



CC650 CRIMPER OPERATORS MANUAL



SAFETY PRECAUTIONS



**READ INSTRUCTIONS AND IDENTIFY ALL COMPONENT PARTS
BEFORE USING CRIMPER**

KEEP HANDS AWAY FROM PINCH POINTS

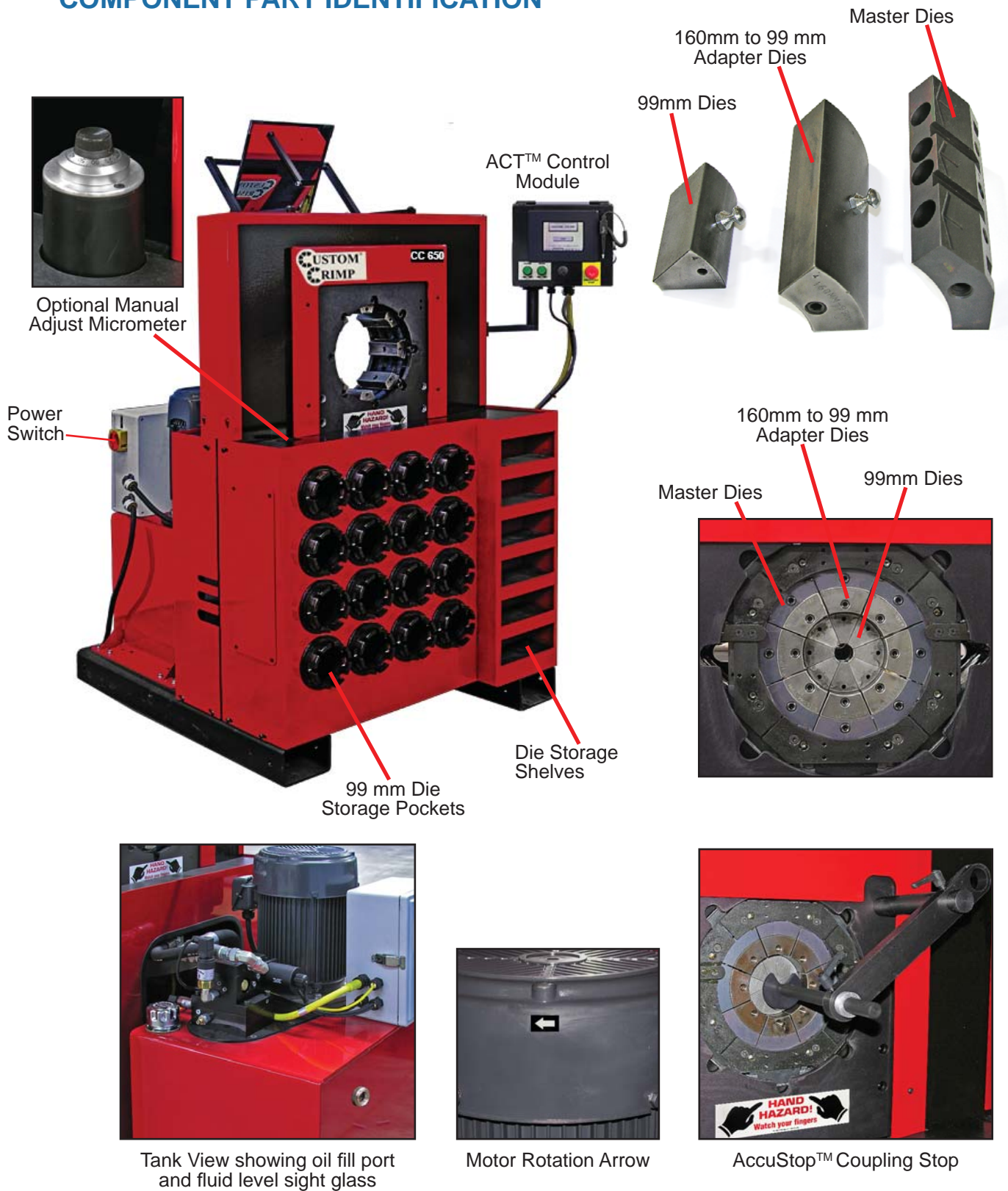
**CONSULT HOSE AND FITTING MANUFACTURER'S
SPECIFICATIONS FOR CORRECT MACHINE SETTINGS AND
CRIMP MEASUREMENTS**

ALWAYS WEAR EYE PROTECTION

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COMPONENT PART IDENTIFICATION



Protected by U.S. Patent 7,383,709
European Patent 06759019.0
Additional Patent(s) pending

CRIMPER SPECIFICATIONS AND INITIAL SET UP

SPECIFICATIONS:

MAX HEAD OPENING W/O DIES -----286 MM (11.25 IN)
MASTER DIE INSIDE DIAMETER -----160 MM (6.29 IN)
MAXIMUM DIE OPENING -----DIE CLOSED DIAMETER + 128 MM
CRIMPER SIZE -----36 IN WIDE X 22 IN DEEP X 57 IN HIGH
WEIGHT -----4000LB. (1814 KG)
ELECTRICAL REQUIREMENTS -----220 VOLT 3 PHASE (STANDARD)
----- 440 VOLT 3 PHASE (OPTIONAL)
MOTOR -----7.5 HP (2 STAGE PUMP)
RESERVOIR CAPACITY -----24 US GAL
OIL TYPE -----ISO 46 HYDRAULIC OIL
ADAPTER DIES -----160 MM TO 99 MM
HOSE CAPACITY -----2 INCH 6 SPIRAL
-----6 INCH INDUSTRIAL

INITIAL CRIMPER SET UP

- CHECK RESERVOIR OIL LEVEL WITH SIGHT GLASS ON THE POWER UNIT.
- CHECK ELECTRICAL CIRCUIT TO BE CERTAIN THAT IT MATCHES THE CRIMPER REQUIREMENTS AS SHOWN ON THE TAG ATTACHED TO THE CRIMPER CORD.
- MAKE CERTAIN THAT MOTOR ROTATES IN THE DIRECTION OF THE ARROW SHOWN ON THE MOTOR HOUSING.
- IF MOTOR ROTATION IS INCORRECT REVERSE ANY TWO HOT WIRES IN THE CRIMPER PLUG.
- ALSO SEE ADDITIONAL INFORMATION ON THE INITIAL SET UP AND MAINTENANCE PAGE.

AccuCrimp ACT™ CONTROL PANEL

U.S. Patent No: 7,383,709

TOUCH SCREEN CONTROL PANEL



MANUAL MODE FUNCTION: CLOSE DIES
AUTO MODE FUNCTION: CYCLE START

EMERGENCY
STOP

MANUAL MODE FUNCTION: OPEN DIES
AUTO MODE FUNCTION: CYCLE STOP

NOTE:

IF THE CRIMPER IS IN **MANUAL MODE**, THE GREEN OPEN/CLOSE BUTTONS WILL OPEN AND CLOSE THE CRIMPER HEAD.

IF THE CRIMPER IS IN **AUTO MODE**, THE BUTTONS FUNCTION AS CYCLE START AND CYCLE STOP BUTTONS.

IF THE CRIMPER IS IN **SEMI-AUTO MODE**, PRESSING THE FOOT SWITCH OR THE CLOSE BUTTON WILL CLOSE THE CRIMPER HEAD AND RELEASING WILL HALT THE CLOSING ACTION.

ACT™ CONTROLLER QUICK START

While the ACT™ crimper has the ability to perform a number of fully automatic functions, manual operation is also possible. To make a manual crimp, two numbers are needed:

- **The closed diameter of the die** (in either in or mm).
- **The finished crimp diameter** (in either in or mm).

That's all you need to know. ACT™ does the rest.



TO MAKE A MANUAL CRIMP:

- Press **START MOTOR**.
- Select **CRIMP TO DIAMETER**.
- Enter the closed diameter of the die set in either in or mm and press **ENTER**.

*Note: for a 25 mm die, enter 2500. ACT™ will add 2 decimal places.
for a 1.5 inch die, enter 1500, ACT™ will add 3 decimal places.*

- Enter the finished crimp diameter and press **ENTER**.
- From the **ENTER CRIMP** screen, press the **MANUAL** button to put the crimper in manual mode.
- Confirm that the die and finished crimp diameters are correct and that **MANUAL MODE** is displayed.
- Press and hold the green close button until the crimper stops closing.
- Check the final crimp diameter. If a minor correction is required see [HOW TO MAKE MINOR CORRECTIONS](#).

*Tip: Pressing the **CHANGE DIES** button allows the crimper head to be fully opened or closed with the green **OPEN-CLOSE** buttons on the controller front panel. When the **CHANGE DIES** button is blinking the dies can be opened and closed manually without altering any of the crimper settings.*

HOW TO MAKE MINOR CORRECTIONS

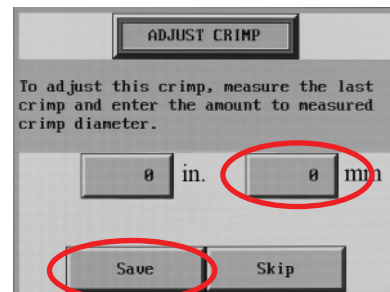
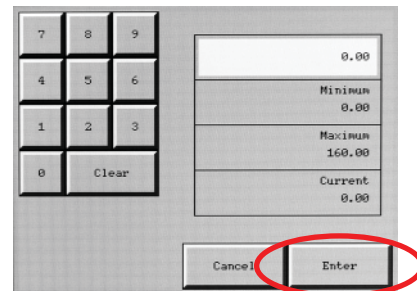
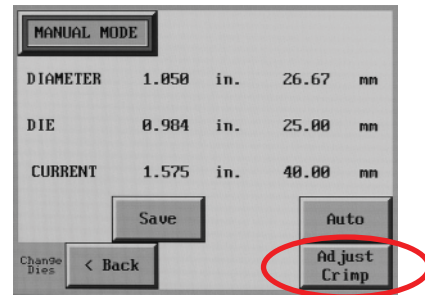
Due to variations in hose and fitting tolerances a minor crimp adjustment may be required if the measured diameter of the final crimp is not within the hose and fitting manufacturer's specifications. ACT™ technology makes minor corrections a simple process which requires no addition or subtraction.

If the finished crimp diameter is not within the required specifications:

- Press the **ADJUST CRIMP** button.
- Enter the measured diameter of the fitting in either inches or mm (**Do not enter the amount of correction**) and press **ENTER**.
- Press **SAVE**.
- Make another crimp and verify that the fitting is within specifications.

EXAMPLE: *If the hose and fitting manufacturer specifies that the finished crimp should measure 1.500 to 1.520 and the measured crimp diameter was 1.530, simply enter the measured diameter (1530 - Controller will supply 3 decimal places) and press **SAVE**. The finished crimp diameter can be entered in either in or mm and ACT™ will make the conversion.*

While a single correction will usually bring the hose and fitting into specifications, the process can be repeated as many times as is required.



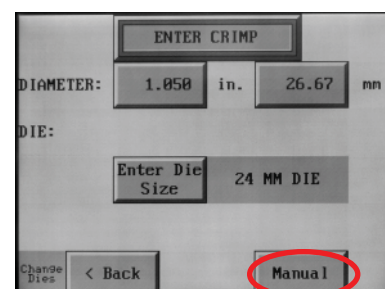
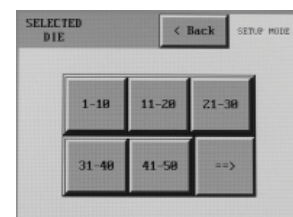
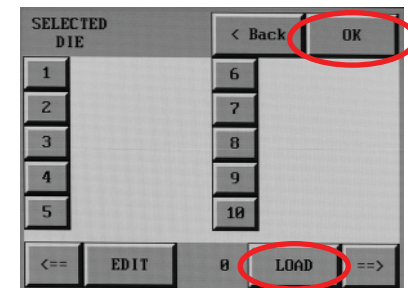
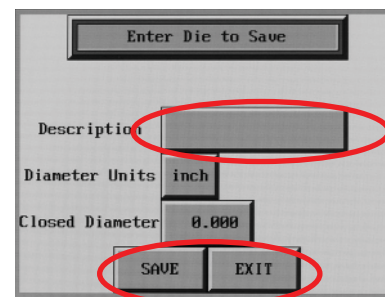
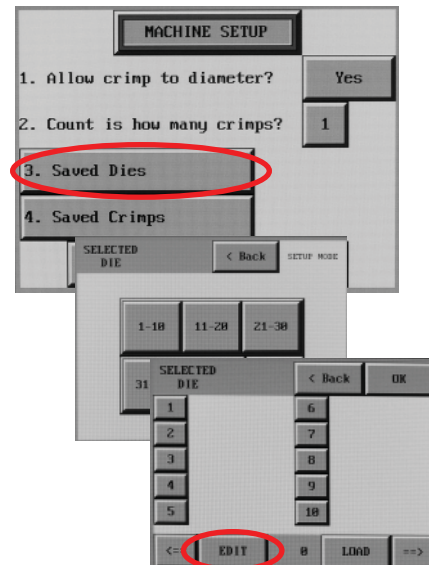
HOW TO ADD A SAVED DIE

Up to 50 different dies can be saved in the computer memory. These dies can be recalled in the set up process eliminating the need to re-enter the die size each time.

To enter a saved die:

- From the **OPTION** screen, press **SETUP MODE**.
- Select **SAVED DIES**.
- Select the save position (1-50) where the die is to be saved and press the **EDIT** button.
- Enter a die description (up to 12 alpha/numeric characters).
- Enter diameter units (inch or metric).
- Enter the closed diameter of the die.
- Press **SAVE** and **EXIT**.

The saved die will now appear on the **SELECTED DIE** screen. From this screen individual dies can be cleared or edited.



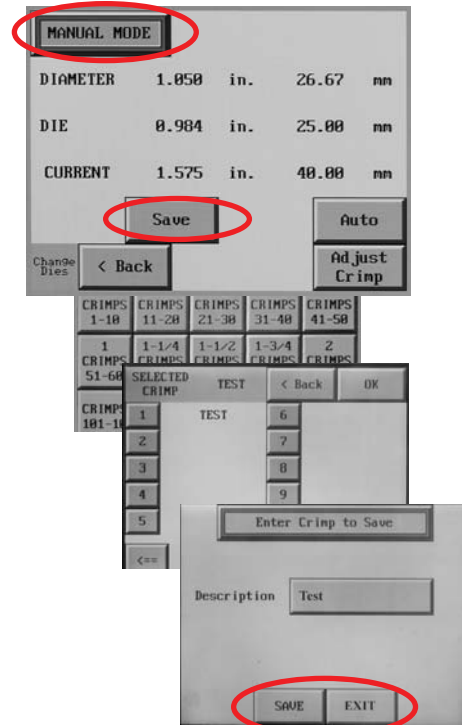
HOW TO RECALL A SAVED DIE

- Select **CRIMP TO DIAMETER**, and from the **OPTION** screen, select **USE SAVED DIE**.
- Select the saved die (1-50) and press **LOAD** and then **OK**. The die parameters will now be used for the crimp process.
- From the **ENTER CRIMP** screen press **MANUAL**.
- The saved die will now be shown on the crimp parameters screen.

HOW TO ADD A SAVED CRIMP

- Adjust the die diameter and crimp diameter as required and place the crimper in **MANUAL** mode.
- Press **SAVE**.
- Select a location (1-150) and press **EDIT**.
- Enter a description (up to 12 characters).
- Press **SAVE** and **EXIT**.

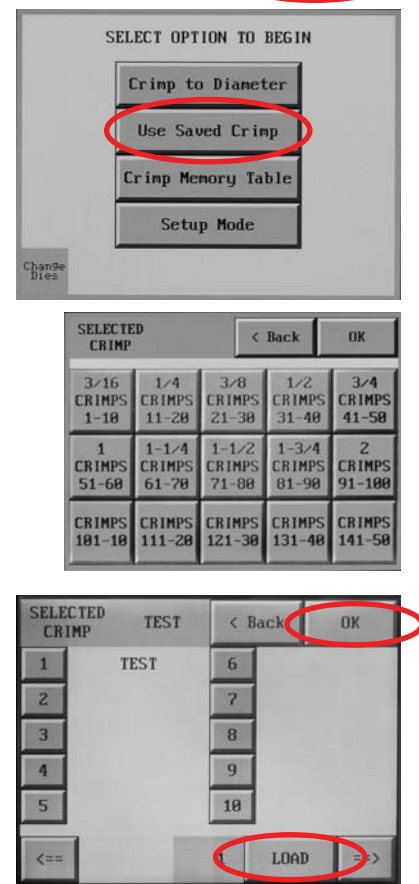
The die and crimp setting can now be recalled from the saved location as required



TO RECALL SAVED CRIMP

- Select **USE SAVED CRIMP** from the option screen.
- Select a previously saved crimp from location 1-150.
- Press **LOAD**.

The saved crimp will appear on the manual screen.



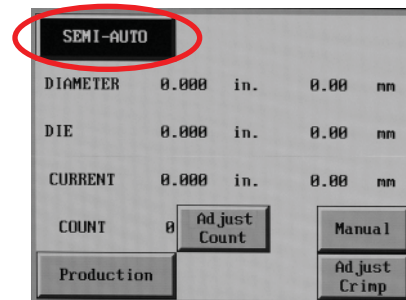
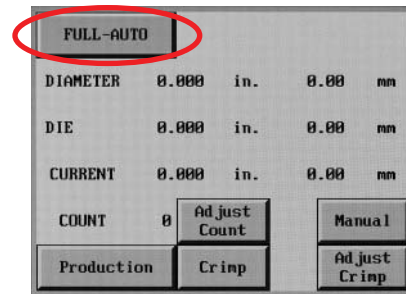
FULL AUTO MODE

With the crimper in **FULL AUTO** mode additional functions are available:

- The crimper will cycle automatically from the **CRIMP** button on the touch screen, the green **CYCLE START** button on the panel, or the foot switch.
- To set the position to which the dies will retract, close the crimper to the desired retract position prior to pressing the **FULL AUTO** button.
- Pressing the **FULL AUTO** button will toggle the crimper into **SEMI-AUTO** mode. In **SEMI-AUTO** mode, pressing the **FOOT SWITCH** or the **CLOSE** button will close the crimper head and releasing it will cause the head to stop closing. This mode allows the crimper to be jogged into position allowing more precise positioning of a fitting in the dies. Pressing the **SEMI AUTO** button will toggle the crimper back to **FULL AUTO** mode

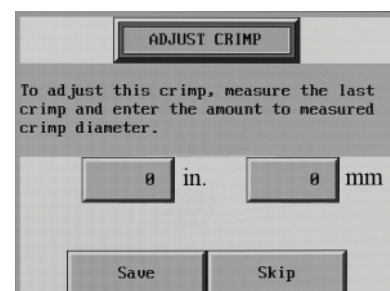
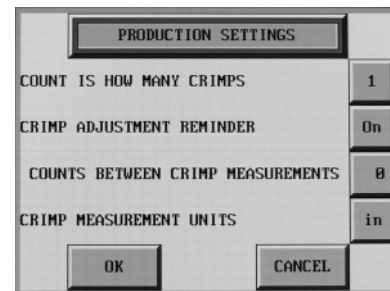
In **FULL AUTO** mode pressing the foot switch will start the crimp cycle and the dies will stop closing when the crimp cycle is complete.

- The **COUNT** function is activated allowing the operator to monitor the number of crimps made.
- A measurement can be required after a preset number of crimps. See **SET REQUIRED MEASUREMENT**.



SET REQUIRED MEASUREMENT

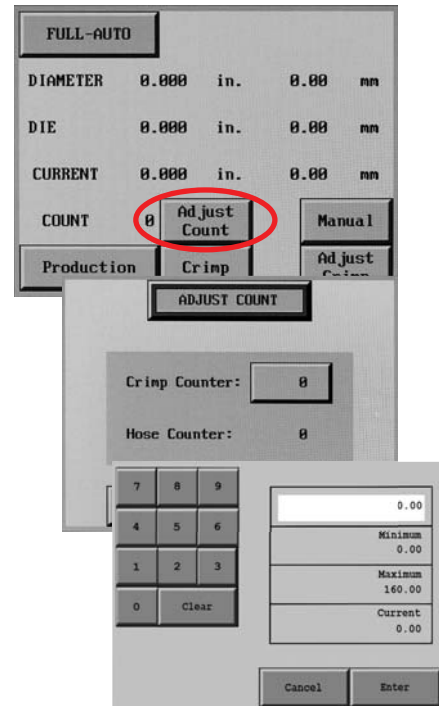
- Press the **PRODUCTION** button.
- Determine if 1 or 2 crimps will count as a crimp.
- Toggle the **CRIMP ADJUSTMENT REMINDER** to **ON**.
- Set the **COUNTS BETWEEN CRIMP MEASUREMENTS** to the desired number and press **OK**.
- At the set interval, the **ADJUST CRIMP** screen will come up and the operator will be asked to measure the last crimp and enter a correction if required.



ADJUST CRIMP COUNT

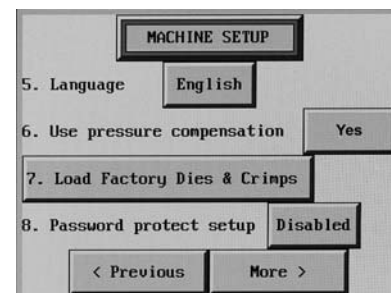
If a production operation is interrupted for some reason, it is possible to reset the counter to where the operation was at the point of interruption.

- Press the Adjust Count button from the auto crimp screen.
- Press the Crimp Counter and reset the count to the desired point.



ACT™ ADDITIONAL FEATURES

- Additional features and functions of the ACT™ controller can be accessed by pressing the **MORE** button on the **MACHINE SETUP** screen.
- When “Allow Crimp to Diameter” is set to “**YES**”, all of the adjustment functions of the crimper are available. When “Allow Crimp to Diameter” is set to “**NO**” only the settings entered as a saved crimp can be used.
- English or Spanish language options are available.
- The “Use Pressure Compensation” is set to “**YES**” for all crimpers equipped with a pressure transducer. A security code is required to turn this function on or off.

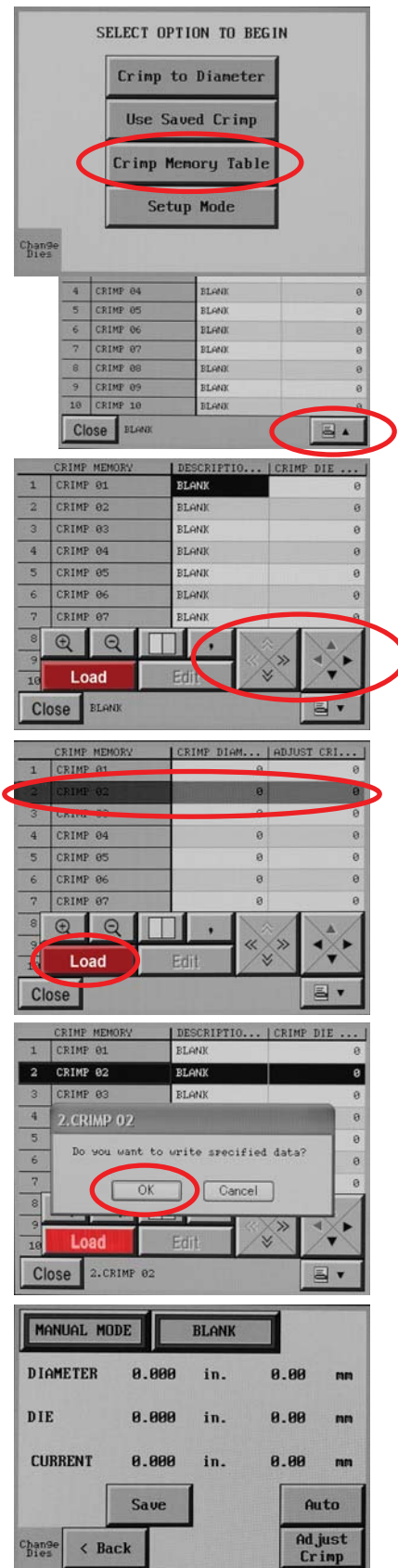


ACT™ ADDITIONAL FEATURES

Pre-Loaded Crimp Specifications

In addition to the ability to store up to 50 user entered dies and 100 user entered crimp settings, the ACT™ Controller has the capability of accepting pre loaded manufacturer's crimp specifications. CustomCrimp® does not maintain these specifications as they are proprietary to the individual hose and fitting manufacturer. If, however, your ACT™ Controller was pre loaded with a manufacturer's crimp specifications or if they are available to you, they are accessed in the following manner:

- Press the **Crimp Memory Table** Button.
- Press the access button to bring up the stored crimp specifications.
- Scroll through the crimp specifications to select the correct one. The right hand rocker button moves through the crimp specs one line at a time and the left hand rocker button moves one screen at a time.
- When the correct crimp specification is selected, press the highlighted selection and then the Load button and select OK to write the data to the ACT™ Controller.
- This will bring up the familiar crimp screen and the crimper can then be operated in the normal manner.



CC650 MIC MANUAL MICROMETER

The CC650 MIC is available with a manual micrometer in place of the ACT™ controller. Set up and adapter and die installation are identical to the CC650 ACT model.

The micrometer is a direct reading metric micrometer. With the micrometer set at zero, the die set will close to the fully closed diameter stamped on the face of the die. The number set on the micrometer will be the amount **ABOVE** the closed diameter of the die at which the dies will stop closing.

Example:

If the required final crimp diameter for the hose and fitting being crimped is 65.5 mm, the correct die set to use would be a 63 mm die set. The micrometer would be set at 2.5 mm as shown, and the final crimp diameter would be 65.5 mm (63 mm-closed die diameter plus 2.5 mm)

Opening and closing of the crimper head is controlled with the foot switch. Press and hold the foot switch until the crimp is complete and the dies stop closing.

Always check the hose and fitting with a caliper to be certain that the final crimp diameter is in accordance with the hose and fitting manufacturers specifications.



DIE INSTALLATION AND REMOVAL

Adapter Die Installation

160 mm to 99 mm Adapter Dies are furnished with the crimper. Adapter dies are held in place by the locking screws as shown in the illustration. Hydraulic dies can either be installed manually or with the die removal tool as shown. (84 mm adapter dies are also available)

The I.D. of intermediate adapter dies must match the O.D. of the corresponding adapter die or hydraulic die or accurate crimps can not be made.

Hydraulic Die Installation

- Install the 160 mm to 99 mm Intermediate Adapter Dies as shown making certain that the Intermediate Adapter Die I.D. matches the Hydraulic Die O.D.
- Remove the Hydraulic Dies from their holder with the magnetic die insertion tool as shown.
- The die size stamped on the face of the die should face toward the operator.

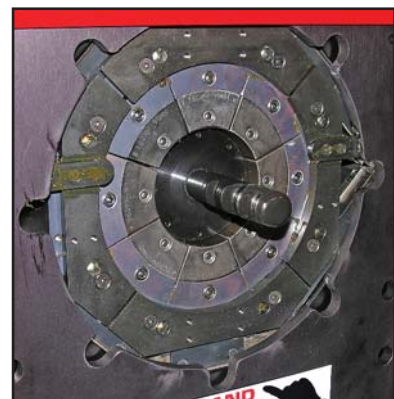
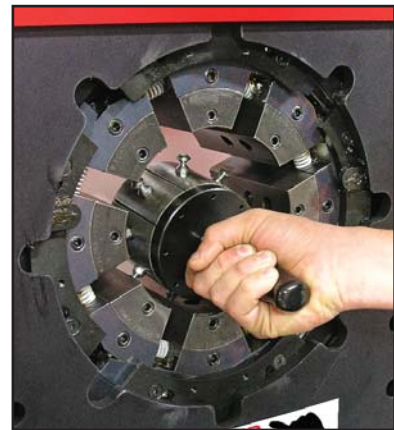
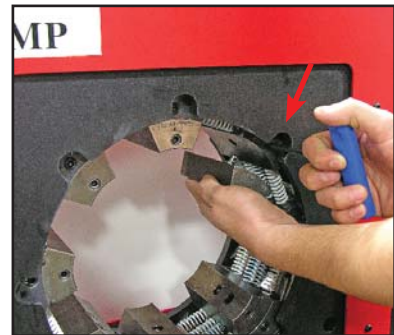
*Press the **CHANGE DIES** button on the ACT™ controller to easily open and close the master dies without affecting crimper settings.*

- Align the studs of the Hydraulic Dies with the holes in the Adapter Dies and with the crimper in die change mode **SLOWLY** close the crimper head on the die set.
- Bring the crimper head to a fully closed position and remove the die insertion tool.

The dies may also be inserted manually with the crimper head in the fully open position.

Proceed to the ACT™ operating instructions to set up the crimper for the hose and fitting being crimped, or adjust the manual micrometer to the correct crimp diameter.

For Hydraulic Die removal, place the crimper in die change mode and bring the crimper head to the fully closed position. Insert the die removal tool and open the crimper head releasing the Hydraulic Dies from their spring retention holes.



INITIAL SET UP AND PLC RESET

Initial Setup

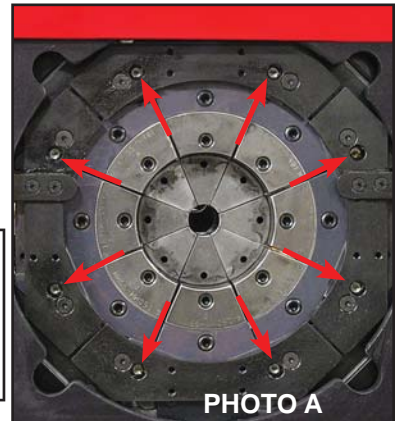
Check to be certain that the motor rotates in the direction of the arrow shown on the motor housing and that the voltage is correct as indicated on the tag attached to the plug. If motor rotation is opposite of the direction of the arrow, reverse any two hot wires in the electrical plug.

Damage to the pump can result if the motor does not rotate in the correct direction.

Check the oil level in the sight glass on the tank. 24 U.S. gallons of ISO 46 hydraulic oil are required to completely refill the tank.

Oil can be drained from either of the two ports at the bottom of the tank.

An additional oil cooler, while not normally required, can be plumbed into the two ports at the rear of the tank.



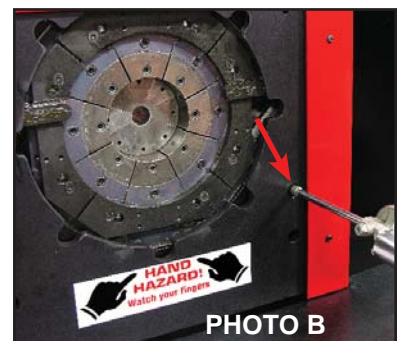
Flush Fitting Adapter

Lubrication

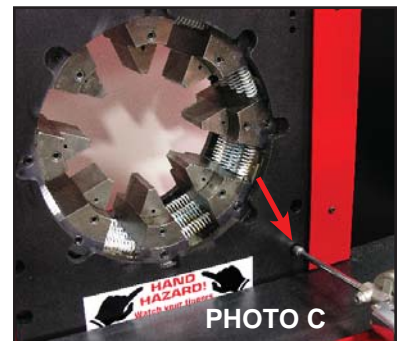
Lubricate the crimping head after each 100 crimping cycles or at the start of each shift if the crimper is used in a production setting. Use only a high pressure moly-di-sulfide grease and a grease gun with a flush fitting adapter.

Failure to lubricate the crimper can cause premature failure, loss of accuracy and may result in costly repairs to the crimper.

Bring the master dies to the fully closed position, and lubricate the master dies through the 8 holes in the protective plates as illustrated in Photo "A". With the dies still in the fully closed position grease the fittings visible through the two top grease holes in the face of the crimper as shown in Photo "B".



Bring the master dies to the fully open position and lubricate the crimper through the fittings visible through the two bottom grease holes in the face of the crimper as shown in Photo "C".

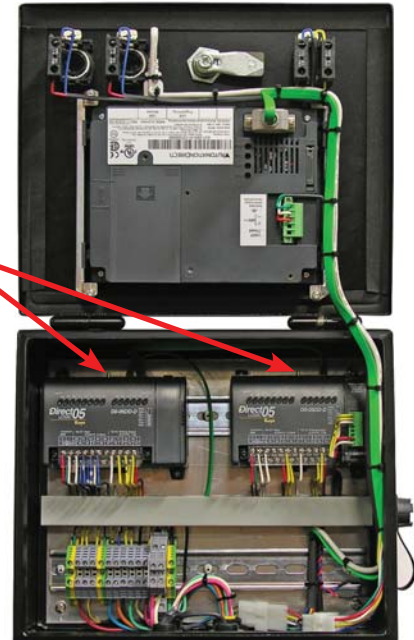


PLC Reset Procedure

The PLC (Programmable Logic Controller) requires a relatively constant source of electrical power. Power surges, outages or drops in power can cause the PLC to lose its settings. This may result in missing or misplaced information on the controller screen.

Resetting the PLC to its original settings is a simple procedure

- Turn the main power switch to OFF.
- Open the front of the Control Panel.
- Power up the crimper from the main power switch. The crimper must be powered on during the PLC reset procedure.
- Move the three position toggle switch on top of the PLC right to the STOP position and then left to the RUN position.
- Return the toggle switch to the center TERM position.
- Repeat for the other PLC Unit.
- Turn the main power switch to OFF and replace the front panel.
- The PLC and the crimper should now operate normally.



TROUBLESHOOTING

PROBLEM: CRIMPER WILL NOT RUN AT ALL

- Check the E-Stop switch to be certain that it is not depressed. A slight twist is required to release switch after it has been depressed.
- PLC (Programmable Logic Control) must be reset. See instructions on the previous page.

PROBLEM: CRIMPER RUNS BUT IS SLOW OR NON-FUNCTIONAL

- Check supply voltage to see that it matches the voltage specified on the tag attached to the crimper. Many performance problems are the result of low voltage or inadequate electrical service.
- Check motor rotation and be certain that the motor rotates in the direction of the arrow on the motor housing. For three phase units rotation can be reversed by switching any two wires in the plug.

PROBLEM: CRIMPER WILL CLOSE ON FITTING BUT DOES NOT DEVELOP POWER TO COMPLETE THE CRIMP

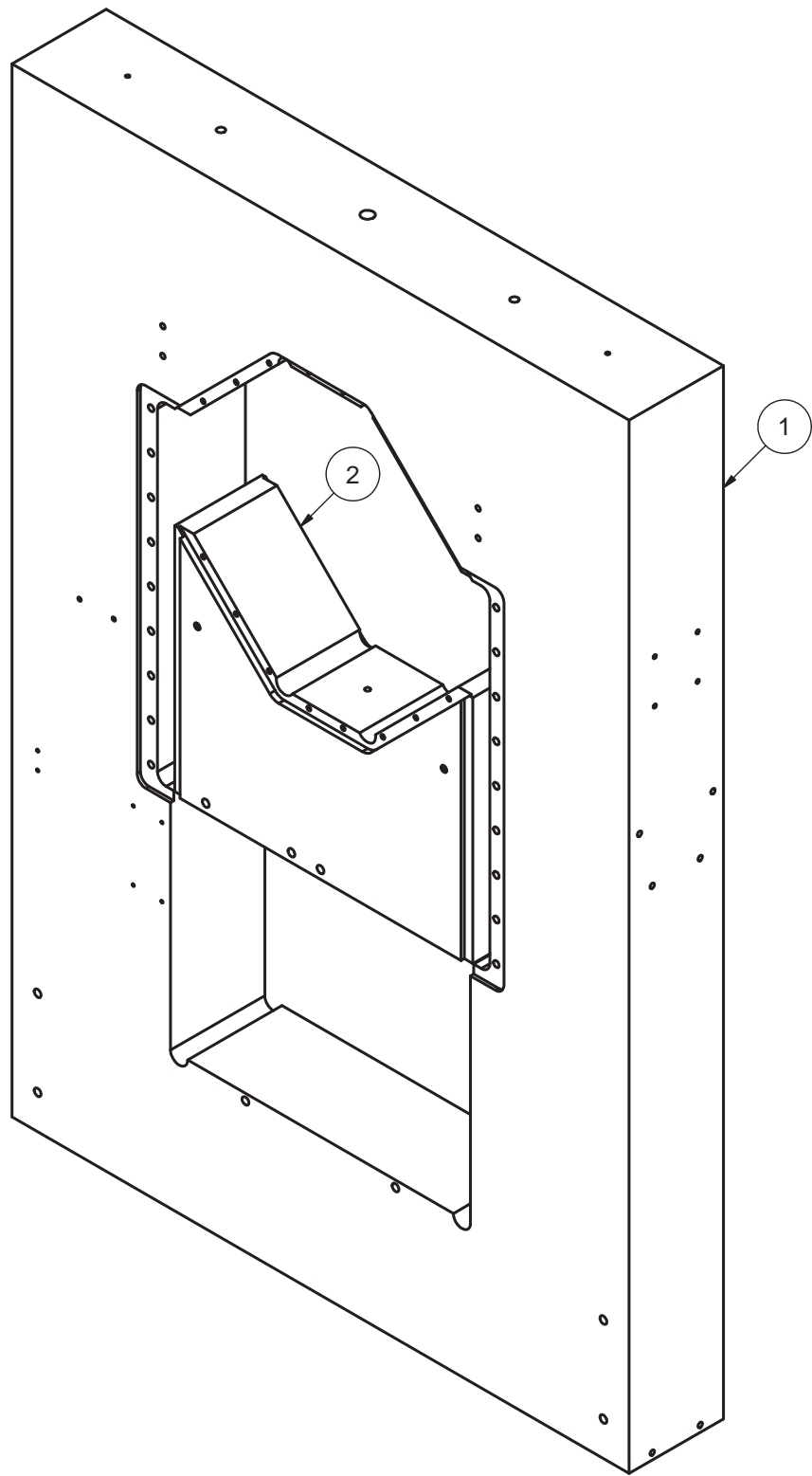
- Check oil level. Position dies to the fully open position and check oil sight gage in rear of machine. Be sure the oil level is in the middle of the sight glass. Use ISO 32 or 46 weight hydraulic oil.

PROBLEM: CRIMPER WILL NOT OPEN TO RETRACT POSITION IN AUTO MODE

- Retract position must be at least 3 mm larger than the final crimp diameter.

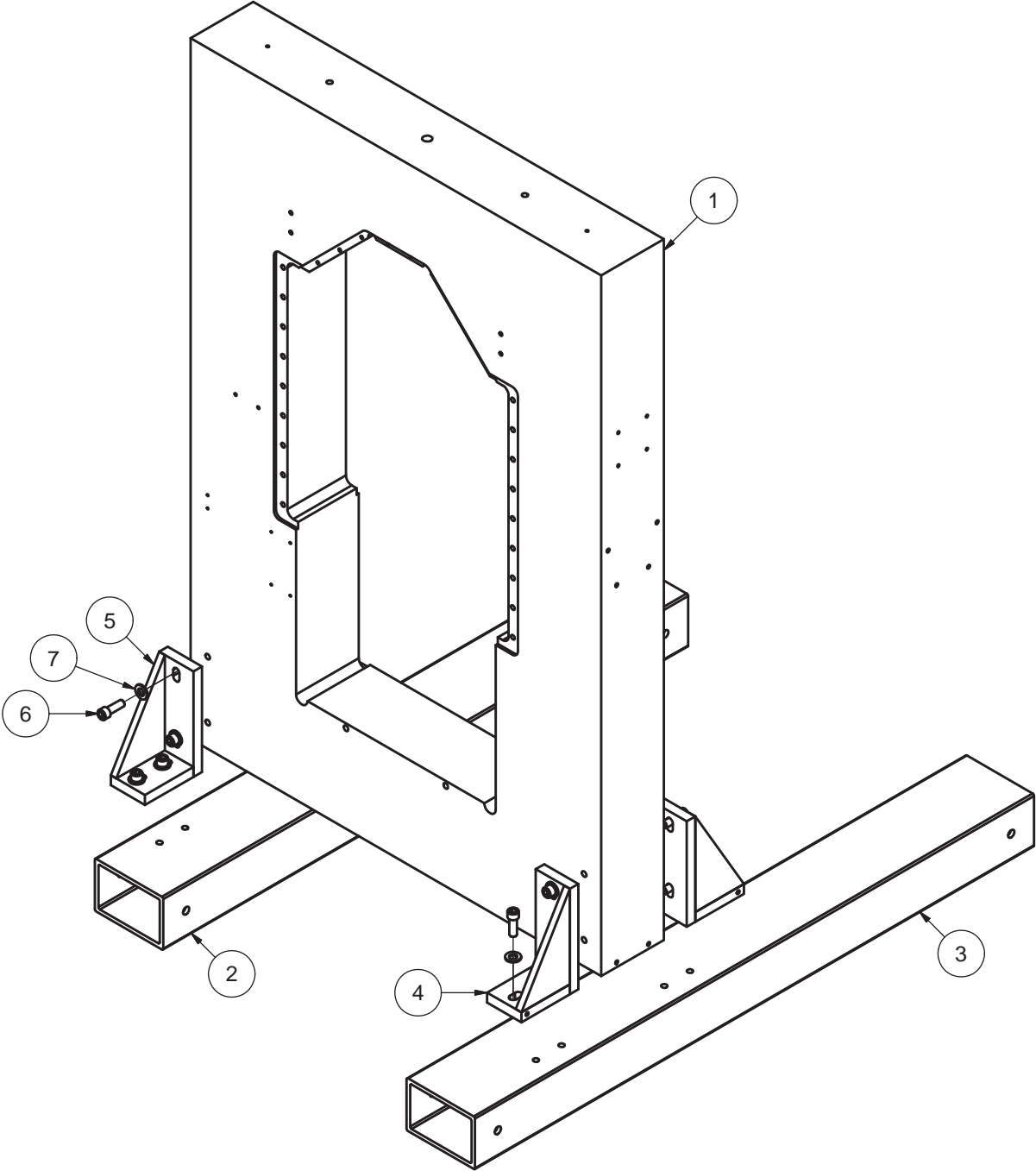
If problems persist contact Customer Service for additional troubleshooting assistance.

EXPLODED PARTS VIEW



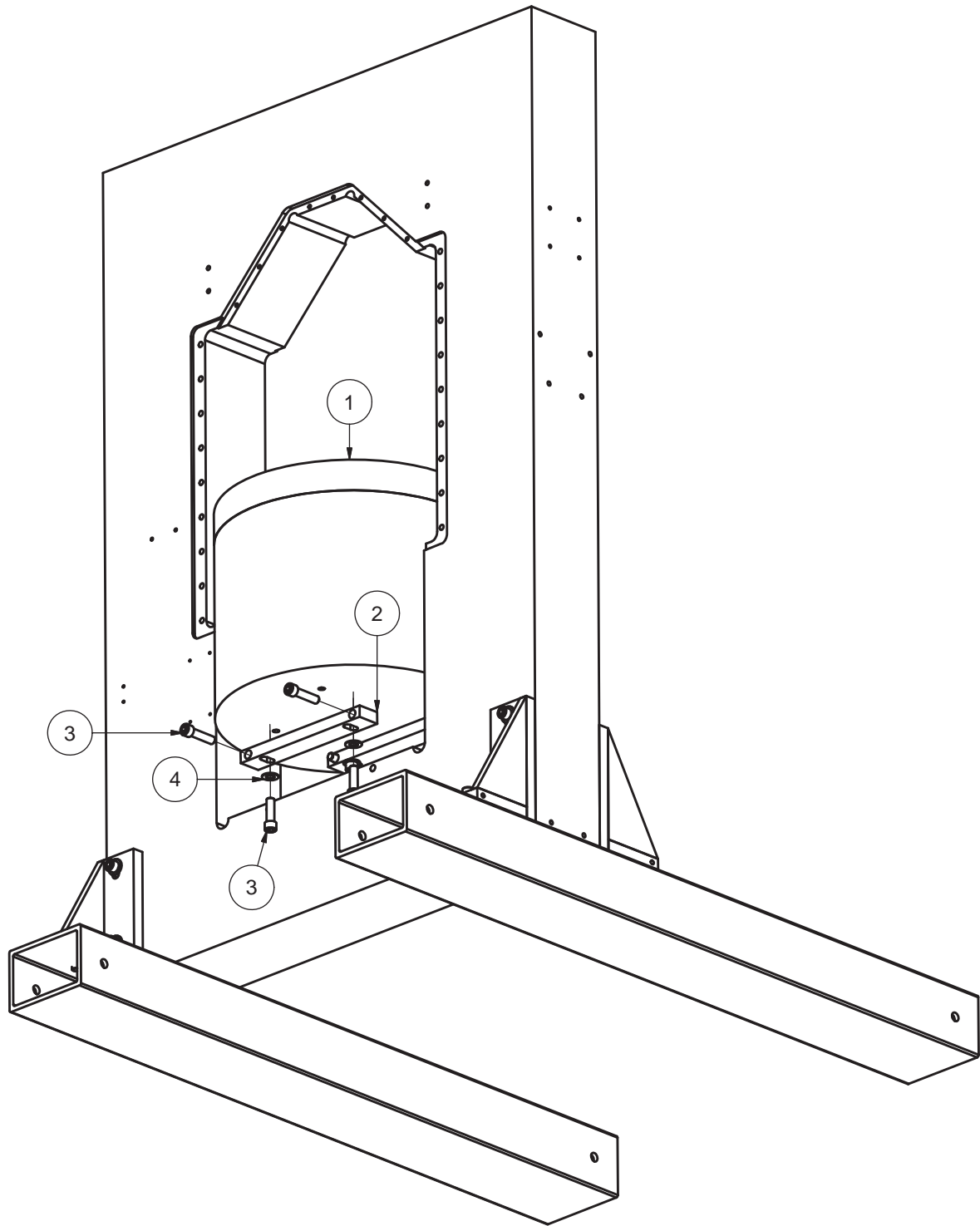
CC 650 Frame and Sliding V Block (103948)			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	103323	CC600 Frame	1
2	103324	CC600 Sliding V Block	1

EXPLODED PARTS VIEW



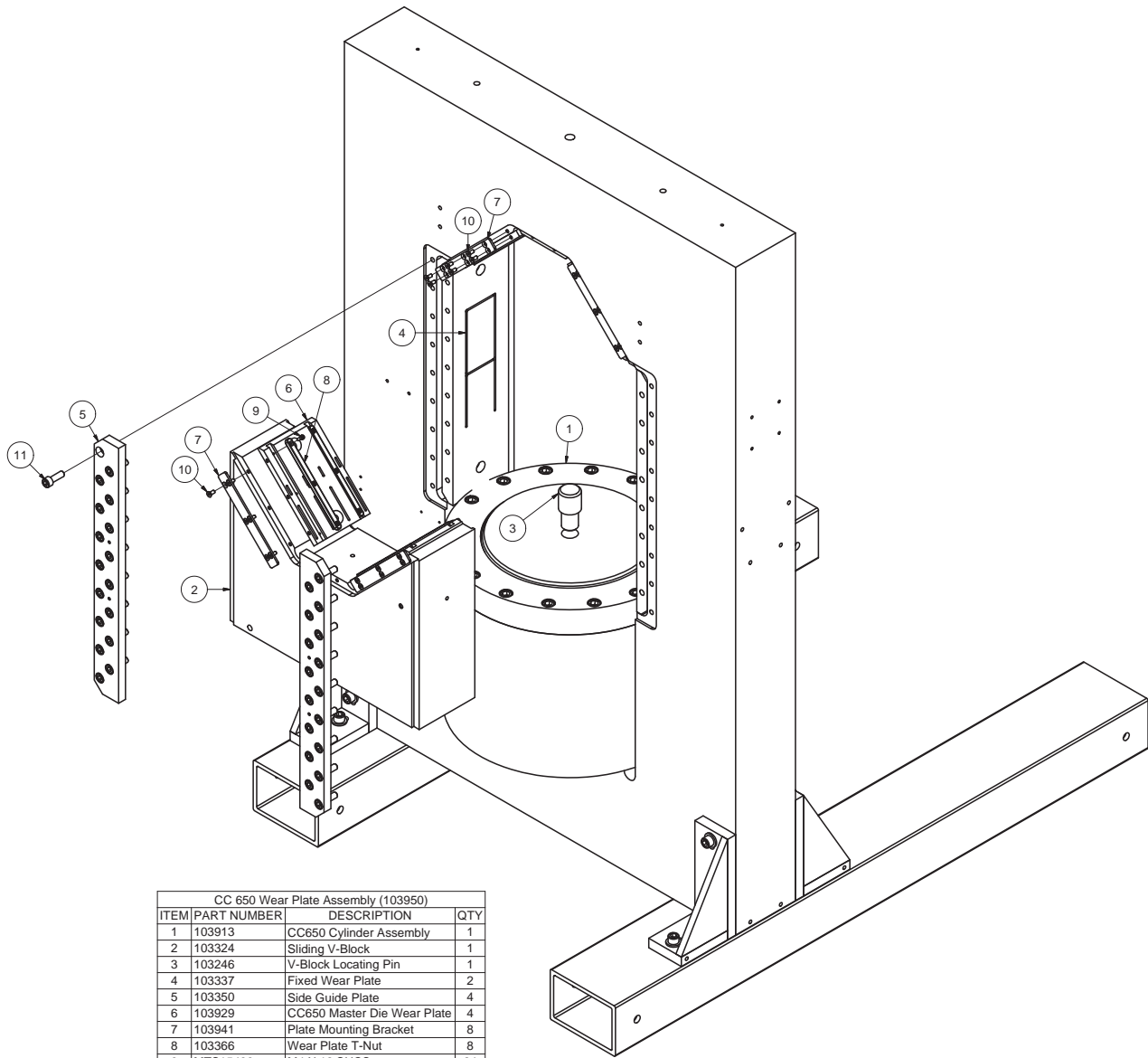
CC 650 Feet and Leg Assembly (103947)			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	103323	CC600 Frame	1
2	103377	CC600 Left Foot	1
3	103378	CC600 Right Foot	1
4	103376-R	CC600 Right Leg Assembly	2
5	103376-L	CC600 Left Leg Assembly	2
6	MTS15612	M12 X 35 SHCS	16
7	WS23558	1/2 Flat Washer	16

EXPLODED PARTS VIEW



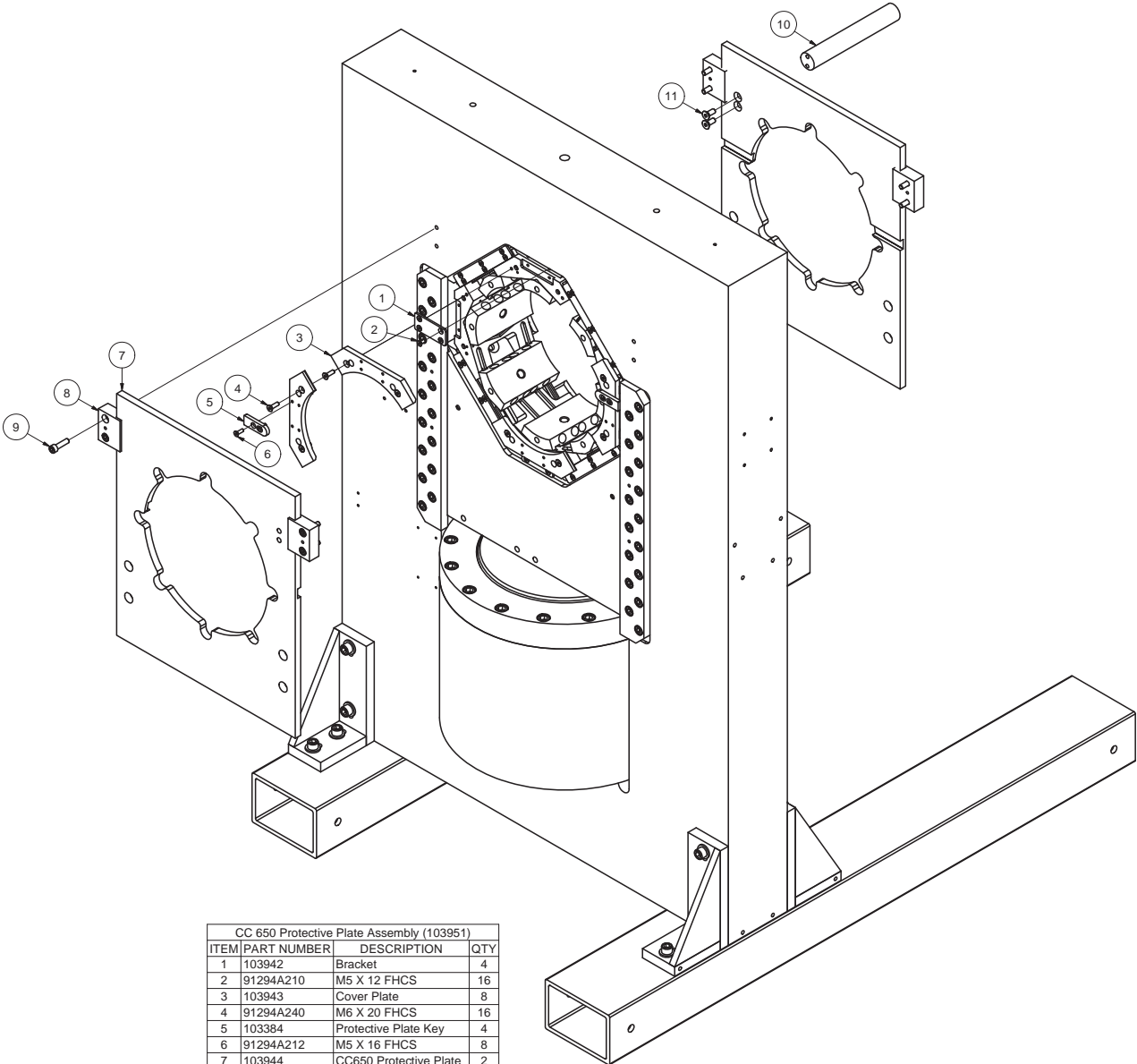
CC650 Cylinder Installation Assembly (103949)			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	103913	CC 650 Cylinder Assembly	1
2	103935	Cylinder Mounting Bracket	2
3	MTS15615	M12 X 50 SHCS	8
4	WS23558	1/2 Flat Washer	4

EXPLODED PARTS VIEW



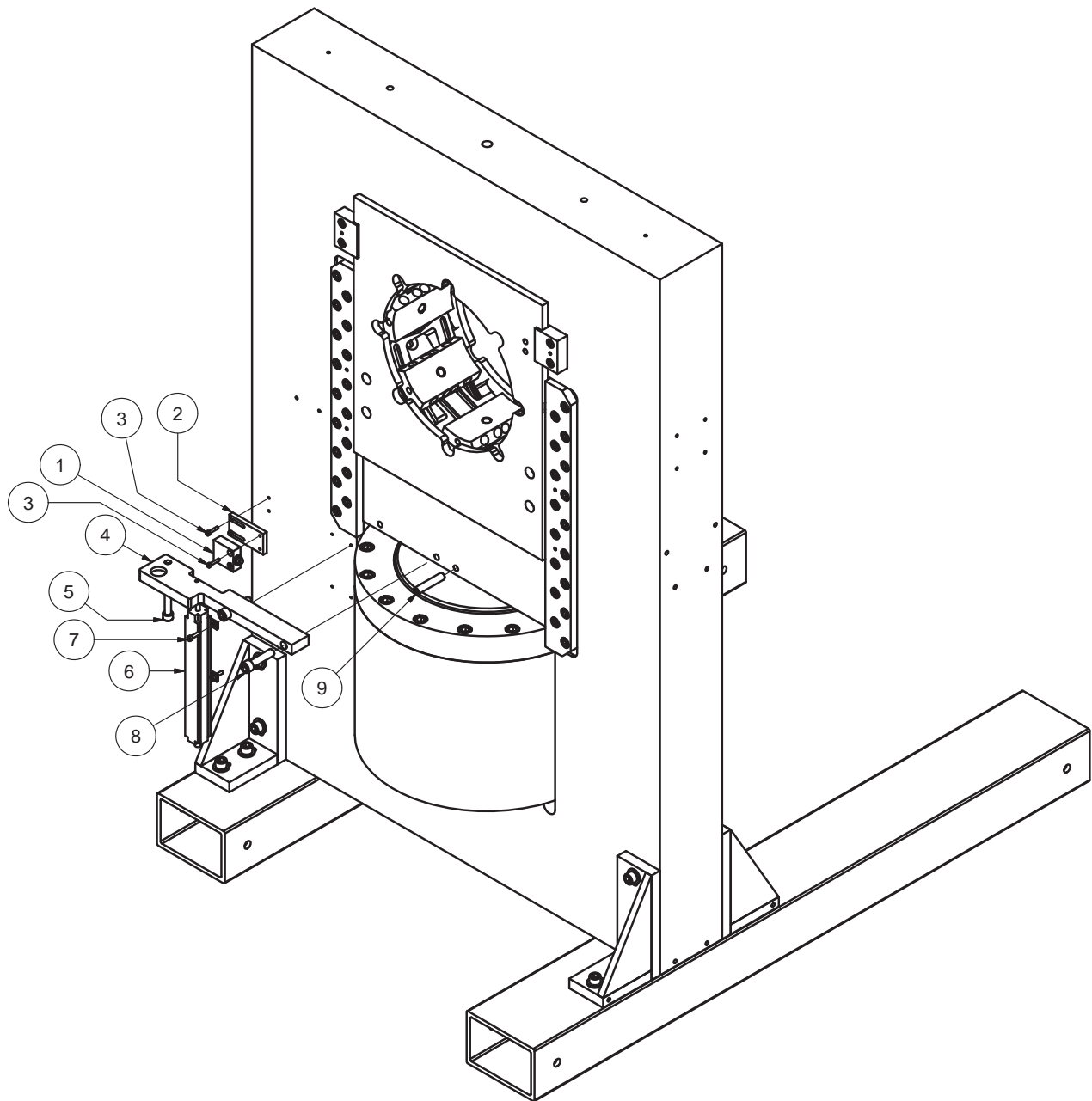
CC 650 Wear Plate Assembly (103950)			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	103913	CC650 Cylinder Assembly	1
2	103324	Sliding V-Block	1
3	103246	V-Block Locating Pin	1
4	103337	Fixed Wear Plate	2
5	103350	Side Guide Plate	4
6	103929	CC650 Master Die Wear Plate	4
7	103941	Plate Mounting Bracket	8
8	103366	Wear Plate T-Nut	8
9	MTS15499	M4 X 12 SHCS	24
10	91294A210	M5 X 12 FHCS	48
11	MTS15583	M10 X 30 SHCS	68

EXPLODED PARTS VIEW



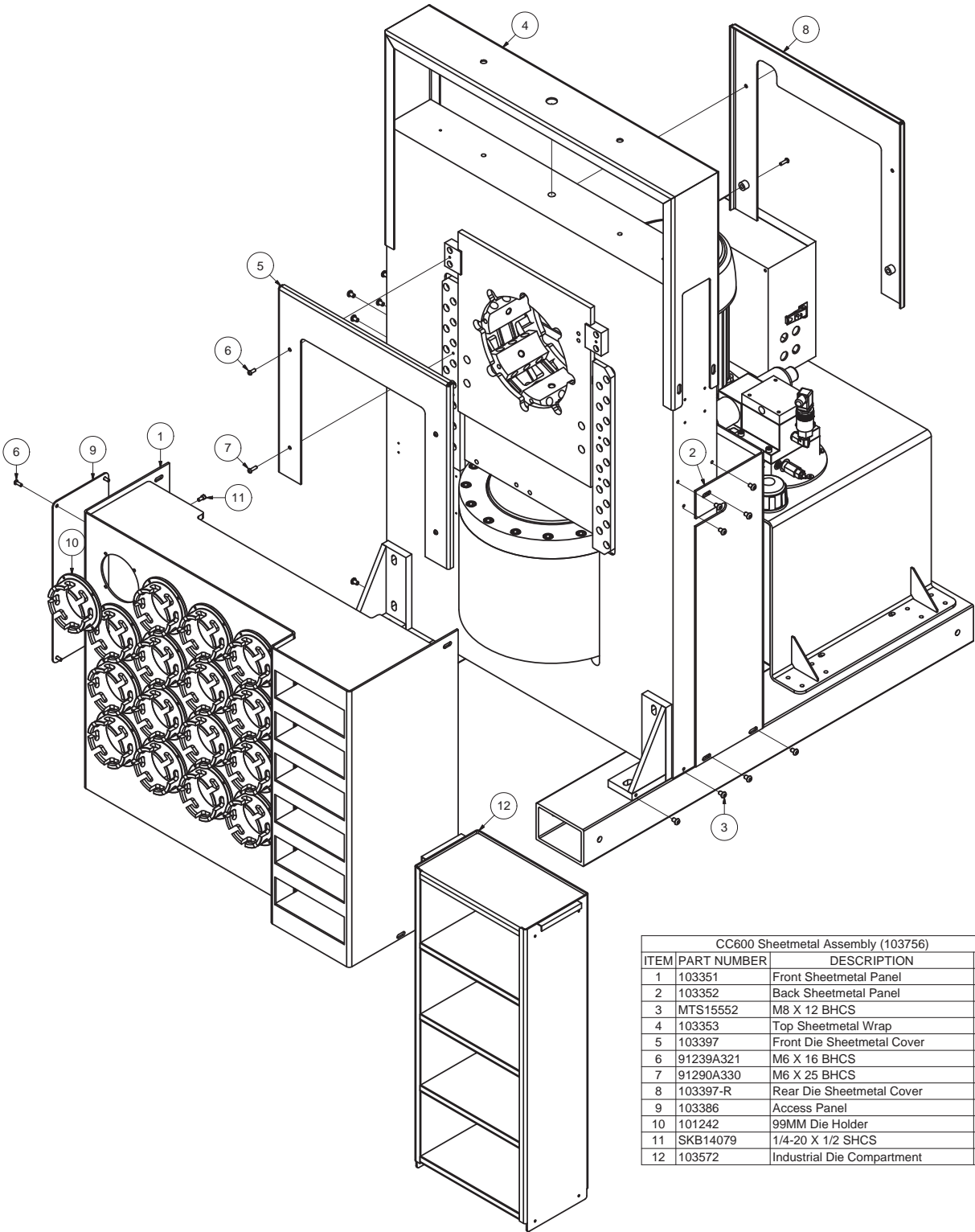
CC 650 Protective Plate Assembly (103951)			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	103942	Bracket	4
2	91294A210	M5 X 12 FHCS	16
3	103943	Cover Plate	8
4	91294A240	M6 X 20 FHCS	16
5	103384	Protective Plate Key	4
6	91294A212	M5 X 16 FHCS	8
7	103944	CC650 Protective Plate	2
8	103387	Alignment Tab	4
9	MTS15554	M8 X 30 SHCS	8
10	103391	Backstop Mount	1
11	91294A284	M8 X 20 FHCS	2

EXPLODED PARTS VIEW



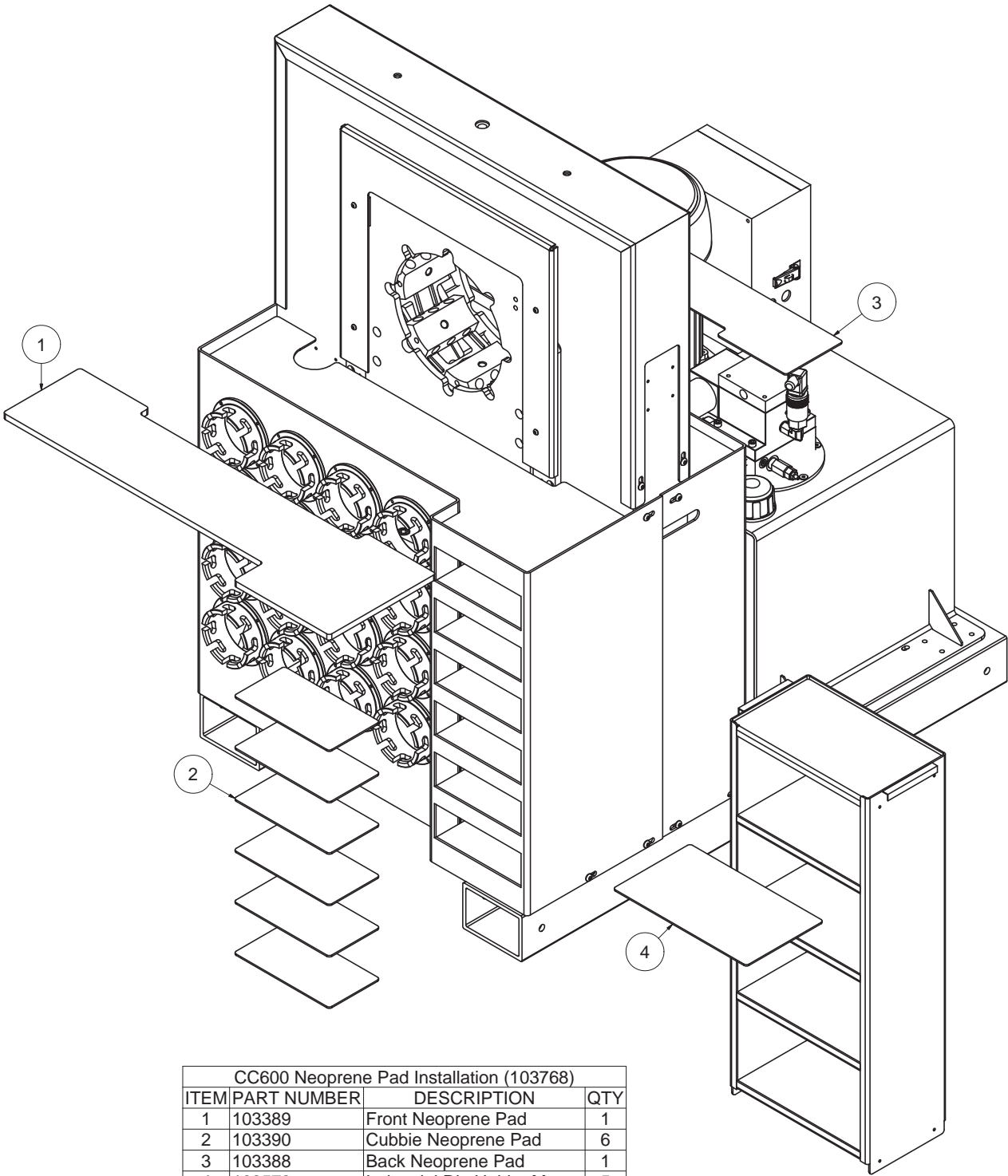
CC600/650 Potentiometer/Limit Switch Assembly (103952)			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	103473	Roller Limit Switch	1
2	103349	Limit Switch Adjustable Bracket	1
3	SKC2095	10-24 X 3/4 SHCS	4
4	103381	Potentiometer Bracket	1
5	91290A548	M10 X 100 SHCS	1
6	103472	CC600/1000 Linear Potentiometer	1
7	103472	M4 X 20 SHCS	4
8	MTS15615	M12 X 50 SHCS	2
9	91390A181	M12 X 70 Set Screw	1

EXPLODED PARTS VIEW

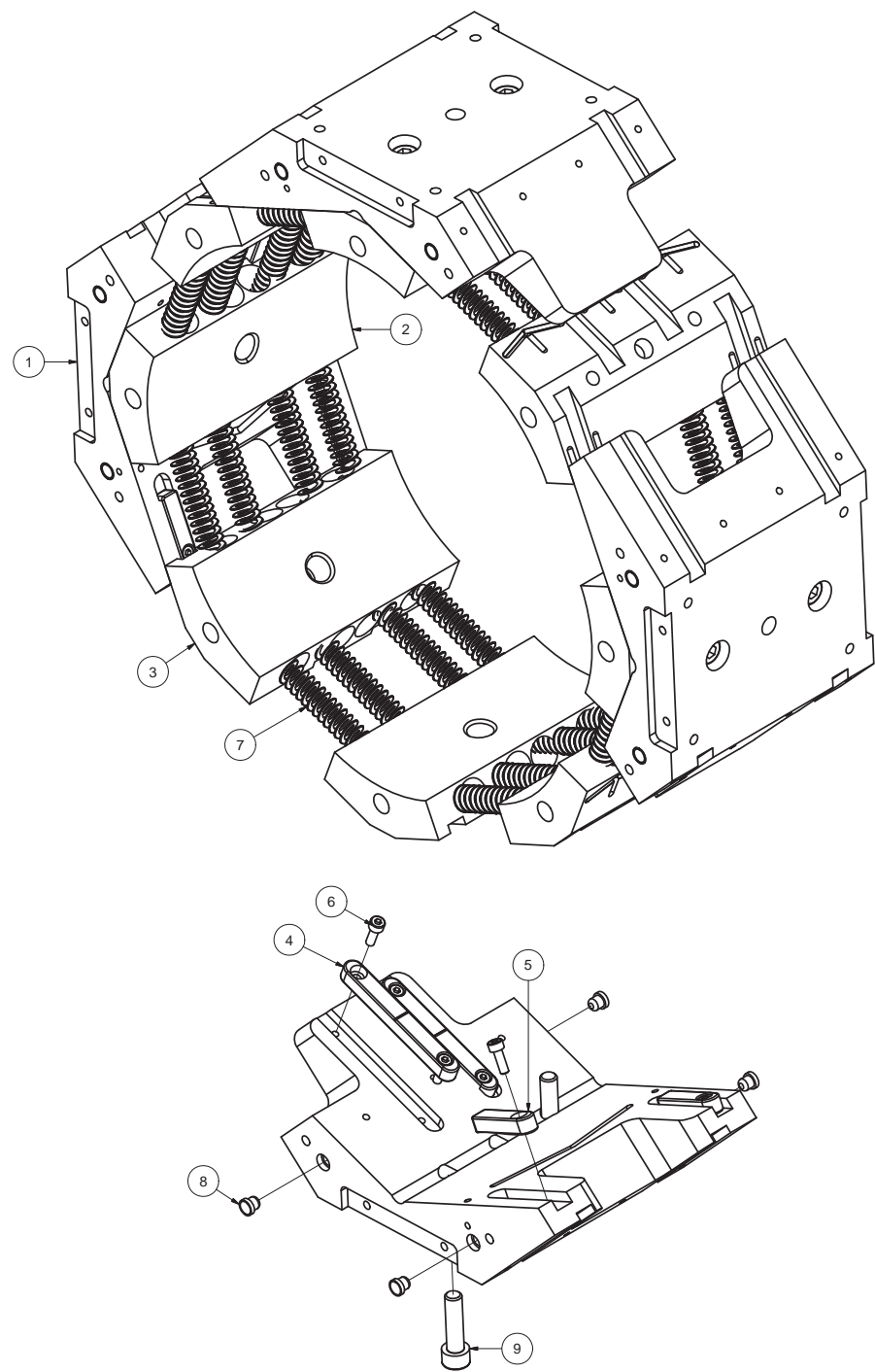


CC600 Sheetmetal Assembly (103756)			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	103351	Front Sheetmetal Panel	1
2	103352	Back Sheetmetal Panel	1
3	MTS15552	M8 X 12 BHCS	16
4	103353	Top Sheetmetal Wrap	1
5	103397	Front Die Sheetmetal Cover	1
6	91239A321	M6 X 16 BHCS	8
7	91290A330	M6 X 25 BHCS	4
8	103397-R	Rear Die Sheetmetal Cover	1
9	103386	Access Panel	1
10	101242	99MM Die Holder	16
11	SKB14079	1/4-20 X 1/2 SHCS	64
12	103572	Industrial Die Compartment	1

EXPLODED PARTS VIEW

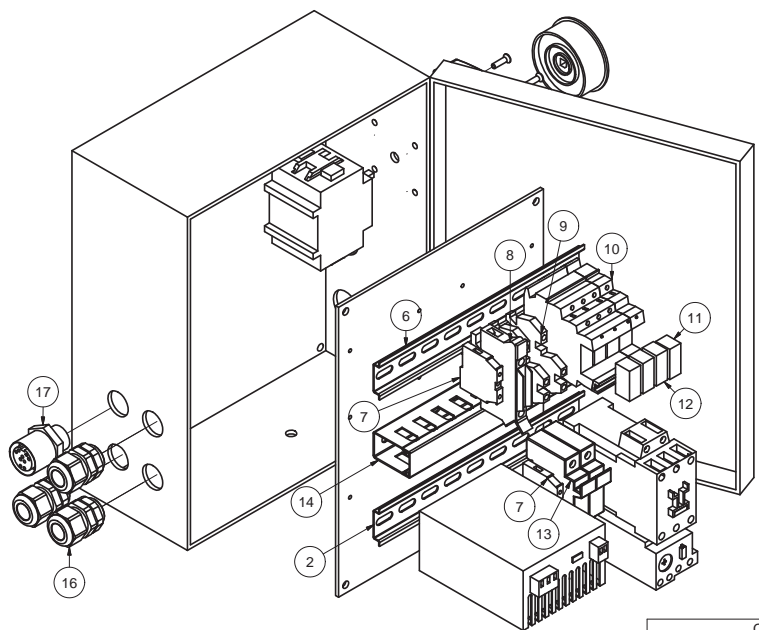


EXPLODED PARTS VIEW

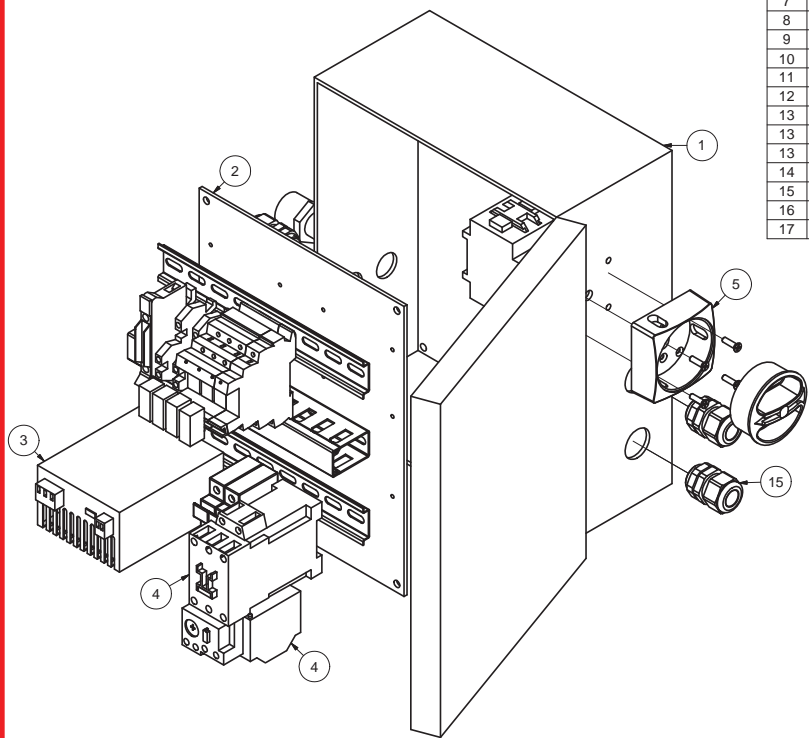


CC650 Master Die Assembly (103954) Current as of 11/2/12			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	104128	CC650 Master Die Carrier	4
2	103930	CC650 Master Die Shoes	4
3	103930-R	CC650 Master Die Shoes	4
4	103367	Medium T-Nut	8
5	103464	Short T-Nut	8
6	91290A148	M4 X 12 SHCS	24
7	103955	Master Die Spring	32
8	102793	6mm Flush Style Grease Fitting	16

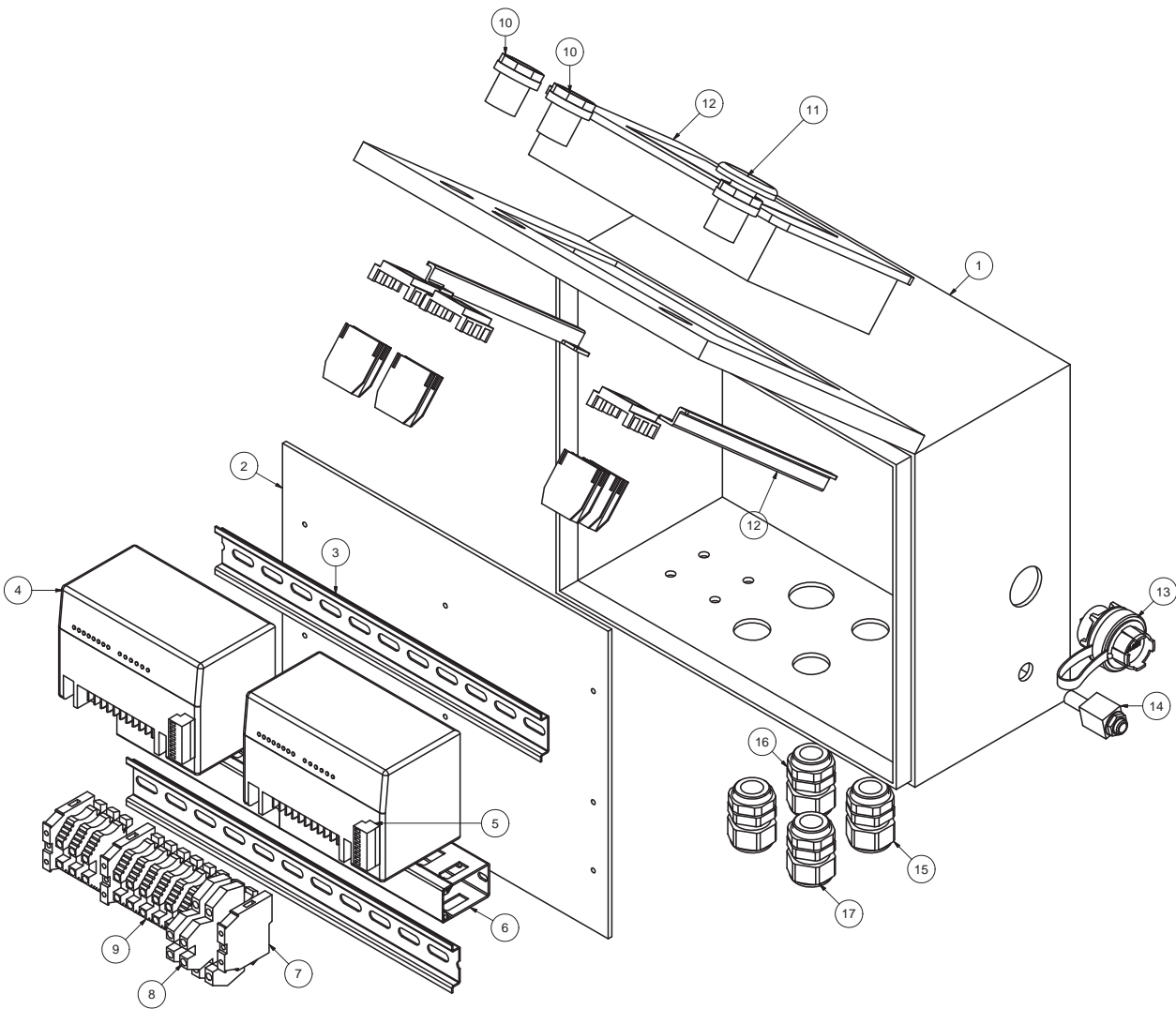
EXPLODED PARTS VIEW



CC600 Electrical Enclosure Assembly (103759)			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	103796	Electrical Enclosure	1
2	103797	Electrical Enclosure Circuit Panel	1
3	102371-120/230	230V Power Supply	1
3	102371-480	480V Power Supply	1
4	103827-2500	230VAC-5HP/7.5HP Overload Relay	3
4	103827-1300	480VAC Overload Relay	1
4	102369-230-25A	230VAC-5HP/7.5HP Motor Contactor	1
5	103151	63 Amp Disconnect Switch	1
5	103050	50 Amp Disconnect Switch	1
6	103788	8.75" Din Rail	2
7	102365	Ground Terminal Block	2
8	102367	Fuse Block	1
9	103775	2 Level Terminal Block	2
10	102368	Relay Block	4
11	102368	White Relay Block (Motor)	1
12	103782	Black Relay Block	3
13	103777	Midget 5 AMP Fuse Holder (230V)	1
13	103882	Midget 5 AMP Fuse Holder (480V)	1
13	103778	Midget 5 AMP Fuse	2
14	103868	8.75" Plastic Wire Duct	1
15	103799	3/4" NPT Cord Grip	2
16	103798	1/2" NPT Romex Cord Grip	3
17	103780	9 Pole Female Receptacle w/Pigtails	1

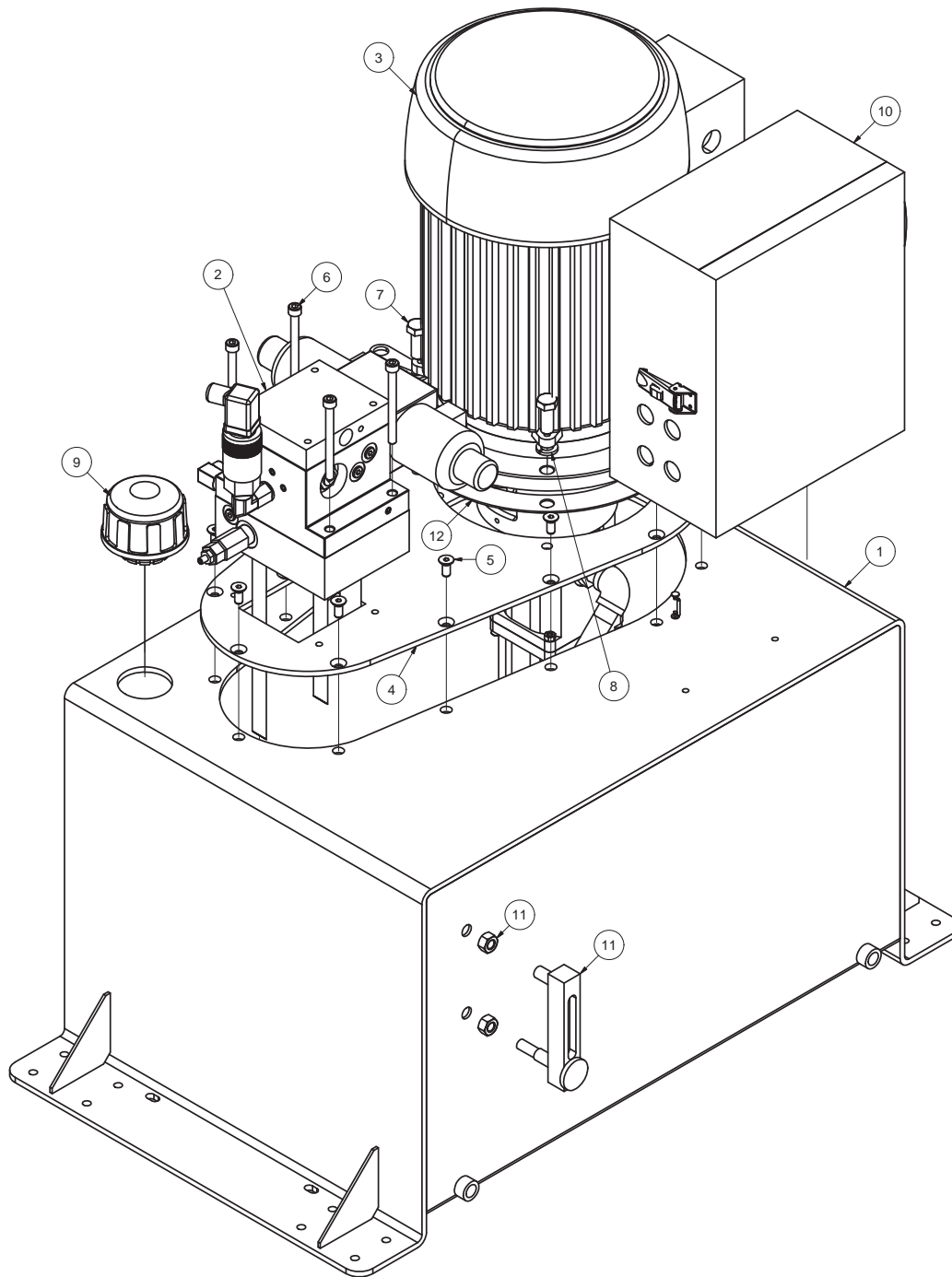


EXPLODED PARTS VIEW



CC600/1000/Nut Crimper Tower Box Assembly (103761)			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	103802	CC600/1000/Nut Crimper Tower Box	1
2	103761	Tower Box Electrical Panel	1
3	103788	11" Din Rail	2
4	102370-PLC	DL05 PLC	2
5	102370-ACT	0-10V Analog In/Out Card	1
6	103868	11" Plastic Wire Duct	1
7	102365	Ground Terminal Block	3
8	103775	2 Level Terminal Block	2
9	103785	Terminal Block	9
10	101545-GREEN	Open/Close Push Button	2
11	101545-RED	Emergency Stop Button	1
12	102600-ACT	6" Touch Screen Text Panel	1
13	103792	USB Connector	1
14	103874	Foot Pedal Receptical	1
15	103828	3/4" NPT Cord Grip	1
16	103800	1/2" NPT Romex Cord Grip	1
17	103801	3/8" NPT Cord Grip	2

EXPLODED PARTS VIEW



CC600 Power Unit Assembly (103758)			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	103278	24 Gallon Tank	1
2	102523	CC1000/600 Manifold Block Assembly	1
3	103760	CC1000/600 Motor and Pump Assembly	1
4	102618-03	Reservoir Top Plate	1
5	SKF14342	5/16-18 x 3/4 FHCS	12
6	91290A466	M8 x 90 SHCS	4
7	NC51622-Z	1/2-13 x 1 1/4 HHS	4
8	WLK3508-Z	1/2 Lock Washer	4
9	103048	Venter Filler Cap	1
10	103759	Electrical Sub Assembly	1
11	103808	Sight Filler Glass	1
12	101539-01	Flange Gasket	1

CC650 WARRANTY



CustomCrimp “No-Nonsense” Warranty Statement

All CustomCrimp Products are warranted to be free of defects in workmanship and materials for one year from the date of installation. This warranty ends when the product becomes unusable for reasons other than defects in workmanship or material.

Any CustomCrimp Product proven to be defective in workmanship or material will be repaired or replaced at no charge. To obtain benefits of this warranty, first, contact Warranty Repair Department at Custom Machining Services at **(219) 462-6128** and then deliver via prepaid transportation the complete hydraulic product to:

**ATTN: WARRANTY REPAIR DEPT.
Custom Machining Services, Inc.
326 North Co. Rd 400 East
Valparaiso IN 46383**

If any product or part manufactured by CustomCrimp is found to be defective by CustomCrimp, at its option, CustomCrimp will either repair or replace the defective part or product and return via ground transportation, freight prepaid. **Custom Crimp will not cover any incoming or outgoing freight charges for machines sold outside The United States.**

This warranty does not cover any product or part which is worn out, abused, altered, used for a purpose other than for which it was intended, or used in a manner which was inconsistent with any instructions regarding its use.

Electric motors are separately warranted by their manufacturer under the conditions stated in their separate warranty.

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