



Hodge Clemco Ltd

Internal Pipe Cleaning Tool

Owner's Manual

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Machinery Directive

(89/392/EEC amended by 91/368/EEC, 93/44/EEC and 93/68/EEC)

EC Declaration of Conformity

We HODGE CLEMCO LTD declare that the supplied equipment when installed and used in accordance with the owners manual provided, conforms with the essential health and safety requirements of the above Directive(s)

Engineering Manager



Managing director



MAINTENANCE INSPECTION CONTRACT

In response to numerous requests we are now able to offer a Maintenance Inspection Contract for your Clemco Equipment.

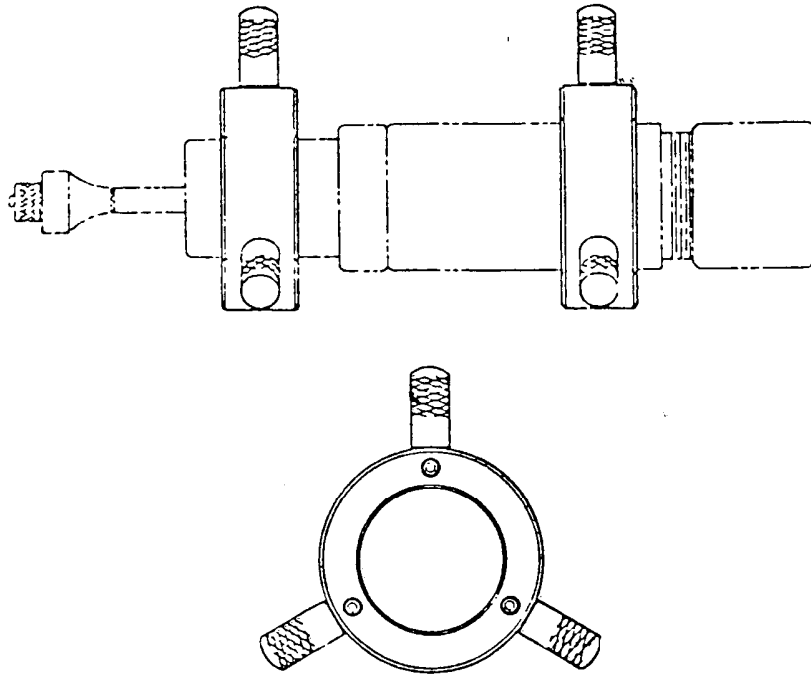
These request have been made by customers who appreciate the benefits of regular inspection/servicing on a planned basis. The remedial work which follows a breakdown or worse, the need for early equipment replacement due to accelerated wear may easily exceed the cost of a Maintenance Inspection Contract. If you would like further details please contact our Customer Services Department on 0114 2548811

A request for more information does not represent any form of commitment on your behalf, so can you afford to say 'NO' at this stage?

We look forward to hearing from you soon.

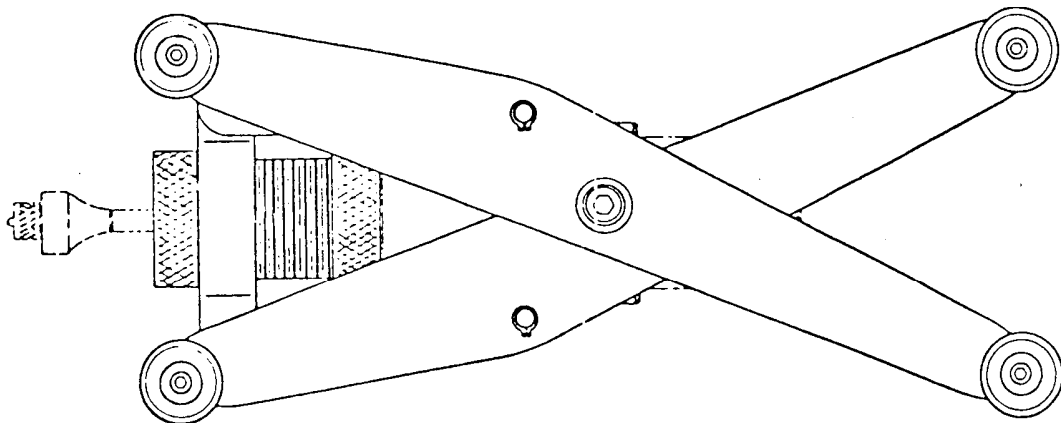
HBC-1 COLLAR & BUTTON CENTERING DEVICE

Fig. 3



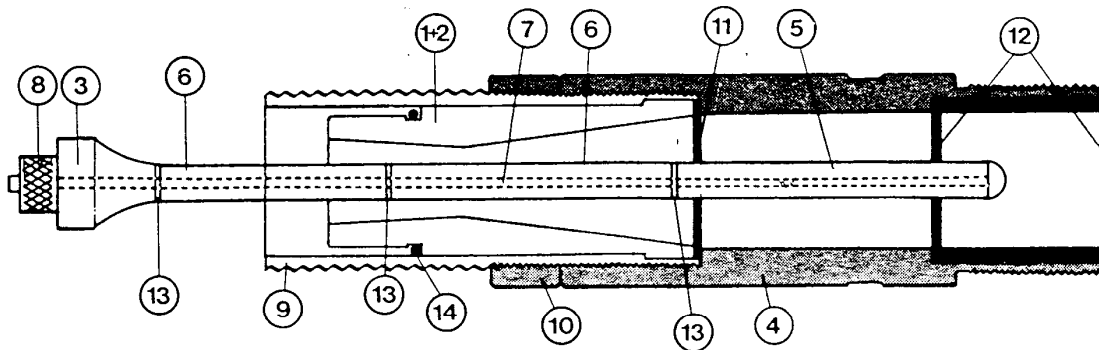
HBC-2 ADJUSTABLE CENTERING CARRIAGE

Fig. 4



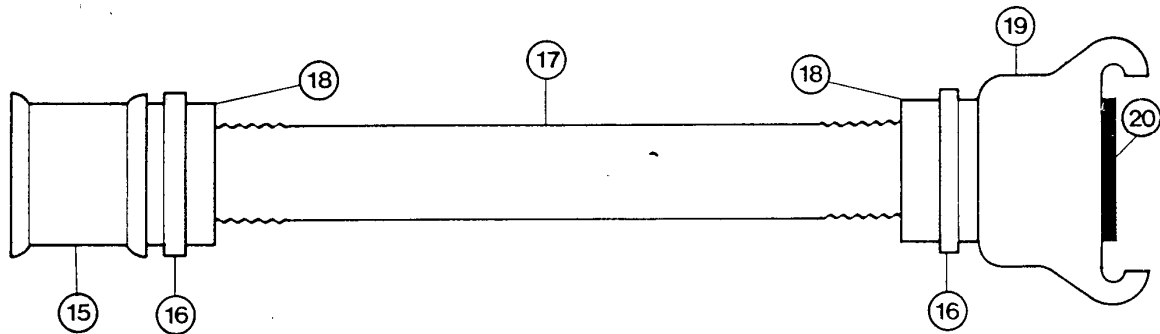
HB-1 HOLLOBLAST BASIC TOOL

Fig. 1



HBSS-1 STREAM STRAIGHTENER

Fig. 2



Item	Part No.	Description	Item	Part No.	Description
1	HBN8	3.1/4" (82mm) x 1/2" (13mm) Orifice Nozzle	11	HB119	Stem Support Front Gasket
2	HBN10	3.3/4" (94mm) x 5/8" (16mm) Orifice Nozzle	12	HB120	Stem Support Rear Gasket (2 required)
3	HB110 *	Deflection Tip	13	HB122	Brass Washer (3 required)
4	HB111	Tool Holder	14	HB123	Nozzle 'O' Ring
5	HB112 *	Stem Support Assembly	15	P2F	1.1/4" Socket
6	HB113 *	Throat Sleeve (2required)	16	P100	1.1/4" x 1" Reducing Bush
7	HB115	Throat Rod	17	HBSS-4	12" x 1" i.d. pipe
8	HB116	Tip Holder Nut	18	P61	1" Back Nut (2 required)
9	HB117	Tip Protection Sleeve	19	P9	CF Quick Coupling
10	HB118	Knurled Lock Nut	20	CG1	Coupling Gasket

* Add suffix 'B' to part number for Boron Carbide components i.e. HB110B

1.0 Introduction

- 1.1 The Holloblast pipe cleaning tool is designed to blast internal surfaces of pipes ranging from 2" (50mm) i.d. to 12" (300mm) i.d. using the appropriate centering carriages HBC1 and HBC2. .
- 1.2 This blast cleaning attachment is used in conjunction with an abrasive blast cleaning machine and blast hose and incorporates a deflection tip which directs the air/abrasive mixture at the internal surface of the pipe resulting in a 360° blast pattern.
- 1.3 A choice of two nozzle sizes is available for use with the Holloblast. These are the standard HBN8, 3 1/4" (82mm) x 1/2" (13mm) orifice (requiring 200 c.f.m at 100 p.s.i.) and HBN10, 3 3/4" (94mm) x 5/8" (16mm) orifice (requiring 350 c.f.m. at 100 p.s.i.).

2.0 Setting Up Instructions

Note: These instructions are to be used in conjunction with those issued with the abrasive blast cleaning machine and are based on the assumption that a RMS-100/2000 remote control system is being used. The maximum recommended working pressure of this machine is 110 p.s.i.(7.5bar). Under no circumstances must it be connected to an air supply of greater pressure.

- 2.1 Start the compressor and run for a period of 5 to 10 minutes to allow it to reach operating temperature.
- 2.2 Connect a suitable length of air hose to the compressor air outlet.
- 2.3 Carefully turn ON the air to 'Blow out' any dirt or moisture from the air hose.
- 2.4 Turn OFF the air supply.
- 2.5 Connect the air hose to the blast machine air inlet

N.B It is essential that the air hose couplings are secure and that any sealing gaskets required are in position. Escaping air can be a danger and will reduce the efficiency of the operation.

- 2.6 Close the abrasive metering valve of the blast machine.
- 2.7 OPEN the choke valve (P21) by positioning the handle in line with the vertical pipe work. This valve should remain open for all normal conditions.
- 2.8 OPEN petcock (RM9) on RMS-100/2000 Recova valve.

- 2.9 Connect the twin recova air hoses (Hose7D) to their respective couplings on the RMS-100/2000 remote control valve and deadman's handle. Red control hose connects between ports R or 1 on the remote control valve and deadman handle. Yellow control hose connects between ports Y or 2.

N.B. It is important to follow the above colour coding when connecting Recova hoses.

- 2.10 Check that the coupling gasket (CG1) in the CF coupling (P9) at base of machine is in position and in good condition.
- 2.11 Connect the requisite number of lengths of blast hose to the machine ensuring that all coupling gaskets are in position and in good condition (Blast hose with quick release couplings at both ends is required).
- 2.12 Secure all couplings with split pins through matching holes provided.
- 2.13 The deadman's handle and its hoses are to be kept separate from the blast hose to enable operation of the blast machine and Holloblast tool by remote control whilst the latter is operating inside the pipe.
- 2.14 Check that the coupling gasket (CG1) in the CF coupling (P9) on the stream straightener (HBSS1) is in position and in good condition.
- 2.15 Screw the stream straightener (HBSS1) to the Holloblast tool.
- 2.16 Mount the Holloblast tool in the appropriate centering carriage (see section 3).
- 2.17 Connect the Holloblast tool complete with stream straightener to the blast hose by means of the quick release couplings.
- 2.18 Secure couplings with split pins through matching holes provided.

3.0 Centering Carriage Selection and Fitting Instructions

Selection of either the HBC1 collar and button device or the HBC2 adjustable centering carriage is determined by the internal diameter of the pipe to be blast cleaned.

The HBC1 is to be used when cleaning 3" to 5" (75mm -125mm) i.d. pipes the HBC2 is to be used when cleaning 5" to 12" (125mm-300mm) i.d. pipes.

The HBC1 collar and button device comprises of two collars and four sets of snap in buttons which are to be used as follows:

Button size	Pipe size (i.d.)
5/16" (8 mm)	3.1/2" (88 mm) i.d
9/16" (14 mm)	4" (100 mm) i.d
13/16" (21 mm)	4.1/2" (113 mm) i.d
1.1/16" (27 mm)	5" (125 mm) i.d
The collar only, is used for 3" (75 mm) i.d. pipes	

- 3.1 The larger collar is mounted over the groove in the tool holder (HB111) on the HB1 and held in position by tightening the socket head screw provided.
- 3.2 The smaller collar is mounted over the tip protection sleeve (HB117) and held in place by tightening the socket head screws provided (see fig 3). The adjustable centering carriage (HBC2) makes use of the threaded tip protection sleeve (HB117).
- 3.3 Mount the Holloblast tool in the centering carriage (see fig.4).
- 3.4 Tighten the socket head screw on the collar onto the groove of the tool holder (HB111) to hold in place.
- 3.5 Screw the second lock ring (HB118) onto the top protection sleeve in order to secure the front of the carriage.

4.0 Operating Instructions

Checking blast machine and Holloblast tool using air only.

- 4.1 Turn ON the air at the compressor.
- 4.2 Fully OPEN the helmet take-off tap (RM20) and abrasive metering valve on the blast machine.
- 4.3 At this point the operator should put on protective clothing and air fed helmet if required.
- 4.4 With the deadman,s handle in the OPEN position, CLOSE petcock (RM9) on the RMS-100/2000 Recova valve.
- 4.5 Adjust drain cock on the blast machine water separator (P23M) to give constant bleed off of air water vapour.
- 4.6 The operator must then take a secure hold of the Holloblast tool.
- 4.7 Pressurise the system by closing the deadman,s handle. The pop-up valve will then close against the sealing ring (P5) of the machine and air will pass through the Holloblast tool.

- 4.8 Allow air to pass through the Holloblast for a short period to purge the system of moisture from condensation which may have accumulated during storage.
- 4.9 Depressurise the machine by either:
 - a) Releasing the deadman handle or
 - b) Opening the petcock (RM9) on the RMS100/2000 Recova valve

N.B. Operation (b) will depressurise the machine in an emergency even if the deadman handle is closed.

- 4.10 CLOSE the abrasive metering valve.

Operating the Blast Machine and Holloblast Tool

- 4.11 OPEN petcock (RM9).
- 4.12 Load the selected abrasive into the blast machine, this will flow in through the filler hole in the centre of the concave head.
- 4.13 Insert the Holloblast tool complete with appropriate centering carriage into the pipe to be blasted ensuring that the deflection tip does not touch the pipe.
- 4.14 Push the Holloblast down to the far end of the pipe and hold the blast hose firmly.
- 4.15 CLOSE petcock (RM9).
- 4.16 CLOSE the deadman,s handle (RM21). The system will then pressurise and air will pass through the Holloblast.
- 4.17 The pot tender should gradually open the abrasive metering valve to introduce abrasive into the air stream. Adjust the valve to maintain the minimum amount of abrasive into the air stream. Too much abrasive will seriously affect the efficiency of the Holloblast tool resulting in accelerated wear.
- 4.18 Withdraw the Holloblast through the pipe at a rate to give the desired finish to the internal surface of the pipe.
- 4.19 When the pipe has been cleaned turn OFF the flow of abrasive by adjustment of the abrasive metering valve.
- 4.20 MAINTAIN THE FLOW OF AIR to purge the system of abrasive (and avoid the occurrence of blockages).

- 4.21 TO CLOSE DOWN the system or for refilling the machine, depressurise be either:
- a. Releasing the deadman handle.
 - b. Opening the petcock on the recova valve.

N.B The petcock must always be open before refilling the machine to avoid accidental pressurisation. Unlike conventional blasting the Holloblast tool ejects abrasive from the side radially therefore avoid being at the side of the Holloblast when it is working and do not allow the deflection tip to contact the surface being cleaned.

- 4.22 Always empty the machine of abrasive after blasting. This will assist in obtaining a quick start when using the machine again, by preventing unnecessary blockages due to damp abrasive.

5.0 Maintenance

All blast cleaning equipment is self destructive when in operation, therefore , for safety and efficiency it is essential to operate a preventative maintenance programme

NB. Ensure that the air supply at the compressor is turned off and the airline is purged of pressure before maintenance work is carried out. Also care must be taken not to drop the Holloblast tool or any of its internal parts.

Checklist

N.B. For abrasive blast cleaning machine and blast hose maintenance, refer to the appropriate machine owners manual.

Holloblast (after 8 working hours)

- 5.1 Strip and clean the Holloblast tool and remove any residual particles.
- 5.2 Check condition of gaskets HB119 and HB120 and replace if worn.
- 5.3 Check condition of nozzle 'o' ring (HB123) and replace if worn.
- 5.4 Check condition of deflection tip (HB110*) and replace if worn.
- 5.5 Check condition of throat sleeves (HB113*) and replace if worn.
- 5.6 Check condition of stem support assembly (HB112*) and replace if worn.

* Use Boron Carbide components if greater wear resistance is required.

- 5.7 Check condition of brass washers (HB122) and replace if worn. Do not neglect these washers as they act as important shock absorbers.
- 5.8 Check condition of Holloblast nozzle for excessive wear. To maintain correct nozzle pressure the nozzle should be replaced if wear increases the bore by 1/16" (1.5mm).
- 5.9 Re-assemble the Holloblast tool making sure to correctly align all parts to maintain even wear.

6.0 Compressed Air Supply

- 6.1 For cleaning the internal surfaces of steel pipes, a pressure of 100 p.s.i at the nozzle of the Holloblast tool or as near as practically possible will give the best rate of cleaning.
- 6.2 The volume of air required in cubic feet per minute (c.f.m) to maintain 100 p.s.i. (7 bar) at the nozzle will depend upon the nozzle orifice size being used (see 1.0).

7.0 Abrasives

- 7.1 All suitable graded and dried abrasives containing no free silica can be used with the blast cleaning machine and Holloblast tool. The following are particularly recommended:

JBlast - Grade Supa

JBlast - Grade Supafine

Steel Grit/Chilled Iron (Providing adequate abrasive recovery equipment is available.

Aluminium Oxide causes accelerated wear to the Holloblast, therefore Boron Carbide components should be used.

8.0 Fault Analysis

The following fault finding procedure is designed to be used in conjunction with fault analysis charts in abrasive blast cleaning machine manuals.

N.B. Ensure that the air supply at the compressor is turned off and the air line is purged of pressure before repair work is carried out.

Symptom	Probable Fault	Action Required
8.1 No air or abrasive passes through the Holloblast tool	Compressor not turned on	Turn on compressor
8.2 Air but no abrasive passes through the Holloblast tool	Abrasive metering valve on blast machine closed	Open valve – see 4.17
8.3 Intermittent flow of abrasive from Holloblast tool	Abrasive metering valve on blast machine not adjusted correctly	Check setting see 4.17
8.4 Abrasive surges from Holloblast tool	Abrasive metering valve on blast machine opened too fully	Check setting see 4.17
8.5 Uneven wear to internal parts of Holloblast tool	Badly worn gaskets (HB119) and (HB120) causing turbulence Stem support assembly (HB112) deflection tip (HB110) and throat sleeves (HB113) not properly aligned	Replace gaskets as necessary see 5.2 Re-align components as necessary –see 5.9
8.6 Inefficient cleaning rate	Worn deflection tip (HB110) Insufficient air pressure Throat rod (HB115) loose or bent	Replace worn deflection tip – 5.4 Check compressor output Re-align or replace as necessary
8.7 360° blast pattern not being achieved	Worn deflection tip (HB110) Throat rod (HB115) misaligned	Replace worn deflection tip – see 5.4 Re-align throat rod
8.8 Centering carriage spiralling and jamming inside pipe when Holloblast tool is in operation	Incorrect adjustment of centering carriage	Re-adjust centering carriage