

Typical Ram

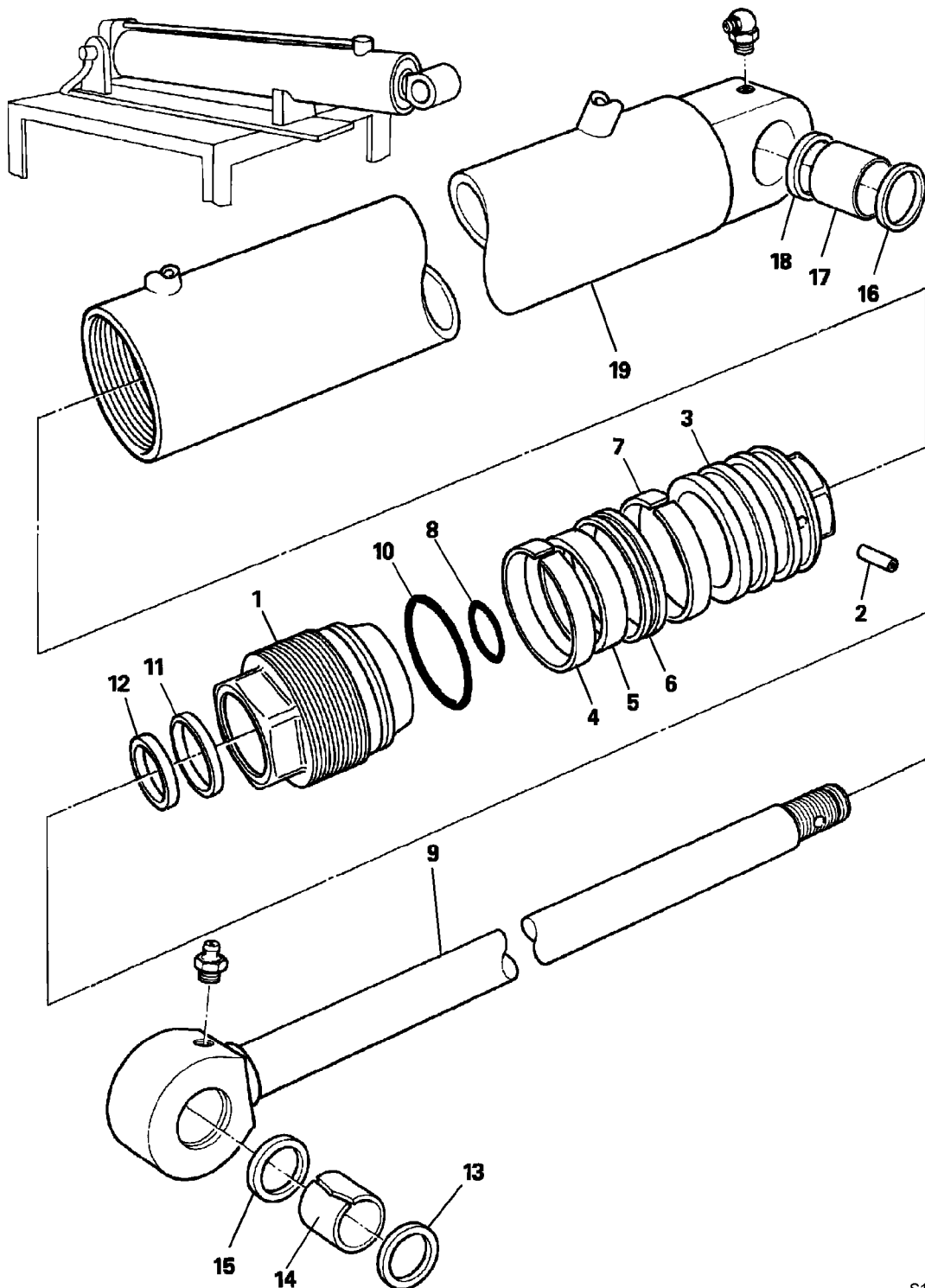


Fig 66.

S153210-V1

Typical Ram

Dismantling

The numerical sequence shown on the illustration is intended as a guide to dismantling.

Place ram assembly on a locally manufactured strip/rebuild bench as shown.

Use the correct size spanner to release end cap **1** and remove the piston rod assembly **9** from the cylinder. [Fig 66. \(E-97\)](#).

WARNING

If air or hydraulic pressure is used to force out the piston assembly, ensure that the end cap is securely fitted. Severe injury can be caused by a suddenly released piston rod.

HYD-1-2

Position piston rod assembly on bench in place of ram cylinder. Remove seals **5**, **6** and wear rings **4**, **7** from piston head **3**.

Extract dowel **2** from the piston head using the appropriate sized screw threaded into the extractor hole.

Use the correct size spanner, remove piston head **3** from rod **9** and remove 'O' ring **8**.

Ensure that metal components are free from scoring, nicks and burrs. A damaged rod will impair the life of the gland seal.

For assembly the sequence should be reversed.

Assembly

Clean threads of piston rod, piston head, end cap and cylinder using a wire brush.

Use JCB Super Clean Safety Solvent to ensure that all threads are free from grease, hydraulic oil and old Loctite. Allow 15 minutes for solvent to dry before applying Loctite.

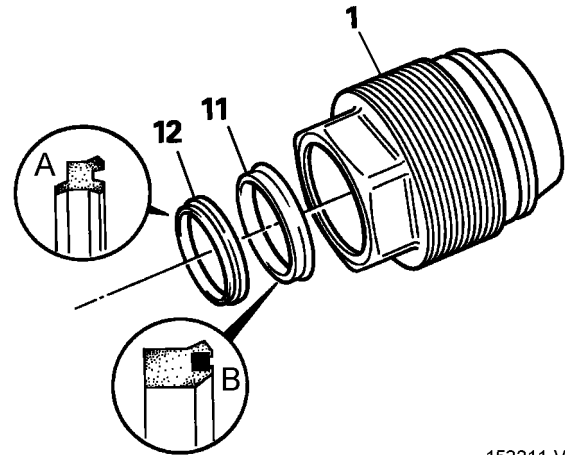
Ensure that lubricants used during assembly do not come into contact with Loctite.

Fit new seals **10**, **11**, **12** into end cap **1**.

Make sure the seals **11** and **12** are fitted as shown at **A** and **B**. [Fig 67. \(E-98\)](#).

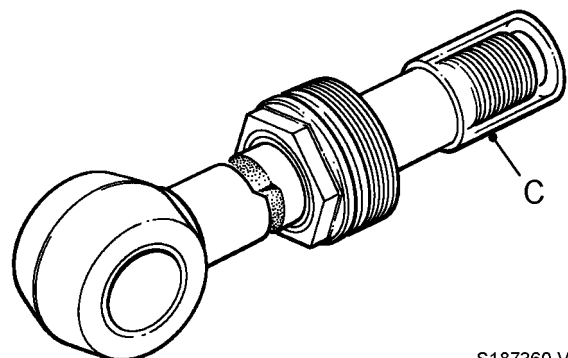
Use sleeve **C** to protect the gland seal from damage. [Fig 68. \(E-98\)](#).

Fit end cap onto the piston rod **9**. [Fig 66. \(E-97\)](#).



153211-V1

Fig 67.



S187360-V1

Fig 68.

Apply Loctite Activator T to threads of end cap and cylinder. Allow Activator to dry for 15 minutes before bringing into contact with Loctite.

Note: Loctite and Activator must not come into contact with seals or 'O' rings.

Fit a new 'O' ring **8** into piston head **3**. [Fig 66. \(E-97\)](#).

Assemble piston head **3** onto piston rod and torque tighten.

Fit locking dowel **2** to piston as follows:

- 1** Existing piston head and rod, align holes so that dowel can be fitted with tapped extractor hole showing.
- 2** New piston head and rod, drill and ream piston head and rod to the diameter and depth shown in the table. Remove all swarf and contamination and insert dowel with tapped extractor hole showing.
- 3** Existing piston head and new rod, drill through existing hole in piston head to the diameter and depth shown in the table. Remove all swarf and contamination and insert dowel with tapped extractor hole showing.
- 4** New piston head and existing rod, same as 2 above but at 90 degrees to existing hole in rod.

Note: Ensure that the top of the dowel is below the level of the bearing ring groove and use an undersized pilot drill before drilling to the final size shown in the table.

Fit seal **6** to piston head **3** then fit outer seal **5** over piston seal **6**. [Fig 66.](#) [\(E-97\)](#).

Note: Make sure when fitting piston seal **6** that it is correctly located and square in the piston head before fitting outer seal **5**.

Fit seal wear rings **4** and **7** to piston head.

Position cylinder on bench and install rod assembly into cylinder.

Apply Loctite 932 to threads of cylinder and torque tighten end cap **1**.

Note: If hydraulic oil contacts uncured Loctite a weakening of the bond will result. Cure times vary according to the ambient temperature. The following approximate cure time applies at 20 degrees C and is the minimum period between assembly and filling the ram with oil.

Loctite 262 or 932 with Activator N - 1 hour

Loctite 262 or 932 with Activator T - 2 hours

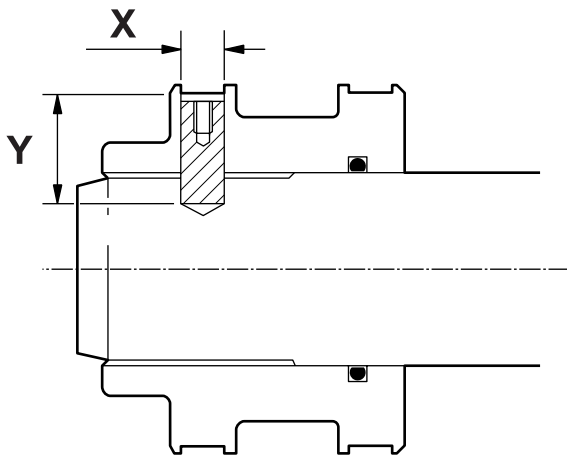
Note: Cold weather operation. When operating in conditions which are consistently below freezing, it is recommended that the rams are operated slowly to their full extent before commencing normal working.

Table 26.

Ram size	Diameter X	Depth Y
90 x 50	8.02mm - 8.10mm	27.0mm - 28.0mm
60 x 30	6.02mm - 6.10mm	22.0mm - 23.0mm
100 x 60	8.02mm - 8.10mm	27.0mm - 28.0mm
70 x 40	6.02mm - 6.10mm	22.0mm - 23.0mm
80 x 50	6.02mm - 6.10mm	22.0mm - 23.0mm
50 x 25	6.02mm - 6.10mm	22.0mm - 23.0mm
130 x 70	12.02mm -12.10mm	37.0mm - 38.0mm
110 x 60	12.02mm -12.10mm	32.0mm - 33.0mm
110 x 65	12.02mm -12.10mm	32.0mm - 33.0mm
140 x 75	12.02mm -12.10mm	47.0mm - 48.0mm

Table 27. Torque Settings

Ram size	Item	Nm	kgf m	lbf ft
All except 60 x 30 & 50 x 25	1	678	69	500
All except 60 x 30 & 50 x 25	3	405	41	300
60 x 30 only	1	450	46	332
60 x 30 only	3	300	31	221
50 x 25 only	1	400	41	295
50 x 25 only	3	250	25	184



A151930-V1

Fig 69.

Hydraulic Rams

Introduction

The following information is for rams used on wheeled loading shovel machines as detailed below:

Machine	Ram	Description
ZX	Shovel	180/90
ZX/HT	Lift	160/80

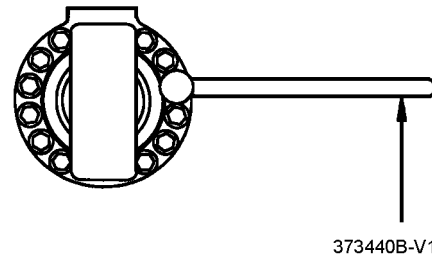


Fig 71.

Dismantling the Piston Rod from Cylinder Tube

Necessary Equipment

- Assembly bench
- Overhead crane
- Cleaning facilities
- Socket wrench

Note: Disassembly should be done vertically.

- 1 Clean the cylinder carefully. Use high-pressure cleaning and solvent (⇒ [Fig 70. \(□ E-101\)](#)). Empty the oil from the cylinder.

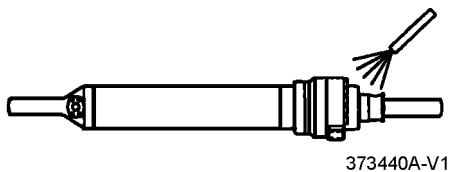


Fig 70.

- 2 Unfasten the cylinder head screws. Keep screws in place (⇒ [Fig 71. \(□ E-101\)](#)).

- 3 Position the cylinder vertically (⇒ [Fig 72. \(□ E-102\)](#)).