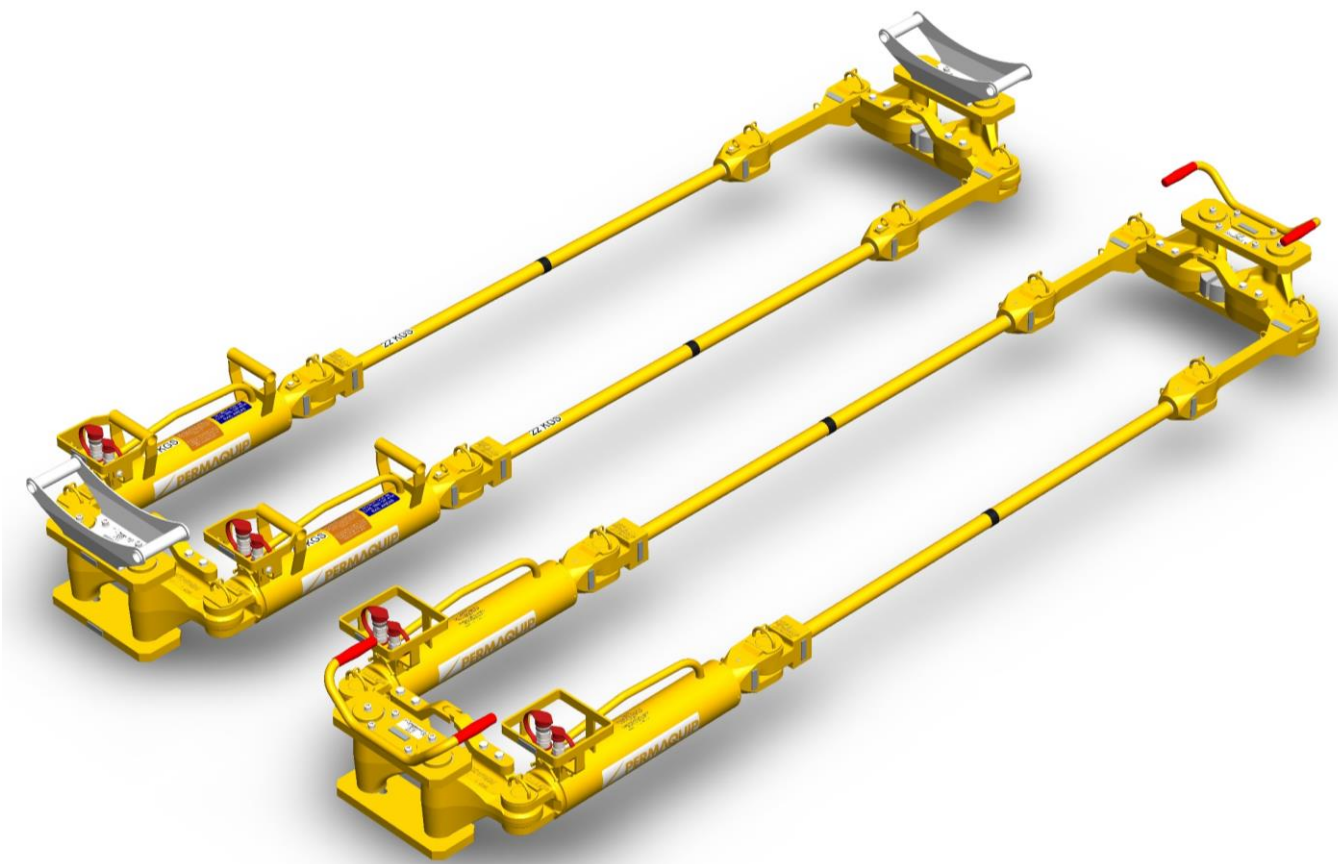


# STRESSOR HSM70

MAN-M-O-110\_05



## Permaquip Ltd

Old Sleningford Farm,  
North Stainley,  
Ripon,  
North Yorkshire, HG4 3JB

Tel: +44 (0) 1623 513349

E-mail: [sales@permaquip.co.uk](mailto:sales@permaquip.co.uk)  
[www.permaquip.co.uk](http://www.permaquip.co.uk)



# CONTENTS

1	Introduction .....	3
2	Issue and Revision Record .....	4
3	Technical Information .....	5
3.1	Testing .....	5
3.2	Warnings .....	5
4	Test Specification .....	6
4.1	Stressor Clamps.....	6
4.2	Hydraulic Ram Assembly .....	8
4.3	Short Tie Bar Assembly.....	10
4.4	Long and Extended Tie Bar Assemblies .....	11
4.5	Top and Bottom Links .....	12
4.6	Lever Arms.....	13
5	Records .....	14
6	Gauges.....	16
6.1	Stressor Fork & Clevis Hole Gauge.....	16
6.2	Stressor Link Plate Gauge .....	17
6.3	Stressor Pin Gauge .....	18
6.4	Stressor Lever Arm Pin Gauge .....	18
6.5	Stressor Fork & Clevis Gauge .....	19
7	Ordering .....	21

## **Please note:**

Whilst Permaquip Limited has taken every care in preparing this Service Guide it is intended as a technical guideline only. Save to the extent that there are statutory rights to the contrary, Permaquip accepts no liability in relation to any use or reliance made of any information in this Service Guide.

All information, illustrations and specifications in this Service Guide are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

Equipment operators and installers shall be responsible for ensuring that a safe working environment and safe systems of work are in place and in certain circumstances advice and permission from the controlling authority must be sought before any operation, installation or surveying work is carried out.

Permaquip™ is a trademark of Permaquip Ltd.  
©2006 Permaquip Ltd.

# 1 INTRODUCTION

The Permaquip™ HSM70 Stressor is designed to be used in matching Permaquip OEM pairs to adjust the gap between rail ends for rail stressing, rail welding, repairing rail failures, and for installing insulated joints.

The HSM70 stressor is the most proven and durable Stressor on the market with up to 78 tonnes pull force. The non-slip type clamps enable the gap to be maintained accurately in order to facilitate a stress-free weld.

Numerous accessories such as side rollers and under rail rollers are available.

The Permaquip™ Power Pack is designed to provide power for the Stressor. Petrol & Electric powered options are available and are the only Permaquip approved power source to be used on the equipment.

The Stressor is painted yellow for high visibility when on track.

Where Stressor kits or parts of have been used with non-OEM approved equipment, then all relevant items should be quarantined, repaired with correct OEM equipment, and re-tested accordingly.


Any modifications or enhancements made by the user or third party which have not been approved by Permaquip are not recommended. Any modifications to the equipment will become the responsibility of the user or third party and the warranty with Permaquip will become null and void. Please see Permaquip's T and Cs on our website for further details.

Prior to using the Stressor & power pack, Permaquip advise all operators and personnel to familiarise themselves with the product. Permaquip offer a wide range of product familiarisation training.

## 2 ISSUE AND REVISION RECORD

This document will be updated, when necessary, by the re-issue of the complete document.

Issue	Description	Date	Revised Page No.	Revised By.
02	Document format and address updated.	14/02/2018	All	M.S.
03	Diagrams and record table added. Tolerances relaxed for top and bottom links as well as lever arms.	26/09/2019	All	M.S.
04	Checks for serial numbers on tags updated. Frequency for checks added.	20/02/2020	All	M.S.
05	Error in revision 04 description corrected. Annotations updated to aid identification of serial number tags, checks for dust covers, jaws and handle grips added. Service gauges added. Redundant checks removed and replaced where necessary with more relevant checks. Further relaxation in service tolerances where they're non-critical. New stressor variants added.	11/10/2022	All	M.S.

Authorised By:	Martin Sheppard BEng	
	Engineering Manager	

## 3 TECHNICAL INFORMATION

### 3.1 Testing

- Test Sample Size: 100%
- Products covered:
  - 26910 Stressor HSM70 Screw Couplings STD
  - 32763 Stressor HSM70 Screw Couplings UIC60
  - 33296 Stressor HSM70 Flat Face Couplings STD
  - 33032 Stressor HSM70 Flat Face Couplings UIC60
  - 38871 Stressor Half Set FFC UIC60
  - 38872 Stressor Half Set FFC STD
- Test equipment required: Calibrated measuring equipment:
  - Vernier Callipers 150mm
  - Vernier Callipers 300mm
  - 1.5" BSF Thread Gauges BS84 medium fit (*service / test centre only*)

OEM approved Stressor service gauges:

  - 38818 Stressor Fork & Clevis Hole Gauge
  - 38819 Stressor Link Plate Gauge
  - 38820 Stressor Pins Gauge
  - 38822 Stressor Fork & Clevis Gauge
- Stressing equipment should be inspected / tested according to infrastructure guidelines for frequency of test. The maximum interval between testing should be six months.

The test specification gives full details of dimensions to be checked with the use of vernier callipers or the approved OEM specified gauges as detailed in the later sections.

When all parts comply with the following inspection criteria, test the complete Stressor Assembly to the Test Specification outlined in the Stressor User Guide MAN-M-O-106.

### 3.2 Warnings

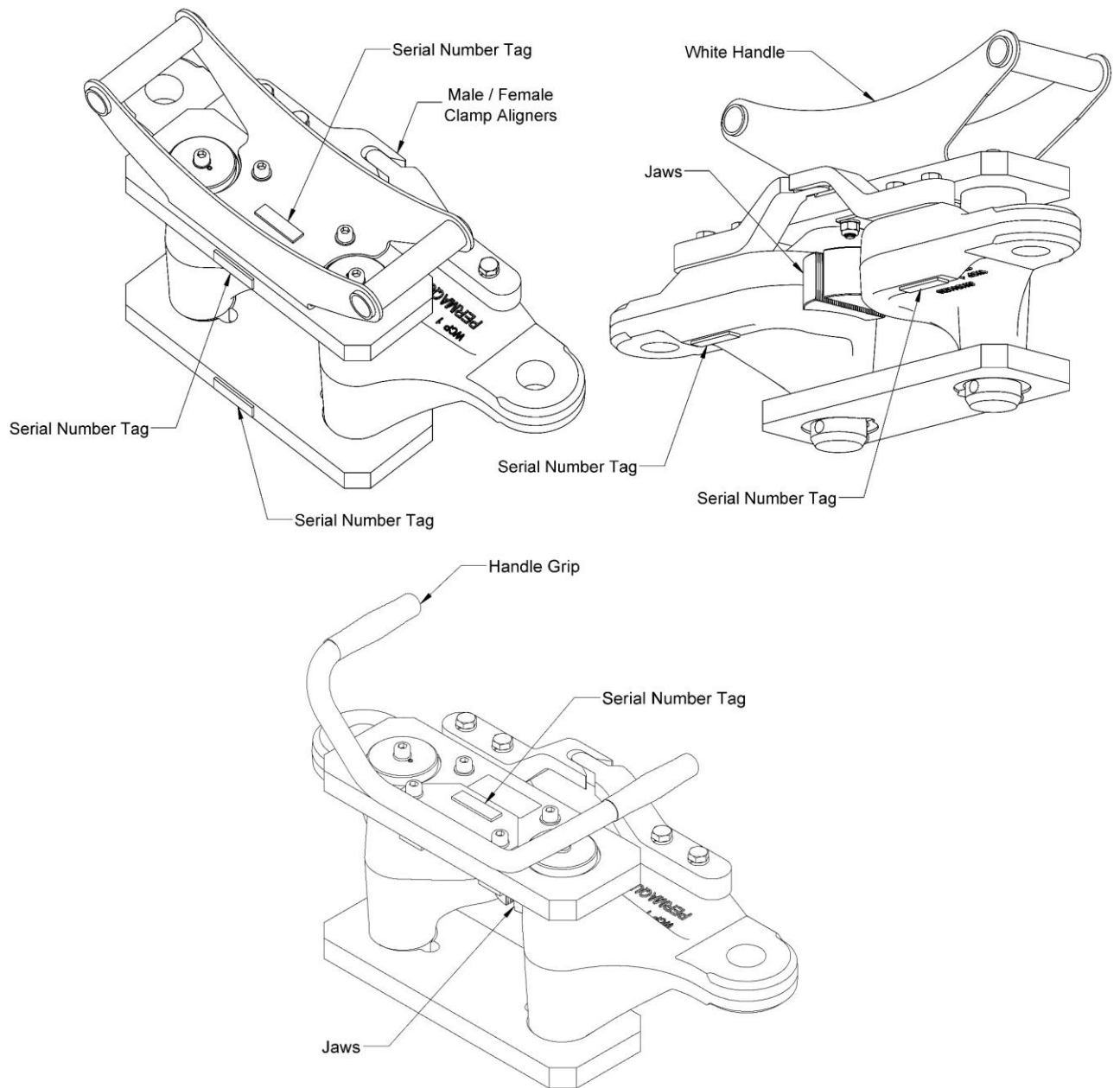
Failure to maintain and keep records of the inspection detailed in this document is the responsibility of the owner of the equipment. Failure to do so will be negligence on the owner's behalf and may result in any warranty claim being void.

The use of the equipment once the service limits have been exceeded is prohibited by Permaquip and liability of any failure or injury resulting from this is at the owner's risk.

Where further clarification is required, please contact Permaquip for advice.

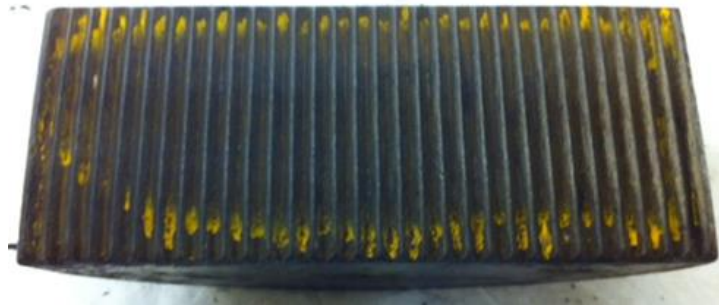
## 4 TEST SPECIFICATION

### 4.1 Stressor Clamps



1. Check that the serial number or unique identification number is visible on the tag or customer specified identification system, and it matches with the rest of the stressor set and proof load certificate.
2. Check that the Rail Guides are secure have matching profiles and are free from damage and deformation. Quarantine and replace if they are not.
3. Clamp Handles:
  - 3.1. For old style stressor Handles: Check the handle is not deformed (ends bent out providing an unsafe lift). Quarantine and replace if necessary.

- 3.2. For old style stressor Handles: Ensure the RED Handle Grips are fitted securely. If missing, loose or incorrect grips fitted, quarantine the stressor kits and replace with the correct Handle Grips and prepare / secure using the adhesive specified by Permaquip.
- 3.3. For new style stressor Handles: Check the handle is not deformed and is secured correctly to the clamp assembly. Quarantine and replace if necessary.
4. Check the Jaws for wear or damage. This includes but not limited to; deformation, burs, grinding or removal of material and thermal melting (see below images). Quarantine and replace in pairs as required, aligning the jaws, and securing with new Rubber Inserts. Ensure the teeth are clean using a wire brush if required to remove foreign objects and contaminants. Ensure the jaws rotate 2° to 3° in the Lever Arms. Remove, clean, replace the rubber washers and refit if they are seized or have excessive movement.



**PASS**

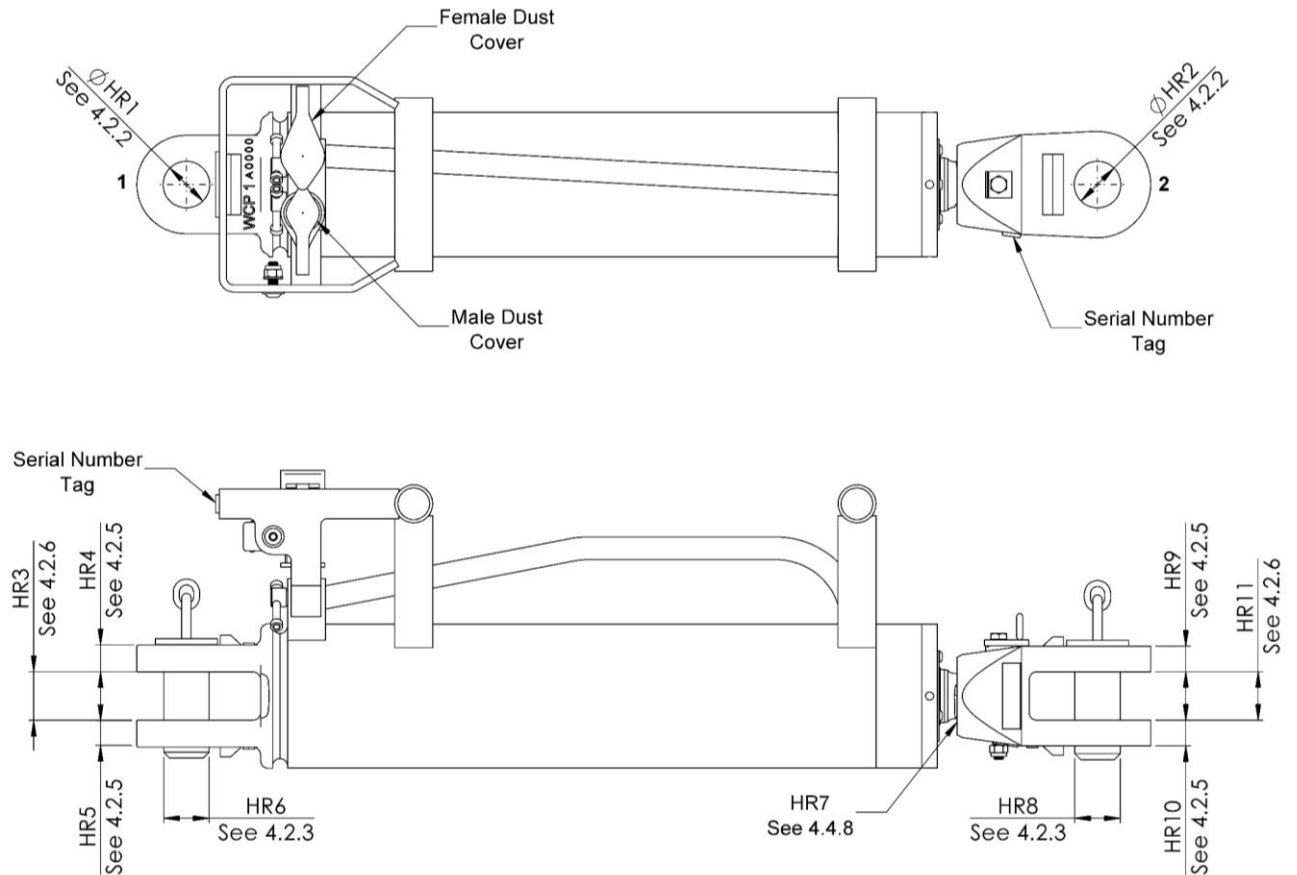


**FAIL (worn damaged teeth)**



**FAIL (damaged jaw + contaminated)**


## 4.2 Hydraulic Ram Assembly



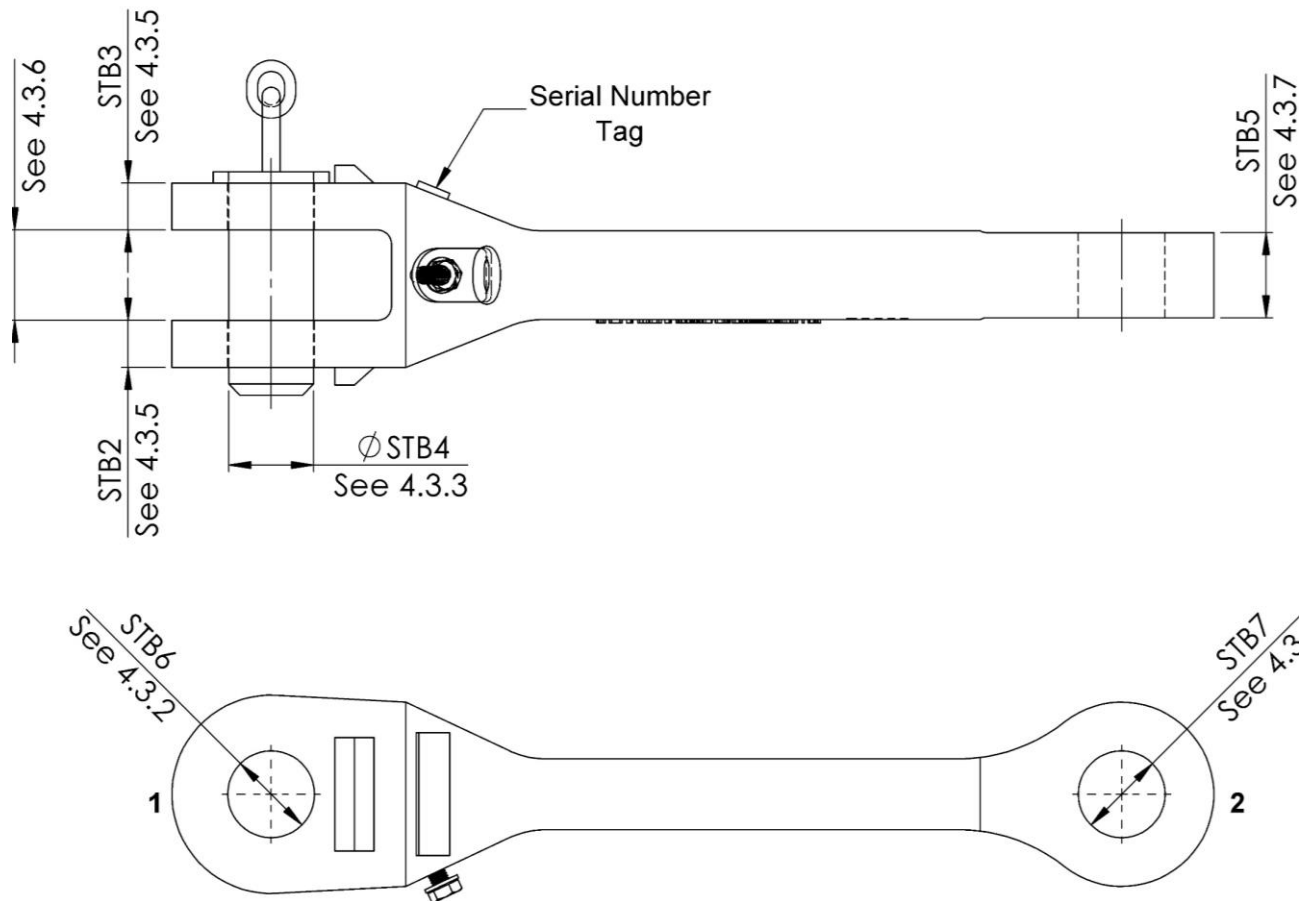
Please note style may vary depending on version.

1. Check that the Hydraulic Ram is free from significant visible damage and deformation. This includes chain condition/security and welding. Quarantine and replace if not.
2. Check that the hole diameters for the pins are less than  $\phi 40.0\text{mm}$ . Holes to be checked in multiple positions on both sides of the fork. Quarantine and replace cylinder or fork end if out of tolerance.
3. Check that both pin diameters are greater than  $\phi 37.75\text{mm}$ . Pin to be measured in multiple positions or where most visible wear is present. Quarantine and replace if out of tolerance.
4. Check that the serial number or unique identification number is visible on the tags or customer specified identification system, and it matches with the rest of the stressor set and proof load certificate.
5. Check that the thickness on both fork ends and on both sides of the fork end, are greater than 19.9mm. Check in multiple positions radially around the fork side. Quarantine and replace if out of tolerance.
6. Check that the maximum gap between the fork sides on both forks are less than 42mm. Quarantine and replace if out of tolerance.
7. Check Male and Female Dust Covers are present in good condition and fitted on the connectors. Quarantine and replace as required.



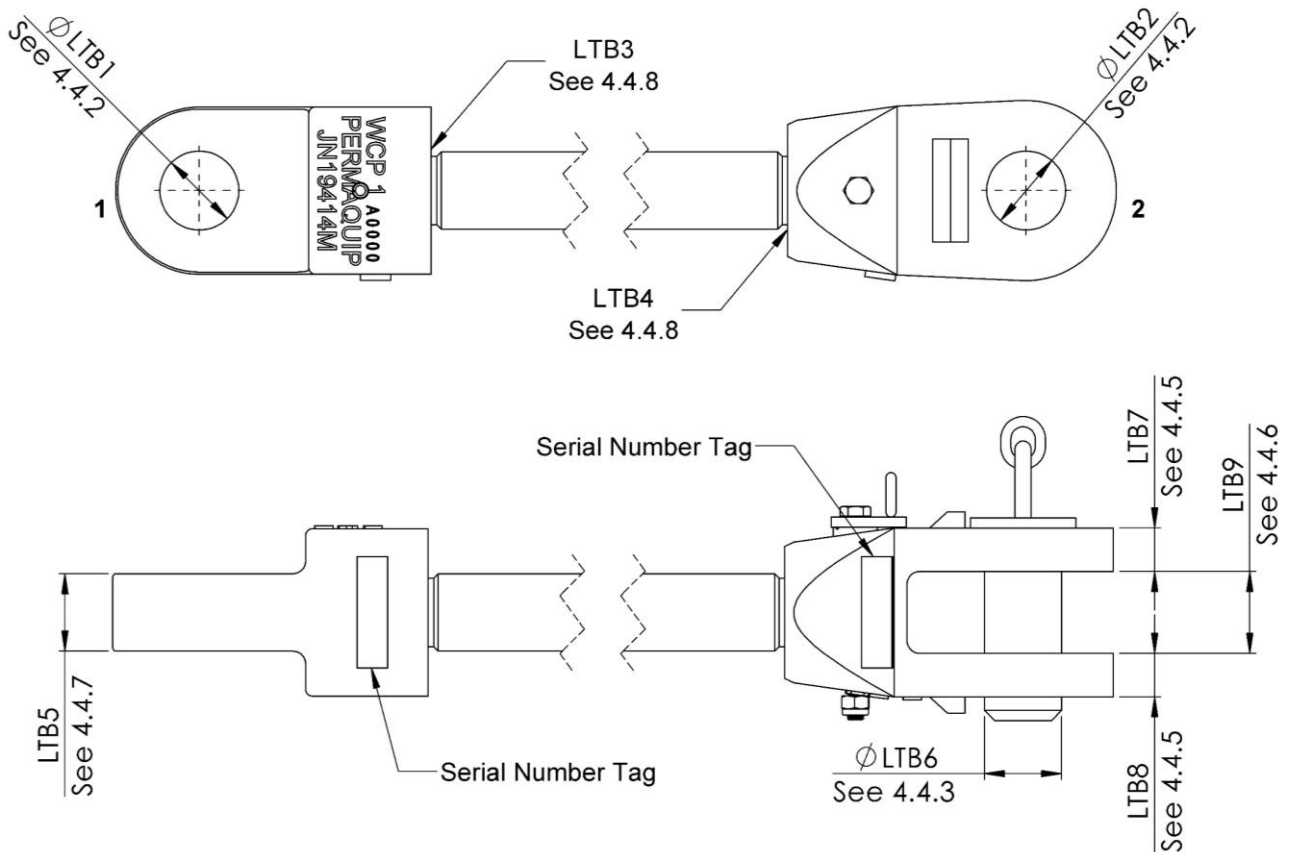
- 
8. Check that the internal and external 1.5" BSF threads on the piston and in the ram fork end complies with BS84 medium fit tolerances. This should only be checked if the parts have been split for service / replacement or there is concern in the play between threads.

### 4.3 Short Tie Bar Assembly



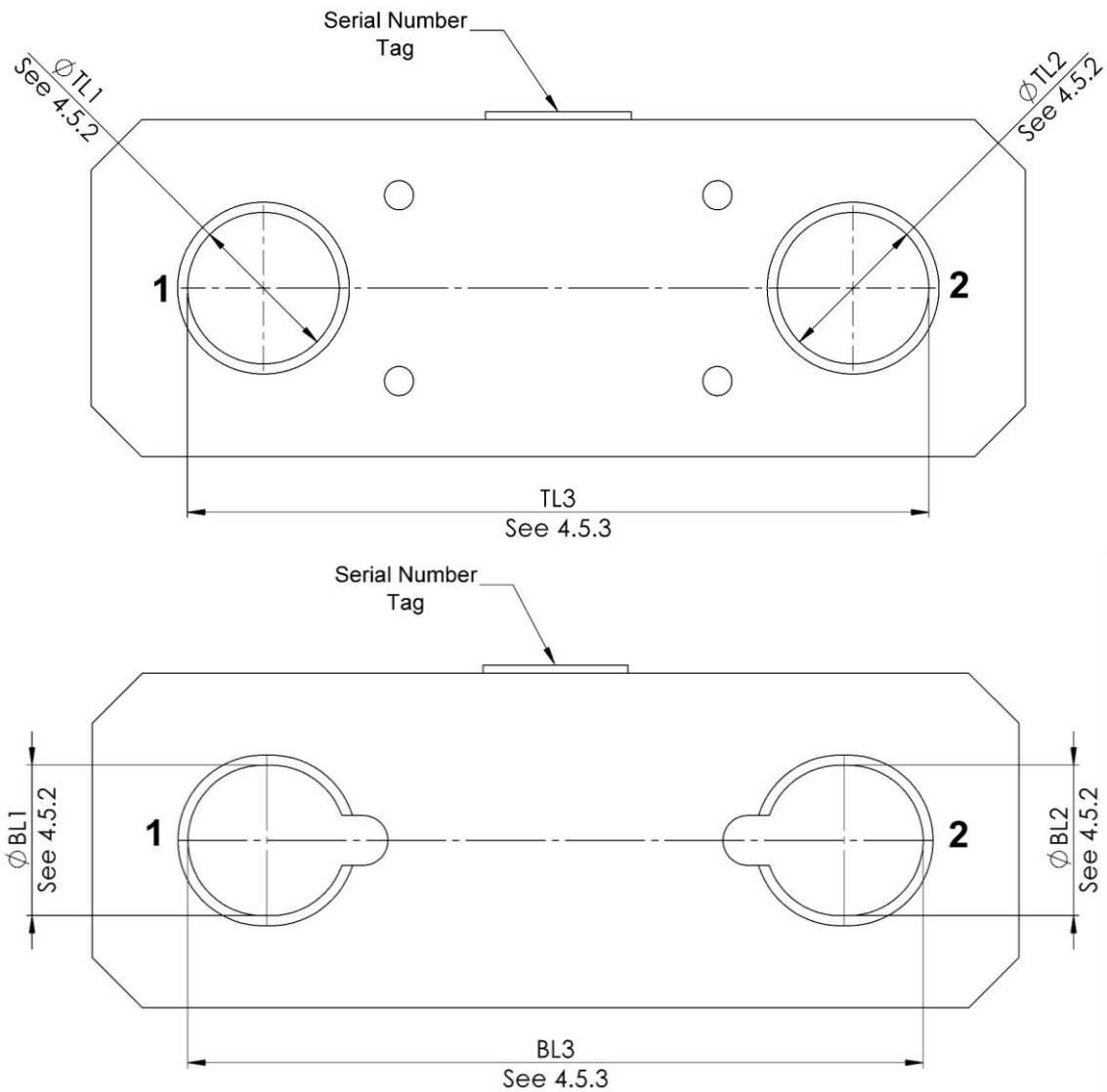
1. Check that the Tie Bar is free from significant visible damage and deformation. This includes chain condition/security and welding. Quarantine and replace if not.
2. Check that the hole diameters for the pins are less than  $\text{Ø}40.0\text{mm}$ . Holes to be checked in multiple positions on both sides of the fork and the clevis. Quarantine and replace if out of tolerance.
3. Check that the pin diameter is greater than  $\text{Ø}37.75\text{mm}$ . Pin to be measured in multiple positions or where most visible wear is present. Quarantine and replace if out of tolerance.
4. Check that the serial number or unique identification number is visible on the tag or customer specified identification system, and it matches with the rest of the stressor set and proof load certificate.
5. Check that the thickness on both sides of the fork end, are greater than 19.9mm. Check in multiple positions radially around the fork side. Quarantine and replace if out of tolerance.
6. Check that the maximum gap between the fork sides is less than 42mm. Quarantine and replace if out of tolerance.
7. Check that the thickness of the clevis, is greater than 36.0mm. Check in multiple positions radially around the clevis end. Quarantine and replace if out of tolerance.

#### 4.4 Long and Extended Tie Bar Assemblies



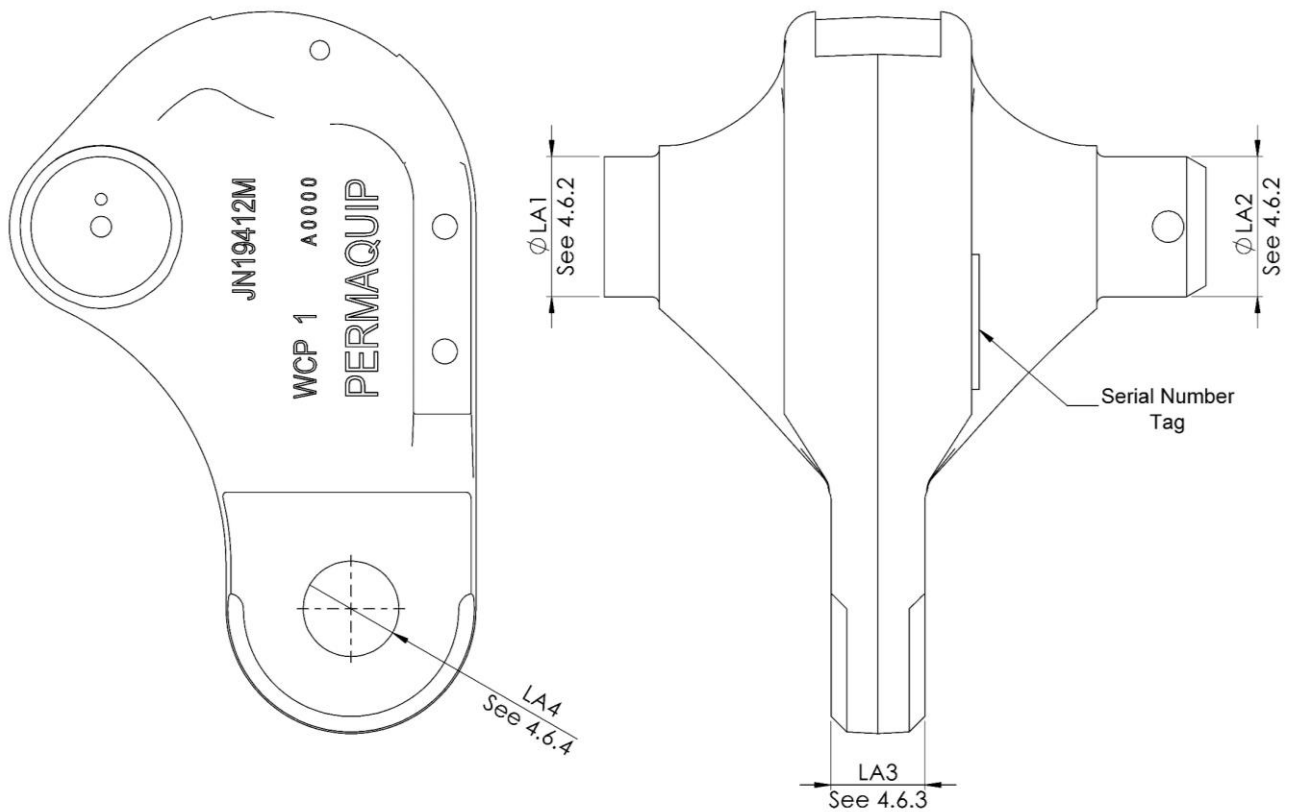
1. Check that the Tie Bar is free from significant visible damage and deformation. This includes chain condition/security and welding. Quarantine and replace if not.
2. Check that the hole diameters for the pins are less than  $\text{Ø}40.0\text{mm}$ . Holes to be checked in multiple positions on both sides of the fork and the clevis. Quarantine and replace if out of tolerance.
3. Check that the pin diameter is greater than  $\text{Ø}37.75\text{mm}$ . Pin to be measured in multiple positions or where most visible wear is present. Quarantine and replace if out of tolerance.
4. Check that the serial number or unique identification number is visible on the tag or customer specified identification system, and it matches with the rest of the stressor set and proof load certificate.
5. Check that the thickness on both sides of the fork end, are greater than 19.9mm. Check in multiple positions radially around the fork side. Quarantine and replace if out of tolerance.
6. Check that the maximum gap between the fork sides is less than 42mm. Quarantine and replace if out of tolerance.
7. Check that the thickness of the clevis, is greater than 36.0mm. Check in multiple positions radially around the clevis end. Quarantine and replace if out of tolerance.
8. Check that the internal and external 1.5" BSF threads on the tie bar rod and in the fork and clevis end complies with BS84 medium fit tolerances. This should only be checked if the parts have been split for service / replacement or there is concern in the play between threads.

## 4.5 Top and Bottom Links



1. Check that the Top & Bottom Link Plates are free from significant visible damage and deformation. Quarantine and replace if not.
2. Check the holes in the Link Plates to accommodate the Lever Arm are less than  $\phi 57.6\text{mm}$ . Holes to be checked in multiple positions. Quarantine and replace if out of tolerance. Note that the Bottom Link holes are elongated longitudinally and have cut outs, so this dimension can only be measured as indicated on the diagram.
3. Check the maximum external hole / slot pitch. Distance to be less than 280.5mm. Quarantine and replace if out of tolerance.
4. Check that the serial number or unique identification number is visible on the tags or customer specified identification system, and it matches with the rest of the stressor set and proof load certificate. Note serial numbers are only on new style top and bottom plates.

## 4.6 Lever Arms



1. Check that the Lever Arms are free from significant visible damage and deformation. Quarantine and replace if not.
2. Check that the Lever Arm pin diameters that locate into the Top and Bottom Links are greater than  $\text{Ø}56.6\text{mm}$ . Quarantine and replace as necessary.
3. Check that the thickness of the clevis end, is greater than  $36.0\text{mm}$ . Check in multiple positions radially around the clevis end. Quarantine and replace if out of tolerance.
4. Check that the hole diameter for the pin is less than  $\text{Ø}40.0\text{mm}$ . Hole to be checked in multiple positions. Quarantine and replace if out of tolerance.
5. Check that the serial number or unique identification number is visible on the tags or customer specified identification system, and it matches with the rest of the stressor set and proof load certificate. Note serial numbers are only on new style lever arms.

## 5 RECORDS

Top Link (Clamp 1)		
Dimension	Limit	Pass / Fail
TL1	< 57.6 mm	Pass / Fail
TL2	< 57.6 mm	Pass / Fail
TL3	< 280.5 mm	Pass / Fail

Bottom Link (Clamp 1)		
Dimension	Limit	Pass / Fail
BL1	< 57.6 mm	Pass / Fail
BL2	< 57.6 mm	Pass / Fail
BL3	< 280.5 mm	Pass / Fail

Left Lever Arm (Clamp 1)		
Dimension	Limit	Pass / Fail
LA1	> 56.6 mm	Pass / Fail
LA2	> 56.6 mm	Pass / Fail
LA3	> 36.0 mm	Pass / Fail
LA4	< 40.0 mm	Pass / Fail

Right Lever Arm (Clamp 1)		
Dimension	Limit	Pass / Fail
LA1	> 56.6 mm	Pass / Fail
LA2	> 56.6 mm	Pass / Fail
LA1	> 36.0 mm	Pass / Fail
LA2	< 40.0 mm	Pass / Fail

Hydraulic Ram 1		
Dimension	Limit	Pass / Fail
HR1	< 40.0 mm	Pass / Fail
HR2	< 40.0 mm	Pass / Fail
HR3	< 42 mm	Pass / Fail
HR4	> 19.9 mm	Pass / Fail
HR5	> 19.9 mm	Pass / Fail
HR6	> 37.75 mm	Pass / Fail
HR7	Thread Gauges	Pass / Fail
HR8	> 37.75 mm	Pass / Fail
HR9	> 19.9 mm	Pass / Fail
HR10	> 19.9 mm	Pass / Fail
HR11	< 42 mm	Pass / Fail

Short Tie Bar 1		
Dimension	Limit	Pass / Fail
STB1	< 42 mm	Pass / Fail
STB2	> 19.9 mm	Pass / Fail
STB3	> 19.9 mm	Pass / Fail
STB4	> 37.75 mm	Pass / Fail
STB5	> 36.0 mm	Pass / Fail
STB6	< 40.0 mm	Pass / Fail
STB7	< 40.0 mm	Pass / Fail

Top Link (Clamp 2)		
Dimension	Limit	Pass / Fail
TL1	< 57.6 mm	Pass / Fail
TL2	< 57.6 mm	Pass / Fail
TL3	< 280.5 mm	Pass / Fail

Bottom Link (Clamp 2)		
Dimension	Limit	Pass / Fail
BL1	< 57.6 mm	Pass / Fail
BL2	< 57.6 mm	Pass / Fail
BL3	< 280.5 mm	Pass / Fail

Left Lever Arm (Clamp 2)		
Dimension	Limit	Pass / Fail
LA1	> 56.6 mm	Pass / Fail
LA2	> 56.6 mm	Pass / Fail
LA3	> 36.0 mm	Pass / Fail
LA4	< 40.0 mm	Pass / Fail

Right Lever Arm (Clamp 2)		
Dimension	Limit	Pass / Fail
LA1	> 56.6 mm	Pass / Fail
LA2	> 56.6 mm	Pass / Fail
LA1	> 36.0 mm	Pass / Fail
LA2	< 40.0 mm	Pass / Fail

Hydraulic Ram 2		
Dimension	Limit	Pass / Fail
HR1	< 40.0 mm	Pass / Fail
HR2	< 40.0 mm	Pass / Fail
HR3	< 42 mm	Pass / Fail
HR4	> 19.9 mm	Pass / Fail
HR5	> 19.9 mm	Pass / Fail
HR6	> 37.75 mm	Pass / Fail
HR7	Thread Gauges	Pass / Fail
HR8	> 37.75 mm	Pass / Fail
HR9	> 19.9 mm	Pass / Fail
HR10	> 19.9 mm	Pass / Fail
HR11	< 42 mm	Pass / Fail

Short Tie Bar 2		
Dimension	Limit	Pass / Fail
STB1	< 42 mm	Pass / Fail
STB2	> 19.9 mm	Pass / Fail
STB3	> 19.9 mm	Pass / Fail
STB4	> 37.75 mm	Pass / Fail
STB5	> 36.0 mm	Pass / Fail
STB6	< 40.0 mm	Pass / Fail
STB7	< 40.0 mm	Pass / Fail

Long Tie Bar 1		
Dimension	Limit	Pass / Fail
LTB1	< 40.0 mm	Pass / Fail
LTB2	< 40.0 mm	Pass / Fail
LTB3	Thread Gauges	Pass / Fail
LTB4	Thread Gauges	Pass / Fail
LTB5	> 36.0 mm	Pass / Fail
LTB6	> 37.75 mm	Pass / Fail
LTB7	> 19.9 mm	Pass / Fail
LTB8	> 19.9 mm	Pass / Fail
LTB9	< 42 mm	Pass / Fail

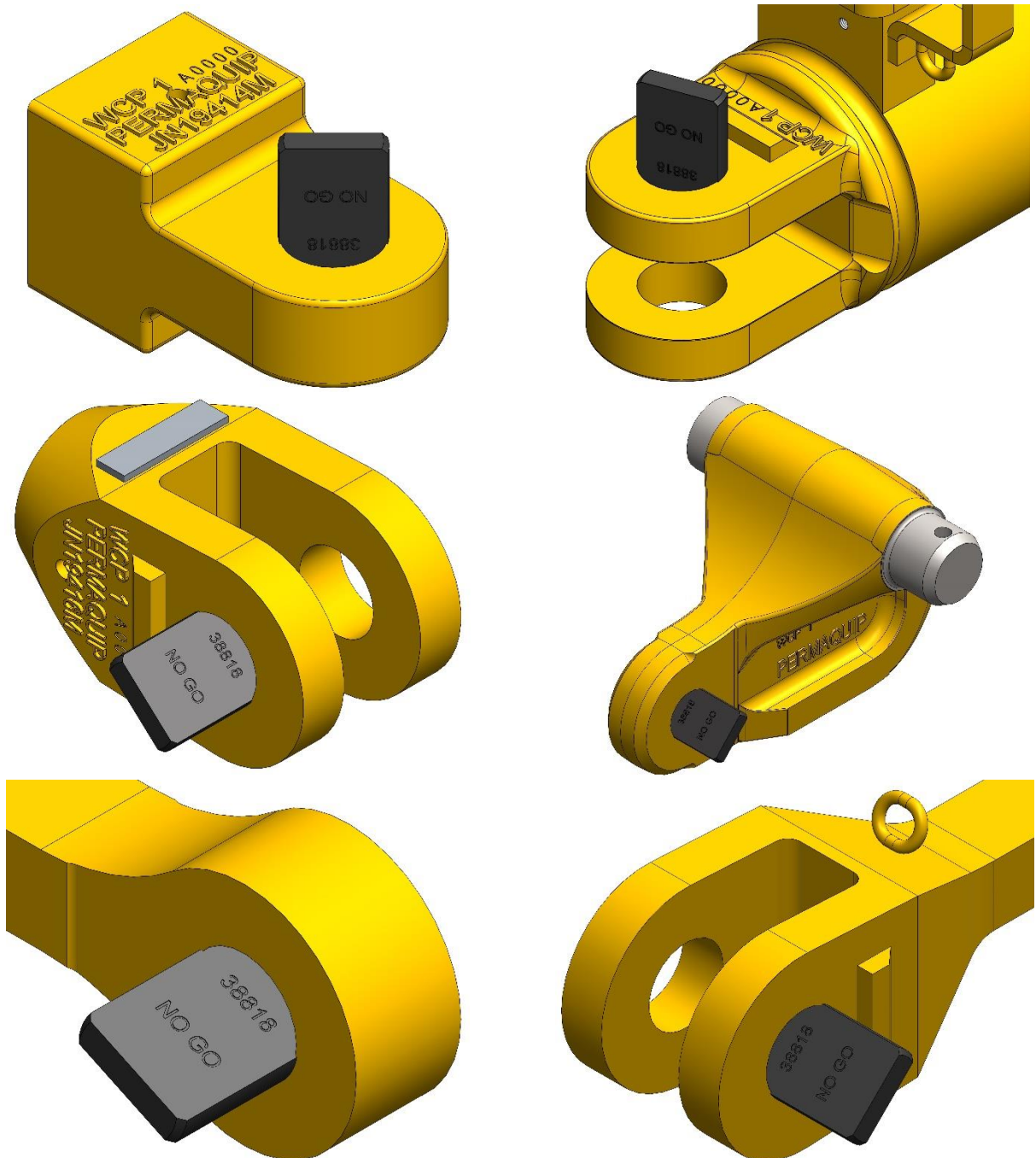
Long Tie Bar 2		
Dimension	Limit	Pass / Fail
LTB1	< 40.0 mm	Pass / Fail
LTB2	< 40.0 mm	Pass / Fail
LTB3	Thread Gauges	Pass / Fail
LTB4	Thread Gauges	Pass / Fail
LTB5	> 36.0 mm	Pass / Fail
LTB6	> 37.75 mm	Pass / Fail
LTB7	> 19.9 mm	Pass / Fail
LTB8	> 19.9 mm	Pass / Fail
LTB9	< 42 mm	Pass / Fail

<b>Serial Number:</b>	
-----------------------	--

## 6 GAUGES

### 6.1 Stressor Fork & Clevis Hole Gauge

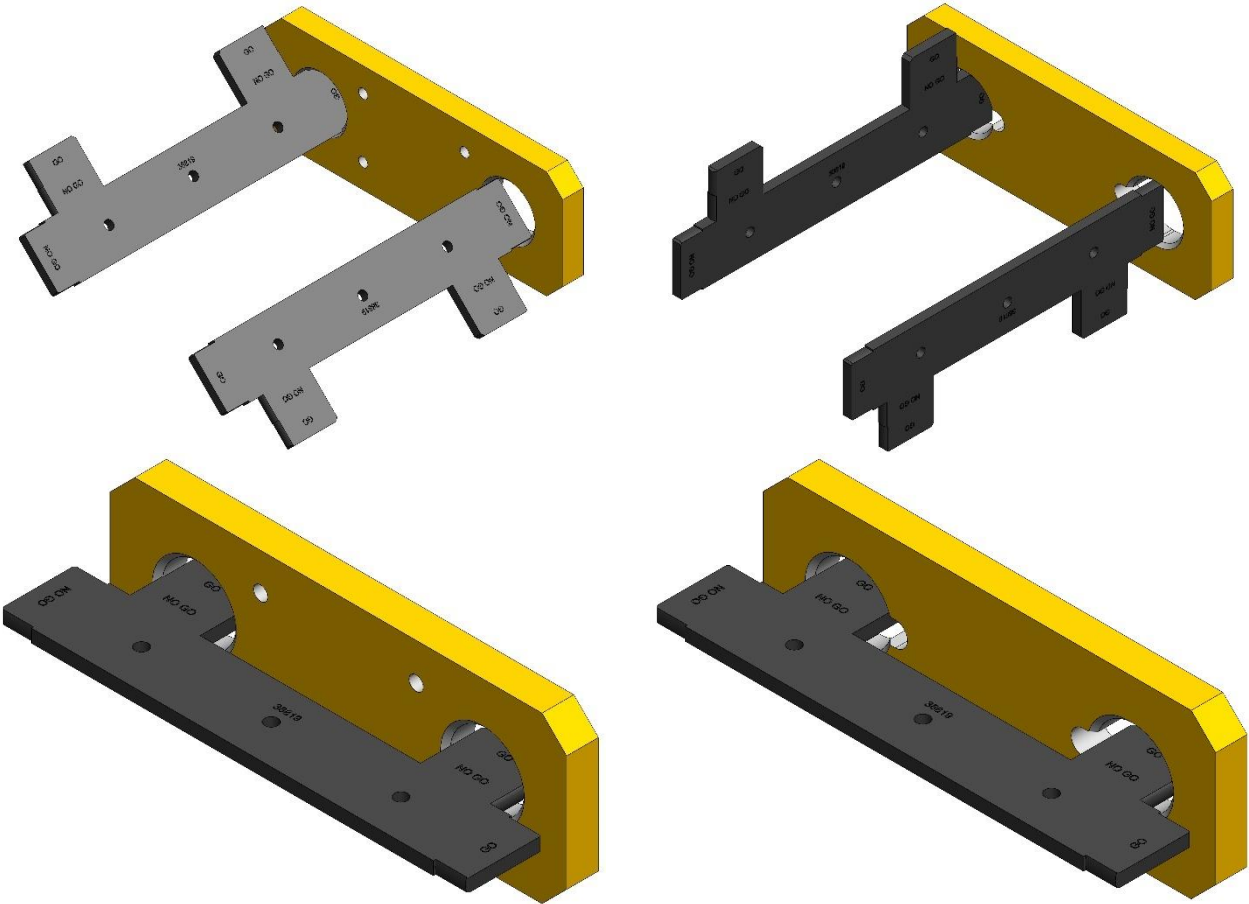
The stressor pin hole diameters can be checked using gauge “38818”. One end is a GO gauge, which should be inserted in the pin hole and rotated by 180° gently to ensure the hole has not deformed below the minimum limit. The back end of the gauge is a NO-GO gauge and should be offered up to the hole and rotated by 180° gently inserting where possible to establish if the hole is beyond the maximum limit. The gauge should be used on both sides of the clevis fork and cylinder fork to establish a pass or fail.





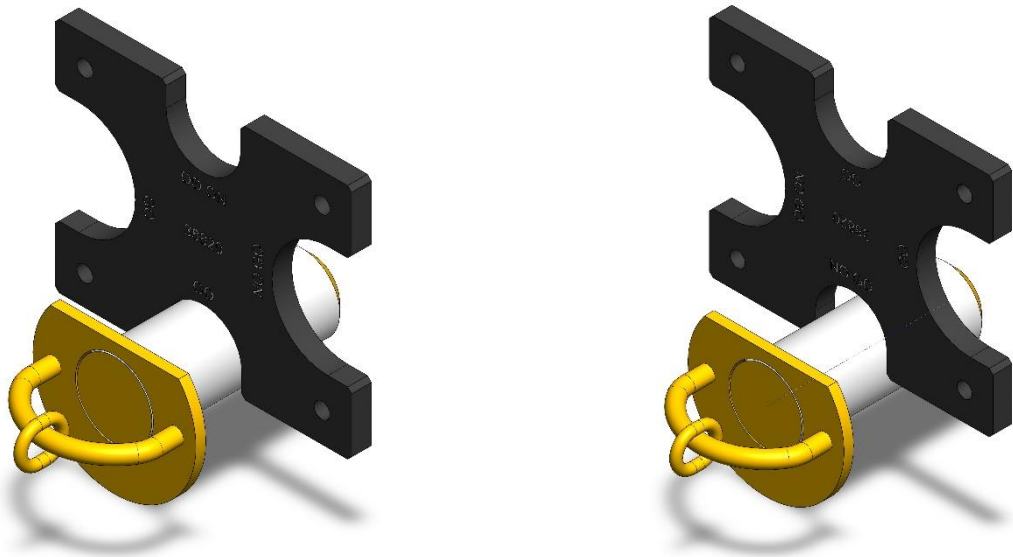
## 6.2 Stressor Link Plate Gauge

The stressor link plate hole / slot diameters and external hole / slot pitch can be checked using gauge "38819". One end is a GO gauge, which should be inserted in the pin hole and rotated by 180° gently to ensure the hole has not deformed below the minimum limit. The back end of the gauge is a NO-GO gauge and should be offered up to the hole and rotated by 180° gently inserting where possible to establish if the hole is beyond the maximum limit. On the bottom plate there are slots, and the gauges should only be used in the vertical plane centred in the slot as shown. The top of the gauge is used to check the external hole / slot pitch. The gauge should be inserted into the holes / slots centrally. The first step is a GO gauge the second step is a NO-GO gauge. The gauge should be used on the top & bottom plates to establish a pass or fail.



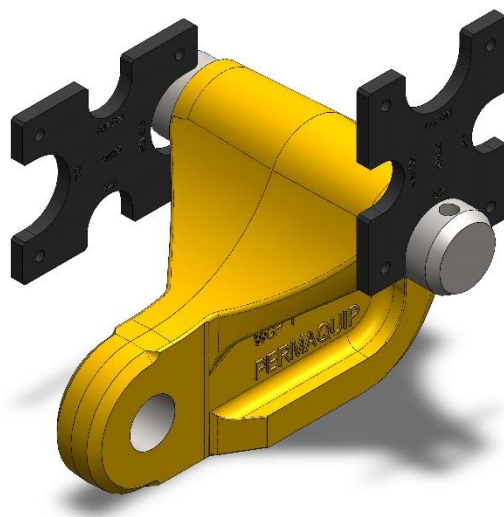
### 6.3 Stressor Pin Gauge

The stressor pin diameters can be checked using gauge “38820”. One side of the gauge has a small slot labelled as GO, which the pin should be inserted into, slid up and down the pin length and rotated about the pin axis to ensure the pin is not deformed above the maximum limit. The opposite side of the slot is labelled as NO-GO. The pin should be offered up to the slot, slid up and down the pin length and rotated about the pin axis to ensure the pin does not enter the NO-GO indicating any area the pin is worn beyond the minimum limit. The gauge should be used on all the stressor pins to establish a pass or fail.



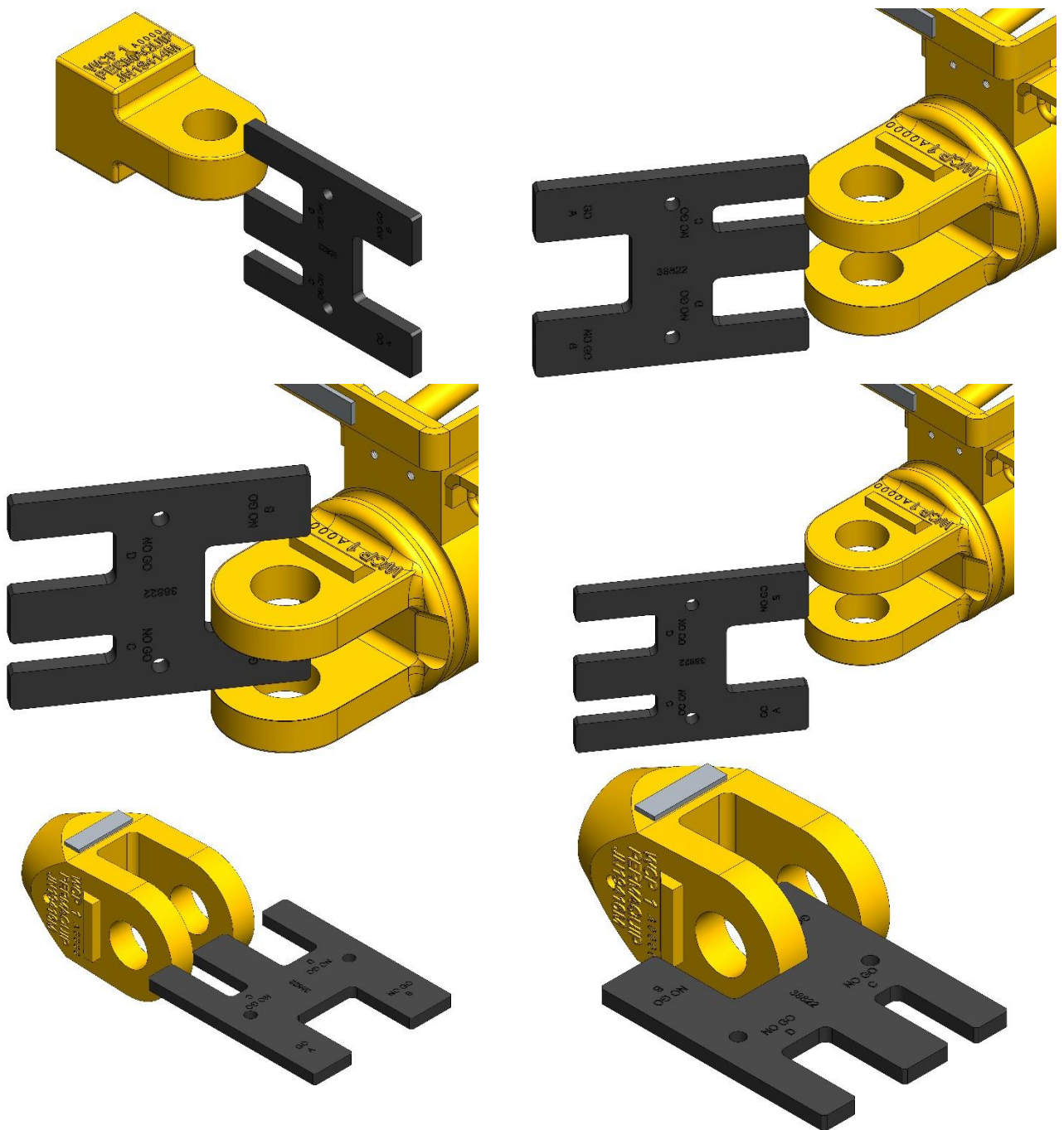
### 6.4 Stressor Lever Arm Pin Gauge

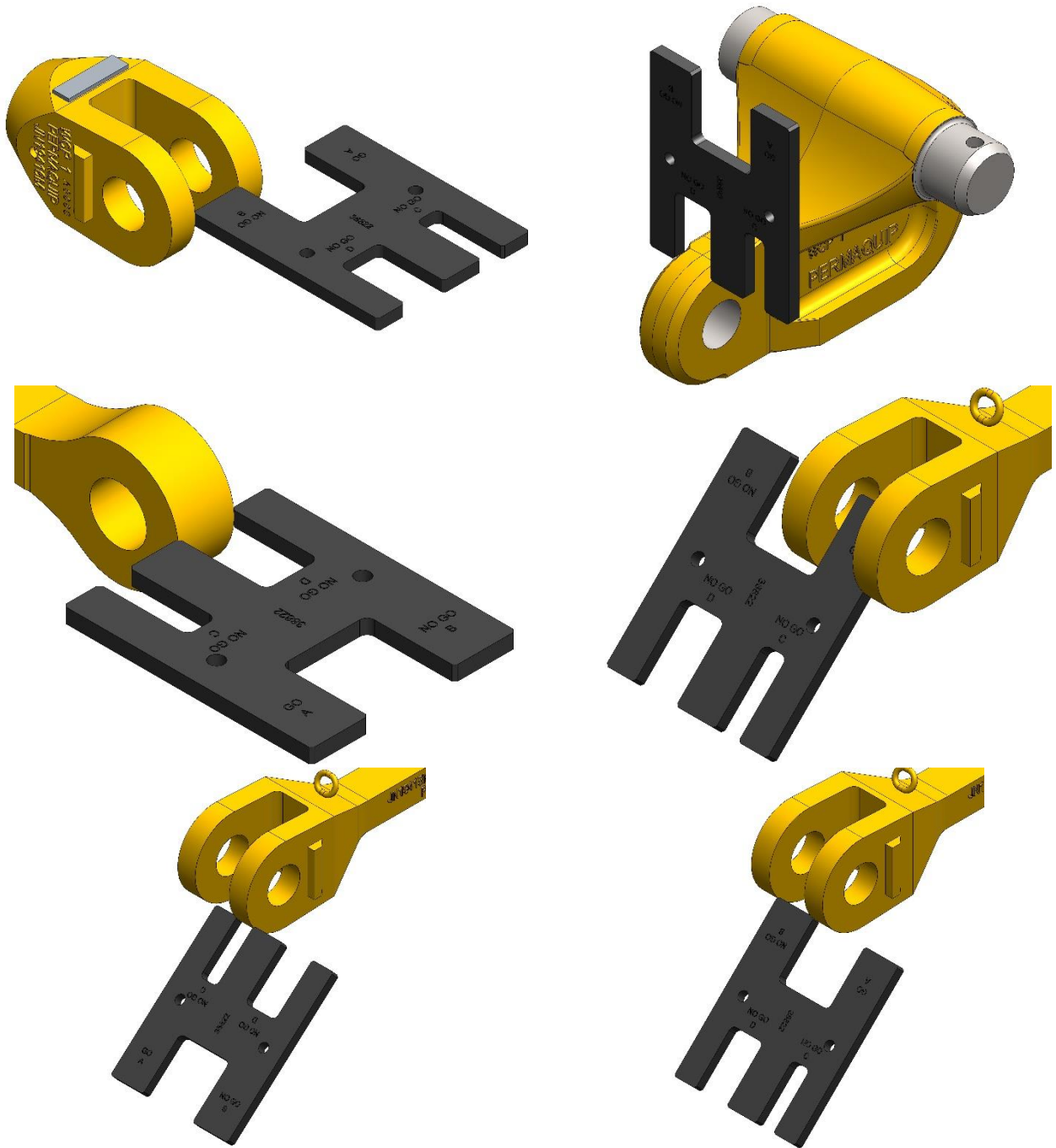
The stressor lever arm pin diameters can be checked using gauge “38820”. One side of the gauge has a large slot labelled as GO, which the stressor lever arm pin should be inserted into, slid up and down the pin length and rotated about the pin axis to ensure the pin is not deformed above the maximum limit. The opposite side of the slot is labelled as NO-GO. The stressor lever arm pin should be offered up to the slot, slid up and down the pin length and rotated about the pin axis to ensure the pin does not enter the NO-GO indicating any area the pin is worn beyond the minimum limit. The gauge should be used on both sides of the lever arms and all the stressor lever arms to establish a pass or fail.



## 6.5 Stressor Fork & Clevis Gauge

The stressor fork flange thickness, fork gap and clevis thickness can be checked using gauge "38822". The gauge is engraved with either GO or NO-GO and a letter to represent the check. "A" is the GO gauge for the fork gap. This should be inserted between the fork flanges and swept around the fork perimeter to ensure the fork aperture is not undersize. "B" is the NO-GO gauge for the fork gap. This should be offered up to check the aperture between the fork flanges is not oversize. "C" is the NO-GO gauge for the fork flange. This should be offered up to check the width of the fork flanges is not oversize. "D" is the NO-GO gauge for the clevis. This should be offered up to check the thickness of the clevis is not oversize. The NO-GO gauges have a line indicating permissible wear depth. This gauge line must not be exceeded when the NO-GO is offered up to component. The gauge should be used as described to establish a pass or fail.



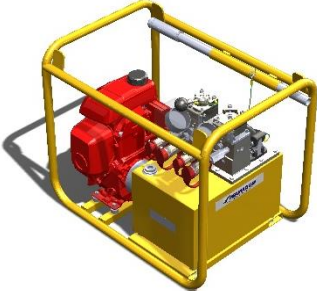

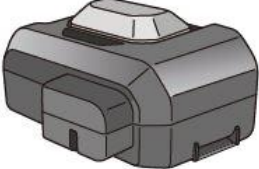




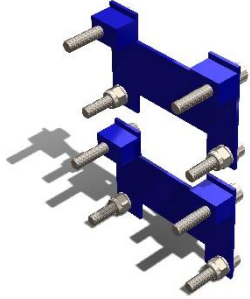

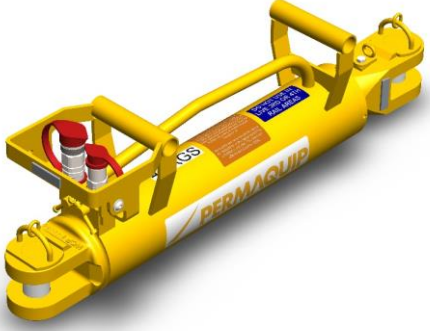





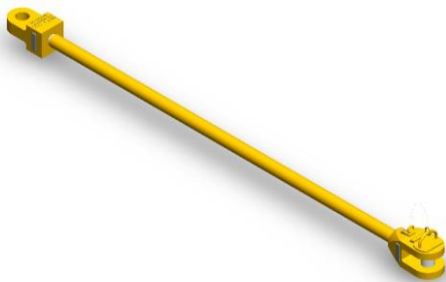
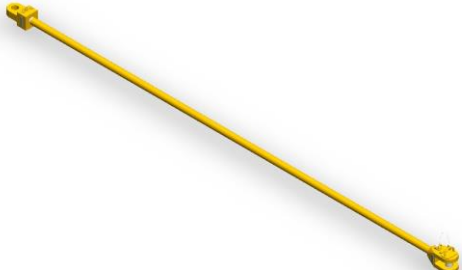
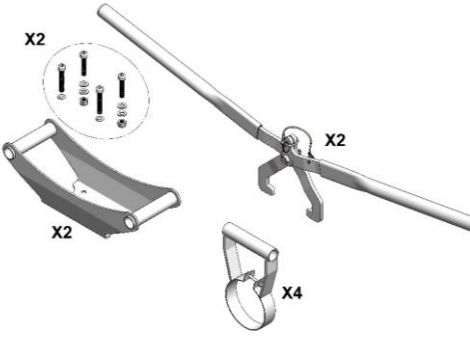
**Note:**

Gauges should not be forced into position or have excessive force applied when rotating around the subject item. They should be stored safely in areas free from abrasion and impacts in a dry moisture free environment. Gauges should be inspected for damage prior to use and quarantined for inspection if there is any present. Permaquip recommend gauges should be calibrated a minimum of once per year or replaced.

## 7 ORDERING

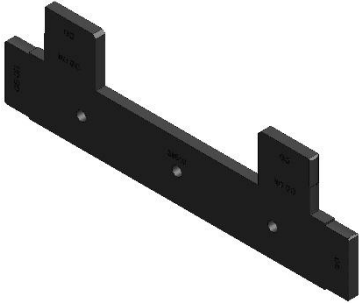
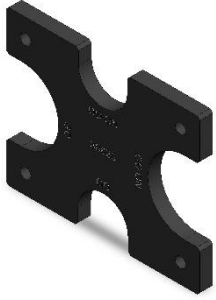
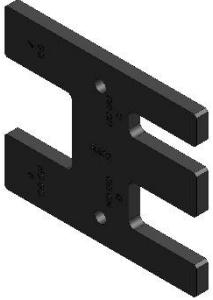
	DESCRIPTION	PADS Cat. No.	PART NO
<p>Stressor Half Set FFC UIC60 (UIC60 Rail Guide. Excludes Power Pack and Hoses)</p>			38871
<p>Stressor Half Set FFC STD (Standard Rail Guide. Excludes Power Pack and Hoses)</p>			38872
<p>Stressor Power Pack - Flat Faced Quick Release Couplings</p>			33282
<p>Stressor Electric Power Pack - Flat Faced Quick Release Couplings</p>			38848
<p>Honda DC Battery</p>			040707348
<p>Honda DC Battery Charger</p>			040707349

<p>Hose Assembly with Flat-face Quick Release Couplings (1/2 set)</p>			<p>33281</p>
<p>UIC60 Rail Guide Kit</p>			<p>31803</p>
<p>Ram Seal Kit</p>			<p>05674</p>
<p>Stressor Cylinder FFC G/A - Tested &amp; Painted</p>			<p>S38868</p>
<p>Stressor Clamp STD G/A - Tested &amp; Painted</p>			<p>S38870</p>

<p>Stressor Clamp UIC60 G/A - Tested &amp; Painted</p>			<p>S38869</p>
<p>Short Tie Bar Assembly - Tested &amp; Painted</p>			<p>S38873</p>
<p>5ft Tie Bar Assembly - Tested &amp; Painted</p>			<p>S38944</p>
<p>10ft Tie Bar Assembly - Tested &amp; Painted</p>			<p>S38863</p>
<p>Stressor Handle Upgrade Kit</p>			<p>38950</p>

<p>Maintenance Kit for Stressor Red Handles (Including adhesive, emery cloth and wipes)</p>			<p>38949</p>
<p>Stressor Lifting/Carrying Tongs</p>			<p>38854</p>
<p>C Spanner Assembly (For Replacement of Ram Seals)</p>			<p>05058</p>
<p>Pressure Relief Tools (Screw type)</p>			<p>34414</p>
<p>Pressure Relief Tools (Flat faced)</p>			<p>35211</p>
<p>Stressor Fork &amp; Clevis Hole Gauge</p>			<p>38818</p>



Stressor Link Plate Gauge			38819
Stressor Pins Gauge			38820
Stressor Fork & Clevis Gauge			38822

Permaquip Ltd offer a familiarisation service – please contact us for further details.

For spare parts please contact Permaquip Ltd for further information and support.

Our contact details are shown on the front of this Service Guide.

In order to avoid delay and to have your orders fulfilled promptly,

**Please telephone, e-mail; [sales@permaquip.co.uk](mailto:sales@permaquip.co.uk) or write giving the following information:**

- 1. Company name.**
- 2. Contact details.**
- 3. Invoicing and delivery details.**
- 4. Purchase order number.**
- 5. Method of delivery.**
- 6. Part number, description and quantity for each item.**