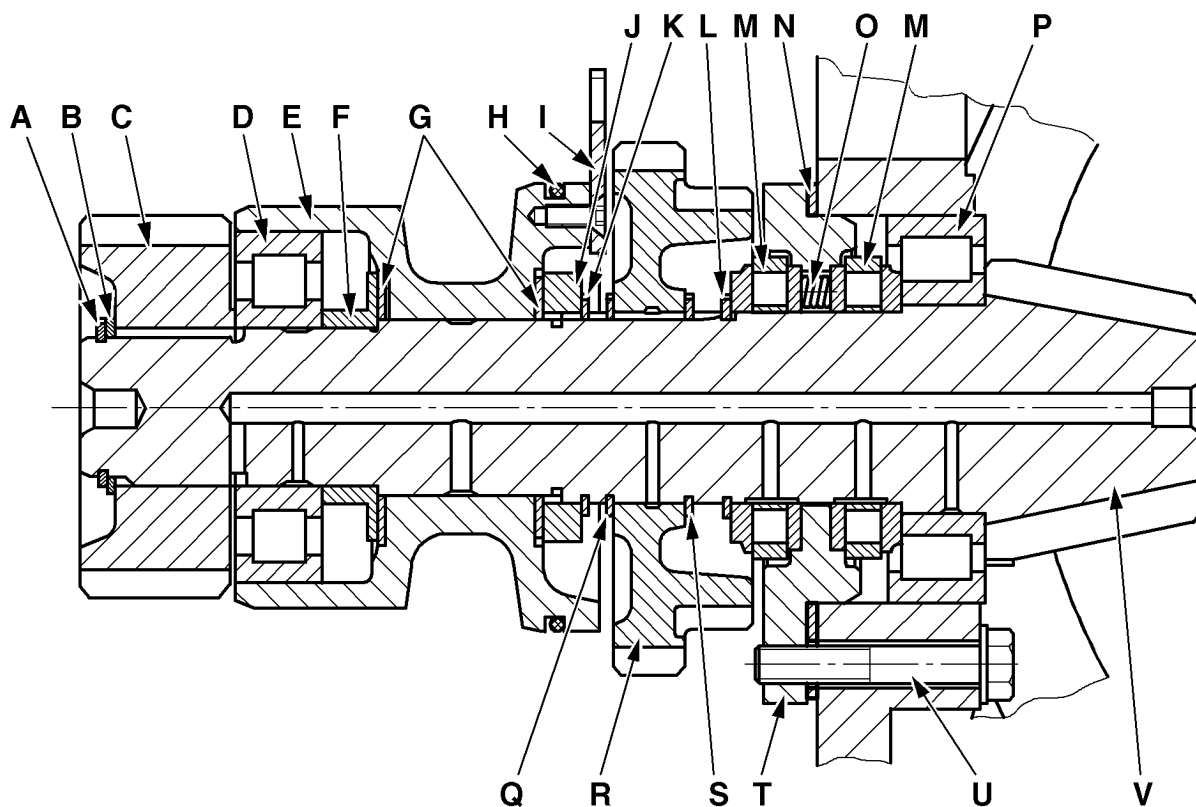
3. Install shaft (A).



Continued on next page

OULXBER,0000883 -19-25OCT01-3/8

Differential Drive Shaft — Sectional View



LX1027294

A—Snap ring
B—Shim (thickness as required)
C—Gear
D—Needle bearing assy.
E—Bearing housing
F—Spacer bushing

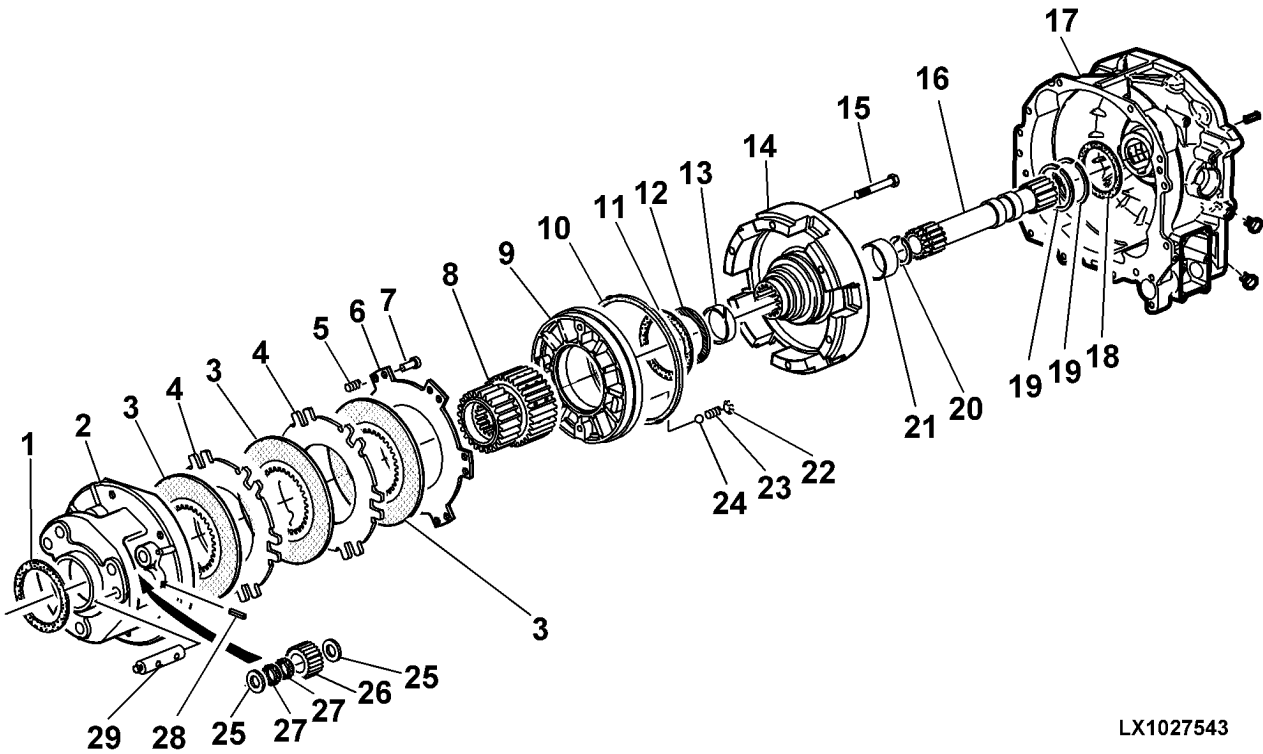
G—Thrust washer (plastic)
H—O-ring
I—Strap
J—Steel washer
K—Snap ring
L—Snap ring (thickness as required)

M—Axial bearing
N—Shim (use as many as required)
O—Spring (5 used)
P—Needle bearing
Q—Snap ring (thickness as required)

R—Front-wheel drive gear
S—Snap ring
T—Bearing quill
U—Cap screw (4 used)
V—Differential drive shaft

LX1027294 -UN-31OCT01

LX24888,0000387 -19-01MAY01-1/1



LX1027543

LX1027543 -UN-29OCT01

- | | | | |
|------------------------|------------------|---------------------------|----------------------|
| 1—Thrust washer | 9—Clutch piston | 16—Input shaft | 23—Spring |
| 2—Planetary carrier | 10—Seal ring | 17—Planetary gear housing | 24—Ball |
| 3—Disk | 11—Seal ring | 18—Thrust washer | 25—Thrust washer |
| 4—Disk | 12—Thrust washer | 19—Seal ring | 26—Planet gear |
| 5—Piston return spring | 13—Bushing | 20—Snap ring | 27—Needle bearing |
| 6—Piston plate | 14—Clutch drum | 21—Bushing | 28—Retaining pin |
| 7—Pin | 15—Screw | 22—Retainer | 29—Planet gear shaft |
| 8—Clutch hub | | | |

Recondition or assemble the forward clutch and planetary drive as required, using the cross-section and exploded views as guidelines.

Continued on next page

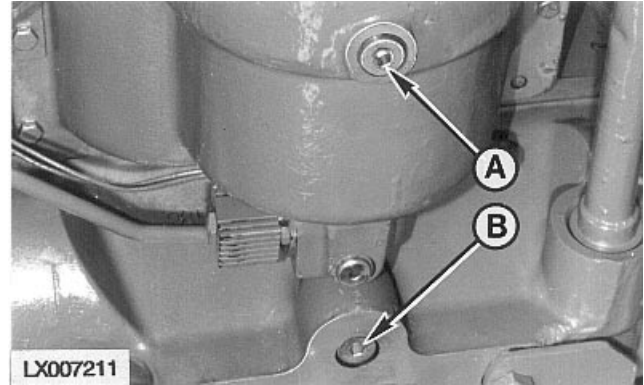
LX25601,000044F -19-01OCT02-3/13

2. If a swinging drawbar is equipped, pull it out to the rear.

Remove drain plug(s) (A) or (B) and allow the transmission oil to drain out.

NOTE: Trap the oil in a container with a capacity of at least 60 liters (15 U.S.gal.).

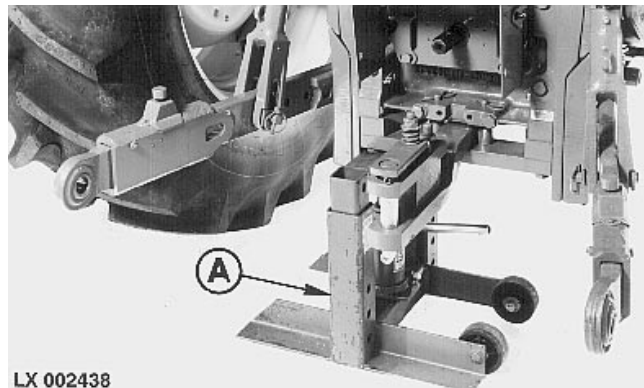
A— Tractors with FWD only
B— Drain screw on all tractors



Tractors with FWD

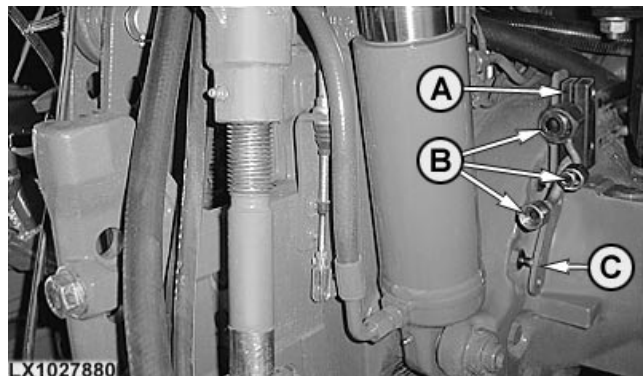
OULXBER,0000808 -19-06APR01-2/17

3. Raise tractor and support it SECURELY with support stand JT05725 (A).
4. Take off one of the rear wheels. See "Removing the Front and Rear Wheels", Section 80, Group 15.



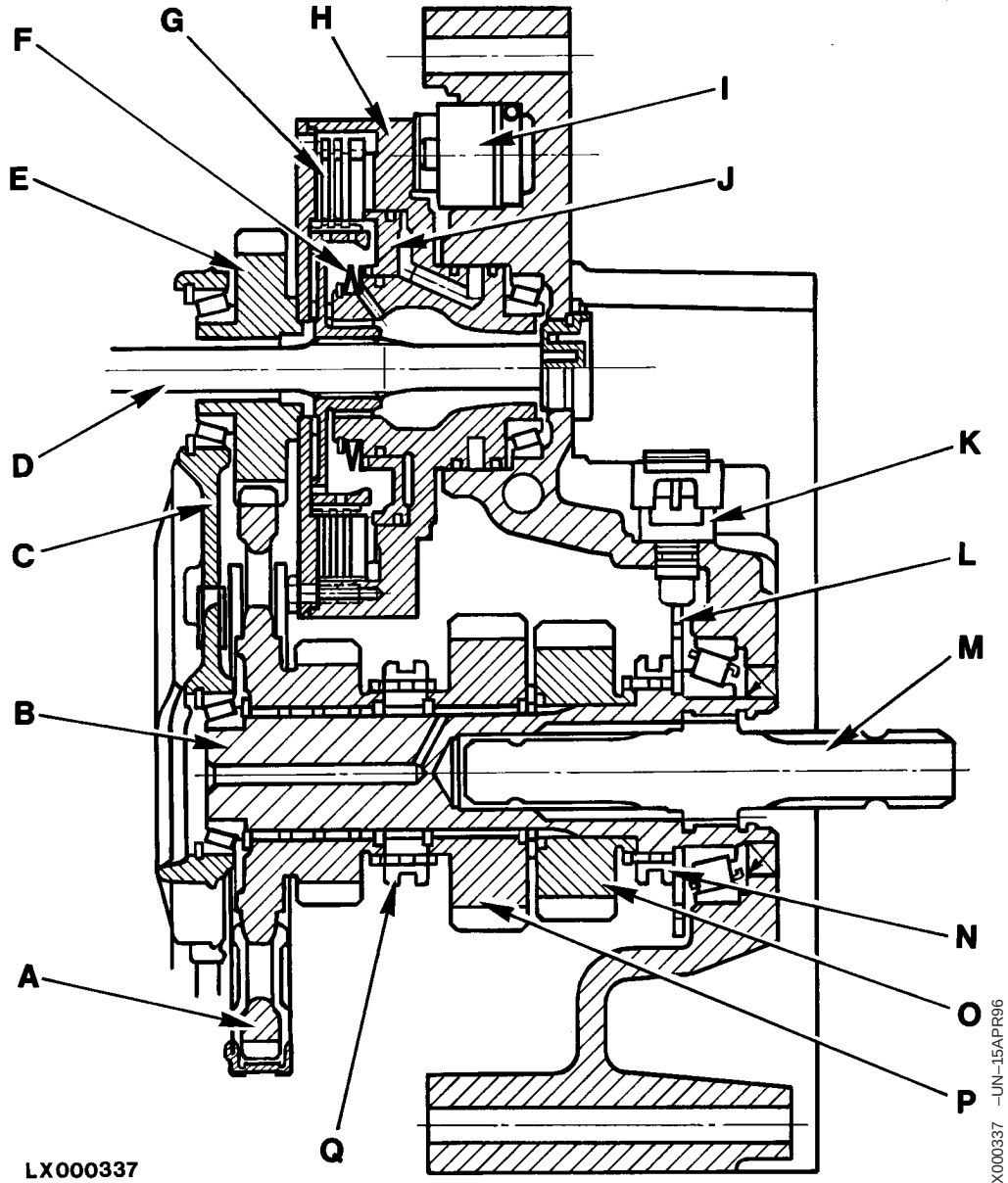
OULXBER,0000808 -19-06APR01-3/17

5. If lines (B) are equipped, disconnect them, take out the screws that hold bracket (A) to bracket (C), and then take off bracket (C).



Continued on next page

OULXBER,0000808 -19-06APR01-4/17



LX000337

LX000337 -UN-15APR96

Sectional view of 540/1000 rpm and 540/540E/1000 shifttable PTOs

A—Double gear with cover
B—Output shaft

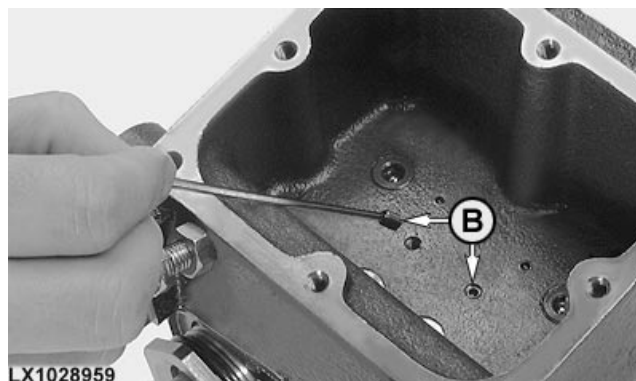
C—Support
D—Input shaft
E—Gear with cover
F—Belleville springs
G—Disk pack

H—Clutch drum
I—Brake piston with segment
J—Piston
K—Speed sending unit
L—Washer

M—PTO stub shaft
N—Shift collar ¹
O—Gear ¹
P—Gear
Q—Shift collar

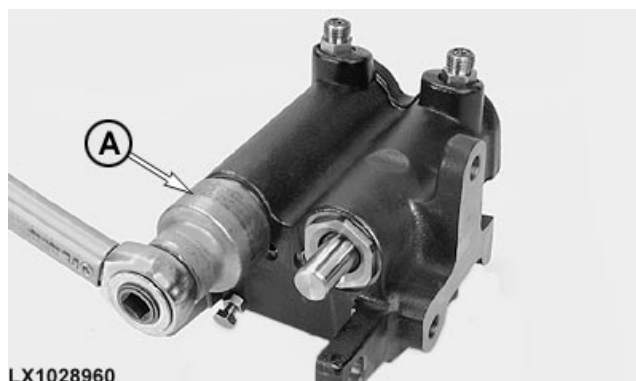
¹540/540E/1000 rpm only

Remove restrictors (B).



LX25458,0000181 -19-01AUG02-7/29

Use socket wrench (A; dealer-fabricated) to unscrew the guide piece.



LX25458,0000181 -19-01AUG02-8/29

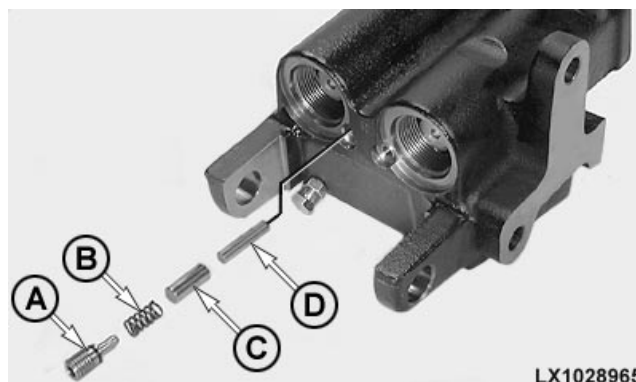
Take out the guide piece and piston.



LX25458,0000181 -19-01AUG02-9/29

Remove plug (A) and take out spring (B) as well as pins (C) and (D).

- A—Plug
- B—Spring
- C—Pin
- D—Pin



Continued on next page

LX25458,0000181 -19-01AUG02-10/29

5. Put O-ring (D) on flange (C) of the SCV unit.

6. Engage bowden cable (H) in spool (A).

7. Tighten sleeve (E).

Specification

Sleeve to flange—Torque 50 N•m
37 lb-ft

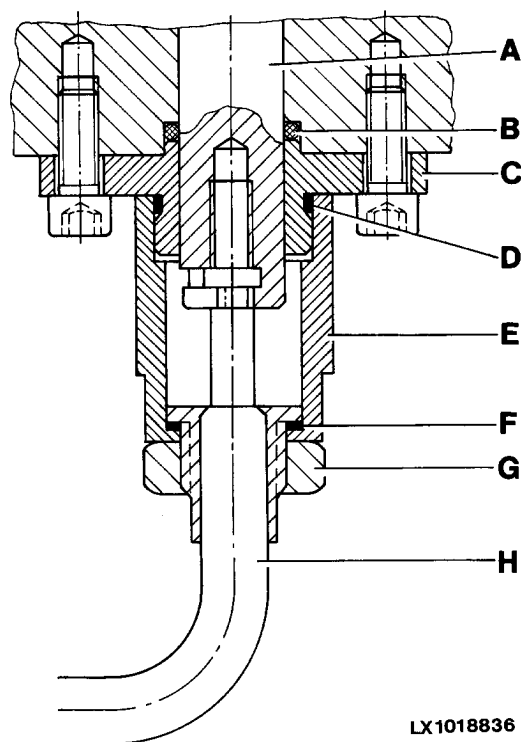
8. Tighten lock nut (G).

Specification

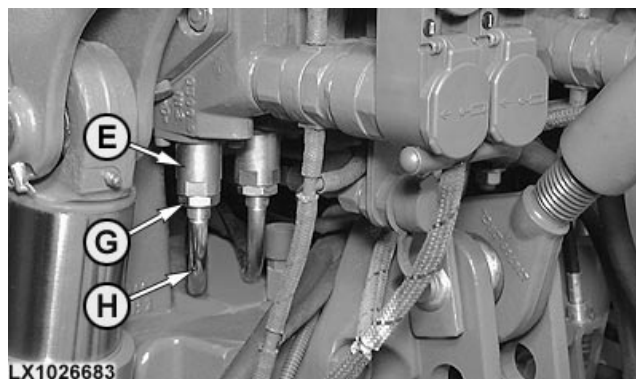
Lock nut to sleeve—Torque 50 N•m
37 lb-ft

9. Adjust the bowden cable. See “Selective Control Valves — Adjusting the Bowden Cable” in this Group.

A—Valve spool
B—O-ring
C—Flange
D—O-ring
E—Sleeve
F—O-ring
G—Lock nut
H—Bowden cable



LX1018836 -UN-18NOV97



LX1026683 -UN-02JUL01

LX24603,00001B9 -19-01SEP02-3/3