

# Section 5

# Trouble Shooting

Possible Cause	Possible Solutions
Hang up. Stud looks like it is sitting on a pedestal with an hour glass shape.	Check alignment of the foot to ferrule and stud.
	Too little plunge. Increase the amount of stud extending past the end of the ferrule or spark shield.
	Service the weld tool to ensure lift/release actions are functioning properly.
Undercutting or lack of fillet.	Too little plunge. Increase the amount of stud extending past the end of the ferrule or spark shield.
	Too little weld time or current. Check power supply manual for base line power recommendations.
	Check alignment of the foot to ferrule and stud.
A lot of splatter or BBs shoot out from the weld zone.	Too much plunge. Decrease the amount of stud extending past the end of the ferrule or spark shield.
	Too much current or time. Check power supply manual for base line power recommendations.
	Dampener Required. If you have a dampener the dampener may have worn out and need replacement. See optional equipment in Section 4.
Stud breaks off and weld zone looks "crystallized".	Not enough weld current or time. Check power supply manual for base line power recommendations.
Bubbles in weld fillet.	If you are attempting short arc you may not be able to eliminate this condition. To improve this situation shorten time and increase current. If the results continue to be unsatisfactory then you may need to add a shielding gas.
	Check your gas flow/type of shielding gas.
	If you are using flux loaded studs, check to make sure there is a flux load present on the end of the stud.
	Be sure the operator is using a ferrule if using fluxed studs.
No lift.	Check alignment of the foot to ferrule and stud.
	Check for weld tool coil short or open. There should be 19 ohms of resistance in the gun coil.
	Check weld tool coil connections.
	Check adjustable core and make sure it is not bottomed out ( turned in too far clockwise) or backed out too far (turned too far counterclockwise).
	Check trigger circuit for opens or shorts.
Short stud and can't get enough to extend past the ferrule.	Adjust the internal stop in the chuck.
Arc extinguishes, or just get a tiny arc but no weld.	Too much lift. Review set up procedures in Operation Manual.
	Check ground path from the power supplies. All joints must be very tight.
No weld.	Broken weld cable.
	Broken or bad ground cable/connection.
	Check weld tool lift.
Tool's shaft doesn't move freely when compressed by hand.	Dirt is binding the mechanism. Service weld tool.
	Check alignment of the foot to ferrule and stud.
	Front cover missing alignment dowels and lift mechanism binding. Service weld tool.
Weld tool spindle is sloppy and has a lot of free play.	The front bearing may be worn or missing. Replace bearing.
	The chuck, chuck adapter, isolator spud or spindle may be loose.
	Front cover may be loose. Tighten screws.

## MAINTENANCE SCHEDULE

Maintenance requirements will vary with environment and usage. Dirty work areas or high volume stud welding will require more frequent maintenance.

### Typical Environments

Full tear down service Annual  
Intermittent service and cleaning 6 months

For high volume or dirty environments:

Full tear down service 6 months  
Intermittent service and cleaning Monthly

There are three prime reasons for maintenance:

1. **Dirt.** Dirt can enter the lifting mechanism and cause erratic lift and plunge operations. Typically, cleaning is all that is required.
2. **Wear.** Components do wear out over time. Typically, items such as the bearing or cables wear out and need to be replaced.
3. **Improper Use.** Components can arc out by inadvertently placing them against grounded materials during a weld sequence.

## MAINTENANCE PROCEDURES

The proper maintenance procedure is to

1. Disassemble the weld tool.
2. Inspect all parts for wear or damage.
3. Replace worn or damaged components.
4. Clean all components
5. Reassemble
6. Adjust settings and test.

### Intermittent Service and Cleaning

Follow the instructions for Complete Disassembly and perform the following steps

Steps: 1, 2, 3, 8, 10, 12

Wipe down the weld tool spindle (main shaft) with a soft rag. Spray down the lifting rod (12) and the moveable core (15) with a degreaser. Clean all parts and inspect for wear. Place a light film of a light grease such a lithium based grease on the shaft of the lifting rod (12). Reassemble.

## Complete Disassembly / Assembly Instructions

Note Part numbers from the exploded diagram on page 20 are placed in ( )

1. Be sure and disconnect the weld tool from the power supply before adjusting or servicing the weld tool. This is a safety precaution to prevent accidental activation.
2. Remove the weld tool from the mounting will make service much easier. The weld tool is located with 3/16 x 3/4 dowel pins to facilitate removal and installation. The weld tool is retained via 4 #10-32 socket head cap screws in the front cover (6).
3. Remove all accessories from the weld tool before servicing.  
To remove the legs loosen the set screws (7) in the front cover (6) of the weld tool that retain the legs and pull them straight out. Inspect the legs for damage and straightness. Bent legs should be replaced.

To remove the chuck insert the chuck key into the chuck adapter and turn the key 180 degrees. Inspect the chuck for damage. Pay special attention to where the stud is inserted. If it looks like there are threads or pitting on the inside of the chuck then the chuck is worn out and needs to be replaced. The chuck must hold the item to be welded firmly. If there is a loose fit, the chuck needs to be replaced.

4. Unscrew the chuck adapter (1)  
Place a pin (the non tapered end of the chuck key works well) through the holes in the chuck adapter (1). Place the spanner wrench (33 supplied when the weld tool was originally shipped) in the lower most holes in the isolator spud (2). Using the spanner wrench, hold the spud fixed and rotate the chuck adapter off of the isolator spud. There is .5 inches of threads so it will take several turns to remove the chuck adapter from the isolation spud. Once the chuck adapter is remove the weld cable can be slid off the end.

Also inspect the threads that hold the chuck adapter onto the isolation spud. If the threads are pitted or damaged the chuck adapter should be replaced.

5. Unscrew the isolator spud (2)  
Slide the dust bellows (3) away from the front cover (6) and place a 5/8 open end wrench onto the wrench flats on the spindle (4). Use the spanner wrench in the top set of holes on the isolator spud. Hold the spindle still and use the spanner wrench to unscrew the isolator spud (2).
6. Remove the dust bellows (3)  
The rubber dust bellows just slides over the spindle (4). The dust bellows is important because it keeps dirt and other contaminants out of the internal mechanisms of the weld tool. if the bellows have holes in the sides or is torn or missing, it should be replaced.
7. Unscrew the spindle (4)  
Use a 5/8 open wrench on the wrench flats on the spindle. Unscrew the spindle (4) from the cable clamp adapter (10). Carefully, pull it straight out of the front of the weld tool. When reinstalling the spindle be careful as to not damage the linear bearing. Do not lubricate the spindle.
8. Remove the front cover (6)  
The front cover is held on with four socket head cap screws (5). Remove all 4 screws from the front cover. Pulling gently, the front cover will separate from the body (20). The body and front cover are aligned by two 3/16 x 3/4 dowel pins (19).

9. Remove the plunge dampener (10)  
The dampener is simply placed inside the front cover. It pulls straight out and pushes straight back in. When the plunge dampener is activated by your finger it should offer continuous resistance over the entire range of travel. The plunger should then return, by itself, to full extension. If this is not the case the dampener needs to be replaced.
10. Remove the lift mechanism (11, 12, 13, 14, 15, 16, 17, 18)  
The assembly will easily come out of the front of the weld tool body (20) as a complete assembly.
11. Remove the Cable Clamp Adapter (11)  
Remove cap screws (5) from the cable clamp adapter (11) and the cable clamp adapter will separate from the lifting rod (12)
12. The Lifting Rod (12)  
Push the lift release (14) firmly against the moveable core (15) and the lifting rod will pull straight out. Inspect the lifting rod for wear or damage. The brass inserts should show no signs of loosening. The steel shaft should not have any nicks on it. Run your fingers over the shaft. If you can feel grooves from the lifting bearing then the lifting rod is worn out. Typically the lifting rod and lift bearing should be replaced as a set. When reassembling, the shaft should have a light film of a light grease such as a lithium based grease.
13. Disassembly of the moveable core (15)  
Remove the snap ring (15d) on the shaft of the core assembly. This snap ring acts as a spring seat and is important to maintain proper spring tension. The bearing retainer (15a) and the moveable core shaft (15b) are held together by a retaining ring (15c). This retaining ring can be removed with a small flat bladed screw driver or a razor tip. After removing the retaining ring (15c) the bearing housing will separate from the core shaft. The lift bearing (16) and the lift bearing spring (17) can now be removed.  
  
When reassembling, the lift bearing balls (16) must face away from the lift bearing spring (17). Put a light film of a light grease (such as a lithium based grease) on the lift bearing (16) and the lift bearing spring (17).
14. Unscrew and remove the rear cap (28).  
Use a flat bladed screw driver to remove pan head screw (29) which retains the rear cap (28). The rear cap is important because it prevents dirt and other contaminants from entering into the weld tool mechanism.
15. Remove the Adjustable Core (27)  
Loosen the nylon tipped set screw (25) in the rear coil yoke (26) holding the adjustable core (27). Completely unscrew and remove the adjustable core (27).
16. Remove the Rear Coil Yoke (26)  
Loosen the nylon tipped set screw (25) holding retaining the rear coil yoke. To do this the hex key will have to go into the opening on an angle to reach the set screw. Once the retaining set screw is loosened use a wrench to unscrew the rear coil yoke (26). When reassembling, only tighten the rear coil yoke (26) until there is no free play in the coil. There should not be any compression on the coil.
17. Remove the Connector Retainer (30)  
Unscrew the flat head screws (31). The connector retainer & connector will separate from the body (20).

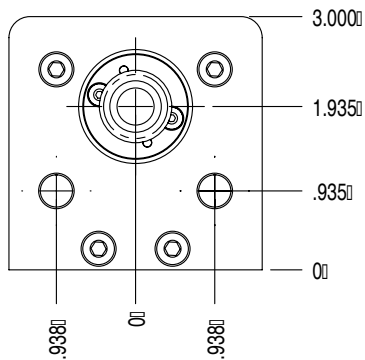
18. Remove the Coil (24)  
The coil can be pulled straight out of the rear of the weld tool. If there is question of the coil condition check to make sure there is no varnish odor (a sign of overheating), heavy discoloration (another sign of overheating) and verify coil resistance at 19 ohms +/- 1 ohm.  
If the coil to connector wires are cut, the coil wires connect to the red and white stripe and the red and black stripe wires.
19. Removal of the Control Cable Connector (32)  
If necessary (it typically is not necessary), cut the wires connecting the coil to the control cable connector. Once these wires are cut the control cable connector (32) can unscrew from the connector retainer (30).
19. Removal of the Front Coil Yoke (22)  
In front of the coil (24) is the front coil yoke (22). The front yoke should pull directly out of the rear of the weld tool body (20).
20. Removal of the Rear Bearing (23)  
Squeeze the flange together at the split and the rear bearing will come out of the front coil yoke (22). Notice the counter bore on the front coil yoke (22) that the flange of the rear bearing (23) fits into. When reassembling be sure that the flange of the rear bearing (23) faces the rear of the weld tool or coil (24).

Be sure and inspect the bearing as this is a typical wear item.

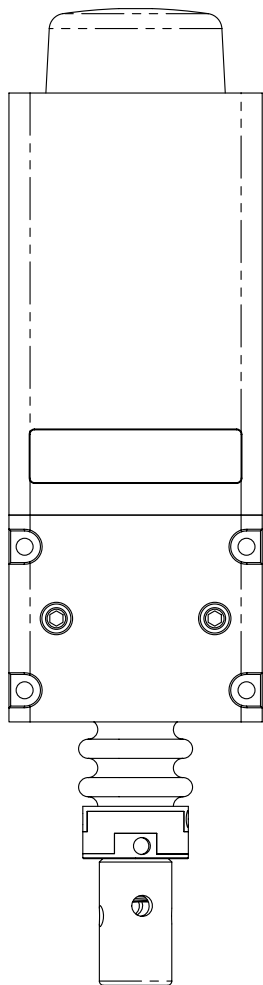
To reassemble, reverse the steps above.

# Section 7

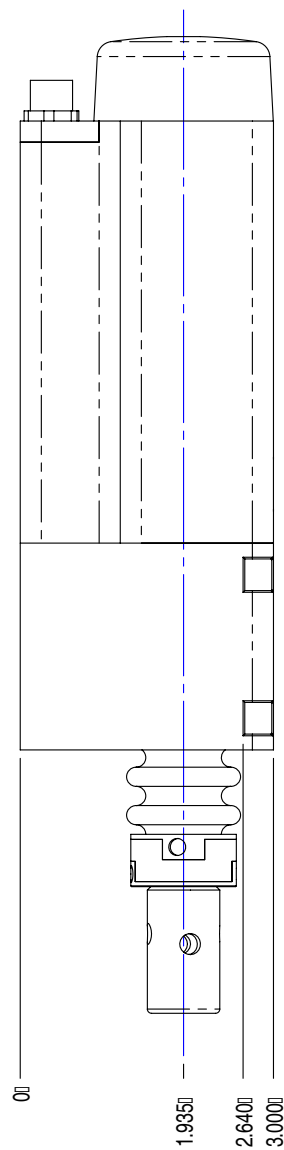
# Mechanical Dimensions



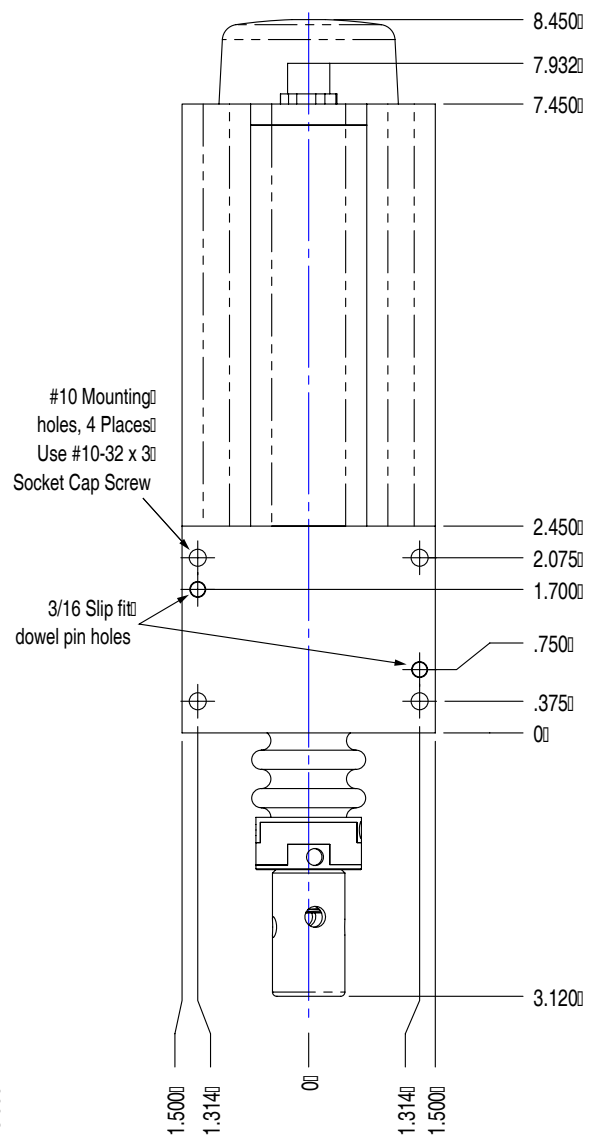
Front View



Top View



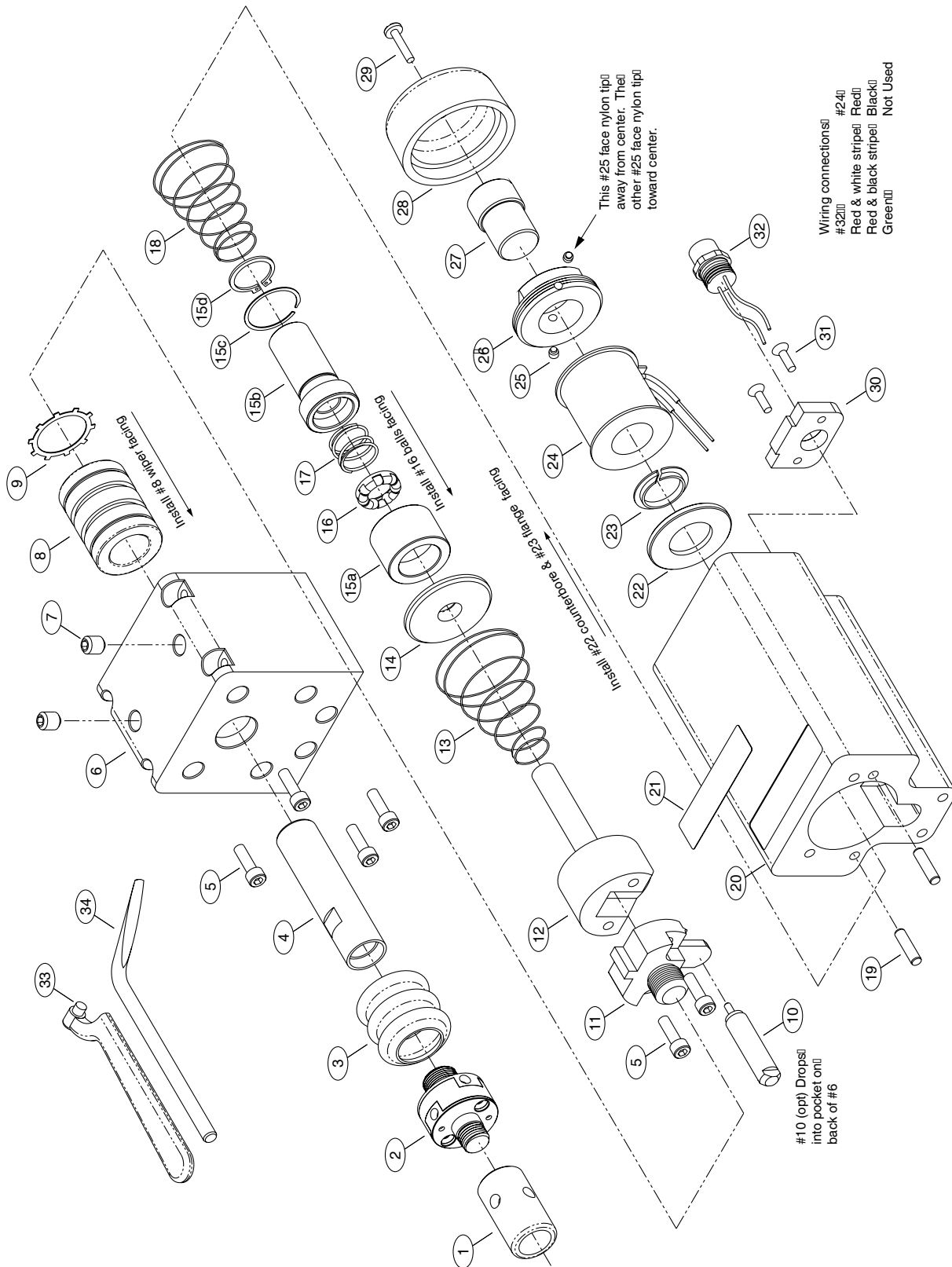
Side View



Bottom View

# Section 8

# Parts List



# Section 8

# Parts List

Item	Description	Part Number
01	Chuck Adapter	GHM12
02	Isolation Spud Assembly	GHM36
03	Dust Bellows	GHM14
04	Spindle	GHM801
05	Socket Head Cap Screw #10-24 x 5/8	SHC19-62
06	Front Cover	GHB16
07	Leg Retention Set Screws	SSC31-37CP
08	Linear Bearing with Wiper	BLF75-125
09	Linear Bearing Retainer	BLR-1
10	Plunge Dampener (D soft, E medium, F hard)	GAM21D
11	Cable Clamp Adapter	GHM18
12	Lifting Rod Assembly	GAM22
13	Main Spring	GAM23
14	Lift Release	GAM24
15	Moveable Core Assembly	GBM10
15a	Lift Bearing Retainer	GBM10A
15b	Moveable Core Shaft	GBM10B
15c	Retaining Ring	VHS-100
15d	Spring Seat	SHI-75
16	Lift Bearing	GAM8
17	Lift Bearing Spring	GAM9
18	Core Return Spring	GAM11
19	Dowel Pin 3/16 x 3/4	DPC19-75
20	Weld Tool Body	GHB1
21	Decal	GHD1
22	Front Coil Yoke	GAM2
23	Nylon Bushing	GAM15
24	Coil	GAE3
25	Set Screw #8-32 x 3/16 Nylon Tip	SSC16-18N
26	Rear Coil Yoke	GAM4
27	Adjustable Core	GBM5
28	Rear Cap	GHB6
29	Pan Head, Slotted #8-32 x 3/4	PSC16-75ZP
30	Connector Retainer	GHM701
31	Socket Flat Head #6-32 x 1/2	FHC13-50
32	Control Cable Connector	CSS3MR
33	Isolation Spud Wrench (Spanned Wrench)	SW20-125-450
34	Chuck Ejection Key	CEK
35	Weld Cable Tang	GHM43
36	Plunge Damper Access Screw	GHM120
37	Optional Flexible Weld Cable Whip	



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