SERVICE MANUAL
KONTAK
KA10/18 CONTROL VALVE

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INTRODUCTION

Introduction

This manual has been prepared to assist you in the proper maintenance of the **Commercial Hydraulics** KA10/18 directional control valve. To facilitate repairs, and before any work is done, we suggest that you read the assembly and disassembly instructions completely.

Also remember that the first rule of good maintenance is cleanliness, including the work environment. **MAKE SURE YOU DISASSEMBLE AND ASSEMBLE YOUR HYDRAULIC EQUIPMENT IN A CLEAN AREA.** Dirt is the natural enemy of any hydraulic system.

Genuine parts

The illustrations in this manual and instructions which refer to them apply only to **Commercial Hydraulics** assemblies, subassemblies and components. All valve components except for spools and housings are available in replacement kits. Spools are hone-fitted to their individual housings. Therefore, damage to either of these components means the entire section must be replaced.

We recommend that you use only original **Commercial Hydraulic** replacement parts in your service program. Manufactured on the same production lines to the same exacting tolerances and quality controls as the original equipment, genuine **Commercial Hydraulic** replacement parts are your best hedge against premature component failure and costly downtime. Service parts and assemblies are available through your original equipment dealer or any authorised **Commercial Hydraulic** distributor.

If you are in doubt about the work sections or replacement kits then you can use the numeric code stamped on it's machined face to obtain help from your distributor.

In accordance with our policy of continuing product development, we reserve the right to change specifications shown in this manual without notice.

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GENERAL INSTRUCTIONS

General Instructions

Valves are often used in hazardous environments, therefore care should be taken to frequently inspect the product for damage due to improper use, corrosion or normal wear. Repairs should be made immediately if needed.

ALWAYS REFER TO THE MACHINES OWNERS MANUAL FOR CORRECT PROCEDURE TO REMOVE THE VALVE FROM THE MACHINE.

Ensure that all the pipes and hoses are marked before removal to ensure correct replacement.

Disconnect all pipes, hoses, fittings, control handles and linkages that might be attached to the machine. Fit protective caps to hose ends to prevent dirt ingress while the valve is off the machine. Always plug supply and return lines to prevent syphoning from the oil reservoir.

Remove the valve bank from the machine, **PLUG ALL PORTS**, and thoroughly clean the valve banks exterior, after which the port plugs can be removed.

ALL WORK MUST BE PERFORMED IN A CLEAN AREA.

When disassembling control valves ensure that all parts are clearly identified so that they can be reassembled in the correct order. The spools and bodies are manufactured as matched pieces to control internal leakage. It is essential that when a spool is removed from a valve body for servicing work, that it is reassembled into the same body.

Whenever the spool seal retaining plates are removed, to change action or handles, it is recommended that the spool seals are always renewed.

We recommend the use of **Loctite Hydraulics** seal for use on certain screwed fittings, it is clearly indicated in the manual where this should be used, (use in accordance with manufacturers instructions).

Conversion

Torque 26 - 28 Nm = 19 - 21 lb ft.
5 - 8 Nm = 4 - 6 lb ft
20 - 24 Nm = 15 - 18 lb ft

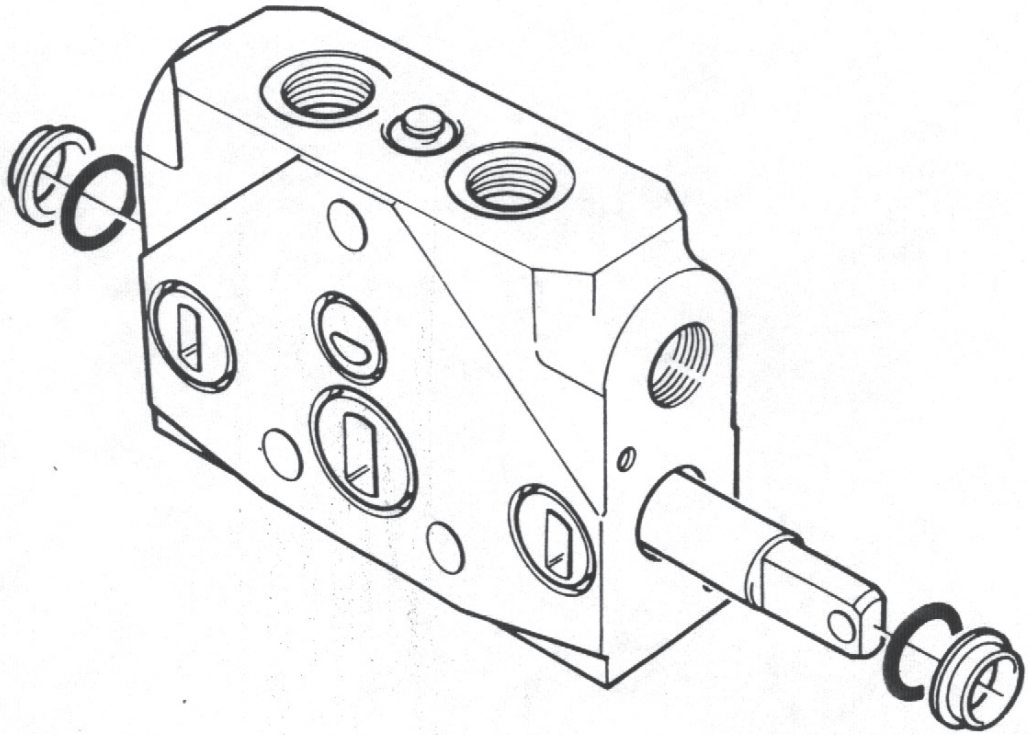
SERVICE KITS

DESCRIPTION	PART NUMBER
Intersection seal kit.	346 9149 001
Spool O-ring kit	346 9149 103
Load drop check valve kit	346 9149 112
KA18 Main R/V, KA10/18 service R/V O-ring kit	346 9149 115
KA10 Main R/V O-ring kit	345 9149 133
Spring centre repair kit	346 9149 003
3 Position detent repair kit	346 9149 102
Spring centre detent out kit	346 9149 105
Spring centre detent in kit	346 9149 106
4th Position detent out repair kit	346 9149 108
4th Position float seal kit	346 9149 130

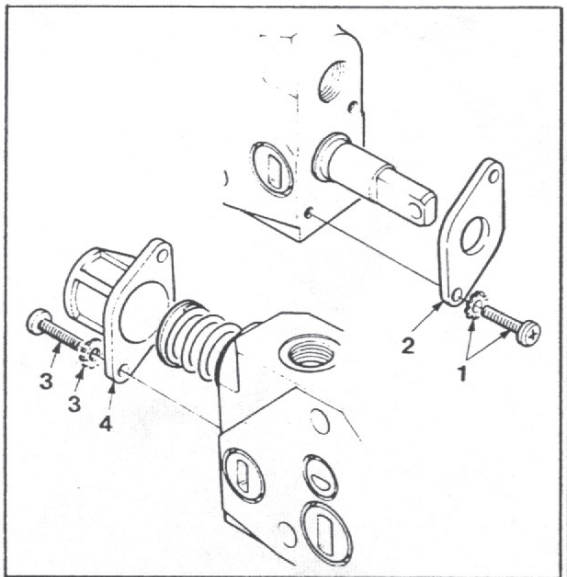
SECTION 1 SPOOL SEAL SERVICING

SPOOL SEAL SERVICING

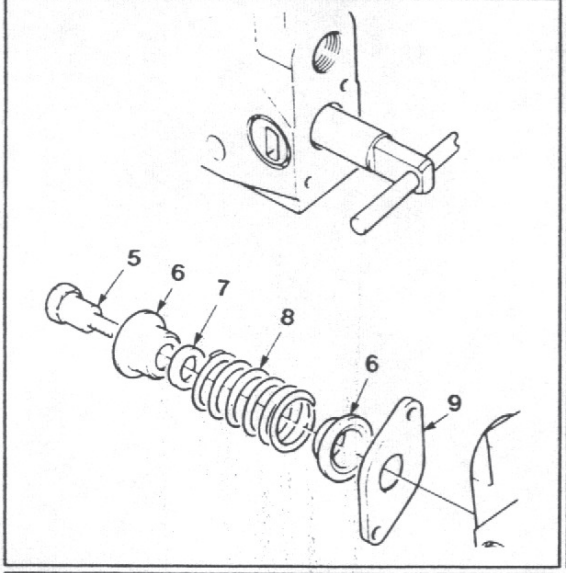
Disassembly 1.1
Assembly 1.2 to 1.3



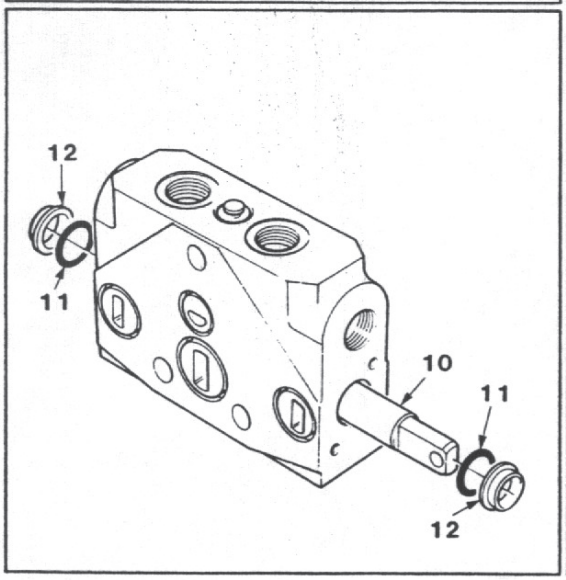
Spool seal servicing: Disassembly
Spool seal kit 346 9149 103



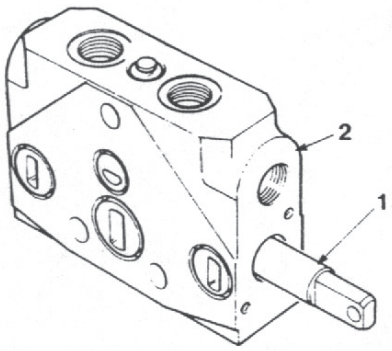
Loosen and remove screws and washers (1). and (3) Remove seal retainer (2) and end cap (4).



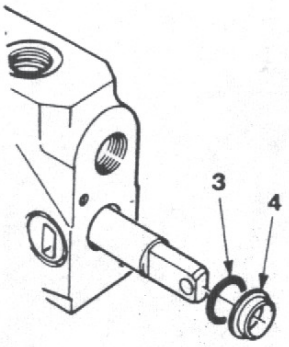
Prevent spool rotating. Remove shoulder screw (5). Disassemble spring seats (6), spacer (7),spring (8), and seal retainer (9).



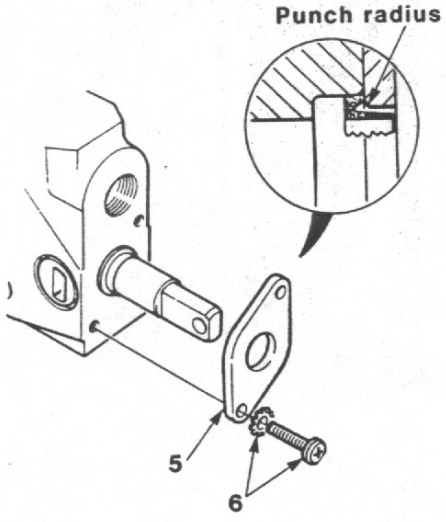
Remove spool (10). Remove and discard O-rings (11) and wiper seals (12).



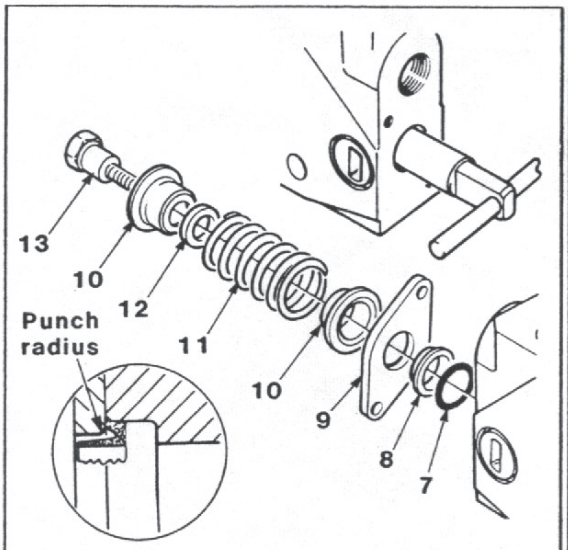
Clean and lubricate spool (1). Insert spool into the housing (2) and set spool in its approximate neutral position.



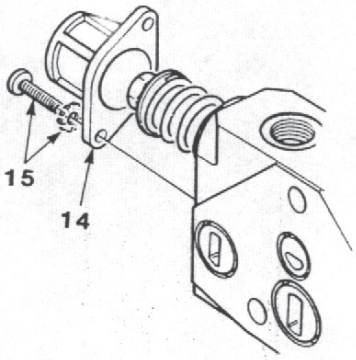
From the service kit fit new O-ring (3) and wiper seal (4).



Refit seal retainer (5) with Punch radius innermost to housing. Refit screws and washers (6) and torque tighten to 5-8Nm.



From the service kit fit new O-ring (7) and wiper seal (8). Assemble (9) with Punch radius innermost to housing. Assemble (10), (11) and (12). Prevent the spool rotating and refit shoulder screw (13) and torque tighten to 5-8Nm

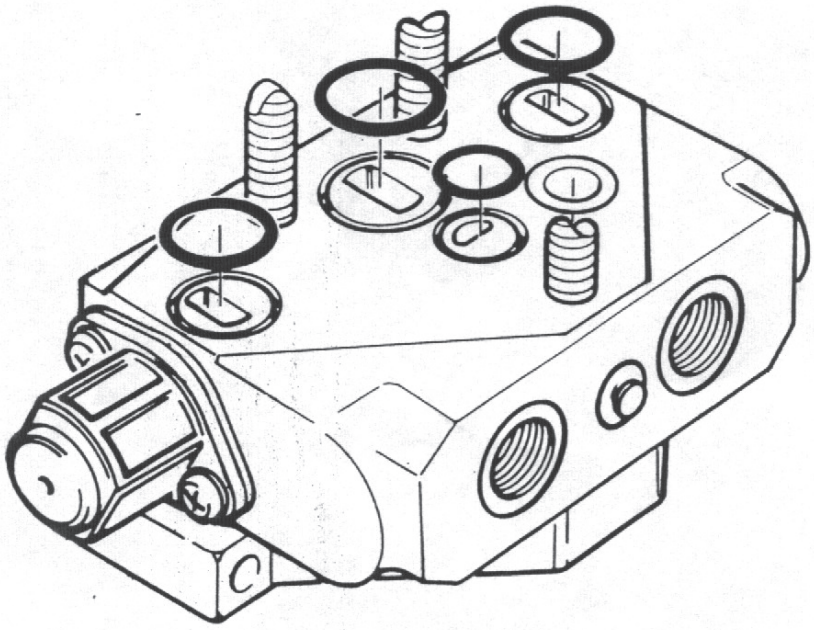


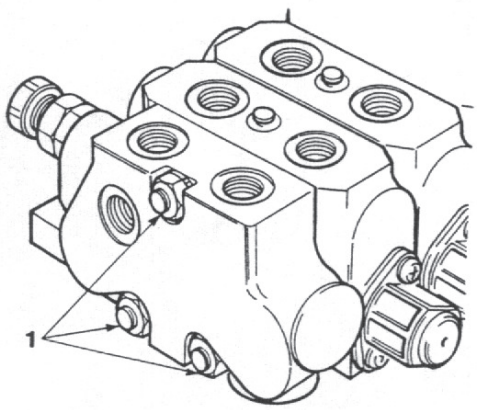
Refit end cap (14). Refit screws and washers (15) and torque tighten to 5-8Nm.

SECTION 2 INTERSECTION SEAL SERVICING

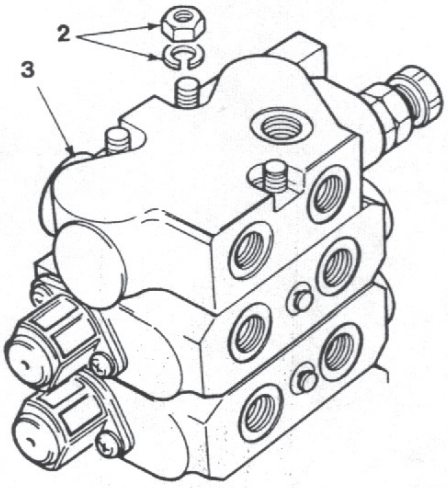
INTERSECTION SEAL SERVICING

Disassembly 2.1
Assembly 2.2 to 2.3

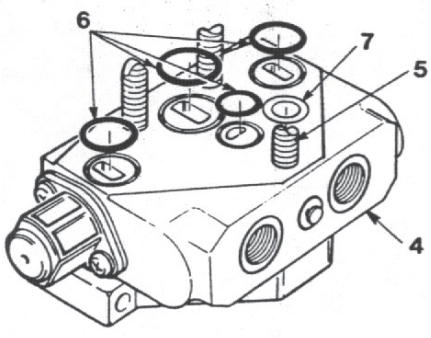




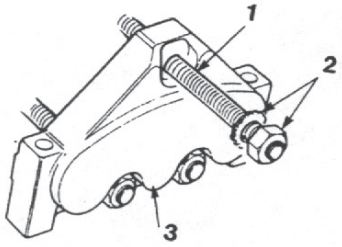
Operate each spool in turn to release any trapped pressure. Loosen tie rod nuts (1) at the inlet cover end of the valve assembly.



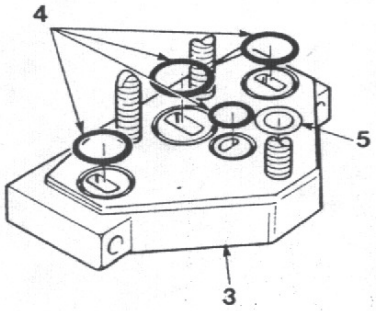
Position the valve assembly upright on its outlet cover. Remove tie rod nuts and washers (2). Remove inlet cover (3). Identify each section to note the order of assembly.



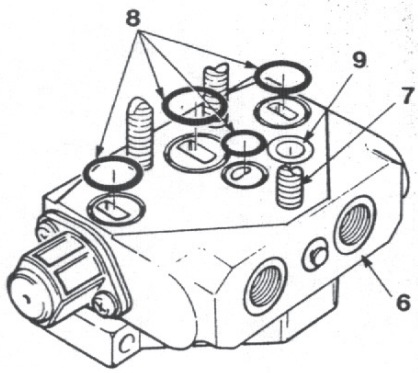
Remove all the sections (4) from the tie rods (5). Discard all intersection seals (6) and shims (7). Inspect all seal grooves and faces for deterioration or damage and ensure all are clean.



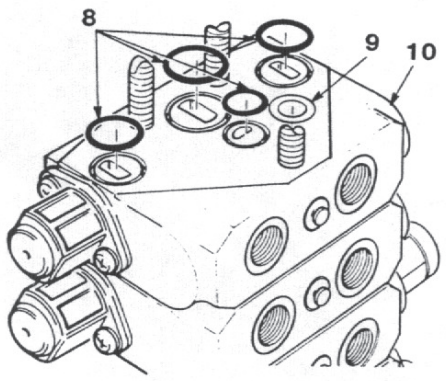
Assemble tie rods (1), nuts and washers (2) and refit to the outlet cover (3).



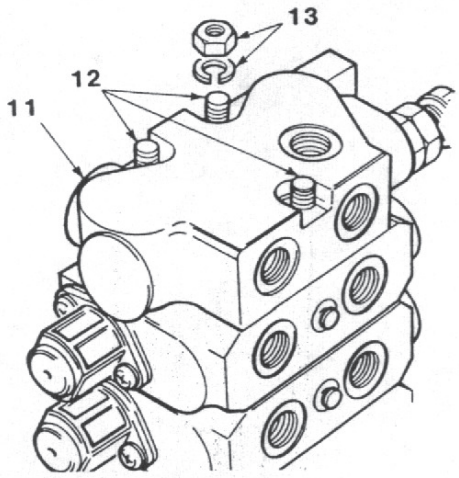
Position the assembly upright on its outlet cover (3). Ensure all parts are clean. From the service kit fit new intersection seals (4) and shim (5).



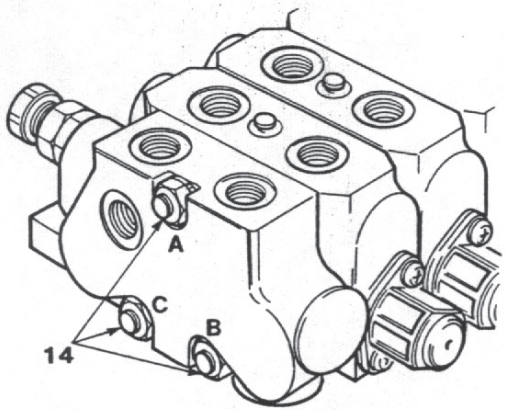
Assemble in the correct order the next section (6) over the tie rods (7). Ensure all parts are clean. From the service kit, fit new intersection seals (8) and shim (9). Repeat until all the sections have been assembled.



Ensure all seal grooves and connection areas are clean. From the service kit fit new intersection seals (8) and shim (9) to the final assembled section (10).



Assemble the inlet cover (11) over the tie rods (12) and the assembled sections. Refit tie rod nuts and washers (13) to the tie rods (12).

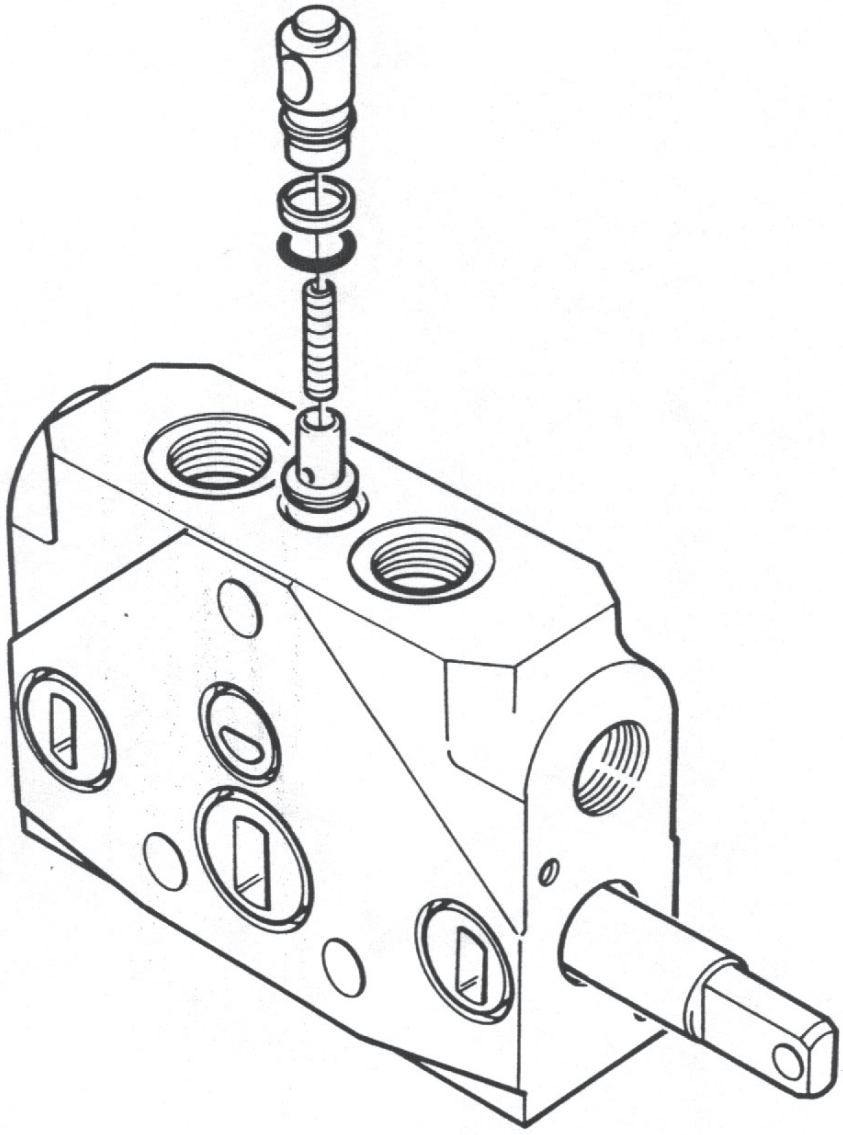


Position the valve assembly on to its feet. Ensure valve is sitting flat. Evenly torque tighten the tie rod nuts (14) to 26-28Nm, using the following sequence, A, B, C and A again.

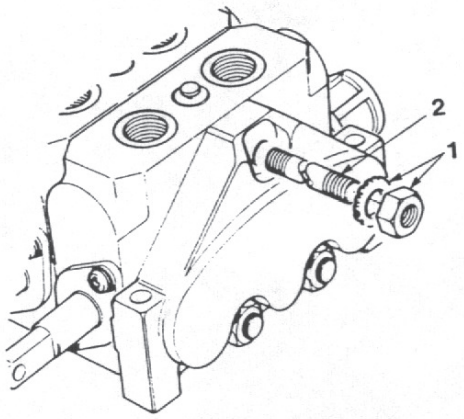
SECTION 3 LOAD CHECK VALVE SERVICING

LOAD CHECK VALVE SERVICING

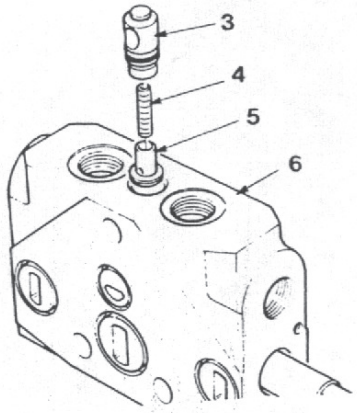
Disassembly 3.1
Assembly 3.2



Anti load drop check servicing: Disassembly
Anti load drop check kit 346 9149 112



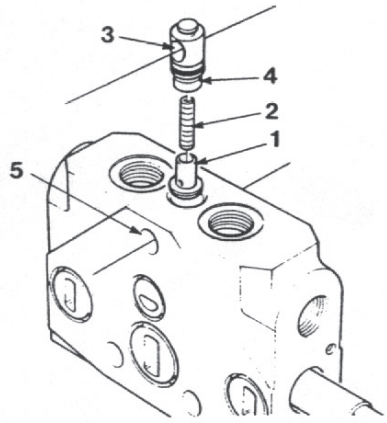
Loosen and remove top tie rod nut and washer (1). Withdraw tie rod (2).



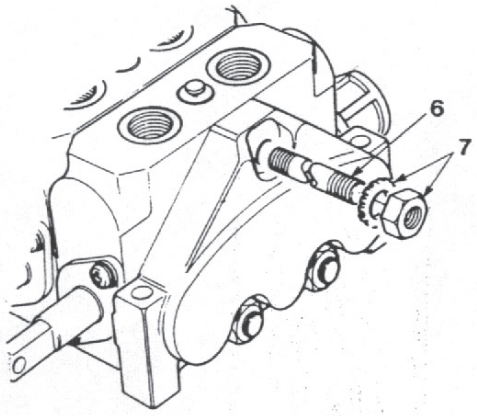
Remove check valve guide (3), spring (4) and poppet (5), from the housing (6).

Inspect all parts for deterioration or damage. Replace unserviceable items with new parts from the service kit 346 9149 112.

Anti load drop check servicing: Disassembly
Anti load drop check kit 346 9149 112



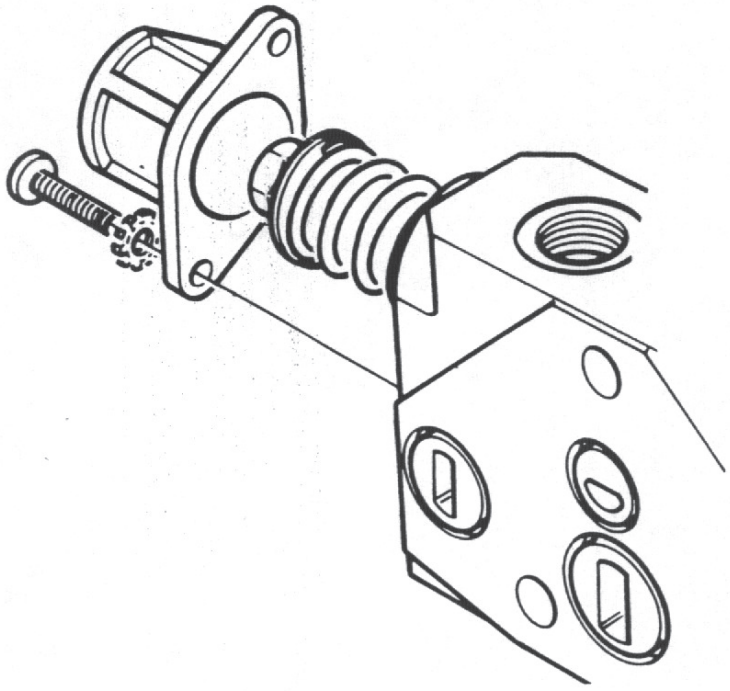
Refit the poppet (1) and spring (2). Ensure the rod hole (3) in the check valve guide (4) is in line with the rod hole in the housing (5) and refit the guide (4) into the housing.

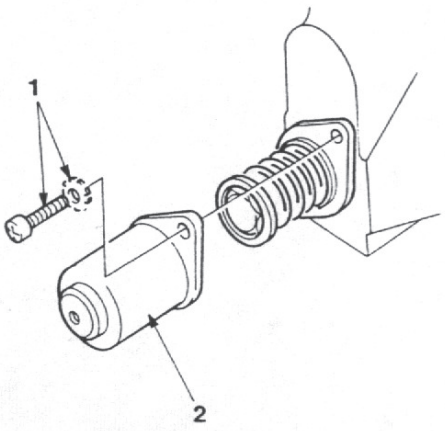


Refit the top tie rod (6). Assemble tie rod nut and washer (7). Torque tighten to 26-28Nm.

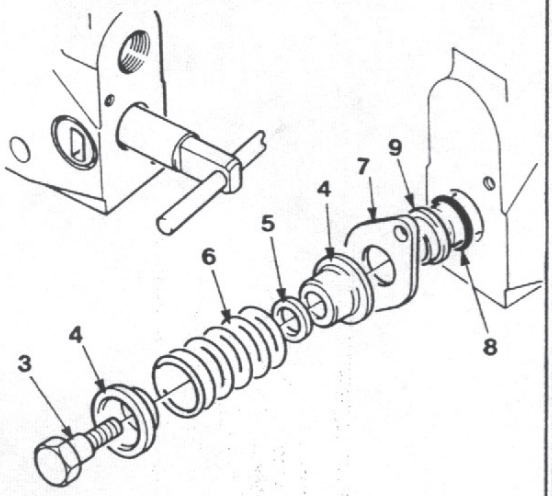
SECTION 4 ACTION MECHANISM KITS

SPRING CENTRE SERVICING
Disassembly 4.1
Assembly 4.2
3 POSITION DETENT
Disassembly 4.3
Assembly 4.4
SPRING CENTRE DETENT SPOOL IN
Disassembly 4.5
Assembly 4.6
SPRING CENTRE DETENT SPOOL OUT
Disassembly 4.7
Assembly 4.8
4 POSITION FLOAT DETENT SPOOL OUT
Disassembly 4.9
Assembly 4.10



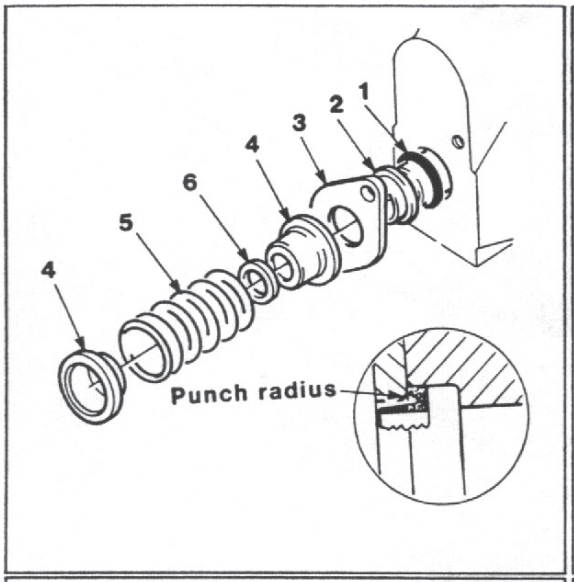


Loosen and remove screws and washers (1). Remove end cap (2).

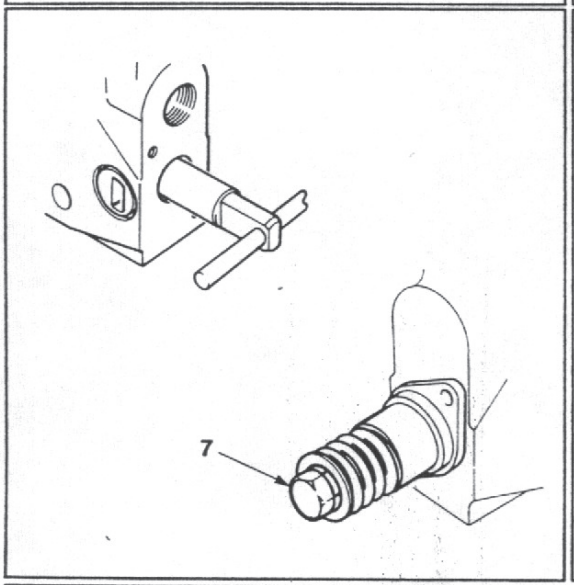


Prevent spool rotating. Remove shoulder screw (3). Disassemble spring seats (4), spacer (5), spring (6), and seal retainer (7). Remove and discard O-ring (8) and wiper seal (9).

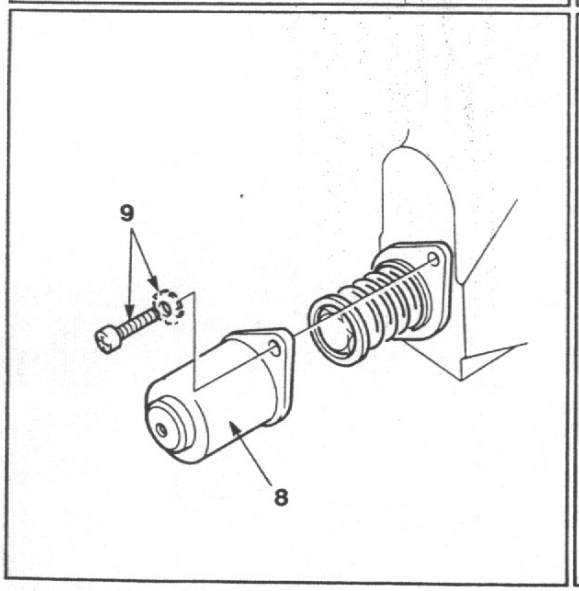
Inspect all parts for deterioration or damage. Replace unserviceable items with new parts from the service kit.



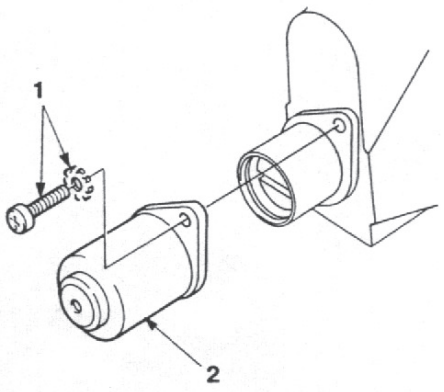
Ensure all parts are clean. From the service kit fit new O-ring (1), and wiper seal (2). Refit seal retainer (3) with Punch radius innermost to housing. Refit spring seats (4), spring (5) and spacer (6).



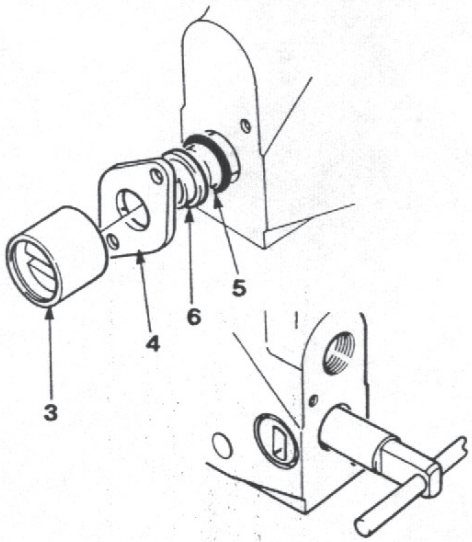
Ensure shoulder screw (7) threads are clean and undamaged. Apply Loctite Hydraulic seal and refit shoulder screw. Prevent the spool rotating and torque tighten to 5-8Nm.



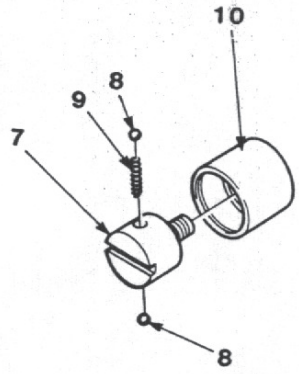
Refit end cap (6). Refit screws and washers (7) and torque tighten to 5-8Nm.



Loosen and remove screws and washers (1). Remove end cap (2).

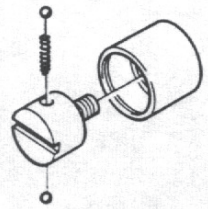


Prevent spool rotating. With a large flat blade/screwdriver remove detent assembly (3), and seal retainer (4). Remove and discard O-ring (5) and wipe seal (6). If the detent assembly is to be reused it is recommended that further disassembly is avoided.

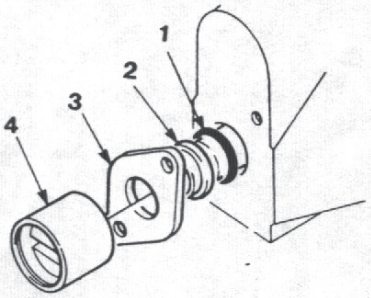


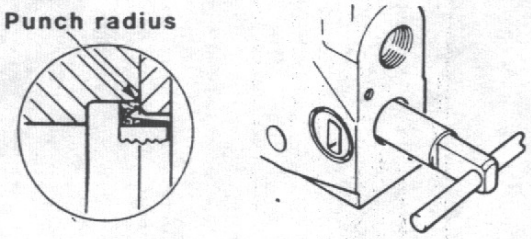
If the detent assembly is to be disassembled. Remove carrier screw (7) from cage (10), taking care to catch balls (8) and spring (9). Inspect all parts for deterioration or damage. Replace unserviceable items with new parts from the service kit.

3 Position detent: Assembly
Complete detent kit 346 9149 102

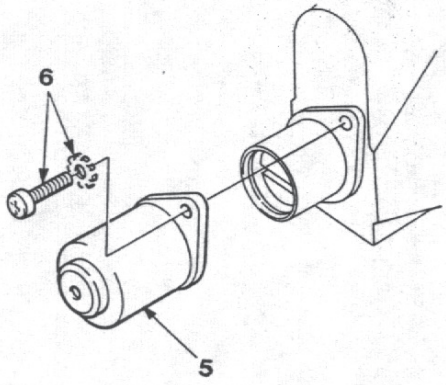


Assemble detent components taking care that the cage is square to the spool axis when engaging the balls.



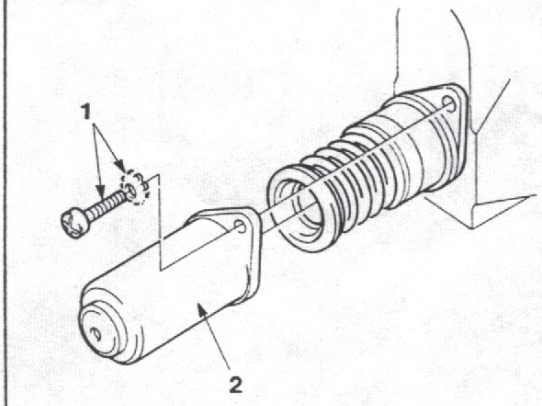


From the service kit fit new O-ring (1), and wiper seal (2). Refit seal retainer (3) with Punch radius innermost to housing. Prevent the spool rotating, fit detent assembly (4), torque tighten to 5-8Nm.

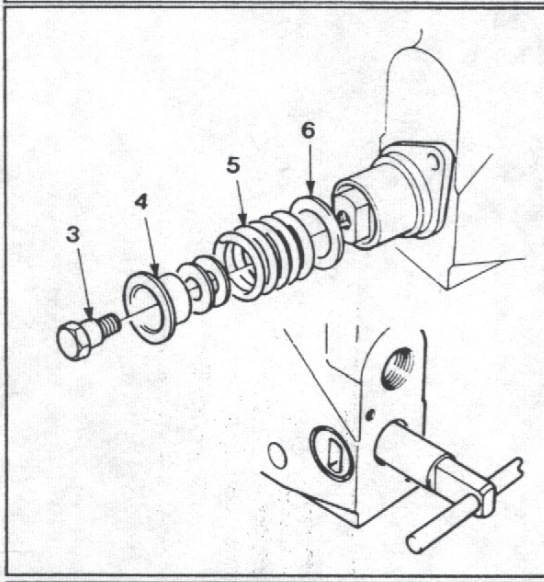


Refit end cap (5). Refit screws and washers (6) and torque tighten to 5-8Nm.

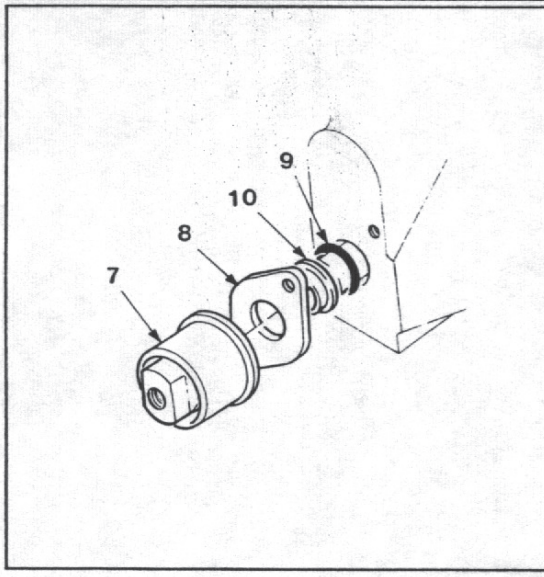
Spring return detent spool in: Disassembly
Complete detent kit 346 9149 106



Loosen and remove screws and washers (1). Remove end cap (2).

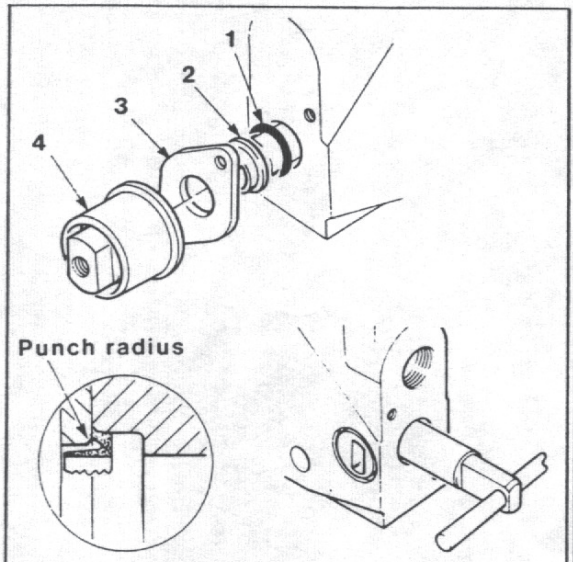


Prevent spool rotating. Remove shoulder screw (3). Disassemble spring (5), and spring seats (4) and (6).
It is possible that while in the process of removing the shoulder screw (3) that the detent carrier becomes unscrewed from the spool.

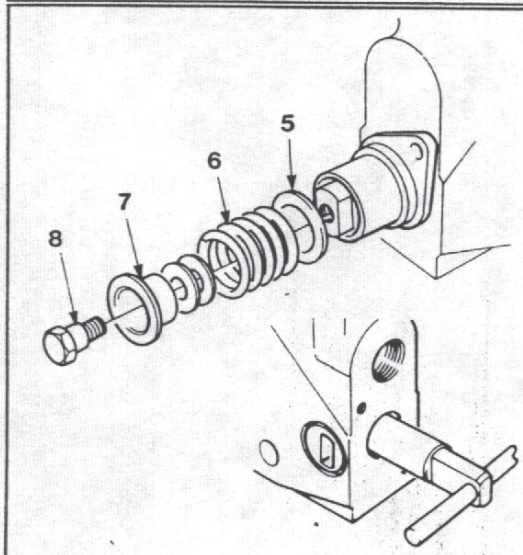


Remove detent assembly (7), and seal retainer (8). Remove and discard O-ring (9) and wiper seal (10). DO NOT dismantle the detent assembly.
Inspect all parts for deterioration or damage. Replace unserviceable items with new parts from the service kit.

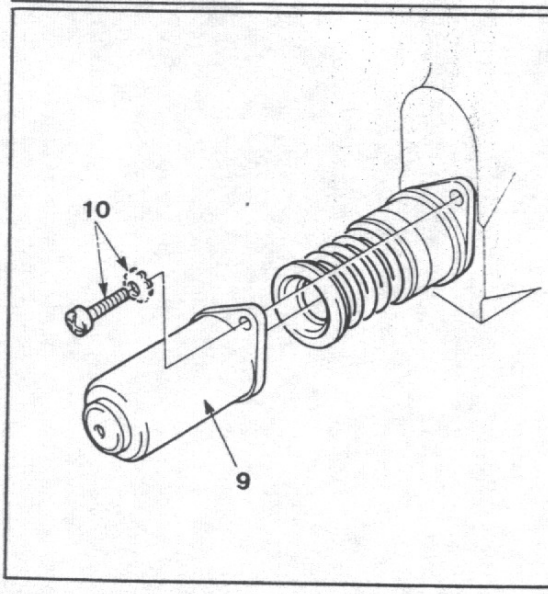
Spring return detent spool in: Assembly
Complete detent kit 346 9149 106



From the service kit fit new O-ring (1), and wiper seal (2). Refit seal retainer (3) with Punch radius innermost to housing. Using a bar to prevent the spool rotating, refit detent carrier (4) and torque tighten to 5-8Nm. Ensure detent carrier is screwed fully onto spool.

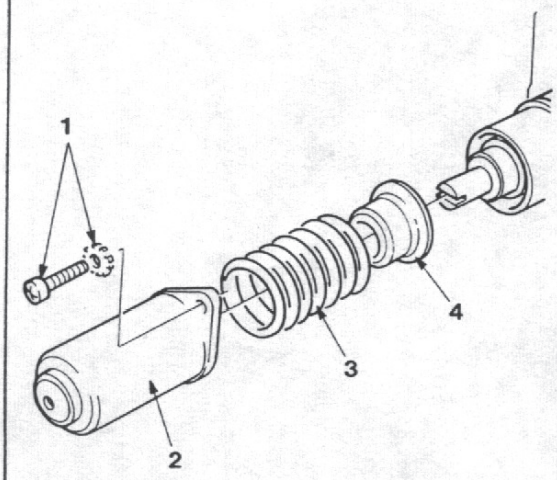


Assemble spring seat (5), spring (6), and spring seat (7) Ensure shoulder screw (8) threads are clean and undamaged. Apply Loctite and refit shoulder screw. Prevent the spool rotating and torque tighten to 5-8Nm.

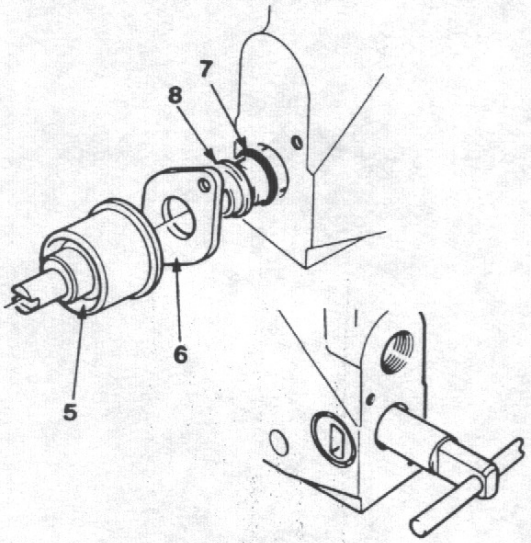


Refit end cap (9).. Refit screws and washers (10) and torque tighten to 5-8Nm.

Spring return detent spool out: Disassembly
Complete detent kit 346 9149 105



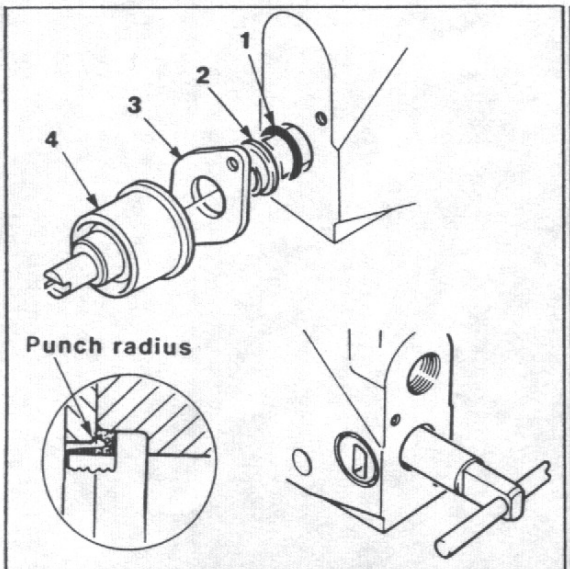
Loosen and remove screws and washers (1). Remove end cap (2), spring (3) and spring seat (4).



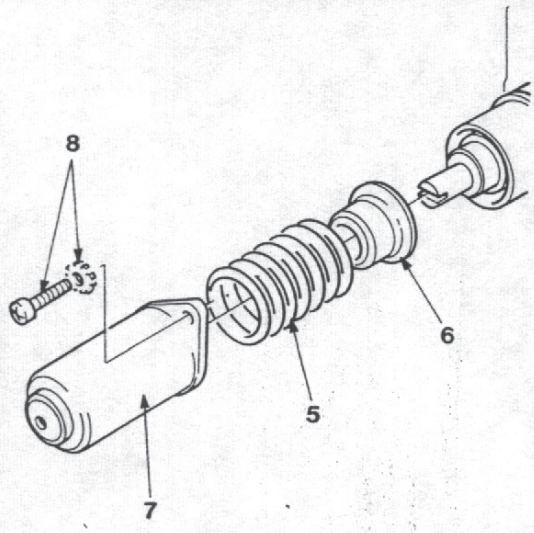
Prevent spool rotating. With a flat blade screwdriver remove detent assembly (5), and seal retainer (6). Remove and discard O-ring (7) and wiper seal (8). DO NOT dismantle the detent assembly.

Inspect all parts for deterioration or damage. Replace unserviceable items with new parts from the service kit.

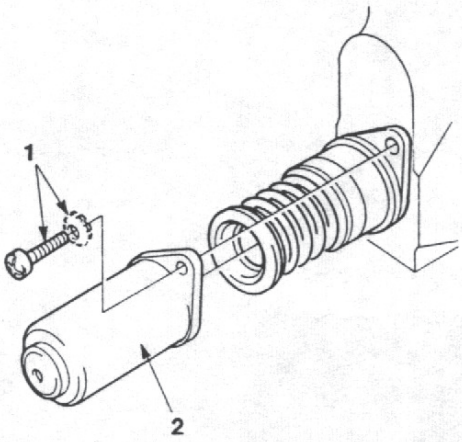
Spring return detent spool out: Assembly
Complete detent kit 346 9149 105



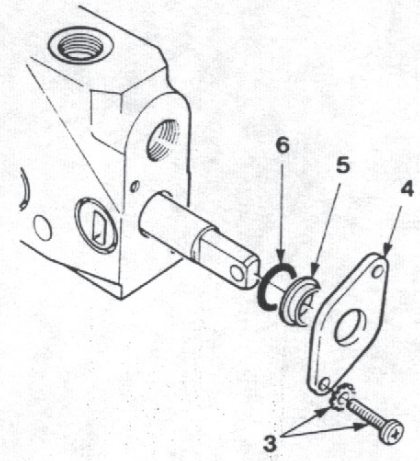
From the service kit fit new O-ring (1), and wiper seal (2). Refit seal retainer (3) with Punch radius innermost to housing. Using a bar to prevent the spool rotating, refit detent assembly (4) and torque tighten to 5-8Nm.



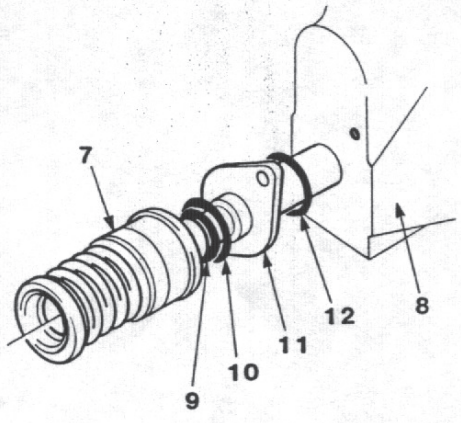
Assemble spring seat (5), spring (6). Refit end cap (7). Refit screws and washers (8) and torque tighten to 5-8Nm.



Loosen and remove screws and washers (1). Remove end cap (2).

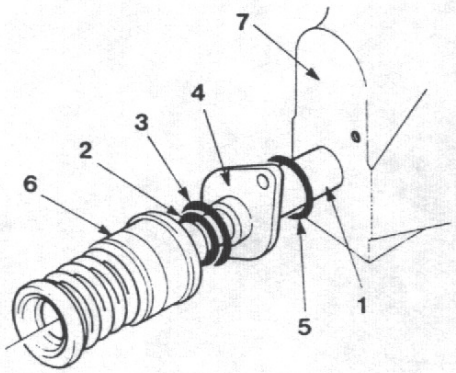


Loosen and remove screws and washers (3). Remove seal retainer (4). Remove and discard O-rings (5) and wiper seals (6).

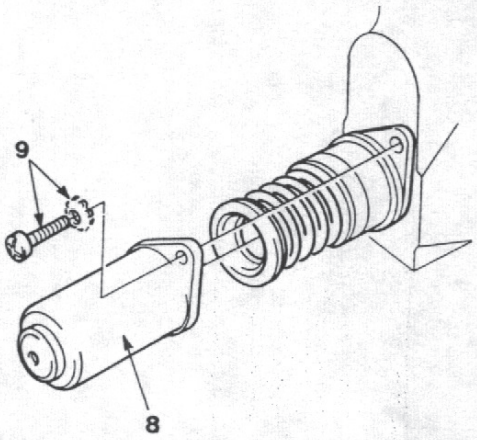


Remove the complete mechanism and spool (7) from the valve body (8). Remove spool seal O-ring (9), and discard. Remove face seal O-ring (10), and discard. Remove rear seal plate (11). Remove rear seal O-ring (12), and discard.
DO NOTdismantle the assembly.
Inspect all parts for deterioration or damage. Replace unservicable items with new parts from the service kit.

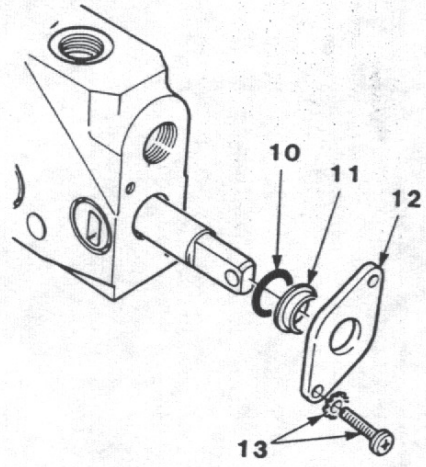
4 Postion float out Assembly
Complete float kit 346 9149 108



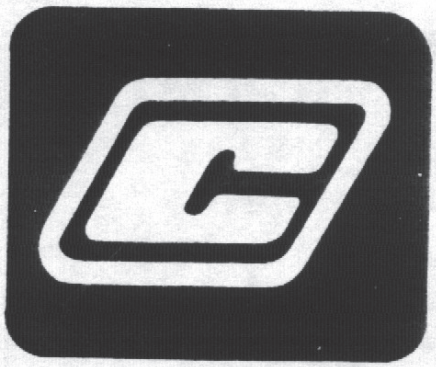
Clean spool (1). Coat land areas of spool with oil. From the service kit fit new spool seal O-ring (2), over the spool. (The O-ring has to be passed along the full length of the spool care must be taken to prevent any damage to the O-ring). From the service kit fit new face seal O-ring (3). Refit rear face seal plate (4). From the service kit fit new rear seal O-ring (5). Insert complete spool and mechanism (6), into the housing (7).



Refit end cap (8). Refit screws and washers (9) and torque tighten to 5-8Nm.



From the service kit fit new O-ring (10), and wiper seal (11). Refit seal retainer (12). Refit screws and washers (13) and torque tighten to 5-8Nm.



SECTION 5 HANDLE ASSEMBLIES

TYPE 1 KA10 STANDARD LEVER / BRACKET

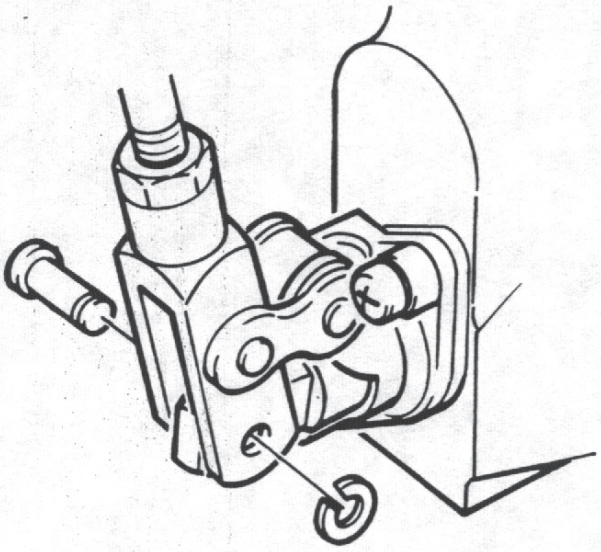
Disassembly 5.1
Assembly 5.2

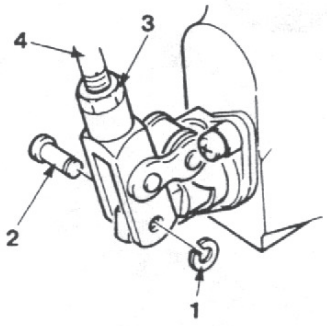
TYPE 1B BOOTED LEVER / BRACKET

Disassembly 5.3
Assembly 5.4

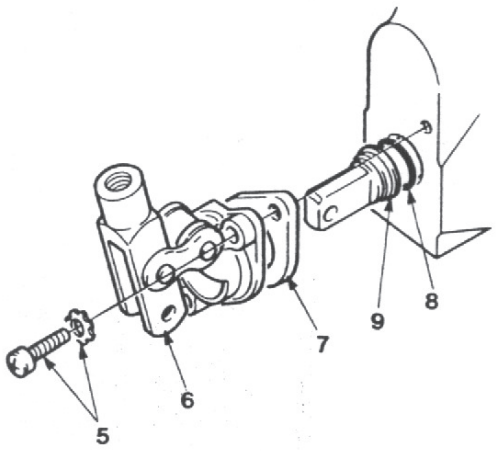
TYPE 2 KA18 STANDARD LEVER / BRACKET

Disassembly 5.5
Assembly 5.6



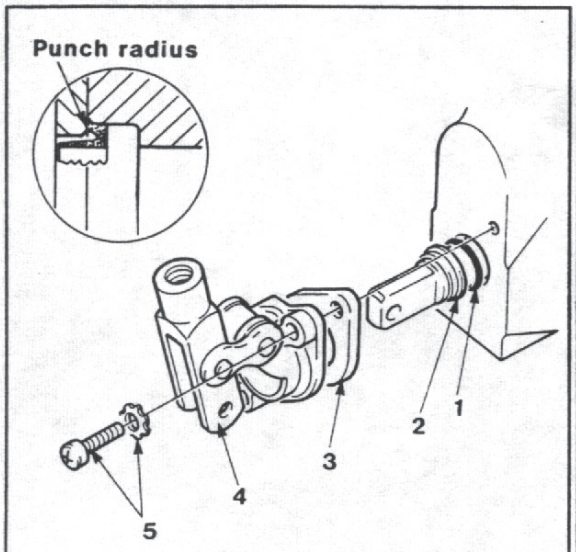


Remove spring clip (1), disassemble spool pin (2).
Loosen locknut (3) and remove handle (4).

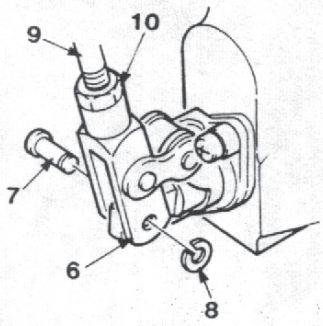


Loosen and remove screws and washers (5). Remove lever assembly (6). Remove seal retainer (7). Inspect O - ring (8) and wiper seal (9).(*For replacement of (8) & (9) refer to section 1.*)

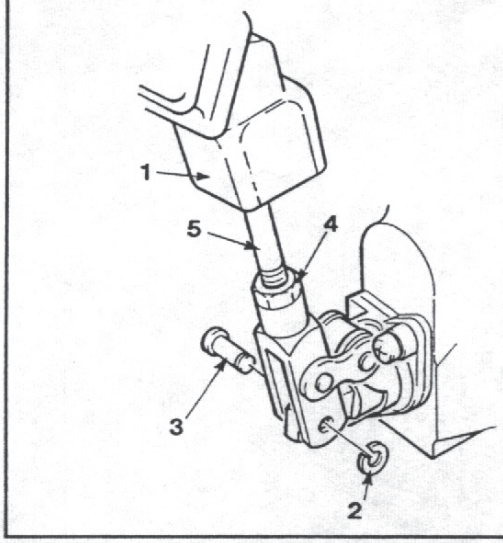
Inspect all parts for deterioration or damage. Replace unserviceable items with new parts.



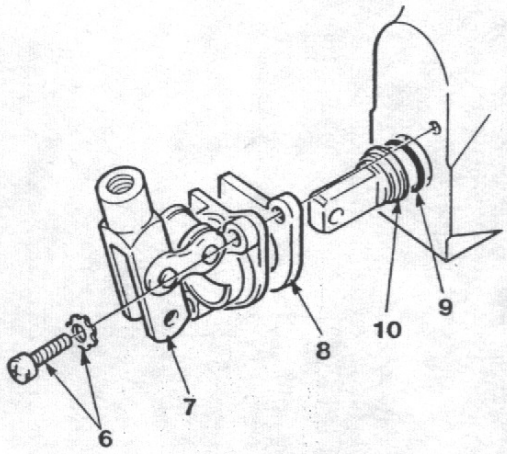
Ensure (1) & (2) are fitted correctly (*refer to section 1*) Refit seal retainer (3) with Punch radius innermost to housing. Refit lever assembly (4). Refit screws and washers (5) and torque tighten to 5-8Nm.



Align hole in lever arm (6) with hole in the spool. Assemble spool pin (7) and refit spring clip (8). Assemble handle (9) and locknut (10) to lever arm (6) and torque tighten to 5-8 Nm.

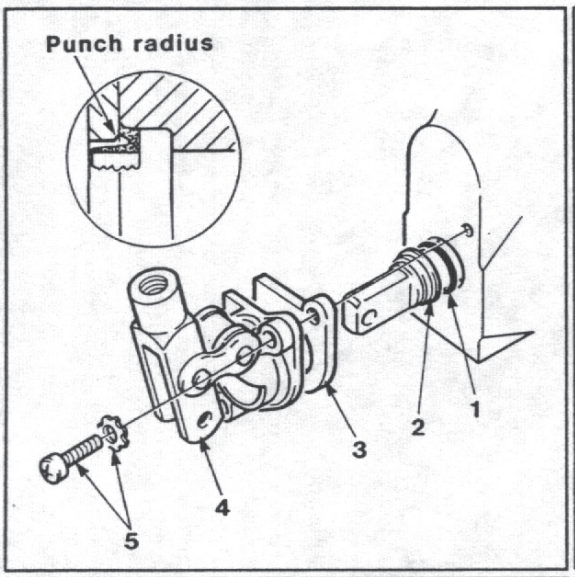


Remove rubber boot (1), Remove spring clip (2) disassemble spool pin (3). Loosen locknut (4) and remove handle (5).

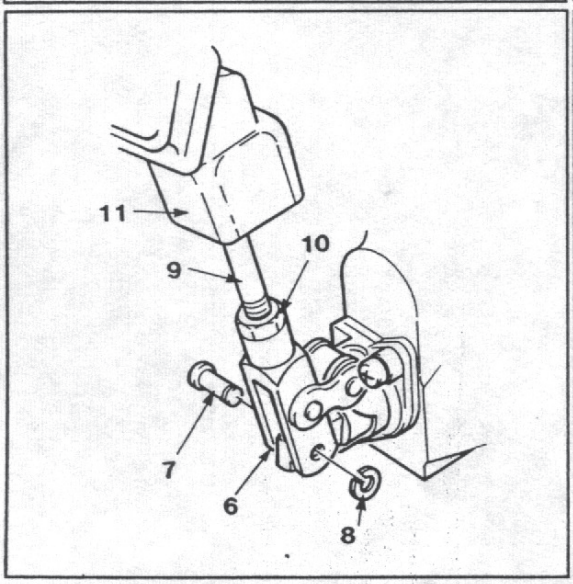


Loosen and remove screws and washers (6). Remove lever assembly (7). Remove seal retainer (8). Inspect O-ring (9) and wiper seal (10) .(*For replacement of (9) and (10) refer to section 1.*)

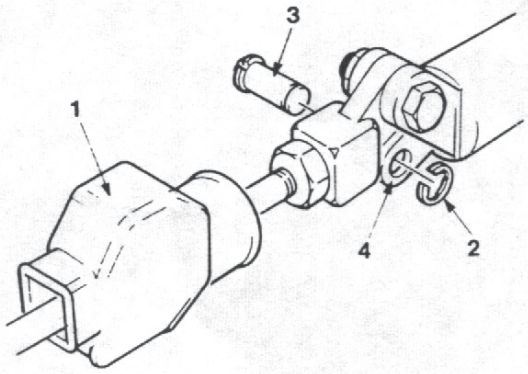
Inspect all parts for deterioration or damage. Replace unserviceable items with new parts.



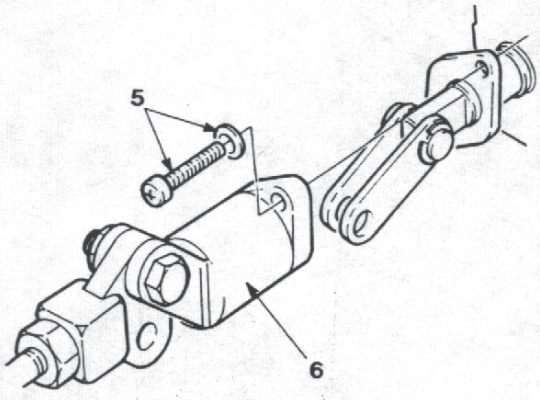
Ensure (1) & (2) are fitted correctly *(refer to section 1)*. Refit seal retainer (3) with Punch radius innermost to housing. Refit lever assembly (4). Refit screws and washers (5) and torque tighten to 5-8Nm.



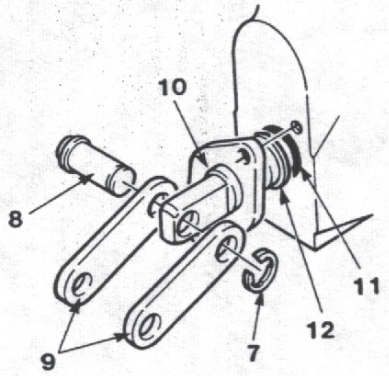
Align hole in lever arm (6) with hole in the spool. Assemble spool pin (7) and refit spring clip (8). Assemble handle (9) and locknut (10) to lever arm (6) and torque tighten to 5-8Nm.
Refit boot (11) ensure boot is correctly located over bracket.



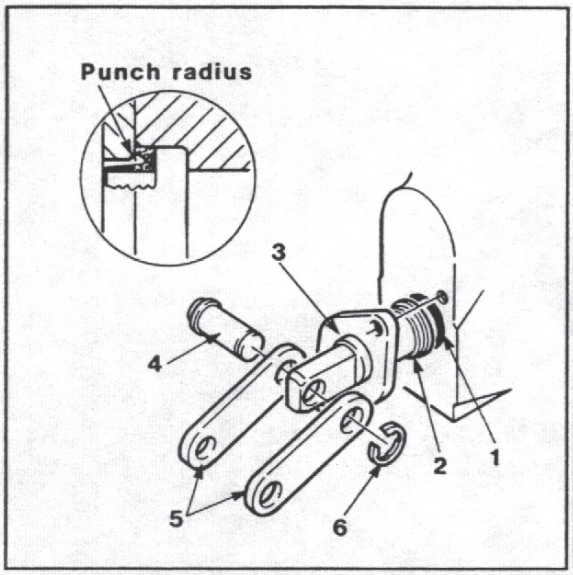
Remove rubber boot (1) if fitted. Remove spring clip (2). Disassemble lever pivot pin (3), from the spool link (4).



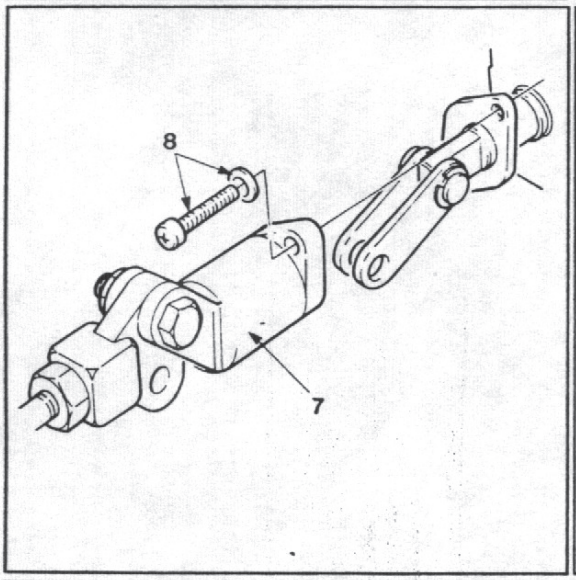
Loosen and remove screws and washers (5). Remove lever bracket assembly (6).



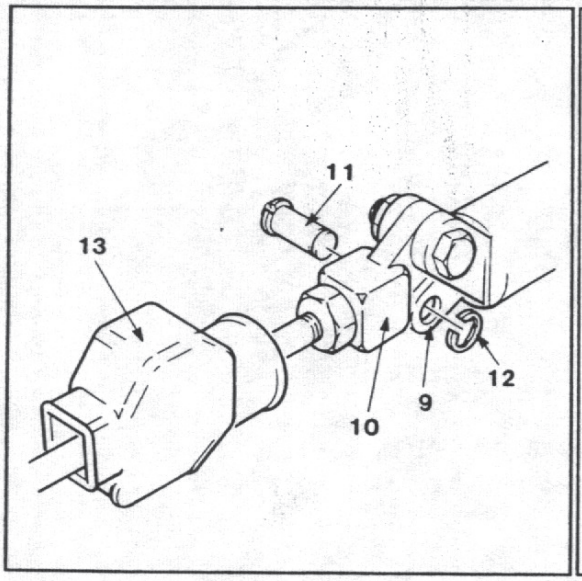
Remove spring clip (7). Disassemble spool pivot pin (8). Remove spool link (9). Remove seal retainer (10). Inspect O- ring (11) and wiper seal (12) (*for replacement refer to section 1.*) Inspect all parts for deterioration or damage.
Replace unserviceable items with new parts.



Ensure (1) & (2) are fitted correctly (*refer to section 1*). Refit seal retainer (3) with Punch radius innermost to housing. Assemble spool pivot pin (4) and spool link (5), to the spool. Refit spring clip (6).



Assemble lever bracket assembly (7). Refit screws and washers (8) and torque tighten to 5-8Nm.



Align hole in spool link (9) with hole in the lever assembly (10). Assemble lever pivot pin (11) and refit spring clip (12). Refit rubber boot (13) if fitted.

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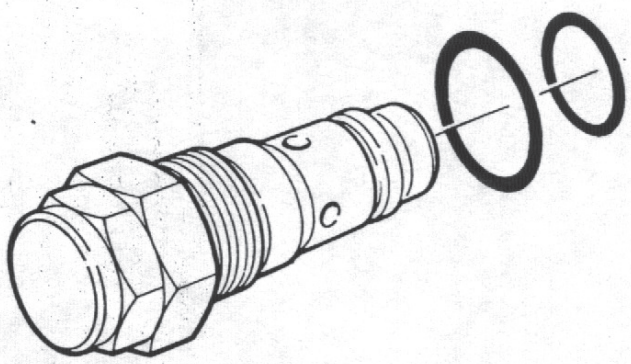
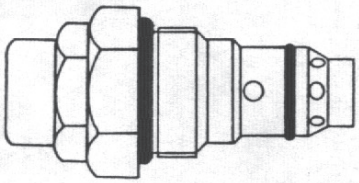
SECTION 6 RELIEF VALVE ASSEMBLIES

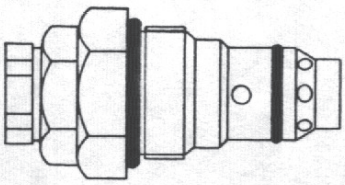
MAIN RELIEF VALVE IDENTIFICATION
KA10 6.1
KA18 6.2
KA10 MAIN RELIEF VALVE
Disassembly 6.3
Assembly 6.4
KA18 MAIN RELIEF VALVE
Disassembly 6.5
Assembly 6.6

SERVICE PORT VALVE IDENTIFICATION
KA10/18 6.7
SERVICE PORT VALVE
Disassembly 6.8
Assembly 6.9

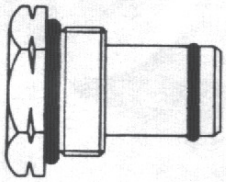




Relief valve Shim adjustable	
For pressure between	Part Number
35 bar - 100 bar	345 9001 002
100 bar - 275 bar	345 9002 002



Relief valve Externally adjustable	
For pressure between	Part Number
35 bar - 100 bar	345 9001 001
100 bar - 275 bar	345 9002 001



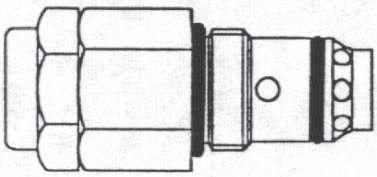
Blanking plug assembly	
	Part Number
	345 9000 001

	Part Number

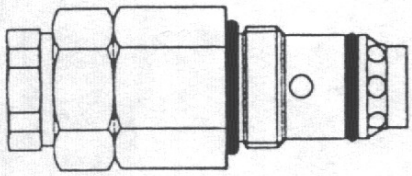
	Part Number

	Part Number

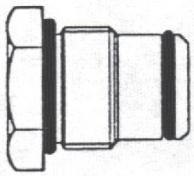
	Part Number



Relief valve Shim adjustable	
For pressure between	Part Number
35 bar - 100 bar	346 9001 007
100 bar - 275 bar	346 9002 007



Relief valve Externally adjustable	
For pressure between	Part Number
35 bar - 100 bar	346 9001 003
100 bar - 275 bar	346 9002 003



Blanking plug assembly	
	Part Number
	346 9000 001

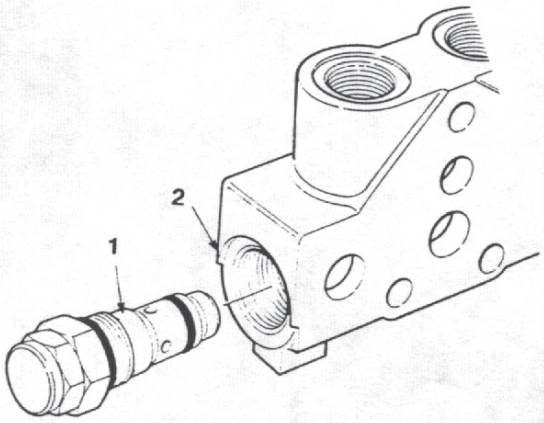
	Part Number

	Part Number

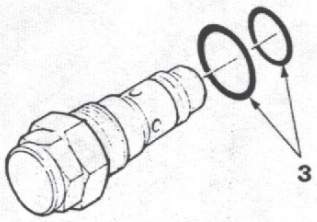
	Part Number

	Part Number

Main relief valve servicing : Assembly
Complete relief valve seal kit 345 9149 133



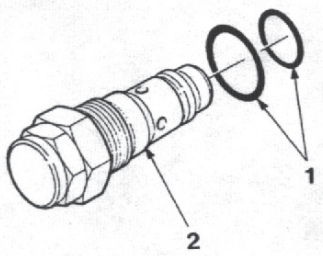
Remove relief valve assembly (1) from the housing (2).



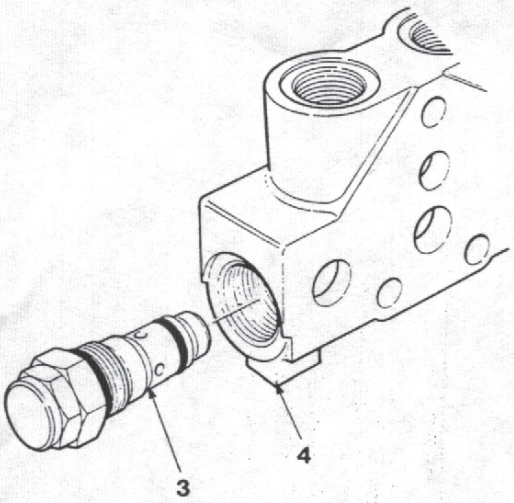
Remove and discard O-rings (3).

Inspect all parts for deterioration or damage. Replace unservicable relief valve assemblies with a complete new unit.

Main relief valve servicing : Assembly
Complete relief valve seal kit 345 9149 133

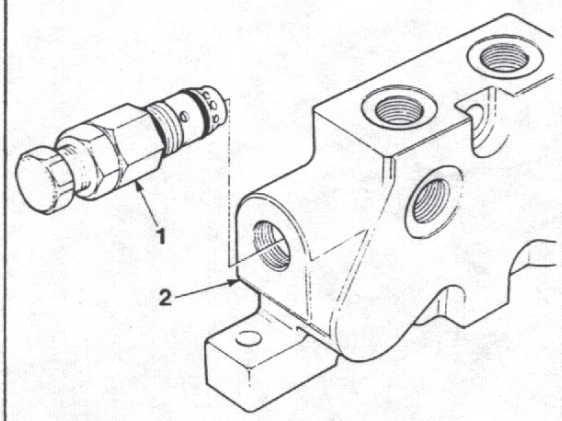


Ensure all threads and sealing areas are clean and free from damage. Fit new O-rings (1), to the relief valve assembly (2).

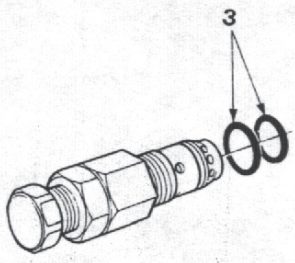


Refit the relief valve assembly (3),to the housing (4). Torque tighten to 20-24Nm.

Main relief valve servicing : Assembly
Complete relief valve seal kit 346 9149 115



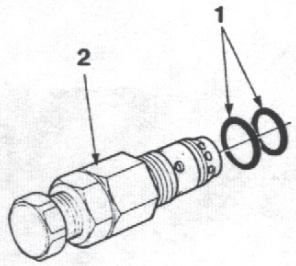
Remove relief valve assembly (1) from the housing (2).



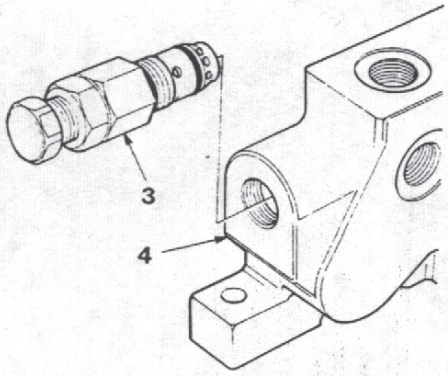
Remove and discard O-rings (3).

Inspect all parts for deterioration or damage. Replace unservicable relief valve assemblies with a complete new unit.

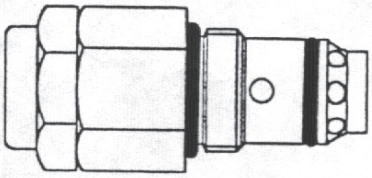
Main relief valve servicing : Assembly
Complete relief valve seal kit 346 9149 115



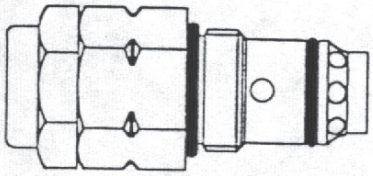
Ensure all threads and sealing areas are clean and free from damage.Fit new O-rings (1), to the relief valve assembly (2).



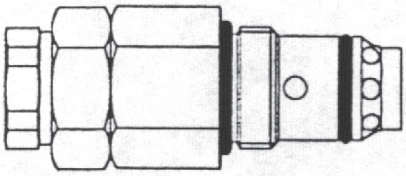
Refit the relief valve assembly (3),to the housing (4). Torque tighten to 20-24Nm.



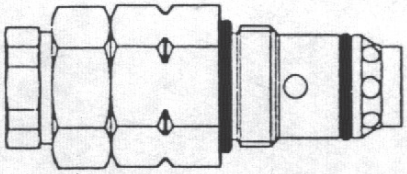
Relief valve Shim adjustable	
For pressure between	Part Number
35 bar - 100 bar	346 9001 007
100 bar - 275 bar	346 9002 007



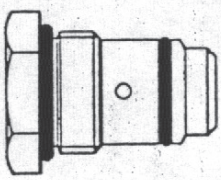
Relief valve / Anticavitation Shim adjustable	
For pressure between	Part Number
35 bar - 100 bar	346 9001 006
100 bar - 275 bar	346 9002 006



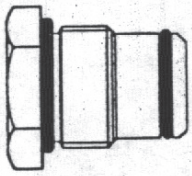
Relief valve Externally adjustable	
For pressure between	Part Number
35 bar - 100 bar	346 9001 003
100 bar - 275 bar	346 9002 003



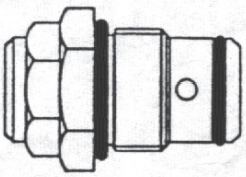
Relief valve / Anticavitation Externally adjustable	
For pressure between	Part Number
35 bar - 100 bar	346 9001 001
100 bar - 275 bar	346 9002 001



Anticavitation valve	
	Part Number
	346 9001 002

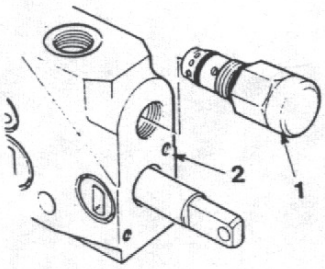
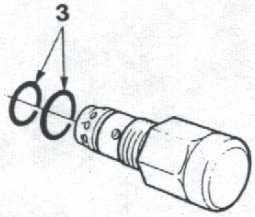


Blanking plug assembly	
	Part Number
	346 9000 001

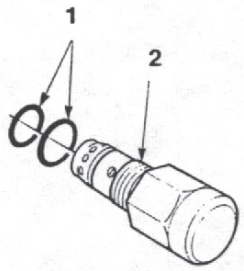


Relief valve Direct acting type	
For pressure between	Part Number
35 bar - 100 bar	346 9001 010
100 bar - 170 bar	346 9002 010
170 bar - 345 bar	346 9003 010

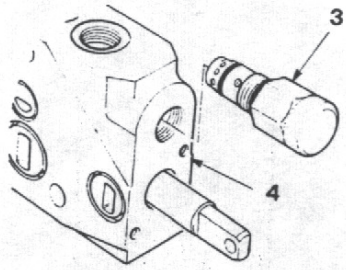
Service relief valve servicing: Disassembly
Complete relief valve seal kit 346 9149 115

	Remove relief valve assembly (1) from the housing (2).
	Remove and discard O-rings (3).
	Inspect all parts for deterioration or damage. Replace unservicable relief valve assemblies with a complete new unit.

Service relief valve servicing: Assembly
Complete relief valve seal Kit 346 9149 115



Ensure all threads and sealing areas are clean and free from damage. Fit new O-rings (1), to the relief valve assembly (2).



Refit the relief valve assembly (3), to the housing (4). Torque tighten to 20-24Nm.