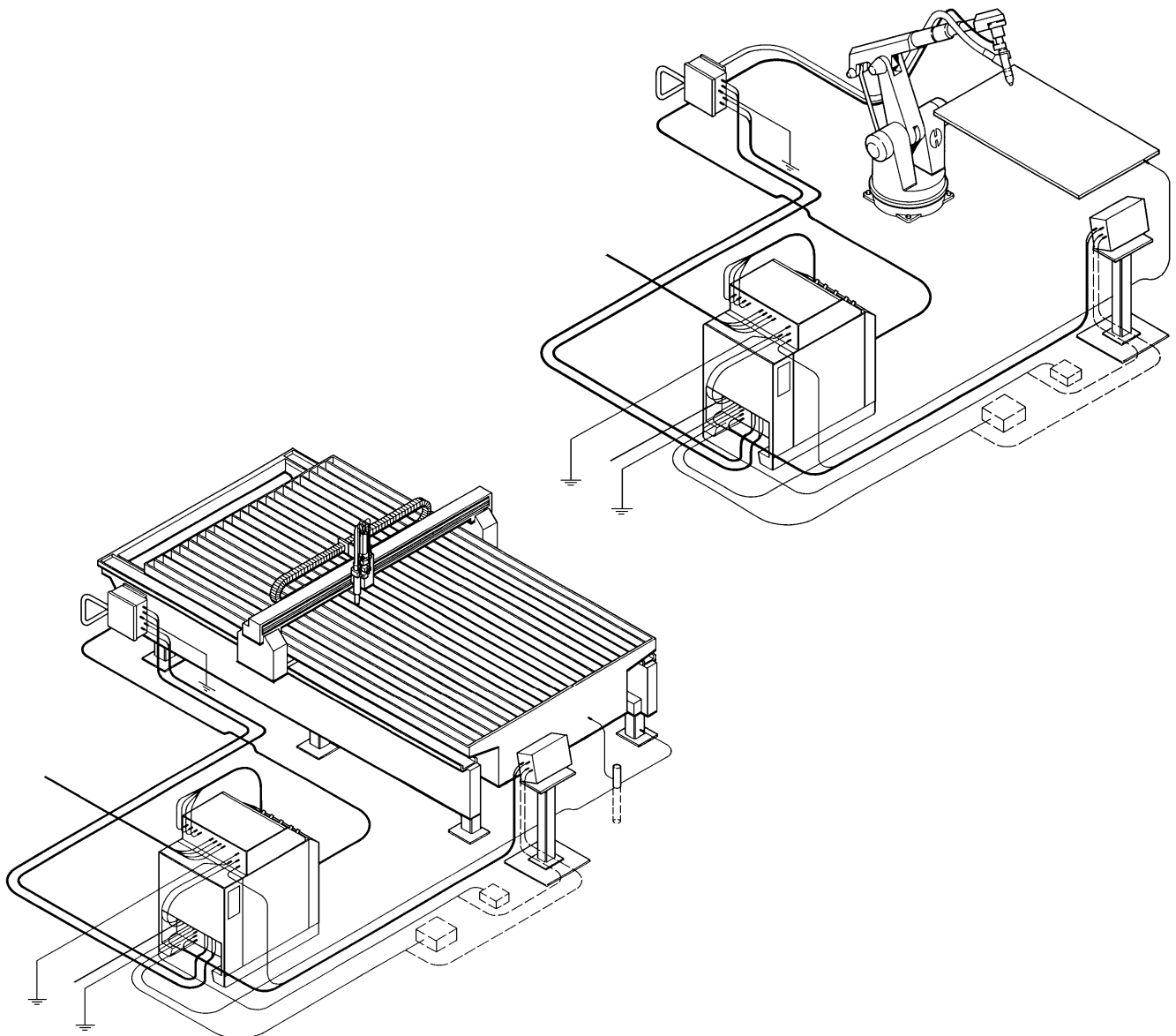


HD3070

*Plasma Arc Cutting System
with Automatic Gas Console*

*Product Configuration Manual
802310 - Revision 4*



HD3070
Plasma Arc Cutting System
with Automatic Gas Console

Product Configuration Manual
PM-231

Revision 4 - January 2000

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1 Ordering Procedure

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INTRODUCTION

Hypertherm's HD3070 HyDefinition® plasma cutting system is a precision cutting dual gas machine-torch system. The microprocessor-controlled system helps to provide extended life for the torch consumables parts. To achieve consumable long life, **all cuts must begin and end on the plate surface**; this allows for the proper ramping of gases and DC current to extend the life of the nozzle and electrode. The HD3070 system consists of a power supply, remote high frequency (RHF) console, gas console, off-valve assembly and torch. Optional units include a timer-counter and a remote current control.

The HD3070 can be configured for either robotic applications or X-Y cutting tables. To accommodate the different needs of these two types of systems, two different torches are offered.

TORCHES

PAC184

If ordering for a robotic system, the PAC184 torch with 45° quick disconnect is recommended. This torch, with a pointed front end, is designed to cut in a robotic environment.

PAC186

The PAC186 torch with the straight quick disconnect is more suitable for X-Y cutting tables.

A unique feature to the PAC184 and PAC186 torches is that the torch bodies, quick disconnects and mounting sleeves are all interchangeable.

CUTTING MACHINES

If cutting on an X-Y machine, it is extremely critical that the torch drive system has very accurate vibration-free control of the X, Y, and Z axes. Placing a precision-cutting plasma system on a cutting machine with poor positioning or poor contouring tolerance, or with inadequate acceleration and deceleration characteristics will clearly show the effects on the cut face. The **Z-axis** of the cutting machine must be controlled to **+/- .005 in.** Initial height sensing (IHS) for plate piercing must also be accurate and repeatable to ensure long consumable life.

Hypertherm recommends HD3070 units be installed on new, high-precision X-Y machines.

For robotic and hard tooling applications, any system that is laser compatible will generally perform well with the HD3070 system.

MULTI-TORCH SYSTEMS

If more than one torch is required, increase the quantity of each component by the number of torches to be used.

To specify the correct components for each application, follow the guidelines in this section.

LAYOUT OF CUTTING MACHINE AND HD-3070 SYSTEM

When configuring an HD3070 system(s), it is important to know where each major component will be placed. This will vary with the cutting machine manufacturer and with the particular installation. After the location of the major components has been determined, the interconnecting leads and cable lengths can be specified.

It is critical to follow the path that the interconnecting leads will follow and allow for some slack when specifying their lengths. **Do not try to get by with the next shorter length!**

Pictured below is a diagram showing an overhead view of a typical precision cutting X-Y machine. Installations vary, so use this figure as a guide.

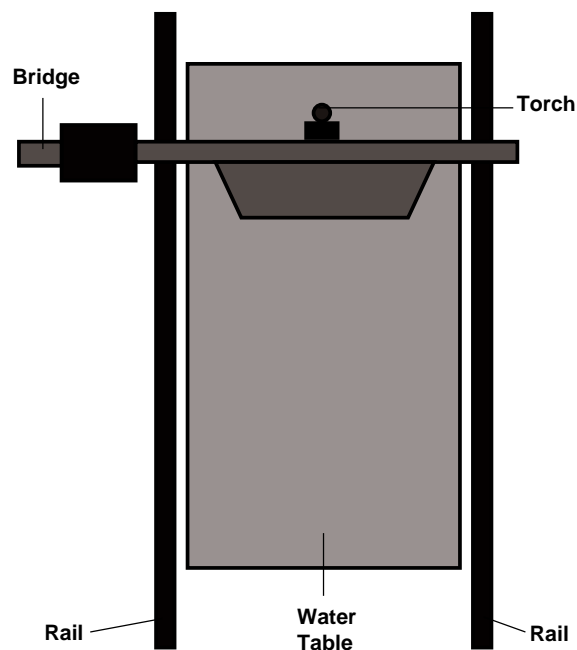


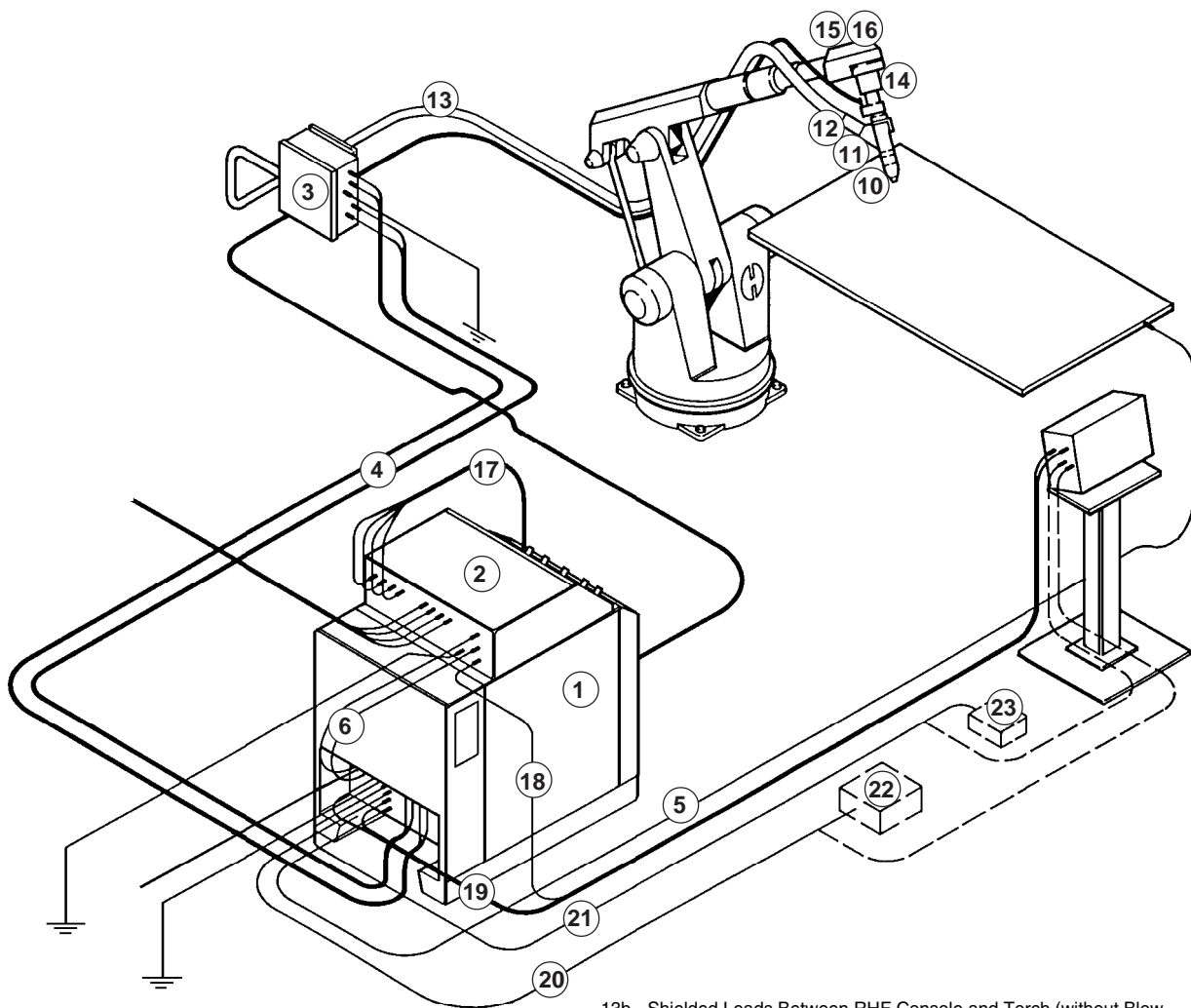
Figure 1-1 Gantry (Bridge) Layout*

* Cables are usually in a power track or festoon system. Cable, lead and hose lengths must allow for routing through the system.

ORDERING INFORMATION

The figure below represents an HD3070 plasma system with automatic gas console mounted in a robotic environment. A complete robotic system is also represented in block diagram form on page 1-7. See pages 1-20 and 1-21 for representations of an HD3070 plasma system with automatic gas console mounted on an X-Y cutting table.

- Notes:
- Block diagrams are offered to clarify connection points and do not necessarily reflect relative sizes or distances between components.
 - If the cutting system has a power track for cabling and hosing, be certain to see the **Specifications** section to check hose, cable and connector diameters.



- | | | | |
|-----|--|-----|--|
| 1 | HD3070 Power Supply, Auto | 13b | Shielded Leads Between RHF Console and Torch (without Blow Down Check Valve & Hose) |
| 2 | HD3070 Automatic Gas Console | 14a | Off-Valve Assembly (with Blow Down Solenoid Valve) |
| 3 | Remote High Frequency (RHF) Console | 14b | Off-Valve Assembly (without Blow Down Solenoid Valve) |
| 4 | Leads Between Power Supply and RHF Console | 15 | 48 Inch Shield Gas Hose Between Off-Valve Assy and Torch |
| 5 | Work Cable Between Power Supply and Work Table | 16 | 48 Inch Plasma Gas Hose Between Off-Valve Assy and Torch |
| 6 | Leads Between Power Supply and Auto Gas Console | 17 | Leads Between Gas Console and Off-Valve Assy |
| 7 | PAC186 Torch (not shown) | 18 | Cable Between Gas Console and Cutting Machine Interface |
| 8 | Quick Disconnect Assembly - Straight (not shown) | 19 | Control Cable Between Power Supply and Cutting Machine Interface |
| 9 | 10 Inch Torch Mounting Sleeve (not shown) | 20 | Current Setpoint Cable Between Power Supply and Cutting Machine Interface or Between Power Supply and RCC |
| 10 | PAC184 Torch | 21 | Timer-Counter Cable Between Power Supply and Cutting Machine Interface or Between Power Supply and Timer-Counter |
| 11 | Quick Disconnect Assembly - 45° | 22 | Remote Current Control (RCC) |
| 12 | 8 Inch Torch Mounting Sleeve | 23 | Timer-Counter |
| 13a | Shielded Leads Between RHF Console and Torch (with Blow Down Check Valve & Hose) | | |

Figure 1-2 HD3070 System in Robotic Environment

HD3070 w/Automatic Gas Console 1-5

SINGLE-SYSTEM ORDERING PROCEDURE

SYSTEM ORDERING FOR HD3070 w/AUTOMATIC GAS CONSOLE - ROBOTIC APPLICATIONS

Special numbers have been established for ordering an entire HD3070 system. Under these numbers, all cables, hoses and leads are at fixed lengths. Refer to the list below and Figure 1-3 on the following page for clarification of the system.

- 1 HD3070 Power Supply, Auto
- 2 HD3070 Automatic Gas Console
- 3 Remote High Frequency (RHF) Console
- 4 15 Ft Leads Between Power Supply and RHF Console
- 5 39.4 Ft Work Cable Between Power Supply and Work Table
- 6 6 Ft Leads Between Power Supply and Auto Gas Console
- 7 PAC184 Machine Torch Assy
- 8 PAC184 Machine Torch Quick Disconnect Assembly and Leads:
 - 8a PAC184 45° Quick Disconnect
 - 8b 8 Inch Torch Mounting Sleeve
 - 8c Off-Valve Assy (Off-Valve comes with or without Blow Down Solenoid Valve)
 - 8d 4 Ft Hoses from Off-Valve Assy to Torch
 - 8e 35 Ft Leads from Gas Console to Off-Valve Assy
 - 8f 19.7 Ft Leads from RHF Console to Torch (Leads come with or without Blow Down Check Valve & Hose)
- 9 28.2 Ft Cable Between Gas Console and Cutting Machine Interface
- 10 28.2 Ft Control Cable Between Power Supply and Cutting Machine Interface
- 11 28.2 Ft Current Setpoint Cable Between Power Supply and Cutting Machine Interface
- 12 28.2 Ft Timer-Counter Cable Between Power Supply and Cutting Machine Interface

If this exact configuration will work for your particular site, simply order by using the appropriate system number listed directly below.

- | | |
|---------------|---|
| 078067 | HD3070 Plasma System w/Auto Gas Console, 200V, 50/60 Hz, 3Ø |
| 078068 | HD3070 Plasma System w/Auto Gas Console, 208V, 60 Hz, 3Ø |
| 078069 | HD3070 Plasma System w/Auto Gas Console, 220/380/415V, 50/60 Hz, 3Ø |
| 078070 | HD3070 Plasma System w/Auto Gas Console, 240/480V, 60 Hz, 3Ø |
| 078071 | HD3070 Plasma System w/Auto Gas Console, 600V, 60 Hz, 3Ø |

To customize a system, begin on page 1-8 and use the order form.

Standard HD-3070 Plasma System w/Automatic Gas Console - Robotic
 (Use Single System Number on This Sheet)

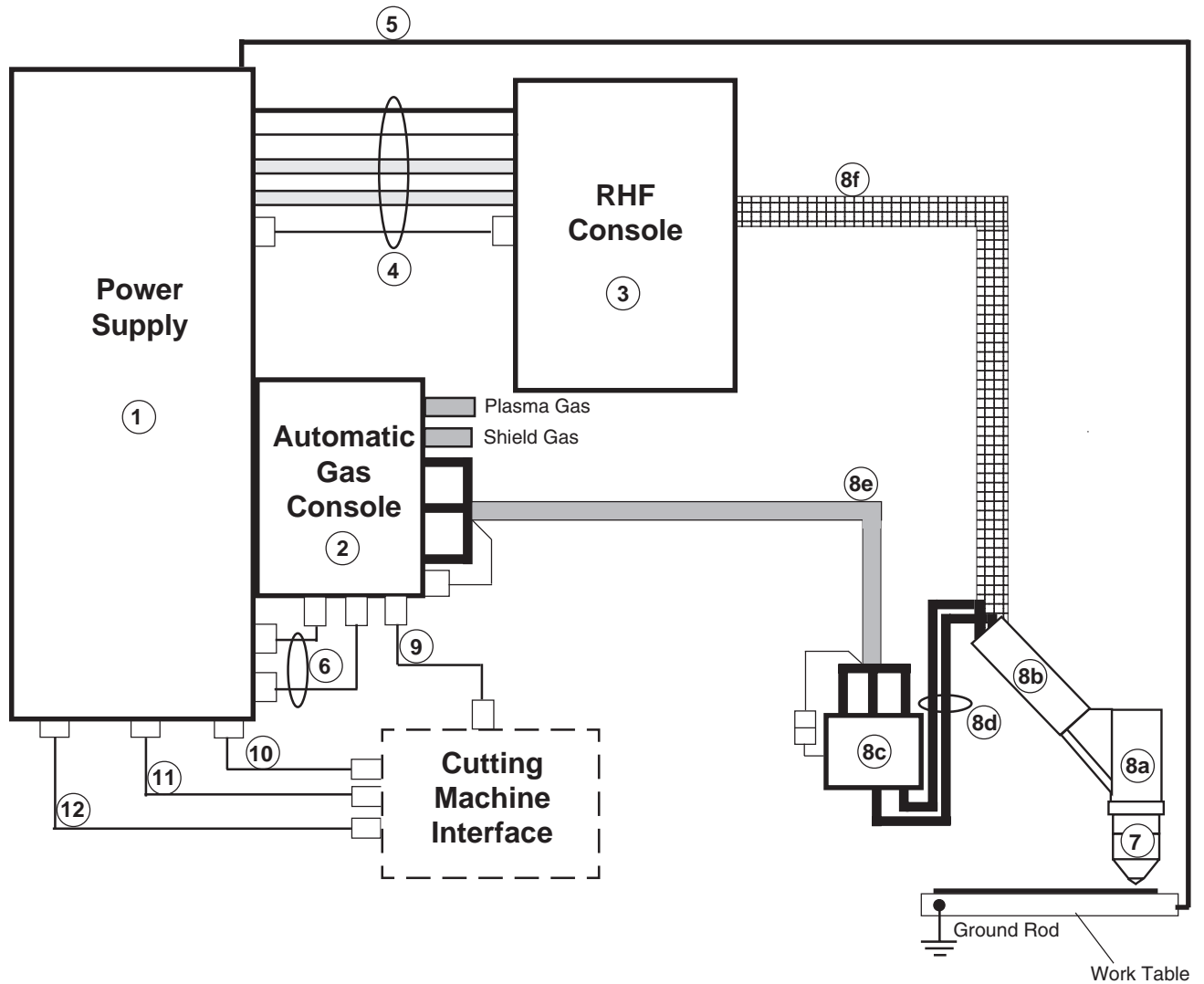


Figure 1-3 HD3070 w/Automatic Gas Console Single Order Number System Configuration

ORDERING PROCEDURE

CUSTOMIZED ORDERING FOR HD-3070 w/AUTOMATIC GAS CONSOLE

1 SPECIFY THE POWER SUPPLY

The HD3070 power supply houses a 100-amp, 15kw chopper power supply which produces a constant current DC output variable from 15 to 100 amps. It contains a microprocessor control PC board which regulates all of the plasma system functions: start sequence, machine interface functions, gas and cut parameters, and off sequence. The power supply also houses the recirculating cooling system to cool the torch. The power supply interconnects with the RHF console, machine interface, gas console, and the workpiece.

- Determine the placement of the power supply (supplies) and input line voltage available at the site and order the appropriate power supply. See *Specifications* for details on power supply dimensions and weight.

2 ORDER THE AUTOMATIC GAS CONSOLE

The gas console is designed to be mounted on the power supply. The unit interfaces with the power supply, torch off-valve assembly, cutting machine interface and the supply gases. The gas console must be located within 100 feet (30 m) of the torch off-valve assembly and 150 feet (46 m) of the cutting machine interface.

- Order the gas console.

3 ORDER THE RHF CONSOLE

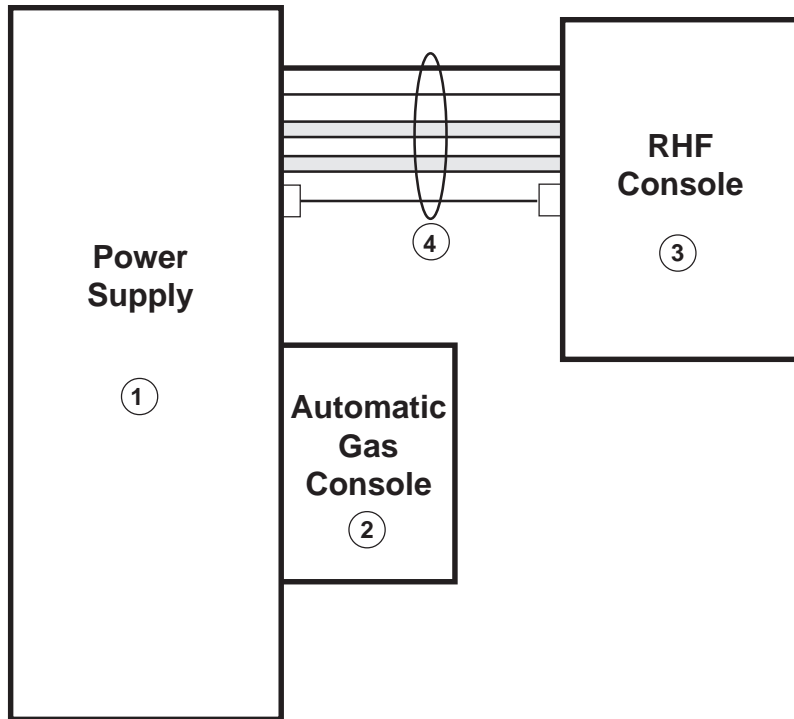
The RHF console houses the high-frequency starting circuit which is needed to initiate the torch. The high-frequency starting circuit permits more effective RF shielding and allows the RHF console to be installed at a distance of up to 125 feet (38 m) from the power supply and 40 feet (12 m) from the torch. A door interlock switch and a cathode manifold are also located in the RHF console.

- Determine approximately where the console will be mounted on the cutting machine. Check the mounting holes and weight of the console in the *Specifications* section to determine where it can best be attached.

4 SPECIFY THE LEADS BETWEEN THE POWER SUPPLY AND THE RHF CONSOLE

The lead set from the power supply to the RHF console consists of five components: a pilot arc cable, a #4 negative lead cable, a cooling supply hose, a cooling return hose, and a control cable.

- Based on the distance (the path that the leads will have to run) between the power supply and the remote high-frequency console, order the appropriate lead package.



- ① **HD3070 Power Supply, Auto**
 078072 HD-3070 PS, Auto, 200V, 50/60 Hz, 3Ø
 078073 HD-3070 PS, Auto, 208V, 60 Hz, 3Ø
 078074 HD-3070 PS, Auto, 220/380/415V, 50/60 Hz, 3Ø
 078075 HD-3070 PS, Auto, 240/480V, 60 Hz, 3Ø
 078076 HD-3070 PS, Auto, 600V, 50/60 Hz, 3Ø

- ② **HD3070 Automatic Gas Console**
 078061 Auto Gas Csl, HD3070

- ③ **Remote High Frequency (RHF) Console**
 078010 RHF Console, HD3070

- ④ **Leads Between Power Supply and RHF Console**
 028561 Leads, PS/RHF Console, 15 Ft (4.6 m)
 028562 Leads, PS/RHF Console, 25 Ft (7.6 m)
 028563 Leads, PS/RHF Console, 50 Ft (15 m)
 028564 Leads, PS/RHF Console, 75 Ft (23 m)
 028565 Leads, PS/RHF Console, 100 Ft (30 m)
 028737 Leads, PS/RHF Console, 115 Ft (35 m)
 028749 Leads, PS/RHF Console, 125 Ft (38 m)

Figure 1-4 Power Supply, Automatic Gas Console, RHF Console, Leads Between PS and RHF Console

5

SPECIFY THE WORK CABLE BETWEEN THE POWER SUPPLY AND THE WORK TABLE

The work (positive) cable connects the positive side of the power supply circuit to the workpiece via the cutting (work) table. It should be kept as short as possible.

- Determine the necessary length for the work cable and order from the parts list on page 1-11.

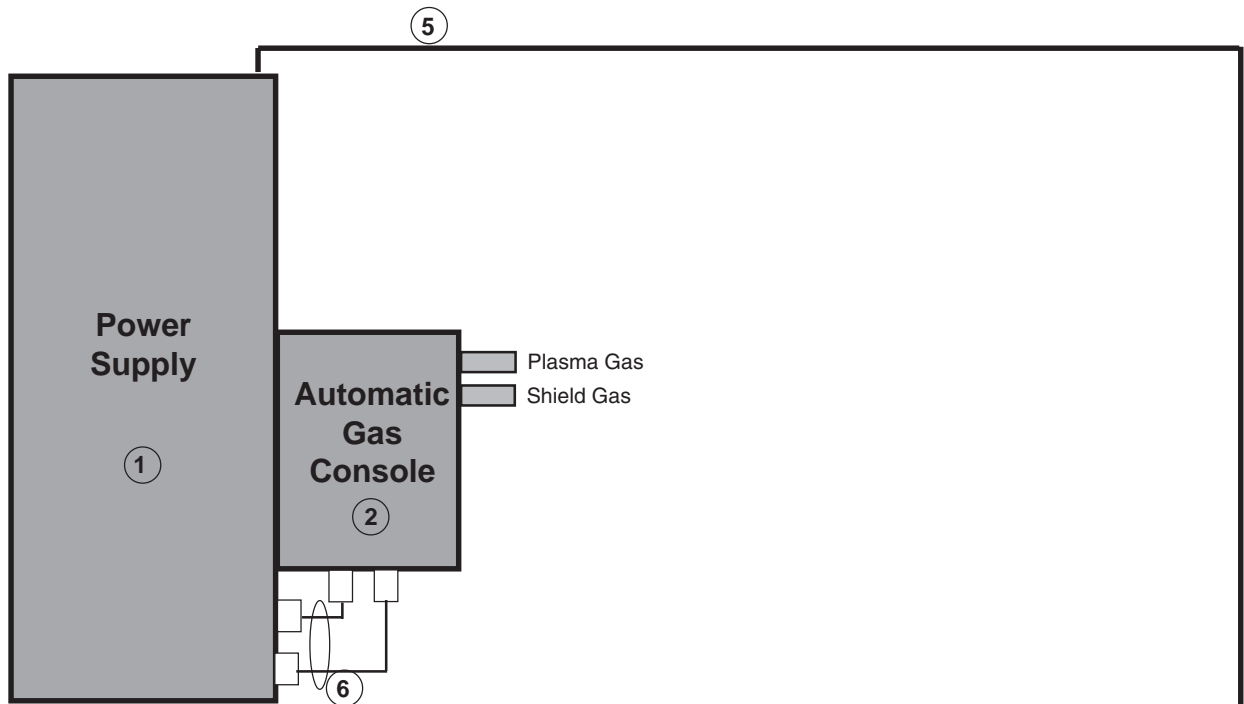
6

SPECIFY THE LEADS BETWEEN THE POWER SUPPLY AND THE GAS CONSOLE

The automatic gas console normally mounts on the power supply and uses two (2) six-foot (2 m) cables to interface to the power supply. If the power supply will be placed farther than 40 feet from the torch off-valve assembly, the gas console will have to be mounted closer to the torch and may require cables greater than six feet to interface with the power supply.

- Determine where the gas console will be mounted and the distance between the power supply and the gas console. Order the appropriate length leads.

Note that the hoses from the gas supplies to the gas console are not provided by Hypertherm.



5 Work Cable Between Power Supply and Work Table

023535	Cable, PS/Work Table,	15 Ft (4.6 m)
023536	Cable, PS/Work Table,	25 Ft (7.6 m)
023828	Cable, PS/Work Table,	39.4 Ft (12 m)
023537	Cable, PS/Work Table,	50 Ft (15 m)
023538	Cable, PS/Work Table,	75 Ft (23 m)
023539	Cable, PS/Work Table,	100 Ft (30 m)

6 Leads Between Power Supply and Auto Gas Csl

028879	Leads, PS/Auto Gas Csl,	6 Ft (2 m)
028880	Leads, PS/Auto Gas Csl,	10 Ft (3 m)
028881	Leads, PS/Auto Gas Csl,	25 Ft (7.6 m)
028882	Leads, PS/Auto Gas Csl,	50 Ft (15 m)
028883	Leads, PS/Auto Gas Csl,	75 Ft (23 m)
028884	Leads, PS/Auto Gas Csl,	100 Ft (30 m)
028885	Leads, PS/Auto Gas Csl,	125 Ft (38 m)
028886	Leads, PS/Auto Gas Csl,	150 Ft (46 m)

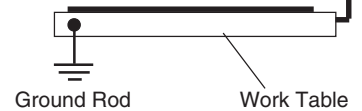


Figure 1-5 Work Cable, Leads Between Power Supply and Auto Gas Console

SPECIFY THE TORCH CONFIGURATION

The torches for the HD3070 system are the PAC184 and PAC186. Hypertherm does not provide a torch mounting bracket for the torches. Precision and robotic cutting machines have their own mounting brackets that have proven to be adequate for the PAC184 and PAC186 torches. A variety of torch configurations are available due to the interchangeability of the torch head, quick disconnect assemblies and torch mounting sleeves.

- Determine the type of torch, quick disconnect and mounting sleeve you need, and specify using the figure on page 1-13 and the following brief descriptions as guides:

- 7 PAC186 Torch**

This torch head comes loaded with 15-amp consumables and is more commonly used with an X-Y table. The PAC186 is capable of cutting with up to 100 amps of current. There are two varieties: one torch includes a retaining cap with a tab for an initial height sensing (IHS) system and the other torch comes without the tab. Determine if the system will be including a THC system before ordering (Hypertherm offers a Command THC system for the HD3070).
- 7a PAC186 Consumable Parts Kits** (not shown on page 1-13)

Order one of these consumable parts kits if you specify either of the PAC186 torches. One kit contains an extra torch body, and the other does not. Both kits include consumables for cutting with 15, 30, 50, 70 or 100 amps.
- 8 Quick Disconnect Assembly - Straight**

Can be used with either torch. More commonly used with the PAC186.
- 9 10 Inch Mounting Sleeve**

Can be used with either torch depending on cutting machine's torch mounting design.
- 10 PAC184 Torch**

This torch head comes loaded with 30-amp consumables and is more commonly used in robotic applications. The PAC184 is capable of cutting with 15 or 30 amps of current. There are two varieties: one torch includes a retaining cap with a tab for an initial height sensing (IHS) system and the other torch comes without the tab. Determine if the system will be including a THC system before ordering (Hypertherm offers a Command THC system for the HD3070).
- 10a PAC184 Consumable Parts Kits** (not shown on page 1-13)

Order one of these consumable parts kits if you specify the PAC184 torch. One kit contains an extra torch body, and the other does not. Both kits include consumables for cutting with 15 or 30 amps.
- 11 Quick Disconnect Assembly - 45°**

Can be used with either torch. More commonly used with the PAC184.
- 12 8 Inch Mounting Sleeve**

Can be used with either torch depending on cutting machine's torch mounting design.

- 7 PAC186 Torch**
 128102 PAC186 Machine Torch w/o IHS Tab
 128101 PAC186 Machine Torch with IHS Tab
- 7a PAC186 Consumable Parts Kits**
 128097 PAC186 Consumable Parts Kit w/Torch
 128098 PAC186 Consumable Parts Kit w/o Torch
- 8 Quick Disconnect Assembly - Straight**
 028855 Quick Disconnect Assy - PAC186/184
- 9 10 Inch Torch Mounting Sleeve**
 020668 Torch Mounting Sleeve - PAC186/184
- 10 PAC184 Torch**
 028839 PAC184 Machine Torch w/o IHS Tab
 128199 PAC184 Machine Torch with IHS Tab
- 10a PAC184 Consumable Parts Kits**
 028842 PAC184 Consumable Parts Kit w/Torch
 028900 PAC184 Consumable Parts Kit w/o Torch
- 11 Quick Disconnect Assembly - 45°**
 028840 45° Quick Disconnect Assy - PAC186/184
- 12 8 Inch Torch Mounting Sleeve**
 120256 Torch Mounting Sleeve - PAC186/184

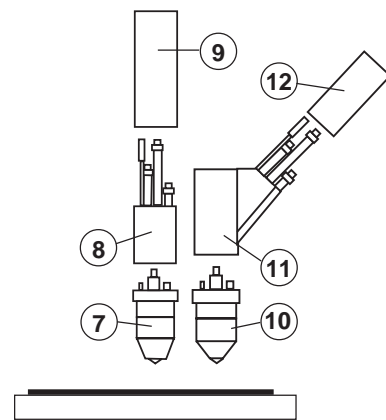


Figure 1-6 PAC186 and PAC184 Torch Configurations

13 SPECIFY THE LEADS BETWEEN THE RHF CONSOLE AND TORCH

- Based on the distance (the path the leads will take) between the RHF console and the torch, specify the appropriate lead set.
- Two options are available: **13a** includes a blow down check valve; **13b** does not include blow down check valve.

14 ORDER THE OFF-VALVE ASSEMBLY

- One off-valve assembly must be ordered for every HD3070 system.
- Two options are available: **14a** includes a blow down solenoid; **14b** does not include blow down solenoid.

15 ORDER THE SHIELD GAS HOSE BETWEEN THE OFF-VALVE ASSEMBLY AND THE TORCH

- One shield gas hose must be ordered for every HD3070 system.

16 ORDER THE PLASMA GAS HOSE BETWEEN THE OFF-VALVE ASSEMBLY AND THE TORCH

- One plasma gas hose must be ordered for every HD3070 system.

17 SPECIFY THE LEADS BETWEEN THE GAS CONSOLE AND OFF-VALVE ASSEMBLY

- Based on the distance (the path the leads will take) between the gas console and the off-valve assembly, specify the appropriate lead set.

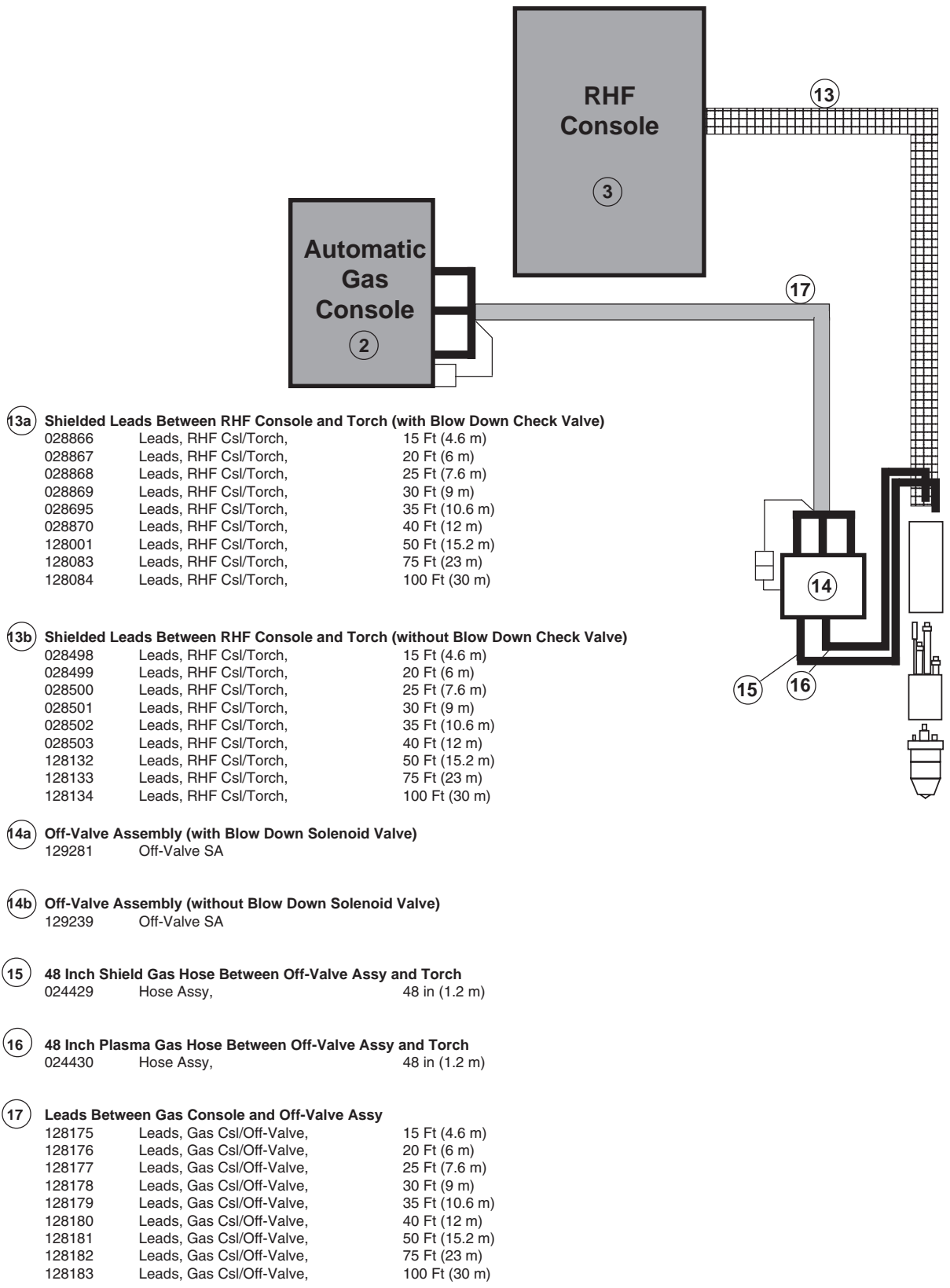


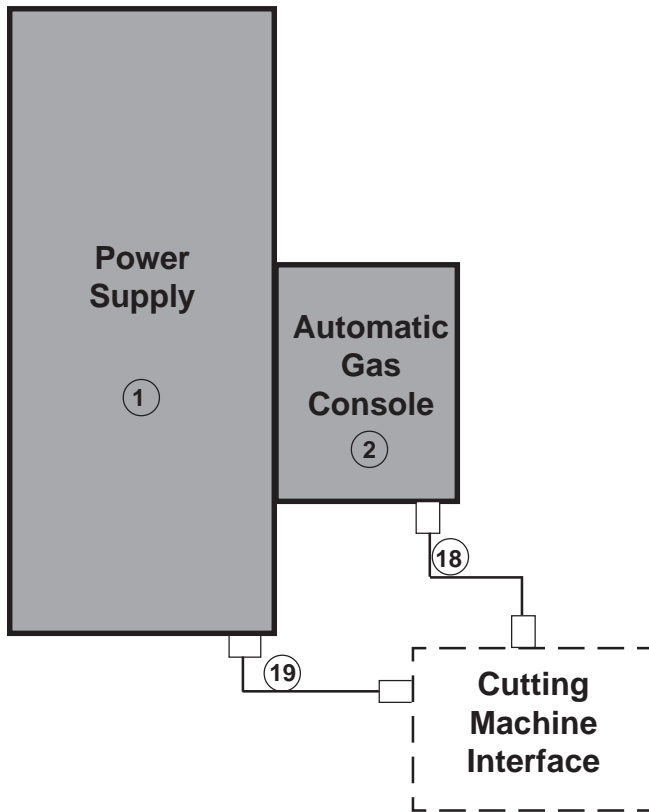
Figure 1-7 Connections to Torch and Off-Valve Assembly

18 SPECIFY THE CONTROL CABLE BETWEEN THE GAS CONSOLE AND THE CUTTING MACHINE INTERFACE

- Based on the distance (the path the cable will take) between the gas console and the cutting machine interface, specify the appropriate cable.

19 SPECIFY THE CONTROL CABLE BETWEEN THE POWER SUPPLY AND THE CUTTING MACHINE INTERFACE

- Based on the distance (the path the cable will take) between the power supply and the machine computer interface, order the appropriate cable.



18 Cable Between Gas Console and Cutting Machine Interface

023667	Cable, Auto Gas Csl/Mach. Int.,	25 Ft (7.6 m)
023831	Cable, Auto Gas Csl/Mach. Int.,	28.2 Ft (8.6 m)
023938	Cable, Auto Gas Csl/Mach. Int.,	50 Ft (15 m)
023939	Cable, Auto Gas Csl/Mach. Int.,	75 Ft (23 m)
023940	Cable, Auto Gas Csl/Mach. Int.,	100 Ft (30 m)
023941	Cable, Auto Gas Csl/Mach. Int.,	125 Ft (38 m)
023942	Cable, Auto Gas Csl/Mach. Int.,	150 Ft (46 m)

19 Control Cable Between Power Supply and Cutting Machine Interface

023707	Cable, Control, PS/Mach. Int.,	25 Ft (7.6 m)
023829	Cable, Control, PS/Mach. Int.,	28.2 Ft (8.6 m)
023933	Cable, Control, PS/Mach. Int.,	50 Ft (15 m)
023934	Cable, Control, PS/Mach. Int.,	75 Ft (23 m)
023935	Cable, Control, PS/Mach. Int.,	100 Ft (30 m)
023936	Cable, Control, PS/Mach. Int.,	125 Ft (38 m)
023937	Cable, Control, PS/Mach. Int.,	150 Ft (46 m)

Figure 1-8 Cables Between Cutting Machine Interface, Power Supply and Gas Console

20 SPECIFY THE CURRENT SETPOINT CABLE BETWEEN THE POWER SUPPLY AND THE CUTTING MACHINE INTERFACE or BETWEEN POWER SUPPLY AND REMOTE CURRENT CONTROL (RCC)

A cable is needed between the power supply and machine interface (if current is set with the cutting machine computer) or between the power supply and the remote current control unit (if current is set with the RCC).

- Determine if the cutting machine's computer will be setting current or if there will be a remote current control unit installed to set current. Based on the distance between the power supply and the cutting machine interface or the RCC, specify the appropriate length cable.

21 SPECIFY THE TIMER-COUNTER CABLE BETWEEN THE POWER SUPPLY AND THE CUTTING MACHINE INTERFACE or BETWEEN POWER SUPPLY AND TIMER-COUNTER

A cable is needed between the power supply and machine interface (if monitoring of starts and errors will be done with the cutting machine computer) or between the power supply and the timer-counter unit (if monitoring will be done with the timer-counter).

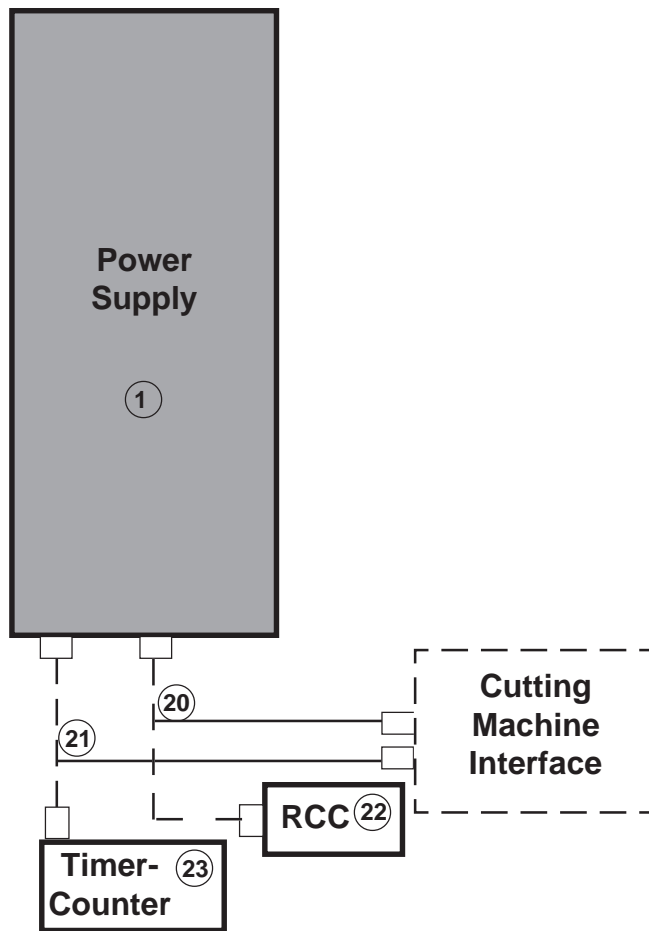
- Determine if the cutting machine's computer or the timer-counter will be used. Based on the distance between the power supply and the cutting machine interface or the timer-counter, specify the appropriate length cable.

22 SPECIFY THE REMOTE CURRENT CONTROL (RCC) - Optional

- Order the RCC only if current is not being set by the cutting machine's computer (see step 20).

23 SPECIFY THE TIMER-COUNTER - Optional

- Order the timer-counter only if monitoring of arc starts and errors is not being tracked by the cutting machine's computer (see step 21).



20 Current Setpoint Cable Between Power Supply and Cutting Machine Interface or Between Power Supply and RCC

023708	Cable, Curr. Setpt, PS/Mach. Int.,	25 Ft (7.6 m)
023830	Cable, Curr. Setpt, PS/Mach. Int.,	28.2 Ft (8.6 m)
023943	Cable, Curr. Setpt, PS/Mach. Int.,	38 Ft (11.6 m)
023709	Cable, Curr. Setpt, PS/Mach. Int.,	50 Ft (15 m)
023710	Cable, Curr. Setpt, PS/Mach. Int.,	75 Ft (23 m)
023711	Cable, Curr. Setpt, PS/Mach. Int.,	100 Ft (30 m)
023944	Cable, Curr. Setpt, PS/Mach. Int.,	125 Ft (38 m)
023945	Cable, Curr. Setpt, PS/Mach. Int.,	150 Ft (46 m)

21 Timer-Counter Cable Between Power Supply and Cutting Machine Interface or Between Power Supply and Timer-Counter

023946	Tmr-Cntr Cable, PS/Tmr-Cntr,	3.5 Ft (1 m)
023947	Tmr-Cntr Cable, PS/Tmr-Cntr,	5.5 Ft (1.7 m)
023948	Tmr-Cntr Cable, PS/Tmr-Cntr,	6 Ft (2 m)
023949	Tmr-Cntr Cable, PS/Tmr-Cntr,	25 Ft (7.6 m)
023721	Tmr-Cntr Cable, PS/Tmr-Cntr,	28.2 Ft (8.6 m)
023950	Tmr-Cntr Cable, PS/Tmr-Cntr,	38 Ft (11.6 m)
123111	Tmr-Cntr Cable, PS/Tmr-Cntr,	50 Ft (15.2 m)
123100	Tmr-Cntr Cable, PS/Tmr-Cntr,	75 Ft (23 m)

22 Remote Current Control (RCC)

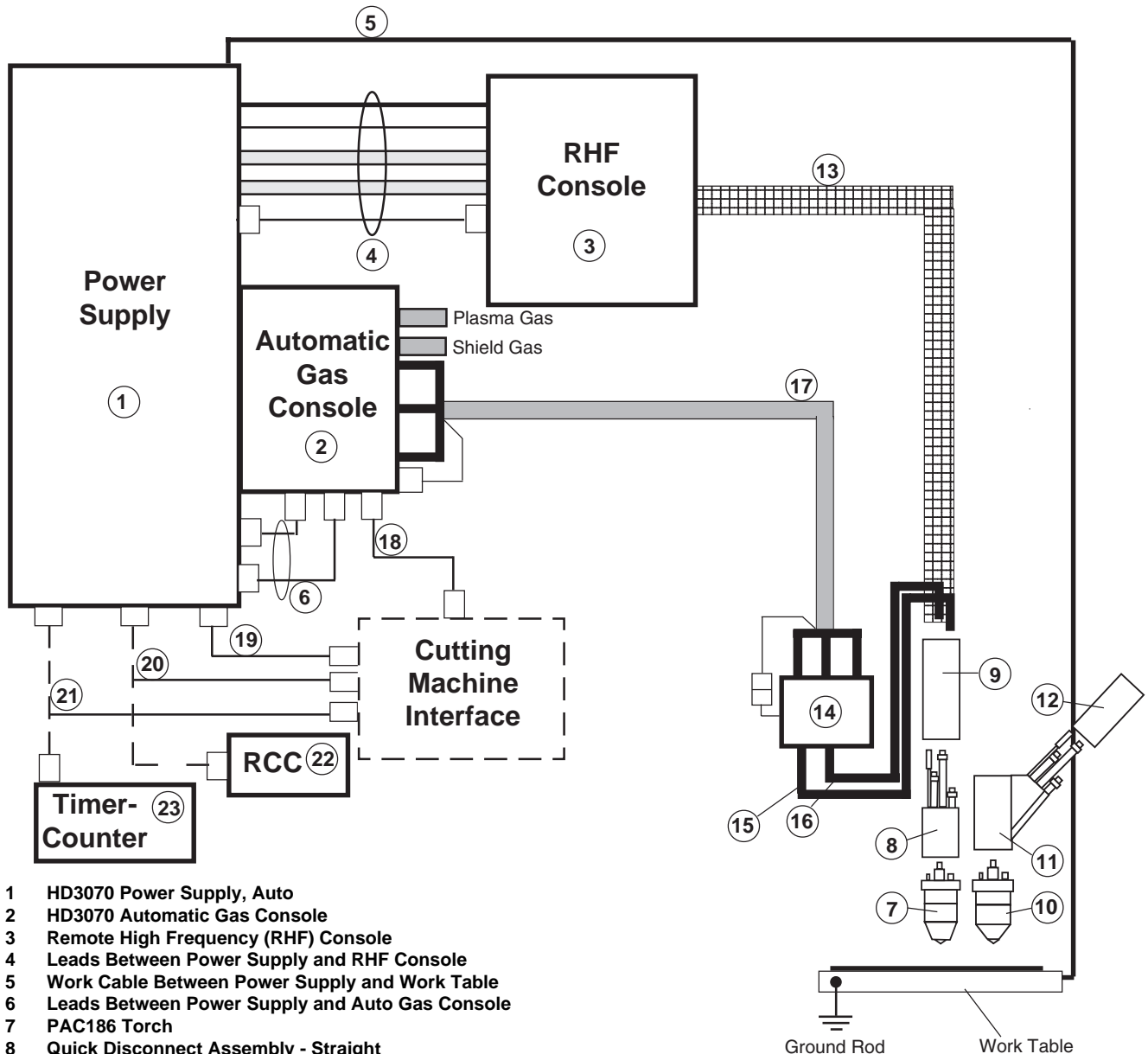
078050	Rem. Curr. Control
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23 Timer-Counter

078049	Timer-Counter, HD-3070
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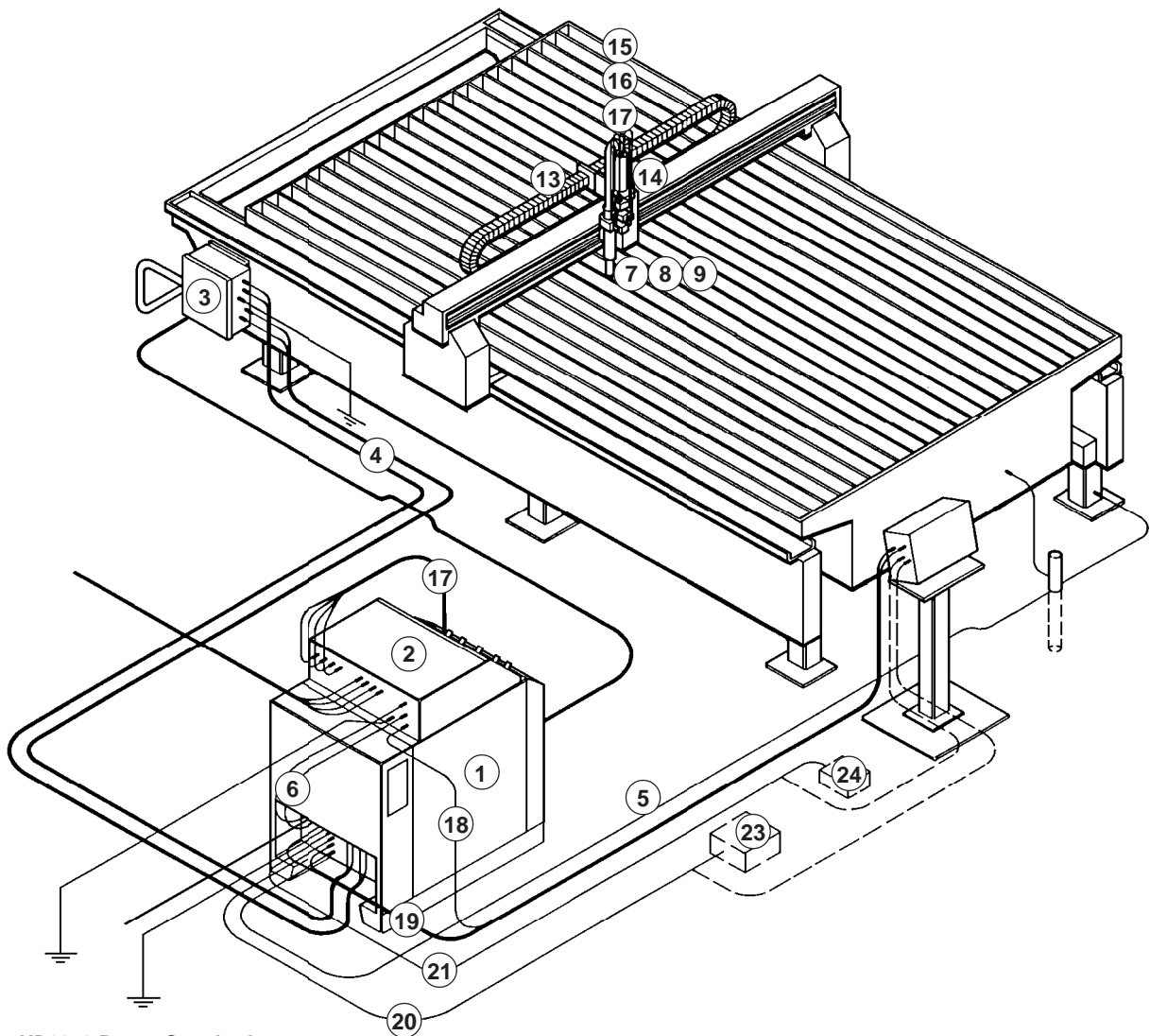
Figure 1-9 Timer-Counter, Remote Current Control and Cables

Customized HD3070 Plasma System w/Automatic Gas Console
(Use with Order Form)



- 1 HD3070 Power Supply, Auto
- 2 HD3070 Automatic Gas Console
- 3 Remote High Frequency (RHF) Console
- 4 Leads Between Power Supply and RHF Console
- 5 Work Cable Between Power Supply and Work Table
- 6 Leads Between Power Supply and Auto Gas Console
- 7 PAC186 Torch
- 8 Quick Disconnect Assembly - Straight
- 9 10 Inch Torch Mounting Sleeve
- 10 PAC184 Torch (not shown)
- 11 Quick Disconnect Assembly - 45°
- 12 8 Inch Torch Mounting Sleeve
- 13a Shielded Leads Between RHF Console and Torch (with Blow Down Check Valve & Hose)
- 13b Shielded Leads Between RHF Console and Torch (without Blow Down Check Valve & Hose)
- 14a Off-Valve Assembly (with Blow Down Solenoid Valve)
- 14b Off-Valve Assembly (without Blow Down Solenoid Valve)
- 15 48 Inch Shield Gas Hose Between Off-Valve Assy and Torch
- 16 48 Inch Plasma Gas Hose Between Off-Valve Assy and Torch
- 17 Leads Between Gas Console and Off-Valve Assy
- 18 Cable Between Gas Console and Cutting Machine Interface
- 19 Control Cable Between Power Supply and Cutting Machine Interface
- 20 Current Setpoint Cable Between Power Supply and Cutting Machine Interface or Between Power Supply and RCC
- 21 Timer-Counter Cable Between Power Supply and Cutting Machine Interface or Between Power Supply and Timer-Counter
- 22 Remote Current Control (RCC)
- 23 Timer-Counter

Figure 1-10 HD3070 w/Automatic Gas Console System Interconnect - Block Diagram



- 1 HD3070 Power Supply, Auto
- 2 HD3070 Automatic Gas Console
- 3 Remote High Frequency (RHF) Console
- 4 Leads Between Power Supply and RHF Console
- 5 Work Cable Between Power Supply and Work Table
- 6 Leads Between Power Supply and Auto Gas Console
- 7 PAC186 Torch
- 8 Quick Disconnect Assembly - Straight
- 9 10 Inch Torch Mounting Sleeve
- 10 PAC184 Torch (not shown)
- 11 Quick Disconnect Assembly - 45° (not shown)
- 12 8 Inch Torch Mounting Sleeve (not shown)
- 13a Shielded Leads Between RHF Console and Torch (with Blow Down Check Valve & Hose)
- 13b Shielded Leads Between RHF Console and Torch (without Blow Down Check Valve & Hose)
- 14a Off-Valve Assembly (with Blow Down Solenoid Valve)
- 14b Off-Valve Assembly (without Blow Down Solenoid Valve)
- 15 48 Inch Shield Gas Hose Between Off-Valve Assy and Torch
- 16 48 Inch Plasma Gas Hose Between Off-Valve Assy and Torch
- 17 Leads Between Gas Console and Off-Valve Assy
- 18 Cable Between Gas Console and Cutting Machine Interface
- 19 Control Cable Between Power Supply and Cutting Machine Interface
- 20 Current Setpoint Cable Between Power Supply and Cutting Machine Interface or Between Power Supply and RCC
- 21 Timer-Counter Cable Between Power Supply and Cutting Machine Interface or Between Power Supply and Timer-Counter
- 22 Remote Current Control (RCC)
- 23 Timer-Counter

Figure 1-11 HD3070 w/Automatic Gas Console System Interconnect Example - 3D View

Blank

2 Specifications

In this section

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11 Quick Disconnect Assembly - 45°	2-5
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13b Shielded Leads Between RHF Console and Torch (without Blow Down Check Valve & Hose)	2-5
14a Off-Valve Assembly (with Blow Down Solenoid Valve)	2-5
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19 Control Cable Between Power Supply and Cutting Machine Interface	2-6
20 Current Setpoint Cable Between Power Supply and Cutting Machine Interface or Between Power Supply and RCC	2-6
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22 Remote Current Control (RCC)	2-7
23 Timer-Counter	2-7
Quick Reference to Cable / Hose Dimensions	2-8

SYSTEM SPECIFICATIONS

System Requirements

Gas Requirements:

Plasma Gas Types	Oxygen (O ₂), Air
Shield Gas Type	Oxygen (O ₂) and Nitrogen (N ₂) mixture, Methane, Air, Methane/Air mixture
Oxygen Gas Quality	99.95% pure (liquid gas recommended)
Nitrogen Gas Quality	99.995% pure (liquid gas recommended)
Air Quality	Clean, dry, oil-free
Methane Quality	93% pure (commercial grade)
All Gas Inlet Pressures	120 psi (8.3 bar)
Oxygen Flow rate	77.8 scfh (2203 l/hr) at full scale
Nitrogen Flow rate	83.1 scfh (2353 l/hr) at full scale
Air Flow rate	81.7 scfh (2313 l/hr) at full scale
Methane Flow rate	110 scfh (3114 l/hr) at full scale

Torch Coolant Requirements

(Torch coolant requirements are provided by power supply.)

Coolant Tank Capacity	2.9 gallons (11 liters)
Coolant	Deionized water or mixture (propylene glycol 30% and deionized water 70%)
Flow Rate	1 gpm (3.8 l/m)
Pressure	150 psi (10.3 bar)

1

HD3070 Power Supply, Automatic

Dimensions and Weight

Width	24.25 in. (616 mm)
Height	36 in. (914 mm)
Depth	38.25 in. (972 mm)
Weight	545 pounds (247 kg)

2

HD3070 Automatic Gas Console

Input Power from Power Supply (intrik'd)	120 VAC
Output Power to Off-Valve Assy	120 VAC
Outputs to CNC	Active (low or closed)

Dimensions and Weight

Width	24 in. (610 mm)
Height	8 in. (203 mm)
Depth	22 in. (559 mm)
Weight	83 pounds (37 kg)

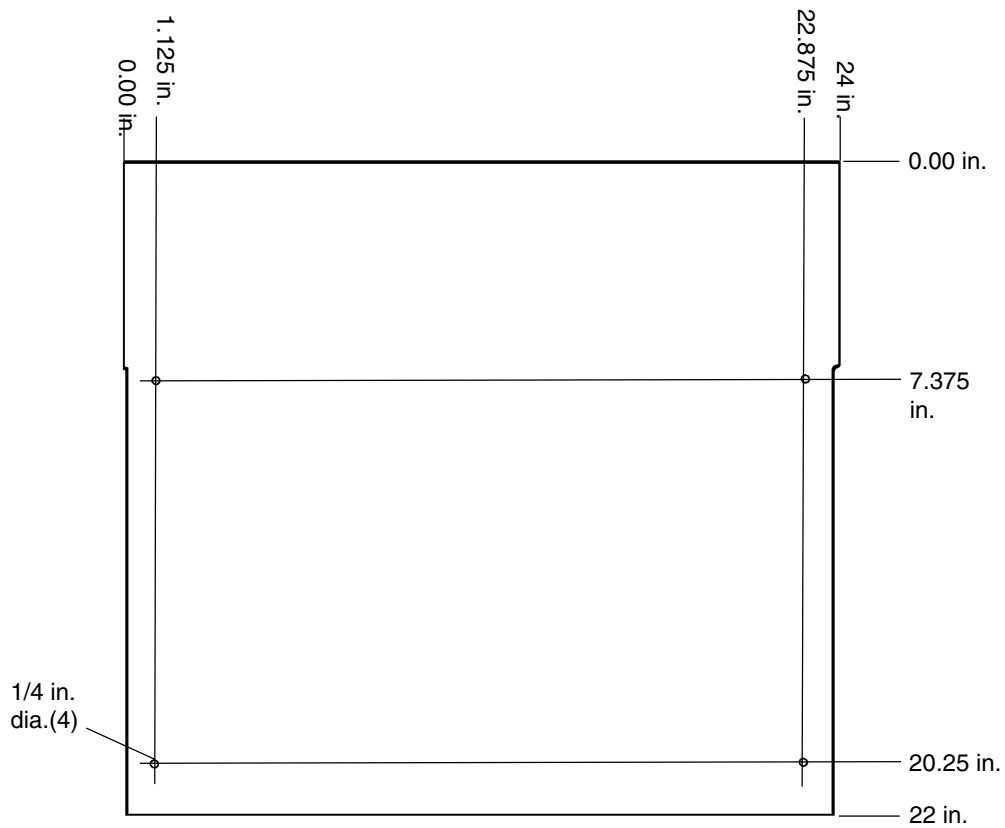


Figure 2-1 Mounting Dimensions - Automatic Gas Console

3 RHF Console

Dimensions and Weight:

Width	12.63 in. w/hardware (321 mm)
Height	13.5 in. (343 mm)
Depth	6.5 in. (165 mm)
Weight	20 pounds (9 kg)

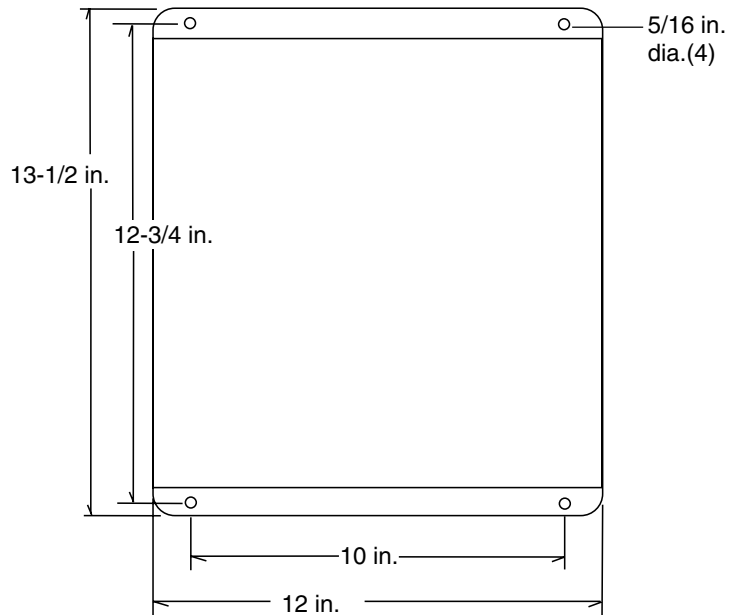


Figure 2-2 Mounting Dimensions - RHF Console

4 Leads Between Power Supply and RHF Console

Lead	Lead Diameter (O.D.)	Connector/Lug Diameter
Pilot Arc Cable	.25 in. (6 mm)	.5 in. (12 mm)
Negative Lead Cable	.38 in. (9.5 mm)	.63 in. (16 mm)
Cooling Supply Hose	.63 in. (16 mm)	.63 in. (16 mm)
Cooling Return Hose	.63 in. (16 mm)	.63 in. (16 mm)
Control Cable	.25 in. (6 mm)	1 in. (24.5 mm)

5 Work Cable Between Power Supply and Work Table

Cable	Cable Diameter (O.D.)	Connector/Lug Diameter
Work Cable	.38 in. (9.5 mm)	.38 in. (9.5 mm)

6 Leads Between Power Supply and Automatic Gas Console

Lead	Lead Diameter (O.D.)	Connector/Lug Diameter
Gas Console/PS Cable	.5 in. (12 mm)	1.75 in. (44 mm)
Gas Console/PS Cable	.5 in. (12 mm)	1.75 in. (44 mm)

7 PAC186 Torch

Dimensions and Weight:

Diameter	1.75 in. (44 mm)
Length	3.44 in. (88 mm)
Weight	1 pound (0.45 kg)

8 Quick Disconnect Assembly - Straight

Dimensions and Weight:

Diameter	2 in. (51 mm)
Length	2.5 in. (63 mm)
Weight	1 pound (0.45 kg)

10 PAC184 Torch

Dimensions and Weight:

Diameter	1.75 in. (44 mm)
Length	3.44 in. (88 mm)
Weight	1 pound (0.45 kg)

11 Quick Disconnect Assembly - 45°

Dimensions and Weight:

Width2.13 in. (54 mm)
Length4.19 in. (107 mm)
Depth4.56 in. (117 mm)
Weight1 pound (.45 kg)

12 8 Inh Torch Mounting Sleeve

Dimensions and Weight:

Outer Diameter2 in. (51 mm)
Length8 in. (203 mm)

13a Shielded Leads Between RHF Console and Torch (with Blow Down Check Valve & Hose)

Lead	Lead Package Diameter (O.D.)
Leads - Trch/RHF Console	1.5 in. (38 mm)

13b Shielded Leads Between RHF Console and Torch (without Blow Down Check Valve & Hose)

Lead	Lead Package Diameter (O.D.)
Leads - Trch/RHF Console	1.5 in. (38 mm)

14a Off-Valve Assembly (with Blow Down Solenoid Valve)

Dimensions and Weight:

Diameter (side to side)5.75 in. (146 mm)
Diameter (front to back)4.25 in. (108 mm)
Weight4 pounds (1.8 kg)

14b Off-Valve Assembly (without Blow Down Solenoid Valve)

Dimensions and Weight:

Diameter (side to side)5.75 in. (146 mm)
Diameter (front to back)4.25 in. (108 mm)
Weight4 pounds (1.8 kg)

15 48 Inch Shield Gas Hose Between Off-Valve Assy and Torch

Cable	Hose Diameter (O.D.)	Connector/Lug Diameter
Hose Assy	.38 in. (9.5 mm)	.38 in. (9.5 mm)

16 48 Inch Plasma Gas Hose Between Off-Valve Assy and Torch

Cable	Hose Diameter (O.D.)	Connector/Lug Diameter
Hose Assy	.38 in. (9.5 mm)	.38 in. (9.5 mm)

17 Leads Between Gas Console and Off-Valve Assembly

Lead	Lead Package Diameter (O.D.)
Leads - Off-Valve/Gas Console	1 in. (25 mm)

18 Cable Between Gas Console and Cutting Machine Interface

Cable	Cable Diameter (O.D.)	Connector/Lug Diameter
Cable - Auto GasCsl/Cutting Mach.	.5 in. (12 mm)	1.25 in. (32 mm)

19 Control Cable Between Power Supply and Cutting Machine Interface

Cable	Cable Diameter (O.D.)	Connector/Lug Diameter
Control Cable - PS/Cutting Mach.	.5 in. (12 mm)	1.75 in. (44 mm)

20 Current Setpoint Cable Between Power Supply and Cutting Machine Interface or Between Power Supply and RCC

Cable	Cable Diameter (O.D.)	Connector/Lug Diameter
Curr. Stpt. Cable - PS/Cutting Mach.	.25 in. (6 mm)	1.75 in. (44 mm)

21 **Timer-Counter Cable Between Power Supply and Cutting Machine Interface or Between Power Supply and Timer-Counter**

Cable	Cable Diameter (O.D.)	Connector/Lug Diameter
Timer-Counter	.3 in. (8 mm)	1.25 in. (32 mm)

22 **Remote Current Control (RCC)**

Dimensions and Weight:

Width	6.3 in. (160 mm)
Height	2.37 in. (60 mm)
Depth	8.5 in. (216 mm)
Weight	3 pounds (1.4 kg)

23 **Timer-Counter**

Dimensions and Weight:

Width	6.5 in. (165 mm)
Height	2.5 in. (64 mm)
Depth	8.63 in. (219 mm)
Weight	3 pounds (1.4 kg)

QUICK REFERENCE TO CABLE / HOSE DIMENSIONS

HD3070 System - (Ref. Fig. 1-10)

The following figures are a one-to-one representation of the HD3070 system interconnecting cables and hoses. Figure 2-4 shows cables and hoses that would lay in the rail at the site. Figure 2-5 shows cables and hoses that would lay in the cutting machine's cable/hose carrier. The rulers have been added to use as a guide. Arrangement of cables and hoses laying in rails or carriers are roughly suggested here.

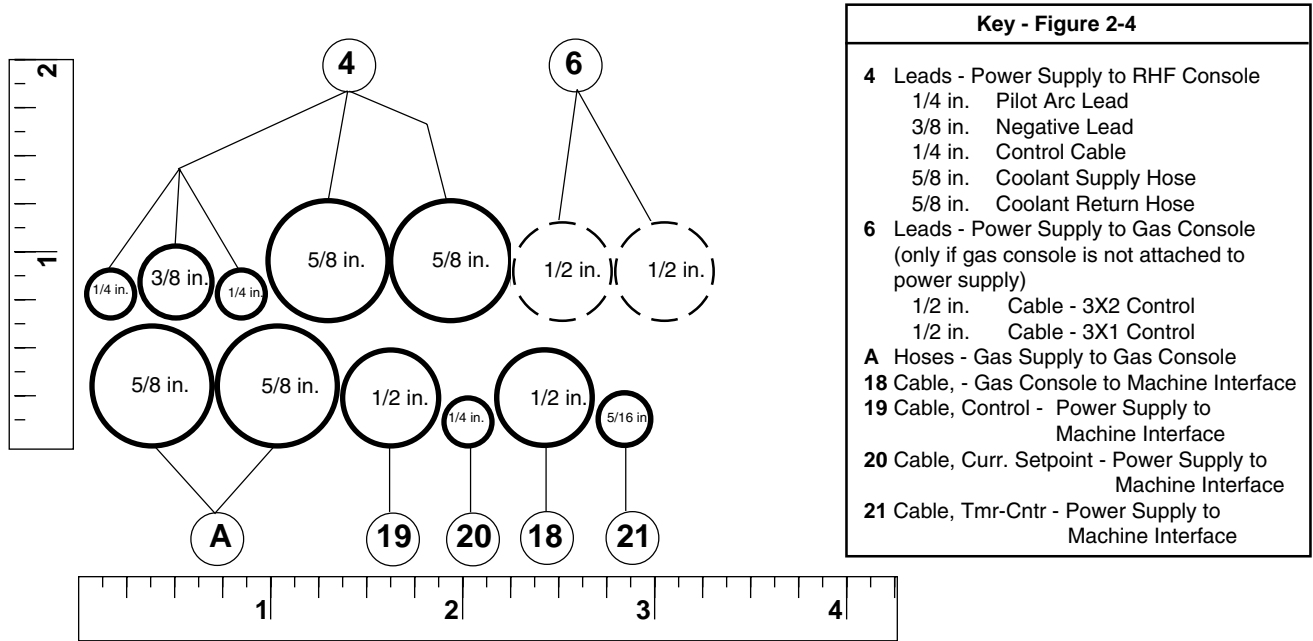


Figure 2-4 Cables / Hoses in Rail

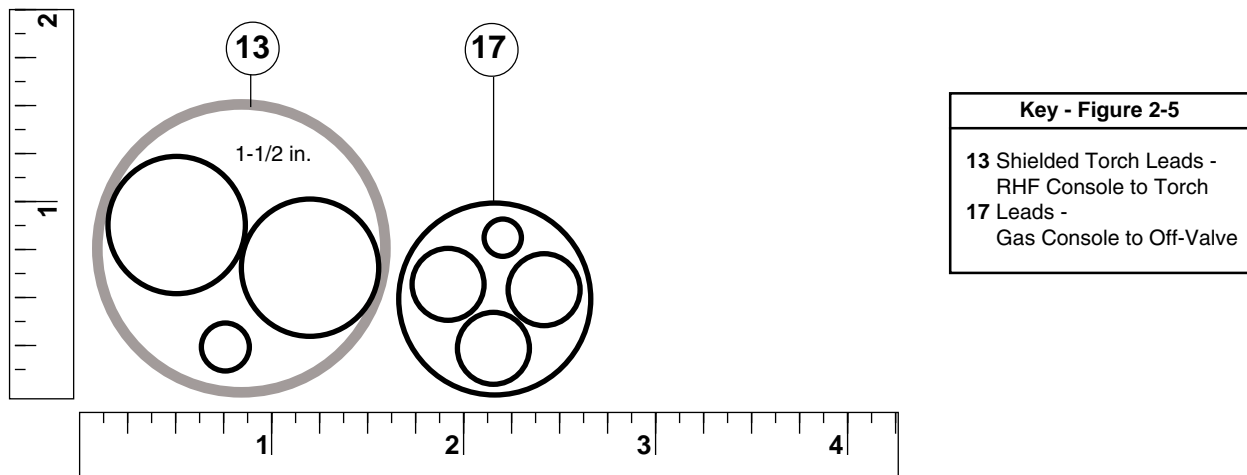


Figure 2-5 Cables / Hoses in Machine Cable/Hose Carrier

Distributor Information:

Customer Information:

HYPERTHERM HD3070 w/Auto Gas Console Order Form

- 1** **HD3070 Power Supply, Auto**
 - 078072 HD3070 PS, Auto, 200V, 50-60 Hz, 3Ø
 - 078073 HD3070 PS, Auto, 208V, 60 Hz, 3Ø
 - 078074 HD3070 PS, Auto, 220/380/415V, 50/60 Hz, 3Ø
 - 078075 HD3070 PS, Auto, 240/480V, 60 Hz, 3Ø
 - 078076 HD3070 PS, Auto, 600V, 50-60 Hz, 3Ø
- 2** **HD3070 Automatic Gas Console**
 - 078061 Auto Gas Csl, HD3070
- 3** **Remote High Frequency (RHF) Console**
 - 078010 RHF Console, HD3070
- 4** **Leads Between Power Supply and RHF Console**
 - 028561 Leads, PS/RHF Console, 15 Ft
 - 028562 Leads, PS/RHF Console, 25 Ft
 - 028563 Leads, PS/RHF Console, 50 Ft
 - 028564 Leads, PS/RHF Console, 75 Ft
 - 028565 Leads, PS/RHF Console, 100 Ft
 - 028737 Leads, PS/RHF Console, 115 Ft
 - 028749 Leads, PS/RHF Console, 125 Ft
- 5** **Work Cable Between Power Supply and Work Table**
 - 023535 Cable, PS/Work Table, 15 Ft
 - 023536 Cable, PS/Work Table, 25 Ft
 - 023828 Cable, PS/Work Table, 39.4 Ft
 - 023537 Cable, PS/Work Table, 50 Ft
 - 023538 Cable, PS/Work Table, 75 Ft
 - 023539 Cable, PS/Work Table, 100 Ft
- 6** **Leads Between Power Supply and Auto Gas Csl**
 - 028879 Leads, PS/Auto Gas Csl, 6 Ft
 - 028880 Leads, PS/Auto Gas Csl, 10 Ft
 - 028881 Leads, PS/Auto Gas Csl, 25 Ft
 - 028882 Leads, PS/Auto Gas Csl, 50 Ft
 - 028883 Leads, PS/Auto Gas Csl, 75 Ft
 - 028884 Leads, PS/Auto Gas Csl, 100 Ft
 - 028885 Leads, PS/Auto Gas Csl, 125 Ft
 - 028886 Leads, PS/Auto Gas Csl, 150 Ft
- 7** **PAC186 Torch**
 - 128101 PAC186 Machine Torch with IHS Tab
 - 128102 PAC186 Machine Torch w/o IHS Tab
- 7a** **PAC186 Consumable Parts Kits**
 - 128097 PAC186 Consumable Parts Kit w/Torch
 - 128098 PAC186 Consumable Parts Kit w/o Torch
- 8** **Quick Disconnect Assembly - Straight**
 - 028855 Quick Disconnect Assy - PAC186/184
- 9** **10 Inch Torch Mounting Sleeve**
 - 020668 Torch Mounting Sleeve - PAC186/184
- 10** **PAC184 Torch**
 - 028839 PAC184 Machine Torch Assembly
- 10a** **PAC184 Consumable Parts Kit**
 - 028842 PAC184 Consumable Parts Kit with Torch
 - 028900 PAC184 Consumable Parts Kit w/o Torch
- 11** **Quick Disconnect Assembly - 45°**
 - 028840 45° Quick Disconnect Assy - PAC184/186
- 12** **8 Inch Torch Mounting Sleeve**
 - 120256 Torch Mounting Sleeve - PAC184/186
- 13a** **Shielded Leads Between RHF Console and Torch (with blow down check valve & hose)**
Order with 14a
 - 028866 Leads, RHF Csl/Torch, 15 Ft
 - 028867 Leads, RHF Csl/Torch, 20 Ft
 - 028868 Leads, RHF Csl/Torch, 25 Ft
 - 028869 Leads, RHF Csl/Torch, 30 Ft
 - 028695 Leads, RHF Csl/Torch, 35 Ft
 - 028870 Leads, RHF Csl/Torch, 40 Ft
 - 128001 Leads, RHF Csl/Torch, 50 Ft
 - 128083 Leads, RHF Csl/Torch, 75 Ft
 - 128084 Leads, RHF Csl/Torch, 100 Ft
- 13b** **Shielded Leads Between RHF Console and Torch (without blow down check valve)**
Order with 14b
 - 028498 Leads, RHF Csl/Torch, 15 Ft
 - 028499 Leads, RHF Csl/Torch, 20 Ft
 - 028500 Leads, RHF Csl/Torch, 25 Ft
 - 028501 Leads, RHF Csl/Torch, 30 Ft
 - 028502 Leads, RHF Csl/Torch, 35 Ft
 - 028503 Leads, RHF Csl/Torch, 40 Ft
 - 128132 Leads, RHF Csl/Torch, 50 Ft
 - 128133 Leads, RHF Csl/Torch, 75 Ft
 - 128134 Leads, RHF Csl/Torch, 100 Ft

**(14a) Off-Valve Assy (with blow down solenoid valve)
Order with (13a)**

- 129281 Off-Valve Assy

**(14b) Off-Valve Assy (without blow down solenoid valve)
Order with (13b)**

- 129239 Off-Valve Assy

**(15) 48 Inch Shield Gas Hose Between Off-Valve Assy
and Torch**

- 024429 Hose Assy, 48 in

**(16) 48 Inch Plasma Gas Hose Between Off-Valve Assy
and Torch**

- 024430 Hose Assy, 48 in

(17) Leads Between Gas Console and Off-Valve Assy

- 128175 Leads, Gas Csl/Off-Valve, 15 Ft
- 128176 Leads, Gas Csl/Off-Valve, 20 Ft
- 128177 Leads, Gas Csl/Off-Valve, 25 Ft
- 128178 Leads, Gas Csl/Off-Valve, 30 Ft
- 128179 Leads, Gas Csl/Off-Valve, 35 Ft
- 128180 Leads, Gas Csl/Off-Valve, 40 Ft
- 128181 Leads, Gas Csl/Off-Valve, 50 Ft
- 128182 Leads, Gas Csl/Off-Valve, 75 Ft
- 128183 Leads, Gas Csl/Off-Valve, 100 Ft

(18) Cable Between Gas Console and Cutting Machine Interface

- 023667 Cable, Auto Gas Csl/Mach. Int., 25 Ft
- 023831 Cable, Auto Gas Csl/Mach. Int., 28.2 Ft
- 023938 Cable, Auto Gas Csl/Mach. Int., 50 Ft
- 023939 Cable, Auto Gas Csl/Mach. Int., 75 Ft
- 023940 Cable, Auto Gas Csl/Mach. Int., 100 Ft
- 023941 Cable, Auto Gas Csl/Mach. Int., 125 Ft
- 023942 Cable, Auto Gas Csl/Mach. Int., 150 Ft

**(19) Control Cable Between Power Supply
and Cutting Machine Interface**

- 023707 Cable, Control, PS/Mach. Int., 25 Ft
- 023829 Cable, Control, PS/Mach. Int., 28.2 Ft
- 023933 Cable, Control, PS/Mach. Int., 50 Ft
- 023934 Cable, Control, PS/Mach. Int., 75 Ft
- 023935 Cable, Control, PS/Mach. Int., 100 Ft
- 023936 Cable, Control, PS/Mach. Int., 125 Ft
- 023937 Cable, Control, PS/Mach. Int., 150 Ft

**(20) Current Setpoint Cable Between Power Supply and Cutting
Machine Interface or Between Power Supply and RCC**

- 023708 Cable, Curr. Setpt, PS/Mach. Int., 25 Ft
- 023830 Cable, Curr. Setpt, PS/Mach. Int., 28.2 Ft
- 023943 Cable, Curr. Setpt, PS/Mach. Int., 38 Ft
- 023709 Cable, Curr. Setpt, PS/Mach. Int., 50 Ft
- 023710 Cable, Curr. Setpt, PS/Mach. Int., 75 Ft
- 023711 Cable, Curr. Setpt, PS/Mach. Int., 100 Ft
- 023944 Cable, Curr. Setpt, PS/Mach. Int., 125 Ft
- 023945 Cable, Curr. Setpt, PS/Mach. Int., 150 Ft

**(21) Timer-Counter Cable Between Power Supply and Cutting
Machine Interface or Between Power Supply and Timer-Counter**

- 023946 Tmr-Cntr Cable, PS/Tmr-Cntr, 3.5 Ft
- 023947 Tmr-Cntr Cable, PS/Tmr-Cntr, 5.5 Ft
- 023948 Tmr-Cntr Cable, PS/Tmr-Cntr, 6 Ft
- 023949 Tmr-Cntr Cable, PS/Tmr-Cntr, 25 Ft
- 023721 Tmr-Cntr Cable, PS/Tmr-Cntr, 28.2 Ft
- 023972 Tmr-Cntr Cable, PS/Tmr-Cntr, 33 Ft
- 023950 Tmr-Cntr Cable, PS/Tmr-Cntr, 38 Ft
- 123111 Tmr-Cntr Cable, PS/Tmr-Cntr, 50 Ft
- 123100 Tmr-Cntr Cable, PS/Tmr-Cntr, 75 Ft

(22) Remote Current Control (RCC)

- 078050 Rem. Curr. Control

(23) Timer-Counter

- 078049 Timer-Counter, HD3070

Robotic Command THC

- 803010 Product Configuration Manual

X-Y Command THC

- 802600 Product Configuration Manual