

# Dimension™ 650

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)

**ArcReach (recommended option)**  
 Remote voltage control without a control cable

## Big capabilities in a smaller package.

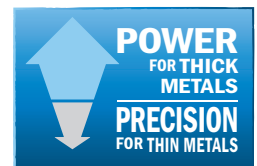
*Developed for harsh environmental conditions and output requirements that range from power-intensive to precise.*

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.



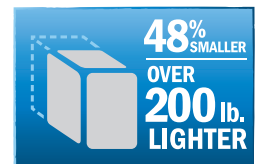
Rugged and durable inside and out



Power and precision



Improved weld quality



More portable and takes up less floor space



ArcReach® — remote control without a cord



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



**Miller Electric Mfg. LLC**  
 An ITW Welding Company  
 1635 West Spencer Street  
 P.O. Box 1079  
 Appleton, WI 54912-1079 USA

**Equipment Sales US and Canada**  
 Phone: 866-931-9730  
 FAX: 800-637-2315  
 International Phone: 920-735-4554  
 International FAX: 920-735-4125

**MillerWelds.com**  




# Dimension™ 650 Advantages

## Withstands harsh environments



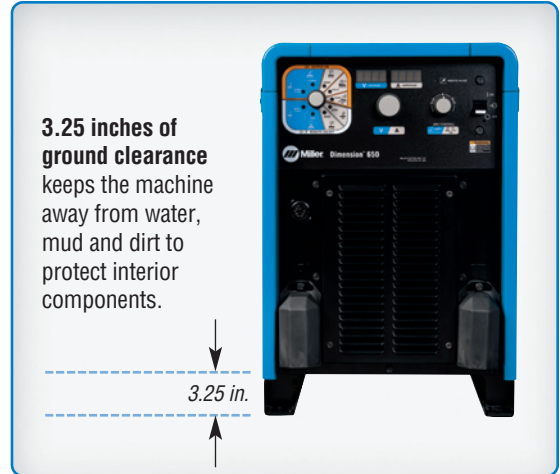
Rugged and durable inside and out

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

**Exclusive protection** input inductor protects machine's performance and reliability from "dirty" input power.

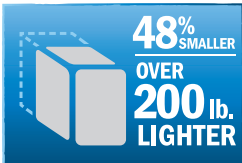
**Wind Tunnel Technology™** Internal air flow that protects electrical components and PC boards from dirt, dust, debris... greatly improving reliability

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



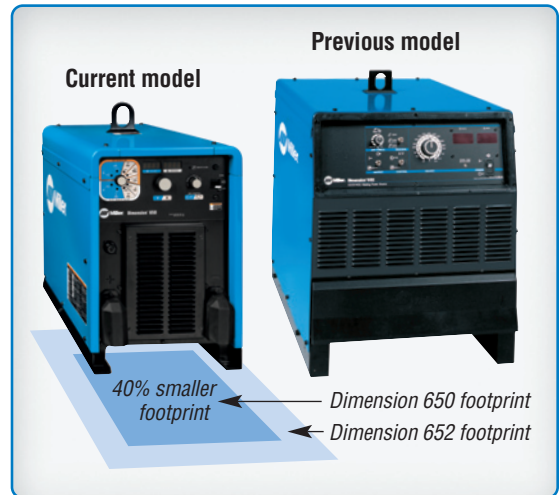
**3.25 inches of ground clearance** keeps the machine away from water, mud and dirt to protect interior components.

## Smaller and lighter

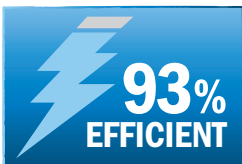


More portable and takes up less floor space

**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.

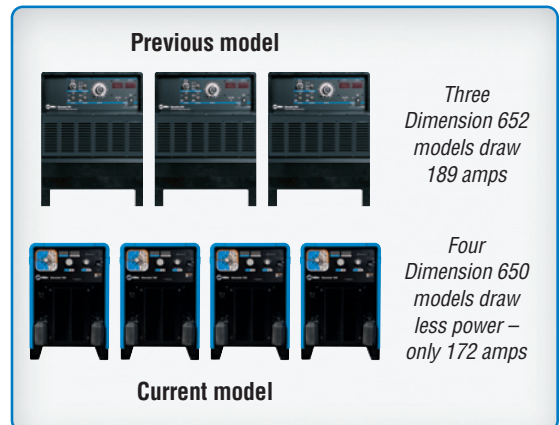


## Power efficient



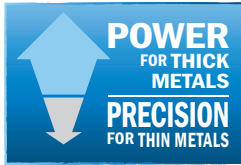
Uses 32% fewer amps than previous model

**High electrical efficiency and excellent power factor** mean that you can get more welding done using less power. On 460-volt input power, 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.



# 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.

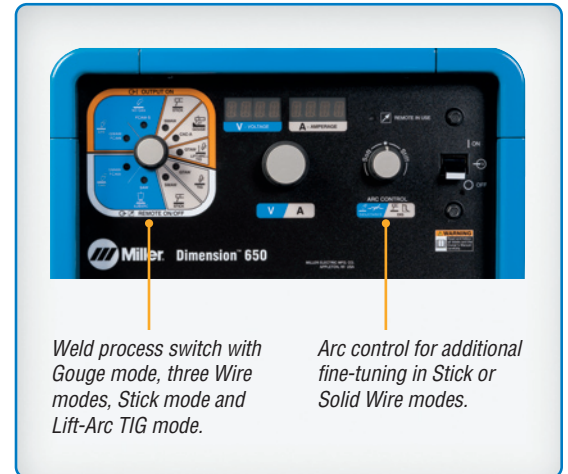
**Gouging mode provides** 800 amps of usable power, a full 650 amps of power at 100 percent duty cycle. Perfect for heavy gouging with 3/8-inch carbons.

**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.**

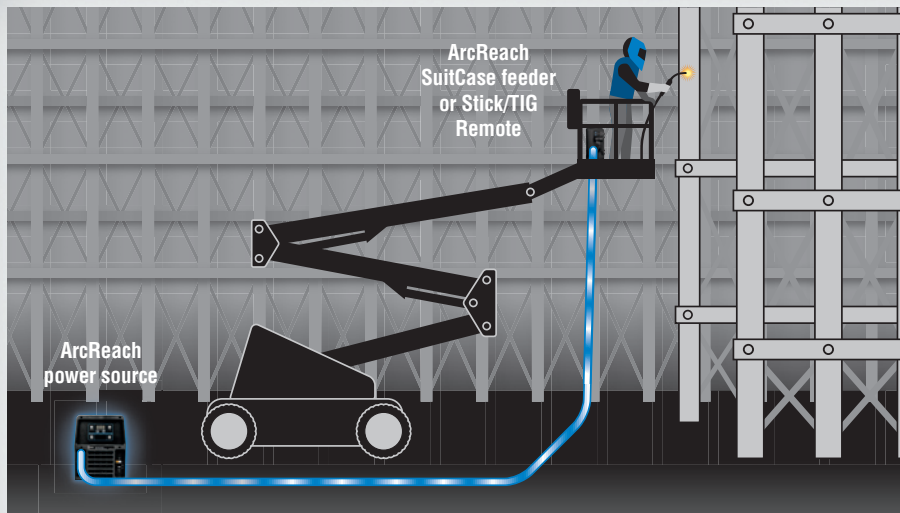
**Arc control** is beneficial when welding with stick and solid wires for easier fine-tuning of tough-to-weld materials and out-of-position applications.



*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 Recommended Option



**ArcReach**

**Remote control of the power source without a cord.**

ArcReach technology uses the existing weld cable to communicate welding control information between the feeder or remote and power source. This technology eliminates the need for control cords, and their associated problems and costs.

### ArcReach accessories



**For MIG or flux-cored welding — ArcReach® SuitCase® feeders**

- Remote voltage control
- Polarity indication
- Auto-Process Select™



**For stick or TIG welding — ArcReach® Stick/TIG Remote**

- Remote amperage control
- Arc control for stick
- Polarity indication
- Auto-Process Select™

# 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**

- Process settings for quick and easy setup
- Preset and actual amperage

**LED process indicator.** Front panel process selections are illuminated with an LED that identifies the active process. This enables the selected weld process to be seen at a distance from the power source.

- 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



**Remote in use indicator.** On standard Dimension 650 models the remote in use indicator means a device (remote control or wire feeder with a remote control) is connected to the 14-pin connector.

## Dimension 650 ArcReach additional features

**Remote in use indicator** provides convenient feedback indicating an ArcReach wire feeder is controlling the power source. While under ArcReach control, process and voltage/amperage adjustments are locked out, preventing accidental changes by personnel other than the welding operator.

**Auto-Bind** automatically establishes an exclusive communication between the power source and the wire feeder, using the existing weld cables upon system power up.

**Fleet compatibility.** ArcReach-equipped power sources and wire feeders work with non-ArcReach equipment; however, the complete ArcReach benefit is only realized with the ArcReach system.



**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.



**Back panel.** 20 amps of 120-volt power to run power tools — like grinders, chop saws, drills and lights.

## 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			
10–815 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

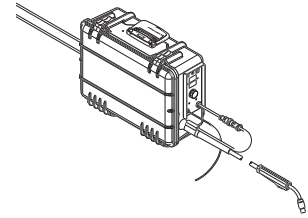
### Portable Suitcase-Style Feeders

#### ArcReach® SuitCase® 8 and 12 See literature M/6.55

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

#### SuitCase® 12RC See literature 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 M/11.0

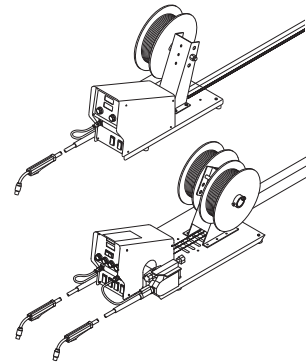
Simple and cost-effective feeders for industrial manufacturing and fabricating.

#### 70 Series Feeders See literature M/3.0

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

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

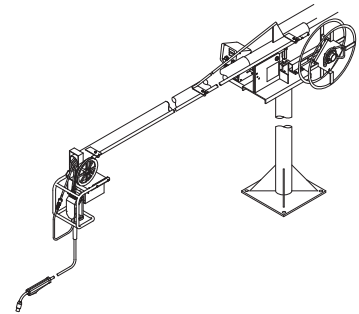
**74 MPa Plus** — Adds push-pull aluminum capabilities. Optimized for use with XMT® MPa, Invision™ MPa and Dimension™ 650 power sources.



### Boom-Style Feeders

#### 70 Series Swingarc™ See literature 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™-S Control See literature M/1.7

Cost-effective push-pull feeder for industrial applications.

#### XR-Aluma-Pro™ Gun See literature M/1.71

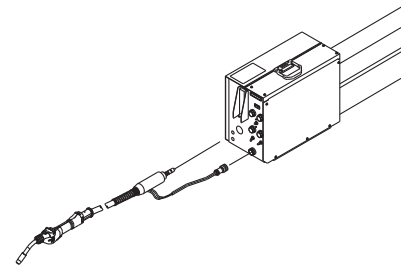
Robust professional grade gun has the highest duty-cycle rating in its class.

#### XR™-Pistol Gun See literature M/1.73

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

#### XR™-Pistol-Pro Gun See literature M/1.74

Exceptional aluminum welding results for heavy industrial applications.

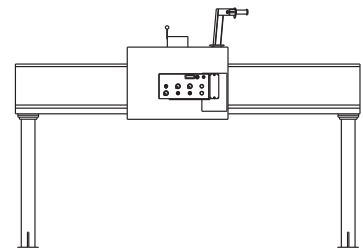


### Hard Automation

#### 70 Series Remote Configurations See literature 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 non-digital sub arc applications. 115-volt adapter cord for legacy 14-pin accessories is required.





**Dimension™ 650 ArcReach® Rack 907701**  
 Conveniently houses four Dimension 650 ArcReach 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



**Running Gear Cylinder Rack 300408**  
 Small footprint and easily maneuverable, with cylinder rack low enough that you do not have to lift bottles.

**Adapter Cord 301259**  
 115-volt cord for legacy 14-pin accessories. Required to connect to HDC 1500.

**Polarity Control 042871**  
 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 042872**  
 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 300390**  
 Consists of 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.

## Remote Controls and Switches



When paired with an ArcReach power source, provides remote control of the power source without a cord — saving time and money. See literature AY/14.5.



**Wireless Remote Foot Control 300429**  
 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 300430**  
 For remote current and contactor control. Receiver plugs directly into the 14-pin receptacle of Miller machine. 300-foot (91.4 m) operating range.



**RFCS-14 HD Foot Control 194744**  
 Maximum flexibility is accomplished with a reconfigurable cord that can exit the front, back or either side of the pedal. Foot pedal provides remote current and contactor control. Includes 20-foot (6 m) cord and 14-pin plug.



**RHC-14 Hand Control 242211020**  
 20 ft. (6 m) cord  
**242211100**  
 100 ft. (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.



**RCC-14 Remote Contactor and Current Control 151086**  
 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 043688**  
 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.



**RMLS-14 129337**  
 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.

**Extension Cables for 14-Pin Plugs to 14-Pin Sockets**  
**242208025** 25 ft. (7.6 m)  
**242208050** 50 ft. (15.2 m)  
**242208080** 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.

## Genuine Miller® Accessories (Continued)

### Wire Feeders



#### ArcReach® SuitCase® 8

**951726** With Bernard® BTB Gun 300 A

**951728** With Bernard® Dura-Flux™ gun

#### ArcReach® SuitCase® 12

**951729** With Bernard® BTB Gun 300 A

**951731** With Bernard® Dura-Flux™ gun

Portable feeder designed to run off of arc voltage. When paired with an ArcReach power source, provides remote control of the power source without a control cord — saving time and money. See literature M/6.55.



#### 70 Series Wire Feeders

**S-74 MPa Plus 951291** Single-wire feeder

**D-74 MPa Plus 951292** Dual-wire feeder

Order XR-Aluma-Pro™ Plus gun and U-grooved drive rolls separately to match your aluminum needs. Above models are optimized for Dimension™ 650 and have push-pull capability.

**S-74S 951196** Single-wire feeder

**S-74D 951198** Single-wire feeder

**D-74S 951203** Dual-wire feeder

**D-74D 951204** Dual-wire feeder

70 Series feeders feature Posifeed™ wire drive assembly and handle a variety of wires. Each includes a 15-foot Bernard® BTB Gun 400 A (two for dual feeders) and .035/.045-inch V-grooved drive rolls. See literature M/3.0.

### Coolant Systems

For more information see literature AY/7.2.



#### Coolmate™ 3

**043007** 115 V

**043008** 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 042288

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

#### Coolant 043810

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.

### Welding Intelligence™

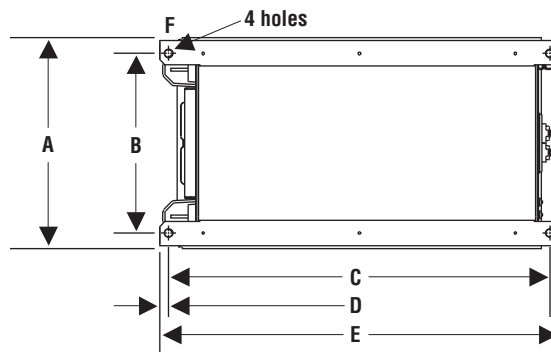


#### Insight Core™ 14-pin Module 301072

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.

## 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
<b>Dimension™ 650 Power Source Only</b>	<b>907617</b>	380/460 V, 50/60 Hz		
<b>Dimension™ 650 Stationary Package</b>	<b>951638</b>	380/460 V, 50/60 Hz. Includes S-74 MPa Plus feeder, Bernard® BTB Gun 400 A, .035/.045 drive rolls and industrial MIG 4/0 kit		
<b>Dimension™ 650 MIGRunner™ Package</b>	<b>951637</b>	380/460 V, 50/60 Hz. Includes stationary package plus running gear cylinder rack		
<b>Dimension™ 650 ArcReach™ Power Source Only</b>	<b>907617001</b>	380/460 V, 50/60 Hz		
<b>Dimension™ 650 ArcReach™ Rack</b>	<b>907701</b>	4-pack rack		
<b>Options and Accessories</b>				
Running Gear Cylinder Rack	<b>300408</b>			
Adapter Cord	<b>301259</b>	115-volt cord for legacy 14-pin accessories. Required to connect to HDC 1500		
Polarity Control	<b>042871</b>			
Process Control Selector	<b>042872</b>			
Industrial MIG 4/0 Kit	<b>300390</b>	Includes 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		
<b>Remote Controls</b>				
ArcReach® Stick/TIG Remote	<b>301325</b>	Point-of-use control for stick or TIG welding and gouging with Dimension 650 ArcReach		
Wireless Remote Foot Control	<b>300429</b>	Foot control with wireless 90 ft. (27.4 m) operating range		
Wireless Remote Hand Control	<b>300430</b>	Hand control with wireless 300 ft. (91.4 m) operating range		
RFCS-14 HD	<b>194744</b>	Foot control with 20 ft. (6 m) cord and 14-pin plug		
RHC-14	<b>242211020</b> <b>242211100</b>	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		
RCC-14	<b>151086</b>	Fingertip control (east/west)		
RCCS-14	<b>043688</b>	Fingertip control (north/south)		
RMLS-14	<b>129337</b>	Rocker switch		
Extension Cables		See page 6		
<b>Wire Feeders</b>				
ArcReach® SuitCase® 8 and 12		Point-of-use control for MIG or flux-cored welding with Dimension 650 ArcReach. See page 7 and literature M/6.55		
70 Series		See page 7 and See literature M/3.0		
SuitCase® 12RC		See literature M/6.5		
20 Series		See literature M/11.0		
XR™-Controls		See literature M/1.7		
XR™ Push-Pull Guns		See literature M/1.71, M/1.73 and M/1.74		
Swingarc™ Boom Feeders		See literature M/13.11		
<b>Welding Intelligence™</b>		See page 7		
<b>Coolant Systems</b>		See page 7		

Date:

Total Quoted Price:

Distributed by:

