

# OPERATING INSTRUCTIONS

## 100 kN Flexural Frames

### 37-6130, 37-6140

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<p><i>In the interests of improving and updating its equipment, ELE reserves the right to alter specifications to equipment at any time</i> <b>ELE International 2005 ©</b></p>		

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## 1 Introduction

### 1.1 100 kN Flexural (Beams) Frame (Figure 1)

Open sided for ease of specimen loading.

Suitable for BS EN 12390-5 and ASTM C78 for standard section beams with appropriate loading bearers.

Optional ball seating assembly.

This rigidly constructed, open side frame is suitable for testing 100 mm (4") and 150 mm (6") square section beams for flexural strength.

The frame supports a hydraulic ram and upper sub-platen assembly incorporating a spherical seating. The upper and lower sub-platens will accept various specimen loading bearers, **which are supplied separately.**

### 1.2 100 kN Flexural and Transverse (Flags) Frame (Figure 2)

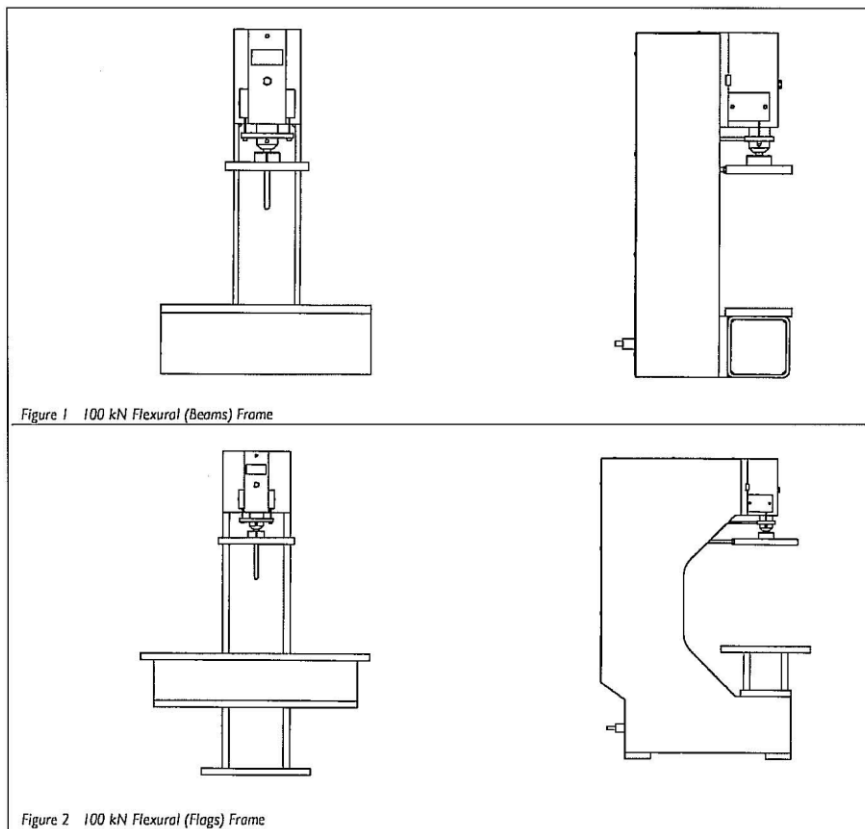
Open sided for ease of specimen loading.

Optional ball seating assembly.

Suitable for testing paving flags to BS EN 1339 and kerbs to BS EN 1340. With optional accessories it can also be used to test 100 mm & 150 mm section beams for flexural strength to BS EN 12390-5 and ASTM C78.

The frame supports a hydraulic ram and upper sub-platen assembly incorporating a spherical seating. The upper and lower sub-platens will accept specimen loading bearers, which are supplied separately.

All frames have travel limit safety switches on hydraulic rams.



## 2 Specification

### ***100 kN Flexural (Beams) Frame***

Dimensions	(length x width x height) 380 mm x 505 mm x 845 mm
Vertical clearance with bearers	164 mm
Vertical clearance with Ball Seating Assembly	334 mm
Throat clearance	95 mm
Ram travel	75 mm
Weight	120 kg

### ***100 kN Flexural and Transverse (Flags) Frame***

Dimensions	(length x width x height) 840 mm x 845 mm x 1215 mm
Vertical clearance with bearers	170 mm (37-6330 and 37-6340) 164 mm (37-6342)
Vertical clearance with Ball Seating Assembly	419 mm
Throat clearance	330 mm
Ram travel	75 mm
Weight	460 kg

## 3 Installation

### 3.1 General

- 3.1.1 The flexural frames may be operated by any of the following hydraulic power sources, ADR Compression Machine, ADR-Auto Compression Machine or Autotest Compression Machine.
- 3.1.2 The frames may be situated either side of the power source and orientated as required.
- 3.1.3 Provision is made for bolting the frames to the floor and footprint details are shown in Figure 3.

### 3.2 Connections (Figures 4 and 5)

- 3.2.1 Plug the ram travel limit switch plug (I) (on the lead emanating from the flexural frame) into the socket on the console or compression machine power pack as designated in the operating instructions for that piece of equipment.
- 3.2.2 Connect the flexural frame to the hydraulic power source i.e. either console or compression machine power pack with a combination of flexible hydraulic hoses and fittings (2) supplied, giving the most suitable pipe run. Ensure that all connections are fully tightened.

3.3 Bleeding the hydraulic system (Figures 4 and 5)

3.3.1 Using the hexagon wrench supplied, unscrew the bleed screw (3) in the top of the flexural frame hydraulic cylinder 4 turns.

**Note:** do not remove the screw as this may cause the loss of the 6 mm diameter steel ball.

3.3.2 Apply hydraulic power to the flexural frame referring to the operating instructions for that piece of equipment supplying the power.

3.3.3 Air and oil will escape from the bleed. When no further air bubbles out, close the bleed and tighten firmly, the flexural frame ram should now descend.

3.3.4 Failure of air or oil to bleed from the valve indicates that air is trapped in the hydraulic supply pump, refer to the relevant operating instructions to remedy this problem.

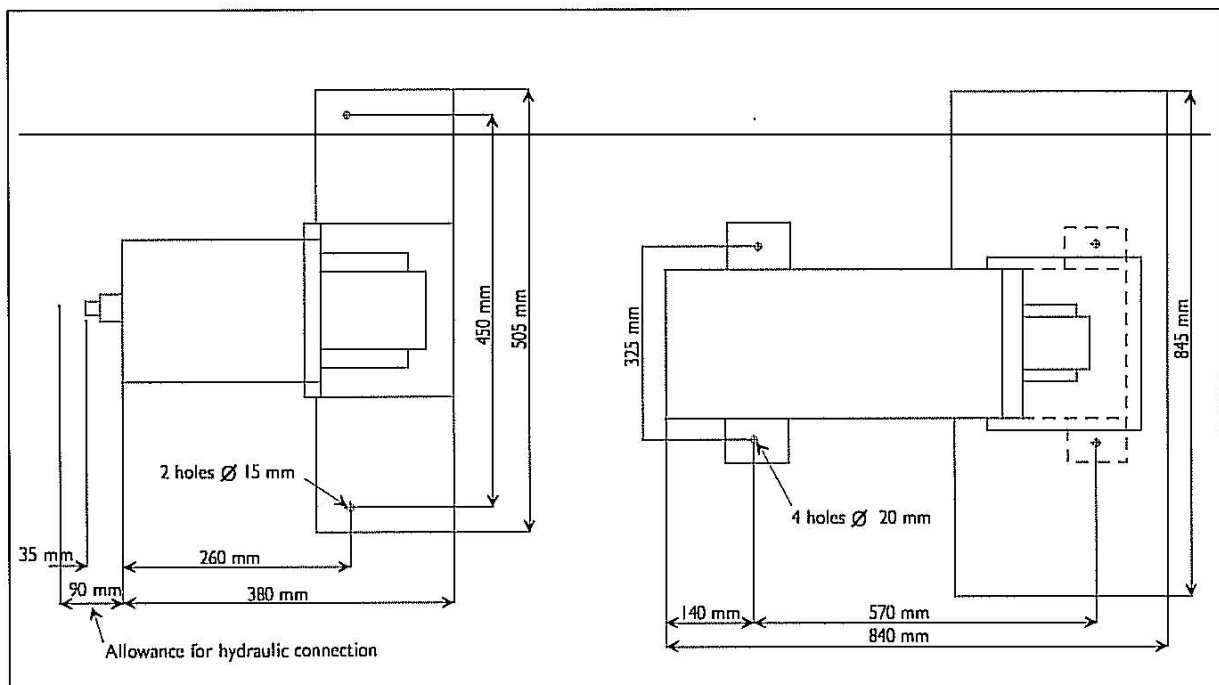
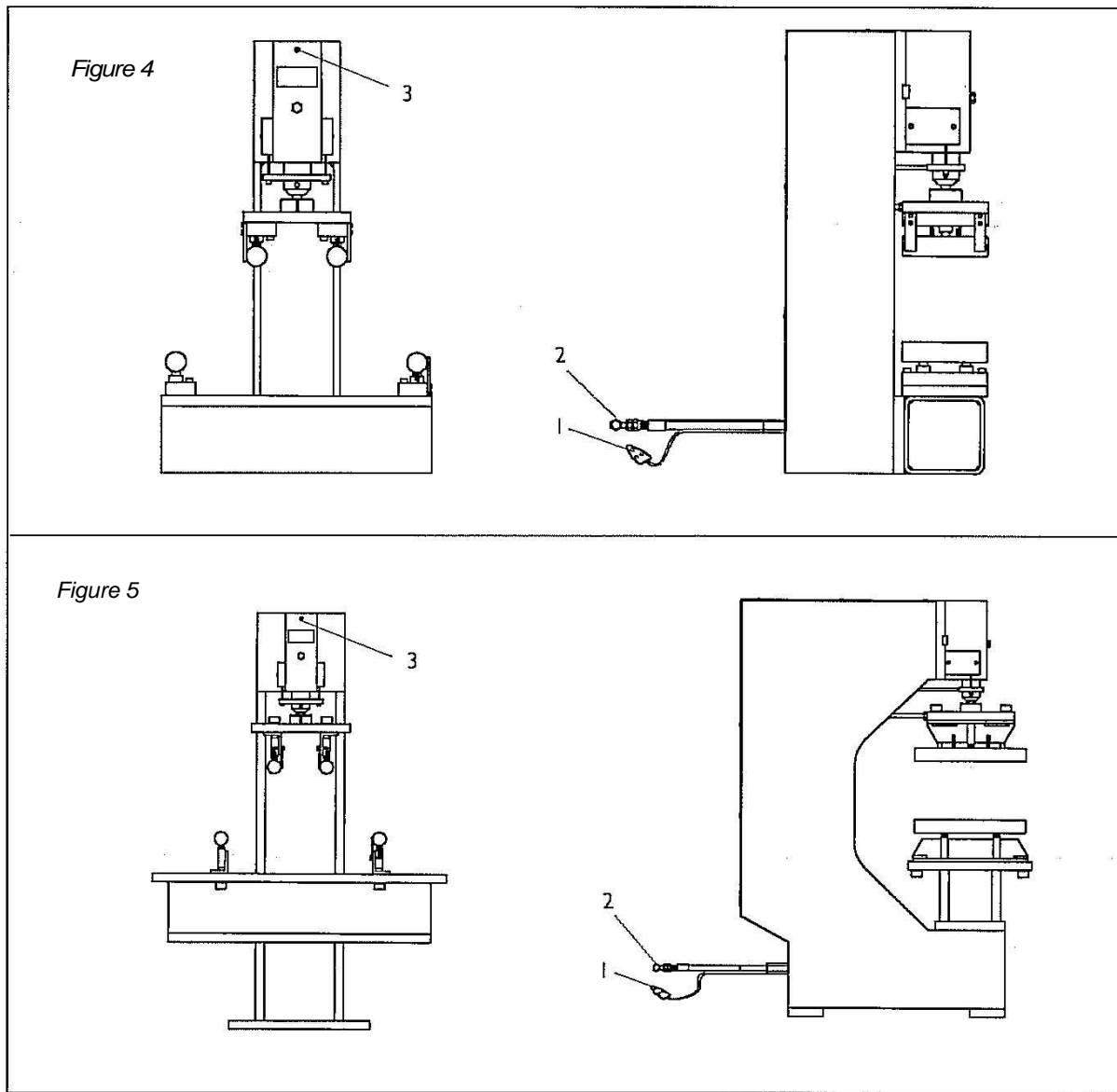


Figure 3 Left : Footprint for Flexural (Beams) Frame

Figure 3 Right : Footprint for Flexural (Flags) Frame



#### 4 Controls

- 4.1 For control of the flexural frame, refer to the relevant operating instructions for that equipment providing the hydraulic power.

#### 5 Operation

- 5.1 Arrangement of bearers

- 5.1.1 To carry out tests it is necessary to use bearers. Bearers are supplied separately for the flexural (beams) frame and the flexural and transverse (flags) frame. Bearers available for the Flexural (beams) Frame:-

##### **BS EN 12390-5 Specimen Bearer Assembly (37-6131)**

Comprising; 2 self-aligning upper roller bearers, 1 self-aligning lower roller bearer and 1 fixed lower roller bearer. Bearers are 38 mm diameter x 160 mm long and suitable for 3 or 4 point flexural testing of beams.

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***ASTM C78 Specimen Bearer Assembly (37-6132)***

Comprising; 2 self-aligning upper roller bearers and 2 self-aligning lower roller bearers; case hardened 38mm diameter x 160mm long and suitable for 3 or 4 point flexural testing of beams.

5.1.2 Bearers available for the Flexural and Transverse (flags) Frame:-

***BS EN 12390-5 Specimen Bearer Assembly (37-6330)***

Comprising; 2 self-aligning upper roller bearers, 1 self-aligning lower roller bearer and 1 fixed lower roller bearer, 38mm diameter x 320mm long, suitable for 3 or 4 point loading of beams for flexural strength tests to BS 1881.

***ASTM C78 Specimen Bearer Assembly (37-6340)***

Comprising; 2 self-aligning upper roller bearers and 2 self-aligning lower roller bearers; 38mm diameter x 320mm long, suitable for 3 or 4 point loading of beams for flexural strength test.

***BS EN 1340 Specimen Bearer Assembly (37-6362)***

Comprising; 1 upper self-aligning loading pad 40mm diameter and 2 lower roller bearers 40mm diameter x 320mm long one fixed and one self-aligning (axially). For transverse testing of kerbs to BS EN 1340. (See Fig. 10 for assembly information.)

***BS EN 1339 Specimen Bearer Assembly (37-6364)***

Comprising; 1 upper self-aligning roller bearer and 2 lower roller bearers 40mm diameter x 600mm long one fixed and one self-aligning. For transverse testing of flags to BS EN 1339. (See Fig 11 for assembly information.)

- 5.1.3 Reference should be made to the relevant standard for the test being performed to determine the type of bearers to be used and the correct centre distances between them.
- 5.1.4 The upper and lower platens of the flexural and transverse (flags) frame are also drilled (clearance holes) to accommodate bearers but as the centre distances are not marked on the platens, reference should be made to Figure 6 for the centre distances. Alternatively they may be measured directly.
- 5.1.5 The holes in the flexural (beams) frame platens are tapped and are also not marked. The centre distances are shown in Figure 6. Because of the offset construction of the bearers for this frame, the hole centres are 50 mm less than the actual centre distances achieved when the bearers are fitted. This must be taken into account if the centre distances are measured. The bearers must be fitted as shown in Figure 4.

5.2 Test Procedure

- 5.2.1 Select and fit the required bearers and spacers for the test to be performed ensuring that all necessary thumb screws or socket cap head screws are fitted and tightened.
- 5.2.2 Place the specimen to be tested centrally upon the lower bearers.
- 5.2.3 Referring to the operation instructions for the equipment supplying the power to the flexural frame, apply hydraulic power either manually or automatically to cause the upper platen to descend.
- 5.2.4 In the case of Manual Operation, as the upper bearer or bearers come into contact with the specimen, increase the load while maintaining the required pace rate until the specimen fails, then release the load allowing the upper platen to return to its uppermost position.

- 5.2.5 No further action is required during automatic operation as load increase, pace rate and load release on specimen failure are controlled automatically.
- 5.2.6 Ball Seating Assembly (37-6133) (Figure 8)
- 5.2.7 Both the beam and flag testing frames may be fitted with a ball seating assembly for testing low strength cubes up to 100 mm square.
- 5.2.8 The ball seating assembly comprises essentially of a ball seated upper platen and lower platen and adapter.
- 5.3 Fitting of the Ball Seating Assembly (Figures 8 and 9)
- 5.3.1 Using the tommy bar (7 Figure 9) supplied, unscrew and remove the upper flexural platen (1 Figure 9) complete with its ball seat (2 Figure 9). Replace with the cube test set ball seat (1 Figure 8).
- 5.3.2 Locate the adaptor (2 Figure 8) into the central hole in the lower flexural platen. Place the required distance pieces (3 Figure 8) onto the lower platen ensuring their correct location. Place the cube test set lower platen (4 Figure 8) onto the uppermost distance piece.
- Note:** both frames have 75 mm ram travel and great care must be exercised not to exceed this.
- 5.4 Flexural testing using Cube Test Set Ball Seat (Figure 9)
- 5.4.1 If desired the upper flexural platen (1 Figure 9) may be fitted to the cube test set ball seat (5 Figure 9).
- 5.4.2 Remove the ball seat (2 Figure 9) from the upper flexural platen (1 Figure 9) by removing the 4 retaining screws (6 Figure 9).
- 5.4.3 The upper flexural platen (1 Figure 9) may then be clamped to the cube test ball seat platen (5 Figure 9) using the 4 clamps and screws (3 Figure 9) provided with the cube test set. Ensure that the guide pin (4 Figure 9) protruding from the rear of the flexural platen locates in the slot of the flexural frame to prevent the platen from rotating.
- 5.4.4 Various distance pieces are also required for the testing of cubes. See table below.

	100 kN Flexural (beams) Frame	100 kN Flexural and Transverse(flags) Frame
Specimen size (effective height)	Distance pieces required	Distance pieces required
40 mm	2 x 100 mm 37-5100 1 x 80 mm 37-5050	3 x 100 mm 37-5100 1 x 60 mm 37-5020
50 mm	2 x 100mm 37-5100 1 x 50 mm 37-5000 1 x 20 mm 37-4980	3 x 100mm 37-5100 1 x 50 mm 37-5000
70.7 mm	2 x 100mm 37-5100 1 x 50 mm 37-5000	2 x 100mm 37-5100 1 x 80 mm 37-5050 1 x 50 mm 37-5000
100 mm	2 x 100mm 37-5100 1 x 20 mm 37-4980	3 x 100 mm 37-5100



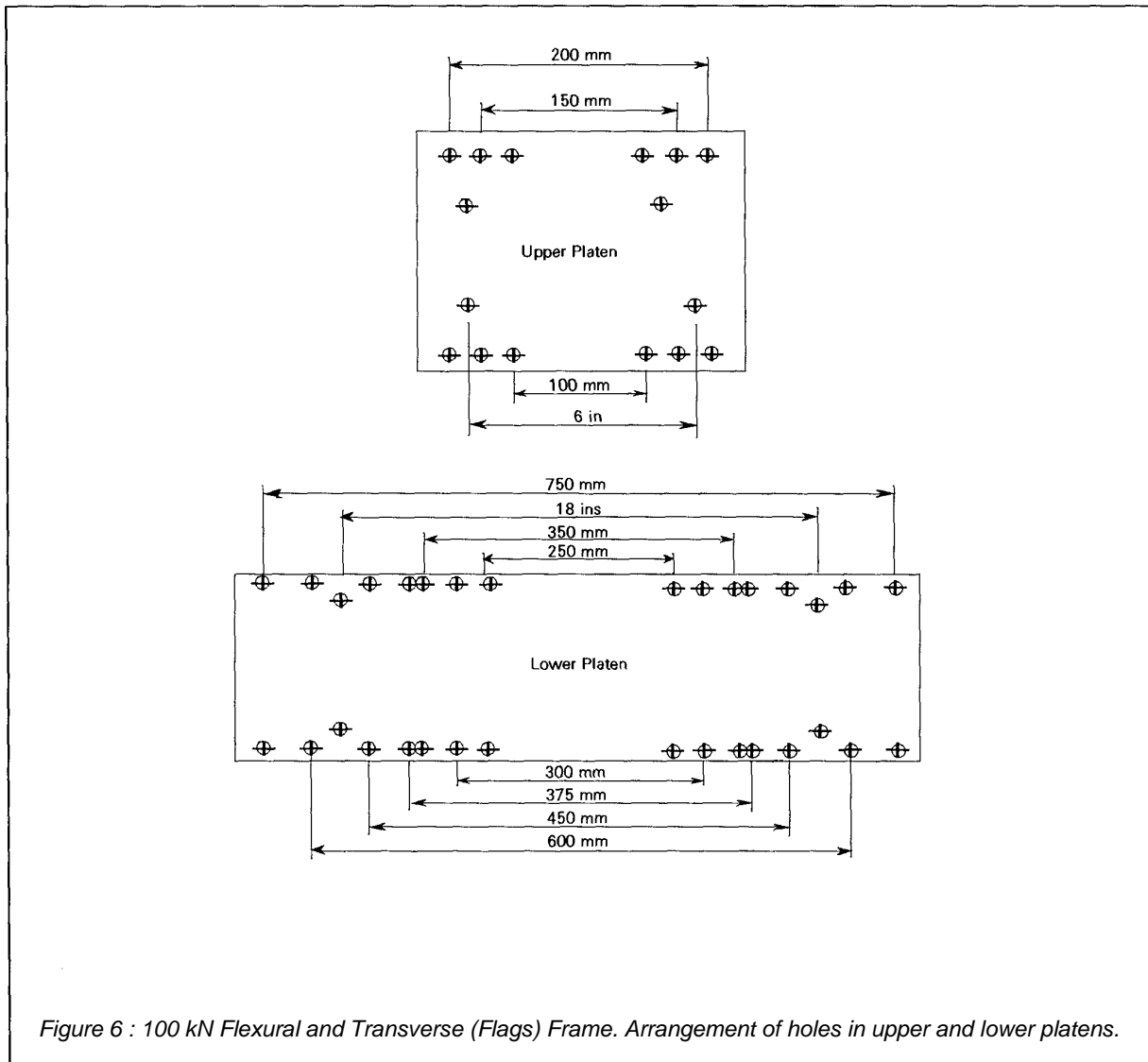
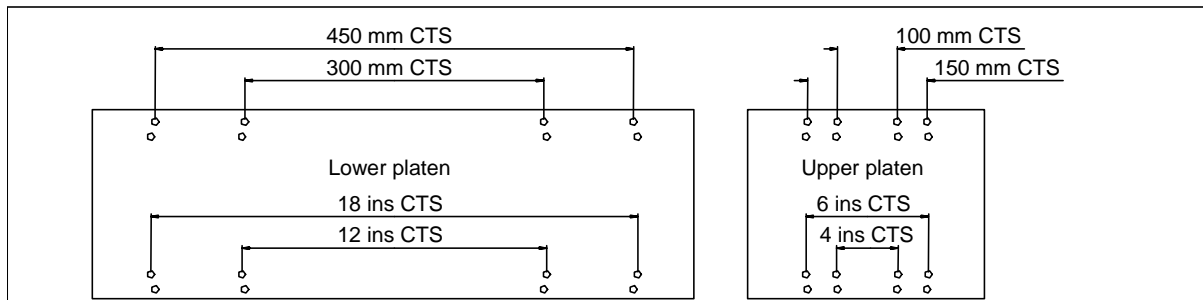


Figure 6 : 100 kN Flexural and Transverse (Flags) Frame. Arrangement of holes in upper and lower platens.



**Note**

The 'CTS' dimensions are centres of the rollers. The actual centres of the holes in the upper and lower platens are different to the centres shown, see section 5.1.7

Figure 7 100 kN Flexural (Beams) Frame

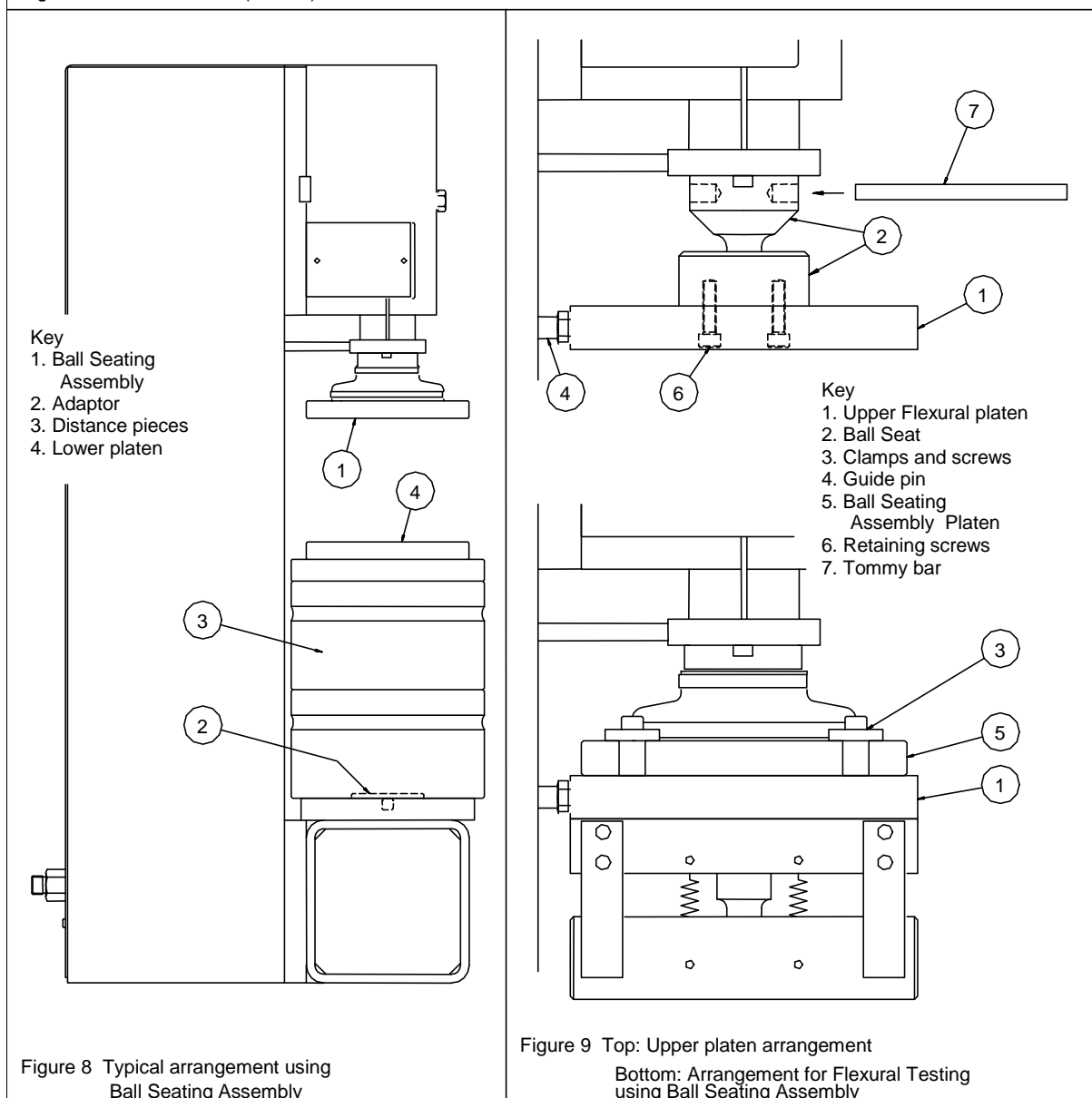
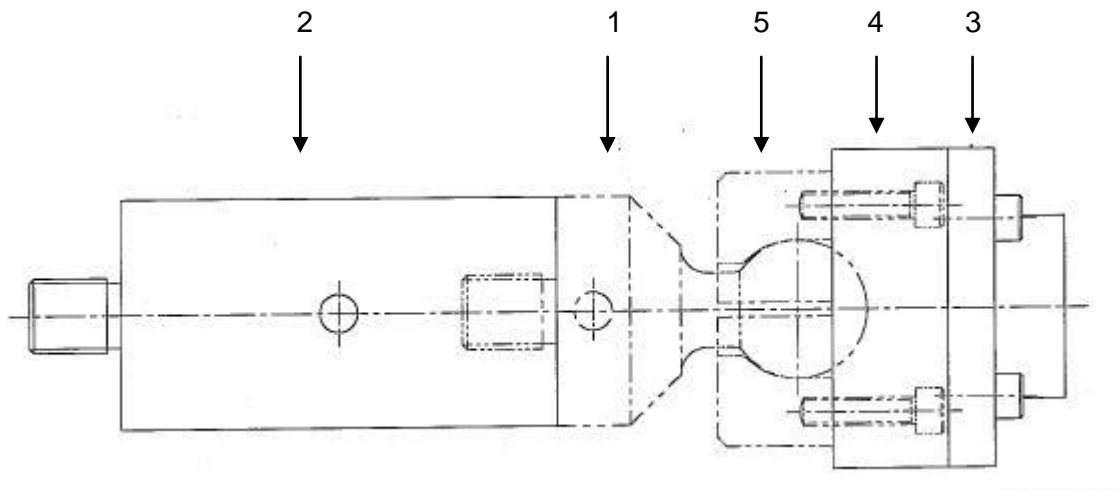


Figure 8 Typical arrangement using Ball Seating Assembly

Figure 9 Top: Upper platen arrangement  
Bottom: Arrangement for Flexural Testing using Ball Seating Assembly

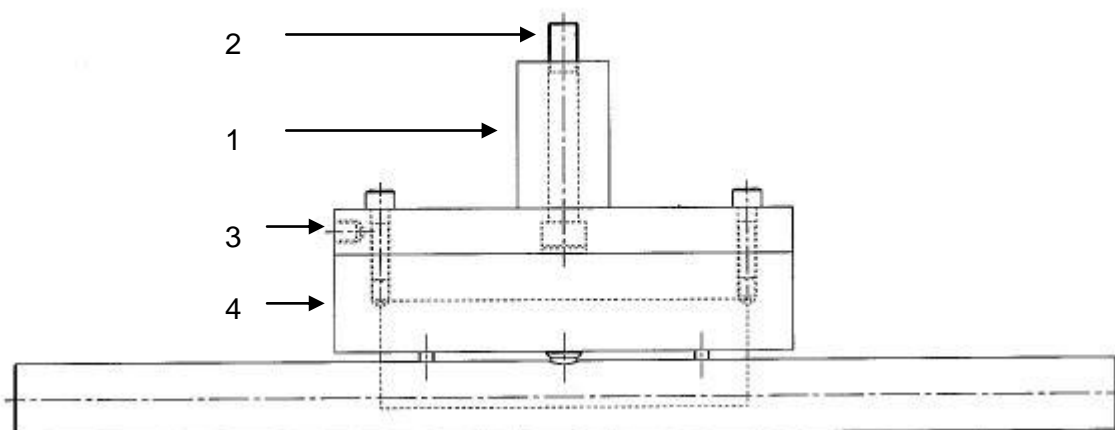
*Figure 10*

Remove the four bolts securing the existing platen assembly to the ram. Support the platen during this operation. Remove the ball assembly (1) and fit the spacer (2) provided to the ram. Attach the ball assembly to the spacer. Split the bearer pad (3). Locate the ball housing (5) around the ball assembly and attach the spherical seat (4) to the ball housing using the existing screws. Finally fit the pad assembly to the spherical seat. Check that the bearer pad assembly rotates freely on the ball assembly.



*Figure 11*

Remove the four bolts securing the existing platen assembly to the ram. Support the platen during this operation. Remove existing ball seat assembly from the ram using the Tommy bar supplied. Split the bearer assembly (3 and 4); fit the spacer (1) to the Allen bolt (2) and secure the Allen bolt to the shaft of the ram. Fit the two parts of the bearer assembly together.



## **5 Maintenance**

### **6.1 Daily**

6.1.1 Check external hydraulic couplings for leaks.

### **6.2 Monthly**

5.2.1 Flexural (beams) Frame and Flexural and Transverse (flags) Frame. Remove rear cover from frame.

Check internal hydraulic couplings for leaks.

Lightly oil ram return cables.

Check operation of the ram travel limit switch.

## **6 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.

## 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 uträdd 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 wetgeving (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.**

## PORTUGUESE

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.**