

# 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.

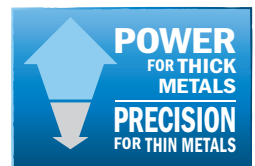
*Developed for harsh environmental conditions and output requirements that range from power-intensive to precise.*

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.



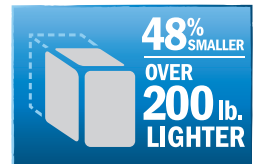
Rugged and durable inside and out



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 rectified parts are warranted for five years.



**Miller Electric Mfg. Co.**  
 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



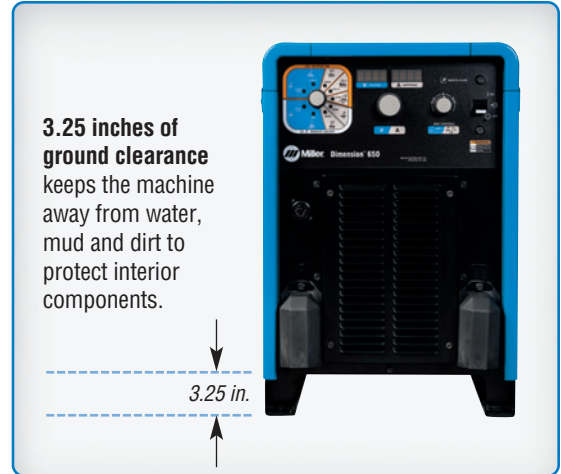
Rugged and durable inside and out

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

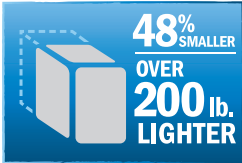
**Exclusive protection** input inductor protects machine's performance and reliability from "dirty" input power.

**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.

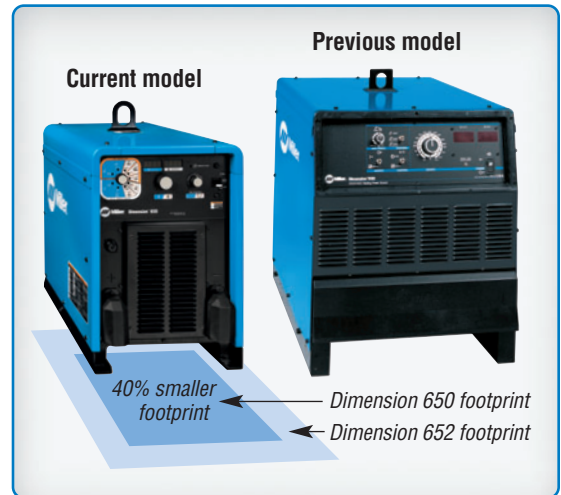


## Smaller and lighter

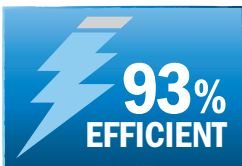


More portable and takes up less floor space

**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.

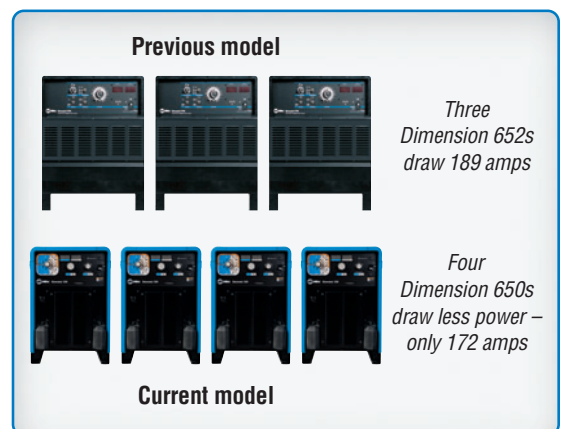


## Power efficient



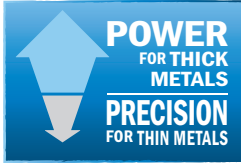
Uses 32% fewer amps than previous model

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



## 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.**

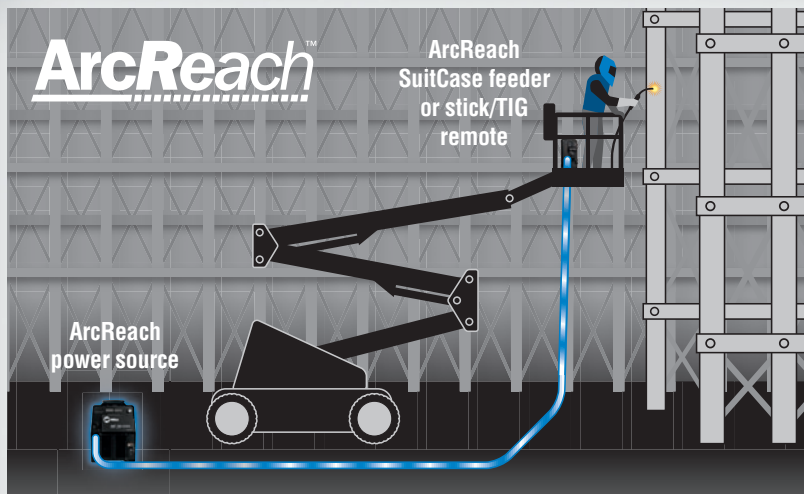
**Arc control** is beneficial when welding with stick and solid wires for easier fine-tuning of tough-to-weld materials and out-of-position applications.



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



**Remote control of the power source without a cord.** An ArcReach system allows you to change weld settings from your SuitCase wire feeder or stick/TIG remote, saving a trip to the power supply. ArcReach technology uses the existing weld cable to communicate welding control information between the feeder or remote and the power source. This technology eliminates the need for control cords, and their associated problems and costs.

### ArcReach accessories



For MIG or flux-cored welding — **SuitCase X-TREME 8VS/12VS ArcReach feeders**

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

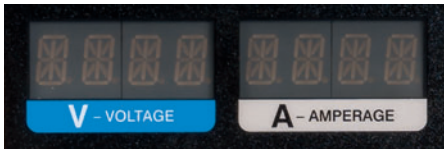


For stick or TIG welding — **ArcReach stick/TIG remote**

- 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.

**NEW! 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 V power to run power tools — like grinders, chop saws, drills and lights.

## Specifications (Subject to change without notice.)



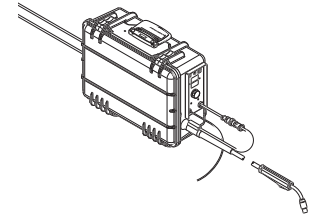
Amperage/Voltage Ranges	Rated Output	Amps Input at Rated Output, 50/60 Hz				Max. Open-Circuit Voltage	Dimensions	Net Weight
		380 V	460 V	KVA	KW			
15–815 A in CC mode 10–44 V in CV mode 10–65 V in SAW mode	650 A at 44 VDC, 100% duty cycle	53.2	42.8	34	30.7	87	H: 28.187 in. (716 mm) (including lift 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 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. ArcReach-equipped models provide remote voltage control of the power source without a cord.



#### 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

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

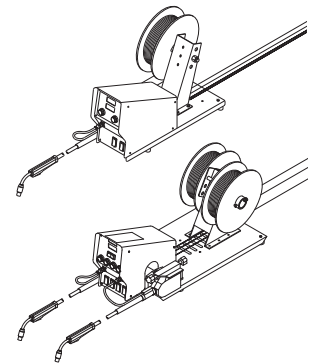
#### 70 Series Feeders See literature M/3.0

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

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

**74DX** — Provides added features for weld control and programs.

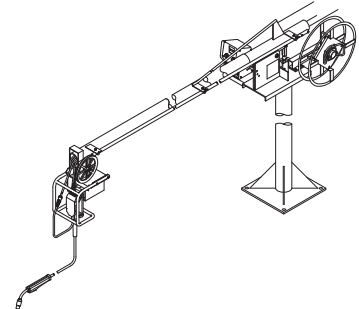
**74 MPa Plus** — Adds push-pull aluminum capabilities. Optimized for use with XMT® MPa, Invision™ MPa and Dimension 650 power sources.



### 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™ Controls See literature 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 M/1.71

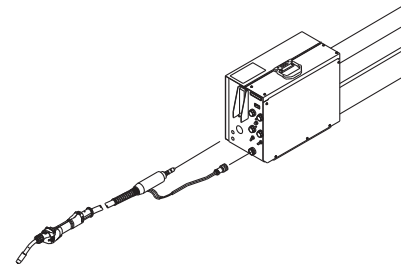
Robust professional grade gun has the highest duty-cycle rating in its class.

#### 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.

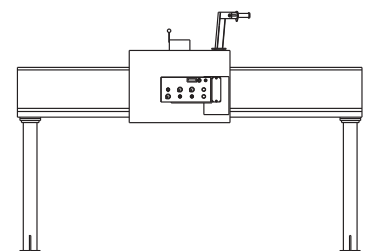


### Hard Automation

#### 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. See literature no. AY/12.0 for list of compatible accessories. Adapter cord, 115 V for legacy 14-pin accessories is required.





### Dimension™ 650 Racks

- 907687** 2-pack rack
- 907688** 4-pack rack (shown above)

### Dimension™ 650 ArcReach™ Racks

- 907702** 2-pack rack
- 907701** 4-pack rack

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 301307

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 300408 when gas cylinders are required.*



### Running Gear Cylinder Rack 300408

Small footprint and easily maneuverable, with cylinder rack low enough that you do not have to lift bottles.

### GFCI Panel Mount Kit 301179

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

### 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

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.

### HF-251D-1 High-Frequency Arc Starter/Stabilizer 042388

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-volt, 50/60/100 Hz. See literature AY/5.1.

## Remote Controls and Switches

### ArcReach Stick/TIG Remote 301325

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 Foot Control 043554

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



### RHC-14 Hand Control\* 242211020

20-foot (6 m) cord

**242211100**

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*



### 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.

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



## Genuine Miller Accessories (Continued)

### Wire Feeders



**SuitCase® X-TREME™ 8VS 951582**

**SuitCase® X-TREME™ 12VS 951543**

Lightweight, portable wire feeder for a variety of wires up to .062 inch. Holds up to an 8-inch (8VS) or 12-inch (12VS) spool of wire. Operates on open-circuit voltage eliminating the need for a control/power cord. Includes Bernard™ BTB Gun 300 A. See literature M/6.42.



**SuitCase® X-TREME™ 8VS ArcReach 951588**

With Bernard™ S-Gun™

**951584** With Bernard™ BTB Gun 300 A

**SuitCase® X-TREME™ 12VS ArcReach 951589**

With Bernard™ S-Gun™

**951581** With Bernard™ BTB Gun 300 A

Portable feeder designed to run off of arc voltage. When paired with an ArcReach power sources provides remote control of the power source without a cord — saving time and money. See literature M/6.42.



#### 70 Series Wire Feeders

**S-74 MPa Plus 951291** single feeder

**D-74 MPa Plus 951292** dual 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 feeder

**S-74D 951198** single feeder

**S-74DX 951200** single feeder

**D-74S 951203** dual feeder

**D-74D 951204** dual feeder

**D-74DX 951206** dual 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.

### 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.

### Coolant Systems

For more information, see the Coolmate™ Series 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

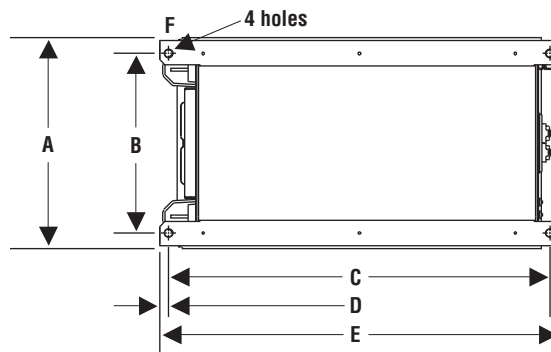
For use with water-cooled torches rated up to 600 amps. Tough molded polyethylene case with carrying handle.

**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.

## 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	907617	380/460 V, 50/60 Hz		
Dimension™ 650 ArcReach™ Power Source Only	907617001	380/460 V, 50/60 Hz		
Dimension™ 650 Stationary Package	951638	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		
Dimension™ 650 MIGRunner™ Package	951637	380/460 V, 50/60 Hz. Includes stationary package plus running gear cylinder rack		
Dimension™ 650 Rack	907687 907688	2-pack rack 4-pack rack		
Dimension™ 650 ArcReach™ Rack	907702 907701	2-pack rack 4-pack rack		
<b>Options and Accessories</b>				
Dimension 650 Running Gear	301307			
Running Gear Cylinder Rack	300408			
GFCI Panel Mount Kit	301179			
Adapter Cord	301259	115-volt cord for legacy 14-pin accessories. Required to connect to HDC 1500		
Polarity Control	042871			
Process Control Selector	042872			
Industrial MIG 4/0 Kit	300390	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		
HF-251D-1 Starter/Stabilizer	042388	See literature AY/5.1		
<b>Remote Controls</b>				
ArcReach™ Stick/TIG Remote	301325	Point-of-use control for stick or TIG welding and gouging with Dimension 650 ArcReach		
Wireless Remote Foot Control	300429	Foot control with wireless 90 ft. (27.4 m) operating range		
Wireless Remote Hand Control	300430	Hand control with wireless 300 ft. (91.4 m) operating range		
RMLS-14	129337	Rocker switch		
RCC-14	151086	Fingertip control (east/west)		
RCCS-14	043688	Fingertip control (north/south)		
RHC-14	242211020 242211100	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	043554	Foot control		
Extension Cables		See page 6		
<b>Wire Feeders</b>				
SuitCase® X-TREME™ 8VS and 12VS		See page 7 and literature M/6.42		
SuitCase® X-TREME™ 8VS and 12VS ArcReach™		Point-of-use control for MIG or flux-cored welding with Dimension 650 ArcReach. See page 7 and literature M/6.42		
70 Series		See page 7 and See literature M/3.0		
SuitCase® 12RC		See literature M/6.5		
22A		See literature M/11.0		
24A		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:



## Kristian Electric Ltd.

Calgary  
4215 64th Avenue SE  
(403)292-9111

Edmonton  
14236 121A Avenue  
(780)444-6116

Saskatoon  
710 46th Street E  
(306)343-9111

www.kristian.ca



**Miller**®

The Power of Blue™