

DuraGard® Nonmetallic Waterproof Connections

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FS/FD™ 10-30A Metallic WaterTight Connections

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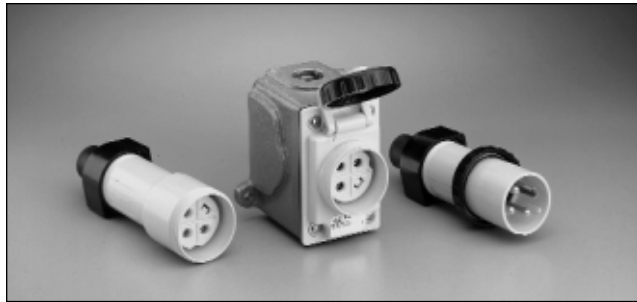
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DuraGard® Nonmetallic Waterproof Connections

Washdown Duty, Chemical, Outdoor, Industrial and Marine Use Nonmetallic Plugs, Connectors Receptacles and Inlets – 20, 30 and 50 Amp, Maximum 600 VAC/250 VDC



The Next Generation: DuraGard®

Severe environments and high pressure washdown duty applications require durable, waterproof and safe connections. Russellstoll takes design reliability to new heights with Safety Grade™ standards for truly waterproof connectors. Many watertight specifications cover mated connections only. DuraGard connectors are designed to be watertight *mated* or *unmated*, thus offering the ultimate waterproof connection. DuraGard connectors are also UL94-V0 flame rated for safety and utilize a durable, efficient pin and sleeve contact design that is voltage polarized to meet NEC210-7 and OSHA standards. DuraGard® ... designed for maximum safety, durability and performance.

DuraGard® Features Make the Performance Difference.



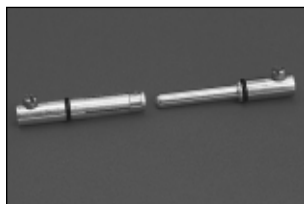
Not just “watertight”; Waterproof for Washdown Duty: DurORing™ Sealing

- Specifically designed for wet environments with our unique DurORing™ sealing system. Unit is watertight mated or unmated.
- Eliminates need for costly “weather boots” or “adapters”.
- Compact Size.
- “Lockout Ready” plugs have padlock access hole in front. (30/50A).



Durable, Tough and Flame Safety Rated Housings

- DuraV™ housing material specially selected for hot or cold washdown duty.
- Flame Safe UL94-V0 rated housings.
- Superior Performance in Corrosive Environments.
- High Visibility yellow housings.



Safe and Reliable Power Connections: Pin and Sleeve, Voltage Polarized

- **Long Life:** Round, Self Cleaning, Constant Pressure Pin and Sleeve Contacts, of Solid CDA 360 brass for long reliable electrical life.
- **More Power, Operates Cooler:** large circular electrical contact area allows more current flow with lower temperature rise.
- **Ground Pin Keyed for Voltage Polarization** (O-ring seal)



Easy To Wire

- **“No twistoff” Locking Plugs™:** Integral Threaded Screw Collars and Compression type Bushings make wiring a snap.
- **Fast Assembly and Wiring:** “Drop-In” rear loaded interiors use no assembly screws, versus 3-5 or more with other connectors. 30/50A connectors use unique E-Z Tite™ external gland lock screw, also.

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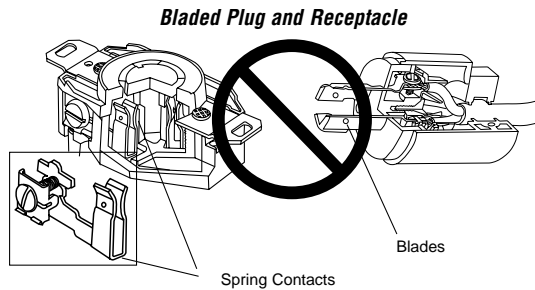
DuraGard® Nonmetallic Waterproof Connections

Washdown Duty, Chemical, Outdoor, Industrial and Marine Use Nonmetallic Plugs, Connectors Receptacles and Inlets – 20, 30 and 50 Amp, Maximum 600 VAC/250 VDC

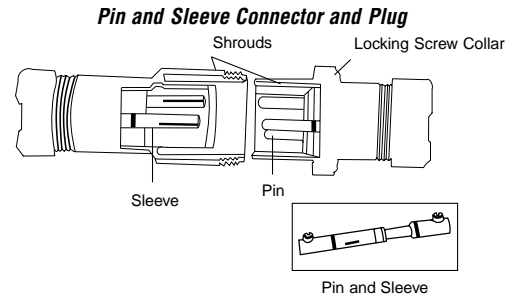
DuraGard® Pin and Sleeve Connections

Pin and Sleeve contact devices consist of round male pins which are inserted into tubular female sleeves. Current flows through a large pin-to-sleeve circular contact area. Because current is not restricted through point contact only, higher current flow and cooler operating temperatures are achieved in a compact connection. Wiping action during insertion or withdrawal provides positive self cleaning.

Shrouded pins and sleeves are protected from physical damage or casual access and aid in polarization features of the line. The shroud and screw collar completely lock plugs to receptacles or connectors for a reliable connection. Step on the cord, kick or drop a plug; your connection will remain tight. *Pin and Sleeve devices are the safety standard for high current applications worldwide.*



Spring blade contact designs offer point contact only, with minimal mechanical support in receptacles. Higher heat is generated in use as contacts loosen with age and dirt accumulation, resulting in failures. Exposed blade contacts can easily be damaged. Contacts are both the electrical and mechanical locking method.



Pin and Sleeve design allows higher current flow at cooler temperatures due to large circular contact area. Sleeves act as retainers for the pins making a reliable connection. Shrouded pins and sleeves are protected from damage and inadvertent access. Locking housing screw collars provide for a reliable, long lasting connection, with electrical contacts separate.



The Water Spray Test

1000 PSI water spray was directly applied at the face of DuraGard receptacles. No damage occurred, and no water penetrated the housing or cord seal. DuraGard plugs, connectors and receptacles are designed to withstand water spray test at 1000 PSI. No extra cost boots or adapters required.



DuraGard®: Designed For the Toughest Washdown Applications



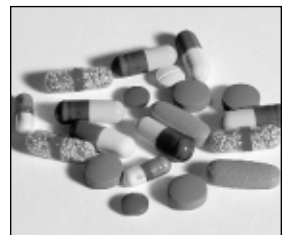
Pulp and Paper



Food Processing



Beverage and Bottling



Pharmaceutical Manufacturing

RUSSELLSTOLL® DURAGARD®/FSFD

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DuraGard® Nonmetallic Waterproof Connections

Washdown Duty, Chemical, Outdoor, Industrial and Marine Use Nonmetallic Plugs, Connectors Receptacles and Inlets – 20, 30 and 50 Amp, Maximum 600 VAC/250 VDC

The Ultimate in Waterproof Connection

20, 30 and 50 Amps, 600 VAC
20 Amp, 250 VDC

Lockout Capable (30/50A Plugs)

- Access Hole (not seen) For Padlock Hasp.
- CDA 360 Solid Brass Pin and Sleeve Contacts.

High Reliability, High Performance Connections

- CDA 360 Solid Brass Pin and Sleeve Contacts.

Long Lasting Self Cleaning Connections

- Full Round Pin and Sleeve Contacts.

Fast, Easy, Rear Load Wiring and Assembly

- Drop-in Assembly Interior.
- Sleeve and Cable Bushing.
- Easy-in pressure screw wiring terminations.

Waterproof Cable Sealing

- Neoprene Compression Bushing.
- One-piece lock screw.
- Locking Bushing Nut with External Cable Clamps.
- Bushing sizes available for any cable size.

Waterproof Locking Connections

- Locking Screw Collars with O-ring gaskets.
- Housing mechanical support and pin and sleeve connection.

Safety Features

- Safety Ground Makes First, Breaks Last.
- Voltage Polarized to Meet NEC210-7 and OSHA Standards.

Durable and UL94-V0 Flame Rated Housings

- DuraV™ high impact body and collars.
- Thermoset Interiors.
- Dead Front Construction.

Dry Wiring Compartments

- DurOring™ Sealing System for each pin and sleeve and interior assembly.

(50 Amp Plug and Connector Shown)

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DuraGard® Nonmetallic Waterproof Connections

Washdown Duty, Chemical, Outdoor, Industrial and Marine Use Nonmetallic Plugs, Connectors Receptacles and Inlets – 20, 30 and 50 Amp, Maximum 600 VAC/250 VDC

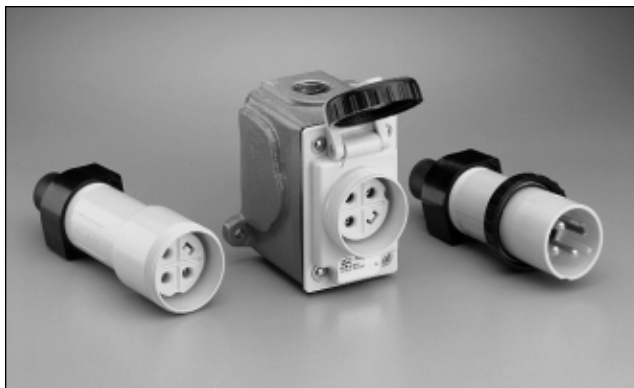
Engineering Specifications

Performance – Electrical

Dielectric Voltage Withstand	3,000 Volts
Max. Working Voltage	6,000 volts RMS (minimum creepage and minimum clearance per UL 840)
Circuit Interrupting/Load Breaking	UL listed and CSA certified for circuit interrupting at full rated current.
Temperature Rise	Max. 30°C temperature rise at full rated current after 50 cycles of overload at 150% rated current at .75-pf.
Horsepower	Per NEC 430-151 ratings

Performance – Mechanical

Impact Resistance	Per UL 1682 Paragraph 34
Cord Accommodation	Round portable service cords. 10 standard diameters from .405" to 1.00", custom sizes to spec.
Terminal Identification	In accordance with UL 1682
Cable Pull-Out Force	In accordance with UL 1682
Product Identification	Identification label and molded in name
Lockout/Tagout	Lockout/Tagout hole on plug complies with OSHA Reg. 29 CFR 1910.147.



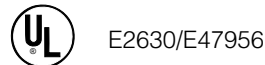
Performance – Environmental

Moisture Resistance	Per UL 1682 Paragraph 49. Watertight/flap screw cover on receptacle, O-Rings on all pins and sleeves, interiors and plug shell. Watertight even when not engaged.
Flammability	V0 or better per UL94
Operating Temperatures	Maximum Continuous: 95°C / 203°F Minimum: -40°C / -40°F w/o impact
Chemicals	Resists standard industrial hydrocarbons, acids, bases and solvents.

Material

Contact Carrier	Molded arc resistant UL94-V0 phenolic thermoset
Housing, Gland Nuts Screw Collar Rings	DuraV™ UL94-V0, High Impact Thermoplastic
O-Rings	Buna-N (Nitrile)
Contacts: Pins and Sleeves	Brass CDA 360
Hinge Pins (Receptacle)	Stainless Steel
Terminals	Brass CDA 360
Terminal Screws	Stainless Steel
Flap Springs	
Assembly Screws	
Nuts, Hardware	
Gland Friction Washer	20 Amp - Nylon 30 and 50 Amp - Aluminum
Cable Clamp Bushing	Neoprene

Approvals



DuraGard® Nonmetallic Waterproof Connections — Ordering Information

Washdown Duty, Chemical, Outdoor, Industrial and Marine Use Nonmetallic Plugs, Connectors Receptacles and Inlets – 20, 30 and 50 Amp, Maximum 600 VAC/250 VDC

Amps	Voltage Polarization	Safety Polarization (Receptacle)	Catalogue Numbers					
			Male Plug	Female Connector	Std. I.D. Bushing: Plug/Conn.*	Female Receptacle	Female Plug	Male Receptacle
2P3W 20A	125 VAC		 9P23U1	 9C23U1	Standard 0.625 For Optional Sizes See pg. 112	 9R23U1W		
	250 VAC		9P23U2	9C23U2		9R23U2W		
	277 VAC		9P23U3	9C23U3		9R23U3W		
	480 VAC		9P23U4	9C23U4		9R23U4W		
	600 VAC		9P23U5	9C23U5		9R23U5W		
	thru 600VAC/250VDC		9P23U0	9C23U0		9R23U0W		
2P3W 30A	125 VAC		9P33U1	9C33U1	Standard 0.700 For Optional Sizes See pg. 112	9R33U1W	9F33U1	9B33U1F
	250 VAC		9P33U2	9C33U2		9R33U2W	9F33U2	9B33U2F
	277 VAC		9P33U3	9C33U3		9R33U3W	9F33U3	9B33U3F
	480 VAC		9P33U4	9C33U4		9R33U4W	9F33U4	9B33U4F
	600 VAC		9P33U5	9C33U5		9R33U5W	9F33U5	9B33U5F
	thru 600 VAC/3P3W		9P33U0	9C33U0		9R33U0W	9F33U0	9B33U0F
2P3W 50A	125 VAC		9P53U1	9C53U1	Standard 0.925 For Optional Sizes See pg. 112	9R53U1W	9F53U1	9B53U1F
	250 VAC		9P53U2	9C53U2		9R53U2W	9F53U2	9B53U2F
	277 VAC		9P53U3	9C53U3		9R53U3W	9F53U3	9B53U3F
	480 VAC		9P53U4	9C53U4		9R53U4W	9F53U4	9B53U4F
	600 VAC		9P53U5	9C53U5		9R53U5W	9F53U5	9B53U5F
	thru 600 VAC/3P3W		9P53U0	9C53U0		9R53U0W	9F53U0	9B53U0F
3P4W 20A	125/250 VAC		9P24U1	9C24U1	Standard 0.625 For Optional Sizes See pg. 112	9R24U1W		
	250- 3Ø VAC		9P24U2	9C24U2		9R24U2W		
	480 3Ø VAC		9P24U4	9C24U4		9R24U4W		
	600 3Ø VAC		9P24U5	9C24U5		9R24U5W		
	thru 600VAC / 250VDC		9P24U0	9C24U0		9R24U0W		
3P4W 30A	125/250 VAC		9P34U1	9C34U1	Standard 0.750 For Optional Sizes See pg. 112	9R34U1W	9F34U1	9B34U1F
	250 3Ø VAC		9P34U2	9C34U2		9R34U2W	9F34U2	9B34U2F
	480 3Ø VAC		9P34U4	9C34U4		9R34U4W	9F34U4	9B34U4F
	600 3Ø VAC		9P34U5	9C34U5		9R34U5W	9F34U5	9B34U5F
	thru 600 VAC/4P4W		9P34U0	9C34U0		9R34U0W	9F34U0	9B34U0F
3P4W 50A	125/250 VAC		9P54U1	9C54U1	Standard 0.925 For Optional Sizes See pg. 112	9R54U1W	9F54U1	9B54U1F
	250 3Ø VAC		9P54U2	9C54U2		9R54U2W	9F54U2	9B54U2F
	480 3Ø VAC		9P54U4	9C54U4		9R54U4W	9F54U4	9B54U4F
	600 3Ø VAC		9P54U5	9C54U5		9R54U5W	9F54U5	9B54U5F
	thru 600 VAC/4P4W		9P54U0	9C54U0		9R54U0W	9F54U0	9B54U0F

□ Add Suffix - / xxxx for bushing I.D. (page 110) or conduit adapter assembled.

♦ "W" suffix is watertight "F" suffix for splashproof spring flap cover.

* Consult your Regional Sales Office.

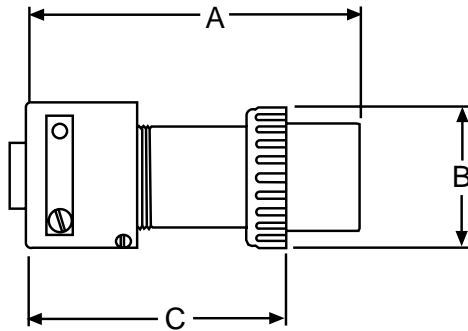
Russellstoll®

DuraGard® Nonmetallic Waterproof Connections

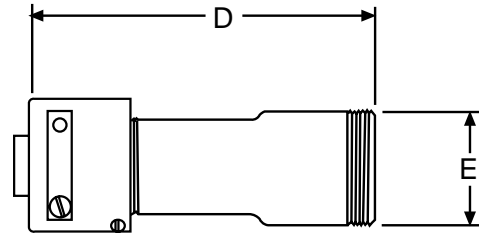
Washdown Duty, Chemical, Outdoor, Industrial and Marine Use Nonmetallic Plugs, Connectors Receptacles and Inlets – 20, 30 and 50 Amp, Maximum 600 VAC/250 VDC

Dimensions

Plugs and Female Plugs (30/50A only)



Connectors

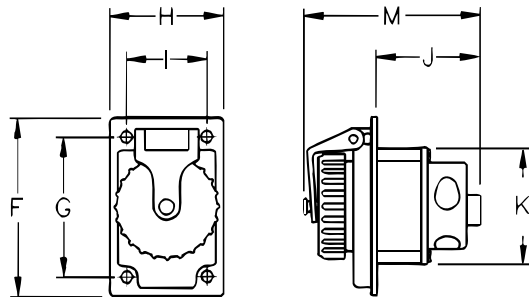


Amps		A*	B	C*	Max AWG	Terminal Ø in./mm
20 Amp	Inches	3.87	2.16	2.75	12	.140/.0055
	mm	98.3	54.9	69.9		
30 Amp	Inches	5.385	2.38	4.16	8	.235/.0092
	mm	136.6	60.5	105.7		
50 Amp	Inches	5.75	2.38	4.16	6	.235/.0092
	mm	146.1	60.5	105.7		

Amps		D	E	Max AWG	Terminal Ø in./mm
20 Amp	Inches	4.75	1.88	12	.140/.0055
	mm	120.7	47.8		
30 Amp	Inches	6.25	2.13	8	.235/.0092
	mm	158.8	54.1		
50 Amp	Inches	6.25	2.13	6	.235/.0092
	mm	158.8	54.1		

* Dimensions will vary slightly with assembly.

Receptacles and Male Receptacles (inlets – 30/50A only)



Screw cover shown. Flap cover also available; no dimensional changes.

Amps		F	G	H	I	J	K	M	Max. AWG	Terminal Ø in/mm
20 Amp	Inches	4.14	3.25	2.66	1.88	1.49	2.26	3.17	12	.140/.0055
	mm	105.2	82.6	67.6	47.8	37.8	57.4	80.5		
30 Amp	Inches	4.14	3.25	2.66	1.88	2.44	2.71	4.12	8	.235/.0092
	mm	105.2	82.6	67.6	47.8	62.0	68.8	104.6		
50 Amp	Inches	4.14	3.25	2.66	1.88	2.44	2.71	4.12	6	.235/.0092
	mm	105.2	82.6	67.6	47.8	62.0	68.8	104.6		

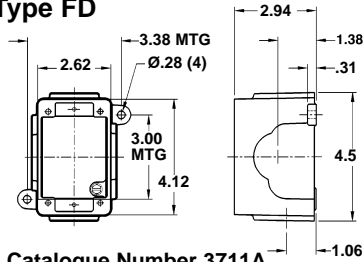
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DuraGard® Nonmetallic Waterproof Connections — Accessories

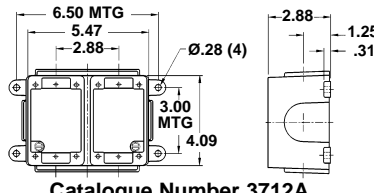
Washdown Duty, Chemical, Outdoor, Industrial and Marine Use Nonmetallic Plugs, Connectors Receptacles and Inlets – 20, 30 and 50 Amp, Maximum 600VAC/250VDC

Conduit Boxes (For Surface Mounting)

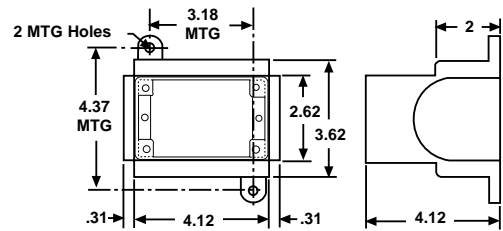
Type FD



Catalogue Number 3711A



Catalogue Number 3712A



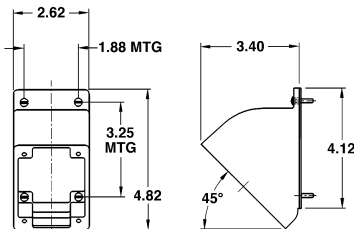
Catalogue Number 3781A

	Cast Aluminum	Cast Brass	Use with
Single	3711A	3731	20A
Double	3712A	3732	30A
DSFD	3781A	3782	50A

¾" NPT Hole Std.

Additional Accessories are Available. Consult your Regional Sales Office.

45° Angle Adapter



Catalogue Number 3678A

Cast Aluminum	Cast Brass
3678A	3678B

Conduit Adapter Kits (Plugs or Connectors)



Size	20 Amp	30 Amp	50 Amp
½"	9X2C <u>50</u>	—	—
¾"	9X2C <u>75</u>	9X3C <u>75</u>	9X5C <u>75</u>
1"	—	9X3C <u>10</u>	9X5C <u>10</u>

Underlining () indicates suffix of plugs and connectors to be assembled at factory.

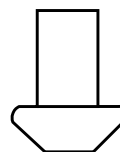
Screw Cap / Cup Cap



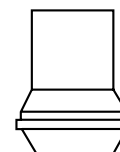
	20 Amp	30 Amp	50 Amp
Screw Cap (Connector)	9X2PSC	9X3PSC	9X5PSC
Cup Cap (Plug)	—	F26874C	F26874C

Cable Bushings

Max. Cable O.D. (Inches)	20 Amp	30 and 50 Amp
0.375	C16984A	
0.437	C16984B	
0.500	C16984C	
0.545		2000-11
0.562	C16984D	
0.606	B16506	
0.620		2000-03
0.625	B16524	
0.700		2000-04
0.750		2000-01
0.800		2000-06
0.870		2000-02
0.925		2000-12
1.000		2000-05



20 Amp Cable Bushing





30 and 50 Amp Cable Bushing

Material – oil resistant neoprene

State Catalogue number followed by slash/ ___ and bushing code; Example: 9P33U1/1000

DuraGard® Nonmetallic Waterproof Connections — Accessories

Washdown Duty, Chemical, Outdoor, Industrial and Marine Use Nonmetallic Plugs, Connectors Receptacles and Inlets – 20, 30 and 50 Amp, Maximum 600VAC/250VDC

Replacement Interiors			
Amps	Voltage Polarization	Catalogue Numbers	
		Male Interior Assembly	Female Interior Assembly
2P3W 20A	125VAC		
	250VAC	9XM23U1	9XF23U1
	277VAC	9XM23U2	9XF23U2
	480VAC	9XM23U3	9XF23U3
	600VAC	9XM23U4	9XF23U4
	thru 600VAC / 250VDC	9XM23U5	9XF23U5
2P3W 30A	125VAC	9XM23U0	9XF23U0
	250VAC	9XM33U1	9XF33U1
	277VAC	9XM33U2	9XF33U2
	480VAC	9XM33U3	9XF33U3
	600VAC	9XM33U4	9XF33U4
	thru 600VAC / 250VDC	9XM33U5	9XF33U5
2P3W 50A	125VAC	9XM33U0	9XF33U0
	250VAC	9XM53U1	9XF53U1
	480VAC	9XM53U2	9XF53U2
	600VAC	9XM53U4	9XF53U4
	thru 600VAC / 250VDC	9XM53U5	9XF53U5
3P4W 20A	125VAC	9XM53U0	9XF53U0
	250VAC	9XM24U1	9XF24U1
	480VAC	9XM24U2	9XF24U2
	600VAC	9XM24U4	9XF24U4
	thru 600VAC / 250VDC	9XM24U5	9XF24U5
3P4W 30A	125VAC	9XM24U0	9XF24U0
	250VAC	9XM34U1	9XF34U1
	480VAC	9XM34U2	9XF34U2
	600VAC	9XM34U4	9XF34U4
	thru 600VAC / 250VDC	9XM34U5	9XF34U5
3P4W 50A	125VAC	9XM34U0	9XF34U0
	250VAC	9XM54U1	9XF54U1
	480VAC	9XM54U2	9XF54U2
	600VAC	9XM54U4	9XF54U4
	thru 600VAC / 250VDC	9XM54U5	9XF54U5
		9XM54U0	9XF54U0

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Safety Interlocks

Features and Benefits

Circuit Breaker Interlocked Outlet

- 30A and 50A ranges and polarizations to 480VAC.
- 22kA Interrupt Capacity Breaker.
- Easy handle reset after trip.
- Auxiliary switch or other options.

User Friendly – Flexible Mounting

- Variable footprint mounting tabs.
- Compact size fits 8" standard I-Beam webs.
- Conduit entry from top, bottom or side.
- Large red handle with lockout access.

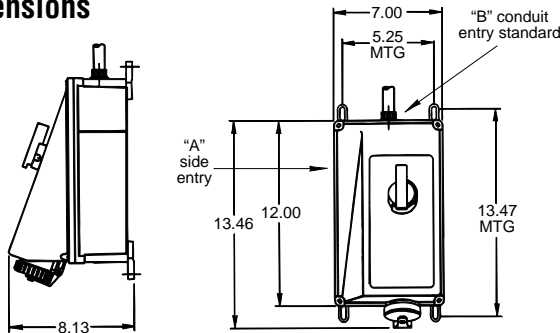
Flame Rated and DuraV® Tough Housing

- UL94-V0 housing and interior with Stainless Steel components.
- High impact thermoplastic housing.
- NEMA 4X construction.



The *only* Nonmetallic, 22kAIC, 20, 30, and 50A series circuit breaker interlocked receptacle available today.

Dimensions



Ordering Information

AMPS	3P4W Voltage Polarization*	Cat. No.			
		Safety Interlock With Circuit Breaker	Circuit Breaker Trip Rating	Mating Plug	Safety Interlock With Non-Automatic Safety Switch
3P4W 30A	125/250 VAC	9MT34U1W30B	30A	9P34U1	9MI34U1WNAB
	250 3Ø VAC	9MT34U2W30B	30A	9P34U2	9MI34U2WNAB
	480 3Ø VAC	9MT34U4W30B	30A	9P34U4	9MI34U4WNAB
	600 3Ø VAC	9MT34U5W30B	30A	9P34U5	9MI34U5WNAB
	Thru 600 VAC/ 3P4W	9MT34U0W30B	30A	9P34U0	9MI34U0WNAB
			♦ 1		
3P4W 50A	125/250 VAC	9MT54U1W50B	50A	9P54U1	9MI54U1WNAB
	250 3Ø VAC	9MT54U2W50B	50A	9P54U2	9MI54U2WNAB
	480 3Ø VAC	9MT54U4W50B	50A	9P54U4	9MI54U4WNAB
	600 3Ø VAC	9MT54U5W50B	50A	9P54U5	9MI54U5WNAB
	Thru 600 VAC/ 3P4W	9MT54U0W50B	50A	9P54U0	9MI54U0WNAB

† Change suffix for alternate trip ratings. Example: 9MT54U2W30B - 50 Amp, 3P4W, Safety Interlock with 30 Amp circuit breaker, conduit top entry.

* Other voltage polarizations available. Contact your Regional Sales Office.

♦ Change "W" to "F" for flap cap access. Example: 9MI34U2F30B - 30 Amp, 3P4W, Safety Interlock with non-automatic safety switch and flap cap.

Russellstoll®

DuraGard® Nonmetallic Waterproof Connections

Washdown Duty, Chemical, Outdoor, Industrial and Marine Use Nonmetallic Plugs, Connectors Receptacles and Inlets – 20, 30 and 50 Amp, Maximum 600VAC/250VDC

Safety Interlocks Engineering Specifications

Performance – Electrical

Dielectric Voltage Withstand	3,000 Volts
Max. Working Voltage	480 volts RMS (minimum creepage distance and minimum clearance per UL 840) (using circuit breaker)
Circuit Interrupting/Load Breaking	UL listed and CSA certified for circuit interrupting at full rated current.
Temperature Rise	Max. 30°C temperature rise at full rated current after 50 cycles of overload at 150% rated current at .75-pf.
Shrouded Contacts	Complies with California Code Title 8, Art. 51, S2510.7(b) for devices exceeding 300 VAC
Horsepower	Exceeds NEC 430-151 ratings (Circuit Breaker)

Performance – Mechanical

Impact Resistance	Per UL 1682 Paragraph 34
Wiring Accommodation	Conduit Entries at top, side and bottom. .750" NPT top entry standard
Terminal Identification	In accordance with UL 1682
Plug Pull-Out Force	In accordance with UL 1682
Product Identification	Identification label
Lockout/Tagout	Lockout/Tagout access on switch complies with OSHA Reg. 29 CFR 1910.147



Performance – Environmental

Moisture Resistance	Per UL 1682 Paragraph 49. Watertight/flap screw cover on receptacle, O-Rings on all pins and sleeves, interiors and plug shell. Watertight even when not engaged. (Screw cover closed/locked)
Flammability	V0 or better per UL94
Operating Temperatures	Maximum Continuous: 95°C/203°F Minimum: -40°C/-40°F w/o impact (note: per circuit breaker trip curves at elevated temps.)
Chemicals	Resists standard industrial hydrocarbons, acids, bases and solvents.
UV Resistance	UV stabilized material

Material

Contact Carrier	Molded arc resistant UL94-V0 thermoset material
Housing, Gland Nuts Screw Collar Rings	DuraV™ UL94-V0, High Impact Thermoplastic
O-Rings	Buna-N (Nitrile)
Contacts: Pins and Sleeves	Brass CDA 360
Hinge Pins (Receptacle)	Stainless Steel
Terminals	Brass CDA 360
Terminal Screws Flap Springs Assembly Screws Nuts, Hardware	Stainless Steel

Approvals



Russellstoll®

FS/FD™ 10-30A Metallic Connections

Metallic Plugs, Connectors, Receptacles and Reverse Service Female Plugs/Male Inlets.
10, 15, 20 & 30A, Maximum 600VAC/250VDC

The FS/FD general purpose interconnection system is designed for lower amperage marine and industrial applications, with rugged die cast aluminum housings and epoxy powder coated finishes. Interlocked receptacles add

Branch Circuit protected outlet capability. Base receptacles fit existing Russellstoll FS, FD and DSFD single and multi-gang back boxes. Its versatility and watertight features make it ideal for marine and light industrial applications.

Safety

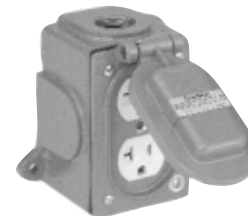
- Circuit-interrupting up to 30A, 250VAC (20A, 600VAC)
- Factory polarized interiors provide for mating of same voltage/same type devices, due to configured ground pins and housing features.
- Housing is grounded by means of ground strap integral with ground contact for assured assembly safety.

Durability

- Constructed of copper-free cast aluminum (Brass construction also available).
- Optional conduit adapters, strain reliefs and cable bushings available. (Modified catalogue number construction.)
- Nonmetallic versions of most metallic plugs and receptacles also available. (See DuraGard)

Performance

- Precision-made, self-aligning and self-wiping contacts.
- Devices available in watertight and weathertight versions.
- Solderless binding screw terminals for convenient wiring. (20A, 2P3W devices have set screw pressure terminals)



FS/FD line also includes NEMA type blade receptacles. See page 124.

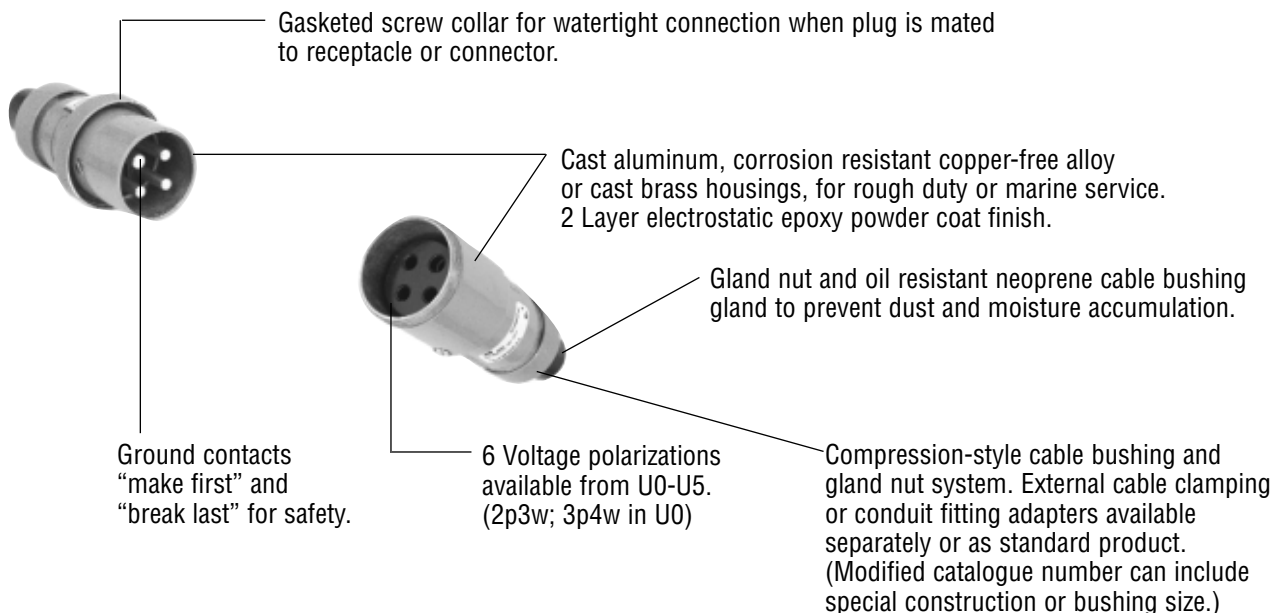
RUSSELLSTOLL® DURAGARD®/FS/FD

Russellstoll®

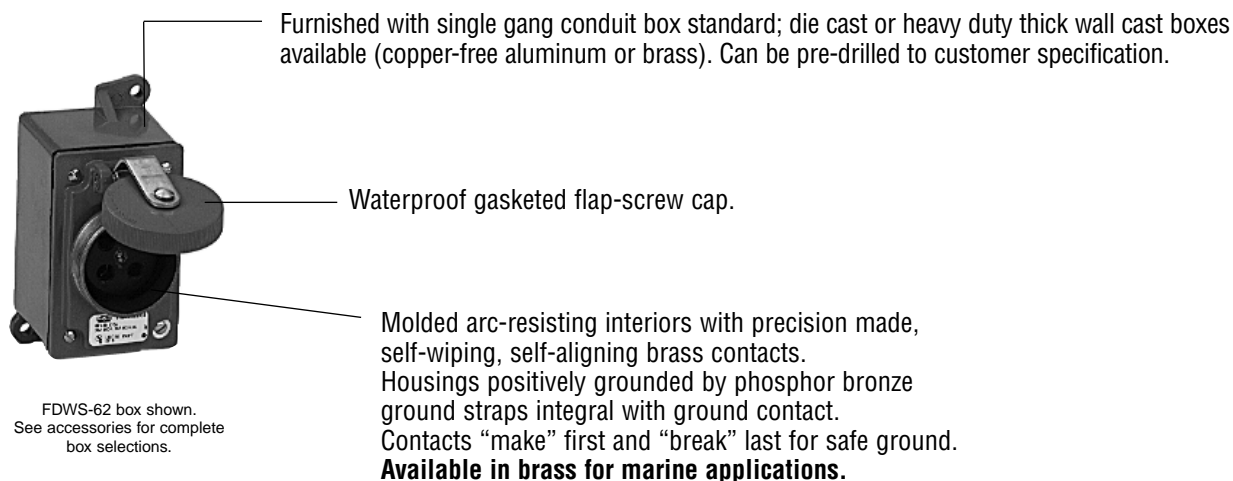
FS/FD™ 10-30A Metallic Connections

Metallic Plugs, Connectors, Receptacles and Reverse Service Female Plugs/Male Inlets.
10-30A, Maximum 600VAC/250VDC

Plug and Connector (+ Reverse Service Female Plug)



Receptacle (+ Reverse Service Male Inlet)



Russellstoll®

FS/FD™ 10-30A Metallic Connections

Metallic Plugs, Connectors, Receptacles and Reverse Service Female Plugs/Male Inlets.
10-30A, Maximum 600VAC/250VDC

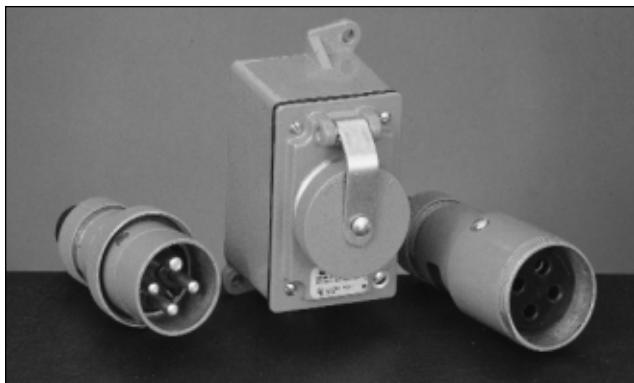
Engineering Specifications

Performance – Electrical

Dielectric Voltage Withstand	3,000 Volts
Max. Working Voltage	600 volts RMS (minimum creepage distance and minimum clearance per UL 840)
Circuit Interrupting/Load Breaking	UL listed and CSA certified for circuit interrupting at full rated current.
Temperature Rise	Max. 30°C temperature rise at full rated current after 50 cycles of overload at 150% rated current at .75-pf.
Shrouded Contacts	Complies with California Code Title 8, Art. 51,S2510.7(b) for devices exceeding 300 VAC
Horsepower	Per NEC 430-151 ratings (non-interrupting)

Performance – Mechanical

Impact Resistance	Per UL 1682 Paragraph 34
Cord Accommodation	Round portable service cords per UL standard 62 and CSA C22.2 No. 49.1
Terminal Identification	In accordance with UL 1682
Cable Pull-Out Force	In accordance with UL 1682
Product Identification	Identification label and name per UL 1686



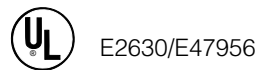
Performance – Environmental

Moisture Resistance	Per UL 1682 Paragraph 49. Watertight/flap screw cover on receptacle.
Flammability	V0 / 5VA per UL94
Operating Temperatures	Maximum Continuous: 95°C / 203°F Minimum: -40°C / -40°F w/o impact
Chemicals	Resists standard industrial hydrocarbons, acids, bases and solvents.

Material

Contact Carrier	Molded arc resistant UL94-V0 thermoset material
Housing, Gland Nuts Screw Collar Rings	Cast Aluminum or Brass
Contacts: Pins and Sleeves	Brass
Hinge Pins (Receptacle)	Stainless Steel
Terminals	Brass
Terminal Screws Flap Springs Assembly Screws Nuts, Hardware	Stainless Steel
Gland Friction Washer Cable Clamp Bushing	Brass or Aluminum Neoprene

Approvals

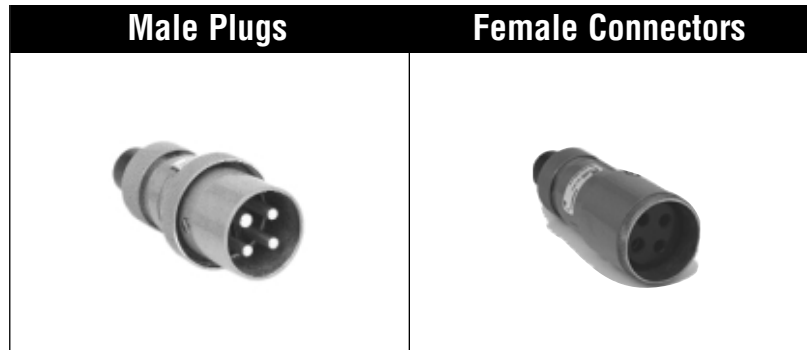


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FS/FD™ 10-30A Metallic Connections — Ordering Information

Metallic Plugs, Connectors, Receptacles and Reverse Service Female Plugs/Male Inlets.

10-30A, Maximum 600VAC/250VDC



*See also DuraGard section for Thermoplastic families.

Poles Wires	Amperes	Voltage	Polarization (Receptacle)	Aluminum	Cast Brass	Aluminum	Cast Brass
2P/3W	15 A	250 V		3720U-2	3720BU-2	3913U-2	3913BU-2
		277 VAC		3720U-3	3720BU-3	3913U-3	3913BU-3
		480 VAC		3720U-4	3720BU-4	3913U-4	3913BU-4
		600 VAC		3720U-5	3720BU-5	3913U-5	3913BU-5
	20 A	250 VAC		3720	3720B	3913	3913B
		125 V		3720U-1	3720BU-1	3913U-1	3913BU-1
		250 VAC		3750	3750B	3933	3933B
	3P/4W	10 A	600 VAC		3730	3730B	3914
15 A		250 VAC		3730	3730B	3914	3914B
20 A		600 VAC		3760	3760B	3934	3934B
30 A		250 VAC		3760	3760B	3934	3934B

Standard Cable Bushing Hole Diameter

Prefix	Hole Dia.	Prefix	Hole Dia.	Prefix	Hole Dia.
3720		3730		3750, 3760	
3913	5/8"	3914	1 1/16"	3933, 3934	3/4"
3789		3790		3809, 3810	

Cable Bushings – oil-resistant, neoprene cable bushing furnished with hole sizes listed above. Other hole sizes are available at no extra cost when specified on order. See page 127 for available sizes.

For other plug and connector accessories see pages 124 and 125.

Plugs can be furnished with adapters to accommodate rigid conduit or standard connectors for armored cable or flexible conduit, see page 127.


Screw Caps For Connectors can be furnished with screw cap and chain at extra cost. For Kits order:

9X2PSC	20A Screw Cap
9X3PSC	30A Screw Cap
F26874C	30A Plug Cup Cap

Russellstoll®

FS/FD™ 10-30A Metallic Connections

Metallic Plugs, Connectors, Receptacles and Reverse Service Female Plugs/Male Inlets.
10-30A, Maximum 600VAC/250VDC

Female Receptacles		Reverse Service			
		Female Plugs 		Male Receptacles 	
		(Inlets)			
Aluminum with Box **	Cast Brass with Box **	Aluminum	Cast Brass	Aluminum w/Box FDWS-62	Cast Brass w/Box 3731
3743U-2	3763U-2	3789U-2	3789BU-2	3776U-2	3779U-2
3743U-3	3763U-3	3789U-3	3789BU-3	3776U-3	3779U-3
3743U-4	3763U-4	3789U-4	3789BU-4	3776U-4	3779U-4
3743U-5	3763U-5	3789U-5	3789BU-5	3776U-5	3779U-5
3743	3763	3789	3789B	3776	3779
3743U-1	3763U-1	3789U-1	3789BU-1	3776U-1	3779U-1
3753	3773	3809 ¹	3809B ¹	3796 ²	3799 ³
3744	3764	3790	3790B	3777	3780
3744	3764	3790	3790B	3777	3780
3754	3774	3810	3810B	3797	3800
3754	3774	3810	3810B	3797	3800

** Receptacles come with the following boxes:

Material	Amperes	Box
Aluminum	10, 15 and 20 30	FSWS-62 FDWS-62
Brass	10, 15 and 20 30	3721 3731

For 20/30A thermoplastic devices, see DuraGard section.

Mating with DuraGard Line

-20A devices will mate and lock across lines.

-30A metal male devices cannot mate to DuraGard 30A female devices.

¹ Also in plastic. Use 3809P or 9F33U0

² Also in plastic. Use 3796PA – Aluminum back box (use 3797-P for brass)

³ Also in plastic. Use 3799P (Brass J-Box) or 9B33U0F (w/o J-Box)

For NEMA style (bladed) Convenience Receptacles, see page 124.

RUSSELLSTOLL® DURAGARD®/FS/FD

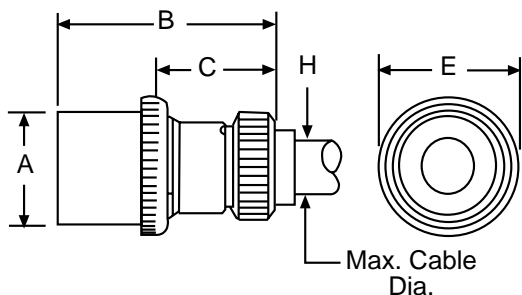
Russellstoll®

FS/FD™ 10-30A Metallic Connections

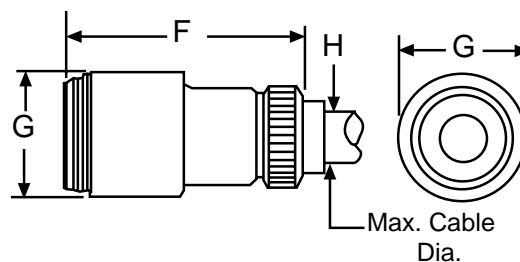
Metallic Plugs, Connectors, Receptacles and Reverse Service Female Plugs/Male Inlets.
10-30A, Maximum 600VAC/250VDC

Dimensions

Plugs and Female Plugs



Connectors

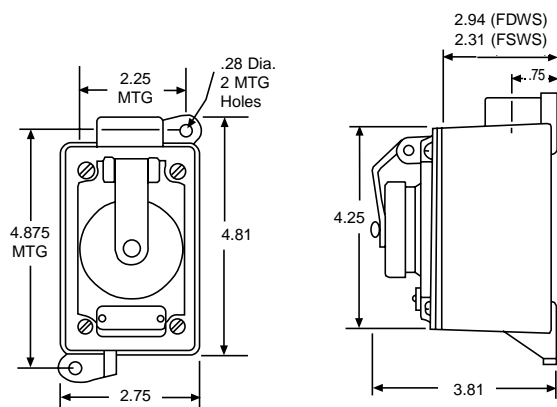


Plug, Female Plug and Connector Dimensions

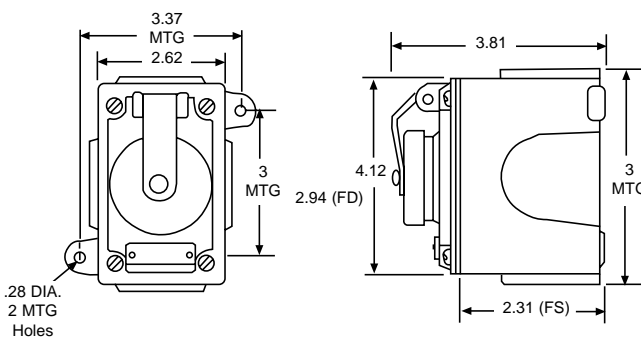
Amps		A	B	C	E	F	G	H
10 Amp	Inches	1.75	3.62	2.25	2.00	4.00	1.87	0.75
	mm	45.65	92.07	57.15	50.80	101.60	47.62	19.050
15 Amp	Inches	1.75	3.62	2.25	2.00	4.00	1.87	0.75
	mm	45.65	92.07	57.15	50.80	101.60	47.62	19.050
20 Amp	Inches	1.75	3.62	2.25	2.00	4.00	1.87	0.75
	mm	45.65	92.07	57.15	50.80	101.60	47.62	19.050
30 Amp	Inches	1.87	3.75	2.25	2.25	4.25	2.25	1.12
	mm	47.62	95.25	57.15	57.15	107.95	57.15	28.57

Receptacles and Male Receptacles

Standard Die Cast Aluminum Back Box
(FSWS/FDWS)



Cast Aluminum / Cast Brass Back Box
(3701-3732 Series)



Russellstoll®

FS/FD™ 10-30A Metallic Connections

Metallic Plugs, Connectors, Receptacles and Reverse Service Female Plugs/Male Inlets.
10-30A, Maximum 600VAC/250VDC

For Plugs and Connectors – Accessories

Combination Gland Nut and Cable Clamp



Provides extra clamping protection in heavy industrial applications. Relieves terminals and rubber gland of all cable strain.

Plug or Connector Size	Cast Aluminum Cat. No.	Cast Brass Cat. No.	Max. Cable Dia.
Ex: 3913 10-20 Amp	3905	3905B	.62"
Ex: 3934 20/30 Amp	3906	3906B	1.12"

Material – cast aluminum, corrosion-resistant, copper-free alloy, cast brass, epoxy powder coat finish.

Conduit Adapters



Adapter tapped with NPT thread to accommodate armored and nonmetallic cable or flexible conduit.

Plug or Connector Size	Cast Aluminum Cat. No.	Cast Brass Cat. No.	Tapped NPT
Ex: 3913 10 -20 Amp	FSA11	FSA11B	½"
	FSA12	FSA12B	¾"
Ex: 3934 20/30 Amp	FSA21	FSA21B	½"
	FSA22	FSA22B	¾"
	FSA23	FSA23B	1"

Type FSA furnished complete with gasket.

Cable Bushings

Hole Diameter for Cable (inches)	Type 2 10 Amp	Type 3 20 and 30 Amp
0.313	SG05	
0.375	SG1	JG31
0.438	SG15	
0.500	SG2	JG32
0.531	SG2A	
0.563	SG25	JG325
0.594	SG2B	
0.625	SG3	JG33
0.688	SG3A	
0.750	SG4	JG34
0.875		JG35
1.000		JG36**
1.125		JG361**

**Special for large O.D. cable.

When standard plugs or connectors are required to be furnished with one or more of the above accessories, add the suffix and catalogue number of the accessory selected to the catalogue number of the plug or connector. Complete list price is the total of the list price of the device plus the list price of the accessory.

EXAMPLES – Using Catalogue No. 3934:

Combo. Gland Nut and Cable Clamp	3934-3906
Adapter at ¾"	3934-FSA22
½" Cable Bushing	3934-JG323



Type 2
Cable Bushing



Type 3
Cable Bushing

Material – oil resistant neoprene.

Russellstoll®

FS/FD™ 10-30A Metallic Connections





Metallic Plugs, Connectors, Receptacles and Reverse Service Female Plugs/Male Inlets.
10-30A, Maximum 600VAC/250VDC

Convenience Bladed NEMA Style Receptacles

Designed for **rugged service/commercial interface**, the receptacles below accommodate standard bladed convenience type plugs. They can be furnished in single

or tandem units and in combination with other Russellstoll FS/FD devices. Each **includes** a standard heavy duty cast back box.

Ordering Information

	Weathertight (Flap Cap)			Watertight (Screw Cap)	
					
2P3W NEMA Rating*	Aluminum Duplex Receptacle	Brass Single Receptacle	Cast Aluminum (FDWS-62)* Duplex Receptacle	Aluminum Single Receptacle	Brass Single Receptacle
15 Amp 125V 5-15	3998G**	3918G	3960G	3910G	3920G
20 Amp 125V 5-20	3998G-20**	3918G-20	3960G-20	3910G-20	3920G-20

Finish – Cast aluminum, corrosion-resistant copper-free alloy, epoxy powder coat finish. Cast brass, natural finish.

Gang Types – Can be furnished in gang or tandem units in combination with other Russellstoll FS/FD devices. See Accessory reference charts on page 125 for more information.

Outlet Boxes – Unless otherwise specified, furnished with one 3/4" threaded conduit hole at B or D. Additional or larger conduit holes charged extra – see price list. Maximum hole one inch, four way. Specify size and location. Use symbols as indicated on diagram.

All the above receptacles accommodate standard convenience-type plugs.



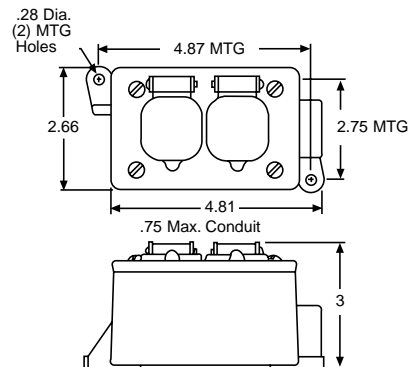
* Can be furnished with 250 Volt receptacles. Price on application.

** The aluminum duplex cover assembly will accept many varied electrical and electronic devices. Please contact your local representative or Regional Sales Office with your requirements.

- ◆ Furnished with stamped Flap Cover made of heavy gage steel, zinc plated, with spring-hinged flap.

Dimensions

Duplex Receptacles



FS/FD™ 10-30A Metallic Connections — Accessories

Metallic Plugs, Connectors, Receptacles and Reverse Service Female Plugs/Male Inlets.
10-30A, Maximum 600VAC/250VDC

Conduit Boxes

Type FS (shallow) and Type FD (deep)

Aluminum boxes have 6-32 cover mounting holes tapped to accommodate all FS and FD cover assemblies. Brass boxes

have 10-24 cover mounting holes tapped to accommodate all FS and FD cover assemblies.



Single Gang



Two Gang



DSFD

No. of Gangs	Type	Cast Aluminum	Cast Brass	Overall Dimensions	For Use With:
Single	FS	3701A	3721	4.12" x 2.62" x 2.31"	15-20A
	FD	3711A	3731	4.12" x 2.62" x 2.94"	30A
	DSFD	3781A	3782	4.12" x 3.62" x 4.12"	30A
Two	FS	3702A	3722	4.12" x 5.5" x 2.25"	15-20A
	FD	3712A	3732	4.12" x 5.62" x 2.87"	30A

When type FD devices (20A) are to be mounted in boxes, type FD boxes should be used. FS boxes will not accommodate FD devices. (30A or 3P4W)

Mounting – All the above boxes are for surface mounting. For flush mounting see page 92.

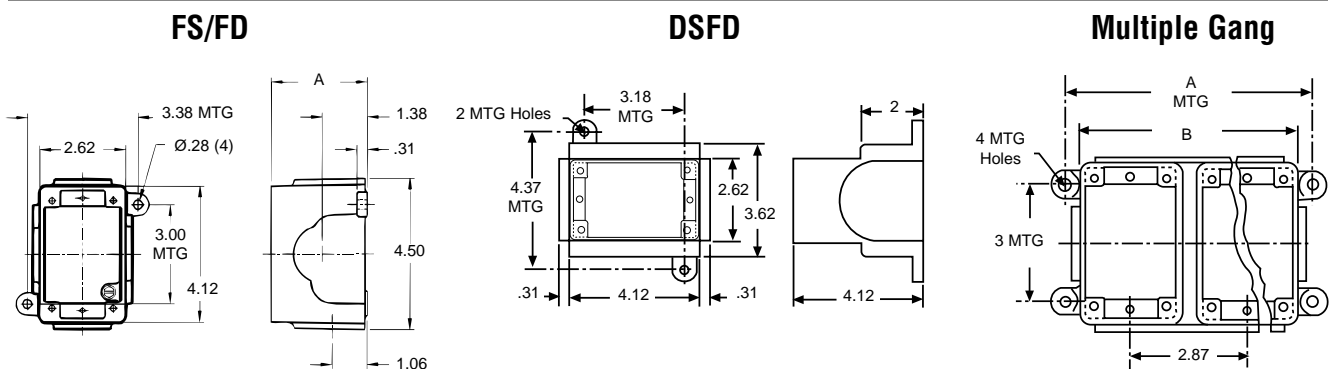
Boxes – Cast brass, natural finish. Cast aluminum, corrosion resistant copper-free alloy, epoxy powder coat finish.

Cast iron available on special order – consult your Regional Sales Office.

Outlet Boxes – Unless otherwise specified, furnished with one .75" threaded conduit hole per gang, top or bottom. Additional conduit holes charged extra – see price list. Specify size and location.

Maximum Conduit – FS and FD: 1", one per gang top and bottom and one each side. DSFD: one 1.5" or two .5" top and bottom.

Dimensions



Type	A
FS	2.31
FD	2.94

Multiple Gang Dimensions

A		B	
FS	6.50"	FS	5.50"
FD	6.50"	FD	5.62"

Russellstoll®

FS/FD™ 10-30A Metallic Connections — Accessories

Metallic Plugs, Connectors, Receptacles and Reverse Service Female Plugs/Male Inlets.
10-30A, Maximum 600VAC/250VDC

Adapters and covers to fit boxes on page 125.

Adapter Flush Frames

For mounting to standard wall outlet boxes (2 screw mount).

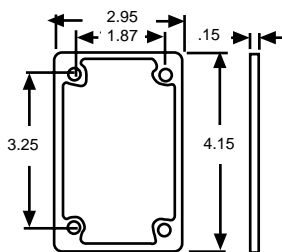


No. of Gangs	Cast Aluminum	Cast Brass	Overall Dimensions
1	3671A	3681	5" x 3.5"
2	3672A	3682	5" x 6.5"

Blank Cover

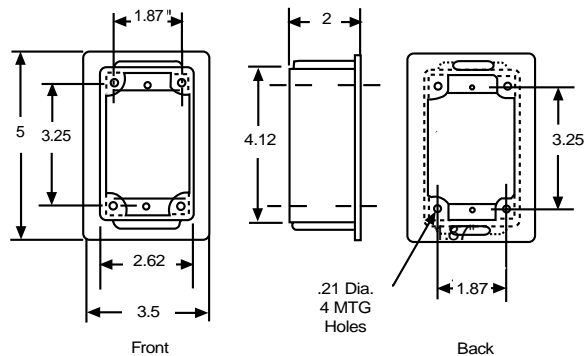
Covers Standard FS/FD box openings.

Cast Aluminum	3677A
Cast Brass	3687



Flush Wall Mounting Extension

Cast Aluminum	3679A
Cast Brass	3679B



FS/FD™ 10-30A Metallic Connections — Accessories

Metallic Plugs, Connectors, Receptacles and Reverse Service Female Plugs/Male Inlets.
10-30A, Maximum 600VAC/250VDC

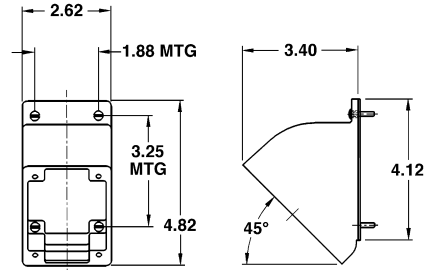
45° Angle Adapter*

Mounts to any FS/FD box.

Cast Aluminum	3678A
Cast Brass	3678B

* Furnished complete with gasket and screws.

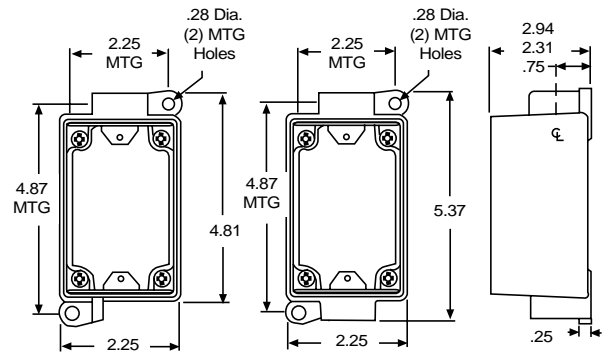
Materials: Cast aluminum, corrosion-resistant, copper-free alloy, epoxy powder coat finish.
Cast brass, natural finish.



Type FSWS and FDWS (with mounting shelf for box-mounted devices)

Aluminum Die-Cast Boxes with cover mounting holes tapped for 6-32 screws to accommodate all FS and FD cover assemblies.

Cat. No.	Conduit Entries	
	Top	Bottom
FSWS-62	¾"	NA
FDWS-62	¾"	NA
FDWS-622	¾"	¾"
FDWS-63	1"	NA
FDWS-633	1"	1"



Boxes – Aluminum die-cast, corrosion-resistant, copper-free alloy, epoxy powder coat finish.

Threaded conduit holes – standard as listed.

Mounting – all of the above boxes are for surface mounting.

Russellstoll®

Mechanically Interlocked Receptacles

Marine/Series Industrial – 20 and 30 Amp, 250VAC

Mechanically interlocked FS/FD receptacle outlets, available through 30 Amp 250VAC, provide added electrical safety when in use.

By design, the plug must be fully inserted into the interlocked receptacle before the switch or circuit breaker can be turned to the "ON" position; and the switch or circuit breaker must be in the "OFF" position before the plug can be withdrawn. This design ensures that when properly installed and operated, the circuit is made and broken by the switch or circuit breaker, not by the connectors.

As with all Russellstoll products, Mechanically Interlocked receptacles were designed with Safety, Durability and Performance in mind.



Safety

- Mechanical linkage prevents plug insertion or withdrawal unless switch is in "off" position.
- Circuit breaker protection available on many models.
- Ground contacts make first, break last.

Durability

- Constructed of copper-free cast aluminum (some types available in brass)
- Sturdy die cast and sand cast housings.

Performance

- Precision-made, self-aligning and self-wiping contacts.
- Receptacles provided with spring-actuated, self-closing flaps.
- Devices available in watertight and weathertight versions.
- Solderless screw terminals for convenient wiring.

Mechanically Interlocked Receptacles — Ordering Information

Mechanically Interlocked Receptacle with Switch

Rating:

20 Amp/600VAC

30 Amp/250VAC



Poles/Wires	Aluminum** Receptacle w/Box	FS/FD Plug	Brass Receptacle w/Box	FS/FD Plug	DuraGard Plug	Bushing I.D.
2P3W	F20493C	3750	1593LP	3750B	9P33U0	5/8"
3P4W	F20493A**	3760	1594LP	3760B	9P34U0	3/4"

**Flap cover brass version Suffix -B.

Mechanically Interlocked Receptacle with Circuit Breaker

Rating:

20 Amp/250VAC

30 Amp/250VAC



Poles/ Wires	Trip Rating	Aluminum Receptacle w/Box	FS/FD Plug	DuraGard Plug	Bushing I.D.
2P3W	20A	F33048B	3750	9P33U0	5/8"
	30A	F33048C	3760		
3P4W	20A	F33054B	3760	9P34U0	3/4"
	30A	F33054C	3760		
50A, 250V*					
3P4W	50A	C1479AH	3760	9P34U0*	7/8"

* Consult your Regional Sales Office for all 50A Trip applications (30A device, 50A trip) See also DuraGard Interlocks.

For brass versions, contact Technical Service.

For Panel Mounting or Cover Assemblies only, please contact your Regional Sales Office.

Russellstoll®

Mechanically Interlocked Receptacles

Specifications

Housings:

Cast Brass, Natural Finish.

Cast Aluminum, corrosion-resistant, copper-free alloy, epoxy powder coat finish.

Cable Bushings: Oil resistant neoprene strain-relief cable bushings regularly furnished with hole size as listed for plug. Other hole sizes available if specified on order.

Outlet Boxes: Unless otherwise specified, boxes are furnished blank.

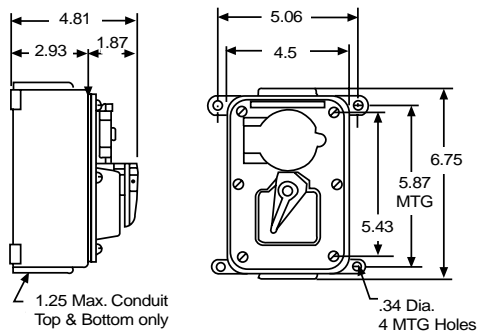
Receptacle Interlocked With Switch – Maximum conduit holes 1¾" top and bottom. Specify number of conduit holes required.

Receptacle Interlocked With Circuit Breaker – Maximum conduit holes 1¾" at locations V, W, X, Y and Z as per diagram. Specify number of conduit holes required, use symbols.

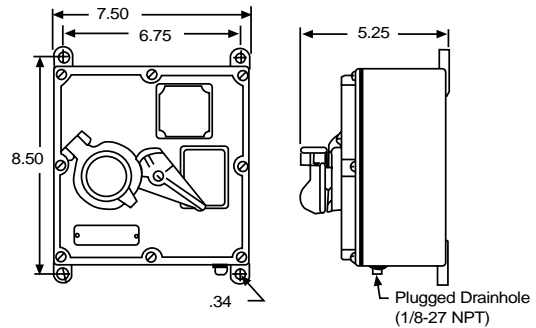
Dimensions

Interlocked with Switch Surface Mount

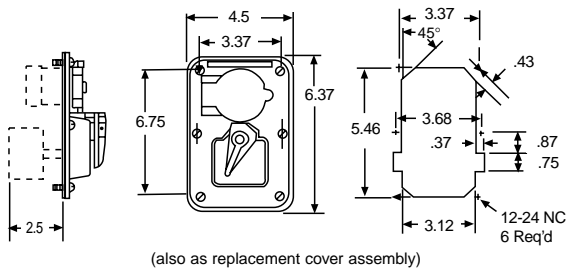
Cat. nos. F18196B&C and F20493A&B



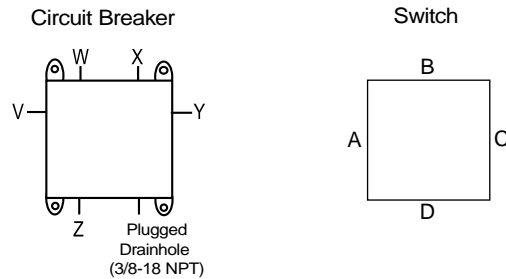
Interlocked with Circuit Breaker



Machine Panel Mount

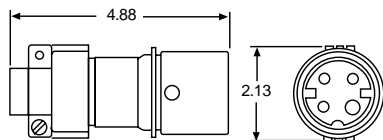


Floor Extension Mount

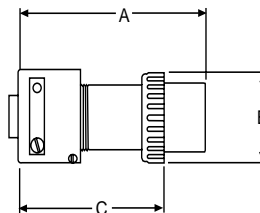


Standard Plug

20/30 Amp FS/FD



30/50 Amp DuraGard



Amps		A	B	C
30 Amp	Inches	5.38	2.38	4.16
	mm	136.6	60.5	105.7
50 Amp	Inches	5.75	2.38	4.16
	mm	146.1	60.5	105.7

Computer System Plugs, Connectors and Receptacles




Over 30 years ago, Russellstoll offered the first pin and sleeve connectors that met the demanding needs of the Data Processing Industry and we've been leading the way ever since.

The expanding technology of the Computer System Industry is creating more sophisticated applications which require a safe, reliable connection that exceeds the tough demands of today's applications. Russellstoll's commitment to excellence offers you that and more... Safety,

Durability, Reliability and Performance on our complete line of plugs, receptacles and connectors.

Pin & Sleeve power connections are chosen for Computer Systems interconnections because of the absolute performance required in today's mainframe and peripheral installation. Pin & Sleeve connections have been proven to be 10 times more reliable in service than any bladed device. Data centers stay in service, because Russellstoll stays connected.

Quick Selection Chart

				
SERIES*	FS/FD	Spec Grade	DuraGard™	Spec Grade
Available Ranges (Amp)	20 & 30	20 & 30	20, 30 & 50	30 (IEC)
Safety Grade™ UL Flame rated High-Temp Thermoplastic	UL94-V0 Aluminum	UL94-5VA	UL94-V0	UL94-V0
Easy-to-Wire Rear loaded interiors		✓	✓	✓
Ground Pin Keyed for Voltage Polarizations	20A	20A 30A	20A 30A 50A	30A (9h – IEC)
Waterproof O-Ring Seal (pins, sleeves & interiors)		✓	✓	✓
2nd Internal Ground Lug (cable shielding alt.)		✓	(optional)	
External Cable Clamp	✓		✓	✓
External Gland Nut Lock			✓	✓

* 60A devices are specially designed versions of Russellstoll Angle Type (73280P)



TüV For TüV listed devices, contact your Regional Sales Office.

Russellstoll®

Computer System Plugs, Connectors and Receptacles—Specifications

Performance – Electrical

Dielectric Voltage Withstand	3,000 Volts
Max. Working Voltage	6,000 volts RMS minimum (creepage distance and minimum clearance per UL 840)
Circuit Interrupting/ Load Breaking	UL listed and CSA certified for circuit interrupting at full rated current.
Temperature Rise	Max. 30°C temperature rise at full rated current after 50 cycles of overload at 150% rated current at .75-pf.
Shrouded Contacts	Complies with California Code Title 8, Art. 51, S2510.7(b) for devices exceeding 300 VAC
Horsepower	Per NEC 430-151 ratings

Performance – Mechanical

Impact Resistance	Per UL 1682 Paragraph 34
Cord Accommodation	Round portable service cords per UL Std. 62 & CSA C22.2 No. 49.1
Terminal Identification	In accordance with UL 1682
Cable Pull-Out Force	In accordance with UL 1682
Product Identification	Identification label and molded in name
Lockout/Tagout	Lockout/Tagout hole in 30/50A DuraGard™ plug complies with OSHA Reg. 29 CFR 1910.147 (V0 30 & 50A plugs only)

Performance – Environmental

Moisture Resistance	Per UL 1682 Paragraph 49. Watertight flap screw cover on receptacle, O-Rings on all V0/5VA pins and sleeves (excludes 60A)		
Flammability	V0 / 5A per UL94 (DuraV also 5VA in some apps.)		
Operating Temperatures	V0*	5VA	Metal*
Maximum Continuous	95°C (230°F)	130°C (266°F)	130°C (266°F)
Minimum w/o Impact	-40°C (-40°F)	-29°C (-20°F)	-40°C (-40°F)
Chemicals	Resists standard industrial hydrocarbons, acids, bases and solvents. (DuraV & Metal)		

Approvals



Conforms to NEMA 4, 4X & 6. (DuraGard and Spec Grade) Contact Tech. Service

Materials

	FS/FD	Spec Grade	DuraGard™ Safety Grade™
Contact Carrier Interior	Thermoset / Thermoplastic (20A & 30A)	Arc resistant UL94-V0 phenolic Thermoset	Arc resistant UL94-V0 phenolic Thermoset
Housing, Gland Nuts	Cast Aluminum	Lexan® UL94-5VA	DuraV™ UL94-V0
Screw Collar Rings	–	High Impact Thermoplastic	High Impact Thermoplastic
O-Rings	–	Buna-N (Nitrile)	Buna-N (Nitrile)
Contacts: Pins & Sleeves	Brass	Brass CDA 360	Brass CDA 360
Hinge Pins (Receptacle)	Stainless Steel	–	Stainless Steel
Terminals	Brass	Stainless Steel	Stainless Steel
All Hardware	Stainless Steel	Stainless Steel	Stainless Steel
Gland Friction Washer	Brass	–	20 Amp - Nylon 30 & 50 Amp - Aluminum
(or Internal Cable Grip)	–	Nylon	
Cable Clamp Bushing	Neoprene	Neoprene	Neoprene

Lexan® is a registered trademark of GE.

Defined

- Any application where electrical connections must be protected from humidity, water, condensation and/or dust ingress to the wiring compartment and contacts.
- Cable-to-connector sealing and device locking designs are critical.
- Thermoplastic connectors preferred.
- Connection integrity needs are absolute; Data Center systems cannot go down.
- Underfloor Data Center applications and wall mount installations.

Russellstoll Line Selections for Outdoor (and Indoor) Applications

DuraGard to 4P4W 20 thru 50A

The toughest construction in thermoplastic safety, durability and performance by design, in UL94-V0 flame rated DuraV material. With DurOring sealed pins, sleeves and interiors water-tight even unmated. A 30 & 50A unique circuit breaker interlock line in DuraV is the best choice in all standard voltage polarization options through 600VAC (Interlock to 480VAC)

Spec Grade to 4P4W 20 & 30A

Otherwise similar to the DuraGard, Spec Grade refers to blue Lexan plugs only made to the same original FS/FD design standards as DuraGard, in UL94-5VA flame rated material. Spec Grade features DurOring sealed pins, sleeves and interiors, watertight even unmated. Spec Grade devices have been superseded by DuraGard ratings for OEM use.

FS/FD to 3P4W 15 thru 30A

The FS/FD line in aluminum was the original 15/20/30A computer system connectors. It continues in MRO usage. Many installations can also mate directly or convert to DuraGard units. Existing FS/FD installations should be upgraded to DuraGard whenever possible.



Angle Type to 3P4W 60A use

The original 60A main power computer system connector, Angle Type plugs are also available in specialty UL94-V0 material (Alum. Connectors). As part of the MRO usage 30-200A Angle Type Line, the 60A connector is still commonly used today. Other lines such as MaxGard should be used for changeout when possible. Contact your Regional Sales Office for more information.

MaxGard 30A to 4P5W


















For data processing and computer system applications, a special MaxGard polarization reflects DP installations. Special thermoplastic housing and back handle are supplied for these applications. Use wherever 4P5W installations are required. Contact your Regional Sales Office for more information.

IEC: IP67 to 4P5W 20 to 100A

Thermoplastic International standard 309-2 or CEE-17 type connector lines usage is growing, especially in OEM, export, and standard performance applications. The IP67 style is watertight when mated and directly interchangeable with other manufacturers. International designations shadow U.S. ratings: 20/16, 30/32, 60/63 and 100/125. IP67 devices have screw collars or flap/screw covers, with catalogue number "W" suffixes.

Typical Application Groups

Telephony Equipment	Mainframes from 30-270A
Switching Rack Systems	Peripherals
Power Distribution Units	Data Storage Devices
Test & Laboratory Equipment	Military or Critical Power Supplies

				Plugs			Connectors		Receptacles			
												
		Voltage	Plug Safety Polarization	Std. Cable** Bushing	FS/FD• Aluminum	Spec Grade UL94-5VA	See Bushing Chart DuraGard™ UL94-V0*	FS/FD Aluminum	DuraGard™ UL94-V0*	FS/FD• Aluminum	DuraGard™ UL94-V0*	
2P/ 3W	15/ 20 Amp	Up To 600 VAC/ 250VDC		0.625" 0.455" 0.405"	3720	3720DP (0.375) 3720DP/0455 3720DP/0405	9P23U0	3913	9C23U0	3743	9R23U0W▼	
		125VAC		0.625" 0.455" 0.405"	3720U1	3720DPU1 (0.375) 3720DPU1/0455 3720DPU1/0405	9P23U1	3913U1	9C23U1	3743U1	9R23U1W▼	
		250 VAC		0.625" 0.455" 0.405"	3720U2	3720DPU2 (0.375) 3720DPU2/0455 3720DPU2/0405	9P23U2	3913U2	9C23U2	3743U2	9R23U2W▼	
	30 Amp	Up To 600 VAC		0.760" 0.700" 0.625"	3750	3750DP	9P33U0	3933■	9C33U0■	3753■	9R33U0W▼■	
		50 Amp	Up To 600 VAC		1.000" 0.925" 0.750"	—	—	9P53U0	—	9C53U0	—	9R53U0W●
3P/ 4W	20 Amp	Up To 600 VAC/ 250 VDC		0.688" 0.625" 0.606"	3730	— 3730DP/0625 3730DP	9P24U0 —	3914	9C24U0 —	3744	9R24U0W▼	
		30 Amp	Up To 600 VAC		1.100" 1.000" 0.875" 0.760"	3760	3760DPG/1100 3760PDG/1000 3760PDG/0875 3760DPG0760	— 9P34U0◆	3934■	9C34U0◆■	3754■	9R34U0W▼■
	50 Amp	Up To 600 VAC 250 VDC		1.000" 0.925" 0.750"	—	—	—	9P54U0	—	9C54U0	—	9R54U0*▼
		60 Amp	Up To 600 VAC	 Angle Type	1.375" 1.188" 1.020" 0.750"	7328-78^	— — —	7328DP/1375 — 7328DP† 7328DP/0750	7428-78^	— — —	—	SCF7324-78
4P/ 5W*	30 Amp	3øY 120/208 VAC	 MaxGard	0.775"	—	—	DS3516MPDP+	DS3516FP+	—	DS3516FR+	—	

All 20A devices are compatible. 30A FS/FD receptacles and connectors will accept all styles of mating plugs.

* For a more complete listing of UL 94-V0 rated devices, consult DuraGard information on pages 106-116.

** Consult your Regional Sales Office for additional cable bushing sizes not listed.

† 7328 DP series thermoplastic can replace 7328 metallic.

• 30A FS/FD Aluminum plugs may not directly exchange with DuraGard plugs. FS/FD metal mating devices must be used.

◆ Standard 0.750 Bushing.

■ DuraGard receptacles and connectors 30/50A will accept only DuraGard or Spec Grade. FS/FD Aluminum 30A plugs must be used with FS/FD metal connectors or receptacles.

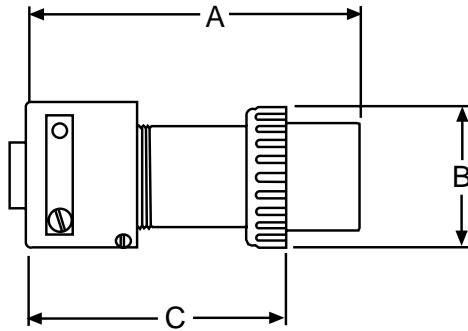
^ Angle Type Line

+ MaxGard Line, for further information contact your Regional Sales Office.

▼ Requires 3711A conduit FD box or 3781A DSFD Box (50A).

Computer System Plugs, Connectors and Receptacles — Dimensions

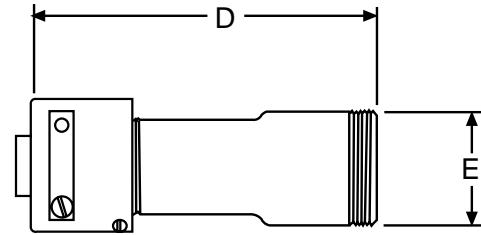
Plugs



		A	B	C
FS/FD	20 Amp	3 ⁵ / ₈ "	2"	2 ¹ / ₄ "
	30 Amp	3 ³ / ₄ "	2 ¹ / ₄ "	2 ³ / ₈ "
	60 Amp*	8"	2 ¹ / ₂ "	3 ³ / ₄ "
Spec Grade DuraGard™	20 Amp	3 ¹ / ₄ "	2 ¹ / ₈ "	2 ¹ / ₈ "
	30 Amp	5"	2 ³ / ₈ "	3 ⁵ / ₈ "
	50 Amp	5 ¹ / ₄ "	2 ³ / ₈ "	3 ⁵ / ₈ "

*Angle Type DP Line (Thermoplastic)

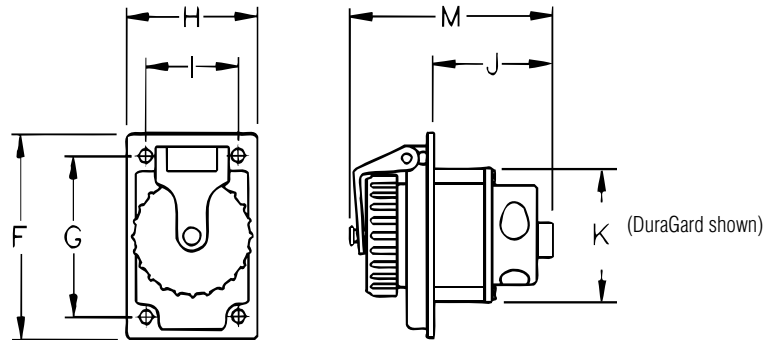
Connectors



		D	E
FS/FD	20 Amp	4"	1 ⁷ / ₈ "
	30 Amp	4 ⁵ / ₈ "	2 ¹ / ₈ "
	60 Amp*	9 ¹ / ₈ "	3 ¹ / ₂ "
Spec Grade DuraGard™	20 Amp	4 ¹ / ₈ "	1 ⁷ / ₈ "
	30 Amp	5 ⁵ / ₈ "	2 ¹ / ₈ "
	50 Amp	5 ⁵ / ₈ "	2 ¹ / ₈ "

*Angle Type DP Line (Metallic)

Receptacles



		F	G	H	I	J	K	M
FS/FD	20 Amp	4 ¹ / ₈ "	3 ¹ / ₄ "	2 ⁵ / ₈ "	1 ⁷ / ₈ "	1 ¹ / ₈ "	2 ¹ / ₄ "	2 ¹ / ₂ "
	30 Amp	4 ¹ / ₈ "	3 ¹ / ₄ "	2 ⁵ / ₈ "	1 ⁷ / ₈ "	1 ³ / ₈ "	2 ³ / ₄ "	2 ⁵ / ₈ "
	60 Amp*	3 1/2"	2 ⁷ / ₈ "	3 ¹ / ₂ "	2 ⁷ / ₈ "		2 ¹ / ₂ "	6"
DuraGard™	20 Amp	4 ¹ / ₈ "	3 ¹ / ₄ "	2 ⁵ / ₈ "	1 ⁷ / ₈ "	1 ¹ / ₂ "	2"	3 ³ / ₈ "
	30 Amp	4 ¹ / ₈ "	3 ¹ / ₄ "	2 ⁵ / ₈ "	1 ⁷ / ₈ "	2 ¹ / ₂ "	2 ³ / ₄ "	4 ¹ / ₈ "
	50 Amp	4 ¹ / ₈ "	3 ¹ / ₄ "	2 ⁵ / ₈ "	1 ⁷ / ₈ "	2 ¹ / ₂ "	2 ³ / ₄ "	4 ¹ / ₈ "

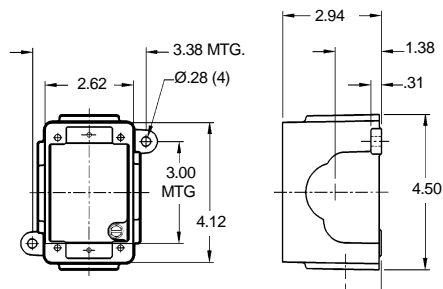
* Angle Type Line (Metallic)

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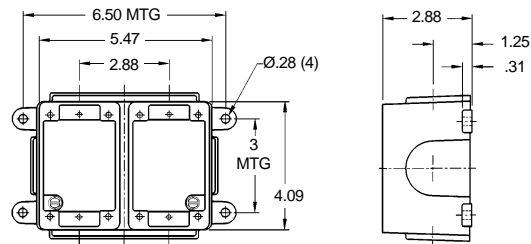
Computer System Plugs, Connectors and Receptacles—Accessories

All conduit boxes/Angle Adapters are copper free, cast aluminum, epoxy powder coat finish.

Conduit Boxes (For Surface Mounting)



Catalogue No. 3711A

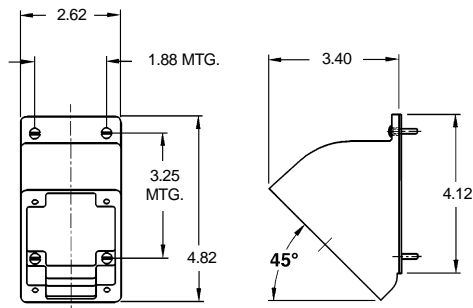


Catalogue No. 3712A

Receptacle size	Cat. No.	
	Single Gang	Double Gang
20, 30 & 50 Amp	3711A	3712A
60 Amp*	JB6	—
50 Amp	3781A	3782

* Various mounting options available.
4" deep (not shown)

Angle Adapter



Catalogue No. 3678A

Receptacle size	Cat. No.	
	45 Degree	20 Degree
20, 30 & 50 Amp	3678A	—
60 Amp*	JAA6-45	JAA6-AB6

*Various options available.
Mounts to conduit boxes to angle the receptacle downwards, for easier access.
There is no moisture retention on surfaces and there is better plug-cable drop bend relief.

Conduit Adapter

Kit includes gland nuts for plugs or connectors.



Plug/ Connector Size	Tapped Hole Size	Cat. No.		
		FS/FD	Spec Grade	DuraGard™
20 Amp	1/2"	FSA11	—	9X2C50
	3/4"	FSA12	—	9X2C75
30 Amp	1/2"	FSA21	—	9X3C50
	3/4"	FSA22	—	9X3C75
	1"	FSA23	—	—
50 Amp	3/4"	—	—	9X5C75
	1"	—	—	9X5C10
60 Amp Angle Type	3/4"	JPA62	—	—
	1"	JPA63	—	—
	1 1/4"	JPA64	—	—
	1 1/2"	JPA65	—	—

Computer System Plugs, Connectors and Receptacles—Accessories



Plug/Connector Replacement Items

Item	Spec Grade		DuraGard		
	Blue	Yellow	Blue	Yellow	Black
Plug/Connector Amperage	20A	20A	30A	30A	50A
Gland Nut	C17077C	C17077A	C17076CX	C17076AX	C17076BX
Nylon Locking Screw	N/A	NA	B16983	B16983	B16983
Bushing, Clamp, Nut, and Screw Kit (Inc. Nylon Locking Screw – 30/50A)	B17019CPR	B17019APR	B17018CPR	B17018APR	B17018BPR
Bushings	To Spec	To Spec	To Spec	To Spec	To Spec
Friction Washer	863-8	863-8	500RS	500RS	500RS
Gland Nut Assembly	B17019CR	B17019AR	B17018CR	B17018AR	B17018BR

Minimum purchase quantities apply.

Replacement Interiors

For replacement bushings, see DuraGard Section, pg. 80

Amperage		Voltage Polarization	Cat. No.	
			Male Interior Assembly	Female Interior Assembly
2P3W 20		125 VAC		
		250 VAC		
		Thru 600VAC/250 VDC		
2P3W 30		Thru 600VAC/250VDC	9XM23U1	9XF23U1
		Thru 600VAC/250VDC	9XM23U2	9XF23U2
2P3W 50		Thru 600VAC/250VDC	9XM23U0	9XF23U0
		Thru 600VAC/250VDC	9XM33U0	9XF33U0
3P4W 20		Thru 600VAC/250VDC	9XM53U0	9XF53U0
		Thru 600VAC/250VDC	9XM24U0	9XF24U0
3P4W 30		Thru 600VAC/250VDC	9XM34U0	9XF34U0
		Thru 600VAC/250VDC	9XM4U0	9XF4U0
3P4W 50		Thru 600VAC/250VDC	9XM54U0	9XF54U0

Interiors with ground straps are specials.



Custom Products

Interlocked Branch Distribution Centers

Utilize an existing higher amperage service and split it into multiple lower current service outlets. The outlets are individually interlocked with circuit breaker protection. Branch Distribution Centers are UL & CSA listed and can be configured for many inlet/outlet combinations.

Standard Dual Configuration

- 60A Male Inlet
- 2 - 30 A Individually Interlocked Female Outlets, each Circuit Breaker Protected.
- Heavy duty NEMA 4 welded, gasketed enclosure.

Benefits

- **Saves rewiring costs** in a facility when installing small-sized, lower current machines using existing electrical service.
- **Quickest** and most cost effective way to expand or reconfigure a single service with multiple service outlet combinations possible at every power drop.
- **Safest** way to operate: UL Listed 22kA interrupt capacity interlocked circuit breaker protection for each branch outlet receptacle, in a NEMA 4 enclosure.

- Power is manually energized only after plug is inserted; externally visible trip indicator handles on each Interlock.
- Automatic Shut Off when plug is removed before contacts disengage; ground sleeves Make first, Break last.
- "Trip-Free" Safety Mechanism where outlets are not powered unless plug is inserted.
- Full NEMA rated UL 489 listed 22kA Circuit Breakers, available to 480V at 30 Amps. 60 Amp and other options available.

Applications

- **Data Processing:** CPU / Disk Arrays / Peripherals and new smaller multiple units.
- **Industrial / Manufacturing Lines:** reorganization, process reconfiguration.
- **Portable Power:** Machinery, Tools, Test and Diagnostic equipment.

Mechanical and Safety Features

- All internal wiring is complete: a Drop-In, Plug-In specified device.
- DP Underfloor (Horizontal) installation standard; vertical or other mounting conventions optional.
- Electrostatic epoxy powder coat grey finish over 14 gauge steel NEMA 4 welded enclosure with gasketed access cover.
- Screw cover protects outlet receptacles (flap cap option).
- Long life stainless steel & nylon external hardware, copper-free aluminum castings, O-ring seals (to device spec) & brass electrical contacts.

Electrical and Safety Features

- One 250VAC 3p4w 60A male inlet feeding two 250VAC 3p4w 30A IEC 309-2 (9h Blue) female receptacle outlets, each protected by 22kA IC circuit breaker; each mechanically Interlocked.

Computer System Plugs, Connectors and Receptacles—Data Center Installation

Ordering Information

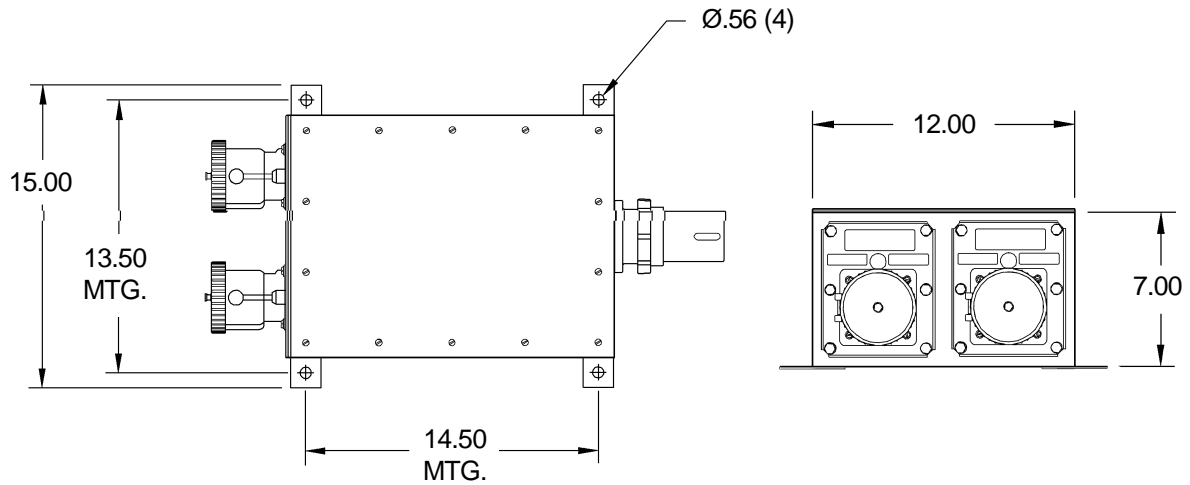
Cat. No.	Inlet Side		Outlet Side*	
	250VAC, 60A Male Inlet	Mating Connector	250VAC, 30A Outlet Receptacle	Mating Plug
ER206M39	7528 Spl.	7428-78	RS430MM9W (x2)	RS430P9WV0

(External mating Plugs & Connectors sold separately)

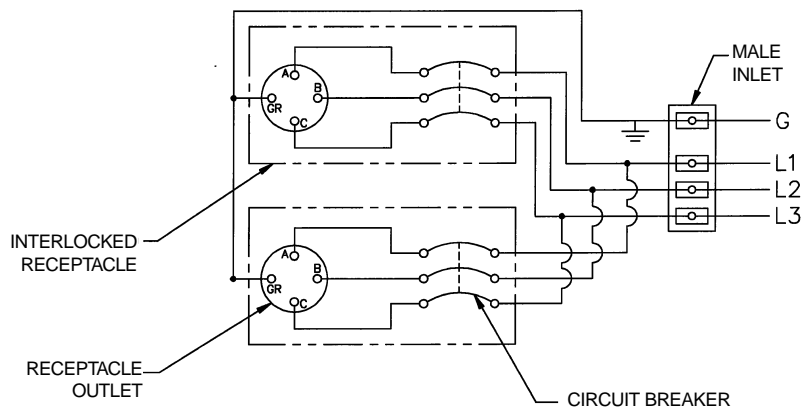
Other Configurations available. Consult your Regional Sales Office.

* IEC 309-2 configuration, 9h, 3P4W

Outline Dimensions



Schematic Diagram



Russellstoll®

Other Fine Russellstoll® Products

