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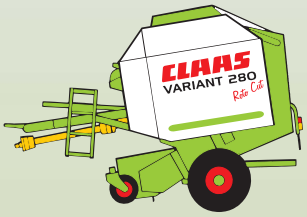


VARIANT 260/280

Technical Systems

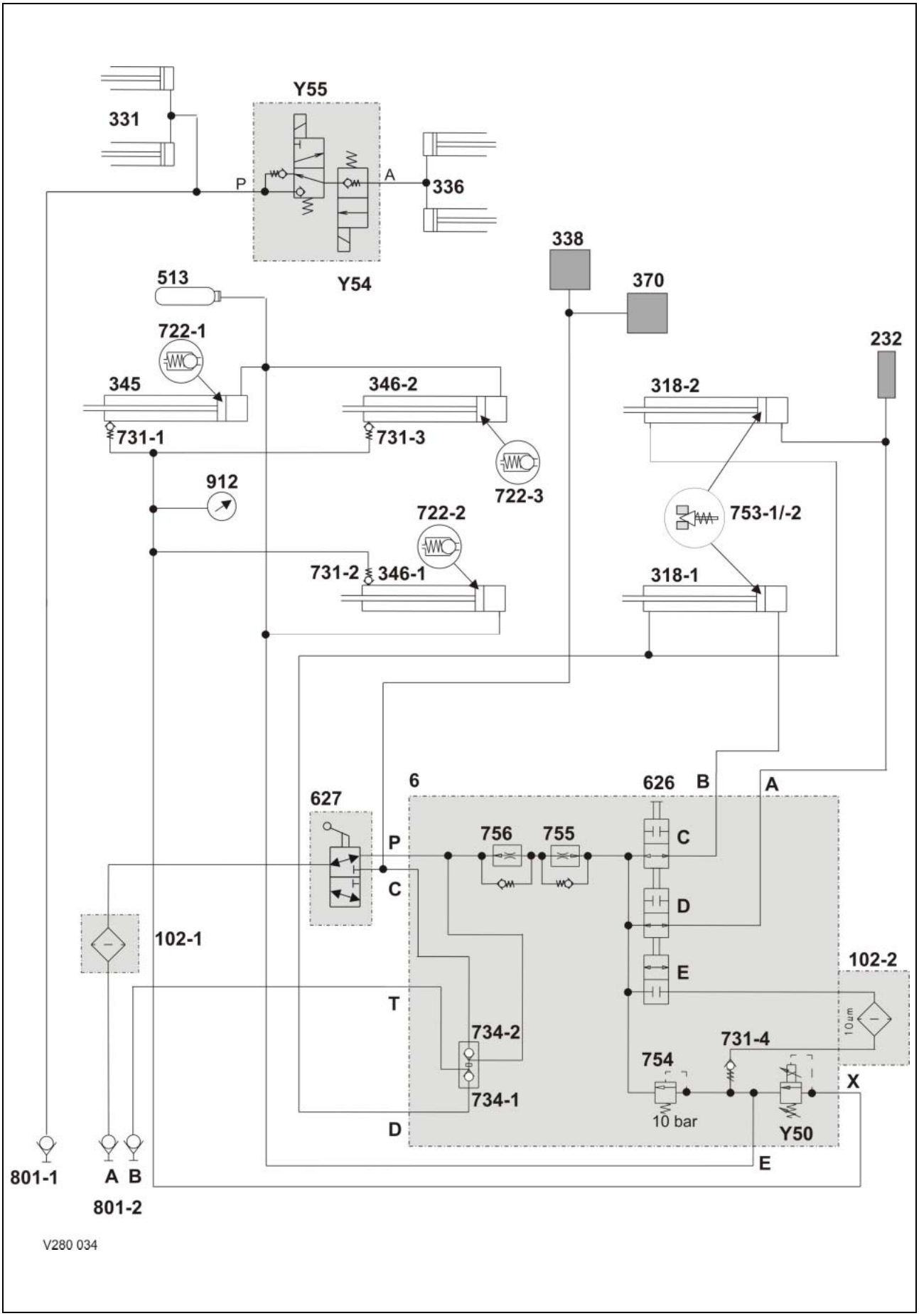
Hydraulic System

SERVICE & PARTS

Hydraulic system
Contents

Chapter 1
Overall hydraulic system circuit diagram

1.1 Circuit diagram – without active hydraulic system



Key to diagram:

6	Valve block
102-1	Filter (option) When factory-mounted, filter (102-2) is not provided - in this case, a hydraulic loop line is installed here. In case of retrofits, filter (102-2) remains in place.
102-2	Filter (series equipment)
232	Lubricating oil pump is actuated when building up pressure for opening the tailgate.
318-1	Left side tailgate hydraulic cylinder
318-2	Right side tailgate hydraulic cylinder
331	Pick-up raise/lower hydraulic cylinders 2 pieces, spring-loaded
336	Knife support On/Off hydraulic cylinder
338	Rotor cut-out clutch
345	Top tensioning arm hydraulic cylinder
346-1	Bottom left tensioning arm hydraulic cylinder
346-2	Bottom right tensioning arm hydraulic cylinder
370	Drive clutch for roller no. 3. When subject to pressure, the clutch opens so that roller no. 3 does not drive the belts (when opening the tailgate).
513	Hydraulic accumulator pressurised to 2 bar
626-C	Shut-off tap for left-side tailgate cylinder. Is combined with 626-D and 626-E.
626-D	Shut-off tap for right-side tailgate cylinder. Is combined with 626-C and 626-E.
626-E	Shut-off tap for belt tensioner cylinder. Is combined with 626-B and 626-C. - blocked when 626-C and 626-D are open. - open when 626-C and 626-D are blocked.
627	Shut-off tap **In the initial position (see circuit diagram):** - the oil supply to valve block (6), (input P) is ensured. - the oil supply to the rotor cut-out clutch (338) is shut off. **When actuated:** - the oil supply to the valve block (6), (input P), is shut off - the oil supply to the rotor cut-out clutch is provided.

722-1 Anti-cavitation valve
opening pressure 3.6 bar

722-2 Anti-cavitation valve
opening pressure 3.6 bar

722-3 Anti-cavitation valve
opening pressure 3.6 bar

731-1 Non-return valve

731-2 Non-return valve

731-3 Non-return valve

731-4 Non-return valve
shuts off the pre-pressurizing circuit against the filter circuit.

734-1 Non-return valves lock-up valve unit
734-2 shut off the tailgate cylinders (318), the rotor cut-out clutch (338) and the drive clutch (370).

753-1 Pressure relief valve
753-2 limits the pressure in the rod spaces to 250 bar.

754 Pressure relief valve
maintains the pressure in the tensioning arm circuit at 10 bar.

755 Flow controller
controls the volume flow for opening the tailgate to 50 l/min. The non-return valve does actually not exist – here it serves merely for better understanding of the circuit diagram.

756 Flow controller
controls the volume flow for closing the tailgate to 18 l/min. The non-return valve does actually not exist – here it serves merely for better understanding of the circuit diagram.

801-1 Quick release coupling
single-acting control unit. Oil supply for knife support and pick-up.

801-2 Quick release couplings
double-acting control unit Open / close tailgate oil supply.

912 Baling pressure gauge

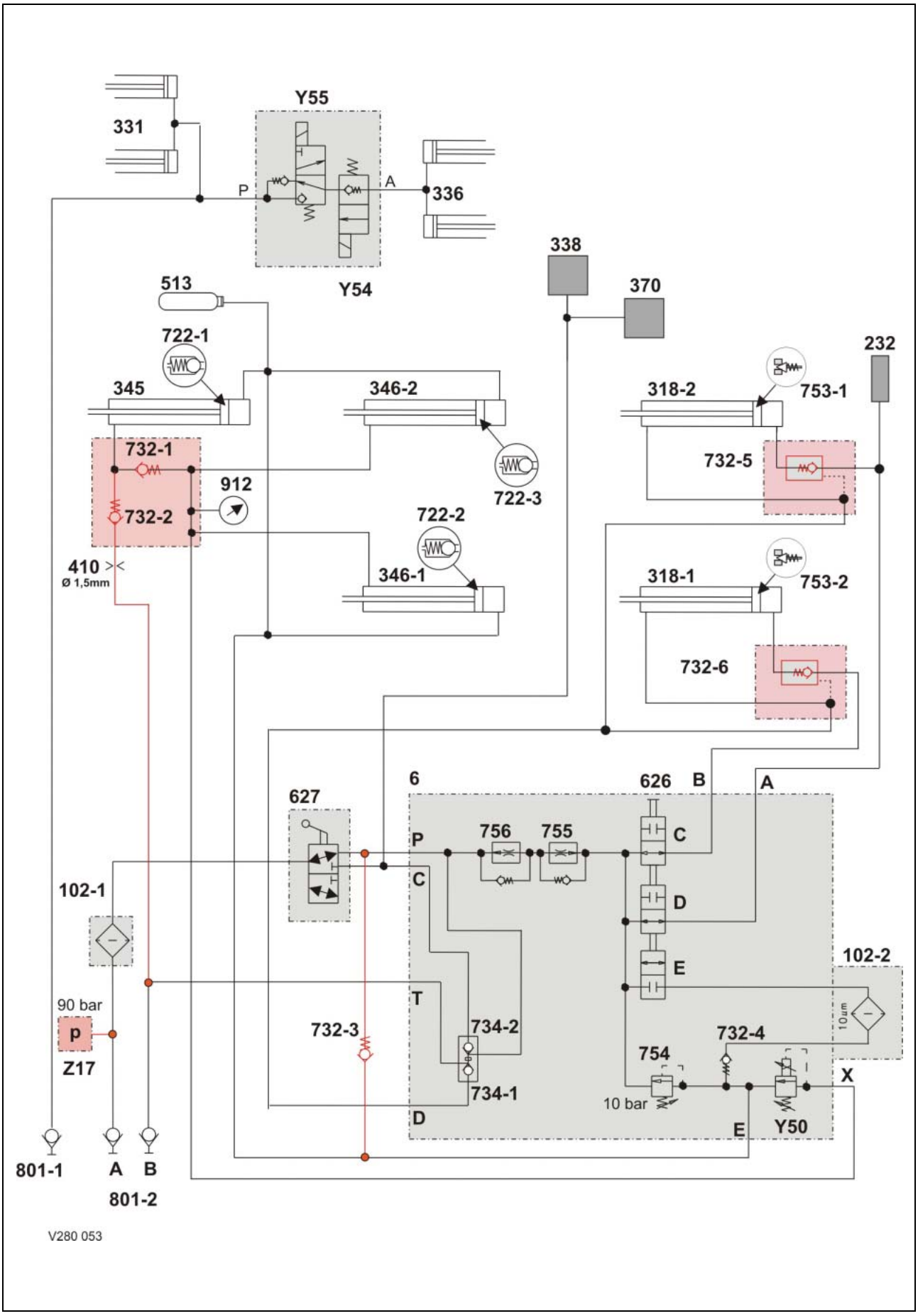
Y50 Baling pressure build-up solenoid valve
- limits the pressure in the tensioning arm circuit and thus controls the baling pressure.
- is controlled by the electronic box (the desired baling pressure is set by a potentiometer).
- when the power supply fails, the highest baling pressure is reached.

Y54 ROTOCUT knives OUT solenoid valve

Y55 ROTOCUT knives IN solenoid valve

Notes:

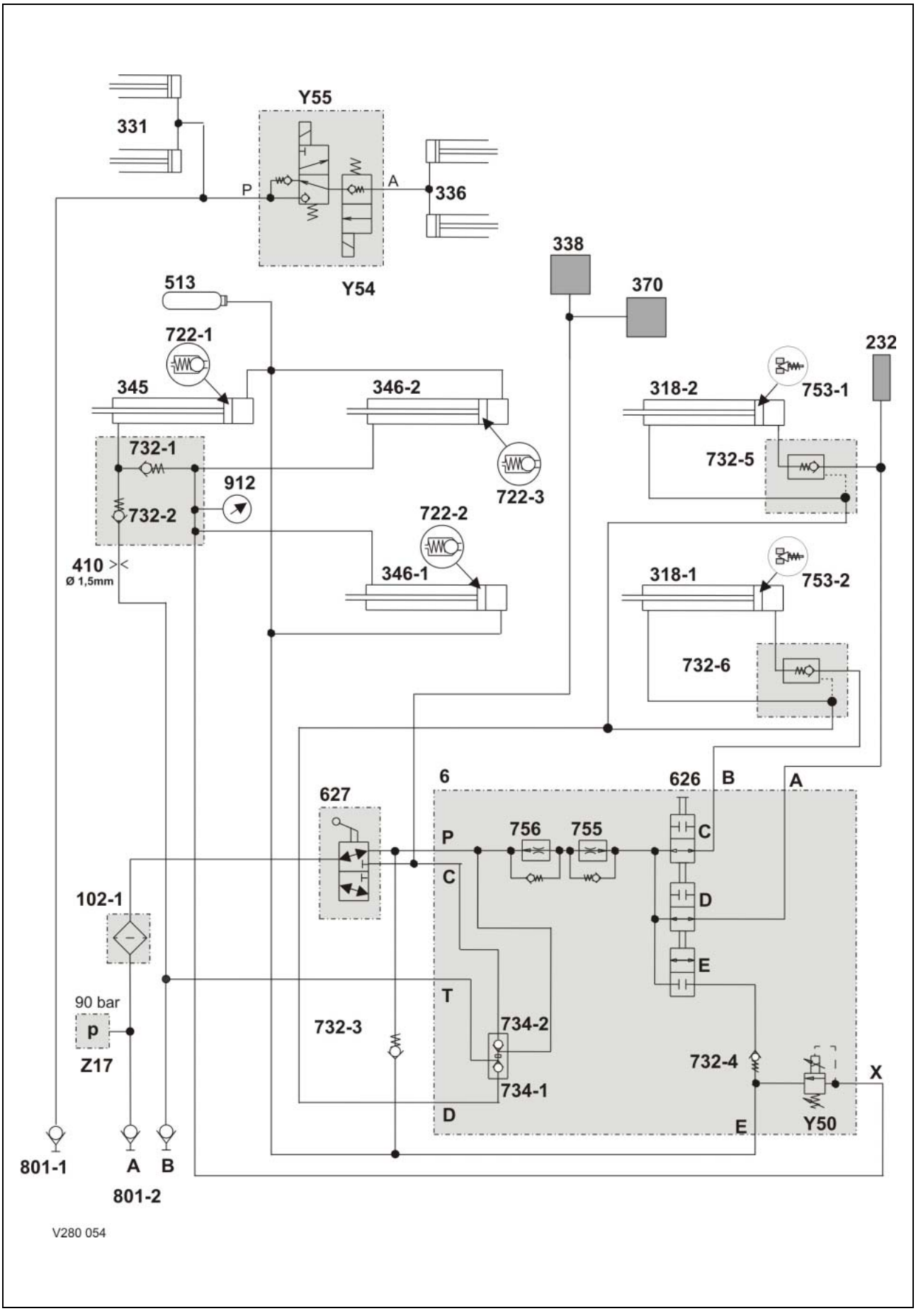
1.2 Circuit diagram – with active hydraulic system, with integrated pressure holding valve (754) up to serial no. …



Key to diagram:

6	Valve block
102-1	Filter (option)
102-2	Filter
232	Lubricating oil pump
318-1	Tailgate left hydraulic cylinder
318-2	Tailgate right hydraulic cylinder
331	Pick-up hydraulic cylinder
336	Knife support hydraulic cylinder
338	Rotor cut-out clutch
345	Top right tensioning arm hydraulic cylinder
346-1	Bottom left tensioning arm hydraulic cylinder
346-2	Bottom right tensioning arm hydraulic cylinder
370	Roller 3 drive clutch
410	Orifice plate diam. 1.5 mm (for oil flow limiting)
513	Hydraulic accumulator (pressurised to 2 bar)
626-C	Shut-off tap
626-D	Shut-off tap
626-E	Shut-off tap
627	Shut-off tap
722-1	Anti-cavitation valve (open pressure 3.6 bar)
722-2	Anti-cavitation valve (open pressure 3.6 bar)
722-3	Anti-cavitation valve (open pressure 3.6 bar)
732-1	Non-return valve
732-2	Non-return valve
732-3	Non-return valve
732-4	Non-return valve
732-5	Non-return valve
732-6	Non-return valve
734-1	Lock-up valve unit (non-return valve)
734-2	Lock-up valve unit (non-return valve)
753-1, -2	Pressure relief valve 250 bar
754	Pressure holding valve is blocked = no function
755	Flow controller
756	Flow controller
801-1	Quick release coupling (single-acting additional control unit on tractor)
801-2	Quick release couplings (double-acting additional control unit on tractor)
912	Baling pressure gauge
Y50	Baling pressure solenoid valve
Y54	2/3 way valve, knife support out
Y55	2/3 way valve, knife support in
Z17	Pressure switch (90 bar)

1.3 Circuit diagram – with active hydraulic system, without integrated pressure holding valve (754) from serial no. ...

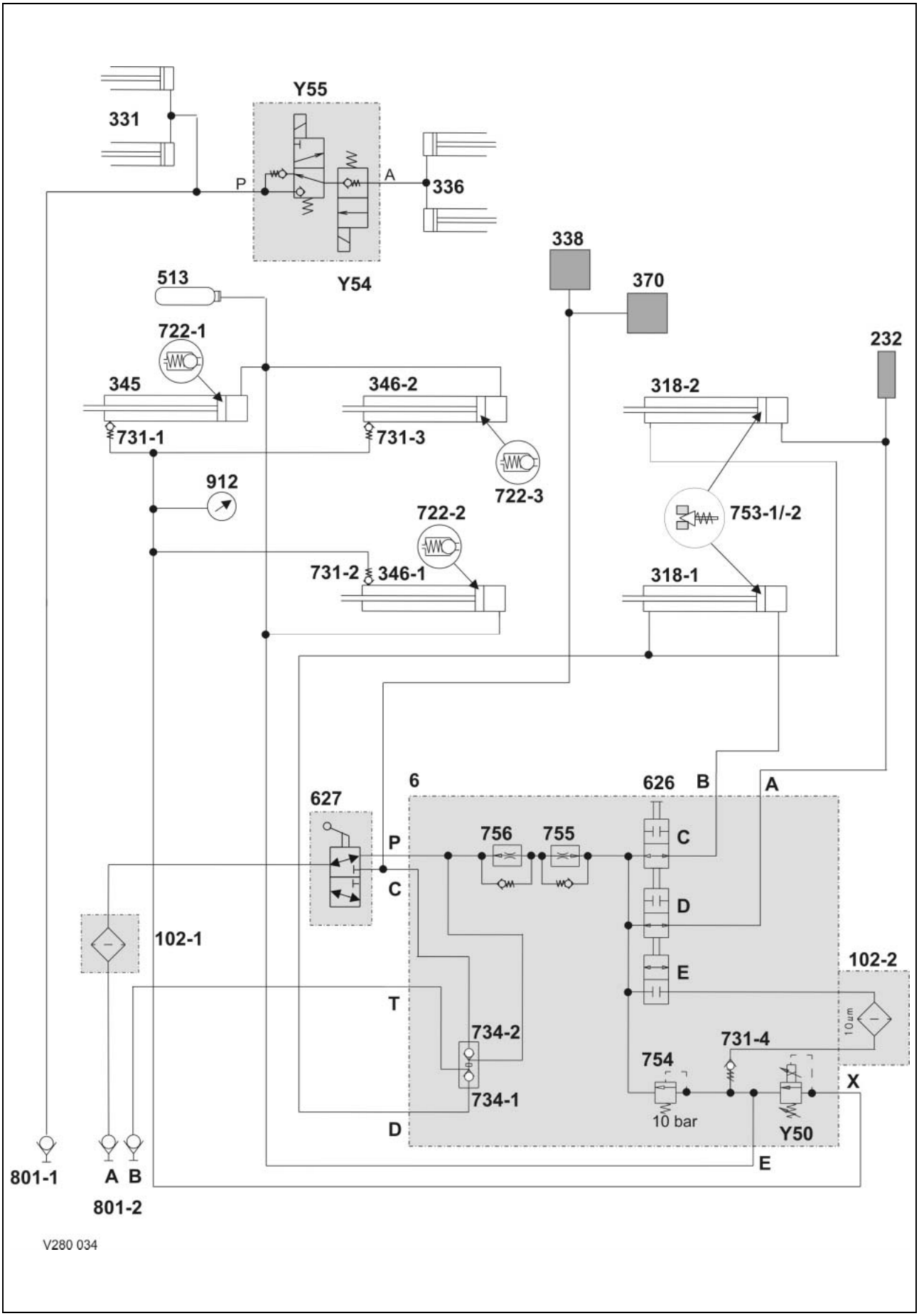


Key to diagram:

6	Valve block
102-1	Filter (option)
102-2	Filter
232	Lubricating oil pump
318-1	Tailgate left hydraulic cylinder
318-2	Tailgate right hydraulic cylinder
331	Pick-up hydraulic cylinder
336	Knife support hydraulic cylinder
338	Rotor cut-out clutch
345	Top right tensioning arm hydraulic cylinder
346-1	Bottom left tensioning arm hydraulic cylinder
346-2	Bottom right tensioning arm hydraulic cylinder
370	Roller 3 drive clutch
410	Orifice plate diam. 1.5 mm (for oil flow limiting)
513	Hydraulic accumulator (pressurised to 2 bar)
626-C	Shut-off tap
626-D	Shut-off tap
626-E	Shut-off tap
627	Shut-off tap
722-1	Anti-cavitation valve (open pressure 3.6 bar)
722-2	Anti-cavitation valve (open pressure 3.6 bar)
722-3	Anti-cavitation valve (open pressure 3.6 bar)
732-1	Non-return valve
732-2	Non-return valve
732-3	Non-return valve
732-4	Non-return valve
732-5	Non-return valve
732-6	Non-return valve
734-1	Lock-up valve unit (non-return valve)
734-2	Lock-up valve unit (non-return valve)
753-1, -2	Pressure relief valve 250 bar
755	Flow controller
756	Flow controller
801-1	Quick release coupling (single-acting additional control unit on tractor)
801-2	Quick release couplings (double-acting additional control unit on tractor)
912	Baling pressure gauge
Y50	Baling pressure solenoid valve
Y54	2/3 way valve, knife support out
Y55	2/3 way valve, knife support in
Z17	Pressure switch (90 bar)

Chapter 2
Function

2.1 Function – without active hydraulic system



Description of function:

Close tailgate	Volume flow enters the valve block (6, port T) via port (801-2 B) and flows to the lock-up valve unit non-return valve (734-1). The lock-up valve unit is opened. Pressurized oil flows into the rod spaces of hydraulic cylinders (318-1 and 318-2) via the opened lock-up valve unit non-return valve (734-1) and port D. The volume flow displaced from the ram spaces of hydraulic cylinders (318-1 and 318-2) flows into the tank via the shut-off taps (626 C and D), the flow controllers (756 and 755), the shut-off tap (627) and filter (102-1). The flow controller controls the returning volume flow to 18 l/min., making the tailgate closing velocity lower than the opening velocity.
Baling	Baled material pulls the hydraulic cylinders (346-1, 346-2 and 345) to the outside by means of the tensioning arms. This builds up baling pressure in the rod spaces of these cylinders. The pressure can be read on pressure gauge (912 baling pressure). The baling pressure enters valve block (6) via input (X). The baling pressure is applied at the baling pressure build-up solenoid valve (Y50). When the set baling pressure has been reached, the baling pressure build-up solenoid valve (Y50) opens, making volume flow flow via port (E) into the ram sides of hydraulic cylinders (346-1, 346-2 and 345). The hydraulic accumulator (513) compensates the volumetric difference.
Open tailgate	Volume flow flows into valve block 6 (port P) via port (801-2 A), filter (102-1) and the rotor clutch / 2nd belt drive shut-off tap (627). The volume flow flows via the open shut-off taps (626C and 626D) into the ram spaces of hydraulic cylinders (318-1 and 318-2), via ports (A and B). During this process, the flow rate is regulated to 50 l/min. by the flow controllers (756 and 755). At the same time, the lubricating oil pump (232) is supplied. Pressurized oil is tapped directly downstream of inlet (P) of valve block (6) which opens the lock-up valve unit non-return valve (734-1). The volume flow displaced from the rod spaces of hydraulic cylinders (318-1 and 318-2) flows through the open lock-up valve unit non-return valve (734-1) and port (T) to the quick release coupling (801-2 B). Downstream of the rotor clutch / 2nd belt drive shut-off tap (627), pressurized oil flows to the rotor cut-out clutch (338) and to the drive clutch (370) for roller 3. The clutches open so that the rotor and the drive of roller 3 are switched off while the tailgate is opened.

Relieving the belts during maintenance work in the baling chamber

- Switch on control box (baler CCT) so the baling pressure build-up solenoid valve (Y50) is energized.
- Disengage the p.t.o. shaft.
- Open the tailgate as far as necessary and secure it.
- Actuate the baling chamber service shut-off valve (626):

The shut-off taps (626 C) and (626 D) of the tailgate are now shut off and the shut-off tap (626 E) is open.
Oil flows into valve block 6 (port P) via port (801-2 A), filter (102-1) and the rotor clutch / 2nd belt drive shut-off tap (627).
Volume flow continues to flow via filter (102-2), non-return valve (731-4) and port (E) into the ram spaces of hydraulic cylinders (346-1, 346-2 and 345) through the open shut-off tap (626 E).
The cylinders extend and the belts are relieved.
The volume flow displaced from the rod spaces of hydraulic cylinders (346-1, 346-2 and 345) flows to the baling pressure build-up solenoid valve (Y50) via port (X). This valve is electronically regulated to 0 bar when the tailgate is open and oil may therefore flow freely through it.
The rod spaces and the ram spaces of the belt tensioner cylinders (346-1, 346-2 and 345) are now connected with each other.
There is the same pressure in both cylinder spaces, but since the greater force is generated on the ram surface (greater by the force of the rod surface), the cylinders extend and relieve the belts.

Tensioning the belts

The baling chamber service shut-off valve still is in the "Tailgate blocked" position; now the double-acting control unit provided on the tractor is set to the "Lower" position
The hydraulic cylinders (346-1, 346-2 and 345) are retracted by springs on the left baler side.
The volume flow displaced from the ram spaces flows via port (E) and uses two different paths, depending on the pressure:

- when the pressure is above 10 bar, it flows into the tank via the pressure relief valve (754), the flow controllers (756 and 755), port (P) and port (801-2 A).
- when the pressure is below 10 bar, the non-return valves (722-1, 722-2 and 722-3) open and provide volumetric compensation so that the tensioning arms can return to their initial position faster.

When maintenance work is finished, the tailgate is closed; during this, the belts must be driven so that they will not be squeezed.

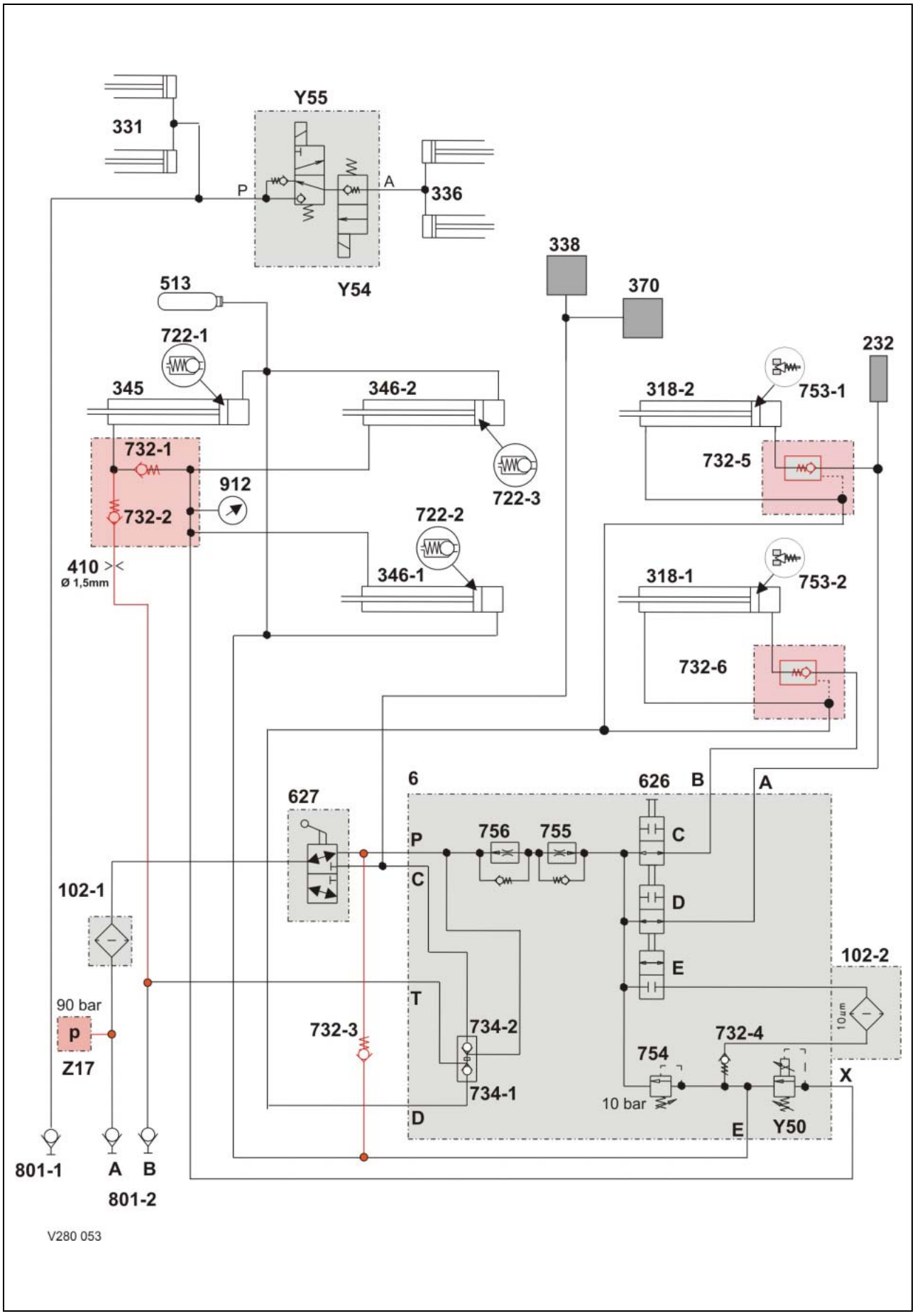
Swinging in the knife support

When actuating the "Swing in knife support" button, the 2/3 way directional control valve (Y55) "ROTOCUT knives IN" is energized.
Volume flow flows into the ROTOCUT knives hydraulic cylinders (336) via port (801-1) and the energized 2/3 way valve.
The ROTOCUT knives hydraulic cylinders (336) extend and swing in the knife support.
The extended ROTOCUT knives hydraulic cylinders (336) are kept in their position by the non-return valve inside the 2/3 directional control valve (Y54).

Swinging out the knife support

The single-acting tractor control unit is set to the "Lower" position – port (801-1) is connected to the tank.
When actuating the "Swing out knife support" button, the 2/3 way directional control valve (Y54) is energized.
The baled material loads the ROTOCUT knives hydraulic cylinders (336), making volume flow flow into the tank from the ram spaces via the energized 2/3 way valve (Y54), the unenergized 2/3 way valve (Y55) and port (801-1).

2.2 Function – with active hydraulic system, with integrated pressure holding valve (754) up to serial no. ...



Description of function:

Closing the tailgate – without active pressure control

Oil enters the valve block (6, port T) via port (801-2 B) and opens the lock-up valve unit non-return valve (734-1).
Via port D, the pressurized oil flows to the non-return valves (732-5 and 732-6) which are unlocked. The pressurized oil flows on into the rod spaces of hydraulic cylinders (318-1 and 318-2). The tailgate is closed.
The oil displaced from the ram spaces of hydraulic cylinders (318-1 and 318-2) flows via the unblocked non-return valves (732-5 and 732-6), the shut-off taps (626 C and 626 D), the flow controllers (755 and 756), the shut-off tap (627) and filter (102-1) into the tank.
The flow controllers (755 und 756) regulate the oil flow to 18 l/min. which reduces the closing time of the tailgate as compared with the opening time.

Closing the tailgate – with active pressure control

1. The pilot-controlled non-return valves (732-5 and 732-6) reliably seal off the tailgate cylinders. This is particularly important when performing service work while the tailgate is open. The tailgate can be closed only by building up pressure in port (801-2 B).

2. Via port (801-2 B), oil also flows into the rod spaces of hydraulic cylinders (345, 346-1 and 346-2) in order to retract the hydraulic cylinders quickly – the belts are tensioned. To this end, the non-return valves (732-1 and 732-2) are opened by the oil flow.
   The oil is applied at port X of the Baling pressure build-up solenoid valve (Y55) which is electronically regulated to 90 bar during the tailgate closing process.
   The oil displaced from the ram spaces of hydraulic cylinders (345, 346-1 and 346-2) is drained via the non-return valve (732-3), the shut-off tap (627) and port A. The pressure relief valve (754) is mechanically blocked = no function.

Baling

Baled material pulls the hydraulic cylinders (346-1, 346-2 and 345) to the outside by means of the tensioning arms. Baling pressure is thus built up in the rod spaces of these cylinders; this pressure can be read at pressure gauge (912).
The baling pressure enters valve block (6) at inlet (X) and is applied to the Baling pressure build-up valve (Y50).
When the set baling pressure has been reached, the Baling pressure build-up solenoid valve (Y50) opens, making oil flow via port (E) into the ram sides of hydraulic cylinders (346-1, 346-2 and 345).
The hydraulic accumulator (513) compensates the volumetric difference between the cylinder sides.

Opening the tailgate – without active pressure control

Oil flows into valve block 6 (port P) via port (801-2 A), filter (102-1) and the rotor clutch / 2nd belt drive shut-off tap (627).
Oil flows via the open shut-off taps (626C and 626D) into the ram spaces of hydraulic cylinders (318-1 and 318-2), via ports (A and B) and the non-return valves (732-5 and 732-6).
During this process, the flow rate is regulated to 50 l/min. by the flow controllers (756 and 755).
At the same time, the lubricating oil pump (232) is supplied. Pressurized oil is tapped directly downstream of inlet (P) of valve block (6) which opens the lock-up valve unit non-return valve (734-1) via a ram.
The oil displaced from the rod spaces of hydraulic cylinders (318-1 and 318-2) flows through the open lock-up valve unit non-return valve (734-1) and port (T) to the quick release coupling (801-2 B).
Downstream of the rotor clutch / 2nd belt drive shut-off tap (627), pressurized oil flows to the rotor cut-out clutch (338) and to the drive clutch (370) for roller 3.
The clutches open so that the rotor and the drive of roller 3 are switched off while the tailgate is opened.

Opening the tailgate – with active pressure control

As early as when opening the tailgate, the pressure rises to above 90 bar. The pressure switch (Z17) opens. With this signal, the module regulates the Baling pressure build-up solenoid valve (Y50) to 0 bar. Now the rod spaces of hydraulic cylinders (345, 346-1 and 346-2) are pressureless and the belts are relieved – opening the tailgate is accelerated.

Relieving the belts (for maintenance work in the baling chamber)

1. Switch on control box (baler CCT) so the Baling pressure build-up solenoid valve (Y50) is energized.

2. Disengage the p.t.o. shaft.

3. Open the tailgate as far as necessary and secure it.

4. Actuate the shut-off valve (626):

   The shut-off taps (626 C) and (626 D) of the tailgate are now blocked and shut-off tap (626 E) is open.
   Oil flows into valve block 6 (port P) via port (801-2 A), filter (102-1) and shut-off tap (627).
   Oil continues to flow via filter (102-2), non-return valve (732-4) and port (E) into the ram spaces of hydraulic cylinders (346-1, 346-2 and 345) through the open shut-off tap (626 E). The cylinders extend and the belts are relieved.
   The oil displaced from the rod spaces of hydraulic cylinders (346-1, 346-2 and 345) flows to the Baling pressure build-up solenoid valve (Y50) via port (X). This valve is electronically regulated to 0 bar when the tailgate is open and oil may therefore flow freely through it.
   The rod spaces and the ram spaces of the belt tensioner cylinders (346-1, 346-2 and 345) are now connected with each other.
   There is the same pressure in both cylinder spaces, but since the greater force is generated on the ram surface, the cylinders extend and relieve the belts.

Tensioning the belts

The baling chamber service shut-off valve still is in the "Tailgate blocked" position; now the double-acting control unit provided on the tractor is set to the "Lower" position.
The hydraulic cylinders (346-1, 346-2 and 345) are retracted by springs on the left baler side.
When maintenance work is complete, the tailgate is closed and the belts must be driven during closing. Otherwise there is a risk of the belts being squeezed.

- with active pressure control

The oil displaced from the ram spaces during this process flows into the tank via non-return valve (732-3), shut-off tap (627) and port (801-2 A).
The pressure relief valve (754) is mechanically blocked = no function.

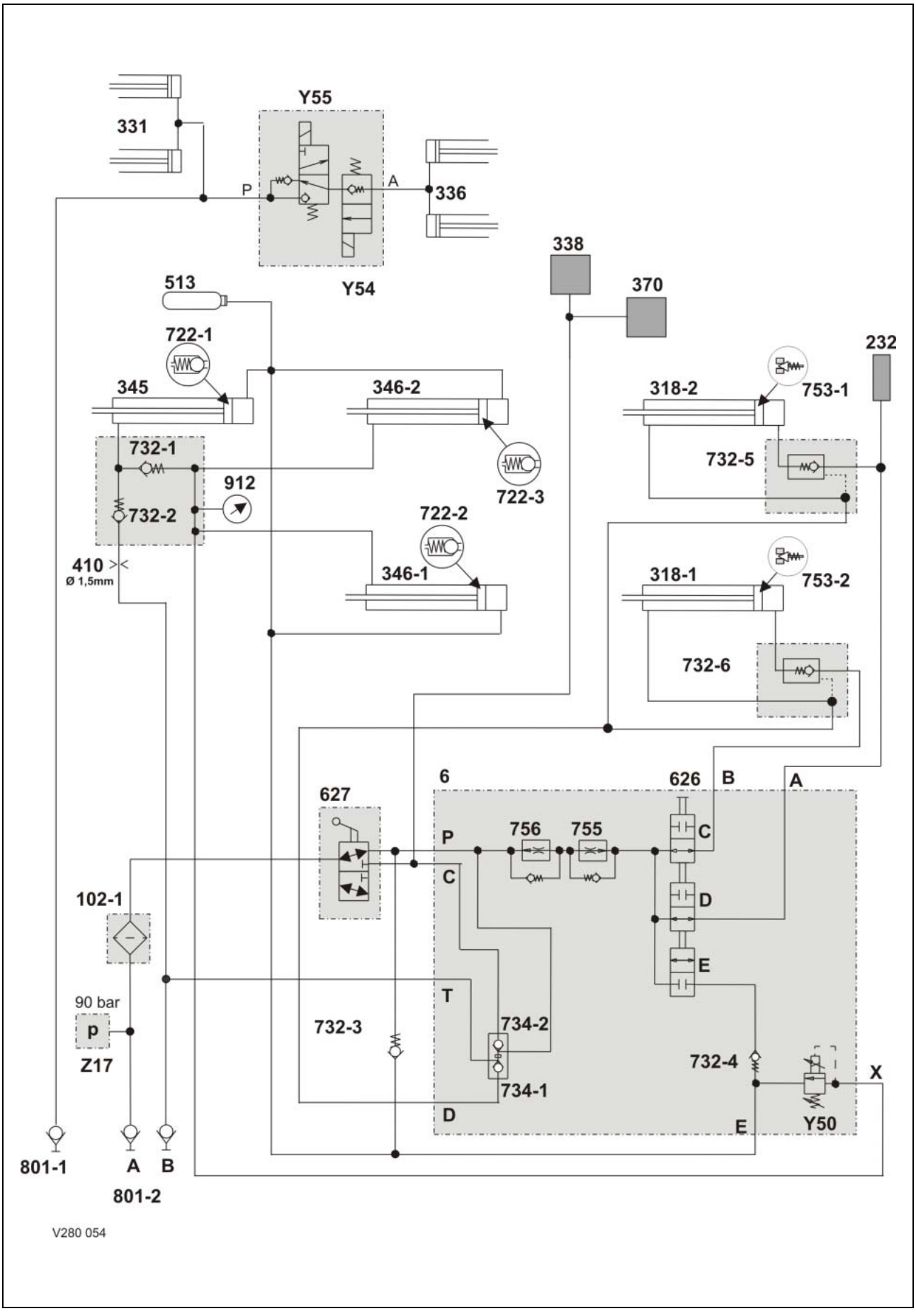
Swinging in the knife support

When actuating the "Swing in knife support" button, the 2/3 way directional control valve (Y55) "ROTOCUT knives IN" is energized.
Oil flows into the ROTOCUT knives hydraulic cylinders (336) via port (801-1) and the energized 2/3 way valve. The ROTOCUT knives hydraulic cylinders (336) extend and swing in the knife support.
The extended ROTOCUT knives hydraulic cylinders (336) are kept in their position by the non-return valve inside the 2/3 directional control valve (Y54).

Swinging out the knife support

The single-acting tractor control unit is set to the "Lower" position – port (801-1) is connected to the tank. When actuating the "Swing out knife support" button, the 2/3 way directional control valve (Y54) is energized.
The baled material loads the ROTOCUT knives hydraulic cylinders (336), making oil flow into the tank from the ram spaces via the energized 2/3 way valve (Y54), the unenergized 2/3 way valve (Y55) and port (801-1).

2.3 Function – with active hydraulic system, without integrated pressure holding valve (754) from serial no.



Description of function:

Closing the tailgate – without active pressure control

Oil enters the valve block (6, port T) via port (801-2 B) and opens the lock-up valve unit non-return valve (734-1).
Via port D, the pressurized oil flows to the non-return valves (732-5 and 732-6) which are unlocked. The pressurized oil flows on into the rod spaces of hydraulic cylinders (318-1 and 318-2). The tailgate is closed.
The oil displaced from the ram spaces of hydraulic cylinders (318-1 and 318-2) flows via the unblocked non-return valves (732-5 and 732-6), the shut-off taps (626 C and 626 D), the flow controllers (755 and 756), the shut-off tap (627) and filter (102-1) into the tank.
The flow controllers (755 and 756) regulate the oil flow to 18 l/min. which reduces the closing time of the tailgate as compared with the opening time.

Closing the tailgate – with active pressure control

1. The pilot-controlled non-return valves (732-5 and 732-6) reliably seal off the tailgate cylinders. This is particularly important when performing service work while the tailgate is open. The tailgate can be closed only by building up pressure in port (801-2 B).

2. Via port (801-2 B), oil also flows into the rod spaces of hydraulic cylinders (345, 346-1 and 346-2) in order to retract the hydraulic cylinders quickly – the belts are tensioned. To this end, the non-return valves (732-1 and 732-2) are opened by the oil flow.
   The oil is applied at port X of the Baling pressure build-up solenoid valve (Y55) which is electronically regulated to 90 bar during the tailgate closing process.
   The oil displaced from the ram spaces of hydraulic cylinders (345, 346-1 and 346-2) is drained via the non-return valve (732-3), the shut-off tap (627) and port A.

Baling

Baled material pulls the hydraulic cylinders (346-1, 346-2 and 345) to the outside by means of the tensioning arms. Baling pressure is thus built up in the rod spaces of these cylinders; this pressure can be read at pressure gauge (912).
The baling pressure enters valve block (6) at inlet (X) and is applied to the Baling pressure build-up valve (Y50).
When the set baling pressure has been reached, the baling pressure build-up solenoid valve (Y50) opens, making oil flow via port (E) into the ram sides of hydraulic cylinders (346-1, 346-2 and 345).
The hydraulic accumulator (513) compensates the volumetric difference between the cylinder sides.

Opening the tailgate – without active pressure control

Oil flows into valve block 6 (port P) via port (801-2 A), filter (102-1) and the rotor clutch / 2nd belt drive shut-off tap (627).
Oil flows via the open shut-off taps (626C and 626D) into the ram spaces of hydraulic cylinders (318-1 and 318-2), via ports (A and B) and the non-return valves (732-5 and 732-6).
During this process, the flow rate is regulated to 50 l/min. by the flow controllers (756 and 755).
At the same time, the lubricating oil pump (232) is supplied. Pressurized oil is tapped directly downstream of inlet (P) of valve block (6) which opens the lock-up valve unit non-return valve (734-1) via a ram.
The oil displaced from the rod spaces of hydraulic cylinders (318-1 and 318-2) flows through the open lock-up valve unit non-return valve (734-1) and port (T) to the quick release coupling (801-2 B).
Downstream of the rotor clutch / 2nd belt drive shut-off tap (627), pressurized oil flows to the rotor cut-out clutch (338) and to the drive clutch (370) for roller 3.
The clutches open so that the rotor and the drive of roller 3 are switched off while the tailgate is opened.

Opening the tailgate – with active pressure control

As early as when opening the tailgate, the pressure rises to above 90 bar. The pressure switch (Z17) opens. With this signal, the module regulates the Baling pressure build-up solenoid valve (Y50) to 0 bar. Now the rod spaces of hydraulic cylinders (345, 346-1 and 346-2) are pressureless and the belts are relieved – opening the tailgate is accelerated.

Relieving the belts (for maintenance work in the baling chamber)

1. Switch on control box (baler CCT) so the Baling pressure build-up solenoid valve (Y50) is energized.

2. Disengage the p.t.o. shaft.

3. Open the tailgate as far as necessary and secure it.

4. Actuate the shut-off valve (626):

   The shut-off taps (626 C) and (626 D) of the tailgate are now blocked and shut-off tap (626 E) is open.
   Oil flows into valve block 6 (port P) via port (801-2 A), filter (102-1) and shut-off tap (627).
   Oil continues to flow via filter (102-2), non-return valve (732-4) and port (E) into the ram spaces of hydraulic cylinders (346-1, 346-2 and 345) through the open shut-off tap (626 E). The cylinders extend and the belts are relieved.
   The oil displaced from the rod spaces of hydraulic cylinders (346-1, 346-2 and 345) flows to the Baling pressure build-up solenoid valve (Y50) via port (X). This valve is electronically regulated to 0 bar when the tailgate is open and oil may therefore flow freely through it.
   The rod spaces and the ram spaces of the belt tensioner cylinders (346-1, 346-2 and 345) are now connected with each other.
   There is the same pressure in both cylinder spaces, but since the greater force is generated on the ram surface, the cylinders extend and relieve the belts.

Tensioning the belts

The baling chamber service shut-off valve still is in the "Tailgate blocked" position; now the double-acting control unit provided on the tractor is set to the "Lower" position.
The hydraulic cylinders (346-1, 346-2 and 345) are retracted by springs on the left baler side.
When maintenance work is complete, the tailgate is closed and the belts must be driven during closing. Otherwise there is a risk of the belts being squeezed.

- with active pressure control

The oil displaced from the ram spaces during this process flows into the tank via non-return valve (732-3), shut-off tap (627) and port (801-2 A).
The pressure relief valve (754) is mechanically blocked = no function.

Swinging in the knife support

When actuating the "Swing in knife support" button, the 2/3 way directional control valve (Y55) "ROTOCUT knives IN" is energized.
Oil flows into the ROTOCUT knives hydraulic cylinders (336) via port (801-1) and the energized 2/3 way valve. The ROTOCUT knives hydraulic cylinders (336) extend and swing in the knife support.
The extended ROTOCUT knives hydraulic cylinders (336) are kept in their position by the non-return valve inside the 2/3 directional control valve (Y54).

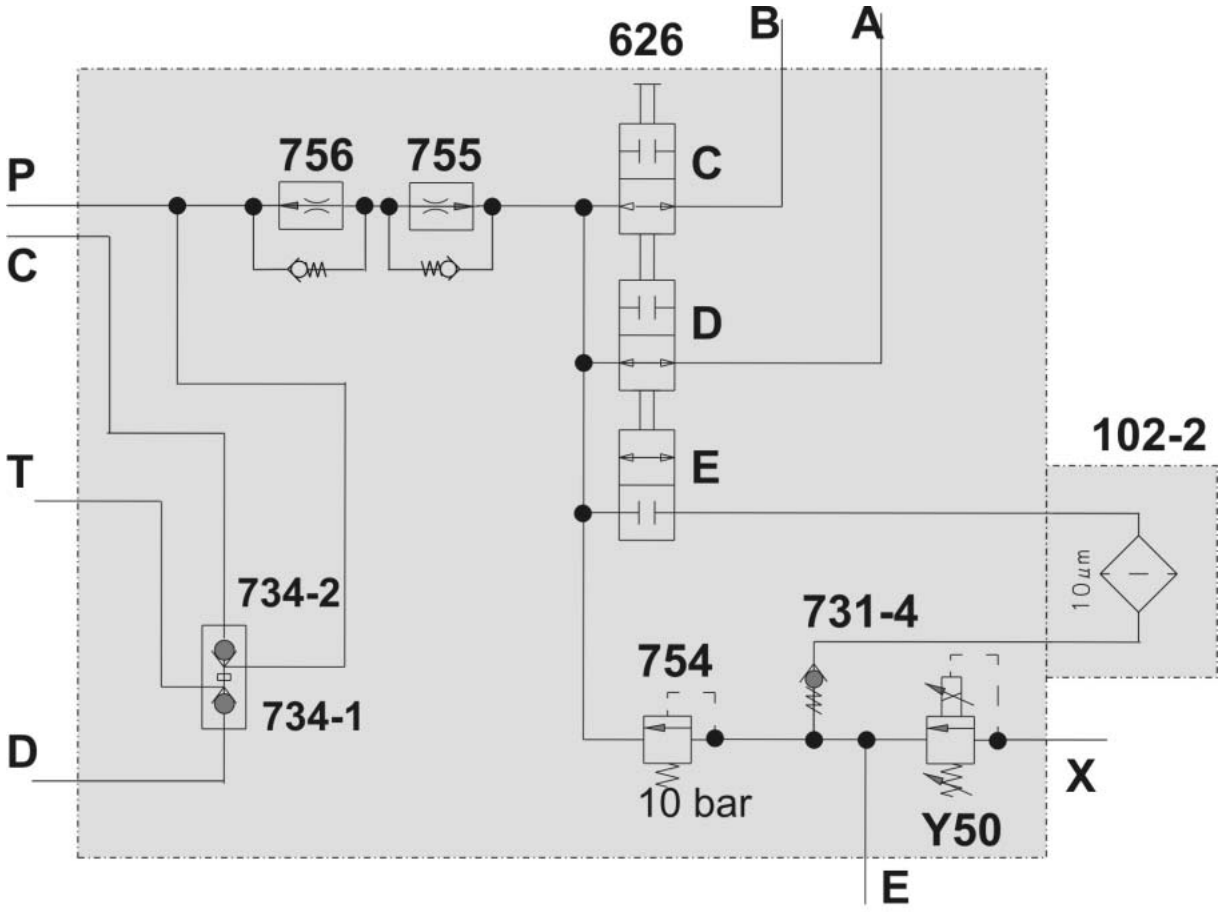
Swinging out the knife support

The single-acting tractor control unit is set to the "Lower" position – port (801-1) is connected to the tank. When actuating the "Swing out knife support" button, the 2/3 way directional control valve (Y54) is energized.
The baled material loads the ROTOCUT knives hydraulic cylinders (336), making oil flow into the tank from the ram spaces via the energized 2/3 way valve (Y54), the unenergized 2/3 way valve (Y55) and port (801-1).

Chapter 3
Valve components

3.1 Main valve block – without active hydraulic system

Hydraulic circuit diagram



V280 035

Key to diagram:

6 Valve block

102-2 Filter (series equipment)

626-C Shut-off tap
for left-side tailgate cylinder Is combined with 626-D and 626-E.

626-D Shut-off tap
for right-side tailgate cylinder. Is combined with 626-C and 626-E.

626-E Shut-off tap
for belt tensioner cylinder. Is combined with 626-B and 626-C.
- blocked when 626-C and 626-D are open.
- open when 626-C and 626-D are blocked.

731-4 Non-return valve

734-1 Lock-up valve unit non-return valve
734-2 shuts off the tailgate hydraulic cylinders (318), the rotor cut-out clutch (338) and the drive clutch (370).

754 Pressure relief valve
maintains the pressure in the tensioning arm circuit at 10 bar.

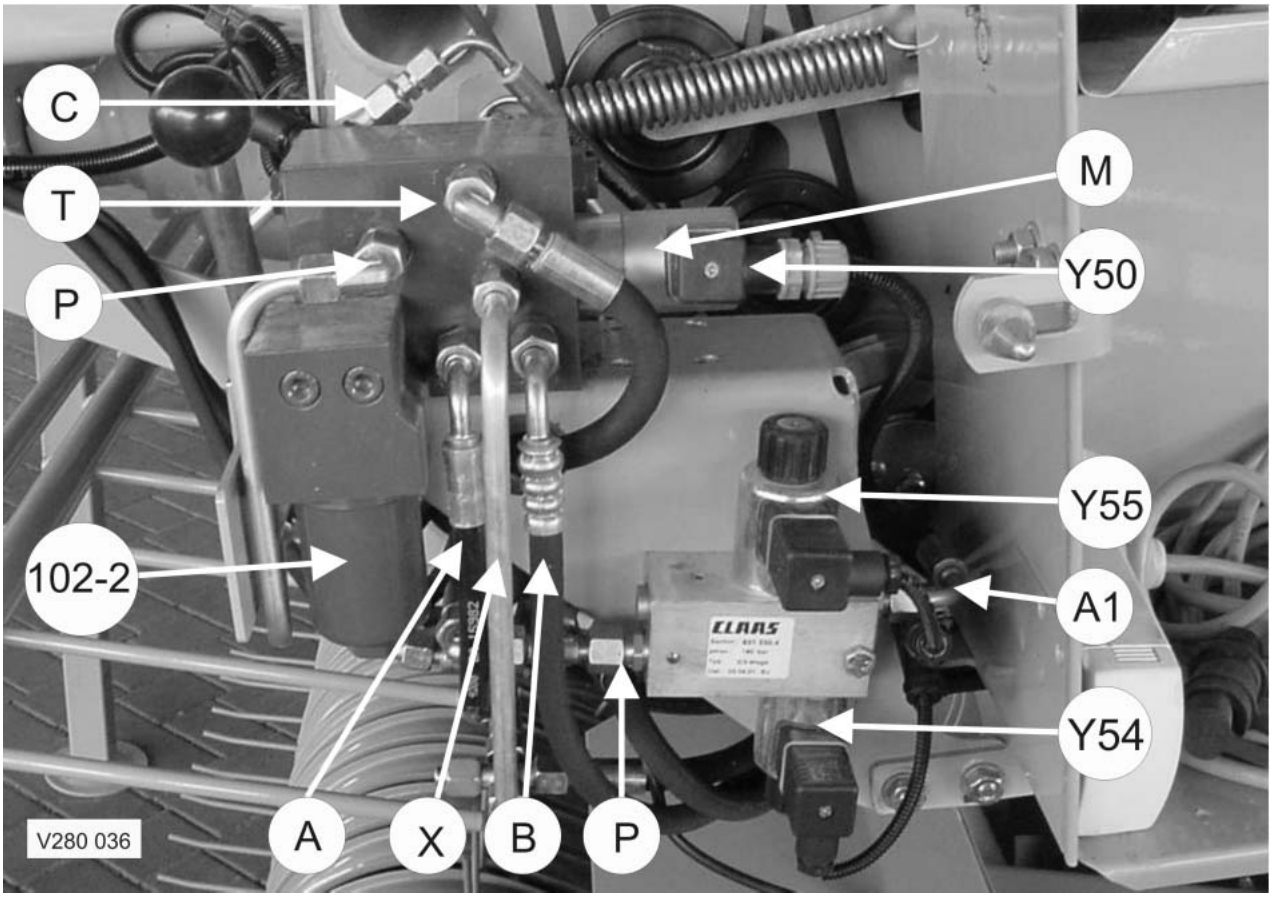
755 Flow controller
controls the volume flow for opening the tailgate to 50 l/min. The non-return valve does actually not exist – here it serves merely for better understanding of the circuit diagram.

756 Flow controller
controls the volume flow for closing the tailgate to 18 l/min. The non-return valve does actually not exist – here it serves merely for better understanding of the circuit diagram.

Y50 Baling pressure build-up solenoid valve
- limits the pressure in the tensioning arm circuit and thus controls the baling pressure.
- is controlled by the electronic box (the desired baling pressure is set by a potentiometer).
- when the power supply fails, the highest baling pressure is reached.

A - X Ports

Ports



Key to diagram:

102-2 Filter (series equipment)

A Port
To the piston top spaces of the tailgate cylinders

A1 Port
To the knife support ON/OFF hydraulic cylinders

B Port
To the piston top space of the tailgate cylinders

C Port
To the rotor cut-out clutch (338) and drive clutch (370)

M Solenoid coil of Baling pressure build-up solenoid valve (Y50)

P Port
Oil supply from tractor

T Port
Tank (return to tractor)

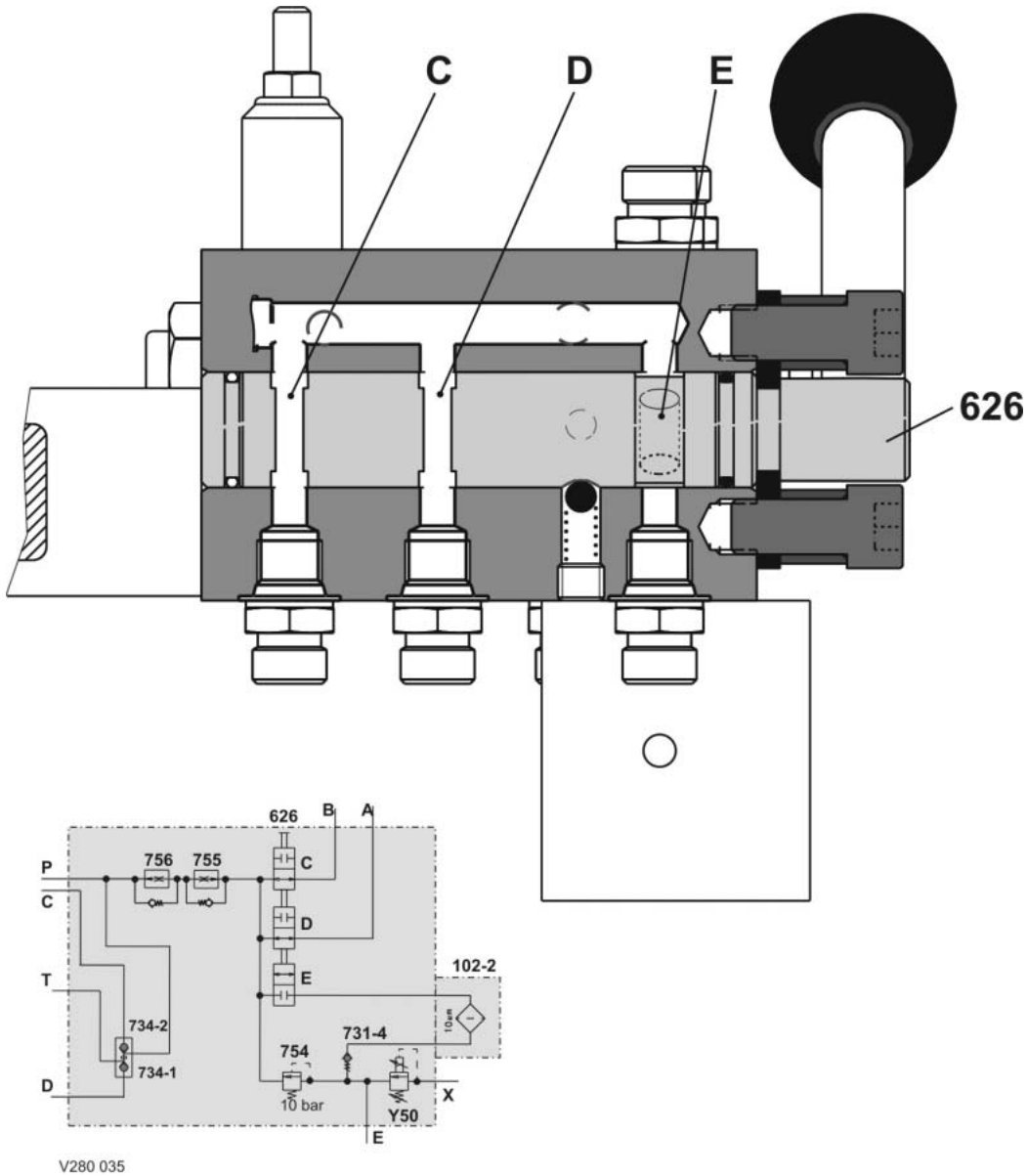
X Port
To the rod spaces of belt tensioner cylinders

Y50 Baling pressure build-up solenoid valve
- limits the pressure in the tensioning arm circuit and thus controls the baling pressure.
- is controlled by the electronic box (the desired baling pressure is set by a potentiometer).
- when the power supply fails, the highest baling pressure is reached.

Y54 ROTOCUT knives OUT solenoid valve

Y55 ROTOCUT knives IN solenoid valve

3.2 Baling chamber service shut-off valve – without active hydraulic system



H4036.1

Key to diagram:

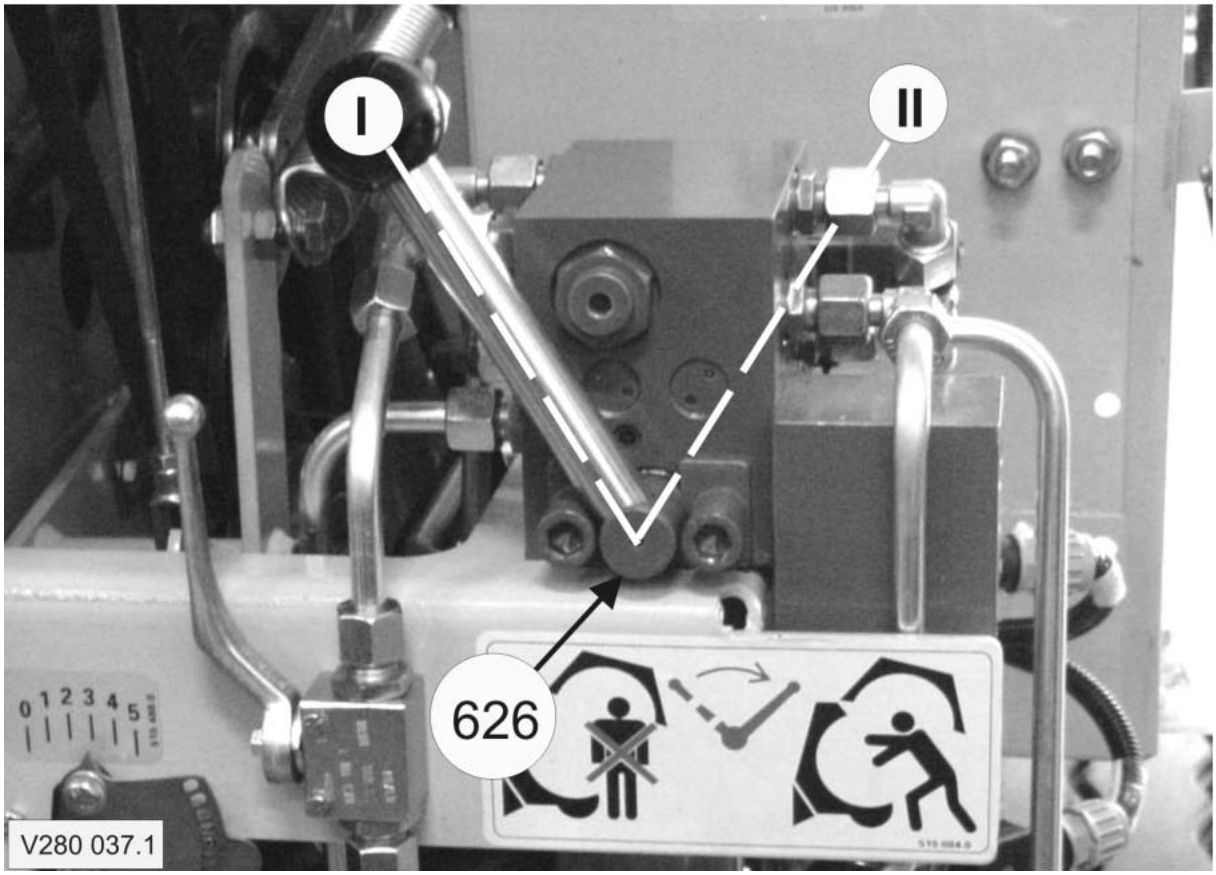
626 Baling chamber service shut-off valve

626-C Left tailgate cylinder shut-off valve
626-D Right tailgate cylinder shut-off valve
626-E Tensioning cylinder shut-off valve

Description of function:

The bale chamber service shut-off valve 626 is a rotary disc valve with the following valve functions:
626 C for the left tailgate cylinder
626 D for the right tailgate cylinder and
626 E for the belt tensioner cylinders

Hand lever position



Key to diagram:

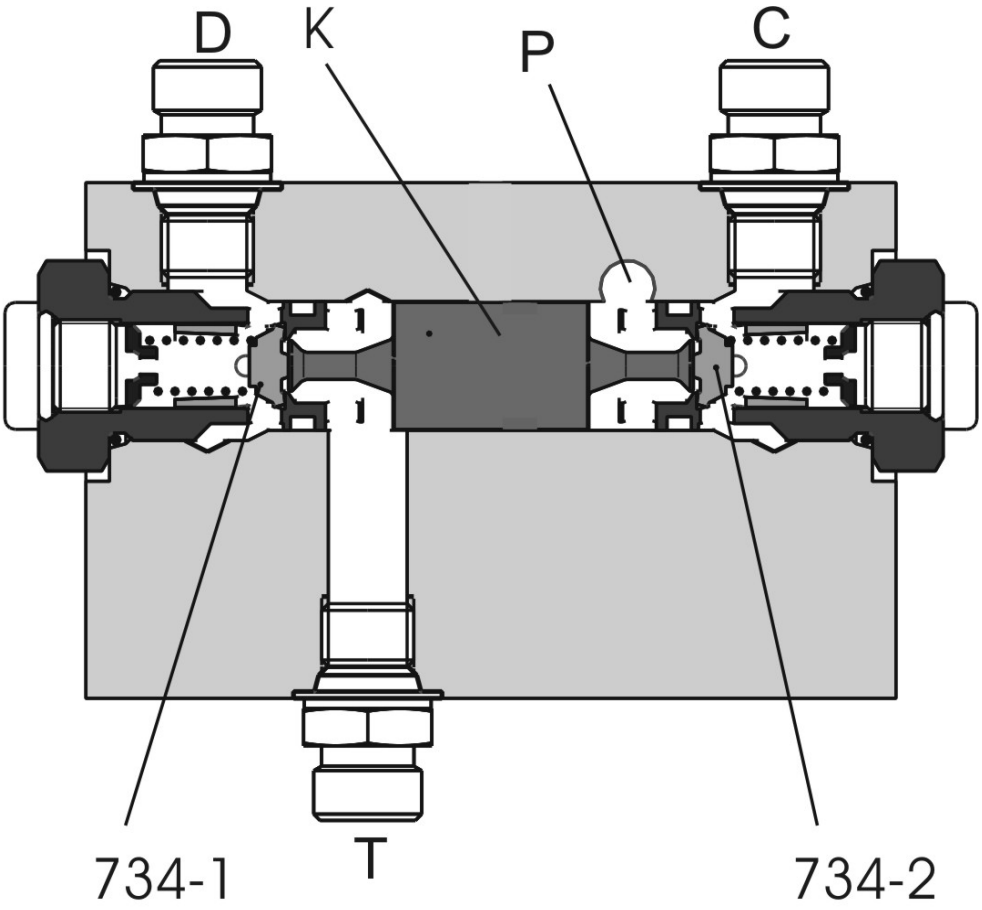
626	Baling chamber service shut-off valve
I, II	Lever positions

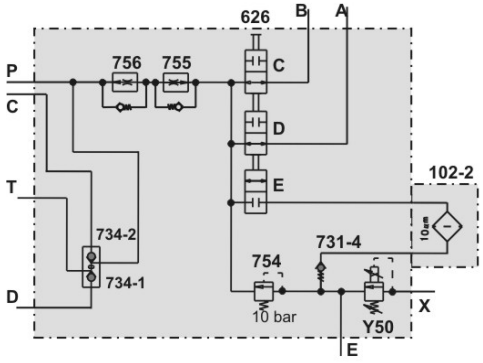
Description of function:

Position I:
The shut-off valves (626 C and 626 D) provide a connection to the tailgate cylinders. The shut-off valve (626 E) has shut off the connection to the tensioning cylinders.

Position II:
The shut-off valves (626 C and 626 D) have shut off the connection to the tailgate cylinders. The shut-off valve (626 E) has opened the connection to the tensioning cylinders.

3.3 Lock-up valve unit (734)





V280 052.1

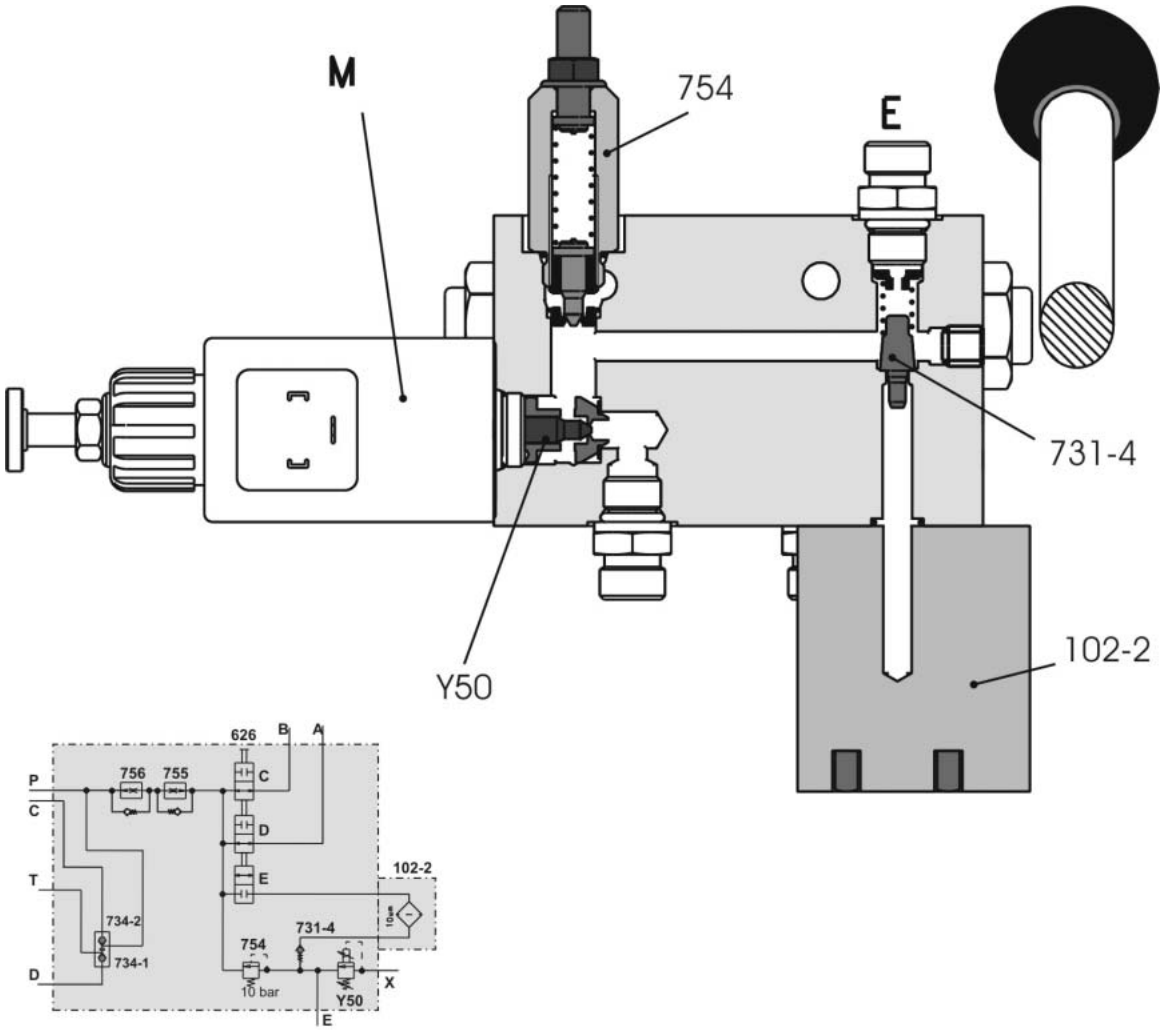
Key to diagram:

734-1	Lock-up valve unit non-return valve
734-2	Lock-up valve unit non-return valve
C	Port
D	Port
K	Piston
P	Port
T	Port

Description of function:

Lock-up valve unit non-return valve (734-1)	Blocks port (D) = to the rod spaces of tailgate cylinders (318-1 and 318-2).
Lock-up valve unit non-return valve (734-2)	Blocks port (C) = to the rotor cut-out clutch (338) and the drive clutch (370).
Port C	Pressurized oil is applied here in case of: - rotor cut-out clutch (338) and drive clutch (370) are to be shut down - tailgate is to be opened
Port D	To the rod spaces of tailgate cylinders (318-1 and 318-2). Pressurized oil when tailgate is to be closed.
Piston K	Is moved to the left by pressure build-up in port (P). This opens the lock-up valve unit non-return valve (734-1).
Port P	Oil supply from tractor. Pressurized oil when tailgate is to be opened.
Port T	To tractor. Pressurized oil when tailgate is to be closed.

3.4 Pressure relief valve (754), Baling pressure build-up solenoid valve (Y50) – without active hydraulic system



H4038.1

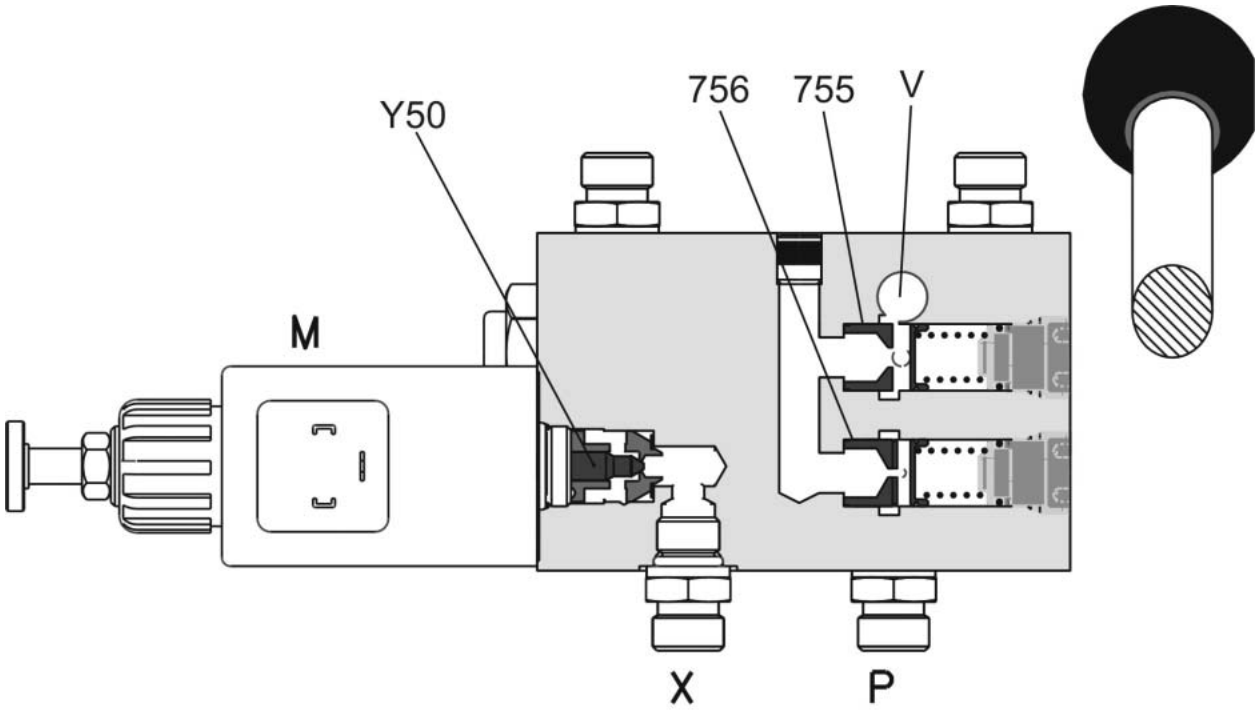
Key to diagram:

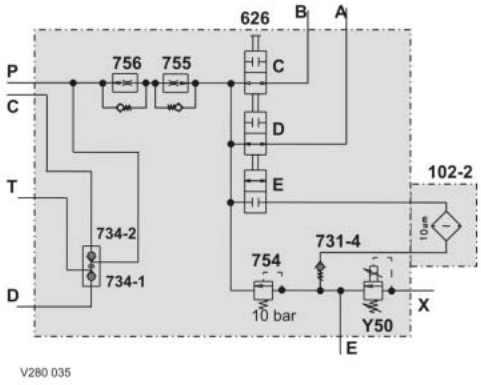
102-2	Filter
731-4	Non-return valve
754	Pressure relief valve
E	Port
M	Solenoid coil
Y50	Baling pressure build-up solenoid valve

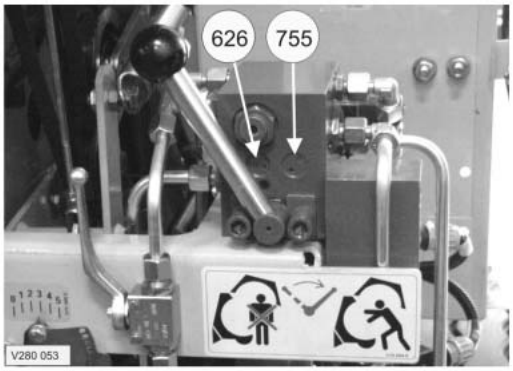
Description of function:

Non-return valve (731-4)	shuts off the pre-pressurizing circuit against the filter circuit.
Pressure relief valve (754)	Maintains the pressure in the tensioning arm circuit at 10 bar.
Port (E)	to the ram spaces of the tensioner cylinders.
Solenoid coil (M)	Solenoid coil of Baling pressure build-up solenoid valve (Y50)
Baling pressure build-up solenoid valve (Y50)	- limits the pressure in the tensioning arm circuit and thus controls the baling pressure. - Is actuated by the electronic box (the desired baling pressure is set with a potentiometer). - When power supply fails, the highest baling pressure is reached.

3.5 Flow controllers (755, 756)







H4039.2

Key to diagram:

755	Flow controller
756	Flow controller
M	
P, X	Port
V	Connection
Y50	Baling pressure build-up solenoid valve

Description of function:

Open tailgate:

- Volume flow enters via port (P) and flows through flow controller (756) from the spring side; flow controller (756) does not control the flow.
- Volume flow flows via the connecting channel to the face end of the flow controller (755).
- The flow controller (755) controls the volume flow to 50 l/min.
- The volume flow flows via port (V) to the rotary disc valve of the shut-off tap and continues into the piston top spaces of the tailgate cylinders.

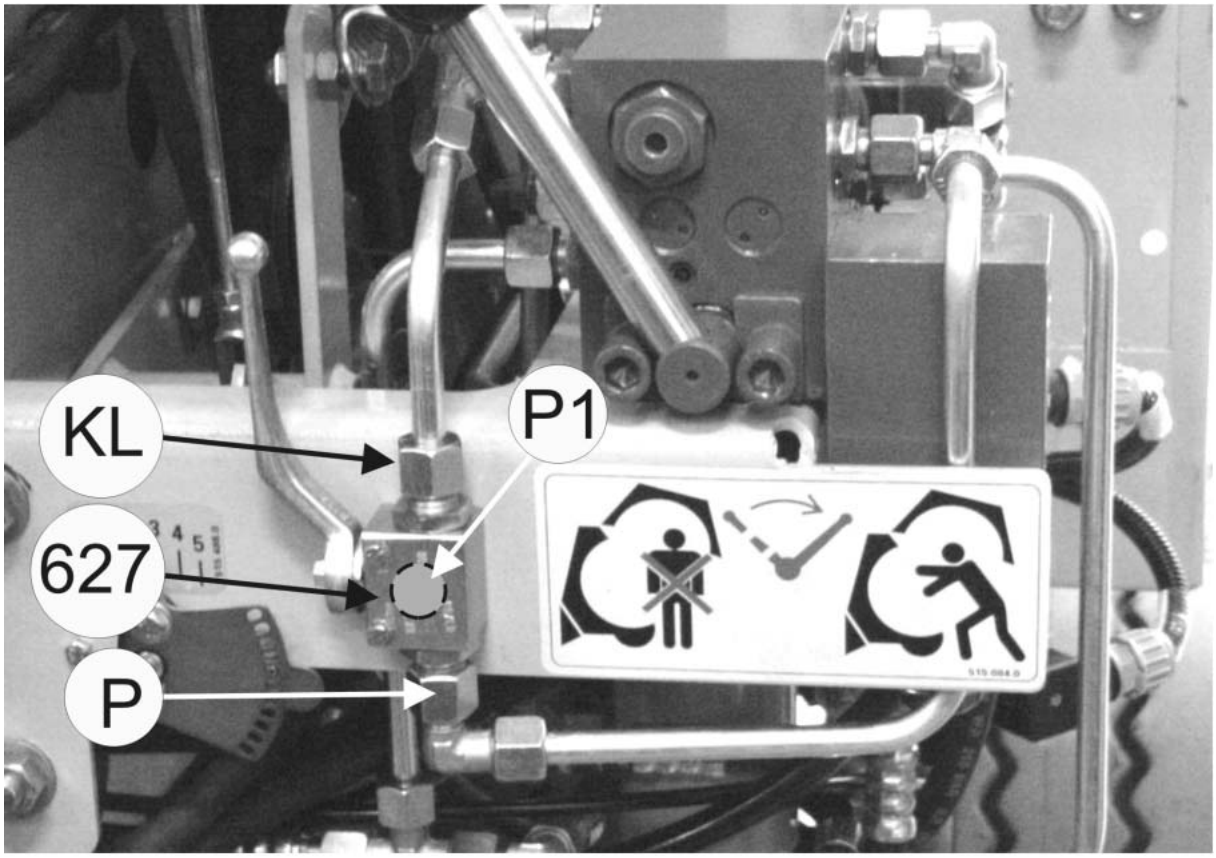
Close tailgate:

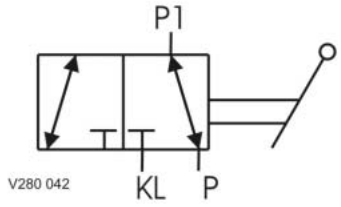
- Volume flow enters via port (V) and flows through flow controller (755) from the spring side; flow controller (755) does not control the flow.
- Volume flow flows via the connecting channel to the face end of the flow controller (756).
- The flow controller (756) controls the volume flow to 18 l/min.
- The volume flow flows to the tractor via port (P).

Baling pressure build-up solenoid valve (Y50)

- limits the pressure in the tensioning arm circuit and thus controls the baling pressure.
- is controlled by the electronic box (the desired baling pressure is set by a potentiometer).
- when the power supply fails, the highest baling pressure is reached.

3.6 Rotor cut-out clutch
Shut-off tap (627)





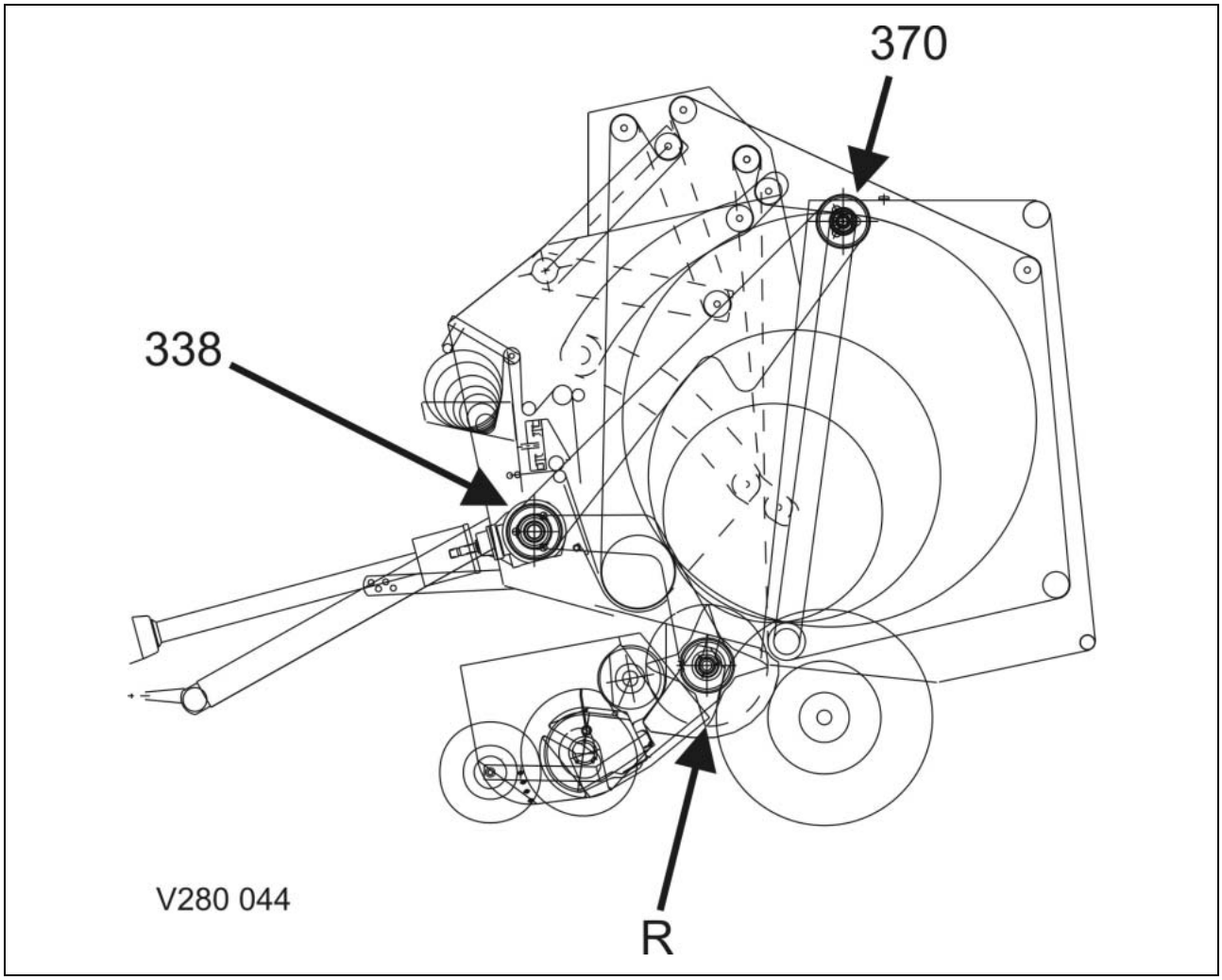
V280 043.1

Key to diagram:

627	Rotor clutch / 2nd belt drive shut-off valve
P, P1	Port
KL	Connection

Description of function:

Port K	Connection to rotor cut-out clutch and drive clutch
Port P	Shut-off tap output = P input into control unit (6)
Port P1	Connection to tractor. This port is located on the back side of the shut-off tap.



Key to diagram:

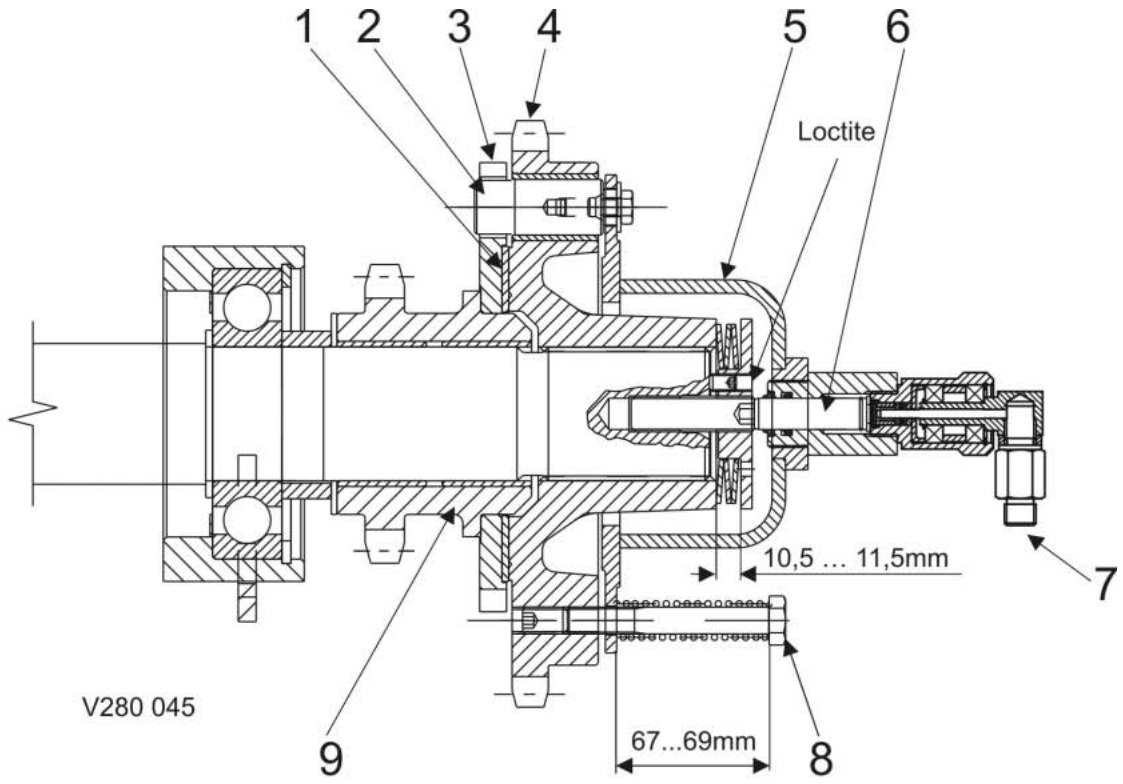
338	Rotor cut-out clutch
370	Roller 3 drive clutch
R	Rotor

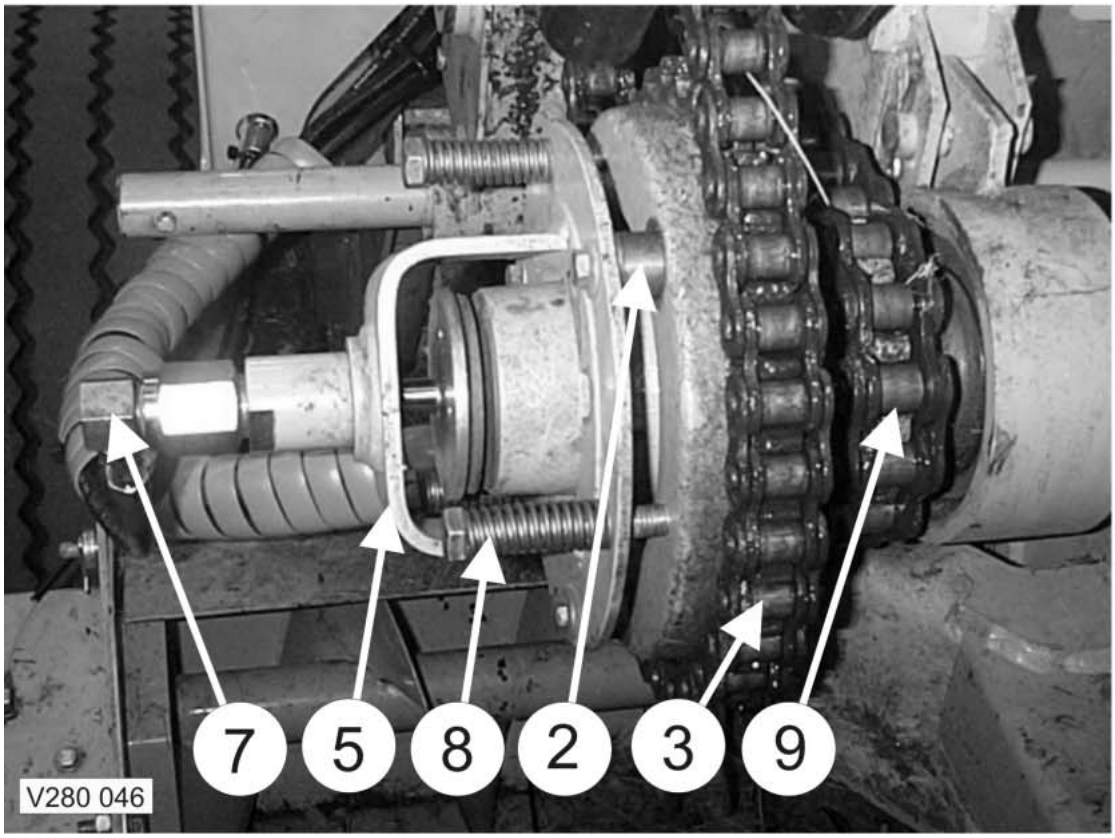
Description of function:

When rotor (R) is blocked, the rotor clutch (338) is shut off separately so that the rotor (R) can be rotated by hand.

Notes:

Design and function





V280 054

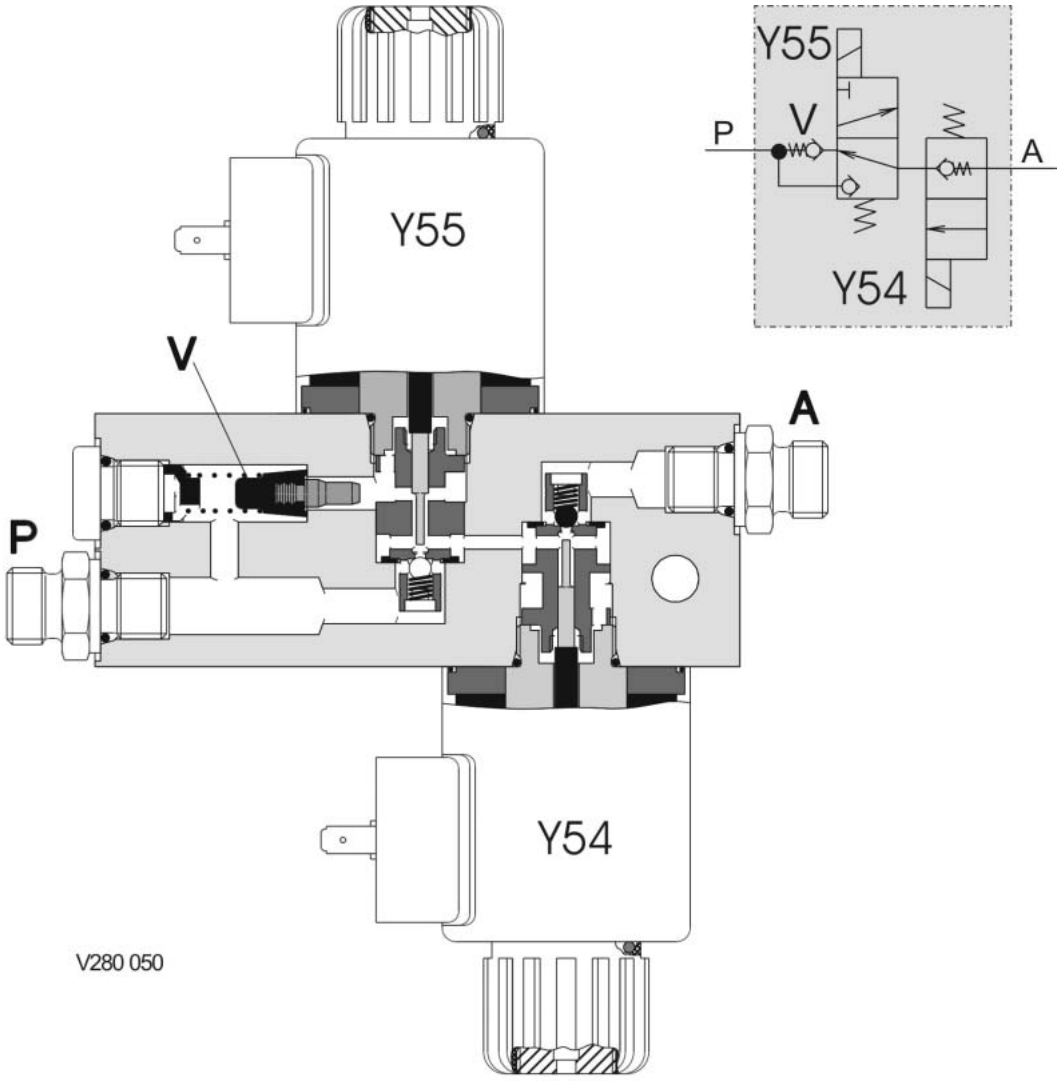
Key to diagram:

1	Friction disc
2	Bolts
3, 4	Sprocket
5	U-plate
6	Bolts
7	Port
8	Pressure spring
9	Sprocket

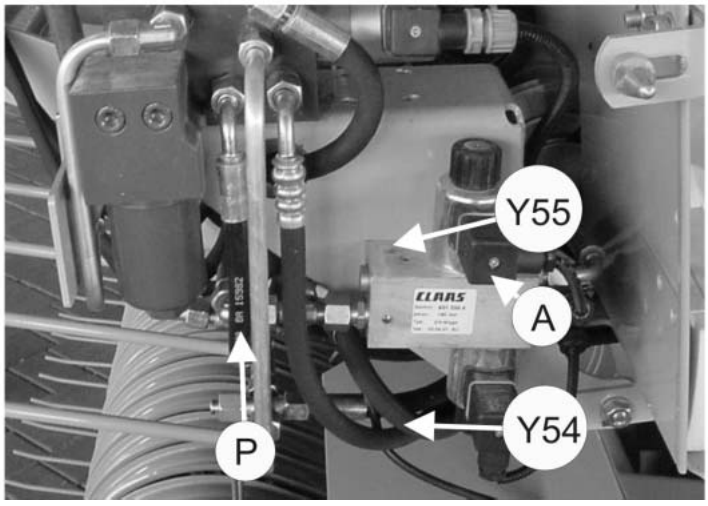
Description of function:

Friction disc (1)	Ensures rotor rotation while clutch is disengaged. This avoids net damage.
Bolts (2)	are bolted to the U-shaped sheet metal (5) and connect the sprockets (3 and 4) when the clutch is closed.
Sprocket (3)	Is welded to sprocket (9).
Sprocket (4)	Bale chamber drive
U-plate (5)	- The bolts (2) are bolted here - Is loaded by the pressure springs (8) so that the bolts (2) remain engaged = clutch engaged.
Bolts (6)	Is bolted to the transmission input shaft.
Port (7)	Hydraulic connection to the shut-off valve and to the rotor cut-out clutch / 2nd belt drive (item 627, see circuit diagram).
Pressure spring (8)	3 pieces distributed around the circumference. They load the U-shaped sheet metal (5).
Sprocket (9)	Pick-up rotor drive
Clutch disengage function	Pressurized oil enters via port (7) and acts on the top side of bolt (6). The U-plate (5) performs a stroke of approx. 12 - 14 mm. As the bolts (2) are bolted to the U-plate, sprocket (4) is disengaged by sprocket (9). Sprocket (9) may be freely rotated on the bearing bushing.
Clutch engage function	No pressurized oil in port (7). The compression springs (8) press on the bolts (6) connecting the two sprockets (4 and 9) with one another via the U-shaped sheet metal (5).

3.7 ROTO CUT knife support IN/OUT solenoid valve (Y54/Y55)



V280 050



V280 055

Key to diagram:

A	ROTO CUT knife support IN/OUT hydraulic cylinder port
P	Tractor port (single-acting control unit)
Y54	ROTO CUT knife support OUT solenoid valve
Y55	ROTO CUT knife support IN solenoid valve

Description of function:

Knife support ON

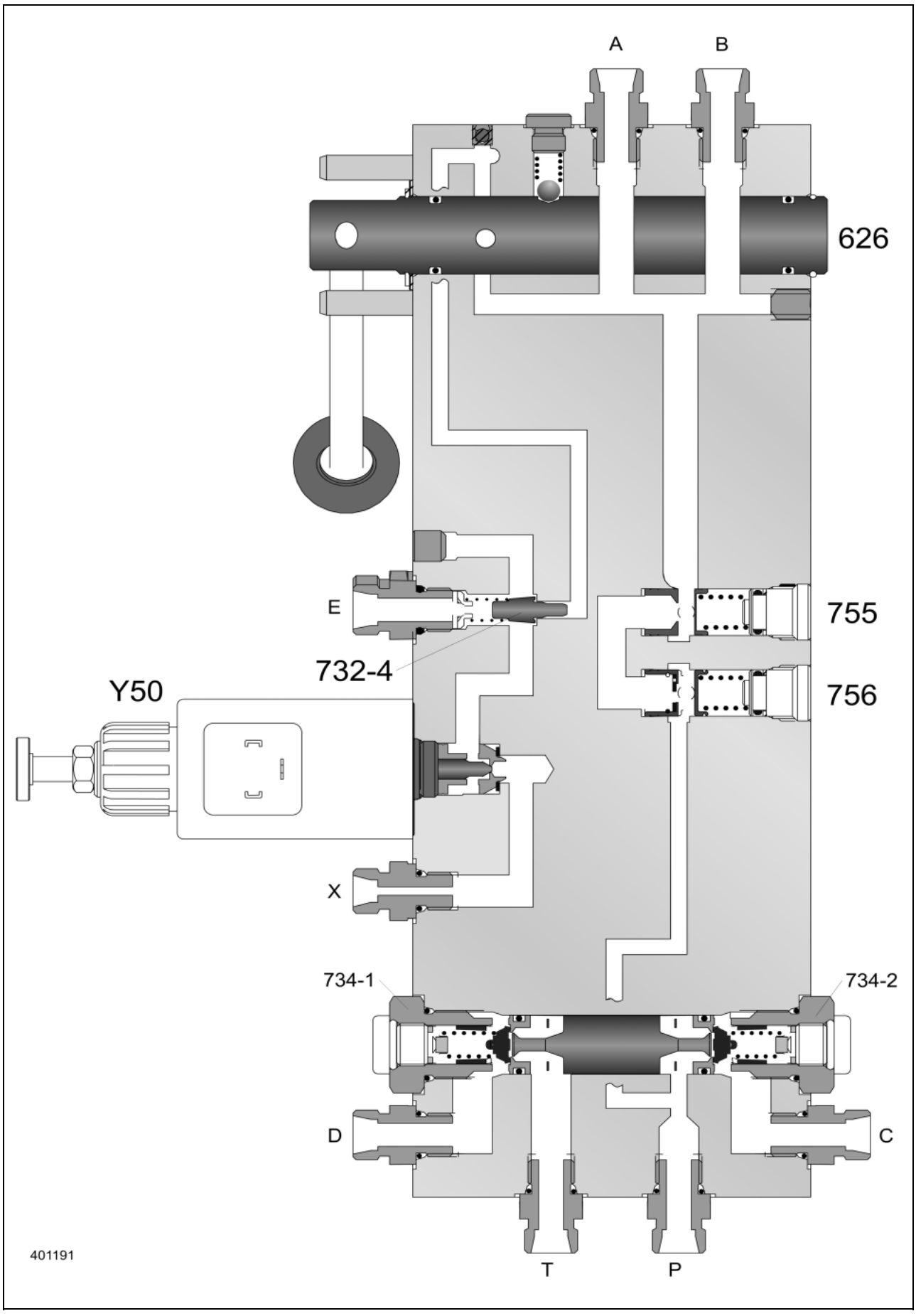
Volume flow from the tractor enters via port (P).
The ROTO CUT knife support IN solenoid valve (Y55) is energized.
The pilot spool of the 2/3-way valve opens the ball so the volume flow flows to the 2/3-way valve (Y54).
The ball of the 2/3-way valve (Y54) is opened by pressure build-up.
The volume flow flows via port (A) to the hydraulic cylinders which swing in the knife support.

Knife support OFF

The tractor control unit is set to floating position.
The solenoid of the 2/3-way valve (Y54) is actuated.
The pilot spool of the 2/3-way valve (Y54) opens the ball. Since the knife support hydraulic cylinders are loaded by the baled material, volume flow flows via port (A) and via the open ball of the 2/3-way valve (Y54) to the 2/3-way valve (Y55). The volume flow flows via the non-return valve (V) to port (P) and further to the tractor (tank).

Note: When disassembling or replacing a valve insert, the sealing ring must always be replaced, too.
Rubber-coated aluminium ring for aluminium valve bodies, copper ring for steel valve bodies.
The rubber-coated aluminium ring cannot be replaced by a copper ring and vice versa.

3.8 Main valve block – with active hydraulic system



Key to diagram:

626	Shut-off tap
732-4	Non-return valve
734-1	Lock-up valve unit (non-return valve)
734-2	Lock-up valve unit (non-return valve)
755	Flow controller
756	Flow controller
Y50	Baling pressure solenoid valve
A	Consumer port
B	Consumer port
P	Pump port
T	Tank port

Description of function:

Closing the tailgate – without active pressure control

Oil enters the valve block (6, port T) via port (801-2 B) and opens the lock-up valve unit non-return valve (734-1).
Via port D, the pressurized oil flows to the non-return valves (732-5 and 732-6) which are unlocked. The pressurized oil flows on into the rod spaces of hydraulic cylinders (318-1 and 318-2). The tailgate is closed.
The oil displaced from the ram spaces of hydraulic cylinders (318-1 and 318-2) flows via the unblocked non-return valves (732-5 and 732-6), the shut-off taps (626 C and 626 D), the flow controllers (755 and 756), the shut-off tap (627) and filter (102-1) into the tank.
The flow controllers (755 and 756) regulate the oil flow to 18 l/min. which reduces the closing time of the tailgate as compared with the opening time.

Closing the tailgate – with active pressure control

1. The pilot-controlled non-return valves (732-5 and 732-6) reliably seal off the tailgate cylinders. This is particularly important when performing service work while the tailgate is open. The tailgate can be closed only by building up pressure in port (801-2 B).

2. Via port (801-2 B), oil also flows into the rod spaces of hydraulic cylinders (345, 346-1 and 346-2) in order to retract the hydraulic cylinders quickly – the belts are tensioned. To this end, the non-return valves (732-1 and 732-2) are opened by the oil flow.
   The oil is applied at port X of the Baling pressure build-up solenoid valve (Y55) which is electronically regulated to 90 bar during the tailgate closing process.
   The oil displaced from the ram spaces of hydraulic cylinders (345, 346-1 and 346-2) is drained via the non-return valve (732-3), the shut-off tap (627) and port A.

Baling

Baled material pulls the hydraulic cylinders (346-1, 346-2 and 345) to the outside by means of the tensioning arms. Baling pressure is thus built up in the rod spaces of these cylinders; this pressure can be read at pressure gauge (912).
The baling pressure enters valve block (6) at inlet (X) and is applied to the Baling pressure build-up valve (Y50).
When the set baling pressure has been reached, the Baling pressure build-up solenoid valve (Y50) opens, making oil flow via port (E) into the ram sides of hydraulic cylinders (346-1, 346-2 and 345).
The hydraulic accumulator (513) compensates the volumetric difference between the cylinder sides.

Opening the tailgate – without active pressure control

Oil flows into valve block 6 (port P) via port (801-2 A), filter (102-1) and the rotor clutch / 2nd belt drive shut-off tap (627).
Oil flows via the open shut-off taps (626C and 626D) into the ram spaces of hydraulic cylinders (318-1 and 318-2), via ports (A and B) and the non-return valves (732-5 and 732-6).
During this process, the flow rate is regulated to 50 l/min. by the flow controllers (756 and 755).
At the same time, the lubricating oil pump (232) is supplied. Pressurized oil is tapped directly downstream of inlet (P) of valve block (6) which opens the lock-up valve unit non-return valve (734-1) via a ram.
The oil displaced from the rod spaces of hydraulic cylinders (318-1 and 318-2) flows through the open lock-up valve unit non-return valve (734-1) and port (T) to the quick release coupling (801-2 B).
Downstream of the rotor clutch / 2nd belt drive shut-off tap (627), pressurized oil flows to the rotor cut-out clutch (338) and to the drive clutch (370) for roller 3.
The clutches open so that the rotor and the drive of roller 3 are switched off while the tailgate is opened.

Opening the tailgate – with active pressure control

As early as when opening the tailgate, the pressure rises to above 90 bar. The pressure switch (Z17) opens. With this signal, the module regulates the Baling pressure build-up solenoid valve (Y50) to 0 bar. Now the rod spaces of hydraulic cylinders (345, 346-1 and 346-2) are pressureless and the belts are relieved – opening the tailgate is accelerated.

Relieving the belts (for maintenance work in the baling chamber)

1. Switch on control box (baler CCT) so the Baling pressure build-up solenoid valve (Y50) is energized.

2. Disengage the p.t.o. shaft.

3. Open the tailgate as far as necessary and secure it.

4. Actuate the shut-off valve (626):

   The shut-off taps (626 C) and (626 D) of the tailgate are now blocked and shut-off tap (626 E) is open.
   Oil flows into valve block 6 (port P) via port (801-2 A), filter (102-1) and shut-off tap (627).
   Oil continues to flow via filter (102-2), non-return valve (732-4) and port (E) into the ram spaces of hydraulic cylinders (346-1, 346-2 and 345) through the open shut-off tap (626 E). The cylinders extend and the belts are relieved.
   The oil displaced from the rod spaces of hydraulic cylinders (346-1, 346-2 and 345) flows to the Baling pressure build-up solenoid valve (Y50) via port (X). This valve is electronically regulated to 0 bar when the tailgate is open and oil may therefore flow freely through it.
   The rod spaces and the ram spaces of the belt tensioner cylinders (346-1, 346-2 and 345) are now connected with each other.
   There is the same pressure in both cylinder spaces, but since the greater force is generated on the ram surface, the cylinders extend and relieve the belts.

Tensioning the belts

The baling chamber service shut-off valve still is in the "Tailgate blocked" position; now the double-acting control unit provided on the tractor is set to the "Lower" position.
The hydraulic cylinders (346-1, 346-2 and 345) are retracted by springs on the left baler side.
When maintenance work is complete, the tailgate is closed and the belts must be driven during closing. Otherwise there is a risk of the belts being squeezed.

- with active pressure control

The oil displaced from the ram spaces during this process flows into the tank via non-return valve (732-3), shut-off tap (627) and port (801-2 A).
The pressure relief valve (754) is mechanically blocked = no function.

Swinging in the knife support

When actuating the "Swing in knife support" button, the 2/3 way directional control valve (Y55) "ROTOCUT knives IN" is energized.
Oil flows into the ROTOCUT knives hydraulic cylinders (336) via port (801-1) and the energized 2/3 way valve. The ROTOCUT knives hydraulic cylinders (336) extend and swing in the knife support.
The extended ROTOCUT knives hydraulic cylinders (336) are kept in their position by the non-return valve inside the 2/3 directional control valve (Y54).

Swinging out the knife support

The single-acting tractor control unit is set to the "Lower" position – port (801-1) is connected to the tank. When actuating the "Swing out knife support" button, the 2/3 way directional control valve (Y54) is energized.
The baled material loads the ROTOCUT knives hydraulic cylinders (336), making oil flow into the tank from the ram spaces via the energized 2/3 way valve (Y54), the unenergized 2/3 way valve (Y55) and port (801-1).

Index

Index:

At CLAAS KGaA mbH we are constantly improving our products to reflect the latest technological developments. For this reason, we may from time to time need to make changes to diagrams and descriptions in this documentation which do not reflect products which have already been delivered and which will not be implemented on these machines.

Technical data, dimensions and weights are given as an indication only. Responsibility for errors or omissions not accepted.

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Germany

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