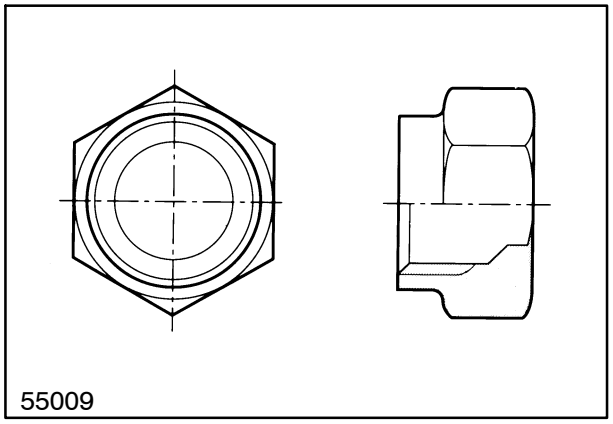
SECTION 35 - HYDRAULIC SYSTEM

Chapter 1 - General

CONTENT

OP. 35.000
TORQUE TABLES FOR HYDRAULIC COMPONENTS

Union nuts



1

Ferrules

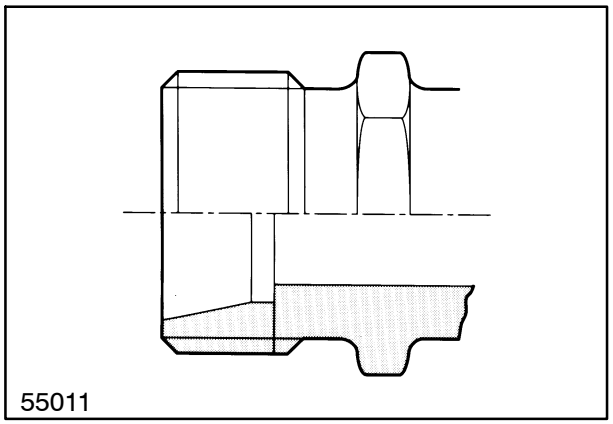
The ferrule must be pre-assembled on the tube. Tighten the union nut as specified in the table below. The ferrule and screw thread are greased.

Tube outer diameter mm (in)	Torque Nm (lbf.ft)	
	Min.	Max.
8 (0.32)	15 (11)	20 (15)
10 (0.4)	25 (18)	30 (22)
12 (0.47)	35 (26)	40 (29)
16 (0.63)	50 (37)	55 (40)
18 (0.71)	60 (44)	70 (51)
22 (0.87)	100 (74)	110 (81)
28 (1.10)	110 (81)	120 (88)

Metric fittings

Unions

Are suitable for use with union nuts and ferrules and ball-type nipples.

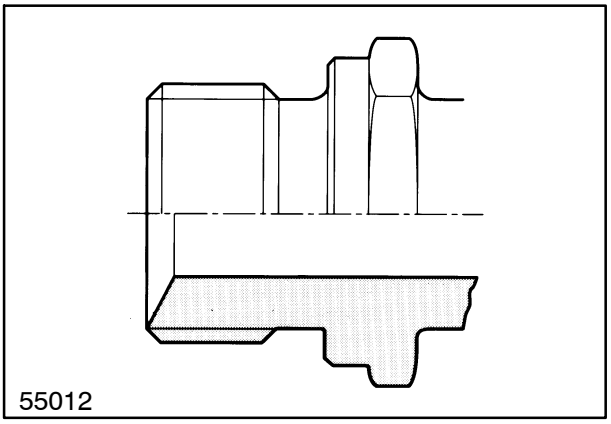


2

Connections

Are screwed in ISO metric thread - tolerance class 6H - with a tightening torque as specified in the table below.

Tube outer diameter mm (in)	Torque Nm (lbf.ft)	
	Min.	Max.
8 (0,32)	40 (29)	45 (33)
10 (0,40)	65 (48)	70 (51)
12 (0,47)	80 (59)	85 (63)
16 (0,63)	100 (74)	120 (88)
18 (0,71)	120 (88)	140 (103)
22 (0,87)	200 (147)	220 (164)
28 (1,10)	350 (257)	380 (280)

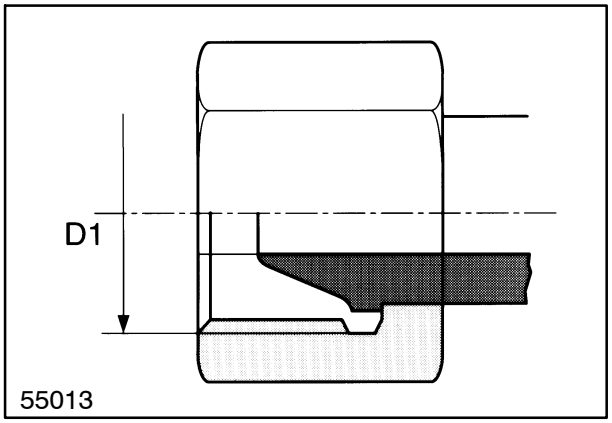


3

Swivel nut with ball-type nipple

Are suitable for use with female unions

D1 6H	Torque Nm (lbf.ft.)	
	Min.	Max.
M14 x 1.5	-	-
M16 x 1.5	15 (11)	20 (15)
M18 x 1.5	20 (15)	25 (18)
M24 x 1.5	30 (22)	35 (26)
M26 x 1.5	-	-
M30 x 2	-	-
M36 x 2	-	-



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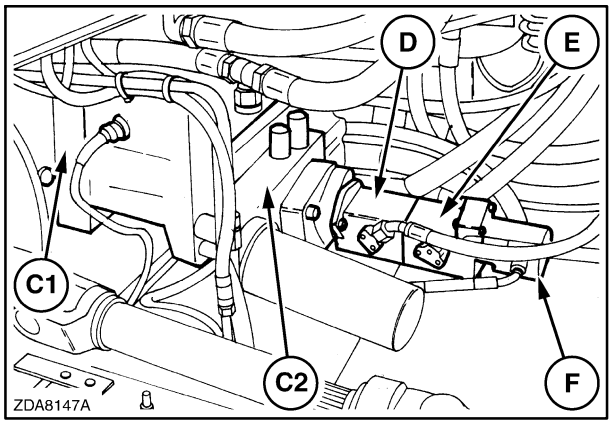
OP. 35.304
PUMP GROUP - DISASSEMBLY AND ASSEMBLY



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The pump group consists of five pumps driven by the engine via the main drive transfer gearbox.

C1: Hydrostatic pump: see Section 29.

- Feed roll drive
- Spout flipper movement
- 4WD clutch (if installed)

C2: Hydrostatic pump: see Section 29.

- Traction

D: Work hydraulics pump:

- Attachment height control
- Reverse drive of the cutterhead / Hydraulic crop processor drive (if installed)
- Spout rotation and vertical movement
- Auxiliary rear hydraulics (if installed)
- Auxiliary front hydraulics
- Crop processor open – close (if installed)

E: Steering hydraulics pump:

- Steering
- Auto-Pilot (if installed)

F: Low pressure pump:

- Main drive clutch
- Main drive belts stretching cylinder

DISASSEMBLY OF THE PUMP GROUP

WARNING

Before starting a service job, always:
- Shut off the engine.
- Remove the ignition key.
- Switch off the battery switch.
- Wait until all parts have completely stopped rotating.

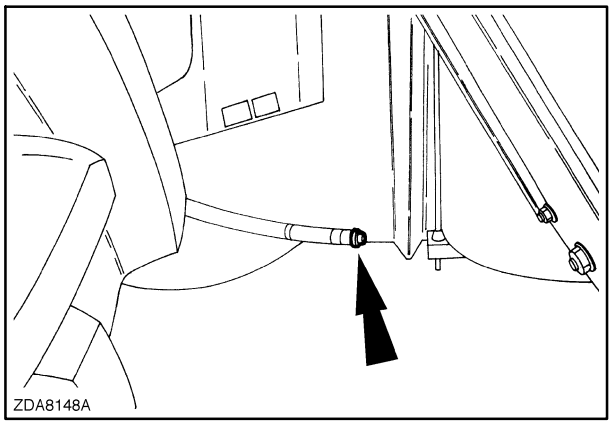
In this paragraph, the following will be explained:

- Removal of the three hydraulic pumps from the hydrostatic pump.

- Separation of the three hydraulic pumps.

Removal of the triple pump from the hydrostatic pump

1. Drain the hydraulic oil reservoir.



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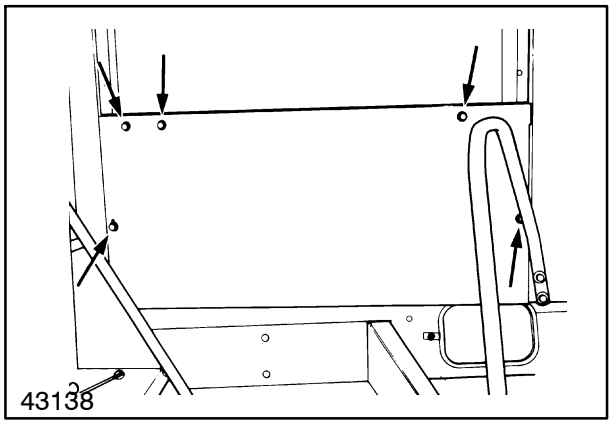
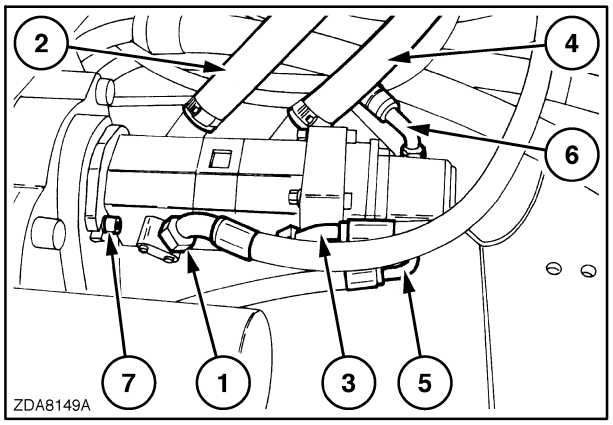
2. Remove the left-hand side shielding.



7

3. Remove hoses 5 and 6 from the low pressure pump F.
4. Remove hose 3 and hose 4 from the steering hydraulic pump E.
5. Remove hose 1 and hose 2 from the work hydraulic pump D.
6. Unscrew cap screws 7.
7. Remove the triple pump from the hydrostatic pumps.



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Splitting of the triple pump

The triple pump consists of four main components:

D: Work hydraulics pump

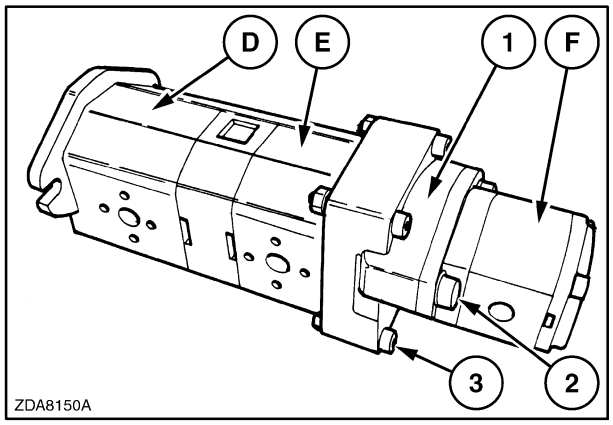
E: Steering hydraulics pump

1: Connecting piece

F: Low pressure pump

The low pressure pump F is connected to the connecting piece 1 with two cap screws 2.

The connecting piece is connected to the steering hydraulic pump E with four cap screws 3.



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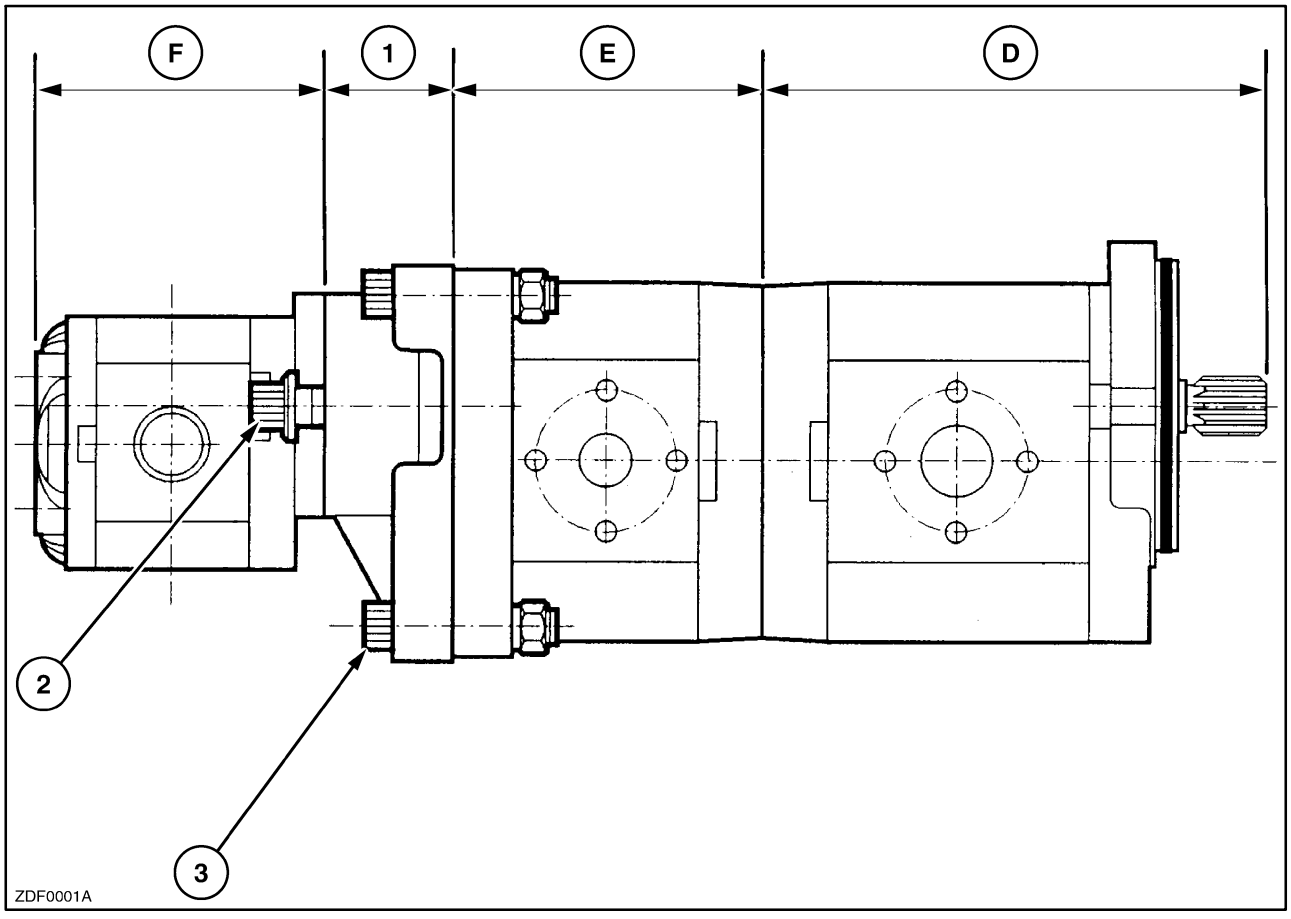

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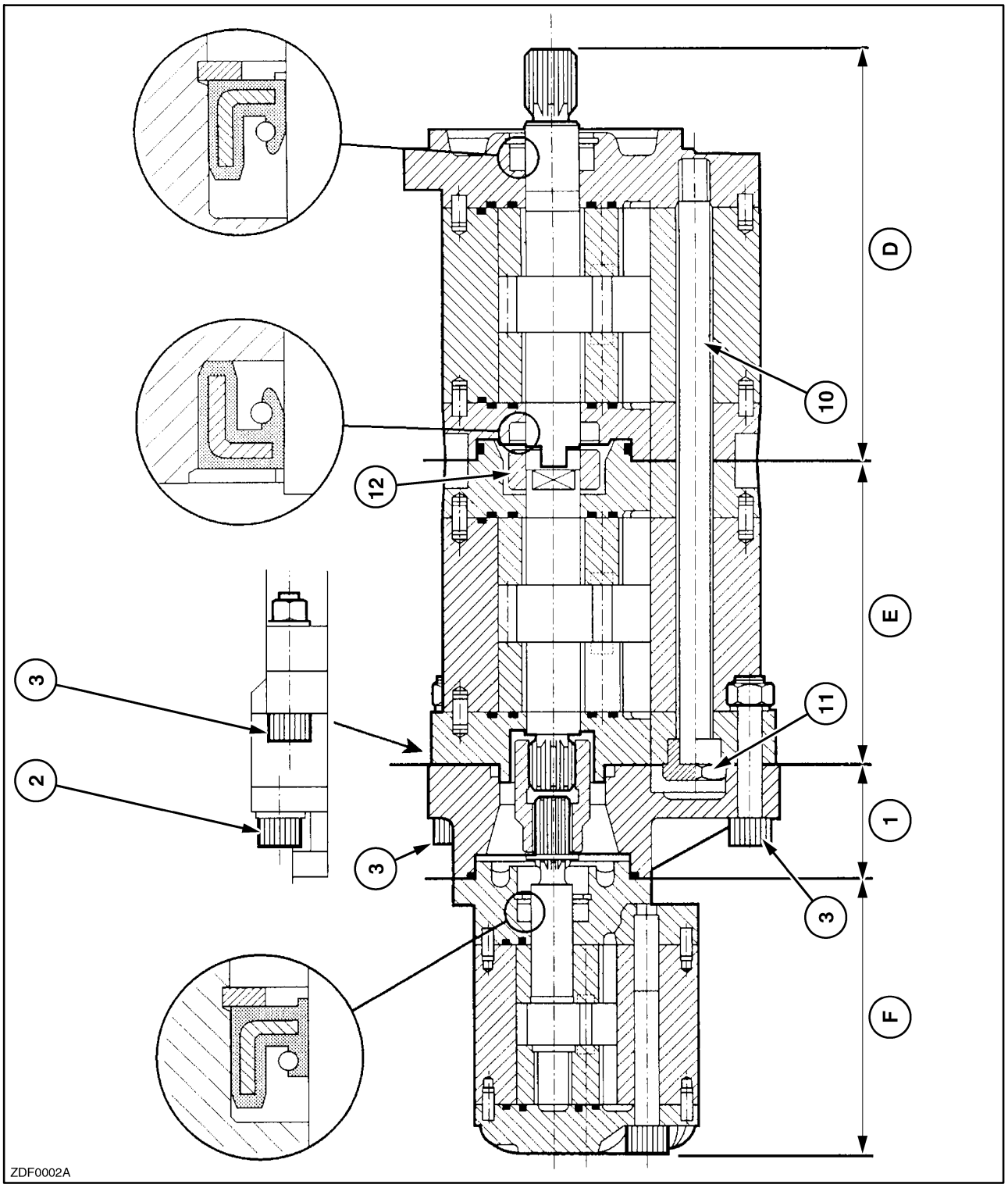

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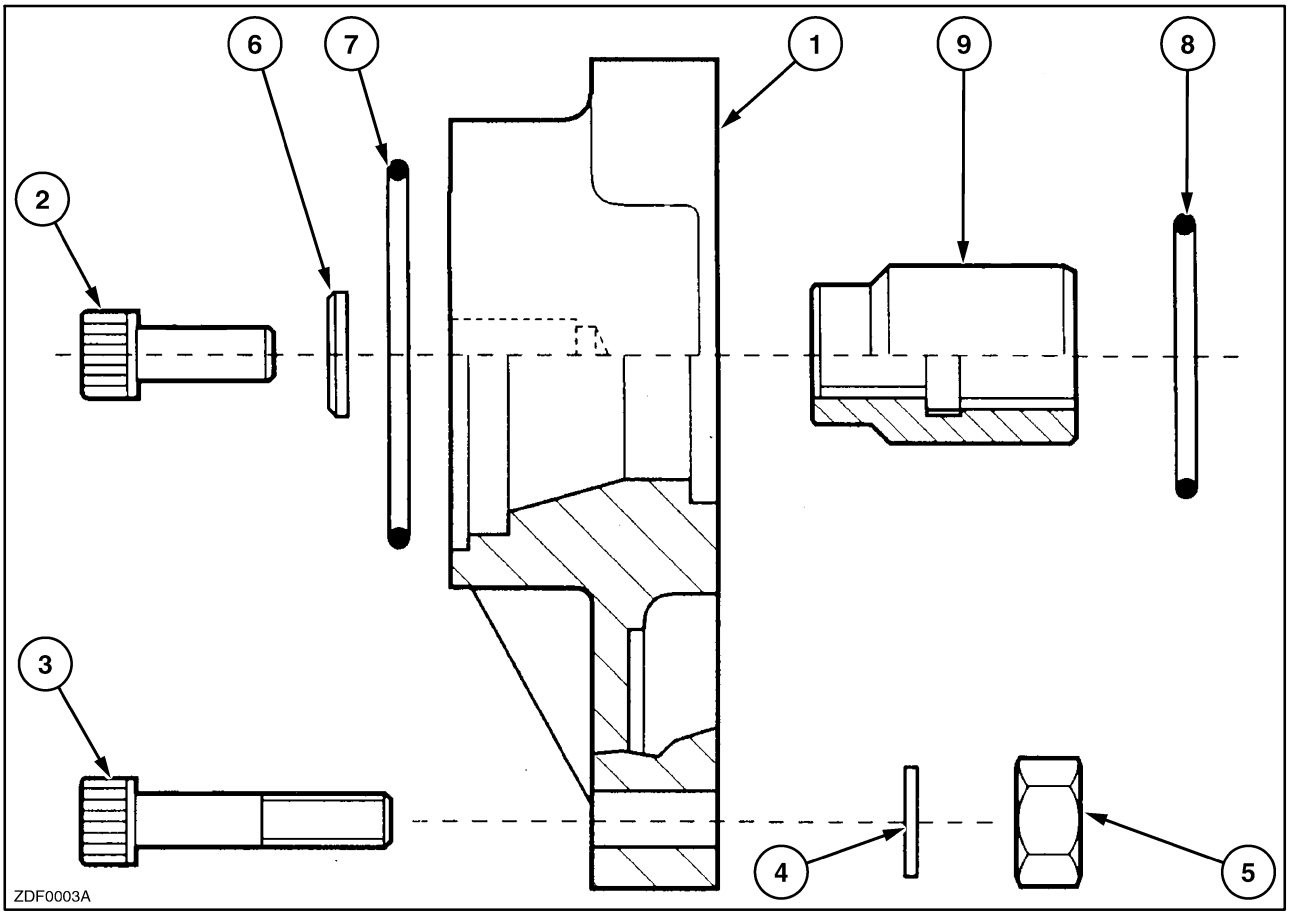

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1. Intermediate piece
2. Two cap screws (M10)
3. Four cap screws (M8)
4. Four washers (M8)
5. Four nuts (M8)
6. Two washers (M10)
7. O-ring seal (towards the low pressure pump)
8. O-ring seal (towards the steering hydraulics pump)
9. Fitting sleeve (connection between drive shafts)

The steering hydraulics pump E is connected to the work hydraulics pump D with 4 long stud bolts 10 (M10 x 185.5 mm).

These bolts are screwed into the part that connects the triple pump to the hydrostatic pump.

The steering and the work hydraulics pumps are tightened to each other with special M10 nuts 11 on these stud bolts.

The drive shafts of the latter pumps are connected to each other with coupling 12.

Assembly of the pump group

Assemble in the reverse order of the disassembly sequence.

IMPORTANT: *Below is a list of recommended torques. Ignoring these torques may lead to severe damage to the pumps.*
Verify the seals for wear or damage. Replace when necessary. Also verify that the seals are properly seated before attaching the pumps to each other.

Cap screw 2: 44 - 54 Nm (32–40 lbf.ft)

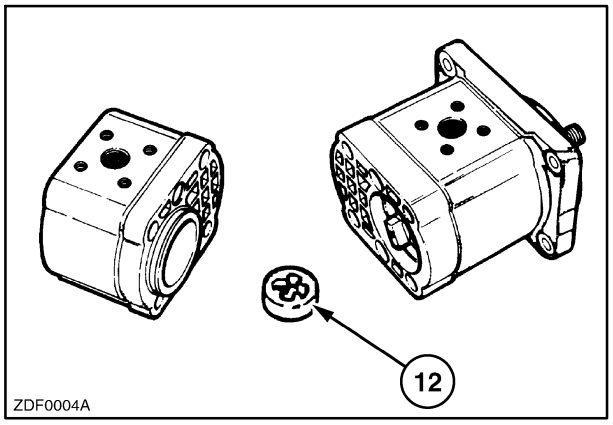
Cap screw 3**:** 26 - 31 Nm (19–23 lbf.ft)

Stud bolt 10 in the connecting piece (to the hydrostatic pump): 5 - 10 Nm (4–7 lbf.ft)

Nut 11 (on stud bolt k): 44 - 54 Nm (32–40 lbf.ft)

Hose 6: 110 - 120 Nm (81–88 lbf.ft)

Torque tables for ferrules, connections and ball-type nipples can be found in paragraph headed "Torque tables for hydraulic components" at the beginning of this section.



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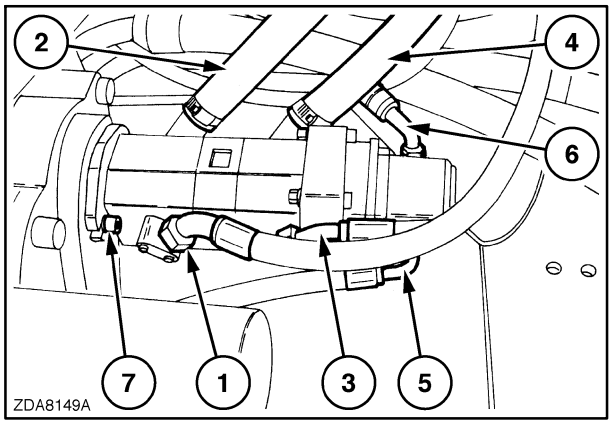
Installation of the pump group to the hydrostatic pump

Cap screws 7: 27 - 37 Nm (20–27 lbf.ft)



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SECTION 35 - HYDRAULIC SYSTEM

Chapter 2 - Work hydraulics - Attachment height control

CONTENT

OP. 35.000
CIRCUIT DIAGRAMS

Work Hydraulics – Attachment height control

1A FX30-60 Series 5262 > .....

A Engine

B Main drive transfer gearbox

C1 Hydrostatic pump – Feed roll drive

C2 Hydrostatic pump – Traction

D Work hydraulics pump

E Steering hydraulics pump

F Low pressure pump

G High pressure relief valve

H Attachment height control valve (E.M.R.)

J Pressure sensor

K Compensation valve

L1 Accumulators FX50–60

L2 Accumulators FX30–40 (100 bar is optional)

M Non-return valve

N Low pressure filter (Return filter)

NN High pressure filter

OC Oil cooler

P Filler opening with filter

PF Pressure filter

Q Drain hose

R Oil reservoir

- **R1 = R2** Hydraulic oil reservoir
- **R3** Low pressure hydraulic oil reservoir

S Breather with filter and non-return valve

SF Suction filter

T To/from steering valve (without Auto-Pilot)

TV Thermovalve

V Stack valve

X To steering valve (with Auto-Pilot)

Y From steering valve (with Auto-Pilot)

Z Collector block

1 From cutterhead reverse drive motor

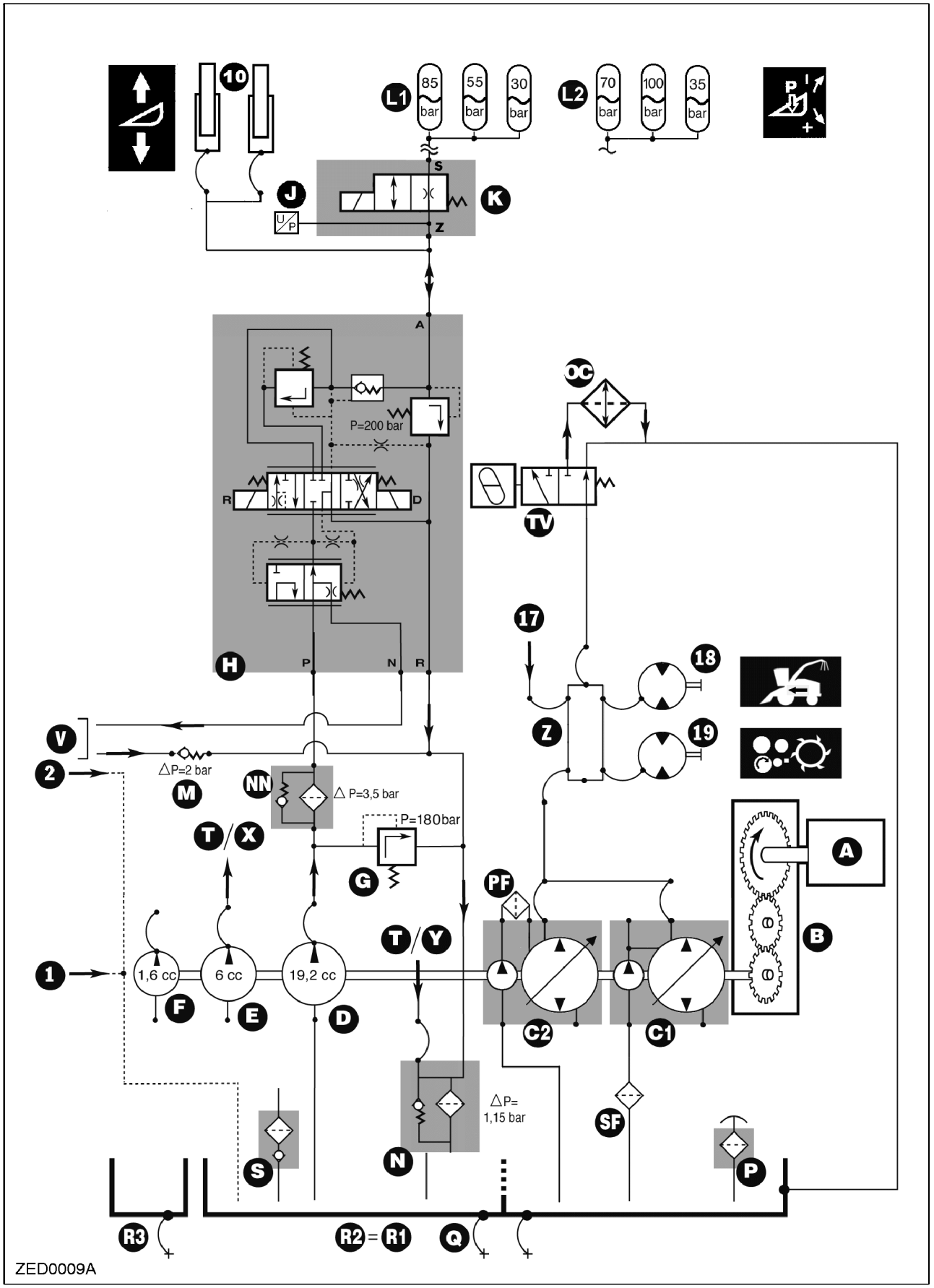
2 From spout rotation motor

10 Attachment lift cylinders

17 From low pressure system

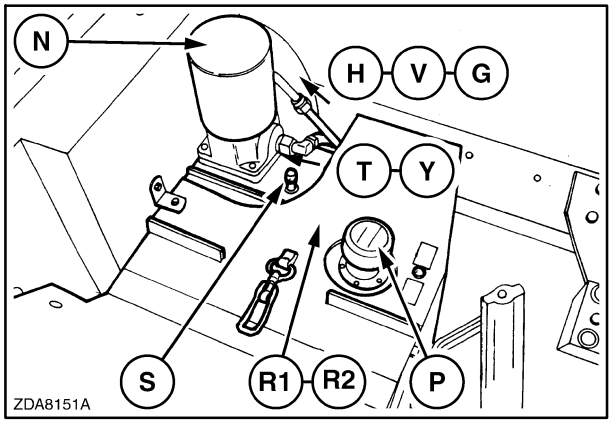
18 From hydrostatic motor – traction

19 From hydrostatic motor – feed roll drive


10
L1
85 bar
55 bar
30 bar
L2
70 bar
100 bar
35 bar
J
K
S
Z
U/P
A
P=200 bar
R
D
T
H
P
N
R
OC
TV
17
18
19
Z
V
2
△P=2 bar
M
NN
△ P=3,5 bar
P=180bar
T/X
G
PF
T/Y
1
1,6 cc
6 cc
19,2 cc
F
E
D
C2
C1
A
B
△P=
1,15 bar
N
S
SF
P
R3
R2=R1
Q
ZED0009A

OP. 35.300
HYDRAULIC OIL RESERVOIR

The hydraulic system, work hydraulics and steering hydraulics, and the hydrostatic system, feed rolls drive and ground speed, uses oil from one hydraulic oil reservoir.



2

Several lines are located on the oil reservoir. Below an overview:

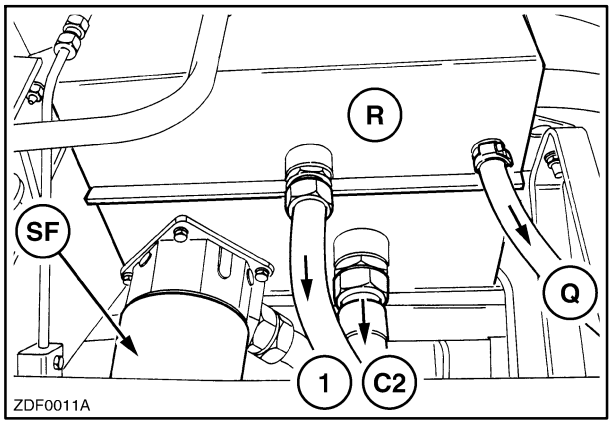
R Oil reservoir

SF Suction filter – Oil flow to the hydrostatic pump C1 – Feed roll drive

C2 Oil flow to the hydrostatic pump C2 – Traction

Q Oil flow to the drain hose Q

1 Oil flow to the cutterhead reverse drive motor 1



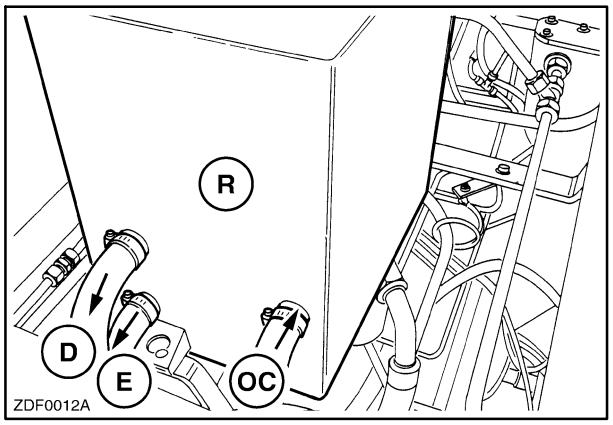
3

R Oil reservoir

D Oil flow to the work hydraulics pump D

E Oil flow to the steering hydraulics pump E

OC Oil returning from the oil cooler OC



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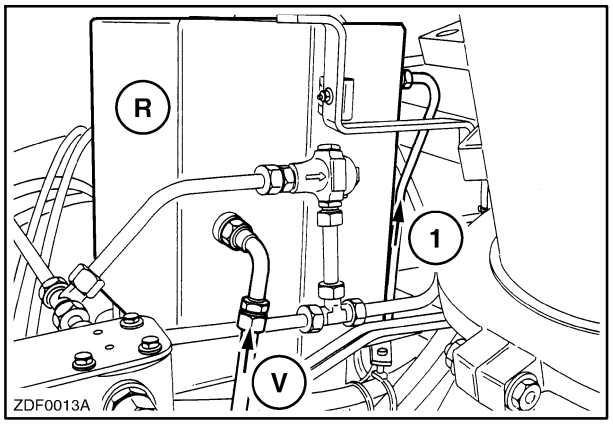
R Oil reservoir

V Oil returning from the stack valve V

1 Oil flow from the cutterhead reverse drive motor 1



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