

Dimension™ 650

Issued Sept. 2015 • Index No. DC/19.3

**Multiprocess Welding
Power Source**



Quick Specs

Heavy Industrial Applications

Fabrication and construction
Heavy manufacturing
MRO — maintenance/repair
Pressure tank/vessel fabrication
Shipbuilding
Refineries and foundries
Railcar manufacturing
Earth-moving equipment manufacturing

Processes

MIG (GMAW)
Flux-cored (FCAW)
Submerged arc (SAW)
Stick (SMAW)
TIG (GTAW)
Air carbon arc (CAC-A)
cutting and gouging
Rated: 3/8-inch carbons

Input Power 3-phase power
380/460 V, 50/60 Hz

Rated Output 650 A at 44 VDC,
100% duty cycle

Output Range 15–815 A, 10–65 V

Net Weight 158 lb. (71.7 kg)

Big capabilities in a smaller package.

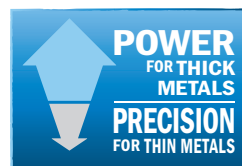
Developed for harsh environmental conditions and output requirements that range from power-intensive to precise.

An unbeatable combination of durability, output, efficiency and capability—all in a smaller, easier-to-handle package. Inside its tough, corrosion-resistant, all-aluminum case is big power for heavy welding jobs and carbon arc gouging.

In addition to excellent stick and Lift-Arc™ TIG, the Dimension 650 also has excellent short-arc MIG characteristics for precise thin-metal welding performance.



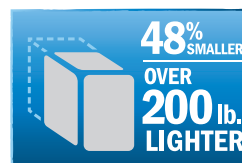
**Rugged and durable
inside and out**



Power and precision



Improved weld quality



**More portable and
takes up less floor space**



Power source is warranted for three years, parts and labor.
Original main power rectified parts are warranted for five years.



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MillerWelds.com



Dimension™ 650 Advantages

Withstands harsh environments



Rugged and durable
inside and out

All-aluminum construction helps the machine resist corrosion for long life.

Exclusive protection input inductor protects machines performance and reliability from “dirty” input power.

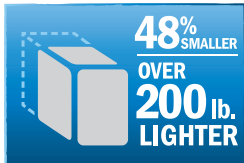
Wind Tunnel Technology™ Internal air flow that protects electrical components and PC boards from dirt, dust, debris... greatly improving reliability

Fan-On-Demand™ operates only when needed reducing noise, power consumption, and the amount of airborne contaminants pulled through the machine.

3.25 inches of ground clearance keeps the machine away from water, mud and dirt to protect interior components.



Smaller and lighter



More portable and
takes up less floor space

Reduced size and weight results in an easier-to-handle package that exceeds the welding performance of larger, heavier machines. Weighing in at 158 pounds (71.7 kg), the Dimension 650 is 3.5 times lighter than the Dimension 652, making it easier to move around the shop, jobsite, or shipyard. It also uses 40-percent less floor space.

New model

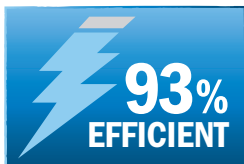
Previous model



40% smaller
footprint

Dimension 650 footprint
Dimension 652 footprint

Power efficient



Uses 32% fewer amps
than previous model

High electrical efficiency and excellent power factor mean that you can get more welding done using less power. On 460 V, the Dimension 650 draws only 43 amps at rated load and can operate on a 50-amp service. Four machines can work at maximum loads simultaneously on a 200-amp service, drawing less amperage than three previous models.

Previous model



Three
Dimension 652s
draw 189 amps

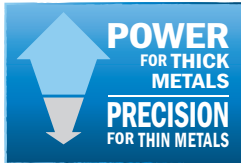


Current model

Four
Dimension 650s
draw less power –
only 172 amps

Dimension™ 650 Advantages

Improved arc performance



Power and precision



Improved weld quality

High-quality performance from power-intensive to precise. Knowing quality welds begin with a quality arc, we've significantly improved the performance in all welding processes and made it easy to fine tune the arc to match your personal preferences and welding style.

Gouging mode provides 800 amps of usable power, a full 650 amps of power at 100-percent duty cycle. Perfect for heavy gouging with 3/8-inch carbons.

Three wire modes (GMAW/FCAW/SAW) for simplified setup and optimized arc performance.

- Solid and flux-cored wires with gas offer exceptional short-arc MIG precision to weld thin metals with less risk of distortion or burn-through, and premium flux-cored welding with gas.
- Flux-cored (self-shielded) welding performance is exceptional, especially with wires commonly found in infrastructure construction.
- Sub arc mode provides capability to retrofit into non-digital sub arc applications.

Excellent stick and Lift-Arc™ TIG performance.

Arc control is beneficial when welding with stick and solid wires for easier fine-tuning of tough-to-weld materials and out-of-position applications.



Weld process switch with Gouge mode, three Wire modes, Stick mode and Lift-Arc TIG mode.

Arc control for additional fine-tuning in Stick or Solid Wire modes.

Dimension™ 650 Features



Digital meters with SunVision™ technology enable welding parameters to be viewed with greater clarity than analog meters — at virtually any angle. Meters can be seen clearly even in direct sunlight.

Meters display

- Preset and actual amperage
- Process settings for quick and easy set up

Weld process switch

- Gouging mode is an optimized stick position for better gouging performance
- Three wire modes (GMAW/FCAW/SAW) for simplified setup and optimized arc performance
 - Solid and flux-cored wires with gas
 - Flux-cored (self-shielded)
 - Sub arc
- Stick mode for all electrode types
- Lift-Arc™ TIG

Standard 14-pin receptacle with Auto-Remote Sense™ for simple connection of remote controls and wire feeders.



Durable weld cable connections

- Serrated hardware for single-wrench application
- Easy double weld cable installation
- Flexible, protective covers prevent incidental contact



Back panel

- 20 amps of 120 V power to run power tools — like grinders, chop saws, drills and lights.



Front-panel-mounted power switch is easy to access when in racks or manufacturing cells.



Arc control is active in the stick and solid-wire processes. It allows the operator to customize arc characteristics to match preference, electrode and joint design from a softer arc with more fluid puddle to a stiffer arc with an more controllable puddle. The Star setting is optimized for most applications and pointing the control at Soft or Stiff is optimal for most arc preferences. Control is fully adjustable from 0 to 25 Soft or 0 to 25 Stiff.

Specifications (Subject to change without notice.)



Amperage/Voltage Ranges	Rated Output	Amps Input at Rated Output, 50/60 Hz				Max. Open-Circuit Voltage	Dimensions	Net Weight
		380 V	460 V	KVA	KW			
15–815 A in CC mode 10–44 V in CV mode 10–65 V in SAW mode	650 A at 44 VDC, 100% duty cycle	53.2	42.8	34	30.7	87	H: 28.187 in. (716 mm) (including lift eye) W: 16.687 in. (424 mm) D: 31.625 in. (803 mm)	158 lb. (71.7 kg)

Wire Feeder Options

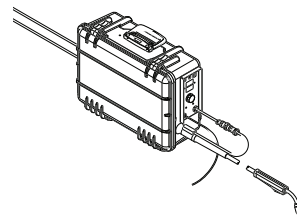
Portable Suitcase-Style Feeders

SuitCase® X-TREME™ 8VS and 12VS See literature no. M/6.42

These voltage-sensing feeders are designed to run off of arc voltage from almost any welding power source. The 8VS utilizes an 8-inch spool of wire and fits through a 14-inch manhole/manway, while the 12VS adds the capability to utilize 12-inch spools and is more commonly used in structural steel and fabrication.

SuitCase® 12RC See literature no. M/6.45

Standard remote voltage control saves the operator a trip back to the power supply for welding adjustments. For applications where the feeder is within 100 feet of the power source and control cords are acceptable.



Bench-Style Feeders

20 Series Feeders See literature no. M/11.0

22A and 24A – Simple and cost-effective feeders for industrial manufacturing and fabricating.

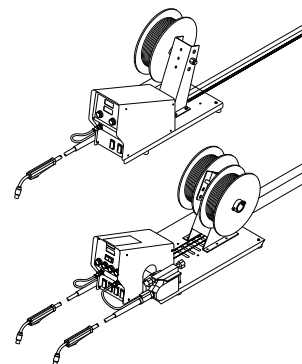
70 Series Feeders See literature no. M/3.0

74S – Standard, simple feeders for most heavy-industrial applications.

74D – Provides increased accuracy and control of the most common weld parameters.

74DX – Provides added features for weld control and programs.

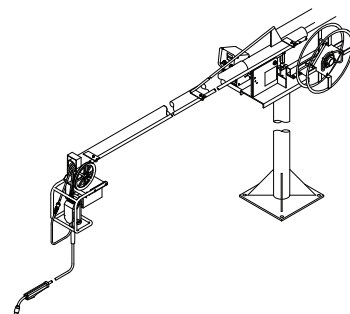
74 MPa Plus – Adds push-pull aluminum capabilities. Optimized for use with XMT® MPa or Invision™ MPa power sources.



Boom-Style Feeders

70 Series Swingarc™ See literature no. M/13.11

Swingarc single and dual boom-mounted wire feeders bring an extra dimension of flexibility and efficiency to weld stations dealing with large weldments, or wherever operator mobility is required.



Aluminum Push-Pull Feeders and Guns

XR™ Controls See literature no. M/1.7

XR-S Control – Cost-effective push-pull feeder for industrial applications.

XR-D Control – Adds capabilities for higher quality welds.

XR-Aluma-Pro™ Gun See literature no. M/1.71

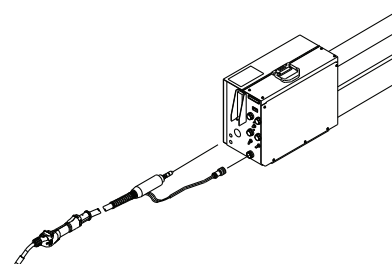
Robust professional grade gun has the highest duty-cycle rating in its class.

XR™ -Pistol Gun See literature no. M/1.73

Reliable cost-effective gun for light to medium industrial applications.

XR™ -Pistol Pro Gun See literature no. M/1.74

Exceptional aluminum welding results for heavy industrial applications.

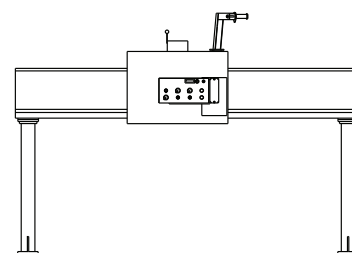


Hard Automation

70 Series Remote Configurations See literature no. M/3.0

Remote wire feeder control box and wire drive assembly for non-Miller boom applications.

Sub Arc mode provides capability to retrofit into nondigital sub arc applications. See literature No. AY/12.0 for list of compatible accessories. Adapter cord, 115 V for legacy 14-pin accessories is required.



Remote Controls and Switches



Wireless Remote Foot Control #300 429
For remote current and contactor control. Receiver plugs directly into the 14-pin receptacle of Miller machine. 90-foot (27.4 m) operating range.



Wireless Remote Hand Control #300 430

For remote current and contactor control. Receiver plugs directly into the 14-pin receptacle of Miller machine. 300-foot (91.4 m) operating range.



RMLS-14 #129 337

Momentary- and maintained-contact rocker switch for contactor control. Push forward for maintained contact and backward for momentary contact. Includes 26.5-foot (8 m) cord and 14-pin plug.



RCC-14 Remote Contactor and Current Control #151 086

East/west rotary-motion fingertip control attaches to TIG torch using two hook-and-loop fasteners. Allows complete current and contactor control at operator's fingertips. Includes 26.5-foot (8 m) cord and 14-pin plug.



RCCS-14 Remote Contactor and Current Control #043 688

North/south rotary-motion fingertip control attaches to TIG torch using two hook-and-loop fasteners. Great for applications that require a finer amperage control. Includes 26.5-foot (8 m) cord and 14-pin plug.



RHC-14 Hand Control*

#242 211 020 Z

20-foot (6 m) cord

#242 211 100

100-foot (30.5 m) cord

Miniature hand control for remote current and contactor control. Dimensions: 4 x 4 x 3.25 inches (102 x 102 x 83 mm). Includes cord and 14-pin plug.

**For additional lengths visit MillerWelds.com/equiptoweld*



RFCS-14 Foot Control #043 554

Foot current and contactor control. Includes 20-foot (6 m) cord and 14-pin plug.

Extension Cables for 14-Pin Plugs to 14-Pin Sockets*

#242 208 025 25 ft. (7.6 m)

#242 208 050 50 ft. (15.2 m)

#242 208 080 80 ft. (24.4 m)

Extension cables make a direct connection between the power source and remote control or 24 V wire feeder. No messy splicing or adapting required.

**For additional lengths visit MillerWelds.com/equiptoweld*

GFCI Panel Mount Kit #301 179

For applications that require GFCI protection of the 115-volt receptacle.

Polarity Control #042 871

This dual-function control is designed for use with dual wire feeders or any application where electrical isolation and/or polarity reversing of weld current is required. Both functions can be used at the same time.

Process Control Selector #042 872

Allows you to easily change weld processes without changing cables—from TIG to MIG or TIG to stick. Also includes features of Polarity Control. Can be used with any constant-current, constant-voltage or multiprocess CC/CV welding power source.



Industrial MIG 4/0 Kit #300 390

Includes Miller flowmeter regulator with 10-foot (3 m) gas hose, 10-foot (3 m) 4/0 feeder weld cable with lugs, and 15-foot (4.6 m) work cable with 600-amp C-clamp.

Power Source Racks



Dimension 650 Racks

#907 687 2-pack rack

#907 688 4-pack rack (shown above)

Conveniently houses multiple Dimension 650 power sources for multiple welders. Features include:

- Provision to parallel power sources on common work connections
- Two lifting eyes for transportation
- Rugged skids for dragging or pushing



Dimension 650 Running Gear #301 307
Large rear wheels and front casters provide excellent power source mobility on the shop floor. Easy to install. Handles double as a cable holder.

Note: Does not accommodate gas cylinders, use Running Gear Cylinder Rack #300 408 when gas cylinders are required.



Running Gear Cylinder Rack #300 408
Small footprint and easily maneuverable, with cylinder rack low enough that you do not have to lift bottles.



HF-251D-1 High-Frequency Arc Starter/Stabilizer #042 388

This portable 250-amp, 60-percent duty cycle unit adds high frequency to the welding circuit to help start the arc when using the TIG (GTAW) process. Operates on 115 V 50/60/100 Hz. See Lit. Index No. AY 5.1.



Insight Core™ 14-pin Module #310 072

Easy-to-install module brings Insight Core capabilities to your existing fleet. This simplified, Internet-based weld data solution collects, transmits and presents actionable information to any Web-connected device. Insight Core can help you increase productivity, improve weld quality and manage costs.

Coolant Systems

For more information, see the Coolmate™ Series literature sheet, Index No. AY/7.2.



Coolmate™ 3

#043 007 115 V

#043 008 230 V

For use with water-cooled torches rated up to 500 amps. Unique paddle-wheel indicator, external filter and easy-fill spout.



Coolmate™ 4 #042 288 115 V

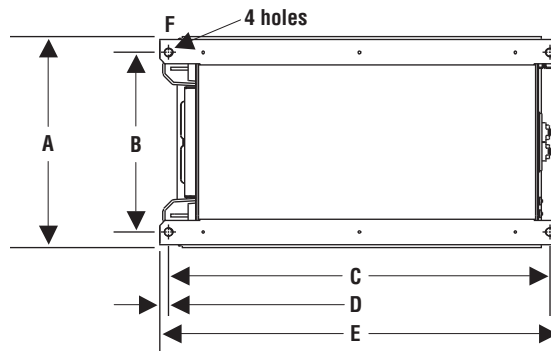
For use with water-cooled torches rated up to 600 amps. Tough molded polyethylene case with carrying handle.

Coolant #043 810

Sold in cases of four one-gallon recyclable plastic bottles. Miller coolants contain a base of ethylene glycol and deionized water to protect against freezing to -37 degrees Fahrenheit (-38°C) or boiling to 227 degrees Fahrenheit (108°C). Also contains a compound that resists algae growth.

Mounting Specifications

Bottom View



A. 16.687 in. (424 mm)

B. 14.25 in. (362 mm)

C. 30.25 in. (768 mm)

D. .687 in. (44 mm)

E. 31.625 in. (803 mm)

F. .625 in. (17 mm) dia.

Height: 28.187 in. (716 mm)

Width: 16.687 in. (424 mm)

Depth: 31.625 in. (803 mm)

Ordering Information

Equipment and Options	Stock No.	Description	Qty.	Price
Dimension™ 650 Power Source Only	#907 617	380/460 V, 50/60 Hz		
Dimension™ 650 Stationary Package	#951 638	380/460 V, 50/60 Hz. Includes S-74 MPa Plus feeder, Bernard™ Q400 MIG gun, .035/.045 drive rolls and Industrial MIG 4/0 kit		
Dimension™ 650 MIGRunner™ Package	#951 637	380/460 V, 50/60 Hz. Includes stationary package plus running gear cylinder rack		
Wire Feeders				
SuitCase® X-TREME™ 8VS	#951 583	See Lit. Index No. M/6.42		
SuitCase® X-TREME™ 12VS	#951 543	See Lit. Index No. M/6.42		
SuitCase® 12RC	#951 580	See Lit. Index No. M/6.5		
22A	#951 190	See Lit. Index No. M/11.0		
24A	#951 193	See Lit. Index No. M/11.0		
70 Series		See Lit. Index No. M/3.0		
XR™-Controls	#300 601 #300 687	XR-S model. See Lit. Index No. M/1.7 XR-D model. See Lit. Index No. M/1.7		
XR Push-Pull Guns		See Lit. Index No. M/1.71, M/1.73 and M/1.74		
Swingarc™ Boom Feeders		See Lit. Index No. M/13.11		
Remote Controls				
Wireless Remote Foot Control	#300 429	Foot control with wireless 90 ft. (27.4 m) operating range		
Wireless Remote Hand Control	#300 430	Hand control with wireless 300 ft. (91.4 m) operating range		
RMLS-14	#129 337	Rocker switch		
RCC-14	#151 086	Fingertip control (east/west)		
RCCS-14	#043 688	Fingertip control (north/south)		
RHC-14	#242 211 020 #242 211 100	Hand control with 20 ft. (6 m) cord and 14-pin plug Hand control with 100 ft. (30.5 m) cord and 14-pin plug		
RFCS-14	#043 554	Foot control		
Extension Cables		See page 6		
Options and Accessories				
GFCI Panel Mount Kit	#301 179			
Adapter Cord	#301 259	115 V. For legacy 14-pin accessories. Required to connect to HDC-1500		
Polarity Control	#042 871			
Process Control Selector	#042 872			
Industrial MIG 4/0 Kit	#300 390	Includes Miller flowmeter regulator with 10 ft. (3 m) gas hose, 10 ft. (3 m) 4/0 feeder weld cable with lugs, and 15 ft. (4.6 m) work cable with 600-amp C-clamp		
Dimension 650 Racks	#907 687 #907 688	2-pack rack 4-pack rack		
Dimension 650 Running Gear	#301 307			
Running Gear Cylinder Rack	#300 408			
HF-251D-1 Starter/Stabilizer	#042 388	See Lit. Index No. AY/5.1		
Insight Core™ 14-pin Module	#310 072	Easy-to-install module brings Insight Core capabilities to your existing fleet.		
Coolant Systems		See page 7		
Coolant	#043 810			
Primary Power Cable				
Secondary Welding Cables				
Work Cable and Clamp				

Date:

Total Quoted Price:

Distributed by:

