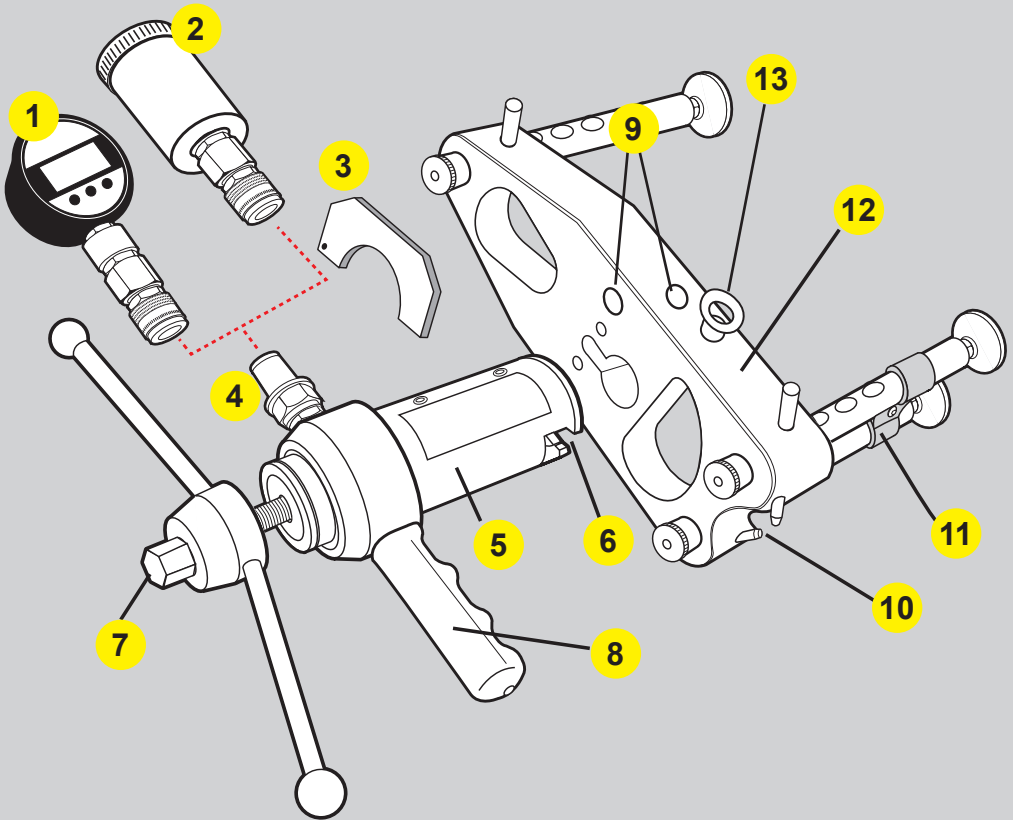


# M2050 Tester



# M2050 Tester Parts



## M2050 Parts

1. Gauge - Digital with QR Hydraulic Coupler
2. Oil bottle with QR Hydraulic Coupler
3. Piston key
4. Quick release body coupler
5. Tester body with 50mm/scale indicator
6. Load jaw
7. Turning handle with integrated nut
8. Grab Handle
9. Level bubbles
10. Leg pins
11. Leg brace
12. Tester bridge
13. Safety eye bolt

## GENERAL DESCRIPTION

The M2050 pull-out tester is a purpose made system for testing fixings, fasteners and anchors. It consists of a mechanical screw arrangement acting through a hydraulic load cell, which measures the load applied to the fixing directly. The resulting load value is then indicated on the dial type gauge or optional digital gauge.

The tester has a built in movement indicator scale 50mm to show "first movement" on the fixing prior to the test load being applied. The tester and bridge are supplied as an integral part of the standard tester kit.

A comprehensive range of accessories is also available, further increasing the scope of possible testing applications.

## USE OF THE TESTER AS DIRECTED

The tester is intended for use by skilled personnel with the appropriate training and knowledge of the applicable safety precautions.



**It is essential that the operating instructions are read before the tester is operated for the first time.**

**Always keep these operating instructions together with the tester.**

**Ensure that the operating instructions are with the tester when it is given to other persons.**

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## SAFETY RULES

- Modification of the tester, or tampering with it's parts is not permissible.
- Observe the information printed in the operating instructions applicable to operation care and maintenance.
- The tester and its accessories may present hazards when used incorrectly by untrained personnel or not as directed.
- Use only the genuine Hydrajaws accessories or ancillary equipment listed in the operating instructions.

# TECH SPECIFICATIONS

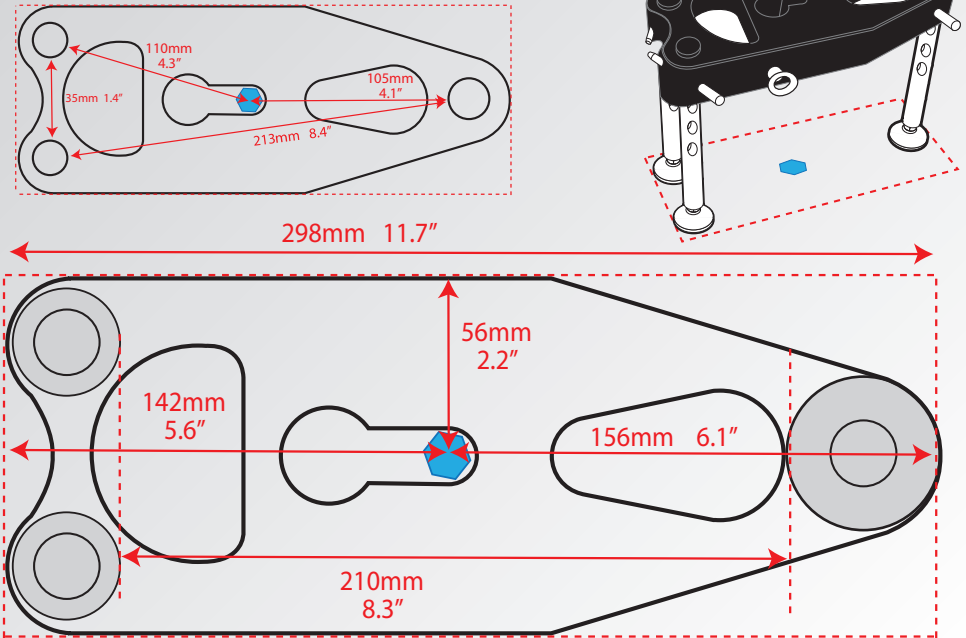
- Pull-out load range 0-50kN/lb/f
- Weight
  - Tester only 2.5kg
  - Gross Box weight 14kg
- Packaged size 61cm x 47cm x 18cm
- Effective stroke up to 50mm
- Stroke scale 0-50mm
- Load gauge Interchangeable
- Casing Aluminium
- Loading jaw Pivot-able through 360° with Spring return
- Operating handle Standard size with integrated 24mm nut for confined spaces

## Load Gauges

- Range available: Digital: 0-50kN
- Accuracy: Digital to +/-1.5% fsd
- Indication of pull-out load
- Calibrated in kN
- 12 month test certificate supplied with each gauge
- Impact resistant glass
- Protection against sudden load relief (i.e. sudden failure of fixing)
- Digital: peak hold memory
- Working Temperature: Digital: -20°C to +60°C

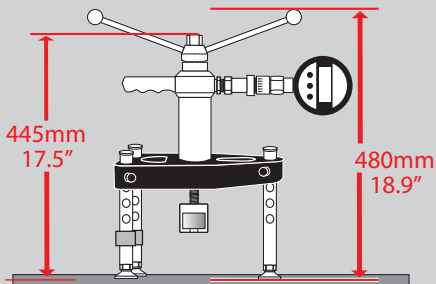
## Bridge Footprint

### M2050 Bridge Footprint

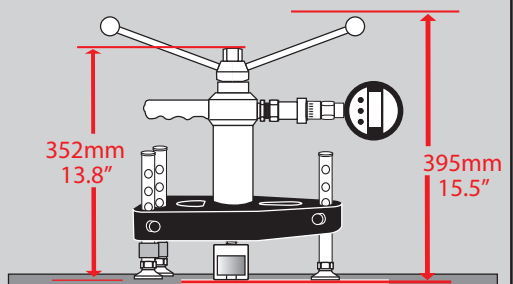


# M2050 Dimensions

**MAX**

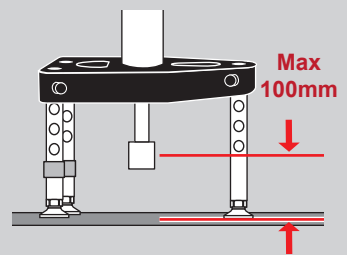
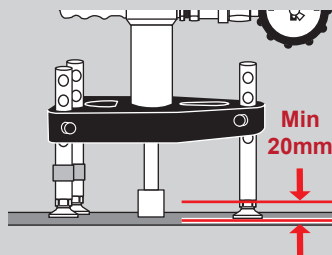
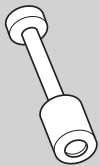


**MIN**

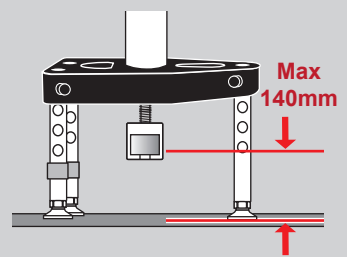
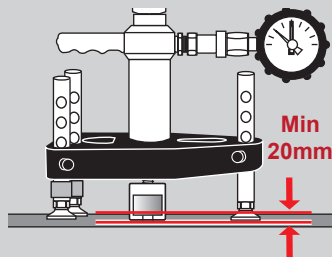


## Adaptor ranges

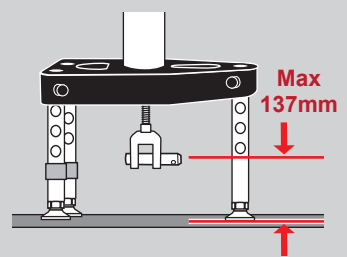
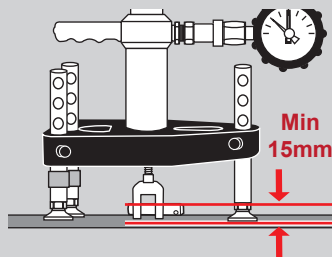
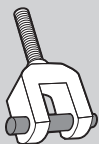
**Threaded Stud**



**Bolt head**



**Clevis**



with Threaded stud **Max 220mm**

# 1. GENERAL TESTING PROCEDURE

## SETTING UP THE TESTER

1. Fit the appropriate adaptor to the tester. Example shown is a bolt tester adaptor. (For fitting of other adaptors please see individual instructions in this manual).
2. The tester is supplied with a locking adaptor fitted into the tester body. This locking adaptor can be removed for fitting of different adaptors by using the 3mm Ball Driver. When replacing back in ensure it is fully engaged into the tester body before tightening (**fig 1**). Thread the bolt tester adaptor into this, until it is fully engaged, using a quarter turn for position (**fig 2**).
3. Make final adjustments so that the bolt tester adaptor, tester and fixing are aligned (**fig 3**).
4. Position the tester so that the gauge can be easily read.
5. Adjust the length of the legs so that all three are in contact with the base material and the load spreading bridge is aligned and level by referring to the bubble levels on each face. Fine adjustment is available by unscrewing the feet by no more than approximately 15mm (**fig 4**).

## TESTING PROCEDURE

6. Set the red pointer on the gauge to zero - hold the tester by the grip handle and proceed to load the fastener by turning the operating handle clockwise (**fig 5**).

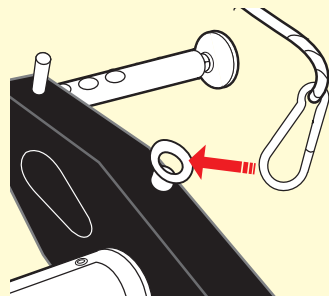
### CAUTION!

Hold the fastener securely by the grip handle as long as the fastener is under load. When the load increases, note the reading on the displacement scale on the tester. Indication of failure of the fastener may be obtained by comparing the current reading with the original reading.

7. Increase the load until the required test load is attained. Hold this load and observe any falling back of the readings which would indicate movement and possible failure of the fastener. Record the satisfactory result.
8. Release the load on the fastener by turning the operating handle anti-clockwise and allowing the test jaw to return to the original position.
9. Remove the tester and bolt tester adaptor.



**It is essential when testing on ceilings (upside down) and/or vertically, that a safety line is attached from the eye bolt on tester body to a suitable solid fixing point. This will stop the tester falling and prevent injury to personnel and/or damage to test unit.**



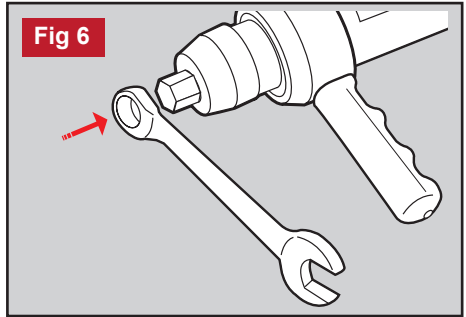


## 1. GENERAL TESTING PROCEDURE continued

### Using the integrated nut

In confined spaces the integrated nut can be used with a 24mm ratchet spanner for better access in confined spaces and for easier operation (**fig 6**).

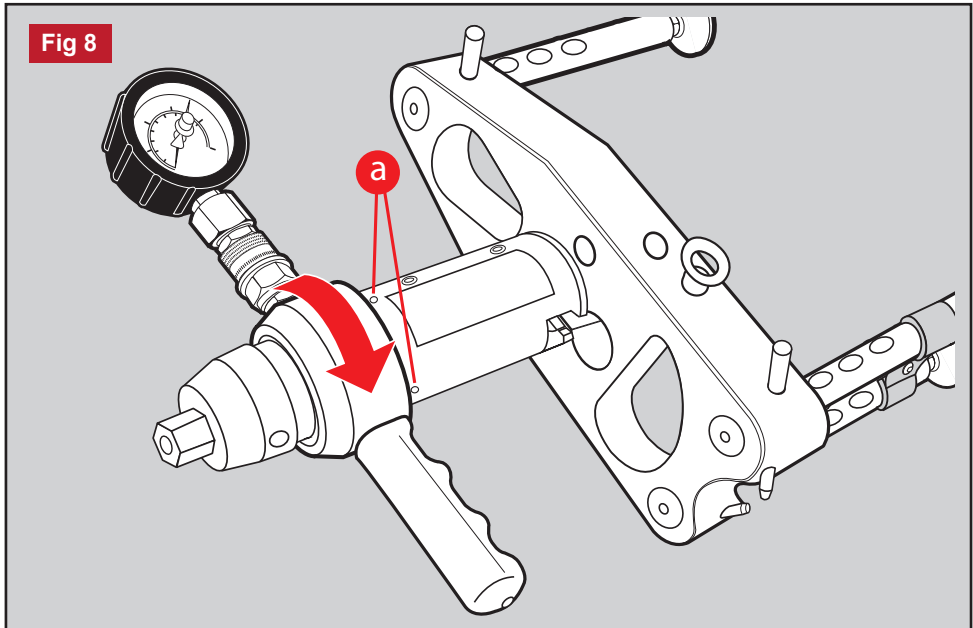
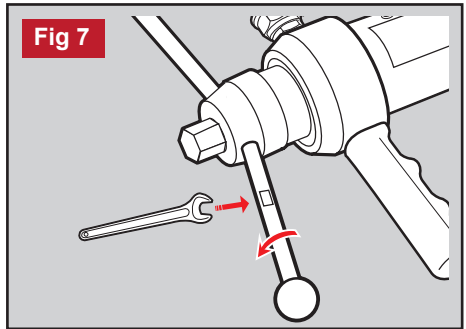
Remove the handles by unscrewing from the base using the 10mm wrench (**fig 7**). Ensure when re-attaching handles that they are tight on and secure.



### Adjusting the handle position

The top part of the unit can be rotated if the handle or gauge becoming obstructed by the unit legs or other objects.

This is achieved by loosening the three grub screws (**a**) on the body using the allen key provided. Rotate the top until the handle and gauge are clear of obstacles and re-tighten the screws (**fig 8**).





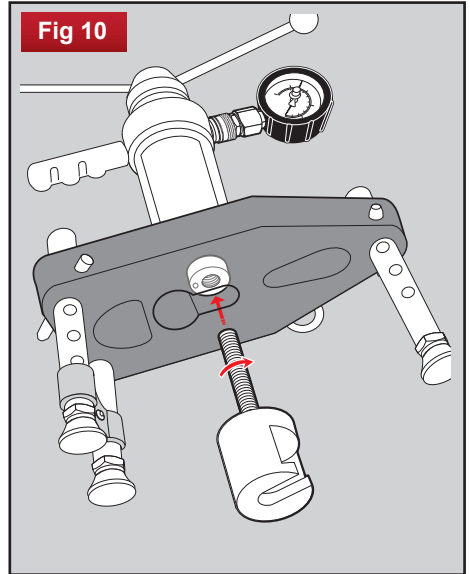
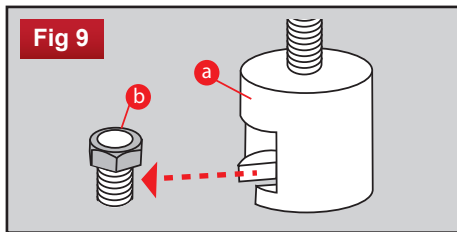
## 2. PULLING ADAPTORS

### 2.1 THE BOLT TEST ADAPTOR

#### Using the bolt test adaptor directly

For M16 nuts, the bolt tester adaptor (a) directly engages the nut (b) in the pulling jaw (fig 9).

Mount the Locking adaptor into the tester (see Section 1 General testing procedure). Then thread the bolt tester adaptor into the tester body (fig 10).

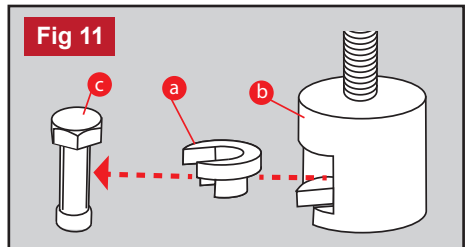


#### Using the bolt test adaptor with the slotted button adaptor

For testing M12 bolts the slotted button adaptor is used.

Mount the locking adaptor into the tester (see Section 1 General testing procedure). Then thread the bolt tester adaptor into the tester body (fig 10).

The slotted button adaptor (a) slots into the bolt tester adaptor (b) and engages the nut (c) (fig 11).

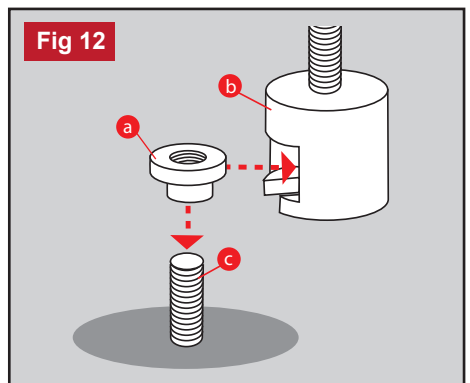


#### Using the bolt test adaptor with the threaded button adaptor

For testing threaded fixings the threaded button adaptor is used.

Mount the locking adaptor into the tester (see Section 1 General testing procedure). Then thread the bolt tester adaptor into the tester body (fig 10).

The threaded button adaptor (a) threads on to the fixing (c) and then slots into the bolt tester adaptor (b) (fig 12). Ensure the button adaptor has at least 2 complete thread turns on the fixing and is secure.

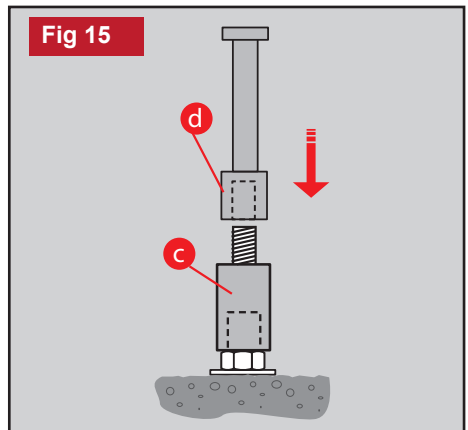
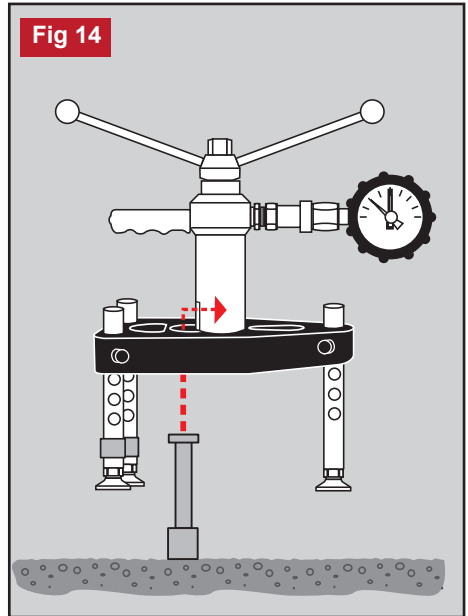
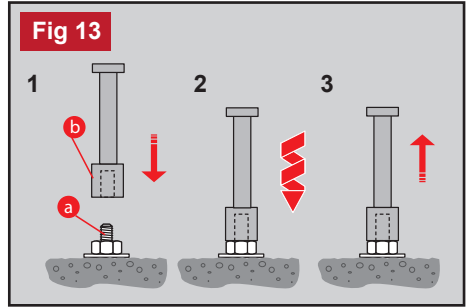


## 2.2 M16, M20 AND M24 THREADED STUD ADAPTORS

Suitable for testing sleeve and stud anchors of 10mm, 12mm and 16mm.

After the anchor has been set in accordance with the manufacturers recommendations, a suitable threaded rod (a) is screwed into the anchor and the adaptor (b) then fitted. The length of the threaded rod to be screwed into the anchor must be at least equal to the diameter of the anchor (fig 13).

Remove the locking adaptor if fitted (see Section 1 General testing procedure). When the adaptor is securely fitted to the anchor thread position, place the tester over the adaptor, passing the head through the hole in the bridge and engage it in the pulling jaw of the tester (fig 14). Level the load spreading bridge with the adjustable legs and swivel feet before commencing the application of the load.



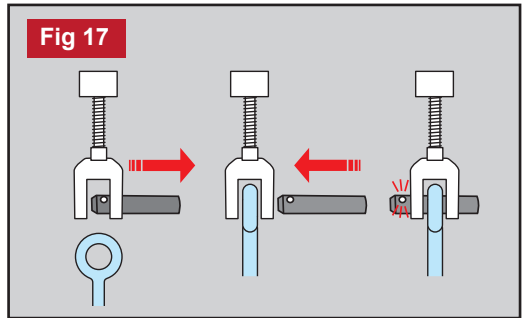
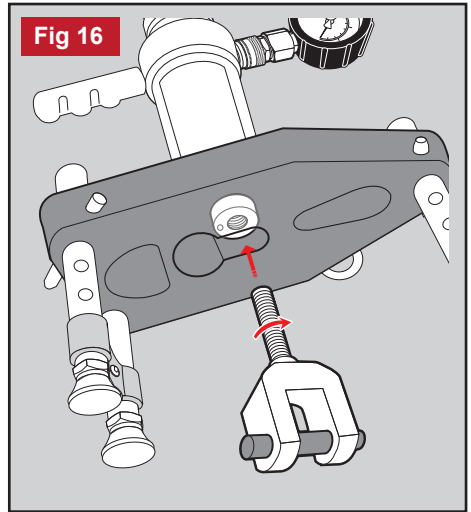
Note: To use the optional M30 Thread stud adaptor, first attach it to fixing (c). Then thread the M20 Adaptor (d) and proceed as above (fig 15).

## 2.3 THE CLEVIS ADAPTOR

For testing ringbolts the Clevis adaptor is used.

Mount the locking adaptor into the tester (see Section 1 General testing procedure). Then thread the clevis adaptor into the tester body until it is fully engaged, using a quarter turn for positioning (**fig 16**).

Remove crosspin from the clevis adaptor and offer the tester and bridge to engage eye of the anchor in the clevis. Some adjustment will be required on the swivel feet, so that this fit is achieved. Push clevis pin through the clevis and eyebolt, ensuring that the ball on the pin clicks into place, having passed through the second fork (**fig 17**). Once fitted securely commence testing (see general testing procedure on page 6).



## 3. EXAMPLES OF USE

### 3.2 TESTING DOWELS

Mount the locking adaptor into the tester (see Section 1 General testing procedure). Thread the bolt test adaptor into the tester (see section 2.1).

(See **fig 11**) Using an appropriate slotted button adaptor if the screw is smaller than M16  
(a). Screw a bolt onto the dowel (c) and mount the bolt adaptor (b) to the bolt head.

Once fitted securely commence testing (see Section 1 General testing procedure).

### 3.3 TESTING ANCHOR BOLTS (MECHANICAL OR CHEMICAL)

Mount the threaded stud adaptor to the anchor bolt (see section 2.2).

Remove the locking adaptor if fitted in tester (see Section 1 General testing procedure).

Mount the threaded stud adaptor into the tester ensuring it is fully engaged (**fig 14**).

Start testing procedure (see Section 1 General testing procedure).

## 4. CARE OF TESTER

### 4.1 LUBRICATION

#### Lubrication of rod

This is required periodically depending on usage.

Unscrew and remove operating handle. Take care to avoid moving the washer and bearing below. Grease surfaces and threads before re-assembly (**fig 18**).

#### Oil refilling

Connecting and disconnecting Gauges from the Tester body will eventually use up the spare oil capacity and will not allow the tester plunger to travel its full stroke or give an accurate reading on the Gauge.

Fig 18

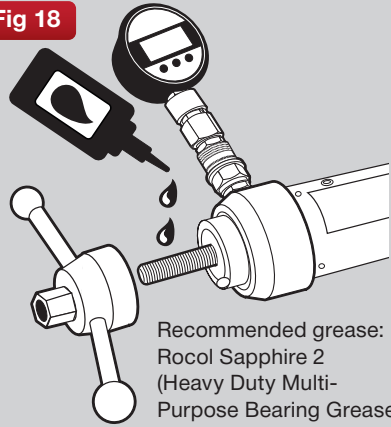
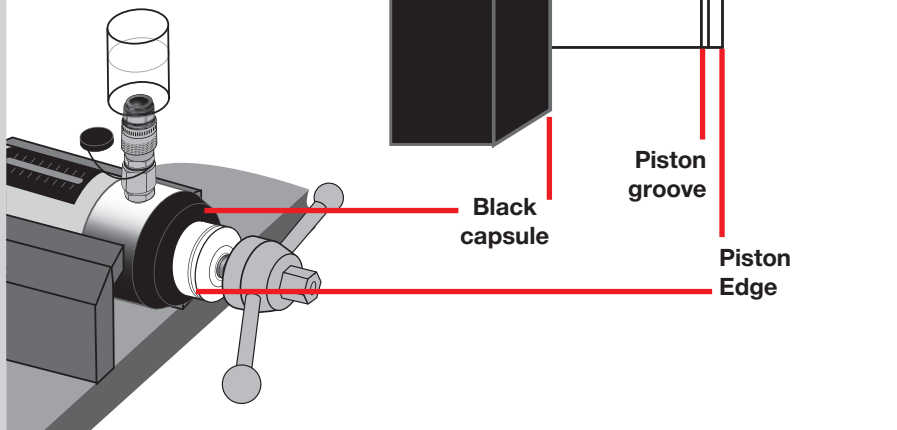


Fig 19

Check the oil level frequently or eventually the plunger will stop at approx. 3mm from the edge and the tester will not function correctly.

(To refill oil see 4.2 oil refilling instructions)



## 4.2 OIL REFILLING INSTRUCTIONS

**NOTE:** A tester with a fixed gauge cannot be filled with oil by the operator.

1. Remove the bridge and all accessories.
2. Secure the tester (e.g. in a vice or other suitable holding device if on-site) with the coupler in the vertical position.
3. Connect the oil bottle via the quick release coupler.
4. Loosen bottle cap (**fig 20**).
5. Turn the handle anti-clockwise a few turns then using the piston key provided insert this into the groove on the piston. Ensure the piston key outer slot is nearer the piston body (**fig 21**).
6. Force any air out of the system by pushing the piston in fully onto the face of the black capsule. Then pull out the piston key and handle away from the capsule. **Ensure not to pull the piston edge out further than 15mm.** This will draw oil from the bottle (**fig 22**).



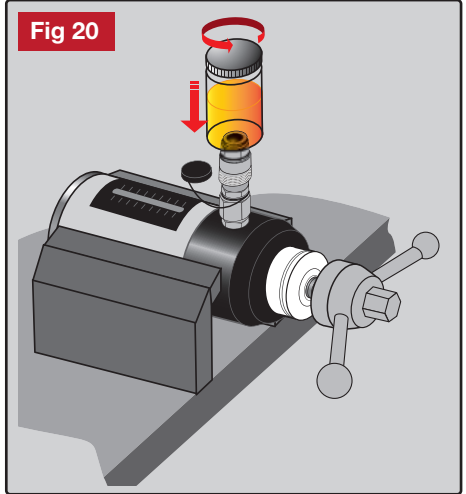
*Ensure not to pull the piston out further than 15mm.*

7. Push the piston back in fully, pull out again and repeat until all the air bubbles are expelled into the bottle. Pull out the piston one more time to 15mm from the face of the capsule to replenish the oil.
8. Remove oil bottle.

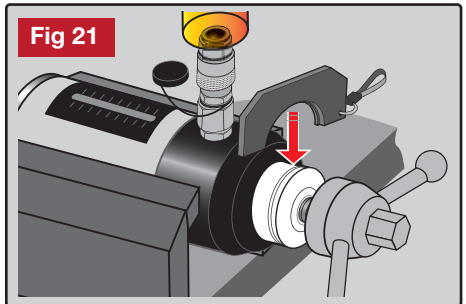


Recommended oil:  
**Light Mineral DTE Type  
VISCOSITY 32**

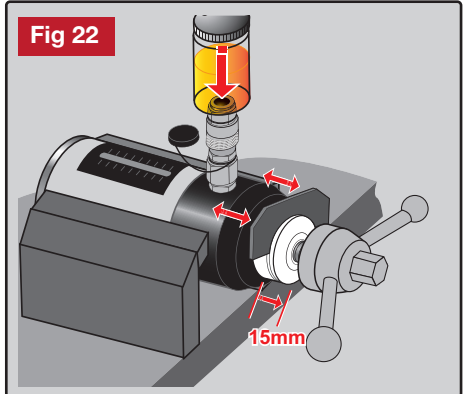
**Fig 20**



**Fig 21**



**Fig 22**



## 4.3 CALIBRATION

From the date of purchase, your tester is calibrated for one year. After this time, the tester should be returned to Hydr jaws for calibration.





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