



High Frequency Inverter Resistance Spot Welder

Instruction Manual



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Quick start instructions



WARNING! Before turning the welder on, make sure it is connected to proper electricity by certified people. Connect air to the air inlet on back panel.

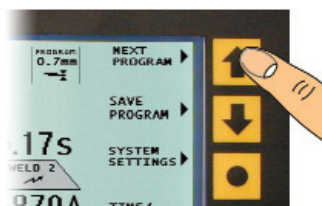
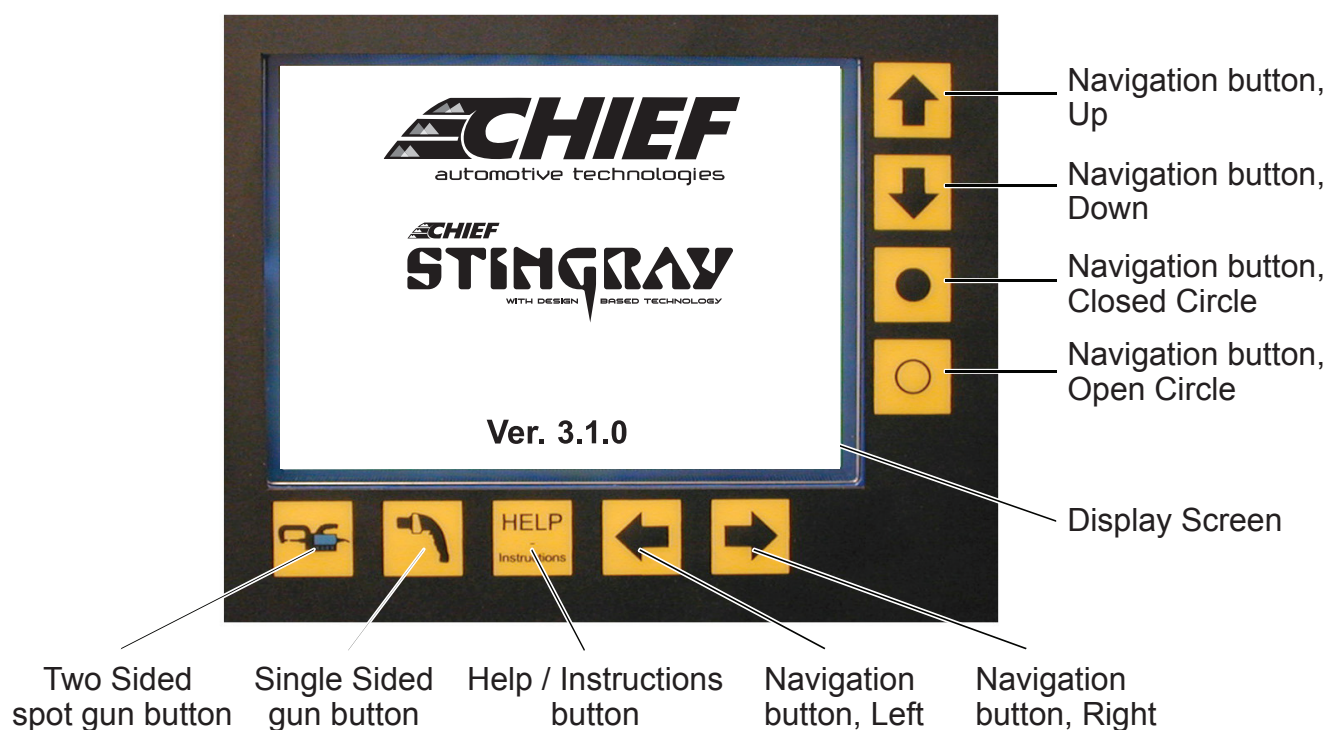


Figure 1.1



Figure 1.2

1. Set Circuit Breaker on the back panel to ON.
2. Turn Power Switch clockwise to ON.
3. Connect Air to the air inlet located on the back panel.
4. During the test procedure a "Push Help to change language" prompt appears on the display screen . Click the Help button to access the System settings screen where the language can be changed. Select desired language by clicking the "Change Language" button, then exit.
5. After test procedure, the software defaults to HSS/Galv. Two Sided weld mode.
6. The welder is now ready to operate. Make sure air pressure is set at 90 PSI. Place the welding gun at the weld area and press the lower trigger button to weld. The upper weld button is for spreading the electrodes open for better access.
7. There are 6 different power levels pre-programmed into the Stingray. The software defaults to 0.7mm weld program. That is the thickness of one of the two layers of metal you are welding . To change between pre-set power settings press Navigation button, Up (fig. 1.1). The programs will switch between 0.7, 1.0, 1.2, 1.5, 2.0 and 2.5mm.
8. To go to the next weld mode: "Mild Steel" press the Navigation button, Right (fig. 1.2). The same weld power levels are available in each weld mode. Navigate with the Right and Left arrow buttons and select weld power with the "Next Program" button (Navigation button, Up).
9. Press the "Help" button anytime for instructions.



1 Introduction

Congratulations on acquiring your new Stingray welder!
Chief Automotive looks forward to supporting you.

You have a welder and support group that will increase your productivity. The integrated features, ease of use, speed and quality welds that your Stingray offers will become an important part of your business.

The following information will be needed when you call Chief Automotive:

* MODEL TYPE: Stingray

* SERIAL NO: _____

The serial number is located on the back of the unit.

For parts or service contact your local Chief distributor,
call: Toll free: 877-644-1044
for Inside Sales Support
Visit Chief On-Line: www.chiefautomotive.com

The Stingray Spot welder is used by body shops to duplicate the welding procedure used by the car manufacturers. Use of the equipment that is contrary to the instructions in this manual can cause personal injury and/or machine damage.

Chief Automotive can in no way be held responsible for intentional or unintentional damage, and consequent unlimited loss of profit, loss of income, loss of business opportunity, loss of use, etc. that originates from incorrect use of this equipment or its use in a manner not intended.

Warranty

Chief Automotive offers a two-year guarantee from the date of delivery of the new welder. This guarantee covers material defects and assumes normal care and maintenance.

The guarantee assumes that:

- The equipment is correctly installed and inspected
- The equipment has not been altered or rebuilt without approval from Chief Automotive.
- Genuine Chief Automotive spare parts are used to make repairs.
- Operation and maintenance has been carried out according to the instructions in this manual.

All claims on warranty must verify that the fault has occurred within the guarantee period, and that the unit has been used within its operating range as stated in the specifications. All claims must include the product type and serial number. This data is stamped on the name plate.

Note: This instruction manual provides advice as well as instructions for installation, operation, maintenance and troubleshooting.



IMPORTANT! Read this manual carefully to become familiar with the proper operation of the welder. Do not neglect to do this as improper handling may result in personal injury and damage to the equipment.

The drawings in this manual are presented for illustrative purposes only and do not necessarily show the design of the equipment available on the market at any given time. The equipment is intended for use in accordance with current trade practice and appropriate safety regulations. The equipment illustrated in the manual may be changed without prior notice.

The contents in this publication can be changed without prior notice.

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Conformity with directives and standards:
Stingray complies with CE standards.

2 Safety

2.1 General

The Stingray welder has been designed and is tested to meet strict safety requirements. Please read the following instructions carefully before operating the Stingray and refer to them as needed to ensure the continued safe operation of the welder.

Information provided in this manual describes the suggested best working practices and should in no way take precedence over individual responsibilities or local regulations.

The Stingray Spot Welder is designed to comply with all applicable safety regulations for this type of equipment. During operation, it is always each individual's responsibility to consider:

- Their own and other's personal safety.
- The safety of the welder through correct use of the equipment in accordance with the descriptions and instructions provided in this manual.

By observing and following the safety precautions, users of the Stingray Spot welder will ensure safer working conditions for themselves and their fellow workers.

2.2 Warnings and important notices

The following types of safety signs are used on the equipment and in Chief's instruction manuals:



Prohibited.

Prohibits behaviour that can cause injury.



Command.

Calls for a specific action.



Warning.

Notice of personal injury risk and or damage to equipment.

The following warnings and important notices are used in the instruction manual:



WARNING! Do not operate or place the welder near water, in wet locations or outdoors. Risk for injuries or damage to the welder.



WARNING! Do not place the welder on unstable or uneven ground. The welder might tip causing personal injuries or serious damage to the welder.



WARNING! All electrical connections must be made by a qualified electrician. Risk for electrical shock.



WARNING! Loose cables and hoses present tripping risks. Risk for injuries.



WARNING! Make sure to use welding goggles when spot welding. The sparks might otherwise injure the eyes.



WARNING! Sparks from welding could start a fire. Risk for injuries.



WARNING! Risk for damage to materials close to the weld, e.g to glass or textiles.



WARNING! For proper cooling efficiency, never operate the welder without connecting it to the compressed air source.



WARNING! All service and maintenance must be carried out by Chief service personnel and service support. Risk for electrical shock.



WARNING! Unplug the welder from the wall outlet before servicing, cleaning or maintenance. Risk for electrical shock.



IMPORTANT! The Stingray welder may only be used by qualified personnel. The user of the welder must have knowledge of spot welding and of alignment of collision-damaged vehicles.



IMPORTANT! Do not turn off the welder while cooling is activated!



IMPORTANT! The air must be clean and free from oil and moisture. Use filter.

2.3 Safety devices

When the Spot Gun is used continuously, the welding cables and the power transformer get hot. To prevent the welder from malfunctioning due to overheating, it is cooled using the built-in air system.

2.3.1 Cooling



Figure 2.1



Figure 2.2

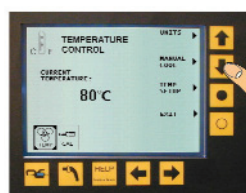


Figure 2.3

Stingray features an air cooling system that cools all four welding cables. There are two different Cooling Modes: "AUTO" (default) and "MANUAL". In the "AUTO" mode, the air cooling system turns on automatically after 15-30 welds and forced air starts to flow through the cable. In the "MANUAL" mode the cooling system operates continuously.

To switch to "MANUAL" mode:

- 1) Restart the software and press "HELP" button while start-up screen is displayed. "System Settings" screen will display (fig. 2.1).
- 2) Select "System Settings" by pressing the Navigation button, Up (fig. 2.2).
- 3) Select "Manual Cooling" by pressing the Navigation button, Down (fig. 2.3). AIR COOLING will activate.

2.3.2 Overheat protection



Figure 2.4

The built-in overheat protection is designed to prevent damage to the welder caused by overheating. The system will automatically shut off the welder when a pre-programmed temperature is reached (fig. 2.4). DO NOT turn off the welder! It needs the cooling air to cool the machine faster. Wait until the display returns to normal (usually 4-8 min.) Shorter duty cycles (due to short weld times and "rest" periods between welds) will allow the cooling system to function better and may prevent the auto-shut-off. (Consistently check weld strength by performing destructive tests).



IMPORTANT! Do not turn off the welder while the cooling system is activated!



IMPORTANT! If the thermal breaker has switched off the welder, please contact Chief at 800-445-9262 ext. 6102

3 Installation

3.1 General

The Stingray Spot welder is inspected and tested prior to leaving the factory to guarantee consistent quality and the highest possible reliability. Follow the installation tips and operating instructions below to ensure user safety and proper welder performance.



WARNING! Do not operate or place the welder near water, in wet locations or outdoors. Risk for injuries or damage to the welder.



WARNING! Do not place the welder on unstable or uneven ground. The welder might fall causing personal injuries and damage to the welder.



IMPORTANT! It is the responsibility of the owner to ensure that the equipment has been installed as specified in the instructions provided. It is also the owner's responsibility to ensure that the welder is inspected in accordance with applicable regulations before it is put into service.

A grounded electrical plug must be installed (*refer to section 3.4 "Connection of electrical supply"*).

3.2 Packaging and delivery inspection

Check the contents of the shipping container against the packing list, consignment note, or other delivery documentation to verify that everything is included and in the correct quantity. Check the Stingray Spot Welder carefully to make sure that no damage has occurred during transport. If anything is damaged or missing, the welder may be unsafe to use until the part is repaired or replaced. If anything is missing, please contact Chief. Remove all packaging material from the welder.

3.3 Welder assembly



Figure 3.1

For your convenience, Stingray welder ships fully assembled.

Due to differences in wiring codes and connection methods, no electrical plug comes with the welder. Consult a certified electrician for proper installation of the electrical plug.

Insert the support arm (boom) as shown in *Figure 3.1*

3.4 Connection of electrical supply

The Stingray Spot Welder requires one of the following voltage / frequency combinations:

- ✓ 208-240V 50/60 Hz U.S.A., Canada, Japan OR
- ✓ 400-420V 50/60 Hz Europe, Australia

Note: Make sure that the facility supply voltage and frequency are the same as shown on the welder name plate (see section 4.2 “About your welder”).

The power supply must have a ground connection. The supply must also be protected as follows:

- ✓ The 208-240V 3-Phase or Single-Phase require 60A breaker.
- ✓ The 400V and 420V supply require a 32A slow blow fuse (Circuit breaker 32D).



WARNING! All electrical connections must be made by a qualified electrician. Risk for electrical shock.

1. Connect the green wire to ground.

Note: Make sure that the supply cable is at least 6 AWG at 208V and 400 V.

3.4.1 Electrical Plug / Extension cords

2. If an extension cord is used with the welder, ensure that the length of the extension cord does not exceed 10 m (30 ft) and it meets the specifications of Item 1 above. The cord must also be grounded. Consult an electrician for safe and proper installation of the electrical plug.

NOTE: When connecting the welder to Single-Phase input power, install Red and White wires. Connect Green to earth ground! **Leave out the black wire.** Insulate and store the black wire properly.

3.5 Connection of pneumatic air supply

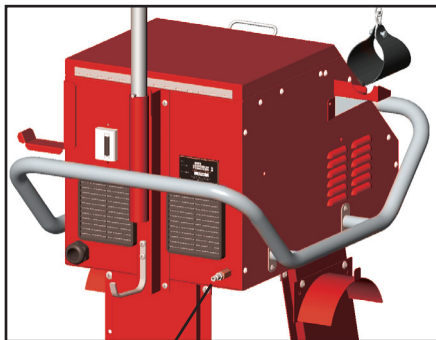


Figure 3.2

Air supply port

The Stingray Spot welder must be connected to a pneumatic air network.

1. Connect the Stingray to the air supply via the threaded input port at the rear of the welder using a standard connector.
2. If not already set, adjust the air pressure setting on the welder front panel to 60 PSI (4-5 bar) (refer to section 4.5 “Setting the pneumatic air pressure”).



IMPORTANT! The air must be clean and free from oil and moisture. Use a filter.

4 Operation

4.1 Before you begin welding

Before you begin welding, be sure to read and understand the following instructions.

The Stingray is a state-of-the-art Inverter Resistance Spot Welder that was designed for the collision repair industry. It duplicates the welding procedure used by the car manufacturers. It is important to understand the design and function of this welder before operating it.

ELECTRICITY ONLY: The Stingray uses only electricity to create the welds unlike the MIG welder which uses an arc from a feeding wire to build a weld nugget using inert gas and the feeding wire material.

PRESSURE: The Stingray has a built in air cylinder that compresses the Double-Sided Gun's welding tips together automatically when triggered. The compression is an important part of a good resistance weld. The pressure is adjustable from the Control Panel. The optimum welding pressure varies between 60-90 PSI (4-6.5 BAR). 90 PSI seems to be a common starting pressure. As a rule, increase pressure with thicker metals but remember that too much pressure could decrease the resistance of the metal between the electrodes, resulting in poor weld penetration.

CURRENT: Another important aspect of a weld is the current applied through the work piece. A weld is created when a large current is transferred through the layers of sheet metal. The resistance in the metal causes the area to heat up and fuse the sheets together in a nugget.

WELD PROGRAM: Maintaining the air pressure after the current shuts off makes the weld cool down under pressure resulting in a harder, stronger weld. This feature is built into the Stingray weld control program and is engaged automatically during a weld cycle.

TIME: The Timer controls the duration of the current applied during the weld cycle. The ideal is to get a weld that uses higher current and shorter time to control heat buildup.

4.2 About your welder

4.2.1 Technical Specifications

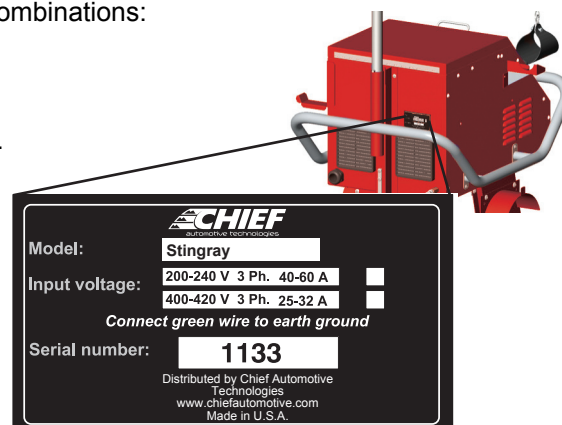
The welder is supplied with one of the following voltage and frequency combinations:

Input voltage: 1 or 3 phase
208-240V 50/60 Hz. OR
400-420V 50/60 Hz.

The actual voltage and frequency is stated on the rear panel name plate.

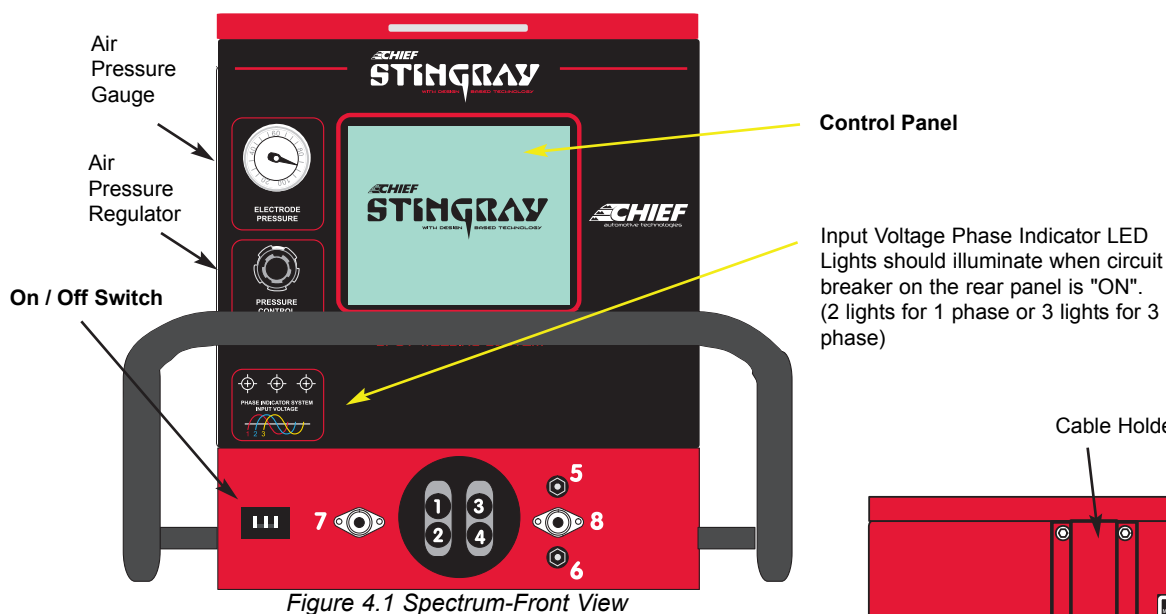
Note: For 1-phase installation leave out black wire.

Welding amperage: 9500A max (3-phase)
6300A max (1-phase)
Cable length: 8' (2.5m) standard
Electrode Pressure: At 7 bars (90 PSI)-280 DaN (616 Lb)
Cooling system: Air (2 fans)
Welding cable cooling: Air cooling
Microprocessor program: Digital control
Weight (standard): 213lb (97kg)



The name plate is at the rear of the welder unit.
The required voltage is indicated with a check mark.

4.2.2 Getting familiar with your welder

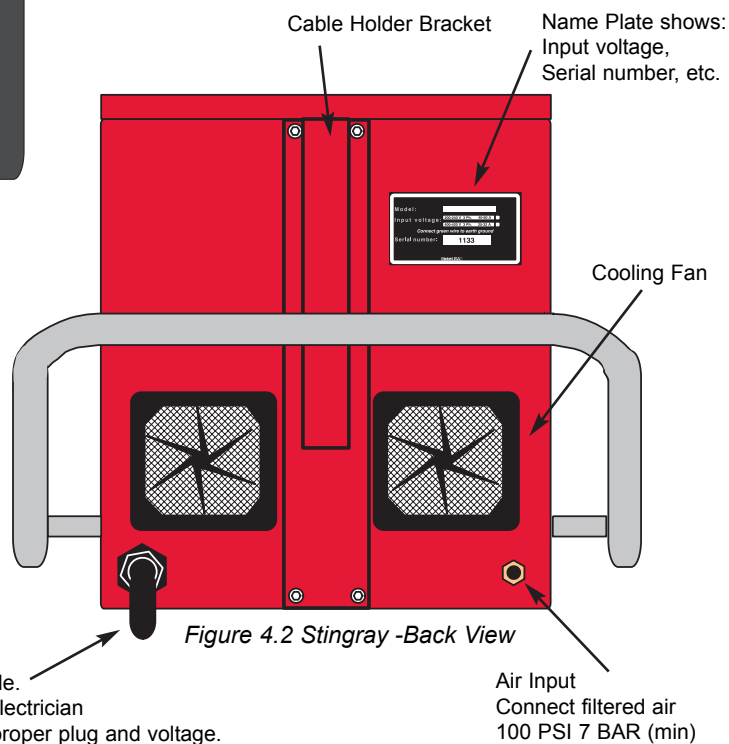


WELD CABLES CONFIGURATION

- ① Single-Sided Weld Gun cable
- ② Single-Sided ground cable
- ③ Two-Sided spot gun cable
- ④ Two-Sided ground cable

AIR HOSE AND COMMAND CABLE CONFIGURATION

- 5 Air Supply to 2-sided spot gun (compress)
- 6 Air Supply to 2-sided spot gun (release)
- 7 Command cable 1-sided gun
- 8 Command cable 2-sided spot gun



Input Voltage Cable.
Consult certified electrician
for installation of proper plug and voltage.

Air Input
Connect filtered air
100 PSI 7 BAR (min)

4.2.3 Stingray Control Panel



Figure 4.3 The Stingray Control Panel

4.2.4 Indications on the Control Panel



Figure 4.4



Figure 4.5

When two sided welding is selected, a spot gun graphic appears in the upper-left corner of the display screen (fig. 4.4).

When single sided welding is selected, a single sided gun graphic appears in the upper-left corner of the display screen (fig. 4.5).

4.3 Turning on the welder

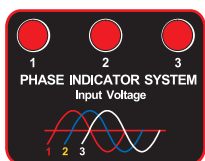


Figure 4.5.1

1. Toggle the circuit breaker on the back panel to "ON". Three red lights on the front panel should illuminate indicating 3-phase installation, 2 red lights for 1-phase installation (fig. 4.5.1).
2. Rotate the power switch to the "ON" position. It takes 1-2 seconds for the contactor to close, and the control system to power up.
3. The display will go through the start-up procedure and automatically default to Two-Sided welding.
4. The Stingray is now ready to use.



IMPORTANT! Make sure to read the instruction manual before operating the welder. Only trained personnel should use this welder.

4.4 Choosing the weld mode



Figure 4.6

The Stingray is a multi-functional resistance spot welder. It is equipped with a four weld cable system for your convenience. Two of the weld cables are connected to the Two-Sided Spot Gun and the other two are connected to the Single-Sided Weld Gun.

To select a weld mode, press the respective mode button (*fig. 4.6*)

Once the welding mode is selected, a group of related weld programs become available to the user (*see section 4.8 "Setting the default weld programs"*)

4.5 Setting the pneumatic air pressure

Pneumatic air is used for:

- Forcing the spot gun to close and open.
- Cooling the welding cables that are connected to the spot gun.

The air pressure is regulated with the air regulator, and the set pressure is indicated on the pressure gauge. Default pressure is 90 PSI.

Change the air pressure as follows:

1. Unlock the pressure regulator by pulling on the adjustor knob till it snaps into the unlocked position.
2. Turn the pressure regulator knob clockwise to increase or counter-clockwise to decrease the air pressure.
3. Lock the pressure regulator by returning the knob to the lock position.

4.6 Setting the weld program

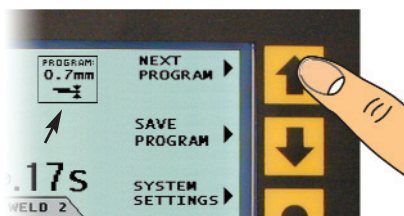


Figure 4.7

The Spectrum features 6 different strength weld power modes. It defaults to 0.7mm program. To change weld program press "Next Program" (*fig. 4.7*).

The program box indicates the weld power (thickness).

For example, when welding two HSS Galv. metals that are 1.2mm thick, you should use the 1.2mm program.

If more power is desired, press "Next Program" to reach the next level.

4.7 Setting the weld time and current

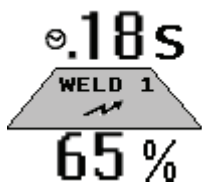


Figure 4.8

The time and current automatically change with each respective weld power mode.

Referring to *fig. 4.8*: The top value indicates the time duration that will be applied during the weld and the bottom value indicates the weld power in weld amperage that will be applied during the weld.

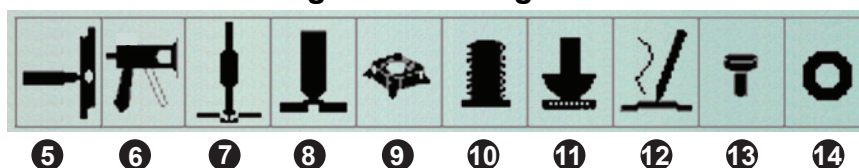
4.8 Setting the default weld programs

There are 14 weld programs featured in the Stingray Spot Welder. Ten of these programs are associated with the Single-Sided Gun and four are associated with the Two-Sided Spot Gun.

Two-Sided Programs



Single-Sided Programs



- | | |
|-----------------------------------|------------------------|
| ❶ HSS Steel / Galv. Steel Welding | ❿ Bolt Welding |
| ❷ Mild Steel Welding | ⓫ Stitch Welding |
| ❸ Weld Bonding | ⓬ Carbon Rod Shrinking |
| ❹ Custom Program | ⓭ Rivet Welding |
| ❺ Single-Sided Spot Welding | ⓮ Washer Welding |
| ❻ Elimi-Dent Dent Removal | |
| ❼ Pulling | |
| ❽ Contact Shrinking | |
| ❾ Nut Welding | |



Figure 4.9



Figure 4.10

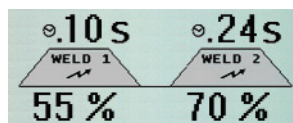


Figure 4.11

The welding programs are selected on the Control Panel. Select the welding program by using the Left and Right navigation buttons (*fig. 4.9*).

The selected program is indicated by a highlighted black box over the program name (*fig. 4.10*).

In any welding mode there are 6 power level programs: 0.7mm - 2.5mm. To switch between programs press the "Next Program" button (*fig. 4.7*).

Some programs require a double-weld in one cycle (*fig. 4.11*). Those welds automatically deliver Weld 1, programmed delay, then Weld 2. This is a very sophisticated weld feature for controlling exact temperature into the weld area and to pre-heat it.



Note: Two-Sided welding mode and Program No. 1 are set by default when the Stingray is turned on.

5 Double-Sided Welding

5.1 CH-500*R Double-Acting Spot Gun

The spot gun is used for the following weld programs:

- Two-Sided spot welding - HSS Galvanized steel, Mild steel, Weld Bonding, Boron Steel, Pulse welding and OEM, Custom Modes

(see section 4.8 “Setting the default welding programs”)

5.1.1 CH-500*R Component Diagram

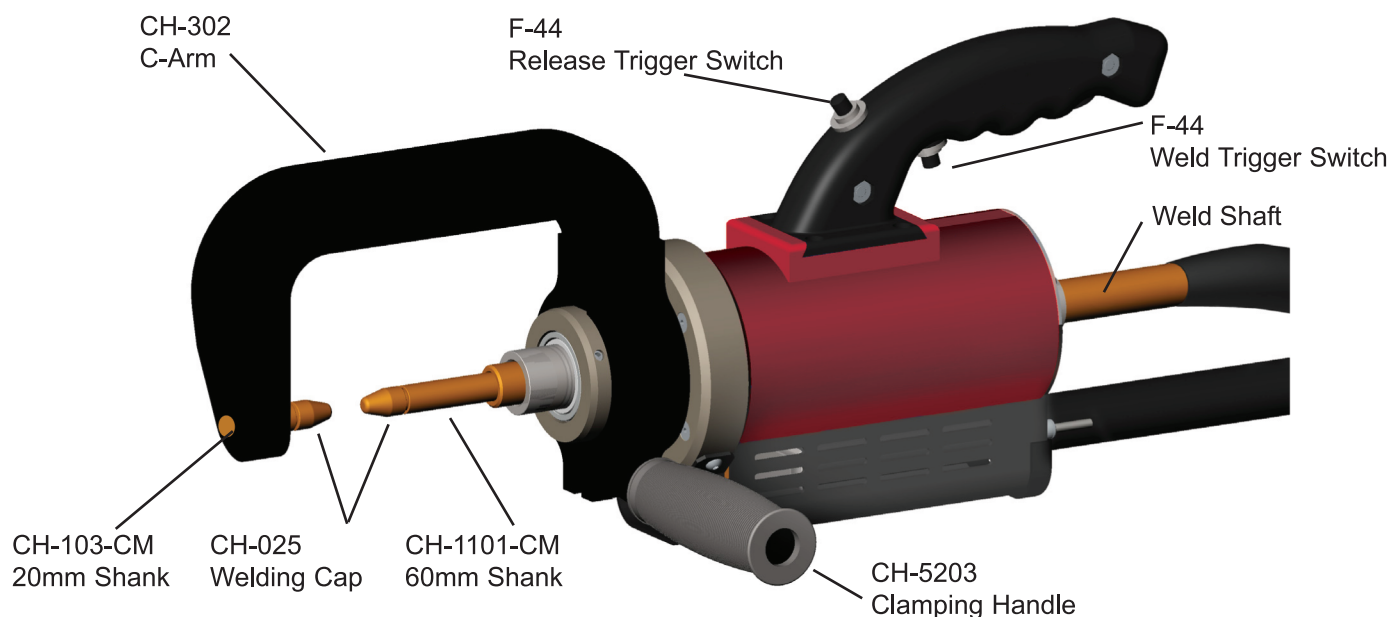
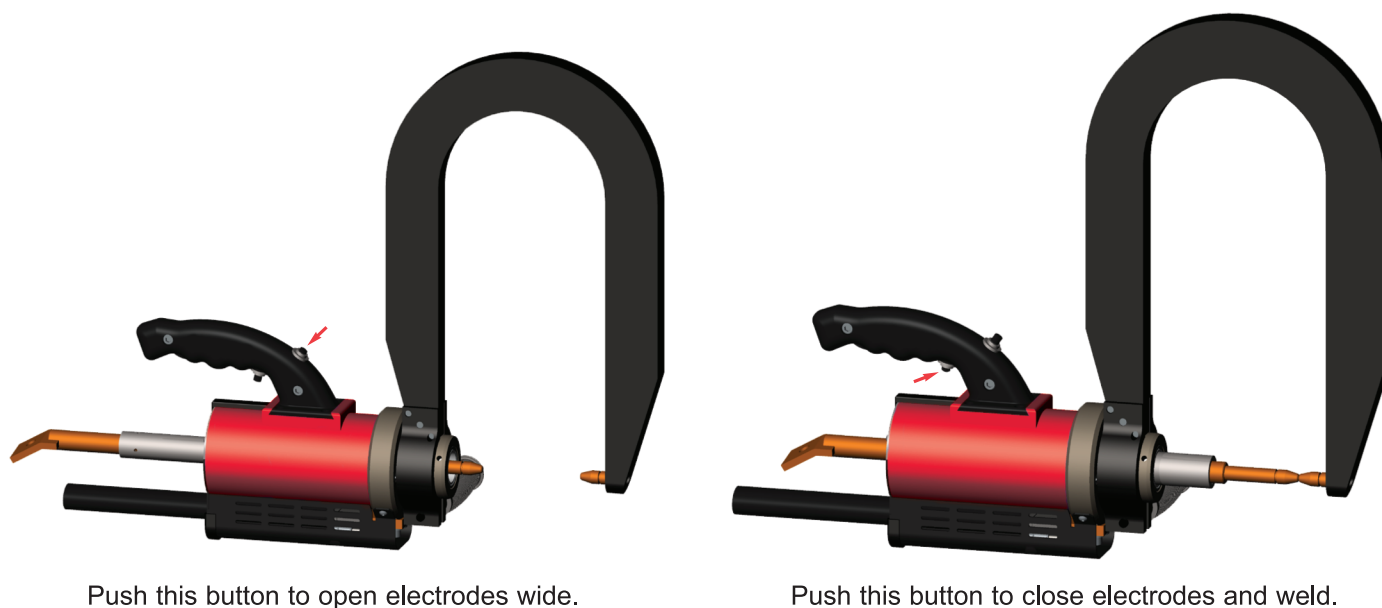


Figure 5.1 CH-500*R Spot Gun - Component Diagram

5.1.2 Using the Double-Acting Gun



5.2 Extension Arms

The Stingray comes with a variety of extension arms to accommodate any welding job situation.

Please refer to *fig. 5.3* for details on what welding electrodes to use with each extension arm.

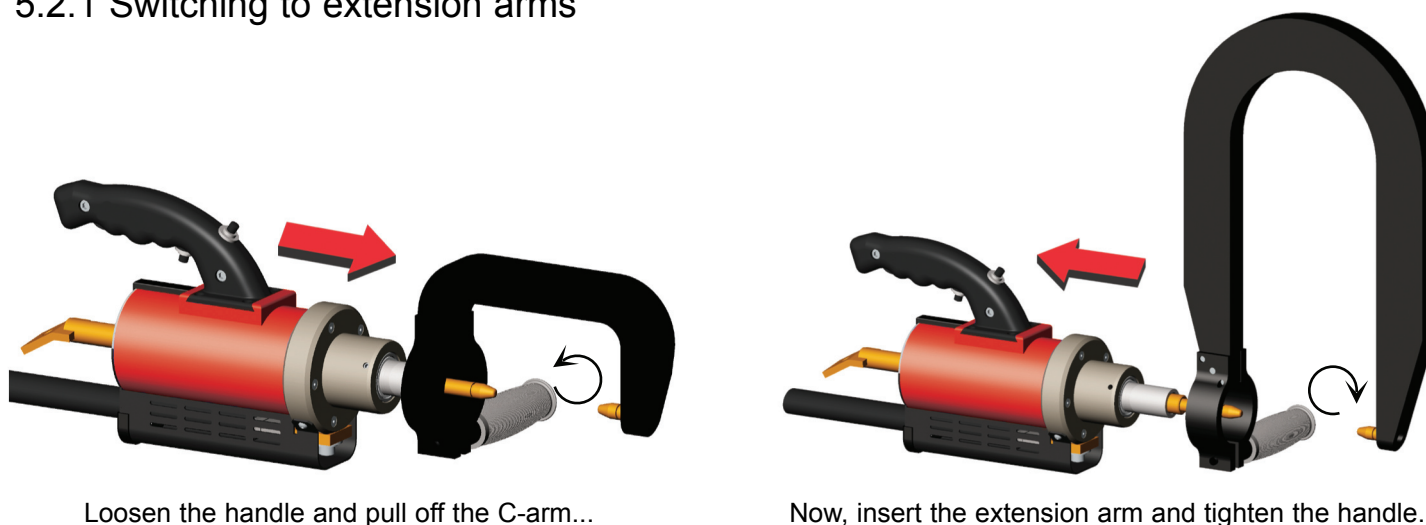


NOTE: Extension arms marked “*optional*” are available from your local distributor or online at www.chiefautomotive.com



Figure 5.2 Stingray Extension Arms

5.2.1 Switching to extension arms



5.2.2 Extension Arms and Welding Electrodes

Different extension arms require the use of different welding electrodes. Use charts in *fig. 5.3 and 5.4 to determine the correct combination of extension arms and welding electrodes.*



IMPORTANT! Using incorrect welding electrodes with extension arms may result in weak welds and/or damage to your welder.

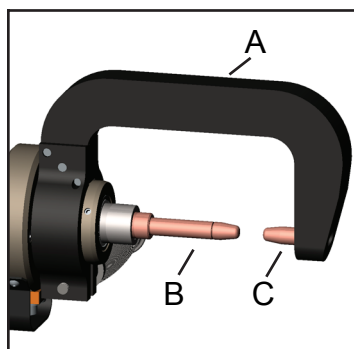
	A	B	C
	CH-302	CH-1101-CM	CH-103-CM
	CH-52-5/8	CH-1101-CM	CH-1133-5/8
	CH-403	see Sec. 5.7.3	see Sec. 5.7.3
	CH-305	CH-1101-CM	CH-129-CM
	CH-503-W	CH-1101-CM	CH-128-CM

Figure 5.3 Extension arm - Welding electrode configuration chart



Electrode Shank **CH-025: Welding Cap**

	Electrode Shank	CH-025: Welding Cap
CH-103-CM	← 40 mm* →	
CH-102-CM	← 60 mm* →	
CH-1101-CM	← 80 mm* →	
CH-128-CM	← 100 mm* →	
CH-129-CM	← 120 mm* →	
CH-130-CM	← 160 mm* →	

* length with Welding Cap attached. -20mm w/o cap

Figure 5.4 Welding electrode selection chart



NOTE: CH-025 Welding Caps can be purchased in packages of 15 online at www.chiefautomotive.com

5.3 CH-500*R Electrode Alignment

Use the set screws (A, B, C) to align the electrodes. Ex: To move electrode down, loosen screw (C) and tighten screws (A and B).

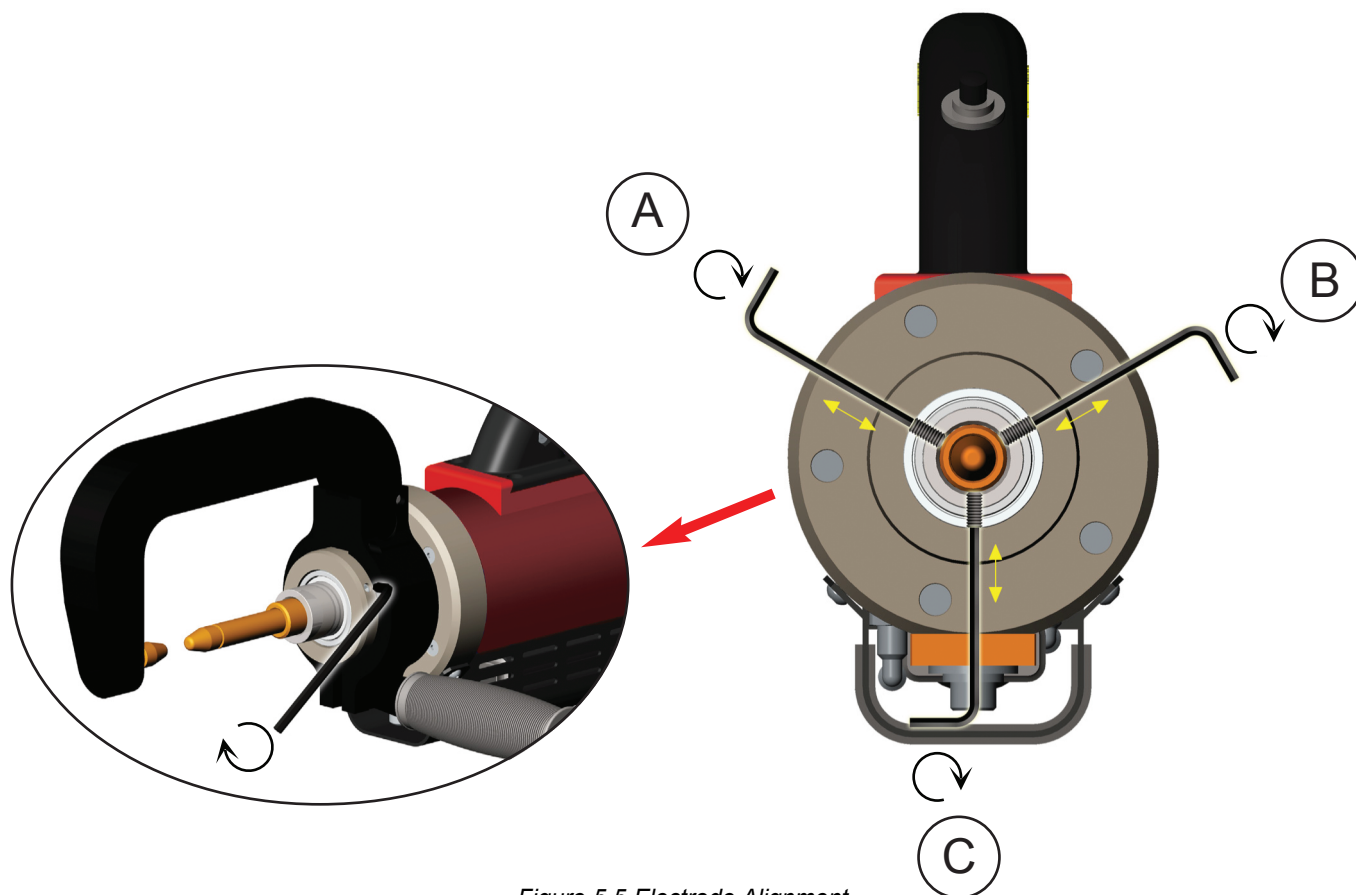
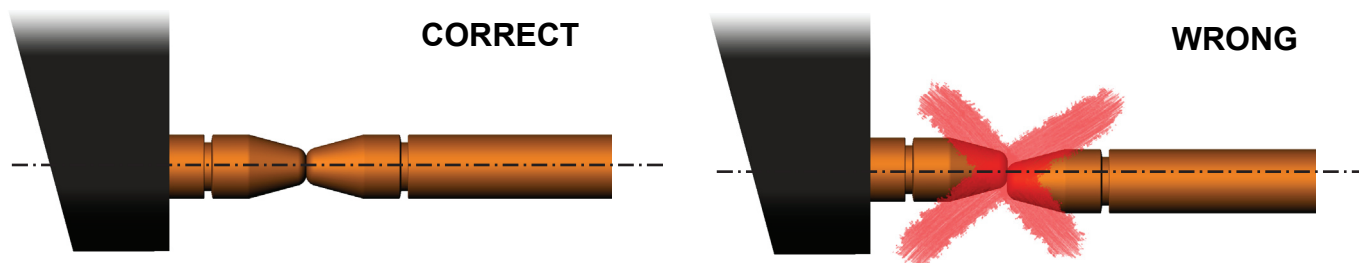


Figure 5.5 Electrode Alignment



IMPORTANT! Always maintain proper electrode alignment. Not doing so may result in weak, substandard welds!

5.4 Removing Welding Electrodes

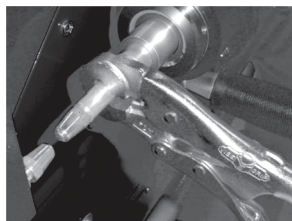


Figure 5.6a: Removing Piston Electrode

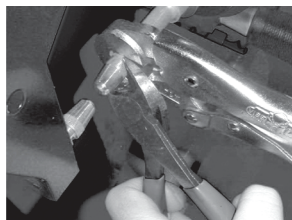


Figure 5.6b: Removing Welding Cap

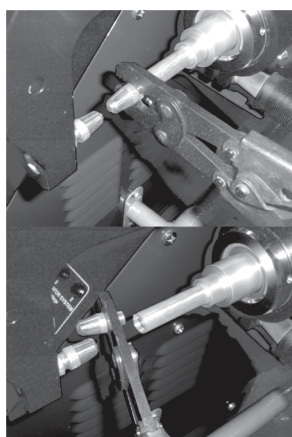


Figure 5.6c: Optional Weld Cap Removal Tool

Removing Extension Arm Electrode

The extension arm electrodes can be easily removed by lightly tapping them with a pin and hammer as shown in *fig. 5.6*

Removing Piston Electrode

To remove the piston electrode:

1. Grip piston electrode with a set of pliers or vise-grips (*fig. 5.6a*).
2. Rock the pliers back and forth to loosen the electrode from the holder.
3. Remove the electrode

Note: Vise-Grips shown in *fig. 5.6a* are specially designed to hold round objects without damaging or scarring them. You can purchase a set online at: www.chiefautomotive.com



IMPORTANT! Do not attempt to remove the electrode by hitting it. This could damage the electrode and the spot gun.

Removing Welding Caps

To remove a welding cap:

1. Hold piston electrode with a set of pliers or vise-grips.
2. Grip welding cap with another set of pliers or wedge side cutters between cap and shank as shown in *fig. 5.6b*
3. Twist the two to loosen and remove the welding cap.



NOTE: An optional welding electrode cap removal tool is available, which makes cap removal easy (*fig. 5.6c*). You can order the cap removal tool online at: www.chiefautomotive.com

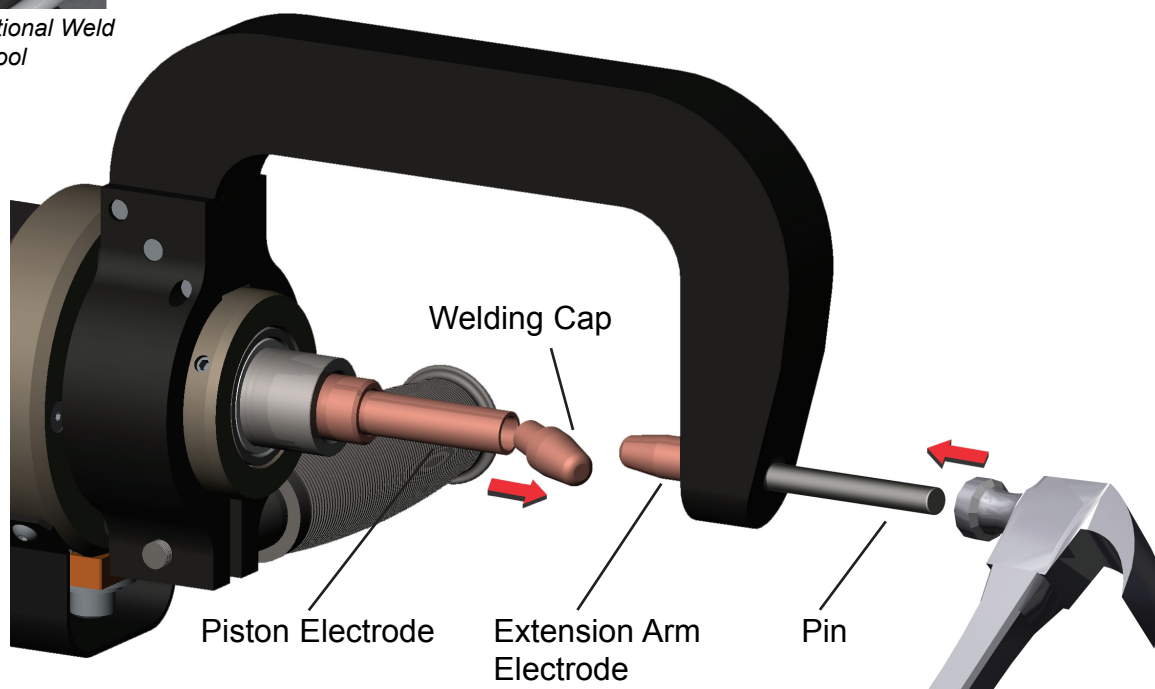


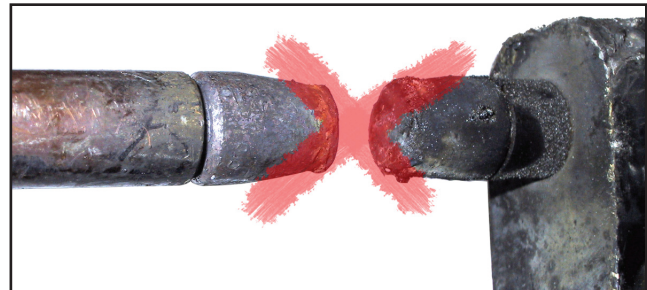
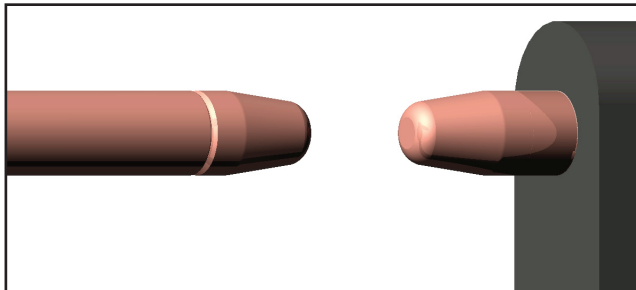
Figure 5.6 Removing Welding Electrodes

5.5 Welding Electrode Maintenance

To maintain structurally-sound welds it is important to keep your welding electrodes clear from build-up. It is also important to maintain a 6mm weld nugget diameter. Clean electrodes with a file and periodically replace welding caps as explained in Section 5.4 *“Removing Welding Electrodes”*

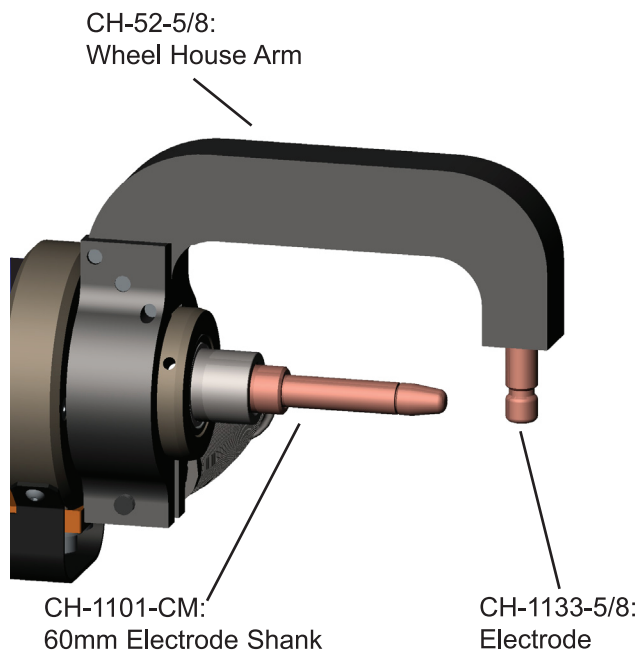


WARNING! The electrodes may be hot. Use caution when handling them.

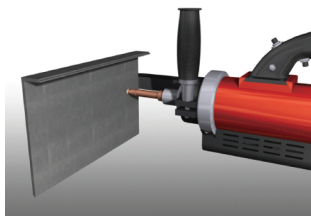


5.6 Wheel House Arm

The wheel house adapter allows access to hard to reach areas such as the wheel house



5.7 X-Adapter (optional)



C-TYPE GUN

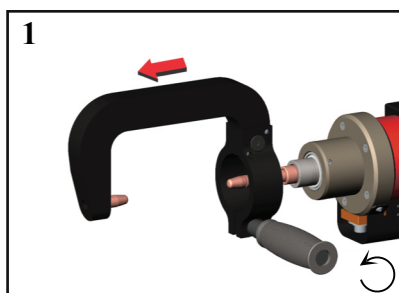
The advantage of the C-Type Spot Gun is that when making vertical pinch welds on quarter panels, rocker panels, door pillars, etc., the spot gun is positioned perpendicular to the work area. Easy to reach! Easy to use!



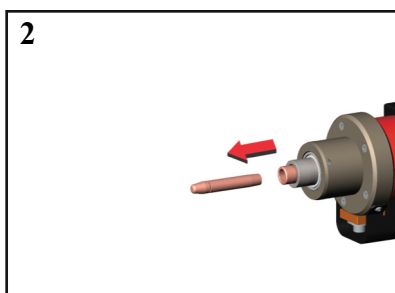
X-TYPE GUN

The X-type design is used on certain applications where the C-type can't reach. 90% of all welding needs can be done with the C-type but for some radiator support and truck bed pinch welds, the X-Adapter works better. This makes it possible to weld where you never could before!

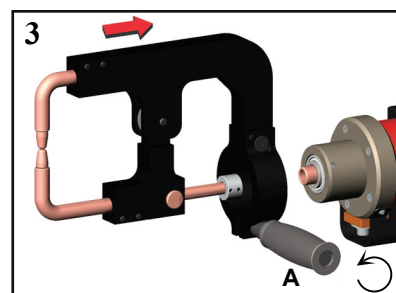
5.7.1 Attaching the X-Adapter



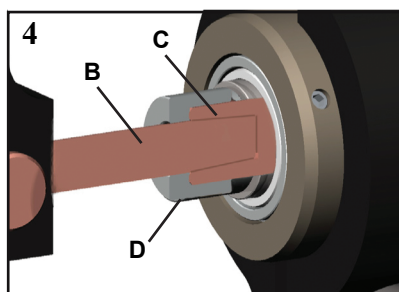
Loosen the handle and pull out C-arm...



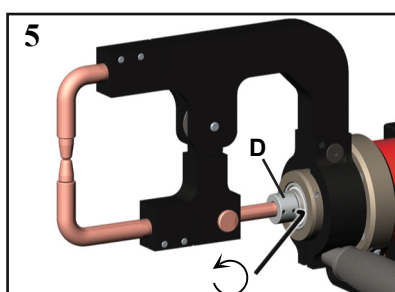
Follow instructions in **Sec. 5.4** to remove piston electrode



Insert the X-Adapter onto the gun. Tighten handle (A).



Insert the Tapered Electrode (B) into the Shaft (C). Apply air (carefully) to put pressure on the electrodes so that Tapered Electrode seats firmly in the shaft before tightening the Collar (D) set screw.



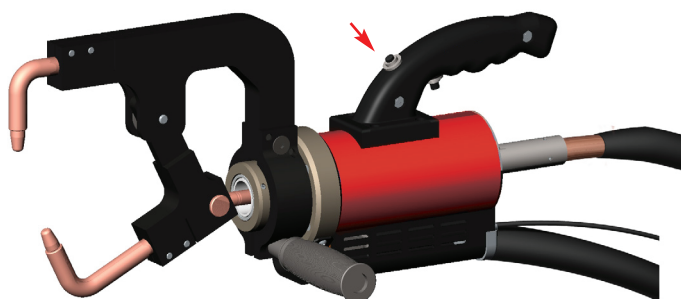
Tighten the Collar (D) set screw.



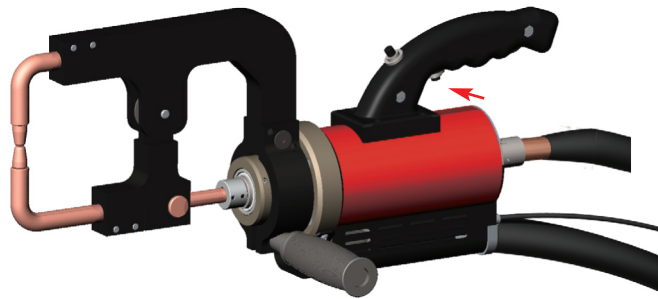
IMPORTANT! Do not tighten the Collar before the inserting Tapered Electrode into the shaft. The collar is designed to prevent the Tapered Electrode from falling out of the Shaft when the gun is fully opened.

5.7 X-Adapter (optional) cont.

5.7.2 Using the X-Adapter



Push the upper switch to open electrodes wide.



Push the lower switch to close electrodes and weld.

5.7.3 X-Adapter Configurations

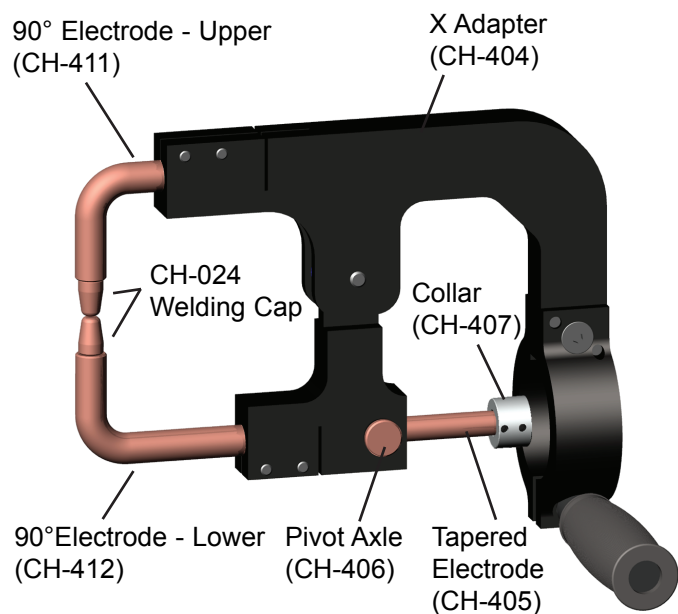


Figure 5.7 90° Arm Set

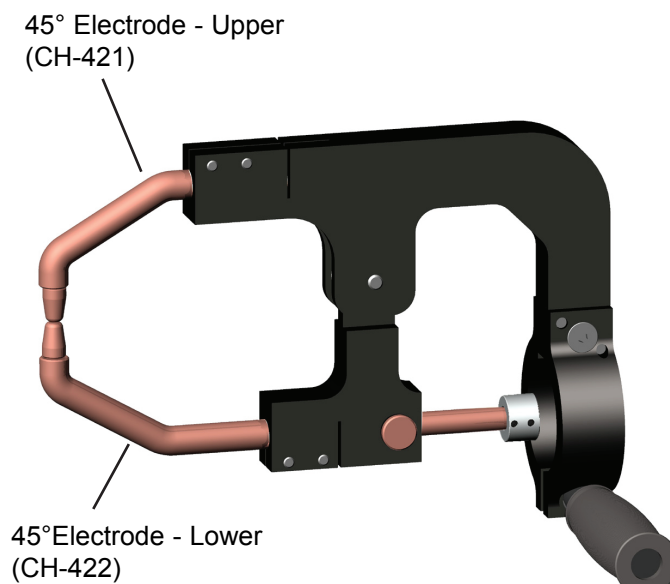


Figure 5.8 45° Arm Set

6 Single-Sided Welding

6.1 Single-Sided Welding Overview

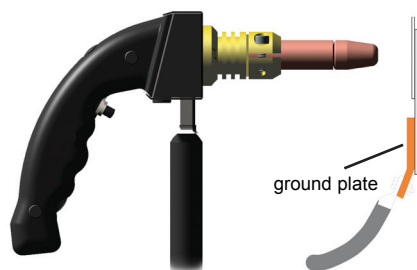


Figure 6.1



Figure 6.1b

The Single-Sided Weld System allows the operator to carry out welding tasks using a Single-Sided Weld Gun. The Single-Sided weld procedure requires contact only from one side compared to two sides in Two-Sided welding. A ground plate must be connected to the panel to be welded for it to work (fig. 6.1).



You can also use an optional magnetic ground plate to easily attach the ground cable to the metal (fig. 6.1b).



NOTE: Make sure the ground plate is clamped firmly in place on the inside of a clean metal surface as near as possible to the weld location. Do not attach the ground to the metal you're about to weld on. When performing other weld tasks such as dent pulling, etc., the ground attachment location becomes less critical.

In the Single-Sided weld mode the following weld procedures are available for the Stingray:

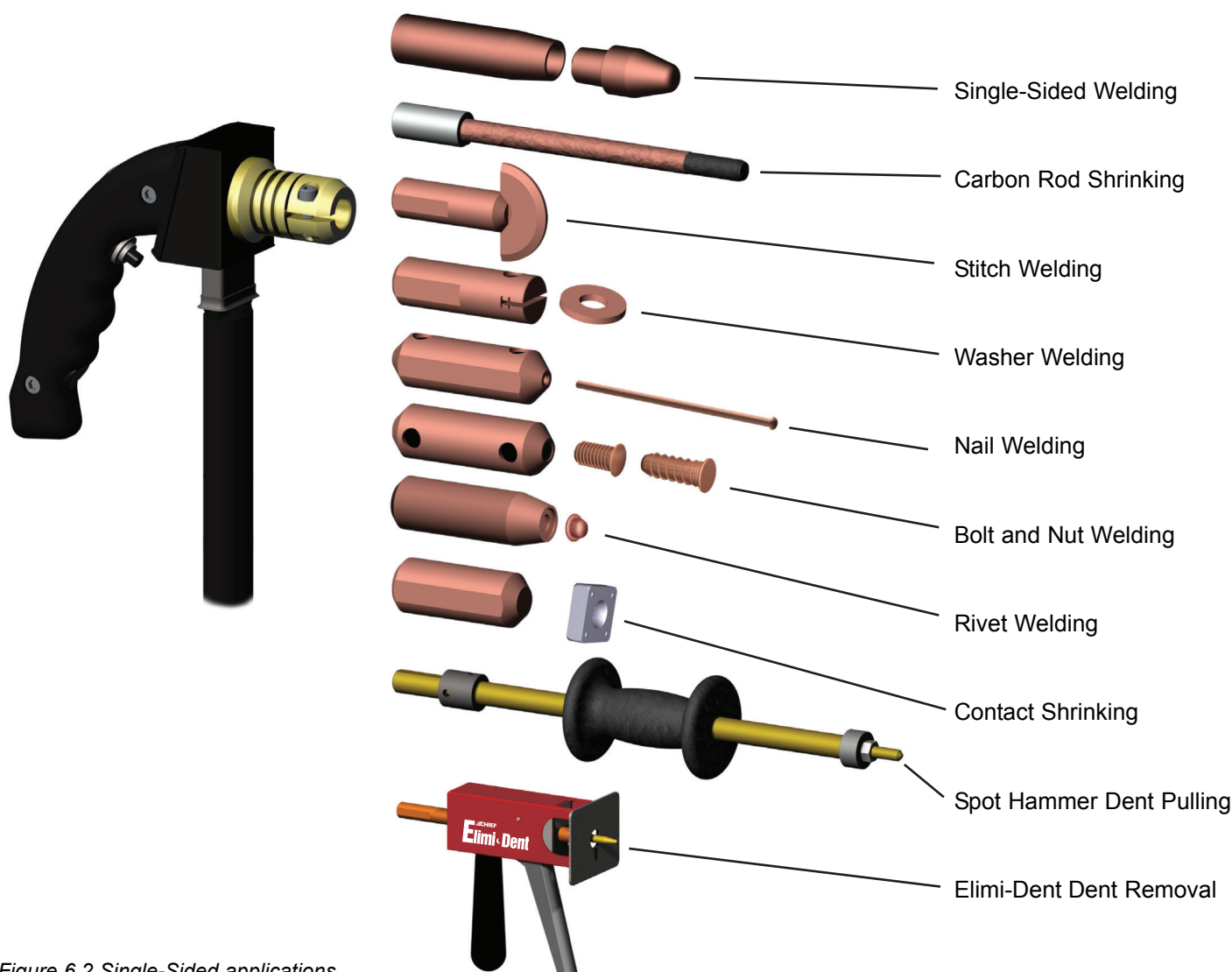


Figure 6.2 Single-Sided applications



Figure 6.3: Selecting Single-Sided weld mode

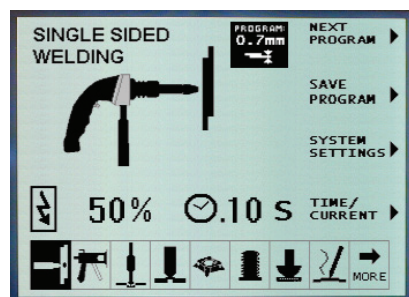


Figure 6.4

1. Make sure the welder is turned on. Push the Single-Sided weld mode button (fig 6.3). Single Sided Weld Programs will display on the screen (fig. 6.5).
2. Use the navigation buttons, Left or Right to select desired weld program (refer to section 4.8 "Setting the default weld program" or fig.4.9). The display screen shows the currently selected program (fig. 6.4).

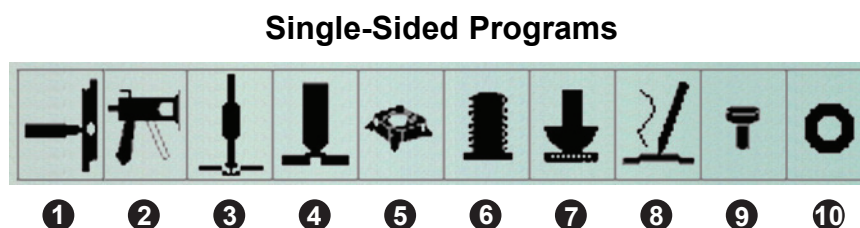


Figure 6.5 Stingray Single Sided Weld Programs

- 1 Single-Sided spot welding
- 2 Elimi-Dent Dent Removal
- 3 Dent Pulling
- 4 Contact Shrinking
- 5 Nut Welding
- 6 Bolt Welding
- 7 Stitch Welding
- 8 Carbon Rod Shrinking
- 9 Rivet Welding
- 10 Washer Welding

6.2 Single-Sided Spot Welding

SINGLE SIDED
WELDING



Figure 6.6

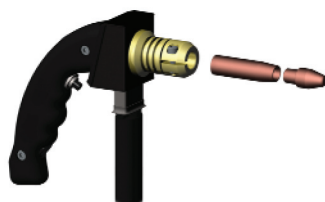


Figure 6.9

Single-Sided spot welding is used where Two-Sided spot welding cannot be used.



Important: The Single-Sided spot welding is not permitted on supporting frameworks of a vehicle. It is only permitted for cosmetic purposes.

1. Push the Single-Sided weld mode button (fig 6.3). Single Sided Weld Programs will display on the screen (fig. 6.5). The Spectrum software defaults to Single Spot Weld Mode (fig. 6.6).
2. Choose weld power level by pressing the "Next Program" button repeatedly. (refer to section 4.6 "Setting the weld program").
3. Fit the Single-Sided Gun with Single-Sided electrode (fig. 6.9).
4. Grind between the inner and the outer body sheets to remove paint, primer and rust. This ensures good electrical contact when performing Single-Sided welding.
5. Ground the working area (refer to section 6.1 "Single-Sided Welding Overview").
6. Apply about 33-44 lbs of pressure on the Single-Sided gun and push the trigger to weld. Reposition and weld again.



Note: Make sure that Single-Sided electrode is clean. If it isn't, use a file or tip dresser to clean it. If the weld cap shows considerable wear, it should be replaced (refer to section 5.4 "Removing Welding Electrodes")

6.3 Stud Welding

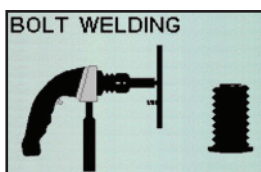


Figure 6.10

Many of today's car bodies come with factory equipped threaded studs. After a collision, the studs may be lost or do not accompany the replacement part. With the Stingray, threaded studs can be welded-on in factory style. This type of stud is also common throughout the car body for attachments of interior, tail lights, door moldings, etc.



Tip: A threaded stud can also be used to fasten the ground clamp directly to the panel, minimizing the area needed for grinding.

Studs are held in place during welding with magnetic adapter electrode.

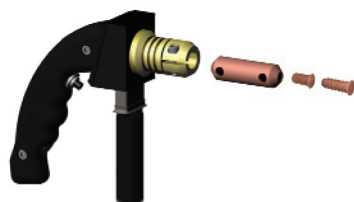


Figure 6.12

1. Push the Single-Sided weld mode button (fig 6.3). Single Sided Weld Programs will display on the screen (fig. 6.5). The Stingray software defaults to Single Spot Weld Mode (fig. 6.6).
2. Select Bolt Welding Program by pressing the Left or Right Navigation Buttons (fig. 4.9). Make sure that Bolt Welding graphic appears on the screen (fig. 6.10)
3. Choose weld power level by pressing the "Next Program" button repeatedly. (refer to section 4.6 "Setting the weld program").
4. Fit Single Sided gun with the magnetic stud adapter (fig. 6.12).
5. Insert stud into the adapter (fig. 6.12).
6. Prepare the surface area by removing paint and primer.
7. Ground the working area (refer to section 6.1 "Single-Sided Welding Overview").
8. Position single sided gun over work area and push the trigger to weld.
9. Repeat as needed.

6.4 Nut Welding

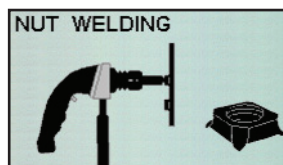


Figure 6.13

Weld-on nuts are common throughout the car body for attachments of interior, tail lights, door moldings, etc. and are applied with ease using the Stingray.



Tip: Different size nuts are available online at www.chiefautomotive.com

Nuts are held in place during welding with a shrinking electrode.

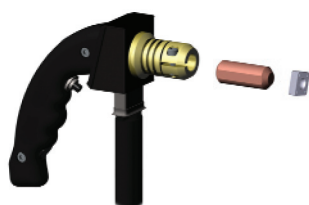


Figure 6.15

1. Push the Single-Sided weld mode button (fig 6.3). Single Sided Weld Programs will display on the screen (fig. 6.5). The Stingray software defaults to Single Spot Weld Mode (fig. 6.6).
2. Select Nut Welding Program by pressing the Left or Right Navigation Buttons (fig. 4.9). Make sure that Nut Welding graphic appears on the screen (fig. 6.13)
3. Choose weld power level by pressing the "Next Program" button repeatedly. (refer to section 4.6 "Setting the weld program").
4. Fit Single-Sided gun with the Shrink Electrode (fig. 6.15).
5. Prepare the surface area by removing paint and primer.
6. Ground the working area (refer to section 6.1 "Single-Sided Welding Overview").
7. Press weld-on nut to the metal with Contact Shrinking electrode, apply some pressure and push the trigger to weld.
8. Repeat as needed.

6.5 Dent Pulling with Spot Hammer

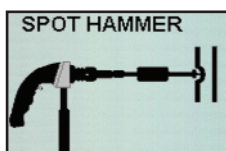


Figure 6.16

Spot hammer dent pulling is used to repair dents on a vehicle body. The spot hammer welds directly onto the work area and pulls the dent.



Tip: The replaceable welding tip should last for over one thousand welds. Order replacement tips online at www.chiefautomotive.com

1. Push the Single-Sided weld mode button (fig 6.3). Single Sided Weld Programs will display on the screen (fig. 6.5). The Spectrum software defaults to Single Spot Weld Mode (fig. 6.6).
2. Select Spot Hammer Program by pressing the Left or Right Navigation Buttons (fig. 4.9). Make sure that Spot Hammer graphic appears on the screen (fig. 6.16)
3. Choose weld power level by pressing the "Next Program" button repeatedly. (refer to section 4.6 "Setting the weld program").
4. Fit Single-Sided gun with the spot hammer (fig. 6.18).
5. Prepare the dent surface area by removing paint and primer.
6. Ground the working area (refer to section 6.1 "Single-Sided Welding Overview").
7. Position the spot hammer tip at the bottom of the dent and push the trigger to weld the electrode onto the metal.
8. Pull out a dent then release by twisting the hammer.
9. If needed, reposition, weld, and pull again.

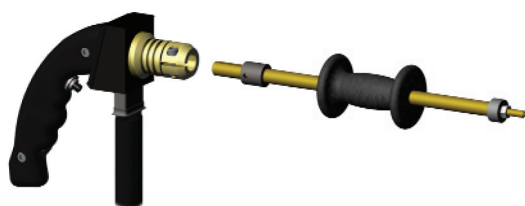


Figure 6.18

When more pulling power is needed, simply increase the current.



Note: Check spot hammer tip periodically to make sure it is in good working order. If the tip looks worn, replace it with a new one.

6.6 Moulding Clip Rivet Welding

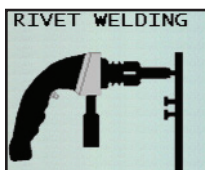


Figure 6.19

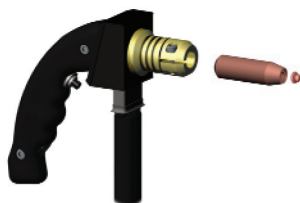


Figure 6.21

This function will weld on factory type clips for the window moulding. The clips that hold the moulding do not, usually, come on the replacement parts.

Rivets are held in place during welding with magnetic adapter electrode.

1. Push the Single-Sided weld mode button (fig 6.3). Single Sided Weld Programs will display on the screen (fig. 6.5). The Stingray software defaults to Single Spot Weld Mode (fig. 6.6).
2. Select Rivet Welding Program by pressing the Left or Right Navigation Buttons (fig. 4.9). Make sure that Rivet Welding graphic appears on the screen (fig. 6.19).
3. Choose weld power level by pressing the "Next Program" button repeatedly. (refer to section 4.6 "Setting the weld program").
3. Fit Single-Sided gun with the magnetic rivet adapter (fig. 6.21).
4. Insert rivet into the adapter (fig. 6.21).
5. Prepare the surface area by removing paint and primer.
6. Ground the working area (refer to section 6.1 "Single-Sided Welding Overview").
7. Position Single-Sided gun over work area and push the trigger to weld.
8. Repeat as needed.

6.7 Dent Pulling with Washers and Slide Hammer with Hook



Figure 6.22

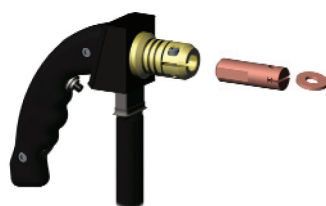


Figure 6.24

The slide hammer with hook (optional) can be used in conjunction with washers to repair car body dents.



Tip: You can purchase a slide hammer with hook online at www.chiefautomotive.com

Washers are held in place during welding with magnetic adapter electrode.

1. Push the Single-Sided weld mode button (fig 6.3). Single Sided Weld Programs will display on the screen (fig. 6.5). The Stingray software defaults to Single Spot Weld Mode (fig. 6.6).
2. Select Washer Welding Program by pressing the Left or Right Navigation Buttons (fig. 4.9). Make sure that Washer Welding graphic appears on the screen (fig. 6.22)
3. Choose weld power level by pressing the "Next Program" button repeatedly. (refer to section 4.6 "Setting the weld program").
4. Fit Single-Sided gun with the magnetic washer adapter (fig. 6.24).
5. Insert washer into the adapter (fig. 6.24).
6. Prepare the dent surface area by removing paint and primer.
When welding on washers, you only need to clean the area where the washer touches the metal since the grounding system is connected through a separate cable.
7. Ground the working area (refer to section 6.1 "Single-Sided Welding Overview").
8. Position the washer at the bottom of the dent and push the trigger to weld the washer onto the metal.
9. Hook the washer with the slide hammer and pull out the dent.
10. Repeat as needed.



Tip: You can also pull multiple washers by welding on a row of washers at the bottom of the dent, inserting a rod through the washers and pulling the rod with the slide hammer with hook.

6.8 Contact Shrinking



Figure 6.25

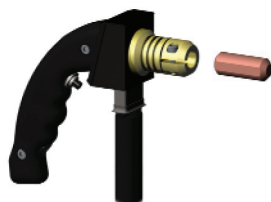


Figure 6.27

Dent pulling with washers creates high spots in the metal. Until now, the common practice would have been to grind the surface, resulting in a loss of sheet metal thickness. With the Stingray, use the shrinking tip instead of a grinder to remove the high spots, leaving a smooth and clean surface that's every bit as thick and strong as before. Shrinking electrode also acts as a nut adapter (*refer to section 6.4 "Nut Welding"*). With this electrode you get two convenient tools in one.

1. Push the Single-Sided weld mode button (*fig 6.3*). Single Sided Weld Programs will display on the screen (*fig. 6.5*). The Spectrum software defaults to Single Spot Weld Mode (*fig. 6.6*).
2. Select Contact Shrinking Program by pressing the Left or Right Navigation Buttons (*fig. 4.9*). Make sure that Contact Shrinking graphic appears on the screen (*fig. 6.25*).
3. Choose weld power level by pressing the "Next Program" button repeatedly. (*refer to section 4.6 "Setting the weld program"*).
4. Fit Single-Sided gun with the contact shrinking electrode (*fig. 6.27*).
5. Prepare the surface area by removing paint and primer.
6. Ground the working area (*refer to section 6.1 "Single-Sided Welding Overview"*).
7. Position the contact shrinking electrode over the high spot, apply some pressure and push the trigger to weld.
8. Repeat as needed.

6.9 Carbon Rod Shrinking / Stretching



Figure 6.28

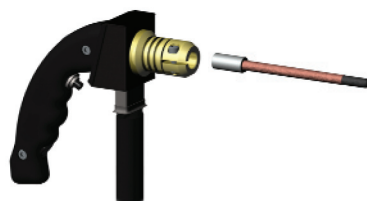


Figure 6.30

Carbon Rod is used to shrink or stretch metal on a vehicle. The carbon rod can also be used on sharp dents caused by such things as hail.

1. Push the Single-Sided weld mode button (*fig 6.3*). Single Sided Weld Programs will display on the screen (*fig. 6.5*). The Spectrum software defaults to Single Spot Weld Mode (*fig. 6.6*).
2. Select Carbon Shrink Program by pressing the Left or Right Navigation Buttons (*fig. 4.9*). Make sure that Carbon Shrink graphic appears on the screen (*fig. 6.28*).
3. Choose weld power level by pressing the "Next Program" button repeatedly. (*refer to section 4.6 "Setting the weld program"*).
4. Fit the Single-Sided Gun with Carbon Electrode (*fig. 6.30*).
5. Clean the metal surface area.
6. Ground the working area (*refer to section 6.1 "Single-Sided Welding Overview"*).
7. Position carbon rod over the work area and push the trigger to start welding. Keep trigger depressed to continue welding. Move the carbon rod in such a way as to heat up the entire working area to the appropriate temperature. Release the trigger to stop welding.
8. Cool the surface with a wet rag or compressed air.

6.10 Stitch Welding



Figure 6.31

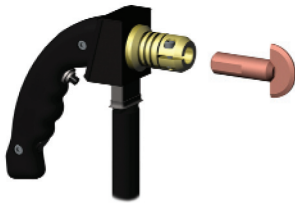


Figure 6.33

The Stingray can also be fitted with a stitch weld adapter enabling the operator to lay staggered bead type welds. While rolling the tip on the sheet metal edge, the welder will automatically deliver an intermittent or pulsating current.

1. Push the Single-Sided weld mode button (*fig 6.3*). Single Sided Weld Programs will display on the screen (*fig. 6.5*). The Stingray software defaults to Single Spot Weld Mode (*fig. 6.6*).
2. Select Stitch Welding Program by pressing the Left or Right Navigation Buttons (*fig. 4.9*). Make sure that Stitch Welding graphic appears on the screen (*fig. 6.31*)
3. Choose weld power level by pressing the "Next Program" button repeatedly. (*refer to section 4.6 "Setting the weld program"*).
4. Fit Single-Sided gun with the stitch electrode (*fig. 6.33*).
5. Prepare the surface area by removing paint and primer.
6. Ground the working area (*refer to section 6.1 "Single-Sided Welding Overview"*).
7. Roll the tip on the sheet metal edge while keeping the trigger depressed. The welder will automatically deliver an intermittent or pulsating current.
8. Repeat as needed.

This procedure works well on stainless steel, and therefore lends itself well to rust repair and patching. It's easy to use and can be manipulated to fit any shape or form you require.



Tip: You can use stitch electrode to weld pulling tabs onto areas that need to be pulled.

6.11 Elimi-Dent Dent Pulling (optional)

Elimi-Dent is a patented, innovative tool for fast and accurate dent pulling. It features paintless dent removal functionality (see sec. 6.3.5 "Paintless Dent Pulling With Elimi-Dent.")

Elimi-Dent can be fitted to most resistance spot welders or dent pullers.

Welder & Adapters not included.



6.11.1 Selecting Elimi-Dent Weld Mode

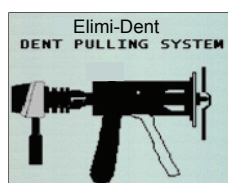


Figure 6.6 Selecting Elimi-Dent weld mode

1. Push the Single-Sided weld mode button (fig 6.3). Single Sided Weld Programs will display on the screen (fig. 6.5). The Spectrum software defaults to Single Spot Weld Mode (fig. 6.6).
2. Select Elimi-Dent Welding Program by pressing the Left or Right Navigation Buttons (fig. 4.9). Make sure that Elimi-Dent Welding graphic appears on the screen (fig. 6.6)

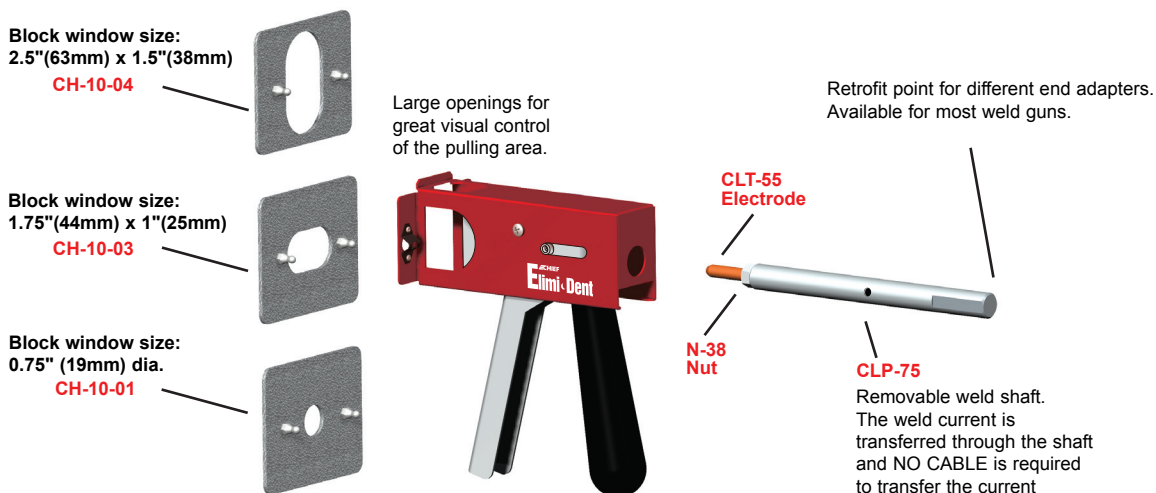


Make sure the ground plate is clamped firmly in place on the inside of a clean metal surface as near as possible to the weld location.

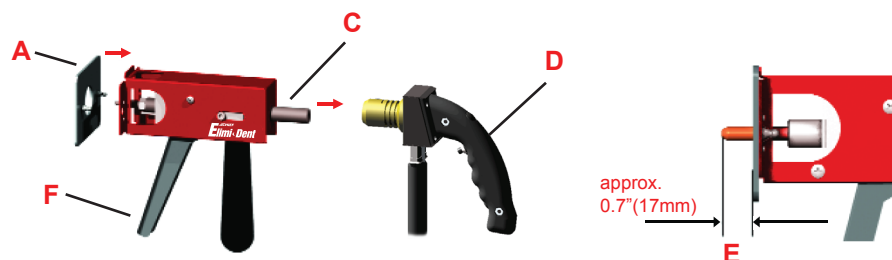
NOTE: Do not attach the ground to the metal you're about to weld on. When performing other weld tasks such as dent pulling, etc., the ground attachment location becomes less critical.

6.11.2 Elimi-Dent Component Diagram

Elimi-Dent comes with three different Blocking Plates with Quick-Connect design.

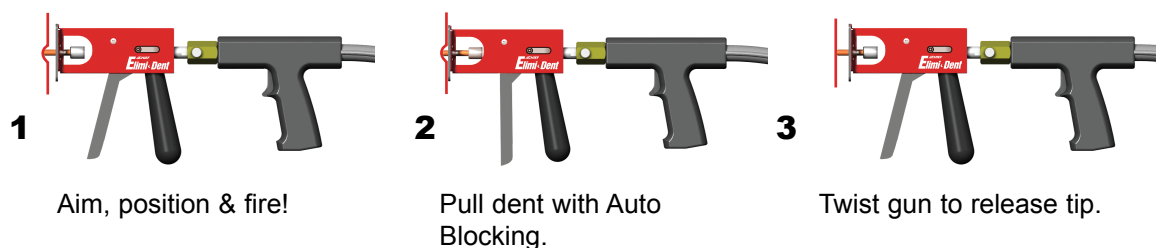


6.11.3 Elimi-Dent Assembly

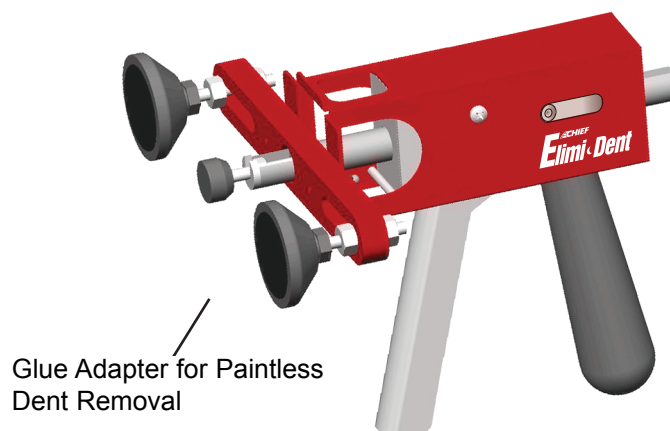


1. Attach the Weld Gun (D) to Weld Shaft (C). Secure Lock Bolt (G).
2. Slide weld shaft and gun to standard distance (E).
3. Attach desired block plate (A)
4. Position the weld tip in the "bottom" of the dent, weld, then pull the handle (F) to initiate the pulling action. Use the shortest weld TIME possible to prevent extensive weld marks.

6.11.4 Dent Pulling with Elimi-Dent



6.11.5 Paintless Dent Pulling With Elimi-Dent





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