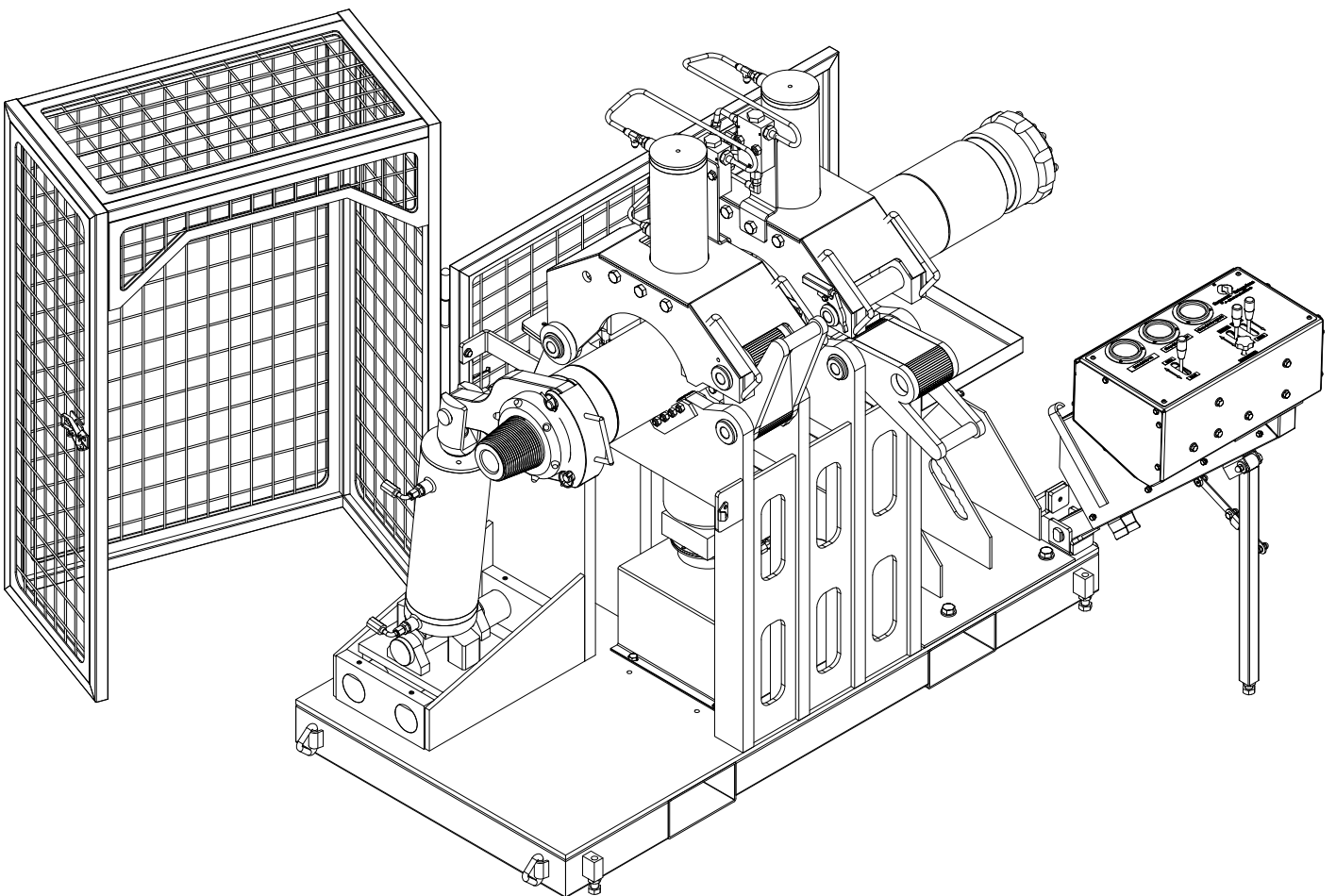


Serial Number:
4-8 BREAKOUT BENCH - 240V/110V



INSTRUCTION MANUAL



Read the instruction manual before operating this equipment
Equipment Version : 11
Manual Version : 24

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Introduction

This manual is specifically for the operation & maintenance of the Corporaal Enterprises PTY LTD Single Breakout. Before operation or maintenance of this equipment this manual must be read and fully understood by all involved. It is the responsibility of the managers/employers to ensure a copy of this manual is read by employee's that work with this equipment. The machine should be destined only to the use for which it was explicitly designed. Any other use is to be considered inappropriate and therefore dangerous. Specifications are subject to change without notice or obligation to retrofit units already in the field. This manual will be constantly updated to remain current with new operations. Please contact Corporaal Enterprises PTY LTD if there are areas requiring further explanation or instruction. Material contained herein may not be reproduced in whole or in part without the express written permission of Corporaal Enterprises PTY LTD drilling tools Pty Ltd.

Description of use

The Corporaal Enterprise **4-8 Breakout bench** was manufactured to be used to "break" & "make up" DTH hammer component joints or similar tooling.

Specifications

- | | |
|--------------------------|---------------------------------|
| - Clamp Range | 97mm to 195mm (barrel diameter) |
| - Maximum clamping force | 70,547 lbs (32,000 kg) |
| - Maximum torque | 55,000 ft/lbs (74,570 N/m) |

Warranty - Terms & conditions

Limited Warranty.

(a) Capital Equipment. CORPORAAL ENTERPRISES PTY LTD warrants for a period equal to the lesser of (i) three (3) months after the date of shipment, or (ii) the initial 250 operating hours.

(b) General Terms. CORPORAAL ENTERPRISES PTY LTD further warrants that, to the extent applicable, as of the date of shipment or performance, all goods manufactured by it and services performed shall conform to the written specifications agreed between the parties. As a condition to CORPORAAL ENTERPRISES PTY LTD's warranty obligations, any goods claimed to be defective under the foregoing warranty must be returned to the facility designated by CORPORAAL ENTERPRISES PTY LTD, which return shall be made promptly upon Purchaser's discovery of the alleged defect. With respect to consumable products purchased through an authorized CORPORAAL ENTERPRISES PTY LTD distributor, the party making the warranty claim must also deliver to CORPORAAL ENTERPRISES PTY LTD reasonable evidence of the date of purchase. CORPORAAL ENTERPRISES PTY LTD shall perform its examination of the goods returned by Purchaser and shall report the results of its examination to Purchaser within thirty (30) days following its receipt of such goods from Purchaser, or, if longer time is required to complete such examination, within such time as would be required through the exercise of reasonable diligence. As a further condition to CORPORAAL ENTERPRISES PTY LTD's obligations hereunder for breach of warranty, Purchaser shall offer its reasonable cooperation and assist CORPORAAL ENTERPRISES PTY LTD in the course of CORPORAAL ENTERPRISES PTY LTD's review of any warranty claim. If requested by Purchaser, CORPORAAL ENTERPRISES PTY LTD will promptly repair or replace at CORPORAAL ENTERPRISES PTY LTD's expense. Goods that are non-conforming according to CORPORAAL ENTERPRISES PTY LTD's warranty as set forth herein. All removal and installation of goods shall be at Purchaser's expense. CORPORAAL ENTERPRISES PTY LTD reserves the right to reimburse Purchaser for an amount equal to the purchase price of any defective goods in lieu of providing repaired or replacement goods. Anything contained herein to the contrary notwithstanding, in no event shall CORPORAAL ENTERPRISES PTY LTD be liable for breach of warranty or otherwise in any manner whatsoever for: (i) normal wear and tear; (ii) corrosion, abrasion or erosion; (iii) any goods, components, parts, software or services which, following delivery or performance by CORPORAAL ENTERPRISES PTY LTD, has been subjected to accident, abuse, misapplication, modification, improper repair, alteration, improper installation or maintenance, neglect, or excessive operating conditions; (iv) defects resulting from Purchaser's specifications or designs or those of its contractors or subcontractors other than CORPORAAL ENTERPRISES PTY LTD; (v) defects associated with consumable parts or materials, the lifetime of which is shorter than the warranty period set forth in this Section; (vi) defects associated with Purchaser's specifications or designs or those of its contractors or subcontractors other than CORPORAAL ENTERPRISES PTY LTD; (vii) defects resulting from the manufacture, distribution, promotion or sale of Purchaser's own products; or (viii) accessories of any kind used by the Purchaser which are not manufactured by or approved by CORPORAAL ENTERPRISES PTY LTD.

(c) Sourced Goods. If the defective parts or components are not manufactured by CORPORAAL ENTERPRISES PTY LTD, the guarantee of the manufacturer of those defective parts or components is accepted by the Purchaser and is the only guarantee given to the Purchaser in respect of the defective parts or components. CORPORAAL ENTERPRISES PTY LTD agrees to assign to the Purchaser on request made by the Purchaser the benefit of any warranty or entitlement to the defective parts or components that the manufacturer has granted to CORPORAAL ENTERPRISES PTY LTD under any contract or by implication or operation of law to the extent that the benefit of any warranty or entitlement is assignable.

(d) Limitation on Liability. Except as provided for herein, in no event will CORPORAAL ENTERPRISES PTY LTD be liable for any indirect, incidental, special, consequential, punitive, or similar damages including, but not limited to, lost profits, loss of data or business interruption losses. In no event will the total, aggregate liability of CORPORAAL ENTERPRISES PTY LTD under the Contract exceed the value of the Contract under which liability is claimed. The liability limitations shall apply even if CORPORAAL ENTERPRISES PTY LTD has been notified of the possibility or likelihood of such damages occurring and regardless of the form of action, whether in contract, negligence, strict liability, tort, products liability or otherwise. The parties agree that these limits of liability shall survive and continue in full force and effect despite any termination or expiration of any Contract. Any action by Purchaser against CORPORAAL ENTERPRISES PTY LTD must be commenced within one year after the cause of action has accrued. No employee or agent of CORPORAAL ENTERPRISES PTY LTD is authorized to make any warranty other than that which is specifically set forth herein. The provisions in any specification, brochure or chart issued by CORPORAAL ENTERPRISES PTY LTD are descriptive only and are not warranties.

Safety

READ SAFE PRACTICES AND PROCEDURES, MANUAL, CATALOG INFORMATION AND PRODUCT LABELING PRIOR TO OPERATION.



Responsibility

It is the responsibility of the employer to train the employee in the proper usage of equipment and to ensure that they are used in proper manner. In many instances, injury results because of inadequate training and information being given to the employee. A part of every job instruction program should therefore have detailed training in the proper use of equipment being supplied to the employee and to all other staff working around or with the equipment.

Employers are responsible for the safe condition of tools and equipment used by employees, including tools and equipment.

Safe Practices

Failure to observe one or more of the following five safe practices accounts for most hand and powered tooling accidents.

1. ALWAYS WEAR CORRECT PPE ACCORDING TO THE JOB
2. SELECT THE RIGHT EQUIPMENT FOR THE JOB
3. KEEP EQUIPMENT IN GOOD CONDITION
4. USE EQUIPMENT CORRECTLY
5. KEEP A SAFE DISTANCE WHEN OPERATING

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Safety Goggles must always be worn by persons in any area where hand and powered equipment are being used.

All equipment should be kept clean, inspected on a regular basis, and repaired when signs of wear show.

Do not to place yourself in a position that could result in injury and or death during operation.

All equipment is only to be used for the mean which it was supplied to be used for. Do not alter or modify any part of this equipment and or its tooling.

Responsibility of Distributors

IT IS THE RESPONSIBILITY OF THE PURCHASERS OF CORPORAL ENTERPRISES PRODUCTS TO CONVEY THE INFORMATION IN THIS PUBLICATION AND ANY OTHER INFORMATION RELATING TO THE INDIVIDUAL PRODUCT, THROUGH THE CHANNELS OF DISTRIBUTION, DOWN TO AND INCLUDING THE INDIVIDUAL USING THE PRODUCT

NOTE:

In view of the fact that the actual use determines whether safety requirements have been met, the ultimate responsibility to comply rests with the end user.

Safety is essential, ensure the below is understood and performed when commencing pre-start checks or maintenance

BEFORE REMOVING, ADJUSTING, OR REPLACING PARTS ON A MACHINE, REMEMBER TO:

- BLEED all pressure from system components (refer to the Maintenance Section of this manual.)
- TURN OFF all external air, water, and hydraulic pressure supplies and all accessory equipment to the machine (if any)
- DISCONNECT AND LOCK OUT electrical power and attach warning tags

Pre-start checks

Before starting the unit, the following pre-start checks must be performed. Should any part not pass, do not operate the equipment until the fault has been corrected

- Condition of lead and power switch. Check full length for any signs of damage
- Hydraulic oil level (Top up with ISO 68 if necessary)
- Signs of hydraulic leaks. Check around cylinders and hoses
- Jaw condition. Both base & clamp jaws

Check the below items for signs of elongation, deformation or premature wear

- Break cylinder clevis
- Tooling (spanners & torque-max wrenches)
- All pins
- Lid lock latch holes
- Clamp lids

Before operating, check page 9 for locations of system pressure adjustment. Only torque up your hammer connections to manufacturers specifications. Clamping pressures should also be adjusted to suite the hammer size if range extension kits are being used.

Operation instruction

When using this product, the correct operating procedures should be followed to reduce risk of harm or damage. This manual should be read and understood before starting any operation. Follow the step by step procedure for make up and breakout of hammers. Use your companies policies and procedures for loading and unloading parts. Be sure to perform pre-start checks. Only Corporaal Enterprise brand tooling should be using on this machine.

1. Start by ensuring you have the breakout cylinder in the correct position for the desired operation. Fully extend the breakout cylinder for breakout operations. Fully retract breakout cylinder for make-up operations,
2. Turn off power supply once breakout cylinder is in correct position.
3. Measure the barrel diameter or the top sub spanner flats and select the correct size tool. If your using a torque-max wrench, install the wrench into the clevis and swivel the tool out of the way. If you cannot swivel the wrench, release the pressure from the breakout cylinder by toggling the control lever in both directions for 10 seconds each way. When a fork spanner is being used, leave the spanner off until after the hammer is loaded into the machine.
4. Remove the lid lock latch pins (lift spring loaded locking mechanism to remove pins) and lift the clamp lids

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5. Load the hammer into the breakout bench using your companies procedures on handling heavy loads. Ensure the desired clamping area is within reach of the spanner/ wrench & that the hammer is stable (balanced) on the bench before removing any loading equipment. The Breakout cylinder is on a slide with approximately 175mm of adjustment to help with alignment.
6. Close the clamp lids and install the locking pins. Check that the pins are secured in place by the spring locking mechanism.
7. If you are using a fork spanner, slip the fork into the spanner flats. Using the leverage of the spanner, carefully spin the hammer around in the bases "V" until the clevis and the spanner line up and the clevis pin can be inserted through clevis and the spanners pin hole. For torque-max wrenches, unfold the wrench. Then swivel the wrench around so that the spanner can be wrapped around the hammer. For more detailed instructions on how to use torque-max spanners, read the torque-max operations manual.
8. Close the safety cage & turn on the power
9. Lower clamp jaws one at a time to clamp hammer. Ensure clamp cylinder gauge reaches full pressure and then return lever to centre position.
10. Using the breakout valve lever, begin make up or breakout process.
11. Lift the clamp jaws all the way back to the top stroke limit.
12. Once the process is complete, turn off power supply, open the safety cage & inspect the hammer.
13. Take out the lid pins and lift clamp lids.
14. Remove the spanner or wrench & unload the hammer

Maintenance

Maintenance on this breakout should be kept up to date and logged and performed by a fitter competent in hydraulic systems. All power supplies be isolated, pressure relieved from valving and the unit tagged before starting any maintenance.

Replace return filter and the suction filter inside oil tank every 6,000 hrs

Use Gulf Western Oil 30063 Superdraulic 68 oil or equivalent to refill hydraulic tank

Replace parts when signs of wear become apparent. See parts manual for identification & order codes

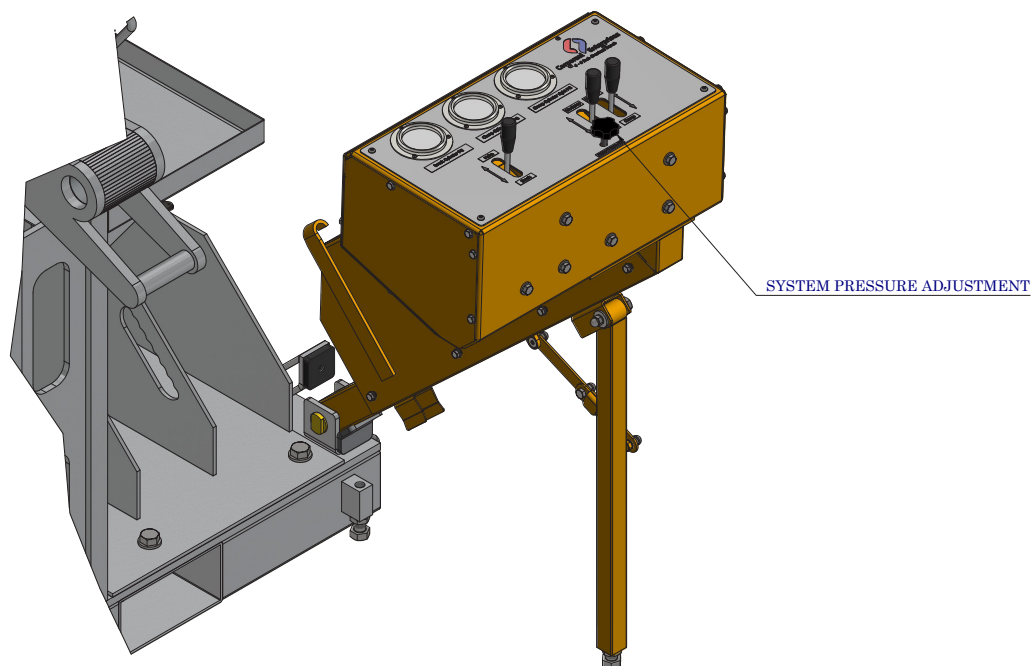
System pressure adjustment

Check with hammer manufacturer for any instructions, specifications or recommendations on clamping & make up forces being applied to hammers. You are able to adjust with the pressure adjustment knob shown in the figure below.

To adjust clamp pressure, start by unscrewing the knob shown below to drop the system pressure. Start to clamp the barrel. If the cylinder doesn't move, you may need to slowly screw in the knob until the cylinder moves. Once the jaw reaches the barrel, pressure should start to show on the pressure gauges. Screw in the adjustment screw until the desired pressure is reached. Refer to chart on page 10 for indication of clamp force being applied. Return lever to centre position. Insure you lower the second cylinder until it clamps the barrel and reaches the same pressure reading. Return that cylinders lever to the centre position. The clamp cylinders have been fitted with lock valves to keep the clamp cylinder pressure constant and at set pressure (do not touch the clamp cylinder control levers or the process will have to be started again).

To adjust the pressure to the break cylinder, either fully extend or fully retract the break cylinder, depending on desired operation. Unscrew the same knob as shown in the below figure. Now hold the makeup/breakout lever in the same direction as before. The gauge should show a small amount of pressure, start screwing in the knob until the desired pressure is reached. Refer to the chart on page 11 for indication of breakout/makeup torque being applied relative to the pressure.

Alternatively, a digital readout & data logging system can be purchased from Corporaal Enterprises . See back of this booklet for contact details if you would like more information



Note: This chart is for one clamp cylinder only & is an indication of the expected out put.

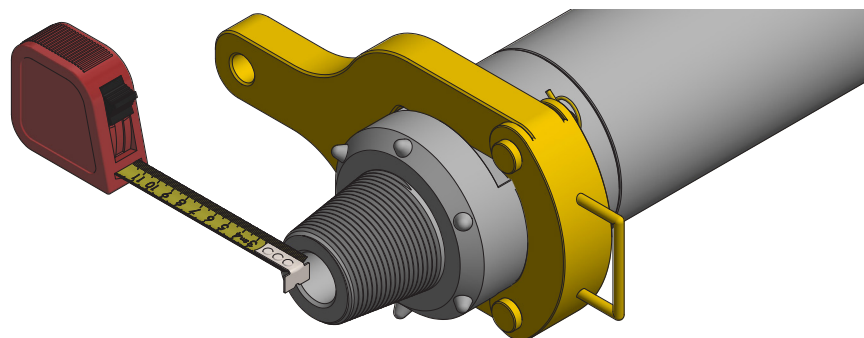
Pressure	Clamp force in imperial (lb/f)	Clamp force in metric (ton)
250	3142	1.4
350	4398	2.0
450	5655	2.6
550	6912	3.1
650	8168	3.7
750	9425	4.3
850	10681	4.8
950	11938	5.4
1050	13195	6.0
1150	14451	6.6
1250	15708	7.1
1350	16965	7.7
1450	18221	8.3
1550	19478	8.8
1650	20735	9.4
1750	21991	10.0
1850	23248	10.5
1950	24504	11.1
2050	25761	11.7
2150	27018	12.3
2250	28274	12.8
2350	29531	13.4
2450	30788	14.0
2550	32044	14.5
2650	33301	15.1
2750	34558	15.7
2850	35814	16.2

Note: The below charts are for make up torque. The factory setting for the breakout bench's break cylinder is 2200 PSI on the make up side. Changing the break cylinders set pressure to exceed 2200 PSI may result in damage to the machine when making up.

Example - Measure the spanner clevis hole centre to pivot point centre (hammer centre) for spanner length. If the tooling is 1.1 ft long & the desired torque is 26998 ft/lbs. Set the system pressure to 1250 PSI

Make up torque (ft/lbs)

		Spanner length (feet)								
		0.9	0.95	1	1.05	1.1	1.15	1.2	1.25	1.3
Pressure (PSI)	250	4418	4663	4909	5154	5400	5645	5890	6136	6381
	350	6185	6529	6872	7216	7559	7903	8247	8590	8934
	450	7952	8394	8836	9278	9719	10161	10603	11045	11486
	550	9719	10259	10799	11339	11879	12419	12959	13499	14039
	650	11486	12125	12763	13401	14039	14677	15315	15953	16592
	750	13254	13990	14726	15463	16199	16935	17671	18408	19144
	850	15021	15855	16690	17524	18359	19193	20028	20862	21697
	950	16788	17721	18653	19586	20519	21451	22384	23317	24249
	1050	18555	19586	20617	21648	22678	23709	24740	25771	26802
	1150	20322	21451	22580	23709	24838	25967	27096	28225	29354
	1250	22089	23317	24544	25771	26998	28225	29452	30680	31907
	1350	23856	25182	26507	27833	29158	30483	31809	33134	34459
	1450	25624	27047	28471	29894	31318	32741	34165	35588	37012
	1550	27391	28912	30434	31956	33478	34999	36521	38043	39564
	1650	29158	30778	32398	34018	35637	37257	38877	40497	42117
	1750	30925	32643	34361	36079	37797	39515	41233	42951	44670
	1850	32692	34508	36325	38141	39957	41773	43590	45406	47222
	1950	34459	36374	38288	40203	42117	44031	45946	47860	49775
2050	36226	38239	40252	42264	44277	46289	48302	50315	52327	
2150	37994	40104	42215	44326	46437	48547	50658	52769	54880	
2250	39761	41970	44179	46388	48597	50805	53014	55223	57432	





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