OPERATING INSTRUCTIONS

Non Automatic Concrete Compression Machines

(Including Hoek Cell Machine)

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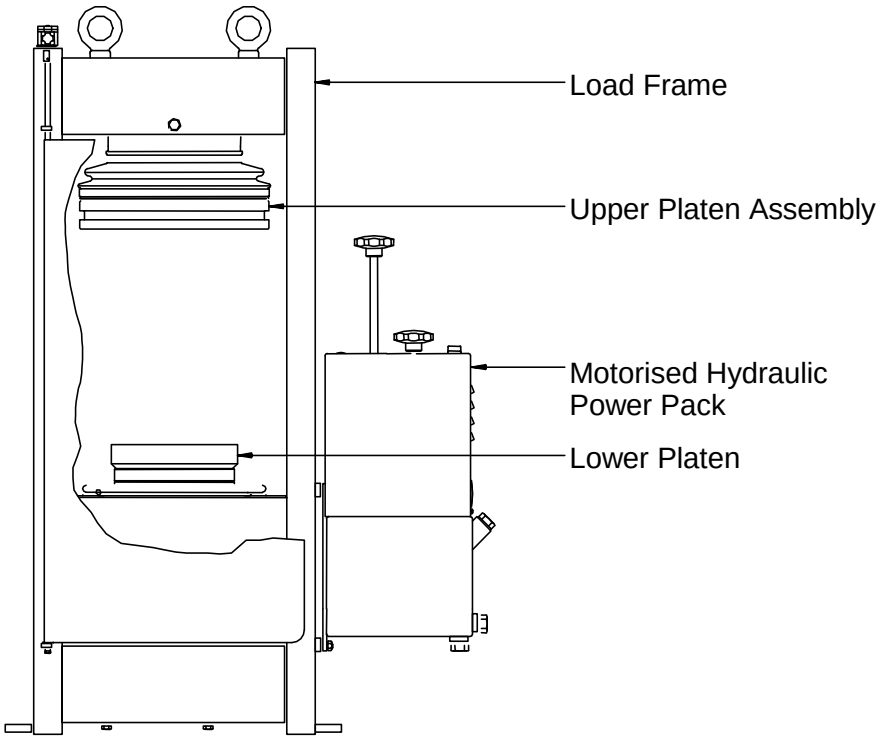
Contents



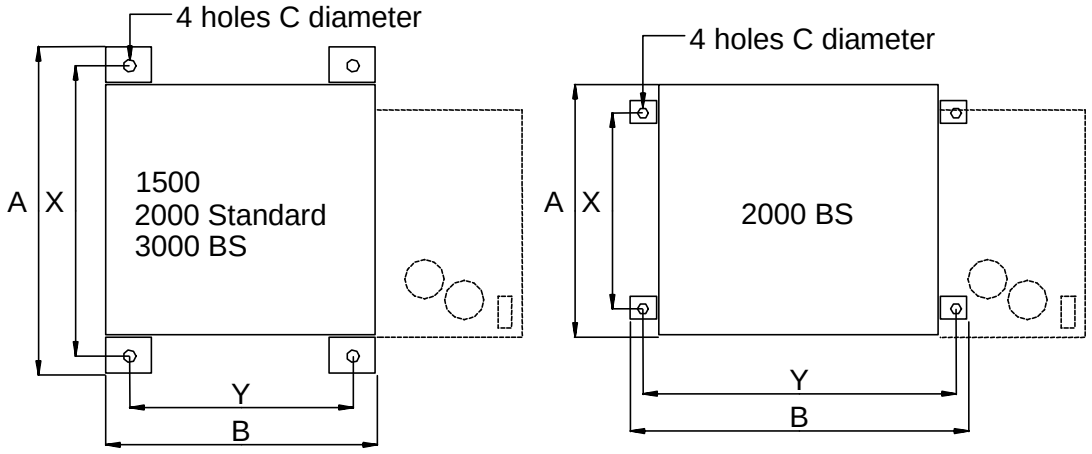
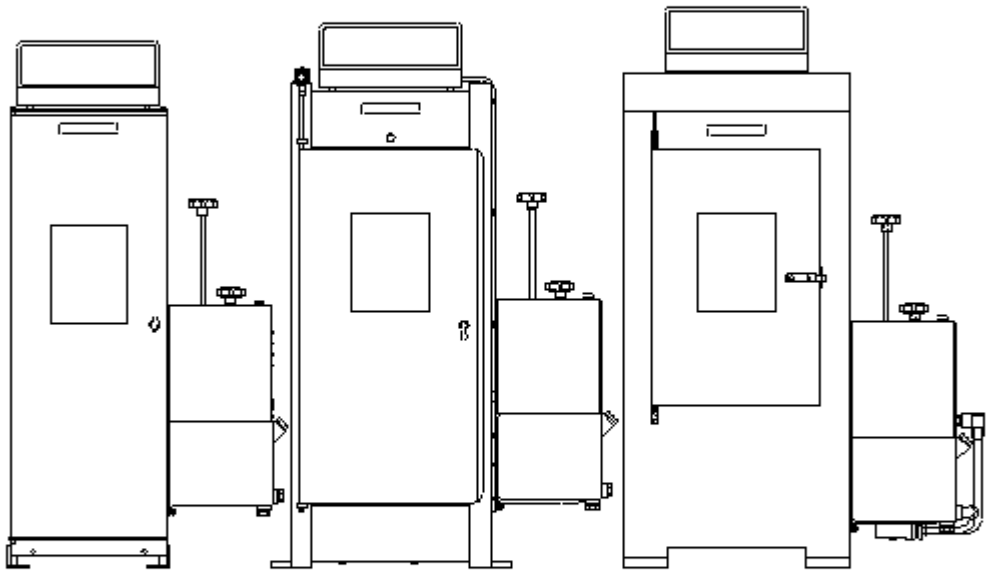


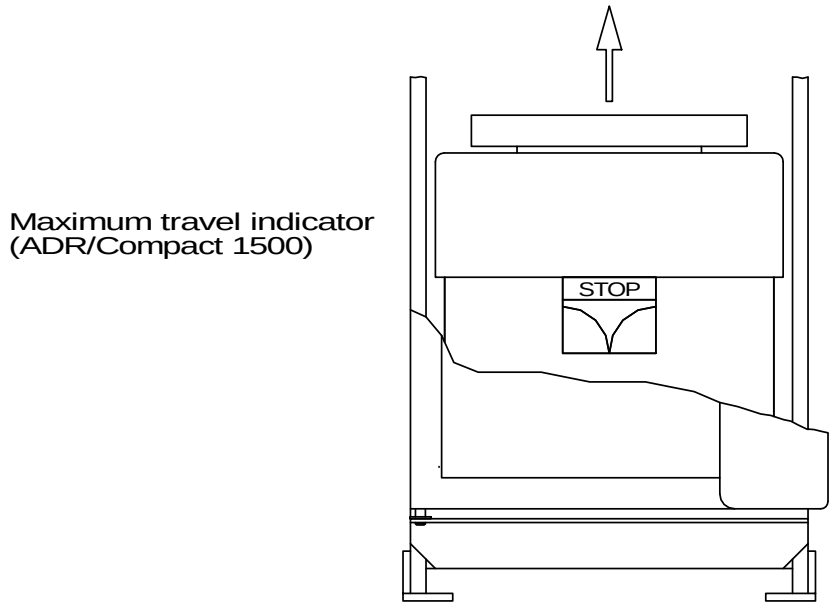
Figure 1. General Arrangement of Compression Frames and Footprint dimensions

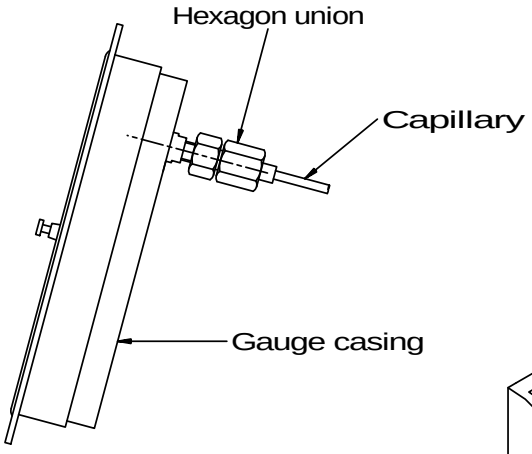
	Dimension (mm)				
Machine	A	B	C	X	Y
ADR 1500/2000 Standard	440	364	13	410	308
ADR 2000 BS	440	536	20	310	496
ADR 3000 BS	630	510	20	570	410



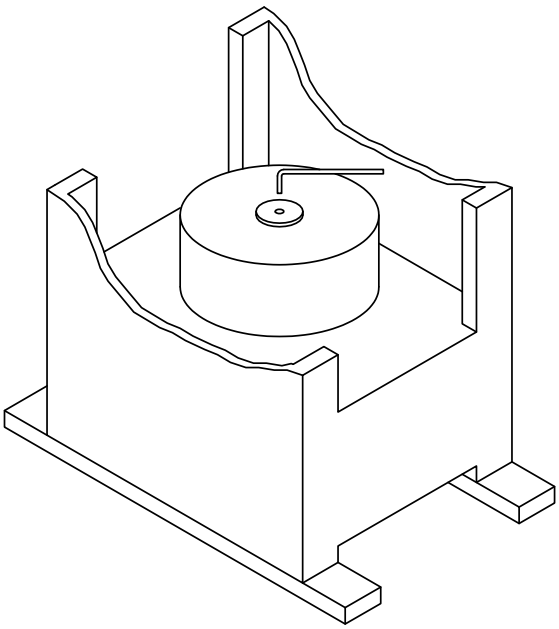
From left to right
ADR 1500/2000 Standard, ADR 2000 BS, ADR 3000 BS

Figure 2 Compression Machine Range



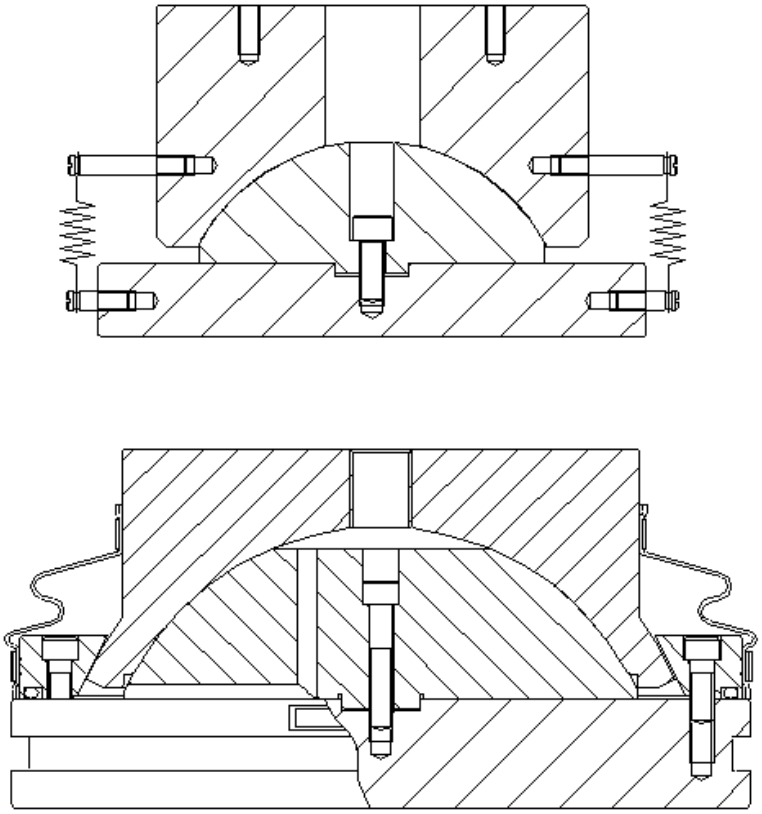


Typical analogue gauge



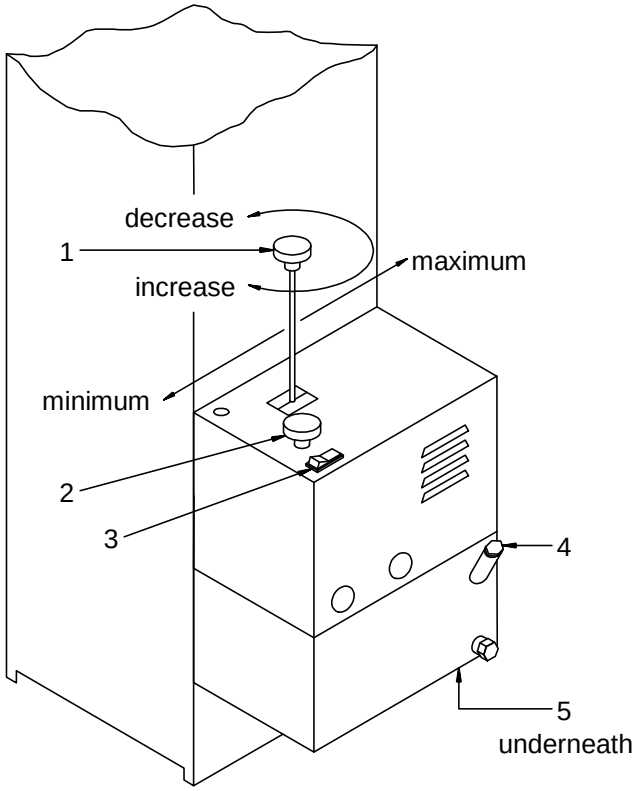
Bleed screw location
(all models)

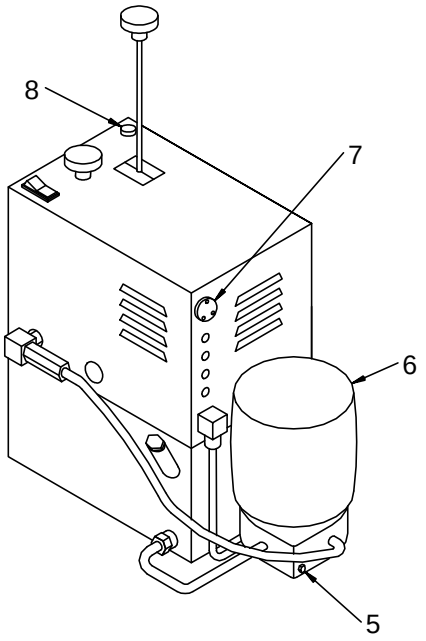
Figure 3. Maximum travel indicator (upper view)
Typical analogue gauge (middle view)
Bleed screw location (lower view)



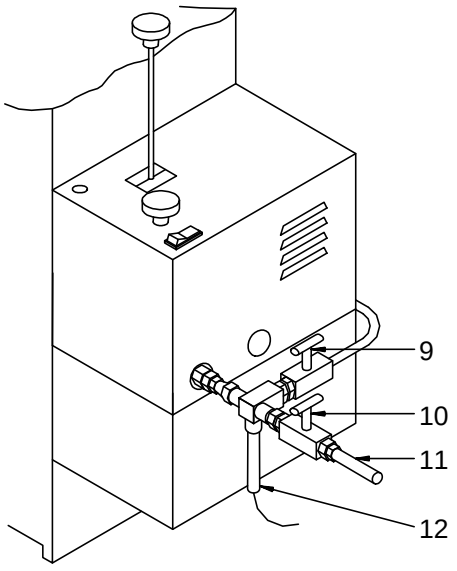
Top : 1500/2000 kN Standard
Bottom :2000/3000 kN BS

Figure 4 Upper platen assemblies



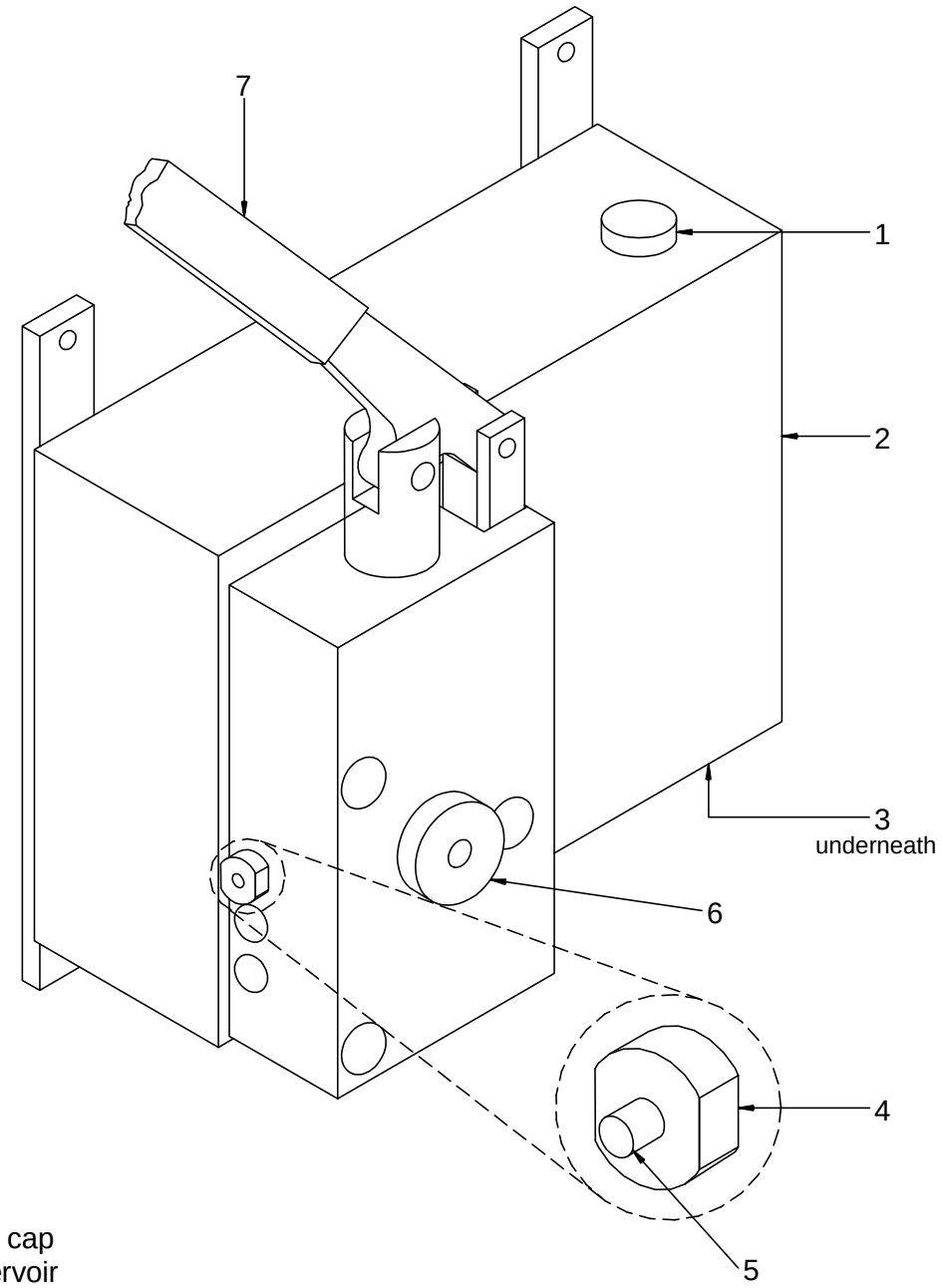


Note:
When using the Flexural Frame, close valve 9 (clockwise) and open valve 10 (anticlockwise). When using the Compression Frame, close valve 10 and open valve 9.



1. Hydraulic Pressure Rate control valve
2. Hydraulic Pressure Flow return valve
3. Power ON/OFF switch
4. Oil filler plug
5. Oil Drain plug
6. Rapid approach pump
7. Socket for flexural frame
8. Switch for rapid approach pump
9. Compression Frame Isolation Valve
10. Flexural Frame Isolation Valve
11. Hydraulic hose to Flexural Frame
12. Transducer

Figure 5. Motorised hydraulic power pack
Top left: Standard version
Top right: Rear view of version fitted with rapid approach pump
Bottom: Version with Flexural Fitting Kit



1. Oil filler cap
2. Oil reservoir
3. Oil drain plug
4. Pressure autochange valve
5. Pressure indicator showing position during high pressure operation
6. Hydraulic pressure flow control valve
7. Handle

Figure 6. Hand operated hydraulic power pack

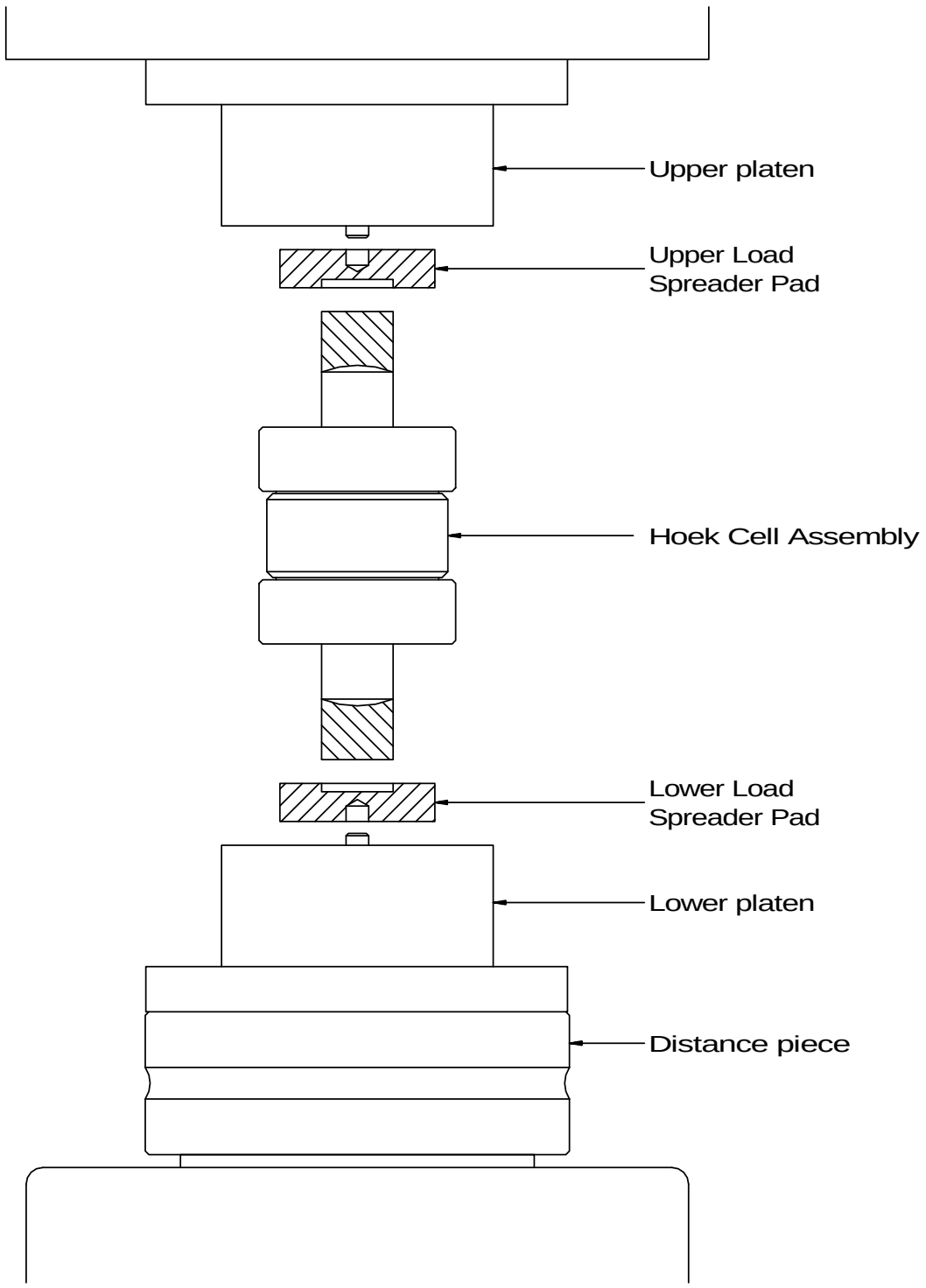


Figure 7. Typical Hoek Cell Set Up

1 Introduction

This Range of manually operated machines has been designed to meet most needs for reliable and consistent testing.

ADR models have a micro processor based readout unit for load indication.

1.1 ADR 1500

A Standard version is available.

Platen overtravel is prevented by a limit switch.

1.2 ADR 2000

Standard and BS versions are available.

Platen overtravel is prevented by a limit switch.

1.3 ADR 3000

These machines are fitted with a rapid approach pump as standard.

Platen overtravel is prevented by a limit switch.

1.4 Hoek Cell Machines

This is essentially an ADR 2000 Standard Compression machine fitted with upper (fixed) and lower platens incorporating locating spigots for Hoek Cell load spreader pads. Slotted rear screens are also fitted to this machine to accommodate the Hoek Cell oil supply pipe (see section 11).

NOTE: It is very important for safety reasons to only use the correct fittings for Hoek Cell and NOT the upper ball seat assembly also supplied. ELE cannot be held responsible for injury if incorrect parts are used.

1.5 Compression and Flexural Jigs

Note: when using Compression Frame Jig Assembly (37-5600) and Flexural Jig Assembly (37-6160) in Non Automatic machines, a maximum load of 250 kN **must not** be exceeded.

2 Specification

The ADR 3000 machines are fitted with a rapid approach pump as standard. This is available as an optional extra on other models if fitted at the time of ordering the machine.

When a Rectangular Platen Handling Assembly (see Rectangular Platen Handling Assembly section) is fitted, it is possible to quickly perform both block and cube tests.

2.1 ADR 1500/2000

	ADR 1500/2000 Standard	ADR 2000 BS
Width	630 mm	780 mm
Height	1185 mm	1225 mm
Length (without rapid approach)	410 mm	450 mm
Length (with rapid approach)	580 mm	620 mm
Vertical clearance between platens	340 mm	340 mm
Horizontal clearance	320 mm	356 mm
Maximum platen travel	50 mm	50 mm
Approximate weight	555 kg	775 kg
Power consumption	1350 watts	1350 ts

2.2 ADR 3000

	ADR 3000
Width	815 mm
Height	1265 mm
Length	630 mm
Vertical clearance between platens	340 mm
Horizontal clearance	310 mm
Maximum platen travel	50 mm
Approximate weight	1300 kg
Power consumption	1350 watts

2.3 Oil (All Machines)

Approximate capacity (hand operated)	2.5 litres
Approximate capacity (motorised)	11 litres

Type: Shell Tellus T46 or equivalent oil to viscosity grade ISO HV 46.

IMPORTANT: do not mix oils of different specifications.

3 Load Frames (Refer to figure 2)

All frames have a single acting upstroking ram.

The ram/cylinder incorporates a low friction coaxial PTFE seal. An air bleed screw is fitted at the top of the ram

4 Upper Platen Assemblies (Refer to figure 4)

There are three basic types of upper platen assemblies.

One of these types is oil filled and can easily be recognised by its oil retaining gaiter.

The oil used in these assemblies is a special type which can only be obtained from ELE. The use of any other type of oil will impair performance.

5 Installation

5.1 Moving and lifting

WARNING: exercise caution when lifting the machine. Use only approved and tested equipment. ELE International will accept no responsibility for damage caused by mishandling.

The machine will be delivered mounted on a pallet and should remain on the pallet until it has been moved as near as possible to its final position.

To remove the machine from the pallet, remove the four securing bolts then lift the machine and remove the pallet.

The machine can be lifted by a fork lift or hoist and lifting straps. The forks can be positioned under the upper platen. A flat piece of wood must be placed on the forks to prevent any damage to the upper platen.

On BS models there is provision for fitting two eyebolts (supplied with the machine) in the top of the upper cross-head. On 3000 kN models the mounting holes for the eyebolts will be revealed when the ADR unit is removed.

Note: The eyebolts supplied are “Dynamo” eyebolts to BS4278 which are intended for direct lifting only. A spreader beam or spreader frame must always be used.

5.2 Bleeding the hydraulic system (Refer to figure 3)

IMPORTANT: the maximum platen travel is 50 mm. On Hand Operated machines, there is no travel limit switch. Indication of maximum travel on these machines is shown on the hydraulic cylinder. After 50 mm of travel, the mark indicates STOP.

The Hydraulic Power Pack (refer to figure 5) has a socket (7) to connect a Flexural Frame Travel Limit Switch. Ensure that this connector is fitted. If there is no flexural frame then the Hydraulic Power Pack is fitted with a dummy connector.

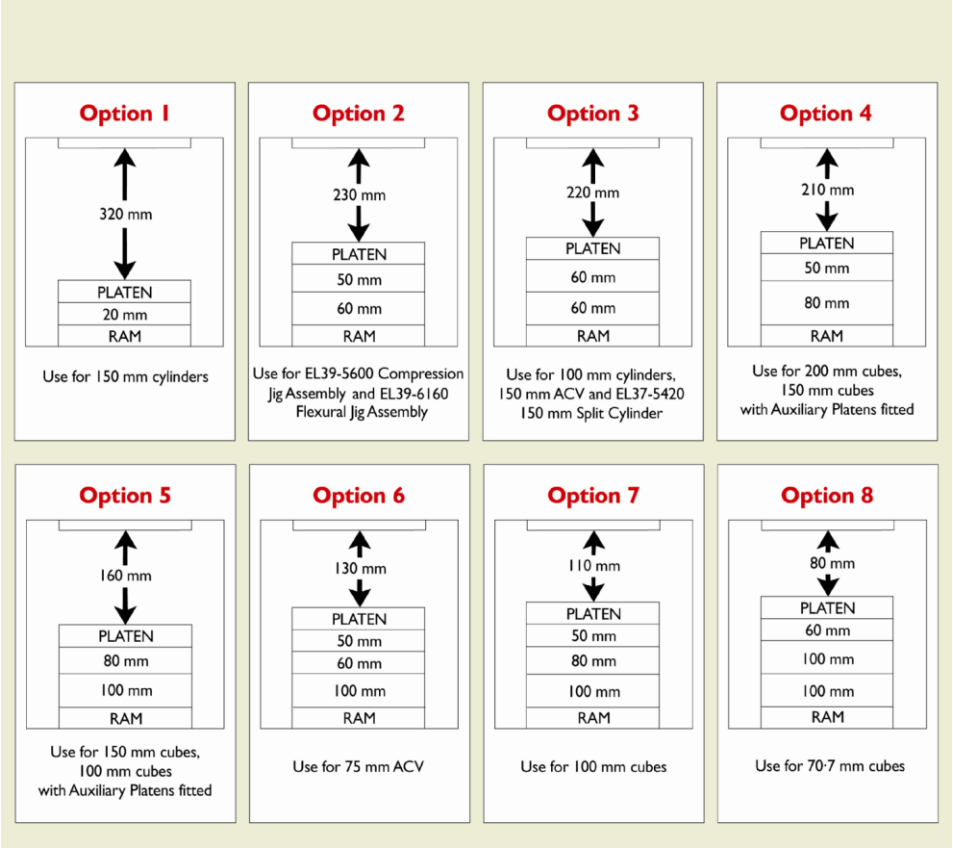
The hydraulic piston is provided with a bleed screw which is accessible after removing the lower platen. This will be used to remove any air from the hydraulic system after initial filling or after an oil change. To open or close the bleed screw requires the use of a 5 mm AF hexagon wrench (supplied with the machine).

Refer to the relevant Hydraulic Power Pack section for procedures when bleeding the hydraulic system.

Note: the bleed screw captivates an 8 mm diameter steel ball. Do not completely remove the bleed screw as this may cause the loss of the steel ball.

5.3 Distance pieces

Since the maximum platen travel is 50 mm, the vertical clearance between the upper and lower platen should be adjusted using distance pieces, according to the type of specimen being tested. The distance pieces are located between the lower platen and the hydraulic piston spigot. Ensure that all mating surfaces between the platen, distance piece and hydraulic piston are free from concrete debris etc. before assembling these items.



5.3.1 Locating lower platens and distance pieces

The lower platen and distance piece form an integral part of the load system. As such, they should be treated with care and cleaned free of debris regularly.

Great care must be taken to ensure that no damage is caused to the locating spigots and recess.

Platens and distance pieces should be placed carefully and under no circumstances should they be “slid” into place. This will cause damage to the spigot and may lead to uneven loading and possible damage to the ball seating assembly.

Note: the distance pieces must NOT be used above the platen.

Please refer to the ELE catalogue or contact ELE for details of available distance pieces.

6 Motorised Hydraulic Power Pack (Refer to figure 5)

This provides the hydraulic supply to the load frame in order to raise the hydraulic piston under the platen. According to the model purchased, it may or may not be fitted with the rapid approach pump.

6.1 Installation (Refer to figure 5)

6.2 Electrical supply

Safety

Whilst the test is in operation do not remove any covers or attempt to adjust any part of the machine.

Ensure all moving parts are thoroughly secured before attempting any maintenance.

Ensure all appropriate measures are taken to protect the operator from excessive noise.

See noise certificate (when supplied).

Electrical safety
Warning: Before removing any covers or performing maintenance repair and service, isolate from electrical supply by removing mains plug. Where mains supply is required during these activities, only competent persons should perform the work.

Check that the power supply is compatible with the requirements stated on the label and connect in accordance with IEE regulations or to local requirements.

This machine may be operated through a standard 13 amp socket outlet when fitted with an appropriate 3 pin plug fused in accordance with the label.

Electrical:
The motorised hydraulic power pack is supplied with a power cable, coded as follows:

Brown wire	L	Live or Power
Blue wire	N	Neutral
Green/Yellow wire	E	Earth or Ground

Important: This equipment must be correctly earthed.

Portable Appliance Tests (PAT)

All ELE designed products are tested for electrical safety prior to sale.

An electrical safety test label is fitted, (usually adjacent to the mains input socket).

Should no label be found, please contact ELE Service Department quoting the serial number of the equipment.

Organisations have an obligation to ensure equipment is maintained and is safe for use. Regular PAT testing is one means of ensuring equipment continues to be electrically safe.

Important: do not connect PAT leads to sensitive components such as PCBs, control switches and the like.

DO NOT FLASH TEST ELECTRONIC EQUIPMENT.

If in doubt as to the most suitable connection point (which will usually be an earth stud or an external earth connection) contact ELE Service Department for assistance.

Filling: unscrew the filler cap (4) and fill the tank to the filler port with oil as specified in section 2.4.

Priming: rotate valve (2) anti-clockwise to open the hydraulic return. Push the rate control valve (1) to maximum. Switch on the unit and allow it to run for 2 to 3 minutes and then rotate valve (2) clockwise to close the hydraulic return. The lower platen should rise. After 15 seconds, open valve (2).

Note: when the rapid approach pump is fitted, turn the valve (2) fully clockwise and press the button (8) for a few seconds to prime the supply pipe.

Failure of the platen to rise indicates that there is air in the hydraulic system.

6.3 Bleeding the hydraulic system (Refer to figure 5)

Remove the lower platen and any distance pieces. Rotate valve (2) clockwise to close, set the rate control valve (1) to maximum and switch on the pump.

Note: If the Compression Frame has a front gate with safety interlock, this must be closed before the hydraulic pump will operate.

Using the hexagon wrench supplied, unscrew the bleed screw in the top of the load frame piston 4 turns. (Refer to figure 3).

Caution: do not remove the bleed screw as this may cause the loss of the 8 mm diameter steel ball.

Air and oil will escape from the bleed screw. When oil, free from air bubbles flows out, close the bleed screw and tighten firmly and the piston should rise.

Failure of oil to bleed from the valve indicates that air is trapped in the pump preventing normal oil flow. The following procedure should prevent this problem.

Push the rate control valve (1) to maximum. Switch the motor on. Close the hydraulic return valve (2), wait 15 seconds then open this valve again sharply. Repeat the closing and opening of this valve (2) in this manner for a maximum of 3 minutes.

If the pump still fails to prime – push rate control valve (1) to maximum, switch the motor on and off repeatedly.

If, after several minutes, the fault will not clear, contact ELE Service Department or your authorised distributor.

After completion of bleeding, open valve (2) and switch off the pump. Clean away all oil from the top of the piston and refit the lower platen.

Rapid approach (when fitted).

The rapid approach pump is operated by pressing and holding down the button (8). To achieve maximum rate of lower platen movement, close valve (2). The rate control valve (1) can remain at its normal position to suit the pace rate required.

If the machine is fitted with an analogue gauge, the capillary tube may also need bleeding. Please refer to the analogue gauge section for details of symptoms which indicate bleeding is required and the method of bleeding.

6.4 Power pack operation for test (Refer to figure 5)

Note: If the Compression Frame has a front gate with safety interlock, this must be closed before the hydraulic pump will operate.

Switch on the pump unit (3), rotate the pressure release valve (2) fully clockwise to close and push the rate control valve (1) to maximum with the knob rotated anti-clockwise.

Note: if the rapid approach pump is fitted, press the button (8) and hold until nearly all daylight has been taken up. **Do not move the valve (1) to maximum.**

The lower platen will rise (the rate will be noticeably quicker when the rapid approach pump is fitted).

As the test specimen comes into contact with the upper platen, return the rate control valve to near 'minimum' position and rotate the knob clockwise to maintain the required pacing rate for the test as defined by the machine instrumentation.

7 Hand Operated Hydraulic Power Pack (Refer to figure 6)

This pump features a two stage delivery system with autochange allowing a low pressure flow to achieve a fast platen approach, and a changeover to high pressure flow to achieve specimen failure without excessive manual effort.

7.1 Installation (Refer to figure 6)

Filling: unscrew the filler cap (1) and fill the reservoir to within 10 mm of the top with oil as specified in section 2.4.

7.2 Pump operation (Refer to figure 6)

Turn the valve (6) clockwise until it is firmly closed and use the handle to pump the oil to the hydraulic cylinder. The indicator (5) should be in when raising the platen and out during test specimen loading. As the load comes on to the test specimen, apply a number of rapid strokes to ensure that the pressure autochange valve operates correctly with the indicator pin (5) extended.

Continue pumping steadily until failure of the specimen occurs then turn valve (6) anti-clockwise 2 turns to allow the platen to lower.

Failure of the platen to rise indicates that there is air in the hydraulic system.

7.3 Bleeding the hydraulic system

Remove the lower platen and any distance pieces, using the hexagon wrench supplied, unscrew the bleed screw in the top of the load frame piston 4 turns. (Please refer to figure 3).

Note: do **not** remove the bleed screw as this may cause the loss of the 8 mm diameter steel ball.

Air and oil will escape from the bleed screw. When oil free from air bubbles flows out, close the bleed screw and tighten firmly.

If the machine is fitted with an analogue gauge, the capillary tube may also need bleeding. Please refer to the analogue gauge section for details of symptoms which indicate bleeding is required and the method of bleeding.

8 Analogue Gauges (Refer to figure 3)

The analogue gauges used on the ELE Concrete Compression Machine range are of the Bourdon tube type.

A maximum load indicator is arranged on the front of the gauge. This is operated by the load indicator needle and can be zeroed before each test. Each gauge is provided with a device to slow the return of oil from the gauge after a rapid specimen failure thus avoiding possible damage.

8.1 Procedure for adjusting torque on carry forward pointers

Zero pressure gauge and rotate black knob anticlockwise to zero carry forward pointer.

Continue to rotate black knob until locking screw in collar is visible through aperture in chrome locknut.

Loosen locking screw by turning anticlockwise with a screwdriver.

Prevent collar from rotating by holding the locking screw with a screwdriver.

Rotate black knob either:

Clockwise to increase torque, or anticlockwise to reduce torque.

Note: optimum torque is achieved when the carry forward pointer will not rotate of its own accord when placed horizontally on gauge face and will not inhibit the travel of the pressure pointer.

When optimum torque is achieved, tighten locking screw in collar.

8.2 Bleeding the Analogue gauge (Refer to figure 3)

During initial setting up of the machine, the hydraulic system may require bleeding. In addition to the work referred to in the Power Pack section, it may be found necessary to bleed the gauges.

Air in the capillary to the gauge will cause jumping of the needle and sluggish response.

The point to bleed the gauge capillary is situated at the rear of the gauge.

To bleed the gauge system, first set the hydraulic system operating. With the control valves set for maximum platen movement, carefully slacken the hexagon union to allow air to bleed from the capillary.

Note: take care not to disturb the capillary or the gauge casing.

When oil free from air bubbles flows, tighten the union.

9 Maintenance

9.1 Daily

Always check that the platens are clean before commencing the test.

Remove the lower platen and distance pieces and clean thoroughly.

Brush away all concrete debris from the area around the hydraulic piston. In the case of 2000 kN and 3000 kN BS machines, raising the hydraulic piston will assist in the removal of this debris etc. from between the folds of the gaiter.

Check for signs of leaks in the hydraulic system.

After completing the days testing, leave the hydraulic pressure flow return valve open to allow the lower platen to settle to its lowest position.

9.2 Occasionally

Check non oil filled upper platen assembly and regrease spherical segment with a medium grease as required.

Inspect gaiters for damage.

Check the oil level in the oil reservoir.

Inspect the platens for wear.

Check the oil in the reservoir for signs of contamination and replace if necessary as follows:

(a) Ensure that the hydraulic pressure flow return valve is fully open. Remove the filler cap followed by the drain plug.

(b) When the oil has drained, replace the drain plug and refill with oil as specified in section 2.4.

Due to the design of the seal, a small amount of oil may 'seep' out of the ram. This is not a problem and should be wiped away as necessary.

9.3 Verification

It is normal National Standard requirement to request the verification of load measuring systems at least once each year or more frequently according to the work undertaken.

A verification should be undertaken after each occasion when any adjustment to the compression machine may have affected the load measuring system.

The verification of the load measurement system should be undertaken by qualified engineers using approved equipment.

Note: always use a load spreader of approximately 150 mm diameter or more when calibrating machines to 3000 kN.

10 Service and Spares

It is recommended that either the ELE Service Department or an authorised distributor be contacted for details of available spare parts or servicing requirements.

11 Hoek Cell Machines (Refer to figure 7)

11.1 A typical test operation

Select the required distance between platens using the appropriate distance pieces supplied separately (see table below).

Cell part no	**70-0410**	**70-0510**	**70-0910**	**70-1310**	**70-1710**	**70-2100**
Nominal core size	EX	AX	1.5 inch	BX	NX	TNX
Nominal specimen diameter	21.46mm (0.845in.)	30.10mm (1.185in)	42.04mm (1.5 in.)	54.74mm (1.655in.)	60.81mm (2.155in.)	(2.394in.)
Distance pieces required	37-5000 x 1 37-5020 x 2	37-5020 x 2	37-5050 x 1	37-5020 x 1	37-4980 x 1	-
Total height (mm) of distance pieces	170	120	80	60	20	-
Maximum axial load	250 kN	491 kN	786 kN	968 kN	1622 kN	2002 kN

Prepare the hoek cell with its specimen as described in the relevant operating instructions.

Switch on the machine pump, set the rate control valve to zero and the flow return valve to closed position.

Assemble the hoek cell on the lower load spreader pad positioned and centred on the lower platen spigot.

Using the rate control valve, raise the assembly until the upper load spreader pad seats onto the spigot of the upper platen.

When the assembly is firm, set the rate control to zero flow.

Check the cell confining pressure.

Increase the axial load to the specimen by rotating the rate control valve.

Note: to prevent damage to the components of the Compression machine, do not exceed the maximum axial load stated in the table.

After specimen failure, set the rate control valve to zero flow and open the flow return valve.

Care should be taken to avoid a collapse of the test arrangement.

Close the flow return valve and record the test information.

12 Rectangular Platen Handling Assemblies

12.1 Introduction

Unique platen handling systems enabling the upper platen to be quickly moved to provide access to, and use of the ball seating. Particularly useful where cube testing to EN12390-3, -4, -5 is specified, the facility does not affect the stability requirements of the ball seating.

All BS EN Compression Machines of 2000 and 3000 kN capacity can be fitted with the above assemblies.

12.2 Specification

	2000 kN Machines	3000 kN Machines
Projection of rectangular platen assembly at rear of frame	465mm	390 mm
Maximum vertical clearance (rectangular platens fitted)	245 mm	245 mm
Upper and lower rectangular platen dimension	445 x 250 x 75 mm	445 x 250 x 75 mm

For other details see specifications of load frame to which the Rectangular Platen Handling Assembly is fitted.

12.3 Installation

12.3.1 General

As supplied, the load frame will not have the rectangular platen handling system or the rectangular platens fitted.

Before any assembly ensure that the load frame is level in both directions.

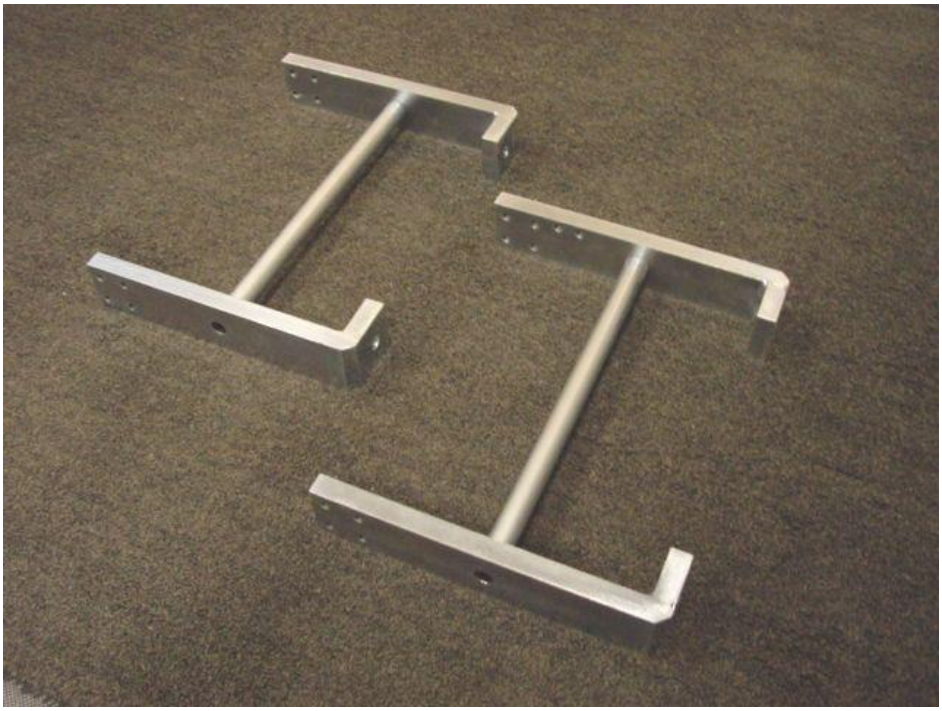
The upper platen is best fitted from the rear of the load frame and this should be taken into account when installing the frame.

12.3.2 Platen Handling System and Upper Platen Installation

When fitted to the 2000 kN BS-EN frame a modified front guard door EL37-4835 will be required. This will not be required on the 3000 kN frames.

NOTE ! The upper and lower platens each weigh 70 kg so it is very important to use correct lifting techniques and protective footwear.

Picture 1



Picture 2

Picture 3

12.3.3 Procedure for fitting the Platen Handling System

Remove the rear safety cover of the frame.

Using the 4 X M8 caphead bolts attach the two rods to the rail hangers as shown in picture 1. Before tightening the bolts make sure the hangers are parallel at each end of the rods.

Make sure the four bolts are fully tightened.

Fit the two hanger assemblies to the underside of the cross beam of the frame using the 4 X M12 bolts with washers. Make sure the hanger with the two extra threaded holes is fitted at the front, left hand side of the frame. Do not fully tighten these bolts until the whole assembly is in place.

Using the 16 X M8 bolts fit the two rails onto the hangers with the overhang at the rear of the frame. Also the bolt relief holes must be on the inside and the platen stop blocks on the rails facing upwards as shown in picture 2. Again leave the bolts very slightly loose.

Fit the two angled support bars at the rear of the frame. Select the two holes on the rails that align depending if the frame is a 2000 kN or 3000 kN capacity.

Once all the above items are fitted correctly, fully tighten all the various bolts used in the assembly of the hangers and rails.

12.3.4 Procedure for locating the upper platen

Remove the 8 small plastic plugs from the upper platen (the upper platen can be identified from the lower by having four holes on the sides of the platen). Attach the four lifting handles supplied to the four end holes of the upper platen. Fit the four roller units supplied into the four holes on the sides of the upper platen and tighten using a large screw driver. (The large nuts attached to the roller units can be removed and are not required.)

To fit the upper platen to the frame undo the four bolts holding the two stop blocks at the rear of the two rails and remove the blocks (shown in picture 2).

It is recommended that four people carefully lift up the platen and take it to the rear of the frame and carefully place the front two rollers onto the rails, then push the platen further onto the rails until the rear rollers are resting in the two small indents at the rear of the rails.

Replace the two stop blocks (as shown in picture 2).

Finally, using an allen key adjust the front platen stop using the grub screw so that the upper platen, when touching the screw, is situated exactly mid position front to back. This can be measured using a ruler from the outer edge of the upper platen to the frame body. Once correct tighten the lock nut (as shown in picture 3).

If required the user can affix the upper rectangular platen (when pushed forward on the rails) to the EN ball seating assembly using the bolts, metal fingers and spacers supplied. The groove on the side of the ball seating is where the metal fingers fit into.

12.3.5 Lower platen

Remove the 4 blanking plugs from the ends of the lower platen and screw in the 4 lifting rods. (The lower platen is the one without the rollers).

Open the load frame front gate.

Ensure the lower platen is the correct way up i.e. engraved lines at the top, then with the aid of an assistant and exercising extreme care, lift the platen onto the ram or distance pieces (see 13.4.1) ensuring its correct location.

Remove the 4 lifting rods from the platen and replace the blanking plugs.

12.4 Operation

12.4.1 Block Testing

The maximum vertical clearance of 245 mm for block testing is achieved by locating the lower rectangular platen directly on the load frame ram (see figure 13.2).

When testing blocks requiring less vertical clearance, the required distance pieces should be bolted to the ram and the platen located on the top distance piece (see figure 13.3).

12.4.2 Cube Testing

100 mm and 150 mm cubes may be tested with the lower rectangular platen located directly on the load frame ram and the upper platen rolled to its rearmost position and retained either by the latch (3000 kN machines) or by seating the transport rollers into the depression in the guide rails.

Correct vertical clearance is obtained by fitting the adaptor into the central hole in the lower rectangular platen then locating the required distance pieces onto the lower rectangular platen, topped by the Self-centring Lower Platen. For testing 100 mm cubes 1 x 80 mm and 1 x 100 mm distance pieces are required. For testing 150 mm cubes 1 x 80 mm and 1 x 50 mm distance pieces are required. (see figure 13.4)

12.5 Maintenance

Keep the rectangular platen handling assembly rails clean and ensure that the upper rectangular platen rolls freely along the rails.

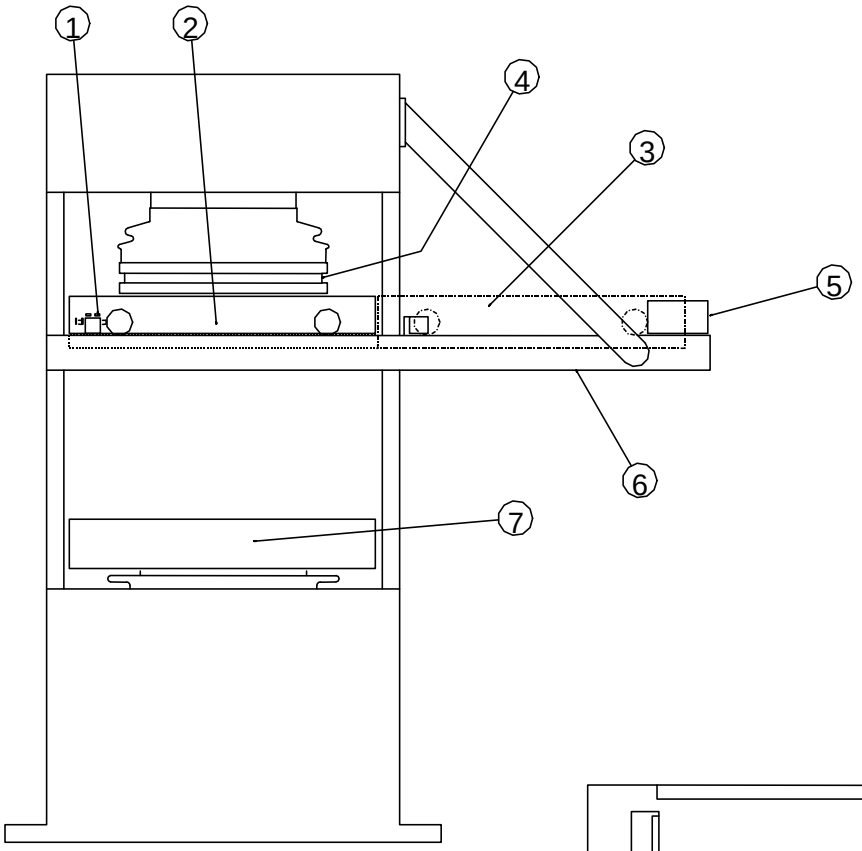
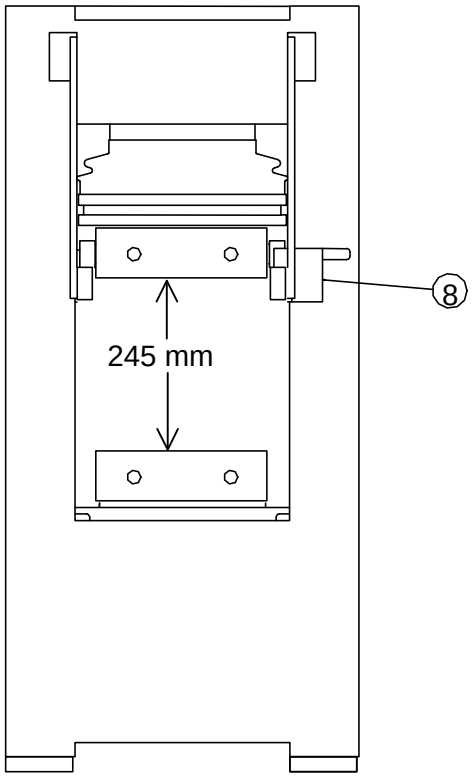


Figure 13.1
Sectioned side view of load frame fitted
with Rectangular Platen Handling Assembly



Key
1. Front Stop (adjustable)
2. Upper Rectangular Platen
3. Upper Rectangular Platen in rearmost position (for cube testing)
4. Ball Seated Upper Platen
5. Rear Stop
6. Rail
7. Lower Rectangular Platen
8. Latch (3000 kN machines only)

Figure 13.2
Rear view of load frame fitted with Rectangular Platen Handling Assembly
(rear stops removed)

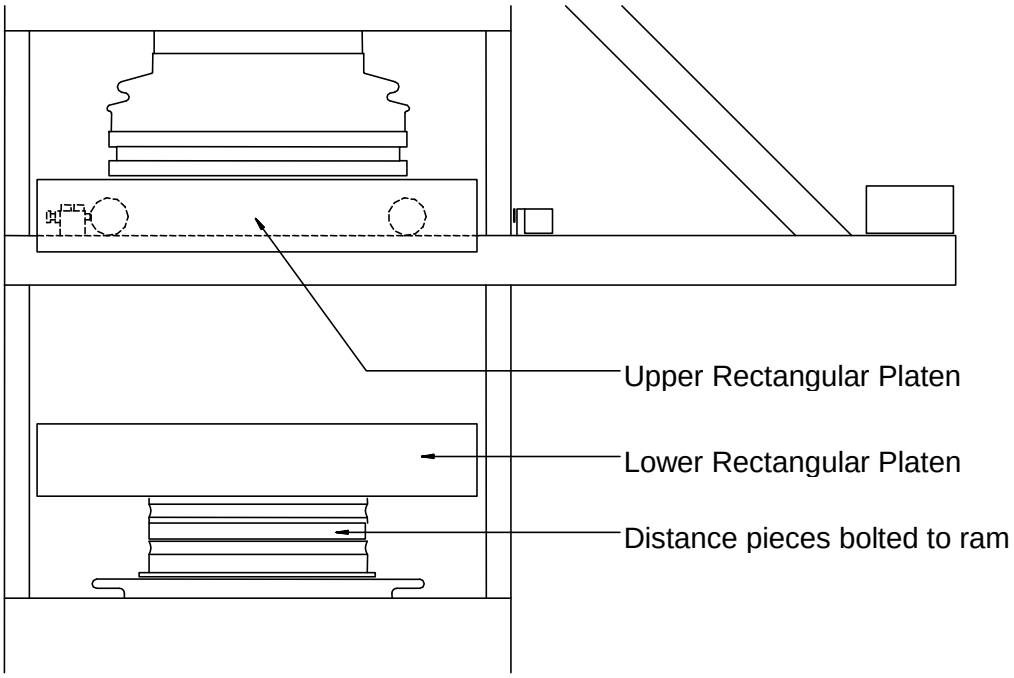


Figure 13.3. Set up for testing blocks requiring less than maximum vertical clearance

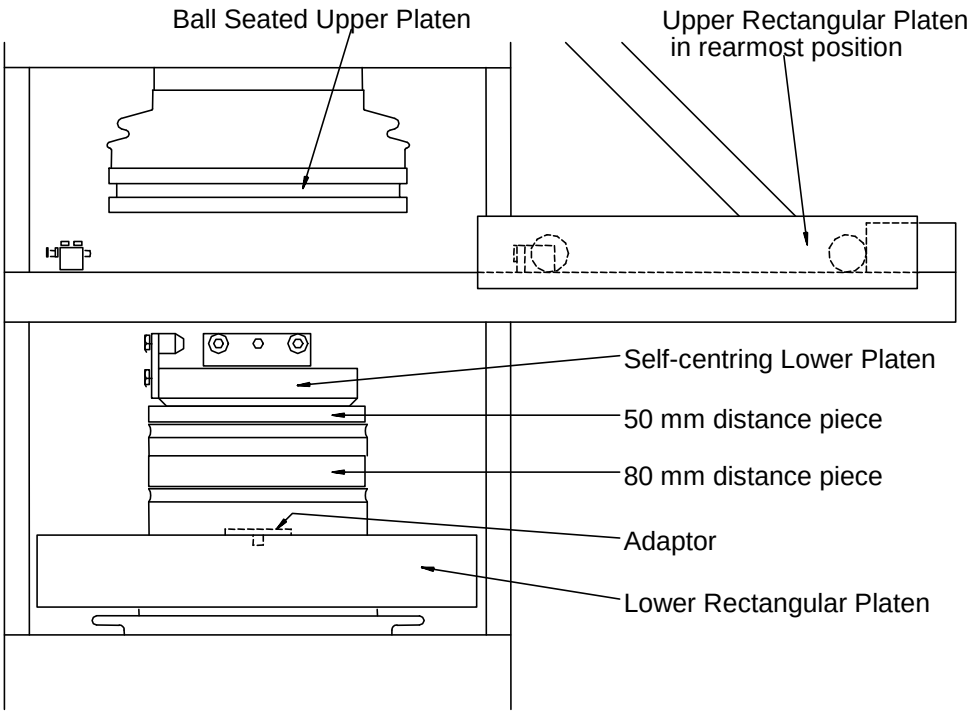


Figure 13.4. Set up for testing 150 mm cubes

Declaration of Conformity

Issued By: **ELE International**

Date of Issue: 1st January 1998 ELE doc ref: 9901X0003

ELE International

Approved Signatory

We, ELE International, Chartmoor Road, Chartwell Business Park, Leighton Buzzard, Beds LU7 4WG, England, declare under sole responsibility that the following product(s) to which this declaration relates is (are) in conformity with the provisions of:

73/23/EEC Electrical Equipment Directive implemented in the UK by S1728/1989 amended by 93/68/EEC 1/1/1997.

Electrical Safety tested to BS EN 60204-1.

89/392/EEC, 91/368/EEC, 93/44/EEC and 93/68/EEC Machinery Directive implemented in the UK by S13073/1992 and S12063/1994.

89/336/EEC, 91/263/EEC, 92/31/EEC (the EMC Directive) amended by 93/68/EEC and implemented in the UK by SI/2372/1992 and SI/3080/1994.

Emissions tested to BS EN 50081-1 Domestic/Light Industrial.
Immunity tested to prEN 50082-2 Industrial.

Product Description	Serial No.
ELE Non Automatic range of Compression and Compression/ Flexural Machines including: Compression Frames a) 1500 kN 2000 kN 3000 kN Flexural Frames b) 100 kN Compression/Tension Machine c) 1000/500kN	(See details on product identification plate)

BS EN ISO9001: 1994 approved
Certificate number 860461

Responsible person's/approved signatory
M Green, Managing Director

This Declaration of Conformity complies with BS 7514 (EN 45014), General Criteria for suppliers' Declaration of Conformity

ELE International
Chartmoor Road, Chartwell Business Park, Leighton Buzzard, Beds, LU7 4WG England
phone: + (0)1525 249200
fax: + (0)1525 249249
email: ele@eleint.co.uk
http: www.ele.com
ELE International, a division of Danaher UK Industries Ltd

Noise Test Certificate

Issued By: **ELE International**

Date of Issue: 1st January 1998 ELE doc ref: 9901X0003

Date of Test: 1st January 1998

ELE International

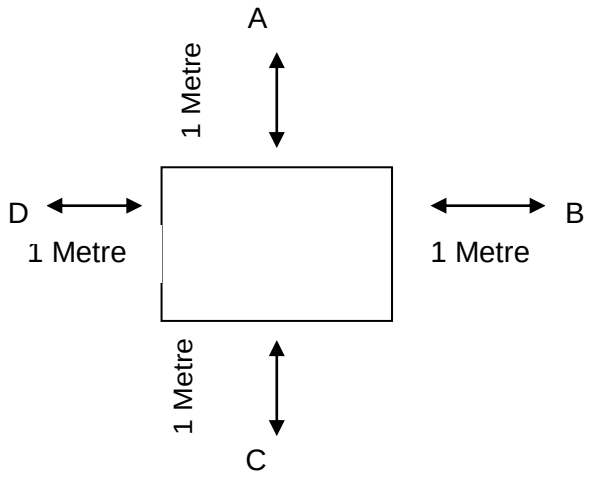
Approved Signatory

We, ELE International, Chartmoor Road, Chartwell Business Park, Leighton Buzzard, Beds LU7 4WG, England, declare under sole responsibility that the following product(s) to which this declaration relates is (are) in conformity with the provisions of:

73/23/EEC Electrical Equipment Directive implemented in the UK by S1728/1989.

89/392/EEC, 91/368/EEC, 93/44/EEC and 93/68/EEC Machinery Directive implemented in the UK by S13073/1992 and S12063/1994.

Product Description	Serial No.
Non Automatic Compression Machines	(See details on product identification plate)



Measurements/recorded noise level

Position A	68	dB
Position B	64	dB
Position C	69	dB
Position D	72	dB
Position E	70	dB

(Normal operator position)

Background Noise level	50	dB

Notes: Tests carried out with machine under load.

BS EN ISO9001: 1994 approved
Certificate number 860461

Noise tests were carried out using Test Meter, serial No.

N30863

which has been calibrated using calibrated standards traceable to national standards of measurement.

ELE International
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ELE International, a division of Danaher UK Industries Ltd

PRODUCT SAFETY DATA SHEET

COPY

SHELL TELLUS OIL T

Shell U.K. Oil, Shell-Mex House, Strand, London WC2R 0DX.
Telephone 01-257-3000

Data Sheet No. LTEL02 Version : 16 11 89

BRANDNAMES :	SHELL TELLUS OIL T15	60406
	SHELL TELLUS OIL T37	60407
	SHELL TELLUS OIL T46	60408
	SHELL TELLUS OIL T100	60409

PRODUCT INFORMATION

APPROVED USES

Shell Tellus Oil T are approved for use as :

hydraulic fluids and fluid power transmission oils.

If Shell Tellus Oil T are used for a purpose not covered in this section, Shell UK Oil would be grateful to receive information on the application.

KNOWN MISUSES/ABUSES

None known.

COMPOSITION

Shell Tellus Oil T are manufactured from highly refined mineral base oil derived from crude petroleum, and may contain additives, none of which give rise to any additional hazard in the finished product to that posed by the mineral oil components.

PHYSICAL AND CHEMICAL PROPERTIES

Physical State :	Liquid at Ambient Temperatures
Appearance :	Pale/Dark Amber
Odour :	Characteristic Mineral Oil
IBP. :	> 280 Deg. C.
Vapour Density (Air = 1) :	> 5
Vapour Pressure @ 20 Deg. C. :	< 0.1 kPas
Sol. in Water :	Very Low
Acidity/Alkalinity :	Neutral

TYPICAL PROPERTIES	DENSITY @ 20 Deg C.	POUR POINT Deg C.	VISCOSITY in cSt. @ 40 Deg C.	@ 20 Deg C.
SHELL TELLUS OIL T15	0.87	-50	15	31
SHELL TELLUS OIL T37	0.87	-42	37	101
SHELL TELLUS OIL T46	0.88	-40	46	130
SHELL TELLUS OIL T100	0.89	-30	100	328

FIRE AND EXPLOSION HAZARDS

Flammability Limits	- Upper :	10 % vol.
	- Lower :	1 % vol.
Autoignition Temperature in Deg. C. :		> 320
Extinguishants	- Large Fire :	Foam/Water Fog - NEVER USE WATER JET
	- Small Fire :	Foam/Dry Powder/CO2/Halon/Sand/Earth

FLASH POINT in Deg. C. by Pensky Marten Closed Cup unless stated otherwise.

SHELL TELLUS OIL T15	150
SHELL TELLUS OIL T37	177
SHELL TELLUS OIL T46	177
SHELL TELLUS OIL T100	153

See also section 4.2.2 'Fire and Explosion' in Part 1 (Page 9)

SUPPLY CLASSIFICATION

Not Dangerous for Supply

See also section 4.2.6 'Product Handling' in Part 1 (Page 12)

TRANSPORT CLASSIFICATION

Not Dangerous for Conveyance

See also section 4.2.4 'Product Receipt' in Part 1 (Page 10)

STORAGE PRECAUTIONS

See also section 4.2.5 'Product Storage' in Part 1 (Page 11)

ACUTE HEALTH HAZARDS AND ADVICE

Toxicity following single exposure to high levels (orally, dermally or by inhalation) is of a low order. The main hazards are: in the unlikely event of ingestion, aspiration into the lungs with possible resultant chemically induced pneumonia ; and, if the products are handled under high pressures, of high pressure injection injuries.

See also section 3.2 'Health Aspects of Petroleum Products' in Part 1 (Pages 4 - 7)

INHALATION

Under normal conditions of use inhalation of vapours is not feasible or likely to present an acute hazard.

SKIN

Skin contact presents no acute health hazard except in the case of high pressure injection injuries. These can lead to the loss of the affected limbs if not treated immediately and properly.

PRECAUTIONS :

Avoid contact with the skin by the use of suitable protective clothing. Where skin contact is unavoidable, a high standard of personal hygiene must be practised. Extreme care must be exercised where the product is likely to be encountered at high pressures. Where high pressures are likely to be encountered, it is recommended that safe systems of work be employed.

FIRST AID :

Skin contact does not normally require first aid, but oil soaked clothing should be removed, and contaminated skin washed with soap and water. If persistant irritation occurs, medical advice should be sought without delay.

Where a high pressure injection injury has occurred, medical attention should be obtained immediately. Show this Data Sheet and section 3.4 'Notes for Doctors' from Part I to the physician.

EYES

Eye contact may cause some discomfort.

PRECAUTIONS :

If there is a risk of splashing while handling the liquid, suitable eye protection should be used.

FIRST AID :

Flush the eye with copious quantities of water. If irritation persists refer for medical attention.

INGESTION

The main hazard following ingestion is of aspiration into the lungs during subsequent vomiting.

PRECAUTIONS :

Accidental ingestion is unlikely. Normal handling and hygiene precautions should be taken to avoid ingestion.

FIRST AID :

DO NOT INDUCE VOMITING If ingestion is suspected, wash out the mouth with water, and send to hospital immediately. Show a copy of this data sheet and section 3.4 'Notes for Doctors' from Part I to the physician.

CHRONIC HEALTH HAZARD AND ADVICE

Prolonged and repeated contact with oil products can be detrimental to health. The main hazards arise from skin contact and in the inhalation of mists. Skin contact under conditions of poor hygiene and over prolonged periods can lead to defatting of the skin, dermatitis, erythema, oil acne and oil folliculitis. Excessive and prolonged inhalation of oil mists may cause a chronic inflammatory reaction of the lungs and a form of pulmonary fibrosis.

Adherence to the precautions contained in section 3.3 'Health Precautions' in Part 1 (Pages 4 to 7) will minimise risks to health.

EXPOSURE LIMIT VALUES

UK Maximum Exposure Limits :
UK Occupational Exposure Standards :

Oil Mist, Mineral :	5 mg/cubic metre 8-hour TWA value
	10 mg/cubic metre 10-min TWA value

RECOMMENDED PROTECTIVE CLOTHING

Impervious gloves and overalls where regular contact is likely, and goggles if there is a risk of splashing.

COMBUSTION PRODUCTS

The substances arising from the thermal decomposition of these products will largely depend upon the conditions bringing about decomposition. The following substances may be expected :

Carbon Dioxide
Carbon Monoxide
Water
Particulate Matter
Polycyclic Aromatic Hydrocarbons
Unburnt Hydrocarbons
Unidentified Organic and Inorganic Compounds

DISPOSAL

See section 5.2.2 'Product Disposal' in Part 1 (Page 13)

FURTHER INFORMATION

The references set out below refer to the publications given in section 6 'Further Information' in Part 1 (Pages 14 & 15)

References : B1, B2.
References : C4.
References : E1
References : L3, L6, L11, L15
References : S12
References : X2, X4, X10.
References : Y1, Y3.
References : Z3, Z8.

EMERGENCY ACTION

See section 7 'Emergency Action' in Part 1 (Page 16)

DIRECTIVE ON WASTE ELECTRICAL & ELECTRONIC EQUIPMENT (WEEE)

Electrical equipment marked with this symbol may not be disposed of in European public disposal systems after 12 August of 2005. In conformity with European local and national regulations (EU Directive 2002/96/EC), European electrical equipment users must now return old or end-of life equipment to the Producer for disposal at no charge to the user.

Note: *For return for recycling, please contact the equipment producer or supplier for instructions on how to return end-of-life equipment for proper disposal.*

Important document. Retain with product records.

GERMAN

Elektrogeräte, die mit diesem Symbol gekennzeichnet sind, dürfen in Europa nach dem 12. August 2005 nicht mehr über die öffentliche Abfallentsorgung entsorgt werden. In Übereinstimmung mit lokalen und nationalen europäischen Bestimmungen (EU-Richtlinie 2002/96/EC), müssen Benutzer von Elektrogeräten in Europa ab diesem Zeitpunkt alte bzw. zu verschrottende Geräte zur Entsorgung kostenfrei an den Hersteller zurückgeben.

Hinweis: *Bitte wenden Sie sich an den Hersteller bzw. an den Händler, von dem Sie das Gerät bezogen haben, um Informationen zur Rückgabe des Altgeräts zur ordnungsgemäßen Entsorgung zu erhalten.*

Wichtige Informationen. Bitte zusammen mit den Produktinformationen aufbewahren.

FRENCH

A partir du 12 août 2005, il est interdit de mettre au rebut le matériel électrique marqué de ce symbole par les voies habituelles de déchetterie publique. Conformément à la réglementation européenne (directive UE 2002/96/EC), les utilisateurs de matériel électrique en Europe doivent désormais retourner le matériel usé ou périmé au fabricant pour élimination, sans frais pour l'utilisateur.

Remarque : *Veuillez vous adresser au fabricant ou au fournisseur du matériel pour les instructions de retour du matériel usé ou périmé aux fins d'élimination conforme.*

Ce document est important. Conservez-le dans le dossier du produit.

ITALIAN

Le apparecchiature elettriche con apposto questo simbolo non possono essere smaltite nelle discariche pubbliche europee successivamente al 12 agosto 2005. In conformità alle normative europee locali e nazionali (Direttiva UE 2002/96/EC), gli utilizzatori europei di apparecchiature elettriche devono restituire al produttore le apparecchiature vecchie o a fine vita per lo smaltimento senza alcun costo a carico dell'utilizzatore.

Nota: *Per conoscere le modalità di restituzione delle apparecchiature a fine vita da riciclare, contattare il produttore o il fornitore dell'apparecchiatura per un corretto smaltimento.*

Documento importante. Conservare con la documentazione del prodotto.

DANISH

Elektriske apparater, der er mærket med dette symbol, må ikke bortskaffes i europæiske offentlige affaldssystemer efter den 12. august 2005. I henhold til europæiske lokale og nationale regler (EU-direktiv 2002/96/EF) skal europæiske brugere af elektriske apparater nu returnere gamle eller udtjente apparater til producenten med henblik på bortskaffelse uden omkostninger for brugeren.

Bemærk: *I forbindelse med returnering til genbrug skal du kontakte producenten eller leverandøren af apparatet for at få instruktioner om, hvordan udtjente apparater bortskaffes korrekt.*

Vigtigt dokument. Opbevares sammen med produktdokumenterne.

SWEDISH

Elektronikutrustning som är märkt med denna symbol kanske inte kan lämnas in på europeiska offentliga sopstationer efter 2005-08-12. Enligt europeiska lokala och nationella föreskrifter (EU-direktiv 2002/96/EC) måste användare av elektronikutrustning i Europa nu återlämna gammal eller utrangerad utrustning till tillverkaren för kassering utan kostnad för användaren.

Obs! *Om du ska återlämna utrustning för återvinning ska du kontakta tillverkaren av utrustningen eller återförsäljaren för att få anvisningar om hur du återlämnar kasserad utrustning för att den ska bortskaffas på rätt sätt.*

Viktigt dokument. Spara tillsammans med dina produktbeskrivningar.

SPANISH

A partir del 12 de agosto de 2005, los equipos eléctricos que lleven este símbolo no deberán ser desechados en los puntos limpios europeos. De conformidad con las normativas europeas locales y nacionales (Directiva de la UE 2002/96/EC), a partir de esa fecha, los usuarios europeos de equipos eléctricos deberán devolver los equipos usados u obsoletos al fabricante de los mismos para su reciclado, sin coste alguno para el usuario.

Nota: *Sírvase ponerse en contacto con el fabricante o proveedor de los equipos para solicitar instrucciones sobre cómo devolver los equipos obsoletos para su correcto reciclado.*

Documento importante. Guardar junto con los registros de los equipos.

DUTCH

Elektrische apparatuur die is voorzien van dit symbool mag na 12 augustus 2005 niet meer worden afgevoerd naar Europese openbare afvalsystemen. Conform Europese lokale en nationale wetgegeving (EU-richtlijn 2002/96/EC) dienen gebruikers van elektrische apparaten voortaan hun oude of afgedankte apparatuur kosteloos voor recycling of vernietiging naar de producent terug te brengen.

Nota: *Als u apparatuur voor recycling terugbrengt, moet u contact opnemen met de producent of leverancier voor instructies voor het terugbrengen van de afgedankte apparatuur voor een juiste verwerking.*

Belangrijk document. Bewaar het bij de productpapieren.

POLISH

Sprzęt elektryczny oznaczony takim symbolem nie może być likwidowany w europejskich systemach utylizacji po dniu 12 sierpnia 2005. Zgodnie z europejskimi, lokalnymi i państwowymi przepisami prawa (Dyrektywa Unii Europejskiej 2002/96/EC), użytkownicy sprzętu elektrycznego w Europie muszą obecnie przekazywać Producentowi stary sprzęt lub sprzęt po okresie użytkowania do bezpłatnej utylizacji.

Uwaga: *Aby przekazać sprzęt do recyklingu, należy zwrócić się do producenta lub dostawcy sprzętu w celu uzyskania instrukcji dotyczących procedur przekazywania do utylizacji sprzętu po okresie użytkowania.*

Ważny dokument. Zachować z dokumentacją produktu.

PORTUGESE

Qualquer equipamento eléctrico que ostente este símbolo não poderá ser eliminado através dos sistemas públicos europeus de tratamento de resíduos sólidos a partir de 12 de Agosto de 2005. De acordo com as normas locais e europeias (Directiva Europeia 2002/96/EC), os utilizadores europeus de equipamentos eléctricos deverão agora devolver os seus equipamentos velhos ou em fim de vida ao produtor para o respectivo tratamento sem quaisquer custos para o utilizador.

Nota: *No que toca à devolução para reciclagem, por favor, contacte o produtor ou fornecedor do equipamento para instruções de devolução de equipamento em fim de vida para a sua correcta eliminação.*

Documento importante. Mantenha junto dos registos do produto.