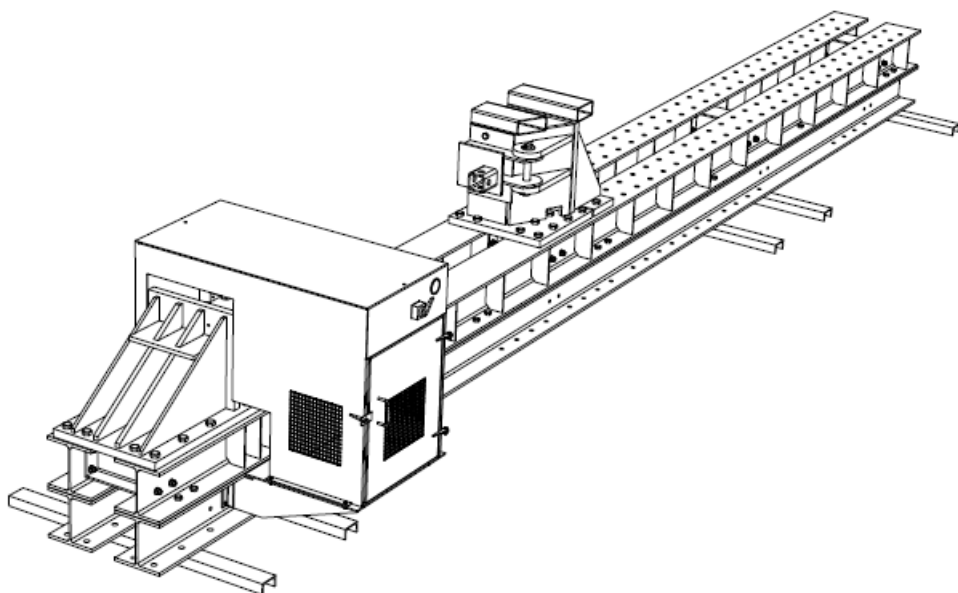




GROUNDWORKS

HYDAULIC MANHOLE BRACE TEST RIG

User Guide



HIRE & SALES

BH/08.26

Altrad Hire & Sales

Support for Construction & Industry



Altrad Hire & Sales is the UK's leading supplier of: Scaffolding, Temporary Fencing, Light Access, Edge Protection, Safety Decking and Groundworks for hire and sale.

OUR **CUSTOMER COMMITMENT** IS TO DELIVER:



BEST QUALITY

We work closely with our suppliers to ensure consistent product quality every time. All our products are specified to meet or exceed statutory requirements, verified by our Quality Assurance team.



BEST AVAILABILITY

Our nationwide branch network, transport fleet and stock holding ensure we can supply your equipment needs. What, When and Where you need equipment.



BEST PARTNERSHIP

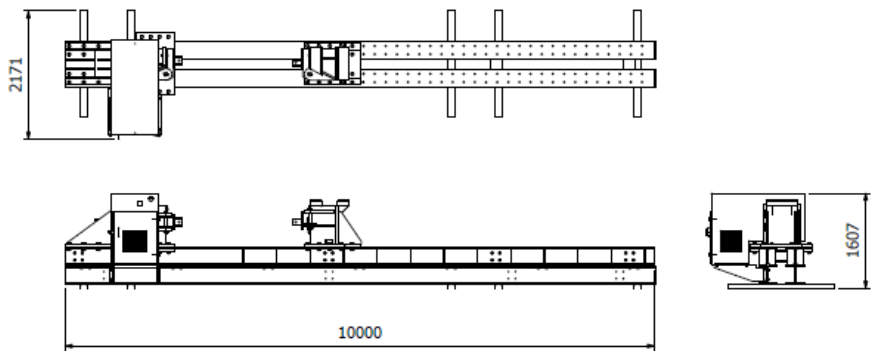
We can take care of all your equipment needs; supplemented by a full range of engineering, design, specification and business services. Our focus is to work together, supporting the growth of your business.



BEST VALUE

Our global supply chain, purchasing and lean business means we don't pass on unnecessary costs to you. We aim to provide consistently low prices and the best value when you buy or hire from us.

Hydraulic Manhole Brace Test Rig



Approx. weight: 8 Tonnes

General Specification

Application	To load test hydraulic manhole brace types 'A' to 'E' and Megabrace
Location	At various Altrad Hire & Sales Sites across the UK
Duty	Intermittent to suit requirements
Media	Hydraulic brace leg
Environment	Outdoors or Indoors (with suitable ventillation)
Design	1161 Series
Construction	Generally Mild Steel
Drive	Gasoline Hydraulic Pump
Maximum test load	120 Tonnes
Test Cylinder stroke	100mm

Health and Safety Precautions

Notes in this section are designed to help our customer create a safe working environment. The following notes should be tailored to suit your requirements, in conjunction with Altrad Beaver Health and safety notifications.

If you are unable to carry out any work safely and in the required manner, then contact your site supervisor, or A.V. Birch Ltd service manager

CAUTION ISOLATE AND LOCK OFF ALL ENERGY SOURCES BEFORE REMOVING ANY COVERS OR GUARDS

- A) Observe instructions in this manual
- B) **Do Not** place hands or feet in openings
- C) Loose clothing and jewellery should not be worn
- D) **Never** walk on the equipment.
- E) **Do Not** put the equipment to any use other than that for which it has been designed
- F) **Never** operate the equipment without covers, guards and safety devices fitted
- G) Ensure all associates are clear of the equipment prior to start up
- H) Ensure all associated are aware of equipment start up procedures
- J) The equipment to be kept clean and free of debris
- K) Apply good housekeeping practices at all times
- L) Avoid excessive heat or cold-ambient temperature should not exceed 40C, or below 0C

Notes:-

1. Operators must be fully trained in the safe use of this equipment.
The tonnage applied to the brace leg is entirely in the control of the operator.
Mis-use could result in serious injury.
2. The equipment must not be left running whilst unattended
3. When at rest, the control valve (VC4) must be in the central locked default position

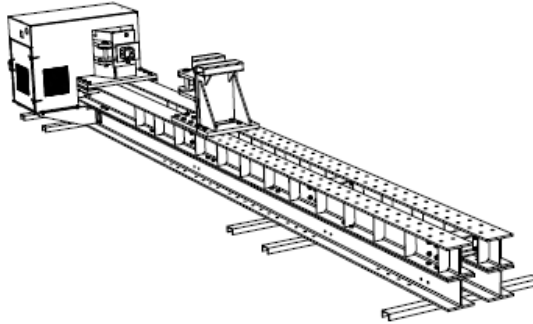
Safety Notes - Electrical (Electric Pump Versions)

- a) Due to inherent dangers in the maintenance and testing of electrical equipment, special attention should be paid to safety, not only the personnel working in the immediate area, but also to equipment under test, maintenance and repair.
- b) All personnel operating in the relevant area should observe these procedures and pay due regard to safety, local safety rules and regulations
- c) It is advisable that at least two fully trained engineers be present at all times when the equipment is being tested, maintained or serviced.
- d) All equipment under electrical test should have WARNING NOTICES displayed saying the equipment tests are in progress. Any ancillary equipment, instruments etc. should be safe and prominent notices around the equipment should advertise any danger which may exist. Any notices displayed during these procedures should be removed as soon as they are no longer applicable, to emphasise the special significance of their presence.
- e) If it becomes necessary to carry out maintenance, testing or setting, on the equipment, requiring access by removing covers etc. then safety hazards may arise. Risk assessments should be carried out and safe working practices followed. A duty holder should be responsible for ensuring that the equipment is made accessible only to authorised personnel to carry out specific tasks, after receiving permission.
- f) The user should ensure that maintenance and setting is authorised and only done by competent persons.
- g) The following basic rules should be adhered to:-
 - i) Before commencing works, the electrical supply to the equipment must be isolated, locked off and the appropriate safety documents issued.
 - ii) Comply with safe working procedures.
 - iii) Do not work on equipment when it is energised.
 - iv) Ensure that all persons working on the equipment are familiar with instructions and the information provided with this manual.
 - v) Provided that the equipment is functioning correctly and all personnel responsible for working on it are complying with the conditions specified, the electrical equipment may be deemed to be 'properly used' and should be safe and free from health hazards.
 - vi) Test equipment should only be connected when being used on the system.
 - vii) Test equipment supply cables and supply sources to the equipment should incorporate efficient protection to prevent danger to the equipment and personnel operating the equipment. Also, needs to be PAT tested and calibrated.

Safety Notes - Mechanical

- a) **DO NOT** carry out adjustments to moving machinery.
- b) Ensure that the machinery has been isolated and padlocked off from its power supply before commencing operations
- c) If the system must be operated for maintenance purposes, specific risk assessment and method statement are to be carried out.
- d) **DO NOT** remove drive guards until the machinery concerned has been isolated and padlocked off from its power supply and come to rest.
- e) **DO NOT** restore power or attempt to test machinery until the drive guards have been re-fitted.
- f) **DO NOT** remove safety devices/guards unless specifically authorised to do so.
- g) **DO NOT** allow machinery or associated equip

Description



The rig is designed to test manhole brace legs when they are returned from hire-or at a pre determined maximum interval. A hydraulic cylinder pressurises the installed leg so that seal leaks will be detected, also, any degradation of the leg extension will be highlighted.

The rig is compatible with types A to E legs and the mega brace. The testing is powered by a Gasoline Hydraulic Pump operating a 700 bar hydraulic cylinder.

The rig is a free standing unit, that can operate outdoors or indoors, with suitable ventilation.

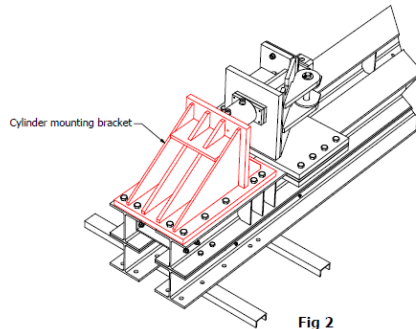


Fig 2

Cylinder mounting bracket

At the operator end of the test rig, is a fabricated bracket, fixed permanently to the main frame beams with hexagon bolts.

The bracket is fully welded and braced to withstand the reaction forces from the hydraulic cylinder.

Location plates support the cylinder in its horizontal operating position, with access to the hydraulic couplers.

Description

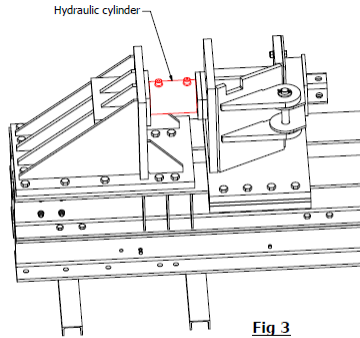


Fig 3

Double acting hydraulic cylinder

The double acting hydraulic cylinder has a maximum operating pressure of 700 bar.

Located within the fixed bracket by mounting threads-the cylinder is supported at both ends.

Complete with 2 female coupler halves and lifting rings as standard, the complete unit can be removed for service and repair.

A hard chromium plated piston has wiper seals to prevent ingress of dirt.

The cylinder has its own built in travel stop at the end of the stroke.

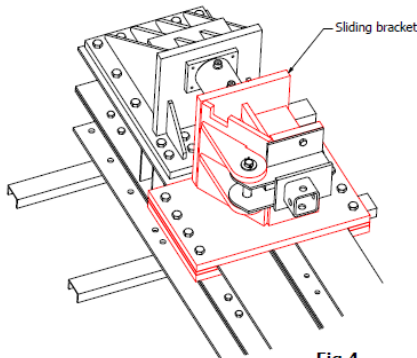


Fig 4

Load transfer sliding bracket

The sliding bracket is positioned in front of the fixed cylinder mounting bracket, and is designed to transmit loads from the hydraulic cylinder, to the manhole brace being tested.

Flange plates and spacer plates, guide and restrain the bracket to the main beams of the baseframe, allowing the bracket to move with the cylinder stroke.

Description

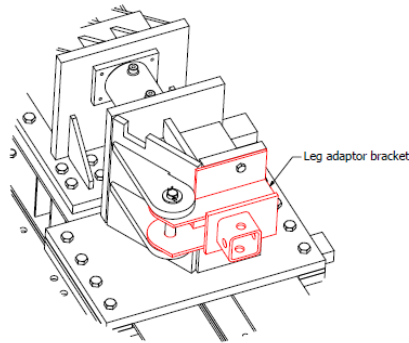


Fig 5

Leg adaptor bracket

Fixed to the front of the sliding bracket is a special adaptor bracket.

This is designed to interface with the Type 'A' to 'E' manhole brace legs.

Held in position with hexagon bolts and a pin, it is easily swung away when required-to enable testing of mega-brace.

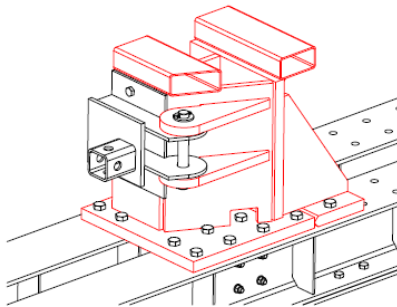


Fig 6

Adjustable fixed bracket

Tighten M30 grade 8,8 bolts/Grade 8 nuts
to 1350Nm

A fixed, but moveable bracket, is bolted to the top flanges of the base frame beams. This allows the testing of different length manhole brace legs. Also, it allows testing brace legs at different positions along the working stroke.

Description

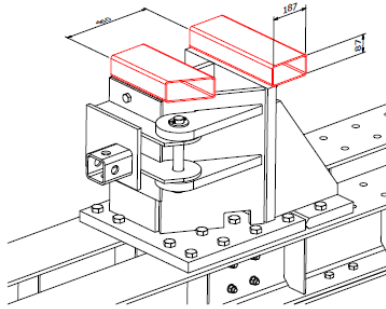


Fig 7

Fork truck tine access

Double fork truck tine access is available to lift and move the fixed moveable bracket along the baseframe beams.

The weight of the moveable bracket is approximately 800Kg.

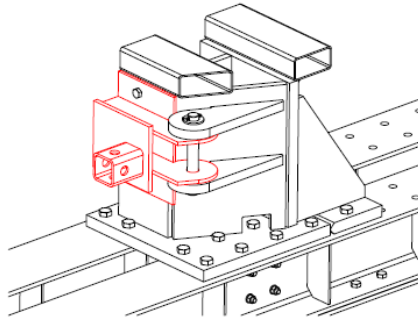


Fig 8

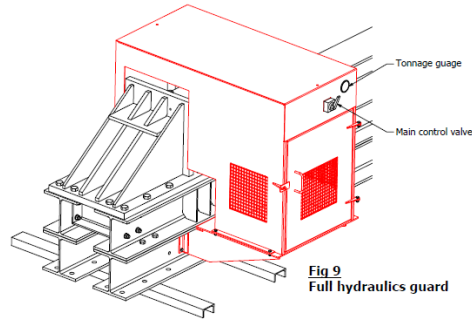
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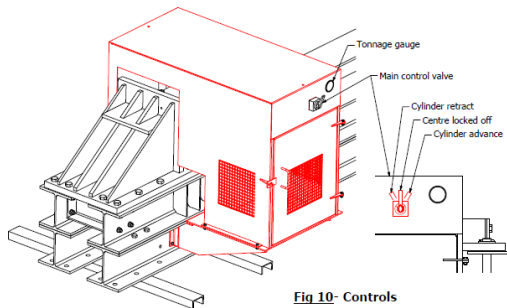
A plated hydraulics guard covers the hydraulic cylinder and pipework. The guard also houses the gasoline hydraulic pump.

Access to the pump is by means of a hinged, lockable gate to the front of the guard.

The whole guard will transfer to the other side, if the preferred rig location is against a wall.

Above the gate, is the main control valve operating lever and a tonnage gauge.

Note: refer to the documentation provided with the gasoline hydraulic pump for information regarding fuel filling.



Minimum controls are present, and comprise of:-

1/ A control valve lever.

2/ A tonnage gauge.

The control valve lever has 3 positions. Centred detent position by default. Full right position to advance the hydraulic cylinder. Centred detent position to stop the hydraulic cylinder advance, and hold the pressure. Then, full left position to retract the hydraulic cylinder.

The gauge is indicated in tonnes applied to the leg brace under test.

Description

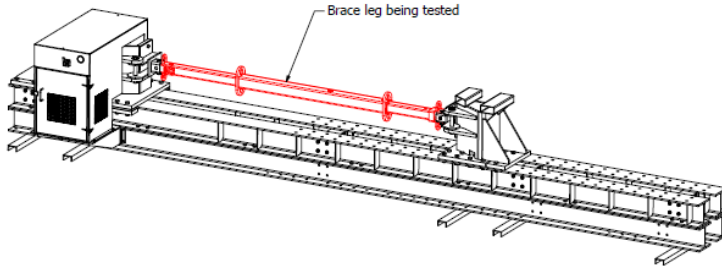


Fig 11- Brace leg under test

Figure 11 shows a typical brace leg under test (Type 'D' shown).

The leg is lifted into position with a fork truck, and held whilst the brace end location pins are installed into the adaptor brackets.

The leg hydraulics are locked off, and pressurised with a hand pump to take out any slack.

Test loads can then be applied by the equipment, up to the maximum tonnage for the particular leg being tested.

Refer to Altrad Hire & Sales test schedules.

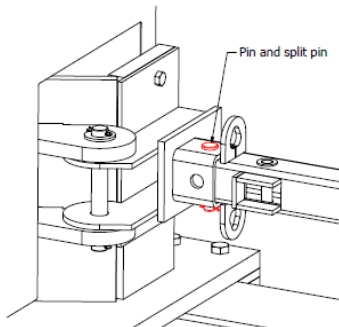


Fig 12- Brace location pin

Figure 12 shows one of the location pins used to fix the brace leg to the adaptor brackets at each end.

Maintenance

The following checks and tasks should form part of a planned preventative maintenance schedule that we would recommend to be implemented, in order to keep the equipment in working condition.

ALWAYS ISOLATE AND LOCK-OFF ALL POWER SOURCES BEFORE ATTEMPTING ANY WORK ON THE EQUIPMENT.

USERS OF THE EQUIPMENT FORM A VALUABLE PART IN THE PREVENTATIVE MAINTENANCE PLAN-THEY USE THE EQUIPMENT DAILY AND WILL NOTICE SMALL FAULTS BEFORE THEY BECOME MAJOR BREAKDOWNS.

LOOK - At mechanical parts-do they operate freely?

LOOK - After the drive units-keep clear of debris

LOOK - At the fastenings-have they worked loose?

LOOK - Is there any excessive noise/vibration from bearings, motors, gearboxes?

REPORT - Tell supervision-include in maintenance plan on next visit.

Our equipment is manufactured to require a minimum amount of maintenance. However, it does not mean that it should be neglected, as a regular servicing and inspection will ensure a long working life.

The information provided here, should form part of a planned maintenance program. Tasks or instructions for the removal or replacement of parts are given for guidance and maintenance staff should use their skill and knowledge and be competent in performing these tasks.

Pump units:

Each unit is sealed and as such require very little maintenance. If the unit is giving problems it should be replaced.

Hydraulic cylinder:

Casing should be checked for damage in any way.

Remove dirt wipe away debris/dust.

Check connections for leaks-note for further inspection.

In use, note excessive noise or vibration

Maintenance Plan

Component	Service Interval	Objective	Work Required	Carried out by
Overview of test rig assembly	Daily	General visual check clean/wipe include casing surfaces.		Employee
	Weekly	Check for loose fittings.	Tighten if required	Qualified
	Monthly	Check for hydraulic fluid from cylinder or pipework.	Replace if leaking	Qualified
	Six monthly	Check hydraulic pump for excessive noise or vibration.	Refer to service schedules for the gasoline hydraulic pump unit.	Qualified

The hydraulics run at a pre determined maximum temperature. If this temperature is exceeded the unit should be replaced.

Check all bolted joints, couplings, for wear, deformation or corrosion and tighten down fully without overtightening.

Check power absorption and voltage against the normal values given on the pump motor name plate. (Where applicable)

Recommended Spares

While we make every effort to supply spare parts from stock, units are usually manufactured on a made to order basis. Normal deliveries of parts can be up to 5-8 weeks. So we would always recommend spare parts are kept by the customer. We have included a list of spares that we would recommend. These can be priced if required and would be supplied as part of an additional purchase order if so instructed.

Spares and service manager
A.V.Birch Ltd
Aldenham Business Park
Muckley cross
Bridgnorth
Shropshire
WV16 4RR

01746 714418

Spares List		
Stock Number	Description	Quantity
Gasoline hydraulic pump was free issue to A.V.B.	Hydraulic pump unit	1
Hydraulic cylinder was free issue to A.V.B.	Double acting hydraulic cylinder	1

Troubleshooting

Symptom	Possible cause	Remedy
Pump motor noisy (Electric pump version) or-Gasoline pump noisy	Insufficient lubrication	Leak-replace unit
	Cooling fan rubbing on casing	Damage-correct or replace unit
	Worn bushes and/or bearings	Replace unit
Cylinder vibration	Fixings loose	Tighten all nuts and bolts
	Seizing piston	Replace cylinder
	Sliding transfer bracket jamming	Investigate cause-possibly ingress of debris between the sliding surfaces and rectify
	Hydraulic problem	Check pipework connections for leaks or damage and rectify

Also refer to the troubleshooting section of the documents supplied with the gasoline hydraulic pump.

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Arrangement 1207a, Test Rig

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GROUNDWORKS BRANCHES NATIONWIDE



0800 043 8484

Glasgow South

Tel: 01696 870000

Email: glasgowgs@altrad.com

Widnes

Tel: 0151 430 1111

Email: widneshs@altrad.com

Birmingham North

Tel: 0121 366 7840

Email: birminghamnorthgw@altrad.com

Cardiff Docks

Tel: 02920 674 190

Email: cardiffdocks.hs@altrad.com

Reading

Tel: 01252 838696

Email: readinggw@altrad.com

London East

Tel: 01375 117 130

Email: londonwest.gw@altrad.com



HIRE & SALES

Altrad Hire & Sales UK Head Office
Trinity Square, Off Tar River Road, Dillbury, R94 8 JX
Tel: 0121 549 3490
groundworks.enquiries@altrad.com
www.altradrailroad.co.uk