

# DECONTACTOR™ Series

## Switch Rated Plugs & Receptacles

## The Main Differences



Pressing the pawl/button on the receptacle will safely switch off the DECONTACTOR. The plug can then be withdrawn in complete safety. (Cutaway model shown for illustration purposes)

Like most Meltric products  
Decontactors feature (see pgs 6-8)

- ▶ Spring-loaded butt contacts
- ▶ Silver-nickel contact materials
- ▶ Dead front construction
- ▶ Enclosed arc chambers
- ▶ Spring-assisted terminals
- ▶ Auxiliary contacts

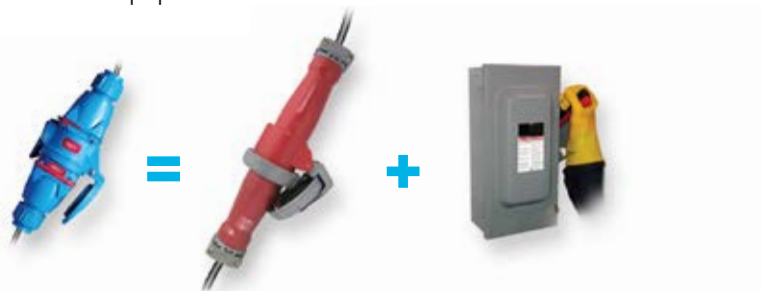
Only Decontactor™ products  
also feature:

- ▶ UL & CSA switch ratings
- ▶ Horsepower ratings
- ▶ Short circuit ratings up to 100 kA in fuse protected circuits

## Switch and Hp Ratings

Decontactors are a combination plug, receptacle and disconnect switch in the same device. The Decontactors integral switch technology ensures the safe breaking of resistive and inductive loads (up to 60 hp or 200A) before the plug can be removed from the receptacle.

Decontactors are UL and CSA approved for both "branch circuit" and "motor circuit" disconnect switching, so they are ideal for connecting motors, welding machines and virtually any other electrical equipment.



To match the functionality of a DECONTACTOR, it would take a pin and sleeve plug plus a non-fused safety switch.

## Short Circuit Ratings

Decontactors help ensure worker safety even in fault conditions. All Decontactors are rated to close into and withstand short circuit currents of 65 kA to 100 kA. The protection far surpasses that offered by other plugs and receptacles, and even surpasses the short circuit protection offered by most manual motor controllers and mechanical interlocks.



Don't let this happen to you!  
Pin and sleeve devices are not safe to make and break  
under load - Meltric Decontactors are.

## UL & CSA Standards

### Test requirements and ratings comparison table

To attain their switch ratings, DECONTACTOR™ Series plugs and receptacles passed electrical and mechanical endurance tests, horsepower/locked rotor overload tests, and short circuit make and withstand tests that far exceed the tests passed by ordinary plugs and receptacles. In fact, the tests performed to achieve the Decontactor's switch ratings are the same electrical performance tests required of manual motor controllers and enclosed disconnect switches (UL 508 and UL 98 type devices).

The chart below compares the test requirements for achieving a Switch Rated Plug & Receptacle listing with those required for a standard pin and sleeve type plug & receptacle listing.

	UL 1682 & CSA 22.2 No. 182.1		UL Subject 2682 (used for both UL & CSA listings)
	Plugs, Receptacles & Cable Connectors of the Pin & Sleeve Type		Switch Rated Plugs & Receptacles
Test	Non-Current Interrupting Break (minimum requirements)	Current Interrupting (minimum requirements)	Motor Circuit/Branch Circuit Disconnect Switching (Tests passed by DECONTACTOR devices)
Temperature Rise	< 30°C	< 30°C	< 30°C
Voltage Withstand	1000V + 200% of Device Rating	1000V + 200% of Device Rating	1000V + 200% of Device Rating
Overload General Use Devices	3 Operations @ 150% of Rated Current (p.f. = .75 - .80)	50 Operations @ 150% of Rated Current (p.f. = .75 - .80)	50 Operations @ 150% of Rated Current (p.f. = .75 - .80)
Mechanical Endurance (Plus Req'd Electrical Opns)	15-20A = 5000 Opns 21-63A = 2000 Opns 64-250A = 250 Opns	15-20A = 0 Opns 21-63A = 1000 Opns 64-250A = 500 Opns	covered by Electrical Endurance test
Electrical Endurance (With Load)	–	15-20A = 5000 Opns 21-63A = 1000 Opns <sup>1</sup> 64-250A = 250 Opns <sup>1</sup> @ Rated Current & Voltage (p.f. = .75 - .80)	6000 Cycles @ Rated Current & Voltage (p.f. = .75 - .80)
Overload - Locked Rotor (Horsepower Rated Devices)	–	–	50 Operations @ 600% of Full Load Motor Current (p.f. = .40 - .50)
Short Circuit Withstand	–	–	≥ 10 kA <sup>+</sup> (600V and ≤ .50 power factor)
Short Circuit Make	–	–	≥ 10 kA <sup>+</sup> (600V and ≤ .50 power factor)

<sup>1</sup> Testing alternates between mechanical & electrical operations. This reduces the severity of the electrical test by allowing additional cooling time during electrical testing.

+ All Meltric switch rated Decontactors are UL listed with short circuit ratings of at least 65kA achieved at 600VAC and ≤ .15 power factor.



# Benefit from Using Decontactors...

## Ensure Worker Safety

Meltric Decontactors help ensure safety by eliminating the hazards associated with pin & sleeve and twist-type devices.

- ▶ The integral switching function ensures that the plug contacts are dead prior to removal from the receptacle and the dead front construction prevents unintended access to live parts. This eliminates potential injury due to electrical shock.
- ▶ Spring-loaded, silver-nickel butt style contacts maintain proper contact force, withstand arcing, resist wear, and maintain low contact resistance. This ensures the integrity of the connection over thousands of operations and eliminates injuries caused by heat, oxidation, wear and arcing induced failures of brass contacts.
- ▶ Push button operation and spring-loaded plug and receptacle disengagement ensures quick and operator independent load breaking. This helps minimize harmful arcing during disconnection and enclosed arc chambers eliminate the possibility of external arcs.
- ▶ Horsepower, switch and short circuit ratings provide significant additional protection during locked-rotor or other significant overload situations. This eliminates injuries that could occur with standard plug and receptacles.



## Simplify Code Compliance

Decontactors provide a simple and cost effective means of helping facilities to achieve compliance with the National Electric Code and NFPA 70E.

### NEC Compliance

Articles 430.101 through 430.113 of the National Electrical Code regulate motor disconnection means (Canadian Electrical Code section 28-600 – 28-604). They require motors to have readily accessible, 'line of sight' disconnects that are either an approved switch or a properly rated plug and receptacle.

- ▶ **430.102** A disconnecting means must be located in sight from the motor and driven equipment.
- ▶ **430.107** The disconnecting means must be readily accessible.
- ▶ **430.109** The disconnecting means must be an approved switch or horsepower rated plug & receptacle.

Meltric's DECONTACTOR Series plugs and receptacles are both horsepower and switch rated. Thus, they can function as a 'line of sight' disconnect in addition to providing a convenient plug and play power connection for the motor. The need for an auxiliary disconnect switch is eliminated.

### NFPA 70E (CSA Z462)

This OSHA consensus standard covers electrical safety related work practices and procedures for employees who work on or near exposed energized electrical conductors or other live circuit parts. Relevant requirements include:

**Power must be proven to be off before work can be performed. This requires:**

- ▶ The safe interruption of the load & opening of the disconnect
- ▶ Visual verification/voltage testing to ensure deenergization

**The potential electrical hazard must be identified and documented.**

- ▶ Flash hazard analysis must be performed
- ▶ Flash protection boundaries must be determined

**Appropriate steps must be taken to protect persons working near live parts or within the flash protection boundary.**

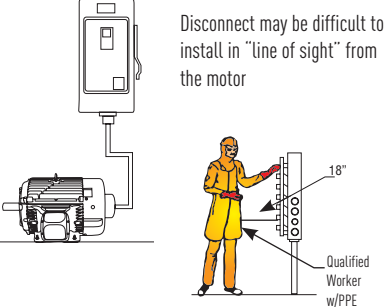
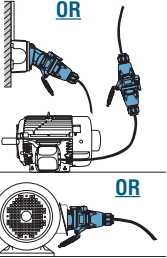
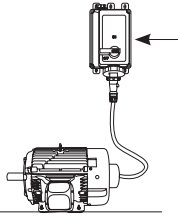
- ▶ PPE must be worn based on incident energy exposure levels (cal/cm2)
- ▶ Only properly qualified persons are allowed to perform work

# ...Throughout your Facility

Wiring and connection systems utilizing conventional switches and/or pin & sleeve devices would typically require all of the previously listed protective measures to comply with NFPA 70E or CSA Z462. By using Meltric's DECONTACTOR Series plugs and receptacles to connect equipment, users can very simply comply with these requirements.

Switch ratings ensure the safe interruption of the load and removing the plug from the receptacle provides visual verification that the power is off. Dead front construction prevents exposure to live parts and thus eliminates the need to perform hazard analysis, establish flash protection boundaries and use electrical personal protective equipment.

## Motor Change-Out Process Comparison

MOTOR HARD-WIRED TO A BLADED DISCONNECT SWITCH	MOTOR CONNECTED WITH A MELTRIC MOTOR PLUG	MOTOR CONNECTED WITH A COMPETITIVE PLUG & RECEPTACLE
 <p>Disconnect may be difficult to install in "line of sight" from the motor</p> <p>18"</p> <p>Qualified Worker w/PPE</p>	 <p>OR</p> <ul style="list-style-type: none"> <li>▶ Cord connection allows easy "line of sight" location</li> <li>▶ Dead front eliminates access to live parts and need for cumbersome PPE</li> <li>▶ Ability to safely make &amp; break under load eliminates the need for interlocks</li> <li>▶ <math>\geq 65\text{kA}</math> short circuit make and withstand rating ensures safety during reenergization</li> </ul>	 <ul style="list-style-type: none"> <li>▶ Expensive mechanical interlocks are required since these plugs &amp; receptacles cannot safely make &amp; break under load</li> <li>▶ The interlock must be mounted on a fixed surface this may make "line of sight" location more difficult</li> </ul>
MOTOR CHANGE-OUT PROCESS	MOTOR CHANGE-OUT PROCESS	MOTOR CHANGE-OUT PROCESS
<ol style="list-style-type: none"> <li>1. Switch disconnect to OFF position</li> <li>2. Apply lockout/tagout</li> <li>3. Perform Shock/Arc Flash Hazard Analysis</li> <li>4. Obtain permit for energized electrical work</li> <li>5. Suit up with appropriate PPE</li> <li>6. Remove the disconnect switch cover</li> <li>7. Voltage test to verify deenergization</li> <li>8. Disconnect motor from hard-wiring</li> <li>9. Remove old/install new motor</li> <li>10. Connect new motor to hard-wiring</li> <li>11. Jog the motor to ensure proper rotation</li> </ol>	<ol style="list-style-type: none"> <li>1. Switch Decontactor receptacle to OFF position</li> <li>2. Mechanic removes plug from receptacle</li> <li>3. Apply lockout/tagout as required</li> <li>4. Mechanic removes old /installs new motor</li> <li>5. Mechanic inserts plug into receptacle</li> </ol> <p><b>Meltric Makes it Safe &amp; Easy</b></p>	<ol style="list-style-type: none"> <li>1. Open interlock switch</li> <li>2. Determine PPE requirements &amp; obtain</li> <li>3. Remove interlock cover</li> <li>4. Voltmeter test to verify deenergization</li> <li>5. Remove plug</li> <li>6. Apply lockout/tagout as required</li> <li>7. Remove old /install new motor</li> <li>8. Insert plug into receptacle</li> </ol>

## Reduce Equipment & Installation Costs

A Decontactor's ability to safely make and break under full load eliminates the need for the expensive interlocks that are required with pin and sleeve devices. Their ability to function as the NEC required 'line of sight' disconnect eliminates the need for auxiliary disconnect switches and their optional pilot contacts can eliminate the need for auxiliary connectors for control circuits.

## Reduce Equipment Change-out Downtime & Cost

Using Meltric's DECONTACTOR Series plug and receptacles to connect motors and other equipment instead of hard-wiring can help reduce equipment change-out time by as much as 50%. With new motors pre-wired with Decontactor plugs or inlets, the only electrical connection required during the change-out will be to plug in the new motor. Thus, a mechanic will be able to perform the change-out without the immediate aid of an electrician. This avoids the scheduling hassle of needing to also provide an electrician and eliminates the extra downtime required to do the wiring. The pre-wiring of replacement motors with Decontactor plugs or inlets can be done off-site and during the convenience of non-downtime periods. This makes Decontactor Series plugs and receptacles an ideal choice for 'plug and play' and modular process applications.



# Selecting the Right DECONTACTOR™ Family

## All Decontactors (DSN, DS and DB) feature:



- ▶ UL & CSA switch ratings
- ▶ Short circuit closing and withstand protection (65kA to 100kA)



- ▶ Silver-nickel contact material
- ▶ Spring-loaded, butt-style contacts



- ▶ Dead front safety shutter
- ▶ Optional auxiliary contacts



## DSN Series (pages 23-34)

Choose DSN Series for its...

- ▶ Compact, lightweight design
- ▶ Automatic Type 4X watertightness

Common Applications

- ▶ Wet or washdown environments
- ▶ Plug & play electrical connections



## DS Series (pages 35-52)

Choose DS Series for its...

- ▶ High amperage range (up to 200A)
- ▶ Poly or metal casing materials (60A and above)
- ▶ Larger conductor capacities

Common Applications

- ▶ Heavy industry
- ▶ High amperage equipment



## DB Series (pages 53-66)

Choose DB Series for its...

- ▶ High HP ratings (up to 60 hp)
- ▶ Robust, heavy duty construction

Common Applications

- ▶ Motors with frequent make and break requirements
- ▶ Harsh environments

## DSN Models and Ratings

Model	Casing Material	Maximum Voltage (VAC)	Amperage Rating	Maximum Number of Contacts		Environmental Rating	Maximum Horsepower Rating	
				Main	Auxiliary		480 VAC	600 VAC
DSN20	Poly	480 VAC	20A	3P+N+G	–	Type 4X IP66+IP67	5 hp	–
DSN30	Poly	600 VAC	30A	3P+N+G	2	Type 4X IP66+IP67	10 hp	15 hp
DSN60	Poly	600 VAC	60A	3P+N+G	4	Type 4X IP66+IP67	20 hp	20 hp

## DS Models and Ratings

Model	Casing Material	Maximum Voltage (VAC)	Amperage Rating	Maximum Number of Contacts		Environmental Rating	Maximum Horsepower Rating	
				Main	Auxiliary		480 VAC	600 VAC
DS20	Poly	600 VAC	20A	3P+N+G	2	Type 3R	5 hp	7.5 hp
DS30	Poly	600 VAC	30A	3P+N+G	4	Type 3R	10 hp	–
DS60	Poly or Metal	600 VAC	60A	3P+N+G	3	Type 3R	20 hp	25 hp
DS100C	Poly or Metal	600 VAC	100A	3P+N+G	3	Type 3R	20 hp	25 hp
DS100	Poly or Metal	600 VAC	100A	3P+N+G	6	Type 3R	–	–
DS200	Metal	480 VAC	200A	3P+N+G	5	Type 3R	–	–

## DB Models and Ratings

Model	Casing Material	Maximum Voltage (VAC)	Amperage Rating	Maximum Number of Contacts		Environmental Rating	Maximum Horsepower Rating	
				Main	Auxiliary		480 VAC	600 VAC
DB30	Zinc Aluminum	600 VAC	30A	3P+N+G	2	IP67	10 hp	10 hp
DB60	Zinc Aluminum	600 VAC	60A	3P+N+G	2	IP67	30 hp	30 hp
DB100	Zinc Aluminum	600 VAC	100A	3P+N+G	4	IP67	60 hp	60 hp