CC-300 Series Concrete Load Frames

Version 1.0

Operator's Manual

DURHAM GEO SLOPE INDICATOR

Operating Instructions

2175 West Park Court • PO Box 870907
Stone Mountain, GA 30087 USA
Phone 770.465.7557 • Fax 770.465.7447
Printed in the USA
Email: sales@durhamgeo.com

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Chapter 1

Setup

Thank you for purchasing a Durham Geo Concrete Machine. By following the setup, operating, and maintenance procedures, you can enjoy a lifetime of use.

Upon receipt, please inspect the frame and electronics for damage. If you note any problems, please notify the freight company that delivered the frame and call Durham Geo Slope Indicator at 1-800-837-0864. ☎

Caution!

- Due to the weight of the frame, extreme care should be taken when un-crating. Always lift the frame using the eyebolt on the top of the frame. The frame should not, under any circumstances, be lifted from the bottom. A load capacity of at least 1 ton is recommended.

- While un-crating the machine, you should be aware that each load frame is shipped full of oil. Take care not to tilt or tip over the frame. Also, take care not to damage any accessories, such as the hydraulics or readout(s) that are attached to the frame or included in the crate with the load frame.

- The hydraulic system is active as soon as the pump is turned on. Always place the valve in the retract position when not actually using the load frame. This will prevent possible injury to personnel or accidental damage to samples or equipment.

- This equipment **must** be bolted to a stable base before use. Failure to properly secure the equipment may result in serious injury or death.

After unpacking the frame, place it on a flat level surface. For optimum performance, please follow the steps listed below.

1. Place the unit in close proximity to at least 2 electrical outlets. Due to the power required by the motor at startup, it is not advisable to plug the pump and digital readout(s) into the same outlet.

2. Place the unit in a relatively cool (less than 100°F/37°C) and low humidity (less than 80%) area.

3. Place the machine so that the back is accessible.

Mount the load frame using the holes provided on the sides of the frame. The recommended bolt diameter is 1/2" (12-mm metric bolt). Some measurements to aid in the mounting of the frame are detailed below.

A. Distance between the two holes: 15.5" (393.70 mm)

B. Distance from the center of either mounting hole to the front, and also the back, of the frame: 5.00" (127.0 mm)

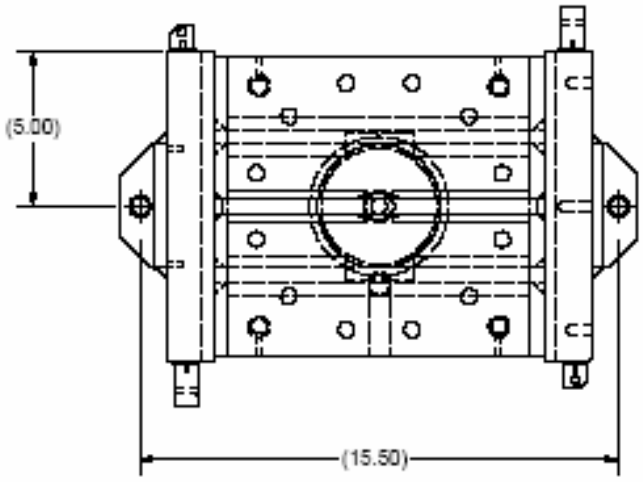


Figure 1

Check all hydraulic fittings for tightness. Each fitting should be pulled tight and seated snug. Loose fittings will result in leaks, however don't over-tighten the fittings as this may strip out the threads.

Your load frame should now be ready to use. Take a second and check that everything is attached and ready for testing. Check the oil level in the tank. It should be approximately ½" to ¾" (1 - 2 cm) from the top of the tank. If it is low, fill the tank with 215 grade hydraulic oil.

Chapter 2

Operation

The CC-300 series load frames are constructed of carbon steel plate. They are precision machined and welded to provide an accurate platform for the hydraulic loading piston and top platen. The top platen is designed to swivel as necessary, so that the load is applied evenly across the specimen. The Durham Geo load frames are also specially engineered to minimize stretch under load, which is critical to uniform breaks. This means that deformation from front to back and side to side, under changing loads, will be equal.

Load is applied through a bottom-acting piston. The piston is precision machined with a high degree finish to reduce friction. This allows for quicker return of the piston on completion of a test.

The load frame is powered by a two-speed high-pressure hydraulic pump. The pump, 2-gallon (7.57-liter) reservoir, and control valve are mounted on the side of the load frame, allowing easy access for service.

The applied load is displayed and monitored by a digital indicator. Readings can be displayed in the engineering units of the user's choice at the time of ordering the unit, or at calibration. All calibration data is held safely in non-volatile memory. Peak hold and zero offset features are standard on all Durham Geo digital readouts.

The load sensed at the loading piston is displayed on the digital readout via a precision pressure transducer. The transducer converts the hydraulic pressure into an electrical signal, which is converted to engineering units and displayed on the digital readout. The pressure transducer has a 10,000 psi (68,948 kPa) range, 0.1% linearity, and 1 ½ times over-pressure capability. This is a simple, but very effective and accurate method for converting hydraulic pressure to load.

The following 2 pages show details and descriptions of the major parts used in operation, calibration, and maintenance of the CC-250 series load frame.

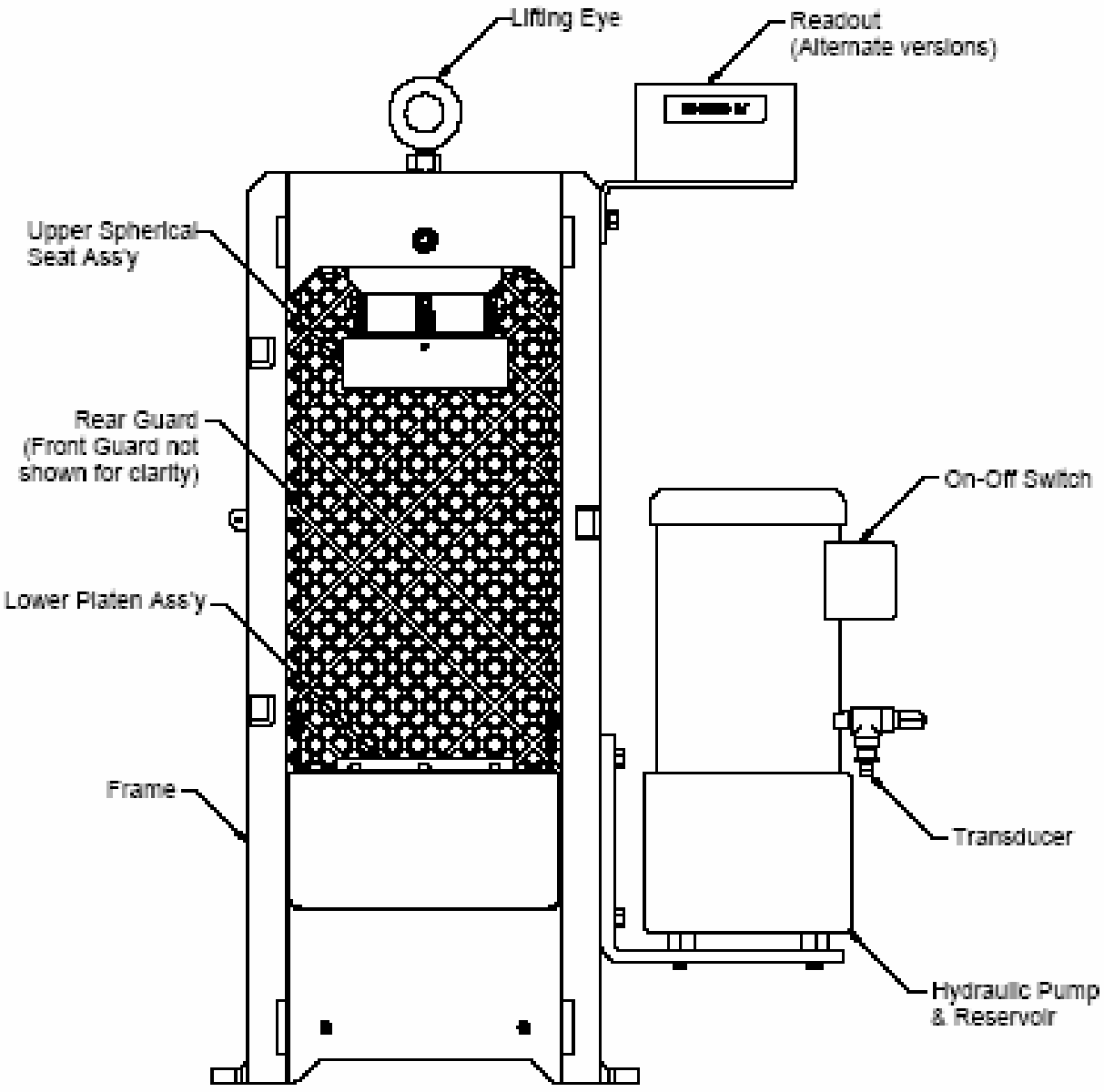


Figure 2.1 Detail of the CC-300 Series Concrete Machine.

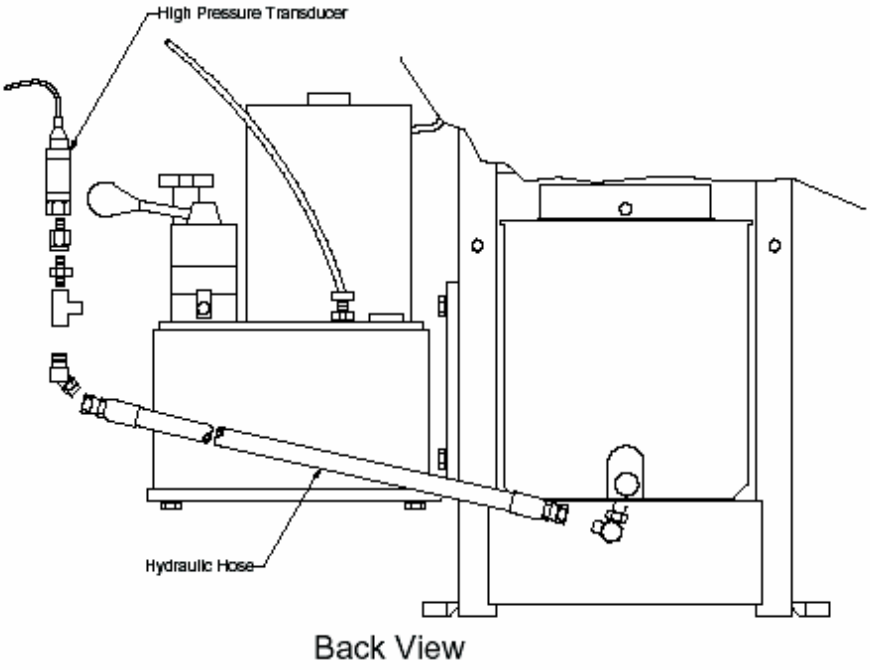


Figure 2.2 Back View Detail of the Concrete Machine.

Hydraulics

The movement of the hydraulic cylinder is controlled through the valve mounted on the pump. The valve has 4 positions:

1. Retract
2. Hold
3. Metered Advance
4. Full Advance

Retract The retract position is used to release pressure from the cylinder and return the cylinder to the home position. This is the position the valve should be in when the frame is not in use.

Hold The hold position is used to lock the cylinder in its place and maintain a pressure. This position is not normally used during testing but is frequently used during calibration.

Metered Advance The metered advance position is used during the actual test to control the rate of loading. When the valve is in this position, the user controls the rate of loading with the metering valve. Turning the valve clockwise decreases the rate of loading. Turning the valve counter clockwise increases the rate of loading. Once the proper rate has been achieved, further adjustment of the metering valve should not be necessary.

Full Advance The full advance position is used to rapidly maneuver the cylinder into position for testing. Typically, the valve is placed in this position to move the sample up to the top platen.

Note: These four positions are actuated by moving the lever on the valve to the appropriate position. The star shaped knob is used in the metered advance position and allows the user to control the rate of loading during a test. In most cases, once you find a satisfactory rate of loading, the metering valve can be left alone and should not need to be changed.

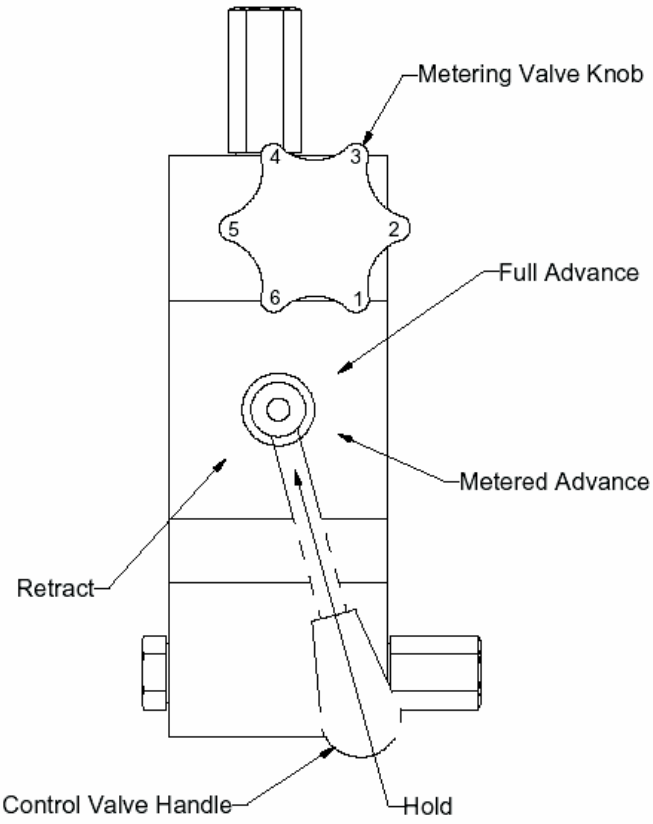


Figure 2.3 Detail of the Hydraulic Control Valve.

Warning!

Remember that the hydraulic system is active as soon as the pump is turned on. Always place the valve in the retract position when not actually using the load frame. This will prevent possible injury to personnel or accidental damage to samples or equipment.

Electronics

The readout comes complete with a peak-hold feature, which allows you to trap and display the load at which the sample failed. A reset should be performed after each test.

To use the readout, simply plug it into an outlet. Attach the transducer cable to the "input" socket on the back of the readout. The readout is now ready for use.

Reference

More detailed information on the use and calibration of the digital readout is available in its accompanying instruction manual. It is strongly suggested that you read the digital readout manual before using the device.

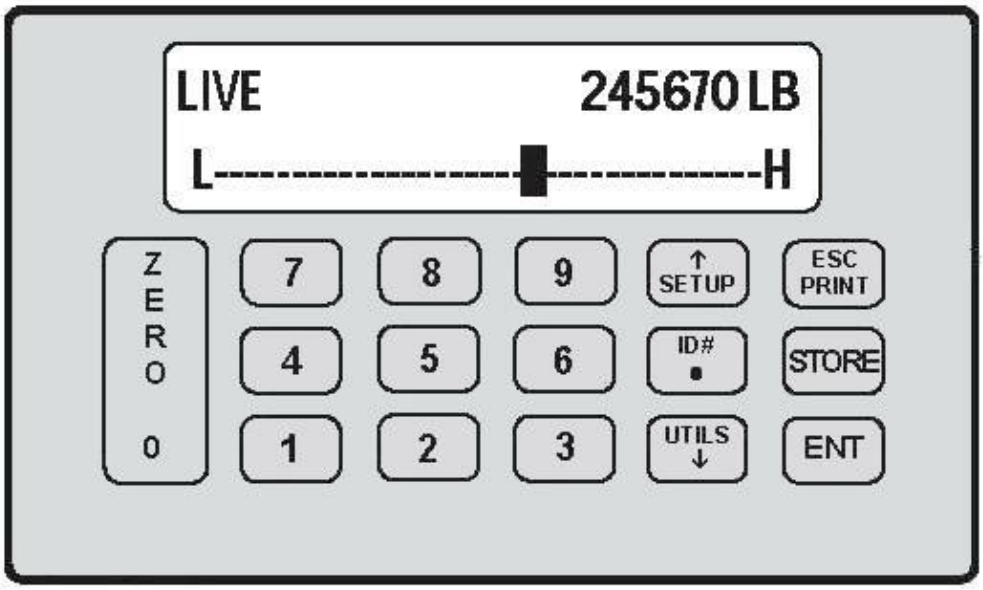


Figure 2.4 Detail of the Readout.

Running a Test

Before running a test, check all your setup conditions to ensure the frame is ready for testing. All readouts should be set to zero, the hydraulic valve should be set in the "retract" position and the cylinder should be all the way down.

To run a test, do the following:

1. Turn the pump on.
2. Place the sample between the platens.
3. Run the sample up to the top platen using the "Fast Advance" position on the valve.
4. Once contact has been made, place the control valve in the "Metered Advance" position.
5. Control the rate of loading with the star-shaped knob on the metering valve.

> Note
>
> Once you have achieved the proper load rate, further adjustments of the metering valve should not be necessary.

6. Load the sample to failure.
7. When the sample fails, move the control level to the "Retract" position.
8. **Important** – Turn off pump between tests, this will facilitate quicker piston return.
9. Record all pertinent information. (Use the peak hold switch to read the peak load.)
10. Reset the peak hold device for your machine.
11. Remove the sample.
12. Brush off aggregate and dust with a small brush or cloth. Do not spray off with water. A moist sponge or cloth is acceptable. Repeat steps 1-10 to continue tests.

Safety / Warnings

Operation

Always wear safety goggles when operating, calibrating, maintaining, or otherwise using the equipment.

Always have the fragment guard in place before operating the equipment.

This equipment must be bolted to a stable base before use. Failure to properly secure the equipment may result in serious injury or death.

Pump

1. Close the oil fill plug to prevent leakage when transporting the pump.
2. Do not exceed the rated capacity of 10,000 psi. (68,947 kPa)
3. Do not tamper with the high-pressure relief on the pump.
4. Do not adjust the low range or high range relief valve. They are preset at the factory. Any adjustments will void all warranties.

Cylinder

1. Do not exceed the load rating of the cylinder. (i.e. the load rating of the frame)
2. Do not set loads that are poorly balanced or off-center on the cylinder.
3. Do not exceed 2.5" stroke of the hydraulic cylinder.

Power Supply

1. Do not use an ungrounded extension cord.
2. Avoid conditions, which could create an electrical hazard.
3. If the power cord is damaged or wiring is exposed, replace or repair immediately.
4. The line voltage must be the same as the voltage your pump is wired for. (i.e. a 110 volt pump plugged into a 110 volt outlet or 220 to 220)

Chapter

3

Maintenance

Calibration

Each concrete load frame is calibrated before it leaves the factory. When you receive the load frame, you will find a calibration certificate enclosed. The certificate does not replace the required ASTM on-site calibration. However, it is useful for comparing calibration results. In most instances a re-calibration of the load frame is unnecessary. In actuality, the readout can be left in the RUN mode and calibration will simply be verified. However, if for some reason, such as a change of transducer or display, a re-calibration is then necessary. The readout manual describes this procedure.

Warning!

Please read the Durham Geo Digital Transducer Readout manual included in the back.

NOTE:

ASTM requires a calibration be performed at a minimum of once per year.

Maintenance

The hydraulic system is powered by a two-stage hydraulic pump coupled to a selector valve. The cylinder is a single acting spring return device. The maximum rated pressure of the system is 10,000 psi (68,947 kPa). for safety reasons, the pressure relief on the pump has been set below 10,000 psi (68,947 kPa).

Before operating the system for the first time, after any repairs, or after an extended period of inactivity, please check the following items.

Hydraulic Hose and Fittings

Warning!

NEVER work on hydraulic lines without first disconnecting power to pump and placing valve in the retract position.

1. Before operating the pump, make sure all hose connections are tight. Use an open-end wrench of the proper size to tighten the fittings.
2. If you find a loose fitting, be careful not to over-tighten it. Over-tightening may cause premature thread failure or cause high-pressure fittings to split at pressures lower than their rated capacities.
3. Unplug the pump before breaking any hydraulic connection in the system.
4. Should a hydraulic hose ever burst or rupture, immediately shut off pump.

Warning!

NEVER attempt to grasp a leaking hose under pressure with your hands. The force of the escaping hydraulic fluid could cause serious and permanent injury.

5. Avoid any conditions which could damage the hose and impair the pump's performance. Never allow the hose to kink, curl, or bend so tightly that the oil flow within the hose is blocked or reduced. This could damage the hose and possibly result in serious injury to persons working in the immediate vicinity.

6. Do not subject the hose to any potential hazard (i.e. fire, extreme heat or cold, heavy impact or sharp surfaces) which may rupture or weaken the hose.

7. Do not use the hose to lift or move the equipment connected to it.

8. Periodically inspect the hose for signs of wear. NEVER use a defective hose with pressurized equipment.

9. Always consult the manufacturer before painting the hoses. NEVER paint the fittings.

Upper Spherical Seat

(Please refer to Drawing #602626 located at the back of this manual for details of the seat assembly.)

The spherical seat and upper platen are precision made and should be handled carefully. The spherical seat will need to be oiled semi-annually to insure proper operation. To remove the spherical seat:

1. **HAZARD!** Make sure the spherical seat is supported from underneath ***before*** removing the retaining setscrew.

2. Using a 3/8" "T" socket head wrench, remove the setscrew located in the cavity on the front of the machine. This will release the pressure against the spigot (#9) attached to the upper seat assembly and allow it to drop from the frame assembly.

3. Remove the spherical seat from the frame and place on a flat surface. Remove the (3) spring retaining bolts (#5) and springs (#1). Separate the dome (#2) from the seat (#8) and inspect both surfaces for rust, scratches, and any deformities.

4. Inspect the upper platen (#6) surface for scratches per ASTM C-39. Have surface ground as required.

5. Remove any rust and oil all surfaces with 40-weight oil and reassemble. Use caution when reinstalling the spherical seat back on the frame.

Platens

If the machine is not being used for several days, apply lightweight oil to the platens. A cloth that is soaked in oil will work to apply the oil to the top and bottom platens. This will prevent any rust from forming on the platens and lengthen their life and appearance.

Filling / Changing the Oil in the Reservoir

Use only new, clean, approved hydraulic oil (215 SSU @ 100°F/37.8°C). Tank capacity is 2 gallons.

1. Before filling or changing the oil in the reservoir, thoroughly clean the area around the filler cap with a clean cloth to prevent contamination.

2. Remove the filler cap and insert a clean funnel with filter. Add enough oil to fill the reservoir to within approximately ½" to ¾" (1 - 2 cm) of the fill hole when the cylinder is in the fully retracted position.

3. Use the oil level site gage to check the oil level in the reservoir weekly.

4. Drain, flush, and fill the reservoir after every 600 hours of use. If conditions are abnormally dirty or dusty, more frequent oil changes are recommended.

Draining and Flushing the Reservoir

1. Clean the exterior of the pump before the pump interior is removed from the reservoir.

2. Disconnect hose at valve.

3. Remove valve by unscrewing the 4 screws on the top of the valve using a 3/16 allen wrench.

4. Remove the ten screws that fasten the motor and pump to the reservoir with a 7/16 open-end wrench. Do not damage the gasket or bump the filter or pressure regulating valves when lifting the pump and motor off the reservoir.

5. Clean the inside of the reservoir and refill with a suitable nonflammable flushing oil. Rinse the filter clean.

6. Place the pump and motor assembly back onto the reservoir and secure with four of the ten screws. Assemble the screws in opposite corners of the housing. Replace valve and hose assembly.

7. Turn the pump on, and place the valve in the hold position. Run the pump for 4 to 5 minutes. Turn the pump off. Disconnect the power cord. Remove the motor and pump assembly, drain and clean the reservoir.

8. Refill the reservoir with two gallons of high-grade hydraulic oil (215 SSU at 100°F/37.8°C) Replace the motor and pump assembly with the gasket. Thread in the ten screws, tightening them securely and evenly. Replace valve and reconnect the hose at the valve.

Chapter 4

HELP!

Troubleshooting

Problem	Cause	Solution
Motor does not run.	Pump not turned to "On" position.	Flip toggle switch to run position.
	Unit is not plugged in.	Plug in unit.
	No voltage supply.	Check line voltage.
	Broken lead wire or defective power cord plug.	Replace defective parts.
	Defective switches.	Check switches.
	Defective motor.	Replace motor.
	Thermal protector switch inside motor housing is open.	Wait for motor to cool before starting.
	Defective starter relay.	Replace defective parts.
—		
Pump is not delivering oil or delivers only enough oil to advance ram partially or erratically	Oil level is too low.	Fill reservoir to within 1" of the filler plug w/ all rams retracted.
	Loose fitting to cylinder.	Check couplings to cylinder. Inspect couplers to insure that they are completely coupled.
	Air in the system.	Bleed the system.

Troubleshooting (continued)

Problem	Cause	Solution
	Air leak in suction line.	Check and tighten the suction line. The pump filter should be cleaned and if necessary, the pump should be dismantled and all parts inspected and cleaned.
	Cold oil or oil is too heavy. (Hydraulic oil is higher viscosity)	Change to a lighter oil. Call factory.
	Relief valve or low pressure unloading valve not adjusted.	Adjust as needed. Call factory.
	Defective directional valve.	Inspect all parts carefully and replace if necessary.
	Sheared drive shaft key.	Replace. Call factory.
	Motor rotating in wrong direction.	Reverse rotation. Call factory.
Pump builds pressure, but cannot maintain pressure.	Oil leak.	Check to see if there are any external leaks. Tighten any loose fittings.
	Leaking valve.	Call factory.
	Faulty relief.	Call factory.
Pump will not build to full pressure.	Faulty pressure gauge.	Calibrate gauge.
	External leakage	Tighten loose fittings.
	Relief valve setting.	Take note of the maximum pressure that the pump reaches. Call factory.
	Check for leaks in the valve.	Call factory.
Electric motor cuts out.	Insufficient power supply.	Check if line voltage matches equipment range.
	Faulty motor and/or thermal protector.	Call factory.

Troubleshooting (continued)

Problem	Cause	Solution
Rams will not retract.	Check the system pressure; If the pressure is zero, the control valve is releasing pressure and the problem may be in the ram(s)	Check the rams.
	Defective valve.	Test valve operation and inspect parts. Call factory.
Pump delivers excess oil.	Relief valve not properly set.	Call factory.
	Check pressure gauge.	Calibrate gauge.

Chapter 5

Specifications

CC-300 Series Specs	English Units	Metric Units
Load Capacity	300,000 lbf.	1334 kN
Vertical Daylight	14.5 in.	368 mm
between platens		
Horizontal Daylight	10.75 in.	273 mm
Upper Spherical Seat	6.50 in.	178 mm
Bottom Platen	7.0 in.	178 mm
Piston Area	38.48 in.^2	248.25 cm^2
Max. Ram Travel	3.0 in.	76 mm
Overall Height	39.5 in.	1003 mm
Overall Width	28.0 in.	712 mm
Overall Depth	13.5 in.	343 mm
Net Weight	760 lbs.	345 kg

Hydraulics	
Max. Operating Pressure	10,000 PSI (68948 kPa)
Pump Type	2 stage 1st stage - low pressure, high volume 2nd stage - high pressure, low volume
Hose Size	1/2" R9 Hydraulic hose
Oil Type	ASTM/150 (ref.) 215/46
Capacity	2 gallons (7.5 liters)

Accessories and Related Products

Equipment/Product	Purpose	Part #
Flexural Strength Test Beam Attachment	Two-piece unit easily installed in the CC-300 series load frames for flexural strength testing of beams	Call Call
Cube Spacer Set	Attachment for testing 2" cube specimens	Call
Cylinder Spacer Set 3" x 6"	Used with the CC-300 series load frames when testing 3" x 6" cylinder specimens	Call
Cylinder Spacer Set 4" x 8"	Used with the CC-300 series load frames when testing 4" x 8" cylinder specimens	Call
Concrete Load Frame Stand	Stand ready made for the CC-300series load frame Allows easy installation and securing of the machine	260201
Cylinder Mold, Disposable Plastic (three sizes)	Constructed of one-piece, non-absorbing, non-adhering plastic for forming cylindrical test specimens of wet concrete	C-210 C-215 C-220
Mold Stripping Tool	Used for splitting disposable cylinder molds to remove cured concrete sample	C-211
Domed Plastic Lid	Reusable lid for plastic cylinder molds	C-212
Steel Cylinder Mold	Reusable steel mold to form 6" x 12" cylindrical test specimens splits vertically for easy sample removal	C-225
Beam Mold (three sizes)	Fill with fresh concrete to produce a concrete test specimen for flexural testing of concrete beams	C-230 C-231 C-232
Cube Mold	Used to from three 2" compressive test cube specimens	C-235
Pi Tape	Gives a fast, accurate measurement of cylinder diameter in one reading, to an accuracy of +/- 0.001"	C-196
Vertical Capping Set	Set includes all equipment needed for efficient and accurate capping of 6" x 12" cylindrical samples	C-270
Vertical Cylinder Capping Fixture (three sizes)	An aid in capping concrete cylinders, the fixture enables accurate alignment and simplifies the process	C-275 C-27510 C-27520
Capping Compound (three sizes)	Specially formulated powder for capping provides a smooth, level test surface	C-280 C-281 C-282
Padcap System (3) sizes/ (3) durometers Alternative to traditional capping, neoprene padcap discs slip into solid steel receivers, which fit cylinder for testing	6″ Pads, 50 Durometer 6″ Pads, 60 Durometer 6″ Pads, 70 Durometer 4″ Pads, 50 Durometer 4″ Pads, 60 Durometer 4″ Pads, 70 Durometer	C-293 C-294 C-295 C-28704 C-28705 C-28706

Warranty Statement

Durham Geo Slope Indicator warrants that equipment shall be free from defects in material and workmanship for a period of **90 days** from the time equipment is put into service. In any event, the warranty period will not exceed **6 months** from the date of shipment.

Durham Geo Slope Indicator's liability shall be limited to replacement of components or equipment (at the manufacturer's discretion) that have been determined by the manufacturer to be faulty. No claims in excess of component replacement value will be recognized. Durham Geo will not be held liable for damages or lost business relating to a warranty claim.

Specifically excluded from this warranty are claims deemed by the manufacturer to have resulted from normal wear and tear, improper use, or abuse of the equipment.

Exceptions to this warranty are:

Steel Frame	Lifetime Warranty
Motor & Pump	1 Year Warranty
Electronics	9 Month Warranty

For a complete warranty disclosure, please call 1-800-837-0864 ☎ (outside Georgia, USA) or (770) 465-7557 ☎ (inside Georgia, USA) or refer to the printed statement on the back of any Durham Geo Slope Indicator original invoice.

Information Record

Frame Model #: _____

Frame Serial #: _____

Digital Readout Model #: _____

Digital Readout Serial #: _____

Sold By: _____

Date Purchased: _____

The model and serial numbers, for the frame and readout, are listed on the side and back of the equipment, respectively. You will need these numbers if you call Durham Geo for service or support.

We can be reached between 8:00 am and 5:00 pm Eastern Standard Time (EST) at:

1-800-837-0864 (outside Georgia, USA)

(770) 465-7557 (inside Georgia, USA)

Fax (770) 465-7447

Email: sales@durhamgeo.com

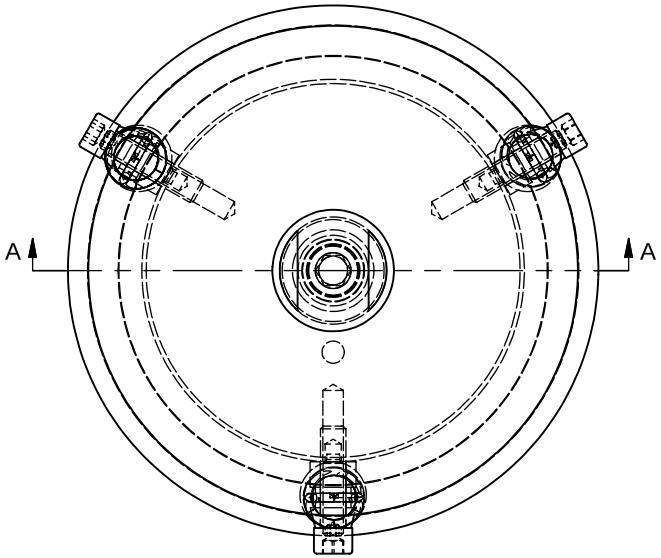
Calibration Record

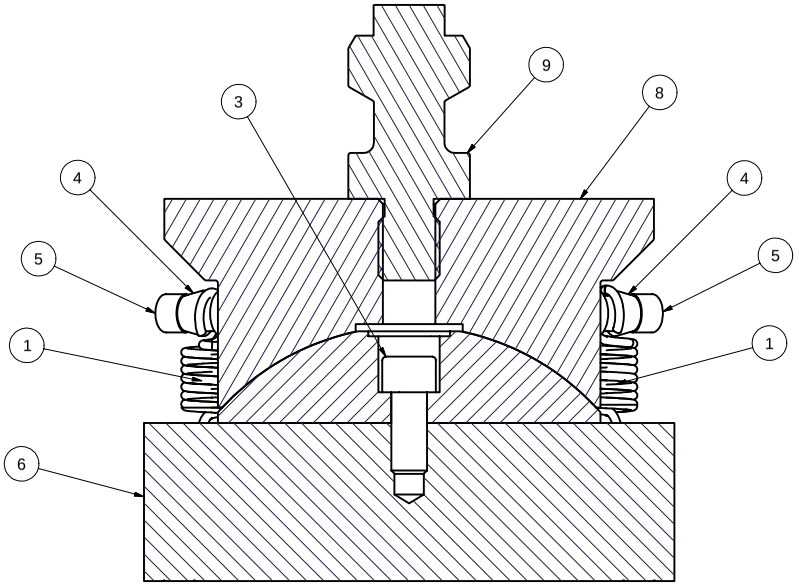
Date	Performed By:	Comments
		Initial Factory Calibration

ASTM requires calibration once per year.

Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	3	259406	Spring, Extension, .75 x .105 x 2.0
2	1	256101	Dome, Spherical Seat
3	1	Socket Head Cap Screw	Hex Socket Head Cap Screw, 7/16-14 x 1" long
4	3	268701	Anchor, Spring
5	3	Socket Head Cap Screw	Hex Socket Head Cap Screw, 5/16-18 x 1.25" long
6	1	268201	Block, Top Bearing
7	3	1/4-20 UNC x 1	Hexagon Socket Set Screw - Half Dog Point
8	1	602622	Spherical Seat, New Style
9	1	602621	Spigot, Platen/Spacer Attachment, CC-300/500

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	Released for production	2/17/2007	PMyers





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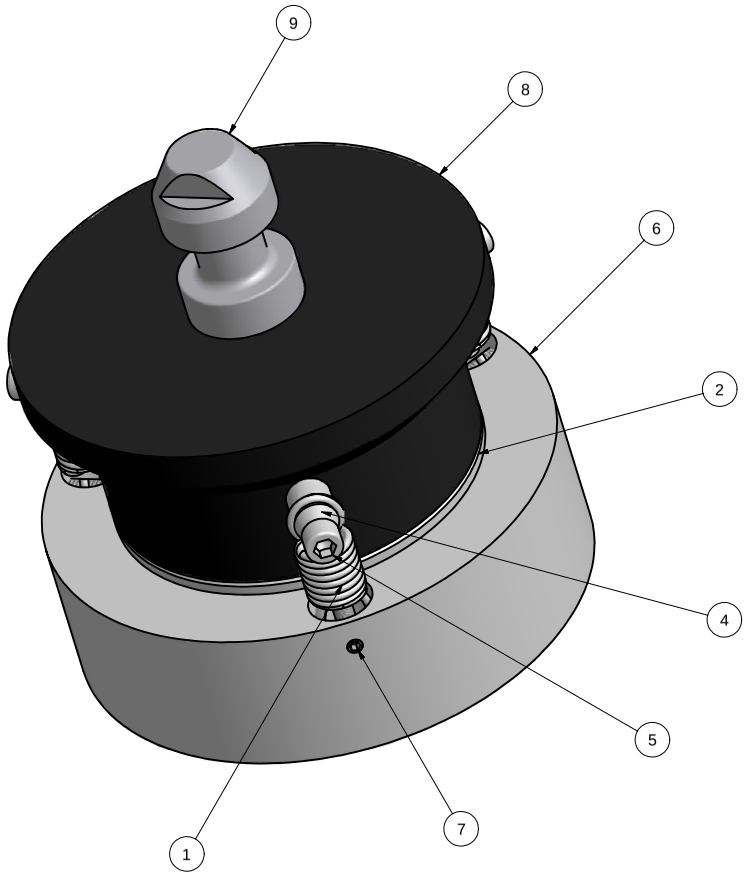

Notes:
1. Use 40 wt oil when assembling seat and dome.
2. If assembly is to be put in stock then coat entire assembly with silicone spray to prevent rust.

DRAWN	2/18/2007	Durham Geo Slope Indicator 2175 West Park Court Stone Mountain, GA 30087
CHECKED		TITLE: Spherical Seat Assembly, New Style, CC-300
QA		
MFG		
APPROVED	2/18/2007	SIZE: C (.X +/- .030, .XX +/- .010, .XXX +/-.004) · DWG NO: 602626 · REV: A
STOCK NUMBER		SCALE: 0.85X · SHEET 1 OF 2
Concrete Load Frames		

REVISION HISTORY			
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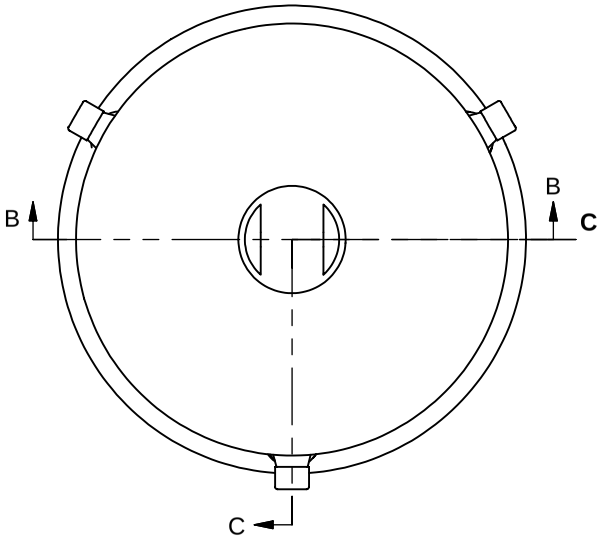

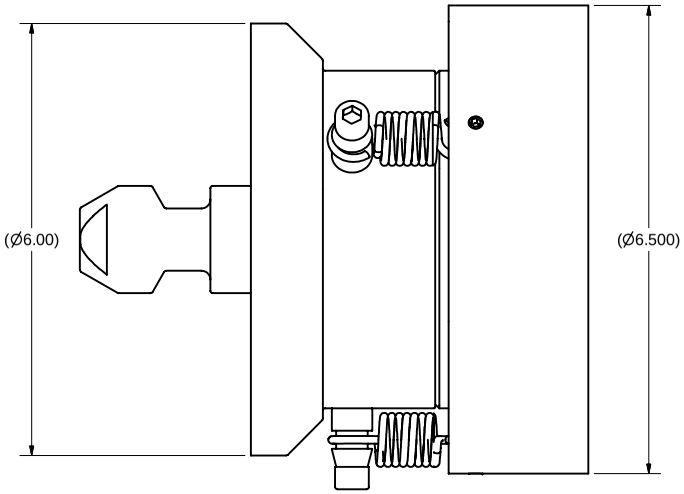

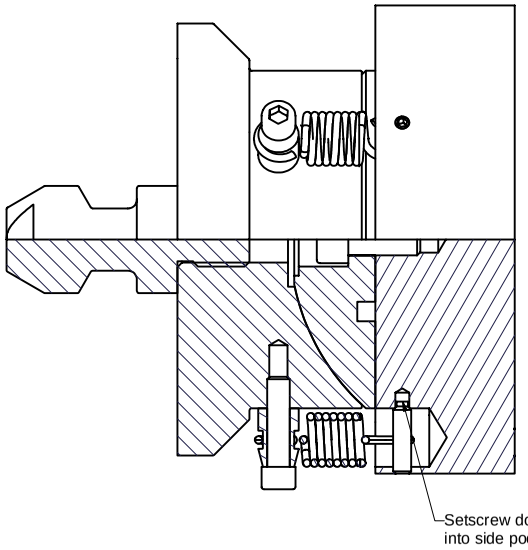

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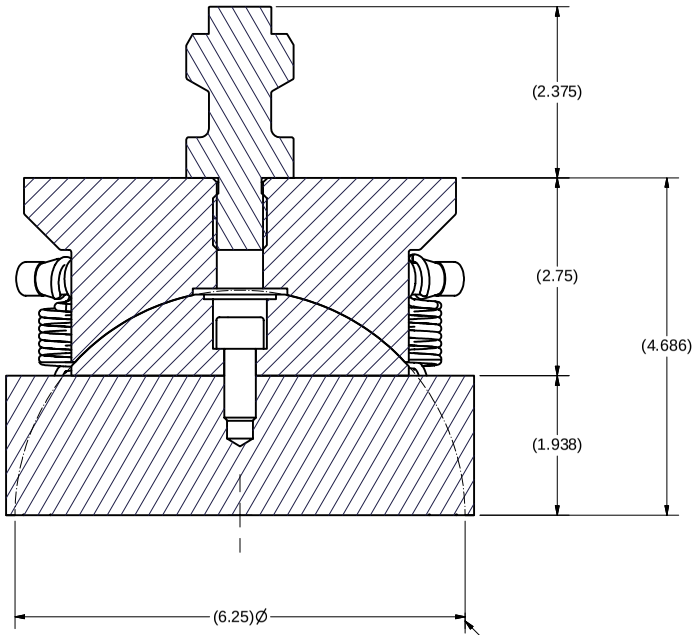
SCALE 3 / 4



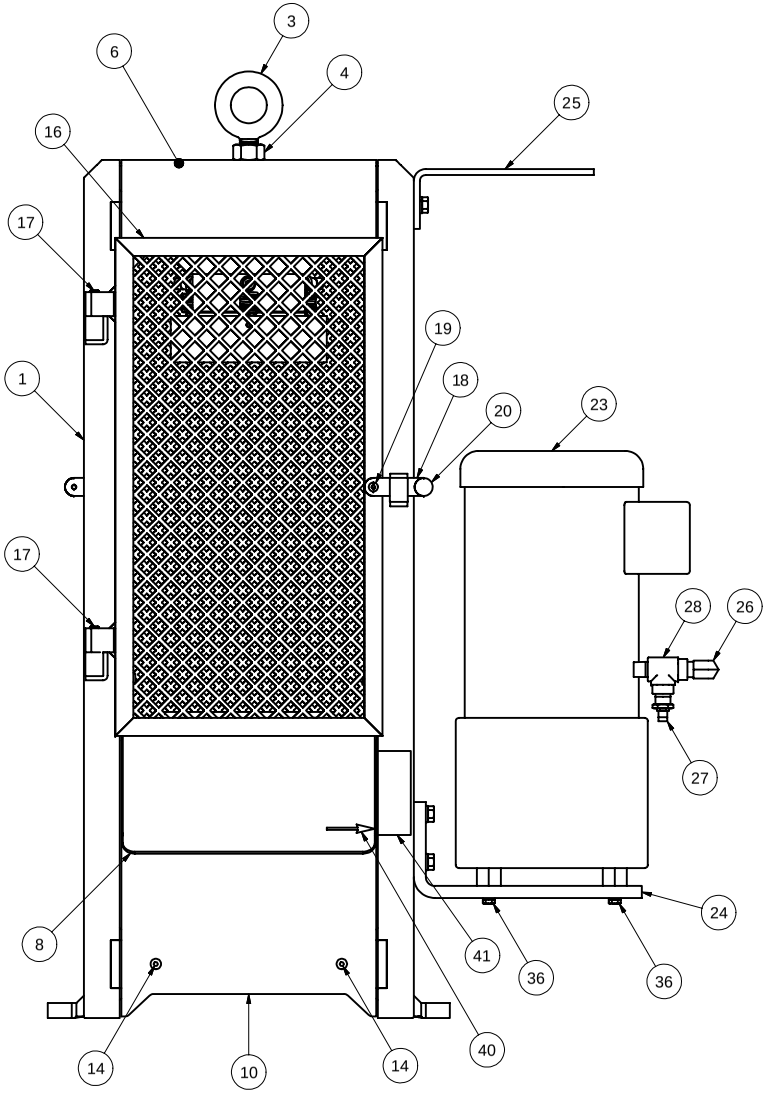
SECTION B-B
SCALE 3 / 4

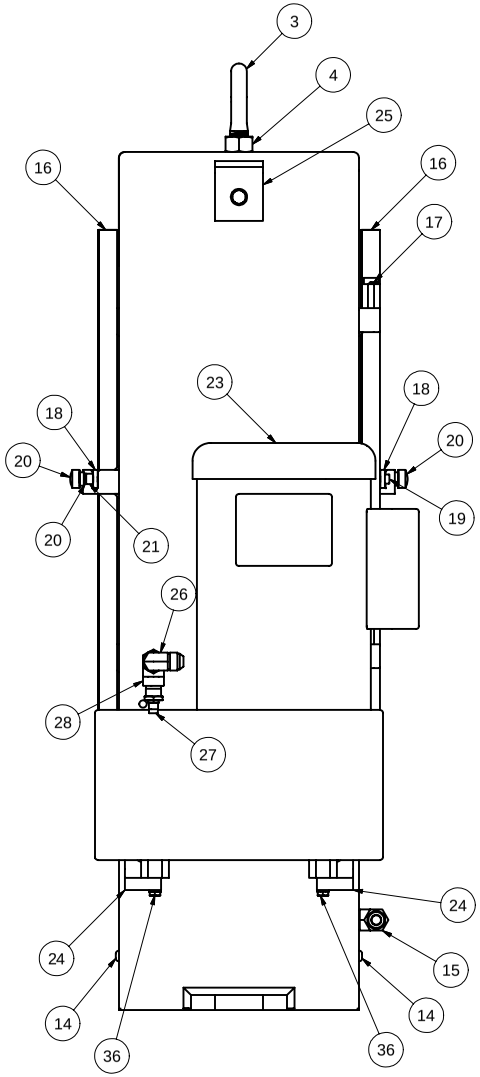
Notes:
1. See Sheet 1 of 2.

DRAWN	2/18/2007	Durham Geo Slope Indicator 2175 West Park Court Stone Mountain, GA 30087
CHECKED		TITLE
QA		Spherical Seat Assembly, New Style, CC-300
MFG		
APPROVED	2/18/2007	SIZE C; .X +/- .030, .XX +/- .010, .XXX +/-.004; DWG NO 602626; REV A
STOCK NUMBER		SCALE 0.75X; SHEET 2 OF 2
Concrete Load Frames		

Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	602458	Frame Weldment, CC-300
2	1	602447	Hydraulic Ram Assembly, CC-300
3	1	602623	Eyebolt, Plated, 3/4-10
4	1	3/4 - 10	Plated Hex Nut
5	1	602624	Set Screw, 3/4 - 10 UNC x 2
6	1	601328	Cap, Sheetmetal, CC-300
7	2	601389	Tray Cover, Half, CC-300
8	1	601390	Tray Cover, CC-300
9	1	601338	Cylinder Cover, Back, CC-300
10	1	601381	Cylinder Cover, Front, CC-300
11	10	1/4-28 - 3/8	Hexagon Socket Button Head Cap Screw
12	1	602625	Bearing Block, Bottom, CC-300
13	1	602626	Spherical Seat Assembly, New Style, CC-300
14	4	1/4 - 20 x 1/2	Hexagon Socket Button Head Cap Screw
15	1	602389	Hyd 90deg Elbow, 1/2" NPT x #8 JIC
16	2	601415	Door Weldment, CC-300
17	4	601331	Pin, Hinge, Long
18	2	239901	Latch, Door, Concrete Frame
19	2	240606	Shoulder Screw, SS, 1/4x1/4
20	2	240612	Knob, Thumb Screw, CC-300/500
21	2	602273	Spacer, Door Knob, CC-300/500
22	2	240607	Washer, SS Flat, 1/4"dia
23	1	601718	Hyd Pump Unit, CC-300/500
24	2	602779	Bracket, Short, ValPower Hyd Unit, CC-300/500
25	1	602271	Bracket, Basic, GageBuster Support, CC-300/500
26	1	602388	Hyd 90deg Elbow, 3/8" NPT x #8 JIC
27	1	601379	Nipple, 1/8" NPT to 3/8" NPT
28	1	2151318	Male Run Tee, 3/8" NPT
29	2	602302	Edge Guard, CC-300
30	1	162505	Valve, Hydraulic (SPX) - not shown
31	1	602387	Fitting, Pressure Port - not shown
32	1	602385	Hose, High Pressure Hydraulic - not shown
33	1	601430	Pressure Transducer - not shown
34	5	3/8 Regular, Steel	Helical Spring Lock Washer
36	4	1/4-20 UNC - 1	Hex Bolt - UNC (Regular Thread - Inch)
37	4	1/4 Regular. Steel	Helical Spring Lock Washer
38	5	3/8-16 UNC - 1	Hex Bolt - UNC (Regular Thread - Inch)
39	4	5/8-18 UNF - 1.75	Hex Cap Screw
40	1	602785	Label, Arrow, CC-300
41	1	602786	Label, Travel Indicator, CC-300

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	Released for production	4/3/2007	PMyers

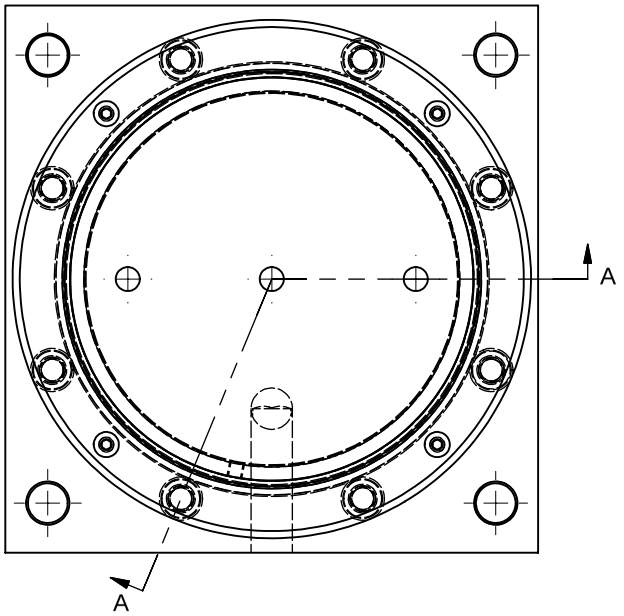


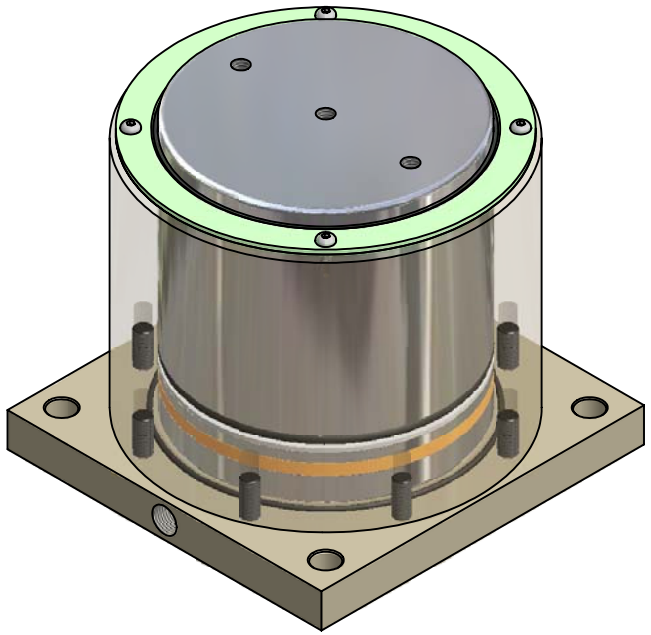


DRAWN	2/14/2007	Durham Geo Slope Indicator 2175 West Park Court Stone Mountain, GA 30087
CHECKED		TITLE
QA		CC-300 Concrete Load Frame Assembly
MFG		
APPROVED	4/3/2007	
STOCK NUMBER CC-300 Concrete Load Frames		SIZE C (.X +/- .030, .XX +/- .010, .XXX +/-.004) DWG NO 602649 REV A SCALE None SHEET 2 OF 5

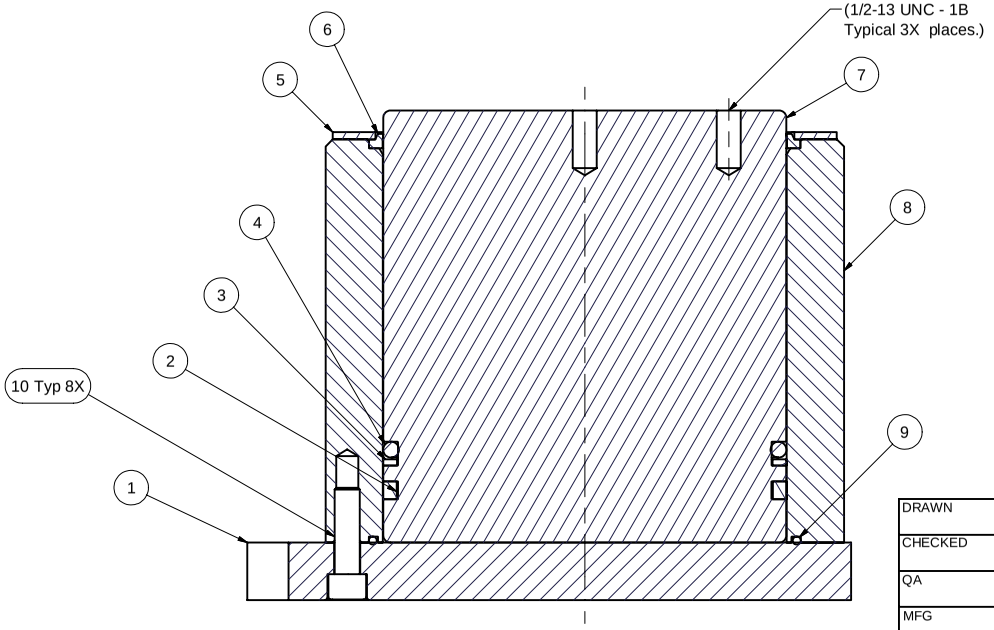
Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	602445	Bottom Plate, Hyd Cyl, CC-300
2	1	602274	Piston Ring, Hyd Cylinder, CC-300
3	1	602276	Backup Ring, Teflon, CC-300
4	1	602778	O-ring
5	1	602439	Wiper Retainer, Hyd Cylinder, CC-300
6	1	602298	Rod Wiper, CC-300
7	1	602282	Piston, Hyd Cylinder, CC-300
8	1	602446	Tube, Hydraulic Cylinder, CC-300
9	1	602278	O-ring
10	8	7/16-20 UNF - 1.5	Hexagon Socket Head Cap Screw
11	4	1/4 - 20 UNC - 1/2	SS Hexagon Socket Button Head Cap Screw

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	Released for production	11/13/2006	PMyers
B	Item 4 - PN#602778 was PN#602280	5/7/2007	PMyers





SCALE 1 / 2



SECTION A-A
SCALE 0.60 : 1

Notes:
1. See Sheet 1 of 2.

DRAWN	11/13/2006	Durham Geo Slope Indicator 2175 West Park Court Stone Mountain, GA 30087
CHECKED		TITLE
QA		Hydraulic Ram Assembly, CC-300
MFG		
APPROVED	11/13/2006	
STOCK NUMBER		SIZE C; .X +/- .030, .XX +/- .010, .XXX +/-.004; DWG NO 602447; REV B
Concrete Load Frame		SCALE 0.60X; SHEET 1 OF 2