



LightWELD Wire Feeder SET-UP GUIDE

DOCCHUGMPSEN0005

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Safety and Support

Please refer to the original manufacturer’s instruction manual “WF-007A Wire filling machine (Argon arc welding wire feeding machine)”, provided with the LightWELD system, for additional operating instructions and safety

For additional safety information, or to view instructional videos, you can reach IPG support using one of the following methods:

NEED SUPPORT?



1-508-506-2877

LightWELD@ipgphotonics.com

[GettingStarted.HandHeldLaserWelder.com](#)



LightWELD Wire Feeder Set-Up Guide: DOCCHUGMPSEN0005

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1 Getting Started

This guide describes the parts included in the LightWELD Wire Feeder Kit, descriptions about the hard wire and soft wire configurations, how to install the wire into the feeder through the nozzle tip, and instruction to synch with the LightWELD.



[VIDEO: Part 1 - Getting Started](#)

Configuration Options

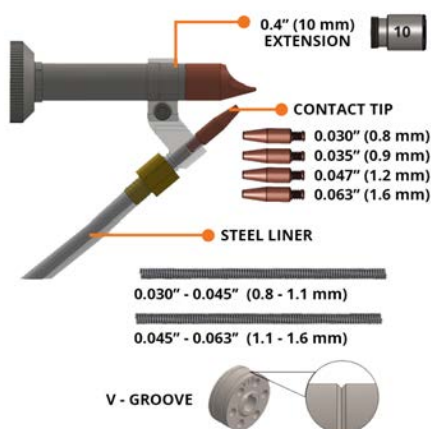
Refer to the sections below to determine the appropriate components for your application. This will affect steps later in the set up process. **This wire feeder accepts standard 8" (203 mm) or 12" (305 mm) spools.**

Hard Wire Configuration

Use the hard wire configuration for welding metals, such as Stainless Steel, Steel, Titanium, and Nickel alloys.

Requires **V-Drive Rolls**, **Steel Liners**, and **0.4" (10mm) Extension**, which is the default.

To select the proper components, use the size that corresponds with the hard wire's diameter. See the chart on the right for reference.



Part Number	Corresponding Wire Diameter
V-Drive Roll	
CMMIXXX0002838PX	0.030"-0.035" (0.8-0.9mm)
CMMIXXX0002839PX	0.045"-0.063" (1.1-1.6mm)
Steel Liner	
CMUS0010363X01XU	0.030"-0.045" (0.8-1.1mm)
CMUS0010363X02XU	0.045"-0.063" (1.1-1.6mm)
Contact Tip	
CMUS0011444XXXX0	0.030" (0.8mm)
CMUS0011445XXXX0	0.035" (0.9mm)
CMUS0011446XXXX0	0.047" (1.2mm)
CMUS0010319XXXXU	0.063" (1.6mm)
Extension	
CMUS0008377XXXXU	The default 0.4" (10mm) extension is used for all hard wire.

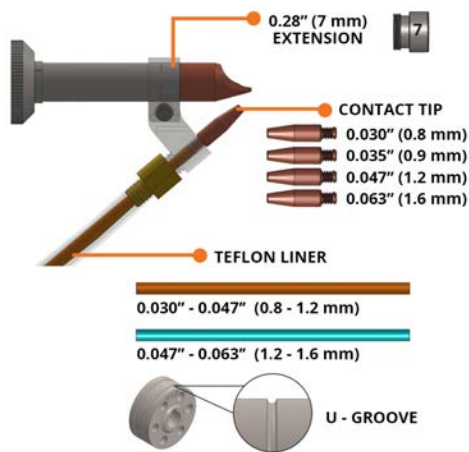
Example: To do a Stainless Steel filler weld with **0.045" (1.1mm) Hard wire**, use the **0.045"-0.063" (1.1-1.6mm) V-Drive Roll**, the **0.030"-0.045" (0.8-1.1mm) Steel Liner**, the **0.047" (1.2mm) Contact Tip**, and the **0.4" (10mm) Extension**.

Soft Wire Configuration

Use the soft wire configuration for welding with Aluminum wire or other very soft materials.

Requires **U-Drive Rolls**, **Teflon Liners**, and **0.28" (7mm) Extension**.

To select the proper components, use the size that corresponds with the soft wire's diameter. See the chart on the right for reference.



Part Number	Corresponding Wire Diameter
U-Drive Roll	
CMMIXXX0002723PX	0.030"-0.035" (0.8-0.9mm)
CMMIXXX0002722PX	0.047"-0.063" (1.2-1.6mm)
Teflon Liner	
CMUS0010362X01XU	0.030"-0.047" (0.8-1.2mm)
CMUS0010362X02XU	0.047"-0.063" (1.2-1.6mm)
Contact Tip	
CMUS0011444XXXXU	0.030" (0.8mm)
CMUS0011445XXXXU	0.035" (0.9mm)
CMUS0011446XXXXU	0.047" (1.2mm)
CMUS0010319XXXXU	0.063" (1.6mm)
Extension	
CMUS0010359XXXXU	The 0.28 (7mm) extension is used for all soft wire.

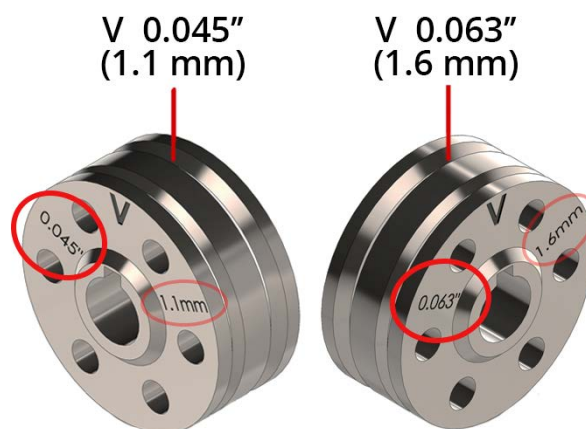
Example: To do an Aluminum 5XXX filler weld with **0.047" (1.2mm) Soft wire**, use the **0.047"-0.063" (1.2-1.6mm) U-Drive Roll**, the orange **0.030"-0.047" (0.8-1.2mm) Liner**, the **0.047" (1.2mm) Contact Tip**, and the **0.28" (7mm) Extension**.

Drive Rolls

		Drive Roll	Corresponding Wire Diameter
Hard Wire V-Drive Rolls		CMMIXXX0002838PX	0.030"-0.035" (0.8-0.9mm)
		CMMIXXX0002839PX	0.045"-0.063" (1.1-1.6mm)
Soft Wire U-Drive Rolls		CMMIXXX0002723PX	0.030"-0.035" (0.8-0.9mm)
		CMMIXXX0002722PX	0.047"-0.063" (1.2-1.6mm)

Each drive roll has 2 different sized grooves to accommodate a range of wire diameters. Notice the drive rolls are labeled on each side. Groove dimensions are indicated on the face opposite of the groove.

When loading the drive rolls into the drive mechanism, ensure the desired groove markings are facing out. **Once installed, the visible markings indicate the groove size that is currently in use.**



Assembling the Wire Feeder Attachment

Once the components (**Drive Rolls**, **Liner**, **Contact Tip**, and **Extension**) have been selected according to the application, the wire feeder unit and equipment can be assembled.



[VIDEO: Part 2 - Assembly](#)

Step 1: Prepare the Liner and Housing Tube

- 1** Insert the **Liner** into the **Housing Tube** and feed it through, until about an inch (25.4mm) of liner extends out from the tube. (Tube may also be black or opaque)

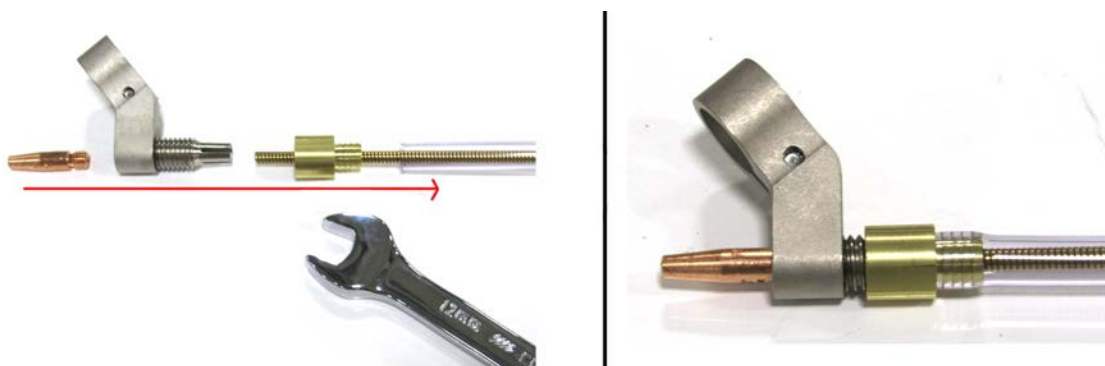


- 2** Insert the **Nut** on to the **Liner** as shown. Note that the nut has not been inserted into the housing tube.



Step 2: Connect the Weld Head Adapter and Components

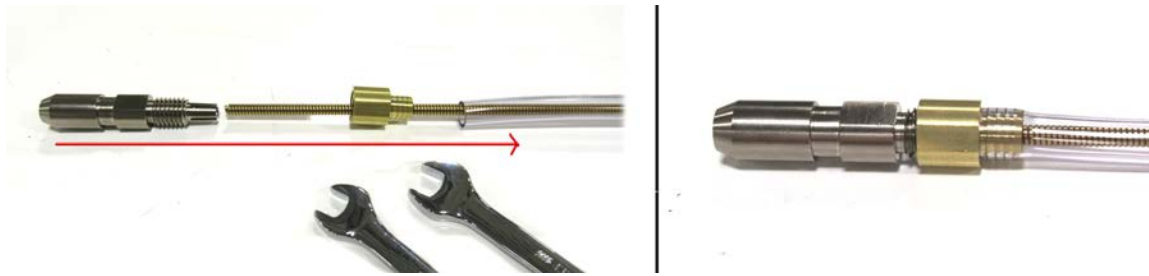
The weld head adapter and components can be assembled from left to right, as shown below.



- 1** Screw the **Contact Tip** into the **Weld Head Adapter**.
- 2** Insert the **Liner** into the **Weld Head Adapter** until it stops.
- 3** Manually screw the **Nut** on to the **Weld Head Adapter**.
- 4** Tighten the **Nut** on the **Weld Head Adapter** using a 12mm wrench.
- 5** Push the **Housing Tube** over the barbed end of the **Nut**. Move the housing tube back and forth while simultaneously pushing, until it is flush with the nut.

Step 3: Connecting the Wire Feeder Adapter and Components

The wire feeder adapter and components can be assembled from left to right, as shown below.



- 1** Insert the **Liner** into the **Wire Feeder Adapter** until the liner is flush with the end of wire feeder adapter.
- 2** Manually screw the **Nut** on to the **Wire Feeder Adapter**.
- 3** Tighten the **Nut** on the **Wire Feeder Adapter** using a 10mm and 12mm wrenches.
- 4** Push the **Housing Tube** over the barbed end of the **Nut**. Move the housing tube back and forth while simultaneously pushing, until it is flush with the nut.

The photo below is what will be referred to as the **Wire Feeder Attachment**. This connects the Wire Feeder Unit to the LightWELD Weld Head. The Wire Feeder Attachment can be disassembled and reassembled according to the hard or soft wire configurations.

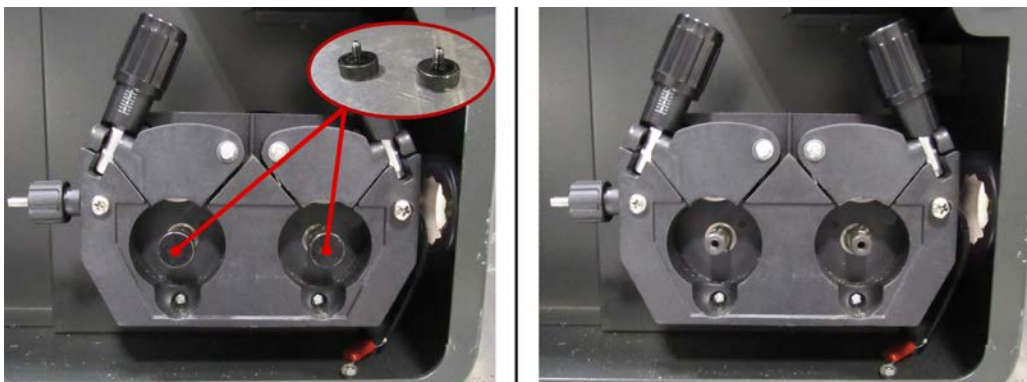


Setting up the Wire Feeder Unit

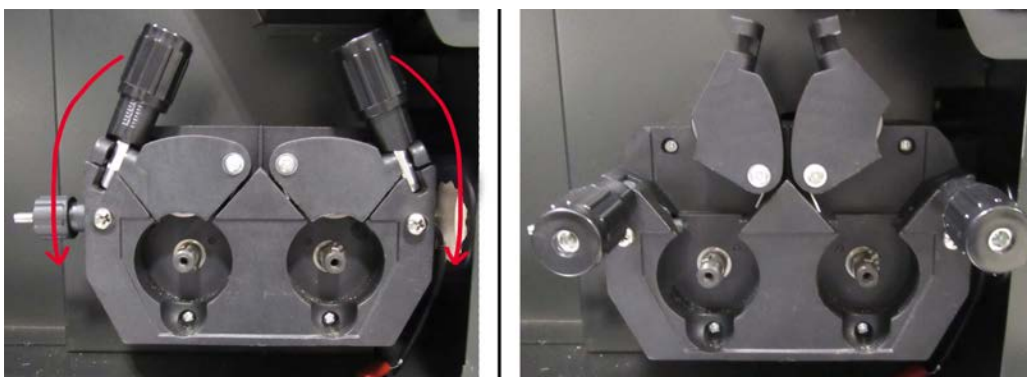
Select the appropriate drive rolls based on your application. (Refer to the [Drive Roll and Wire Configuration Table](#).) Open the wire feeder unit by pushing the tabbed opening toward the back of the wire feeder while swinging the door outward.

Step 1: Insert the Drive Rolls

- 1 Unscrew the **Drive Roll Caps**.



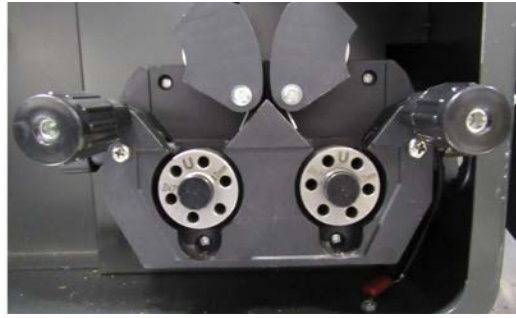
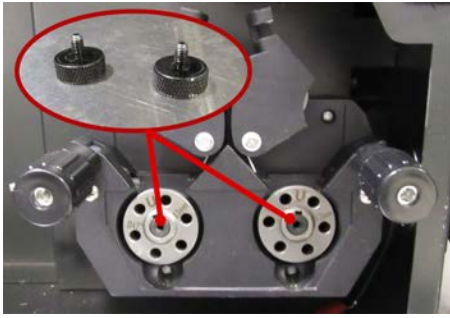
- 2 Pull down both the handles. This releases the drive roll covers.



- 3 The groove size corresponds with the wire diameter. The groove sizes are marked on the faces of the drive rolls. Insert the **Drive Rolls** into the drive roll mechanism, with the desired groove label facing outward.

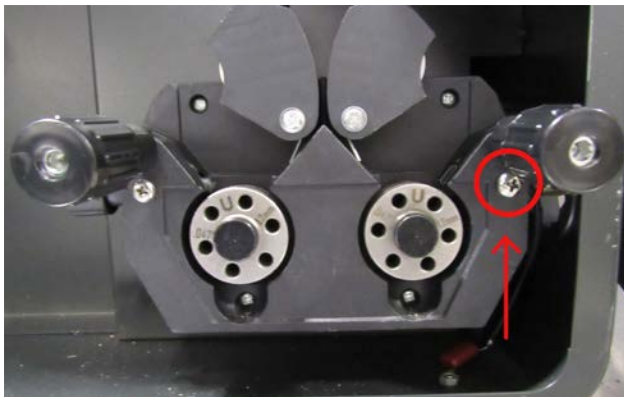


- 4** Screw the **Drive Roll Caps** on to secure the drive rolls.



Step 2: Connect the Wire Feeder Attachment to the Unit

- 1 Using a **Phillips Head Screwdriver**, loosen the set screw on the wire feeder unit.



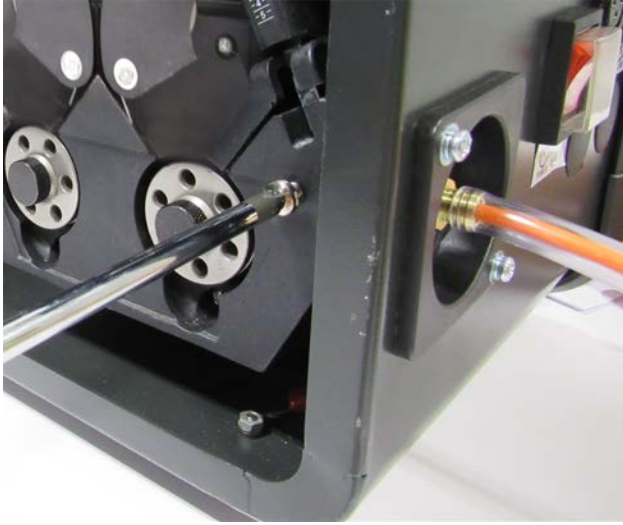
- 2 Locate the **Wire Feeder Attachment**. Insert the **Wire Feeder Adapter** into the wire feeder unit as far as possible without it touching the drive roll.



Warning: There should be a slight space between the adapter and drive roll to ensure it does not get scratched and worn out.



- 3** Using a **Phillips Head Screwdriver**, tighten the set screw to secure the connection between the wire feeder attachment and wire feeder unit.



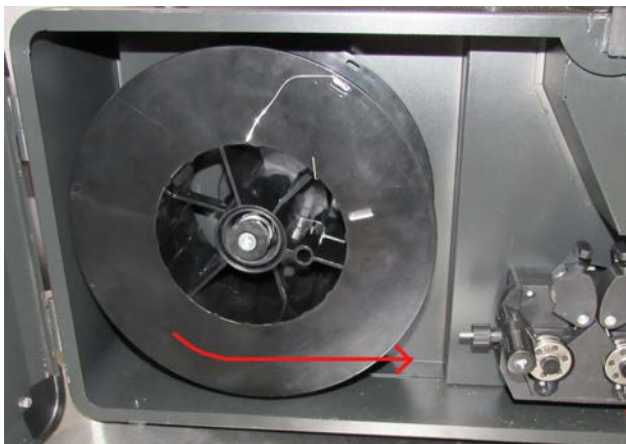
Step 3: Install the Spool

The wire feeder unit accepts standard 8" (203mm) or 12" (305mm) spools.

- 1** Unscrew the plastic **Spool Cap**.



- 2** Insert the corresponding **Wire Spool** for your application. Ensure the spool is installed so the wire will feed from the bottom.



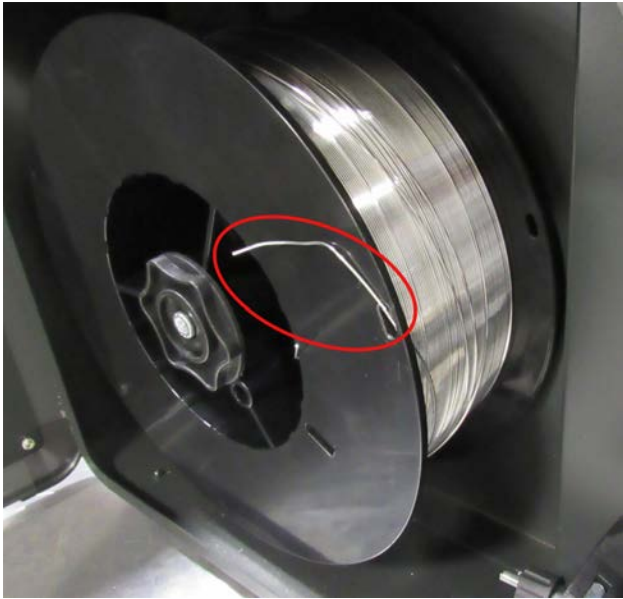
- 3** Screw the **Spool Cap** back on to secure the wire spool.



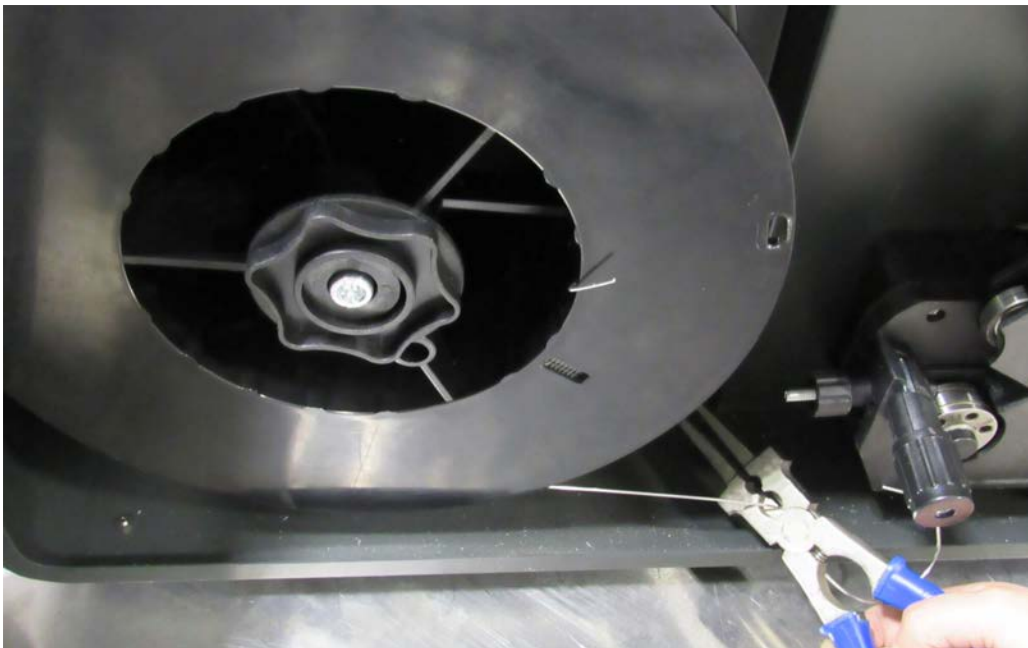
Step 4: Adjust the Wire and Secure the Drive Rolls

- 1 Locate the **start of the wire**. The start of the wire is usually tied off on the outer panels of the spool.

Note: Maintain tension on the wire to prevent the spool from unraveling.



- 2 Remove the start of the wire from the spool. The start of the wire is likely kinked from being secured to the outer panel of the spool. Use wire cutters to remove any kinks or casting.



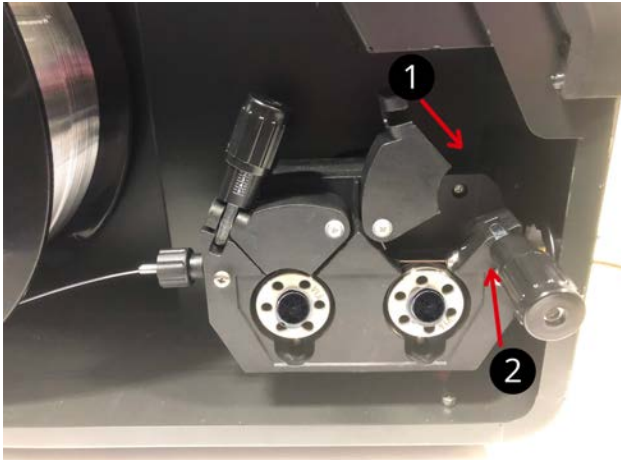
- 3** Manually feed the wire from the bottom of the spool into the drive housing mechanism, through both drive rolls and into the liner for a few inches.



- 4** Ensure that the wire is pushed into the correct grooves, which are furthest from you. **The outward face of the drive roll will have the size of the groove labeled on it.**



- 5** Secure the wire by pushing the drive roll covers down (1) and pushing the knobs back up into place (2).



Note: The tension on the wire can be adjusted by twisting the knobs on the drive roll mechanism. For example, if the wire is slipping then you will need to tighten. If the wire kinks, then you will need to reinstall the wire and loosen the tension.



Step 5: Feed the Wire

- 1** Plug the wire feeder unit into a standard 110V outlet and turn on the power.



- 2** Ensure the **Wire Feeder Attachment** is as straight as possible to prevent the wire from kinking and getting stuck on this initial feed.

Warning: Ensure that the adapter's outlet is not directly pointing at yourself or others. Keep your hands and fingers out of the direct line of the wire's path as there is a potential for the wire to puncture skin

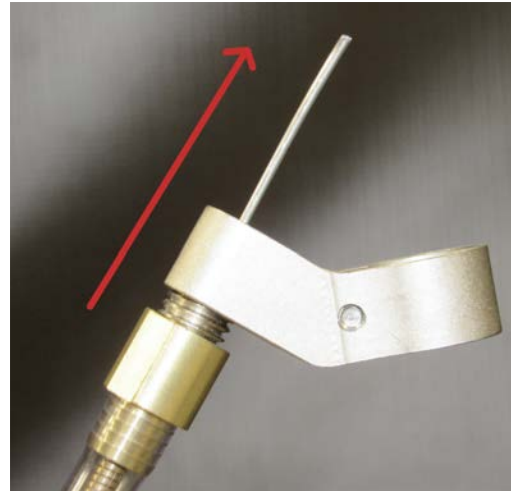


Wire Feeder Attachment is straightened across floor

- 3** Unscrew the **Contact Tip** from the **Weld Head Adapter**. This is to prevent any potential jamming on the initial feed.



- 4** Press the **'Manual Feed' Button** to feed the wire through the **Wire Feeder Attachment** until it comes out of the **Weld Head Adapter**.



- 5** Continue to manual feed until about 2" (50.8 mm) of the wire is exposed. Then, screw the **Contact Tip** back into the **Weld Head Adapter**.

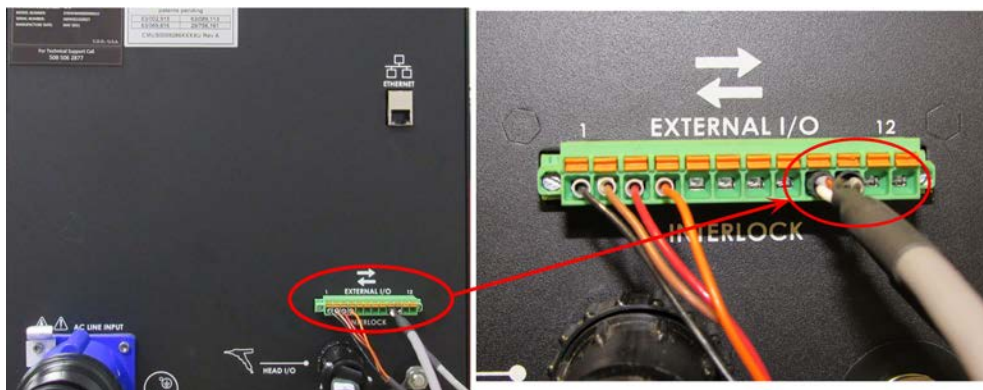


Step 6: Syncing the Wire Feeder Unit and the LightWELD

- 1 Attach the **Synch Cable** to the 'TORCH' port located on the front of the Wire Feeder.



- 2 Connect the synch cable wires to the 12-pin I/O connector on the back of the LightWELD unit as shown below. Ensure the wires are attached to **pins 9 & 10**.



- 3 Turn the LightWELD unit on using the switch key.



For more information about understanding and using the LightWELD panel, review the video titled [LightWELD 1500 Initial Set Up and System Overview](#).

Step 7: Attach Adapter to Weld Head

After the wire feeder tip assembly is complete and the synch cable is attached, the wire tip assembly can be added to the weld head from the LightWELD.

- 1** Connect the **Grooved Nozzle tip**, proper size **Extension** for configuration, and **2.283'' (58mm) Tube**.



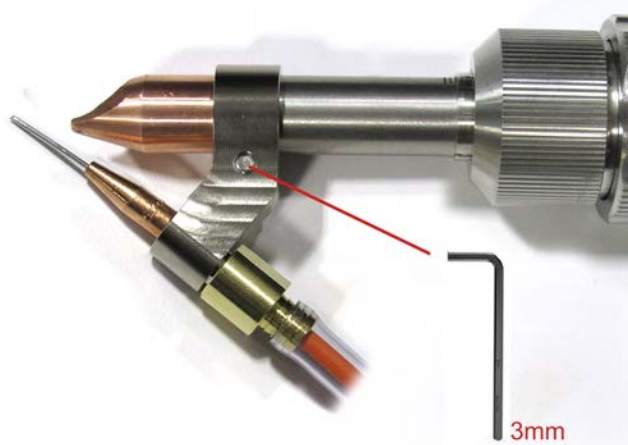
- 2** Insert the **Tube** into the head and secure by tightening the chuck. **Hand tighten only.**



3

Attach the **Weld Head Adapter** by sliding it onto the **tube**. Use a **3 mm Allen Wrench** to begin tightening the screw. Do not tighten completely in order to make adjustments in the next steps.

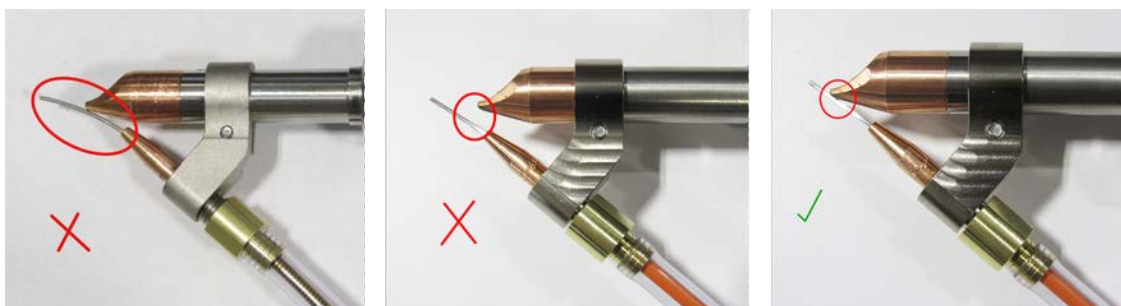
Note: If you do not have metric allen wrench, the SAE 7/64" can also be used. However, it is best practice to use a metric allen wrench. Using SAE instead of metric will cause stripping of the screw over time.



4

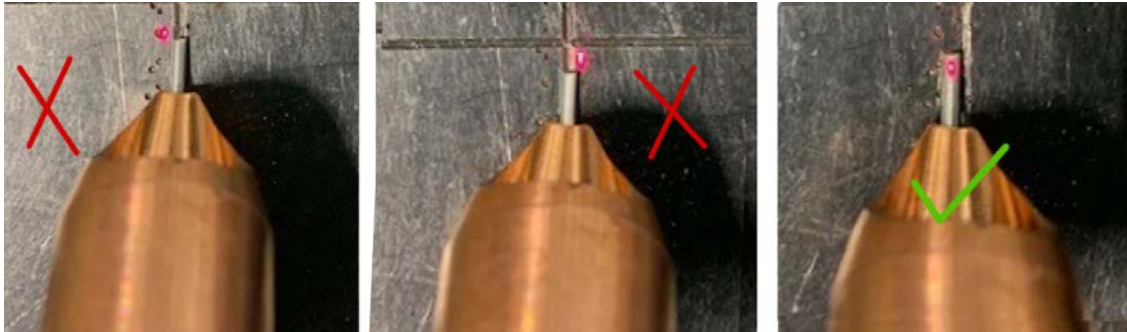
Ensure wire rests in the groove of the **Nozzle**. Tighten the **Screw** with a **3 mm Allen Wrench** once the wire is correctly positioned in the nozzle. The wire should maintain consistent contact with the nozzle.

Note: The nozzle tip must touch the wire feed at all times. The wire should feed through the grooved tip in a straight line. Too much tension of the wire against the grooved tip will feed the wire in a curved pattern. To fix this adjust the Weld Head Adapter's positioning on the 2.283" (58mm) tube.



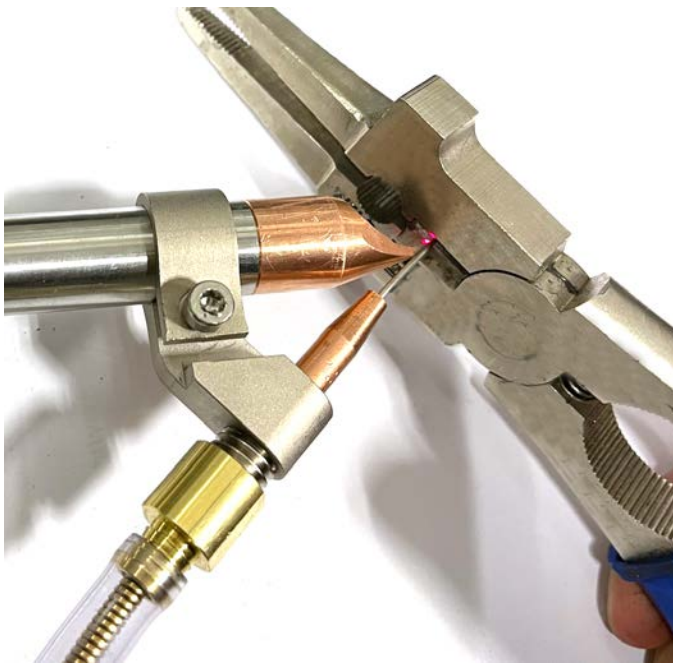
5

Ensure the guide beam is centered. If the guide beam is off center, it needs to be adjusted at the LightWELD Interface. See ["Centering the Guide Beam " on page 23](#) for instructions.



6

Use **wire cutters** to trim the wire where it intersects the guide beam to remove excess wire if necessary.



Presets

IPG has developed preset programs and recommended wire feed rates dependent on material, wire alloy, wire diameter, process gas, and material thickness. Refer to the **Mode Table Chart** (DOCCHRDMPSEX0025) attached to the LightWELD for recommended wire feeder presets.

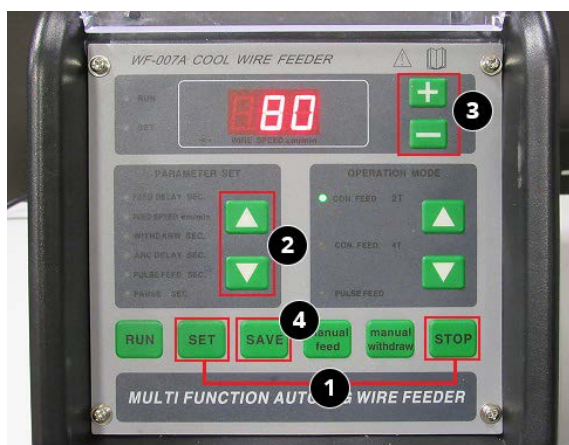


[VIDEO: Part 3 - Process Development](#)

Wire Feeder Interface Overview

Set wire feed speed for the welding job on the wire feeder interface panel, referring to the **Mode Table Chart** (DOCCHRDMPSEX0025) attached to the LightWELD as a guide. Be sure to enter the corresponding program on the LightWELD unit before starting a job in order to calibrate the laser.

Note: The wire feed rate units are centimeter per minute. The default feed speed for this wire feeder is 80 cm/min.



- 1 To change parameters, press STOP, then SET.
- 2 Use the up/down buttons to select a parameter.
- 3 Use the plus/minus buttons to set the desired value for the selected parameter.
- 4 Press 'SAVE' to save the parameters.

Suggested Parameter Settings:

FEED DELAY SEC	0
FEED SPEED cm/min	Refer to the Mode Table Chart (DOCCHRDMPSEX0025) attached to the LightWELD
WITHDRAW SEC	0
ARC DELAY SEC	0

LightWELD Interface Overview

The LightWELD program/mode should match the **wire feed rate** setting of the Wire Feeder. Refer to **Mode Table Chart** (DOCCHRDMPSEX0025) for recommended presets.

Find IPG recommended wire welding programs on the **Mode Sheet** (DOCCHRDMPSEX0025) attached to the LightWELD. However, these programs can be customized to accommodate your preferences.

Note: See the [LightWELD webpage](#) for additional documentation and videos about LightWELD settings.

The diagram shows the front panel of the IPG LightWELD 1500. It features a digital display showing '1500 W', 'R2', '200 Hz', and '05 mm'. There are several buttons and knobs: a red emergency stop button, a power button, a selection-up button (right arrow), a selection-down button (left arrow), and two large rotary knobs for Wobble Frequency and Wobble Length. Callout boxes provide instructions for each of these controls.

LASER POWER
150 - 1500 W
Higher Power for faster travel speeds or more penetration

TO SELECT A WELDING PROGRAM
Push the Selection-**Up BUTTON** (right arrow) to increase the Program Number between 0 to 19
Push the Selection-**Down BUTTON** (left arrow) to decrease the Program Number between 19 to 0
To select a PROGRAM GROUP, hold the UP or DOWN BUTTON (right or left arrow) for 2 seconds. Pressing either button now scrolls through the list of available program groups.

TO SAVE A WELDING PROGRAM
1. Press and hold both the UP and DOWN BUTTONS for 3 seconds.
2. When the display stops blinking it indicates that the program has been saved. This program can be selected as described above.

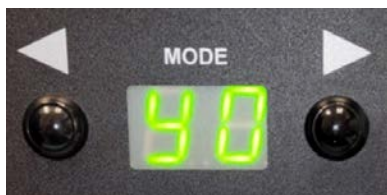
TO RESET A PROGRAM TO FACTORY SETTINGS
1. Press and hold both the UP and DOWN BUTTONS for 10 seconds.
2. When the display stops blinking it indicates that the program values have been restored.

WOBBLE FREQUENCY
0 - 300 Hz
Higher Frequency for higher travel speeds

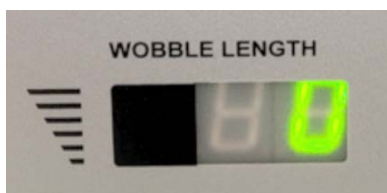
WOBBLE LENGTH
0 - 5 mm
Longer Wobble Length for wider weld beads

Centering the Guide Beam

- 1 Select **program Y0**. Press and hold button to cycle through programs.



- 2 Set the **Wobble Length** to '0'.

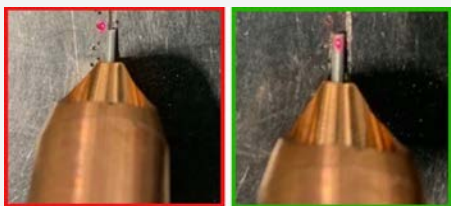


- 3 Use the **Wobble Frequency Knob** to adjust the beam until it is centered on the wire.

Situation 1:

Beam is to the left of the wire

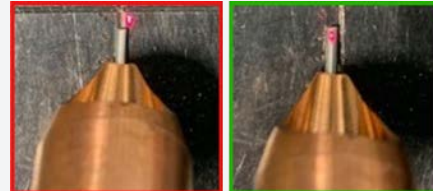
Turn the **Wobble Frequency Knob** clockwise (+) to move the guide beam to the **right**.



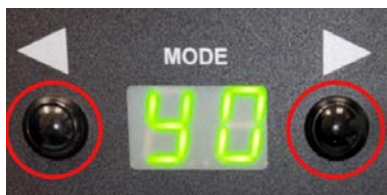
Situation 2:

Beam is to the right of the wire

Turn the **Wobble Frequency Knob** counterclockwise (-) to move the guide beam **left**.



- 4 To save the beam position, press and hold **Both Buttons** simultaneously for 3 seconds. Once the display stops blinking the program is saved.

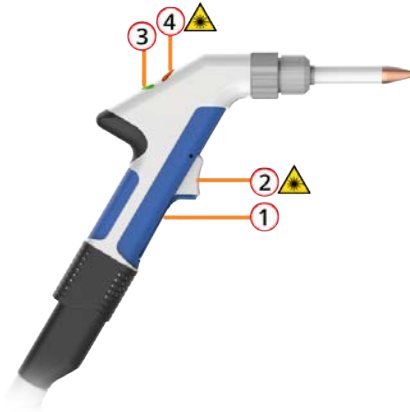




Ready to Weld

Once the wire feeder is setup and the desired settings are entered, the LightWELD is ready for use.

Weld Head Overview

Please refer to the LightWELD User Guide for more details and safety descriptions.



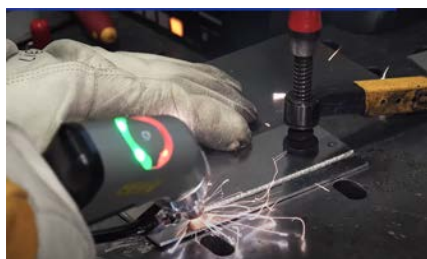
Feature	Description
1	Trigger 1 Press and Hold To Start Gas flow
2	Trigger 2 Press and hold to start Laser emission and feed the wire  <div style="border: 1px solid #0070C0; padding: 5px; margin-top: 10px;"> Note: If the nozzle tip is not touching metal to complete safety circuit, this will still feed the wire. </div>
3	Green Status Indicator Light <ul style="list-style-type: none"> • <u>Solid Green</u> - while Trigger 1 is pressed and no errors are present. • <u>Blinking Green</u> - once all the interlocks are fully satisfied. This indicates that the system is ready to fire. Operator can now press Trigger 2 control to start the laser emission.
4	Red Emissions Indicator Light This will be lit red while laser emission is turned ON. 

Welding Process Overview

Before starting to weld, press and hold **Trigger 1** to activate the gas.

Touch the wire and nozzle to the workpiece to engage the safety interlock. This allows the laser to be activated. Press **Trigger 2** to activate the laser and begin welding.

Warning: The red emissions light will be lit to indicate the laser is active.



Note: The wire must maintain contact with the surface at all times.

If the tip disengages from the workpiece at any point, '**Error 21 - Nozzle Shutdown**' appears on the LightWELD interface indicating the laser was deactivated. Reset the error by depressing **Trigger 1**.

Visit us online for more resources about using the LightWELD:



[LightWELD 1500 Portal](#)

Download PDF manuals and view videos about how to setup and use your LightWELD devices, including the wire feeder and LightWELD 1500. This portal requires a registered serial number for your machine.

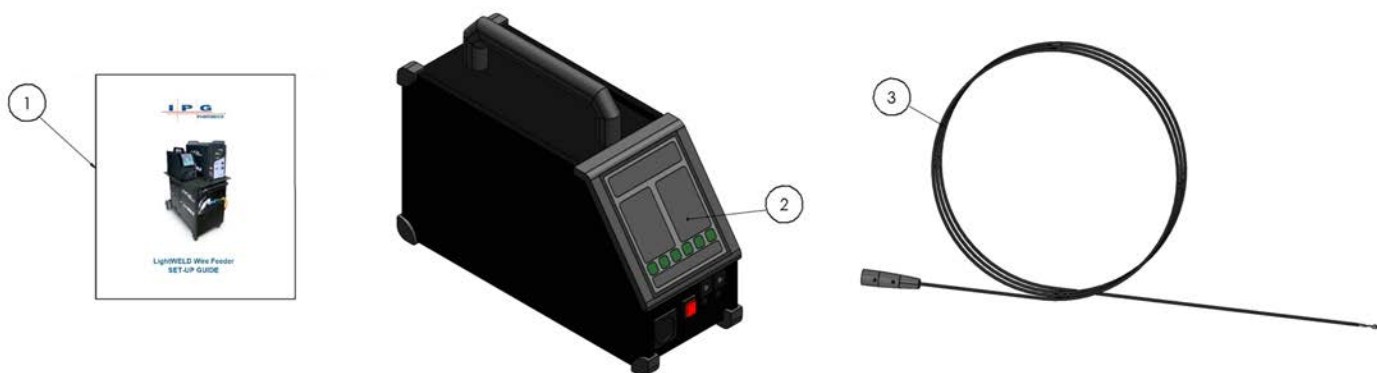
2 Replacement Parts



Visit the IPG Web Shop to order parts 24/7: [IPG Photonics Shop](#)

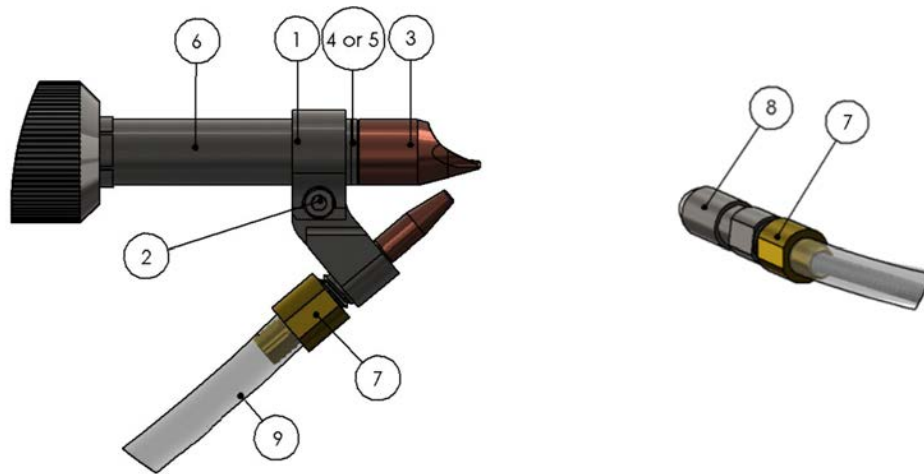
Wire Feeder Assembly

Item #	Part Number	Part Name	QTY.
1	DOCCHUGMPSEN0005	GUIDE	1
2	CMMIXXX0003694PX	WIRE FEEDER UNIT	1
3	CEU0000305710MXU	SYNCH CABLE	1



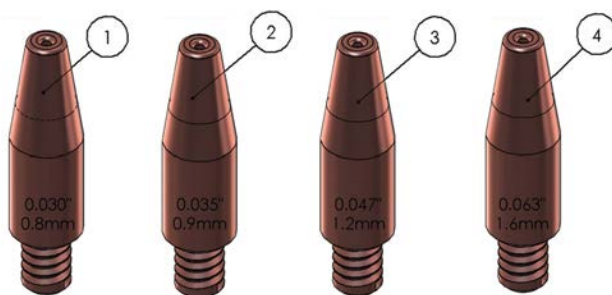
Adapter Nozzle Assembly

Item #	Part Number	Part Name	QTY.
1	CMUS0010223XXXXU	WELD HEAD ADAPTER	1
2	P40-009401	SCREW	1
3	CMUS0008398002XU	GROOVED NOZZLE TIP	1
4	CMUS0010359XXXXU	0.28" (7mm) EXTENSION	1
5	CMUS0008377XXXXU	0.4" (10mm) EXTENSION	1
6	CMUS0008259XXXXU	2.283" (58mm) TUBE	1
7	CMUS0010224XXXXU	NUT	2
8	CMUS0010225XXXXU	WIRE FEEDER ADAPTER	1
9	CMMIXXX0002848PX	HOUSING TUBE	1



Contact Tip

Item #	Part Number	Part Name	QTY.
1	CMUS0011444XXXXU	0.030" (0.8mm) CONTACT TIP	1
2	CMUS0011445XXXXU	0.035" (0.9mm) CONTACT TIP	1
3	CMUS0011446XXXXU	0.047" (1.2mm) CONTACT TIP	1
4	CMUS0010319XXXXU	0.063" (1.6mm) CONTACT TIP	1



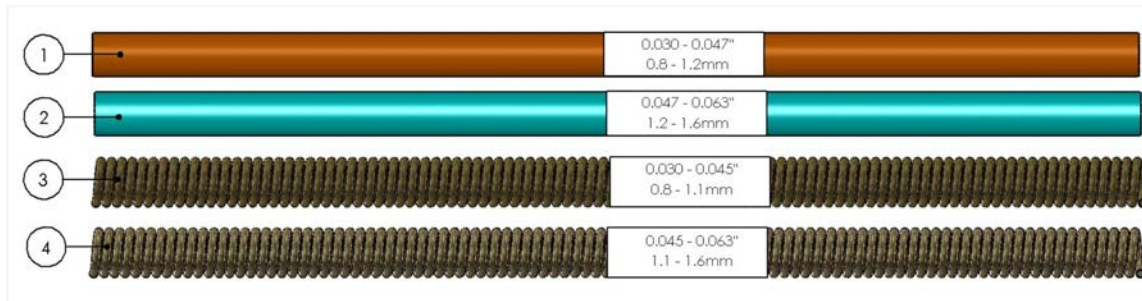
Drive Roll

Item #	Part Number	Part Name	QTY.
1	CMMIXXX0002723PX	0.030"-0.035" (0.8-0.9mm) U-DRIVE ROLL	2
2	CMMIXXX0002722PX	0.047"-0.063" (1.2-1.6mm) U-DRIVE ROLL	2
3	CMMIXXX0002838PX	0.030"-0.035" (0.8-0.9mm) V-DRIVE ROLL	2
4	CMMIXXX0002839PX	0.045"-0.063" (1.1-1.6mm) V-DRIVE ROLL	2



Liner

Item #	Part Number	Part Name	QTY.
1	CMUS0010362X01XU	ORANGE TEFLON LINER	1
2	CMUS0010362X02XU	TURQUOISE TEFLON LINER	1
3	CMUS0010363X01XU	0.030"-0.045" (0.8-1.1mm) STEEL LINER	1
4	CMUS0010363X02XU	0.045"-0.063" (1.1-1.6mm) STEEL LINER	1



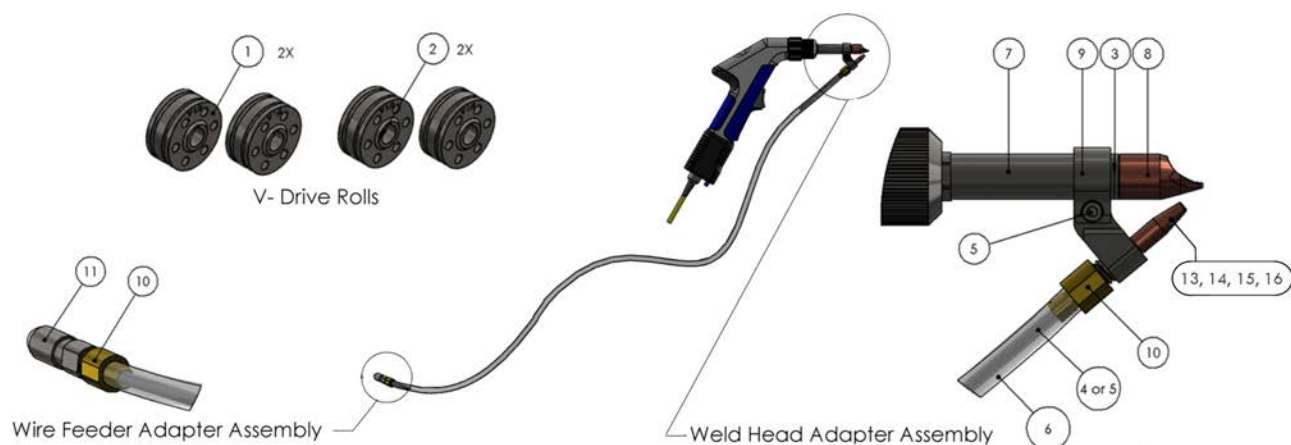
Wire Configuration Kits



Visit the IPG Web Shop to order parts 24/7: [IPG Photonics Shop](#)

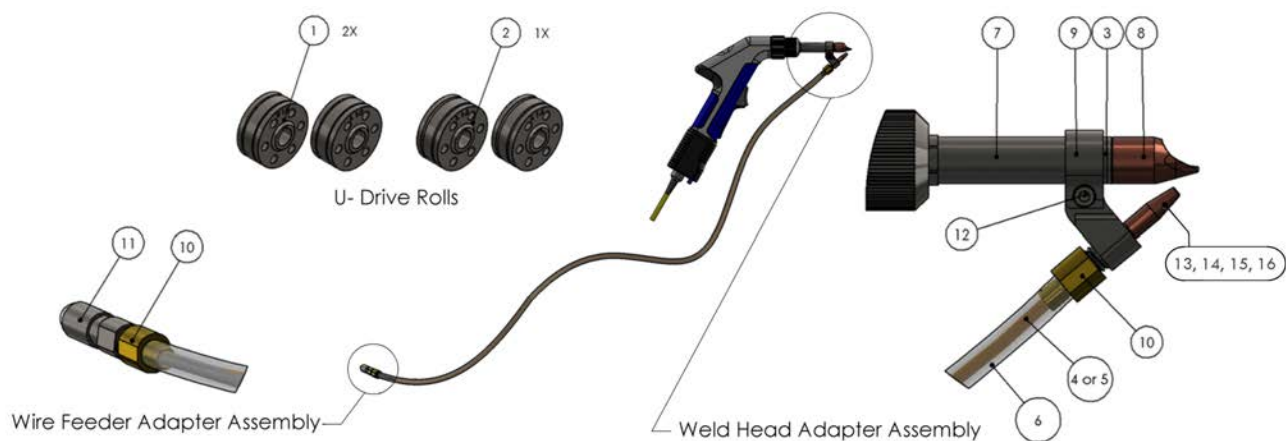
Hard Wire Kit - CEU00003657XXXXU

Item #	Part Number	Part Name	QTY.
1	CMMIXX0002838PX	0.030"-0.035" (0.8-0.9mm) V-DRIVE ROLL	2
2	CMMIXX0002839PX	0.045"-0.063" (1.1-1.6mm) V-DRIVE ROLL	2
3	CMUS0008377XXXXU	0.4" (10mm) EXTENSION	1
4	CMUS0010363X01XU	0.030"-0.045" (0.8-1.1mm) STEEL LINER	1
5	CMUS0010363X02XU	0.045"-0.063" (1.1-1.6mm) STEEL LINER	1
6	CMMIXX0002848PX	HOUSING TUBE	1
7	CMUS0008259XXXXU	2.283" (58mm) TUBE	1
8	CMUS0008398002XU	GROOVED NOZZLE TIP	1
9	CMUS0010223XXXXU	WELD HEAD ADAPTER	1
10	CMUS0010224XXXXU	NUT	2
11	CMUS0010225XXXXU	WIRE FEEDER ADAPTER	1
12	P40-009401	SCREW	1
13	CMUS0011444XXXXU	0.030" (0.8mm) CONTACT TIP	1
14	CMUS0011445XXXXU	0.035" (0.9mm) CONTACT TIP	1
15	CMUS0011446XXXXU	0.047" (1.2mm) CONTACT TIP	1
16	CMUS0010319XXXXU	0.063" (1.6mm) CONTACT TIP	1



Soft Wire Kit - CEU00003658XXXXU

Item #	Part Number	Part Name	QTY.
1	CMMIXXX0002723PX	0.030"-0.035" (0.8-0.9mm) U-DRIVE ROLL	2
2	CMMIXXX0002722PX	0.047"-0.063" (1.2-1.6mm) U-DRIVE ROLL	2
3	CMUS0010359XXXXU	0.28" (7mm) EXTENSION	1
4	CMUS0010362X01XU	ORANGE TEFLON LINER	1
5	CMUS0010362X02XU	TURQUOISE TEFLON LINER	1
6	CMMIXXX0002848PX	HOUSING TUBE	1
7	CMUS0008259XXXXU	2.283" (58mm) TUBE	1
8	CMUS0008398002XU	GROOVED NOZZLE TIP	1
9	CMUS0010223XXXXU	WELD HEAD ADAPTER	1
10	CMUS0010224XXXXU	NUT	2
11	CMUS0010225XXXXU	WIRE FEEDER ADAPTER	1
12	P40-009401	SCREW	1
13	CMUS0011444XXXXU	0.030" (0.8mm) CONTACT TIP	1
14	CMUS0011445XXXXU	0.035" (0.9mm) CONTACT TIP	1
15	CMUS0011446XXXXU	0.047" (1.2mm) CONTACT TIP	1
16	CMUS0010319XXXXU	0.063" (1.6mm) CONTACT TIP	1



3 Reference Videos

[Part 1 - Getting Started](#)



[Part 2 - Assembly](#)



[Part 3 - Process Development](#)

