

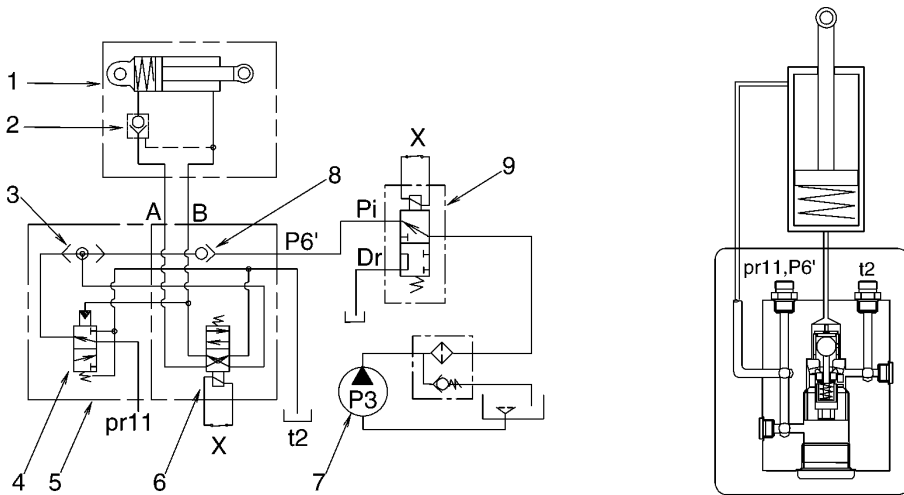
Document Title: Quickfit system operation	Function Group: 940	Information Type: Service Information	Date: 2014/4/12
Profile:			

Quickfit system operation

Solenoid valve : OFF

In case of the solenoid valve (6) is turned OFF,

- The hydraulic oil from the servo pump (7) flows
Pi of safety solenoid valve (9) → P6' of quickfit valve (5) → check valve (8) → shuttle valve (3) → solenoid valve (6) → port A of quickfit valve (5) → check valve (2) → piston side of quickfit cylinder (1)
- The hydraulic oil from the piston rod side flows
Port B of solenoid valve (6) → solenoid valve (6) → hydraulic oil tank (t2)



S05411B

Figure 1

Quickfit system, solenoid valve : OFF

X. ON

Solenoid valve : ON

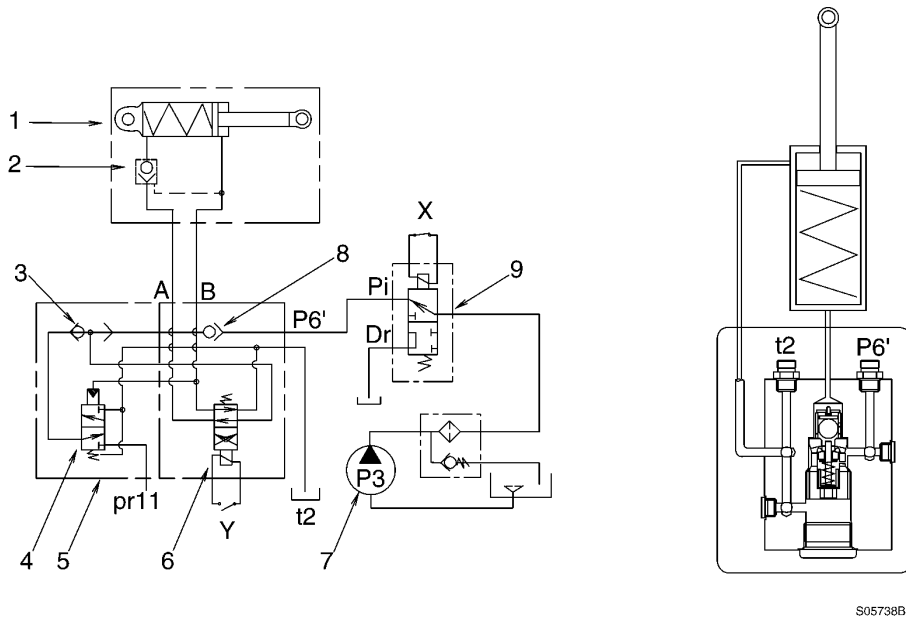


Figure 2
Quickfit system, solenoid valve : ON

X. ON	Y. OFF
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In case of the solenoid valve (6) is turned ON,

- The hydraulic oil from the servo pump (7) flows
 1. Pi of safety solenoid valve (9) → P6' of quickfit valve (5) → check valve (8) → shuttle valve (3) → solenoid valve (6) → press down the servo valve (4)
 2. Quickfit valve (B) → open the check valve (2) → rod side of the quickfit cylinder (1)
- The oil of the piston side of the quickfit cylinder flows
 Check valve (2) → port A of quickfit valve (5) → solenoid valve (6) → hydraulic oil tank (t2)
- The oil from the main pump flows (as the servo valve (4) was moved downward):
 Port pr11 of quickfit valve (5) → servo valve (4) → shuttle valve (3) → solenoid valve (6) → port B of quickfit valve (5) → rod side of quickfit cylinder (1)

Document Title: Tool attachment, adjustment	Function Group: 940	Information Type: Service Information	Date: 2014/4/12
Profile:			

Tool attachment, adjustment

Remove any shims between the screw holder and mating plates.

Hook the bucket on and lock it in accordance with the instructions for installing a bucket or tool.

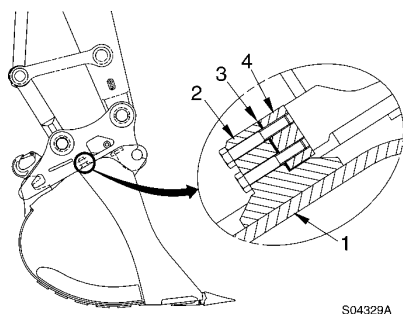


Figure 1

Tool attachment, adjustment

1. Bucket/tool
2. Screw holder
3. Spacer
4. Tool attachment

Check the lock wedge position and the way the attachment butts up against the mating plates. Then calculate any adjustment to the plate shims follows;

Put in thicker shims if the locking wedge goes too far into the hook.

Put in thinner shims if the locking wedge does not go far enough into the hook.

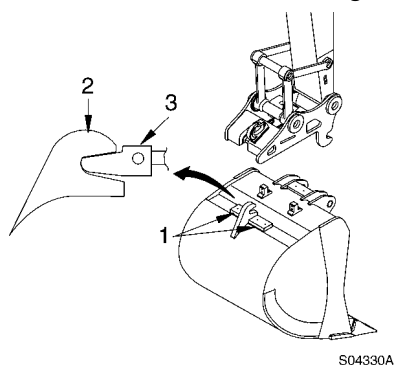


Figure 2

Adjustment using shims

1. Shims
2. Bucket hook
3. Lock wedge

Remove the bucket or tool in accordance with the instructions for removing a bucket or tool.

Fit the requisite number of shims beneath the mating plates, then re-install the bucket or tool.

Check that the locking wedge position is in accordance with the specified tolerances.

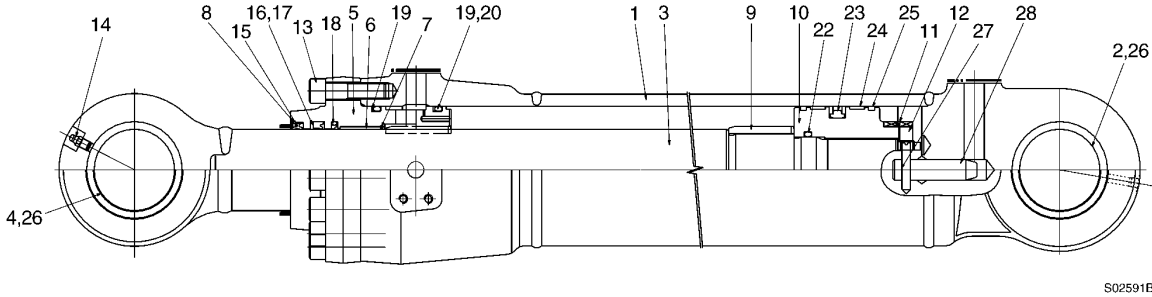
Measure or offer up and install the requisite number of shims between the screw holder and the mating plates. Tension the mating plates with the requisite number of fastening screws.



All mating plates and adjustment screws must be adjusted to give a good fit.

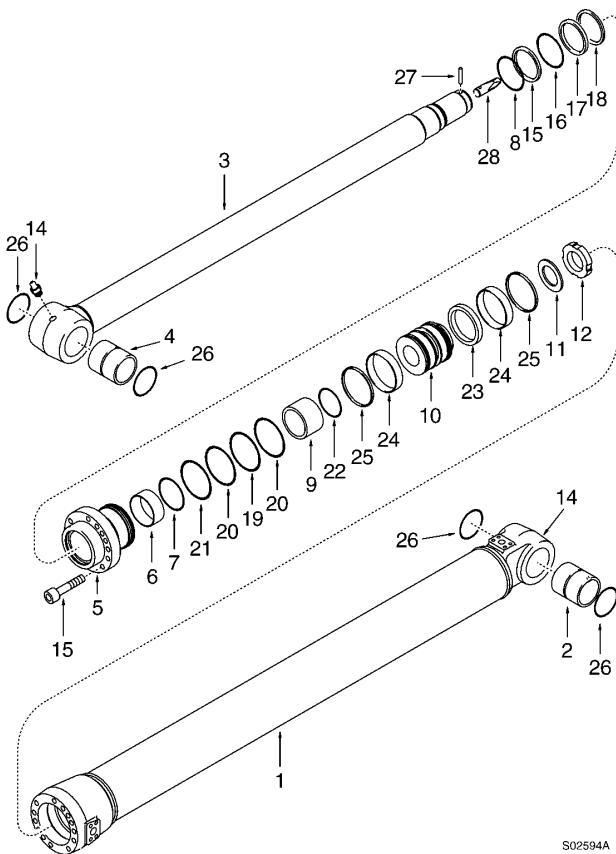
Document Title: Cylinder, description	Function Group: 970	Information Type: Service Information	Date: 2014/4/12
Profile:			

Cylinder, description



S02591B

Figure 1
Cylinder (With both cushion, sectional view)



S02594A

Figure 2
Cylinder (exploded view)

1 Tube	8 Retaining ring	15 Dust seal	22 O-ring
2 Bushing	9 Cushion ring	16 Back-up ring	23 Piston packing
3 Rod	10 Piston	17 Rod packing	24 Wear ring

4	Bushing	11	Lock washer	18	Buffer ring	25	Contami seal
5	Gland	12	Lock nut	19	Back-up ring	26	Dust seal
6	Bearing	13	Screw	20	O-ring	27	Spring pin
7	Retaining ring	14	Grease nipple	21	Back-up ring	28	Cushion plunger

NOTE!

Coat the screws of the gland with "Three bond 1360K" (or equivalent).

By construction the hydraulic cylinder consists largely of cylinder tube (1), piston (10) that reciprocates in it, piston rod (3) that takes the movement of the piston, and gland (5) that serves as a head/guide. The cylinder tube (1) and the piston rod (3) has a clevis, a trunnion or a flange to mount the cylinder assembly.

Packings, seals and bushing are used in the moving part or on the mounting part between piston (10) and cylinder tube (1), between piston rod (3) and gland (5) and between cylinder tube (1) and gland (5).

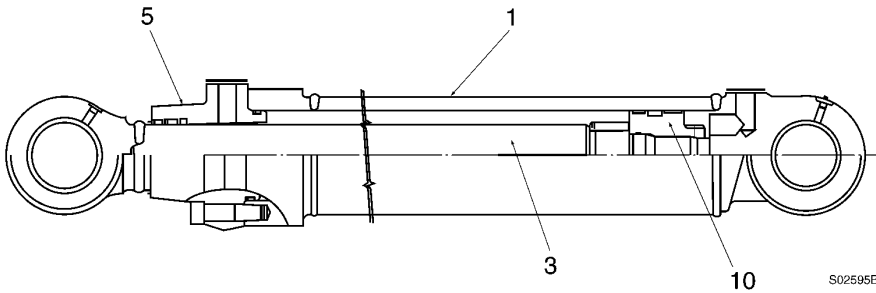


Figure 3
Structure, cylinder

Operation of cylinder with cushion

If pressurized oil is fed alternatively to the oil inlet and outlet provided in the cylinder, force acts on the piston which in turn causes piston rod (3) to extend and retract.

Cushion on rod side

If moving piston (10) strikes gland (5) without deceleration, impact results. A cushioning mechanism is provided to prevent it, as shown in following figure.

When the piston is in its intermediate stroke with the head side under pressure, the oil in chamber "A" passes through path "B" at a constant velocity and returns to the tank. Then if cushion ring (7) plunges into path "B" before the stroke end, the oil in chamber "A" goes through clearance "D".

As a result the oil flow returning to the tank decreases sharply which in turn reduces the moving speed of the piston.

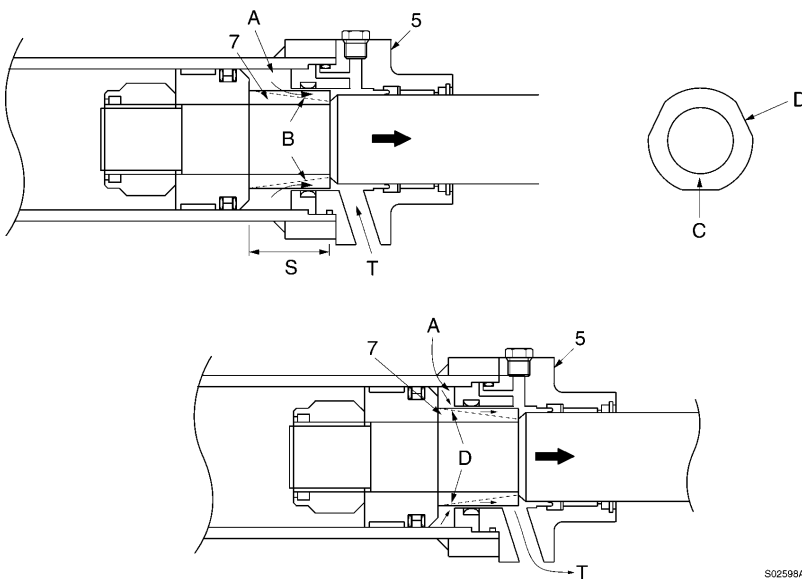


Figure 4
Cushion action on rod side

A	Chamber	T	Tank
C	Cushion ring	5	Gland
D	Clearance	7	Cushion ring
S	Stroke		

Cushion on piston side

In the same way as the construction of the rod side cushion, the oil passes through path "B" at a constant velocity and goes back to the tank when the piston is at its intermediate stroke with the rod side under pressure.

Next, if cushion plunger (9) plunges into path "B" before the stroke end, the oil goes only through clearance (A) between pass "B" and cushion plunger (9). As a result the oil flow returning to the tank decreases sharply which in turn reduces the speed of the piston.

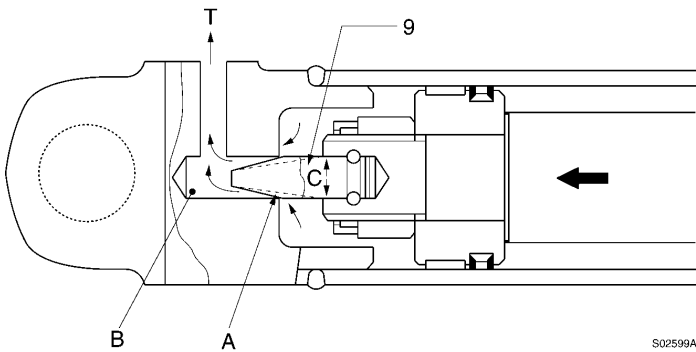


Figure 5
Cushion action on piston side

9	Cushion plunger
A	Clearance
T	Tank

Document Title: Cylinder, disassembly and assembly	Function Group: 970	Information Type: Service Information	Date: 2014/4/12
Profile:			

Cylinder, disassembly and assembly

Precautions

- When reinstalling a hydraulic cylinder it is essential to bleed the air from the cylinder.
 - Observe the following procedure :
 1. Run engine at low idle speed.
 2. Operate cylinder retraction and extension 4 ~ 5 times.
Do not operate to the end of the stroke, but stop about 100 mm (4 in) from the end of the stroke. (Do not relieve at the end of stroke.)
 3. Operate cylinder 4 ~ 5 times to the end of stroke. After completing above procedure, run the engine for normal working conditions and start actual work operation.
- When storing the hydraulic cylinder for more than 1 month, coat the cylinder rod with grease to protect the chrome plated area from rust (Oxidization).
- Clean the packing with hydraulic oil.
Other oils shorten packing life.
- Coat grease on pins and bushings.
- Excessive temperatures of a paint drying booth can affect cylinder packings and seals, resulting in cylinder failure or oil leaks.
- Paint overspray on a cylinder rod can damage the wiper seal, allowing contamination into the cylinder assembly. Prior to painting wrap the exposed chrome plating and after completion of painting clean the rod thoroughly.
- Salt water and materials containing chlorides or acids can cause the chrome plating to peel, pit or rust. Daily, upon completion of work, clean the cylinder rod and apply an anti-corrosive.
- Traverse loading of a cylinder rod (bending) or excessive vibration can damage the cylinder gland dry bearing, wiper seal and the rod chrome plating, resulting in an oil leak and the ingression of contamination.
- High pressure washers can force dirt and water under the wiper seal lip, contaminating the cylinder. Always keep the spray nozzle at an angle of 45° or greater to the rod.

General tools

Tools and jigs

Tool/Jig	Remark
Hammer	Steel hammer Wooden or plastic mallet
Screwdriver	Large and small sizes
Chisel	Flat chisel, Punch
Vise	One having an opening wide enough to hold the tube mounting pin (clevis).
Wrench	Hook wrench Allen wrench Torque wrench Extension pipe for wrenches
Spatula	Metallic one with rounded corners.
Gimlet	A sharp-point tool may be used in place of a gimlet.
Jig	For fitting seal ring For holding seal ring For inserting piston rod bushing

For pressing in dust seal.

Rust remover	Sand paper
Measuring instruments	Slide calipers Micrometer Cylinder gauge V-block

Special tools

Dust wiper seal

Dust wiper seal, unit : mm

Part No.	ϕA	ϕB	ϕC	ϕD	N	M	L	Application
8920-01310	121	109	104	95 depth 35	5	45	50	Boom
8920-01320	133	121	116	105 depth 35	5	45	50	Arm
8920-01330	121	109	104	95 depth 35	5	45	50	Bucket

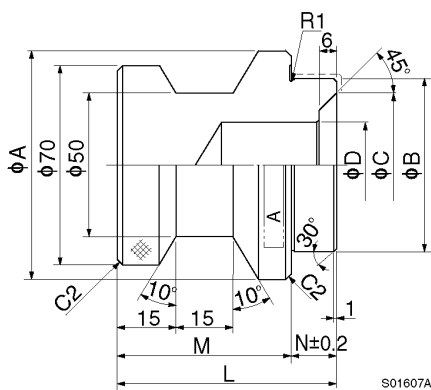


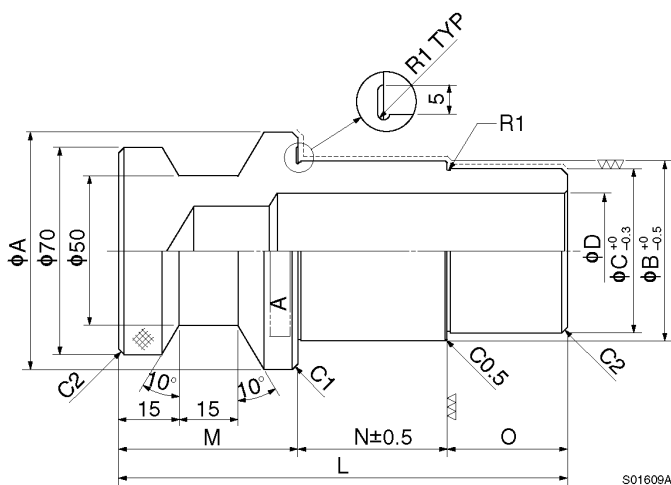
Figure 1

Dimension, dust wiper seal

Cylinder dry bearing (Gland)

Cylinder dry bearing , unit : mm

Part No.	ϕA	ϕB	ϕC	ϕD	O	N	M	L	Application
8920-01250	113	101	95	80 depth 137	40	72	45	157	Boom
8920-01260	123	111	105	90 depth 137	40	72	45	157	Arm
8920-01270	113	101	95	80 depth 137	40	72	45	157	Bucket



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