WHEEL LOADER

SERVICE MANUAL

HL667VL

HYUNDAI

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MATERIAL	LOW WEIGHT OR DENSITY 1,100 KG/M³ (1,850 LB/YD³), OR LESS	MEDIUM WEIGHT OR DENSITY 1,600 KG/M³ (2,700 LB/YD³), OR LESS	HIGH WEIGHT OR DENSITY 2,000 KG/M³ (3,370 LB/YD³), OR LESS
Cement, Portland, DRY granular	----------	1,506 kg/m³ (2,583 lb/yd³)	----------
Cement, Portland, DRY clinkers	----------	1,362 kg/m³ (2,295 lb/yd³)	----------
Dolomite, crushed	----------	1,522 kg/m³ (2,565 lb/yd³)	----------
Earth, loamy, DRY, loose	----------	1,202 kg/m³ (2,025 lb/yd³)	----------
Earth, DRY, packed	----------	1,522 kg/m³ (2,565 lb/y d³)	----------
Earth, WET, muddy	----------	----------	1,762 kg/m³ (2,970lb/yd3)
Gypsum, calcined, (heated, powder)	961kg/m³ (1,620 lb/yd³)	----------	----------
Gypsum, crushed to 3 inch size	----------	1,522 kg/m³ (2,565 lb/y d³)	----------
Gravel, DRY, packed fragments	----------	----------	1,810 kg/m³ (3,051 lb/y d³)
Gravel, WET, packed fragments	----------	----------	1,522 kg/m³ (3,240 lb/y d³)
Limestone, graded above 2	----------	1,282 kg/m³ (2,160 lb/y d³)	----------
Limestone, graded 1-1/2 or 2	----------	1,362 kg/m³ (2,295 lb/y d³)	----------
Limestone, crushed	----------	1,522 kg/m³ (2,565 lb/y d³)	
Limestone, fine	----------	----------	1,602 kg/m³ (2,705 lb/y d³)
Phosphate, rock	----------	1,282 kg/m³ (2,160 lb/y d³)	----------

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TORQUE WRENCH EXTENSION TOOLS

Very large diameter, high grade fasteners (nuts, bolts, cap screws, etc.) require a great deal of turning force to achieve recommended tightening torque values.

Common problems that could occur as a result are:

- Recommended torque exceeds the measuring capacity of the torque wrench.
- Specialized sockets do not fit the adapter on the front end (nose) of the torque wrench.
- Generating adequate force on the back end (handle) of the wrench is difficult or impossible.
- Restricted access or an obstruction may make use of the torque wrench impossible.
- A unique application requires fabrication of an adapter or other special extension.

Most standard torque wrenches can be adapted to suit any one of the proceeding needs or situations, if the right extension tool is used or fabricated.

TORQUE MULTIPLICATION

A wrench extension tool can be used to increase the tightening force on a high capacity nut or bolt.

For example, doubling the distance between the bolt and the back (handle) end of the torque wrench doubles the tightening force on the bolt.

It also halves the indicated reading on the scale or dial of the torque wrench. To accurately adjust or convert indicated scale or dial readings, use the following formula:

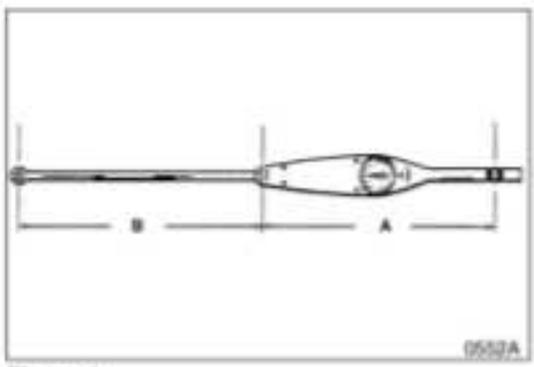


Figure 1

I = A x T / A + B where:

I = Indicated force shown on the torque wrench scale or dial.

T = Tightening force applied to the nut or bolt (actual Torque).

A = Length of the torque wrench (between the center of the nut or bolt and the center of the handle).

B = Length of the extension.

As an example, if a 12" extension is added to a 12" torque wrench, and the indicated torque on the dial reads "150 ft lb," the real force applied to the bolt is 300 ft lb:

$$I = \frac{A \times T}{A + B} = \frac{12 \times 300}{12 + 12} = \frac{3600}{24} = 150$$

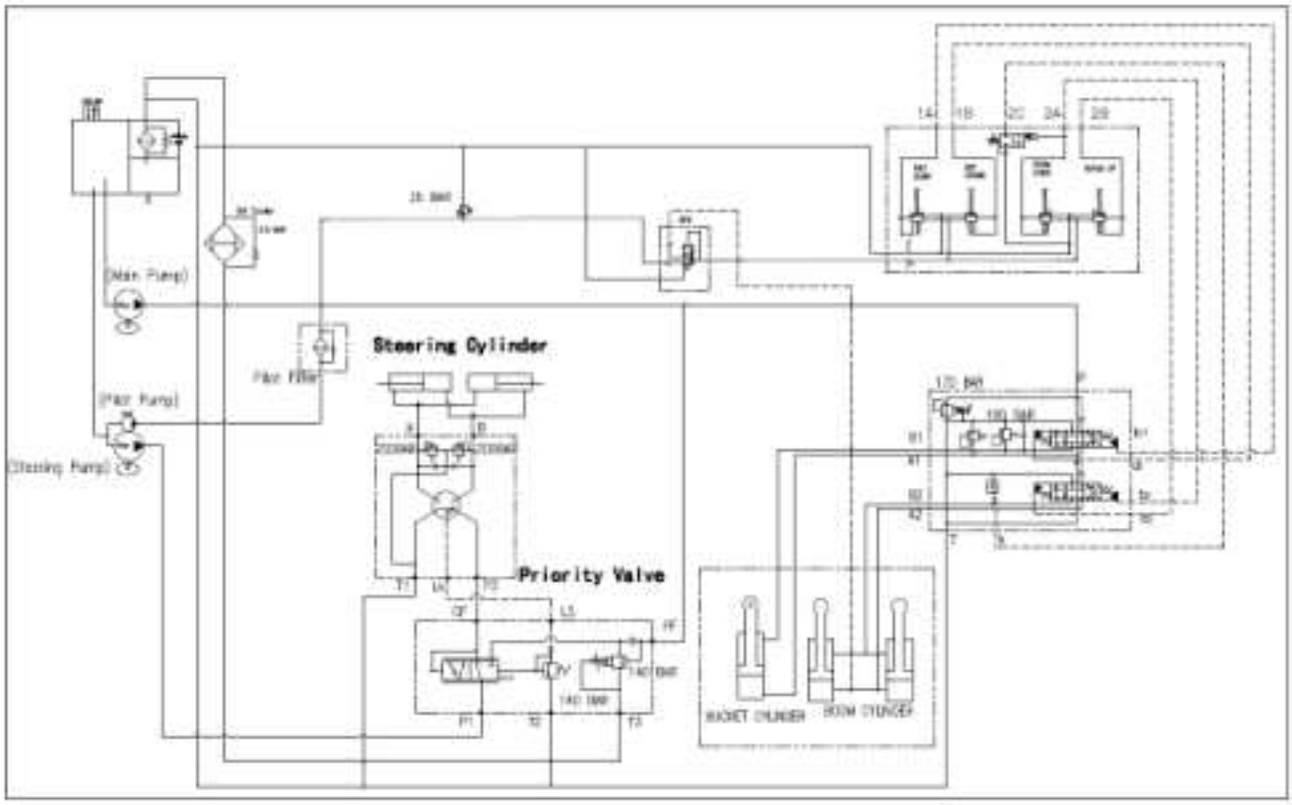
NOTE: *The formula assumes that there is no added deflection or "give" in the joint between the extension and torque wrench. Readings may also be inaccurate:*

- If the extension itself absorbs some of the tightening force and starts to bend or bow out.
- If an extension has to be fabricated that is not perfectly straight (for example, an extension made to go around an obstruction, to allow access to a difficult to tighten fastener), the materials and methods used must be solid enough to transmit full tightening torque.

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General description

Schematic diagram



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Install components :

1 = Control spool

2 = Spring (Lo =124.10 mm)

3 = Spring (Lo = 77.10 mm)

4 = Displacement spool



Figure 146

Install components :

1 = Reversing spool

2 = Disk(s) (optional)

3 = Spring (Lo = 56,30 mm)

NOTE ;

p2 is determined by the disk 2

(pay attention to Notes, Page 12 ... 14) !

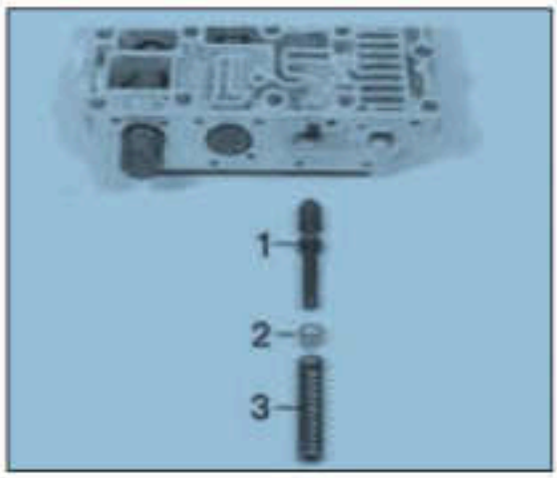


Figure 147

Install components :

1 = Control spool (total length = 55.50 mm)

2 = Spring (Lo = 51.30 mm)

NOTE :

Pay attention to the installation position of the spool, see Figure !

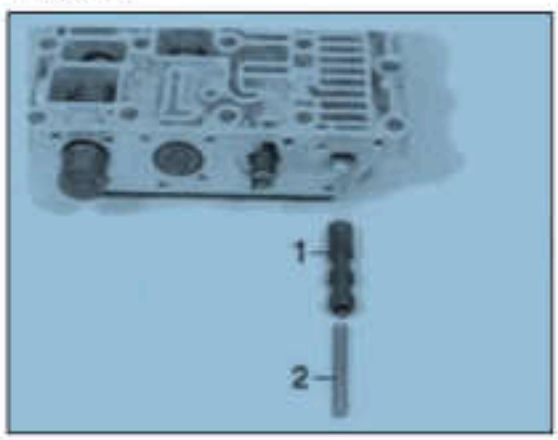


Figure 148

Pre-assemble and attach 2-stage pressure control valve (Figure 149 – 157) ;

Close the bores by means of balls (4 pieces, Ø 4.50 mm).



Figure 149

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Reset valve:

Install components.

1 = Spool

2 = Disk(s) (optional)

3 = Spring (L_o = 58,00 mm)

4 = Spring (L_o = 65,40 mm)

NOTE:

p2 is determined by the disk 4

(pay attention to Notes, Page 12 ... 14) !

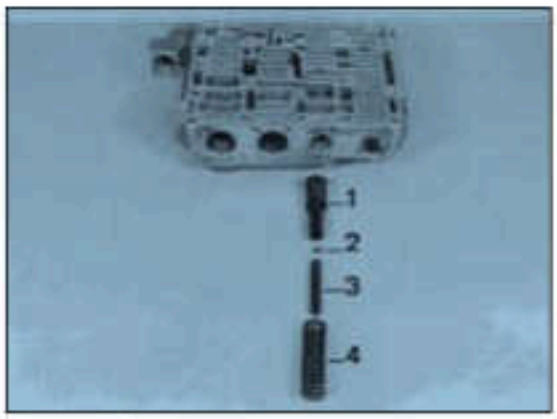


Figure 48

Pressure control valve :

Install components.

1 = Spool

2 = Spring (L_o = 132,40 mm)

3 = Spring (L_o = 76,70 mm)

4 = Spool

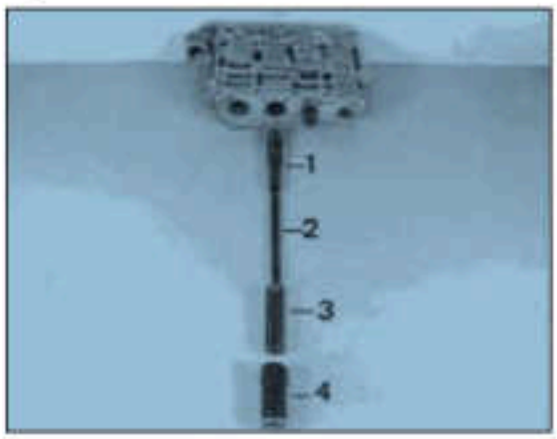


Figure 49

Control pressure valve :

Install components.

1 = Spring (L_o = 78,60 mm)

2 = Spring (L_o = 65,40 mm)

3 = Disk(s) (empirical value s = 3,00 mm)

4 = Disk(s) (empirical value s = 1,00 mn)

NOTE:

ps is deter mind by the disks 3 and 4

(pay attention to Notes, Page 12 ... 14) !

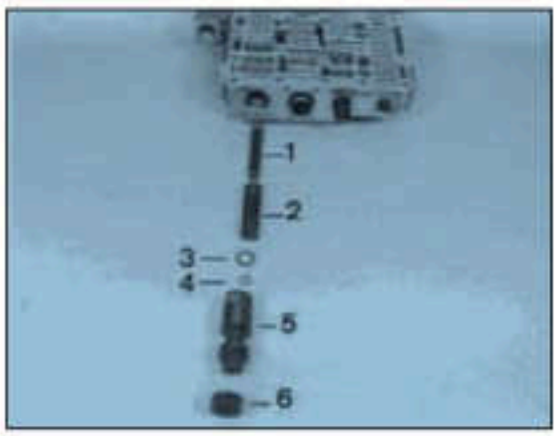


Figure 50

Pre-assemble 2-stage pressure control valve

(Figure 51... 53) :

Install diaphragm (optional).

NOTE :

Wet thread of diaphragm with Loctite (Type No.270)!

Δ t1 is determined by the diaphragm

(pay attention to Notes, Page 12 ... 14)!

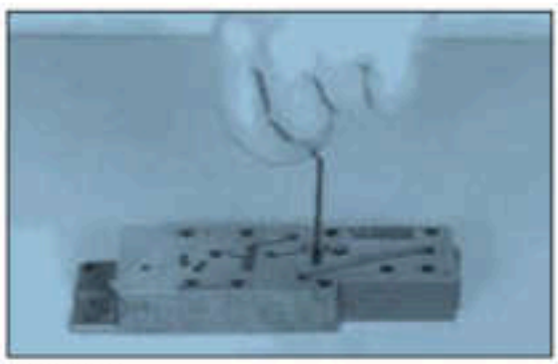


Figure 51

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