

## Installation & Maintenance Instructions for ECP/NCP Model “E” U-Line® Plugs

RETAIN THIS INSTRUCTION SHEET FOR FUTURE REFERENCE. For safe installation and operation, please read these instructions carefully and with full understanding.

### Compliance & Ratings

UL 1203

Class I, Group B, C; Class II, Group F, G; Class III

### Electrical Ratings

Maximum Voltage: 125 V or 250 V; Current: 15 A or 20 A; Configuration: 2W, 3P

### Applications

- Locations where receptacles are used with stationary or portable electrically operated devices such as lighting systems, conveyors, heaters, motor-generator sets, air conditioners compressors, and pumps.
- Locations where damp or corrosive conditions are encountered.
- Class I classified areas such as petrochemical plants, petroleum refineries, paint and chemical plants or any location where ignitable vapors or gases are present.
- Class II locations such as process industries where there are dust hazards from handling such products as flour, grain, and starch or any location where ignitable amounts of dust are present or amounts which would otherwise affect performances.

### Installation

#### ⚠ WARNINGS

- Electrical power must be turned OFF before and during installation and maintenance. Failure to do so may result in serious or fatal injuries due to electrocution.
- Use cable diameters ranging from 0.538 to 0.639 inches. Failure to do so may result in overstressed wire terminations, which may cause the conductors to pull out of the contacts and cause serious/fatal injuries due to electrocution.
- Care must be taken not to cut into the individual conductor insulation when removing the outer cable jacket and to not damage the conductors when removing individual wire insulation. Failure to do so will seriously degrade the electrical properties of the cable and may produce overheating/electrical hazard leading to electrocution.

#### ⚠ CAUTION

Before starting the installation, ensure the plug assembly is suitable for the intended location according to the National Electrical Code or Canadian Electrical Code. If the plug assembly is not suitable, serious damage and injuries may result. Owners are responsible for damages or injuries if these rules are not followed.

#### ⚠ NOTICE

The plug should be wired with three-conductor, rubber-covered #12 AWG – #14 AWG Type SO or SOOW Cords with copper conductors only.

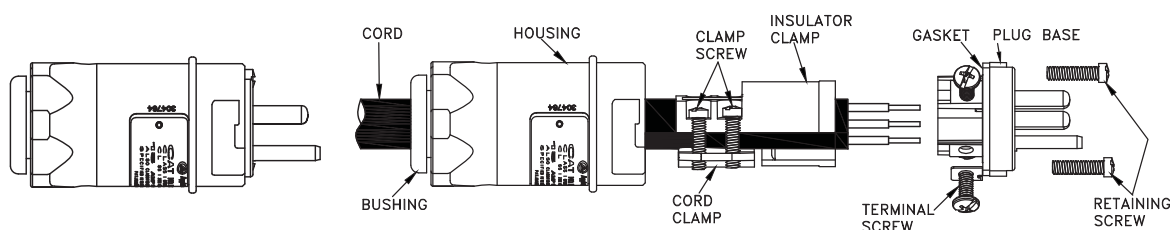


FIGURE 1

## Installing & Wiring

1. To disassemble the device, loosen (do not remove) the two front retaining screws from the plug and remove the plug base assembly from the plug housing.
2. Remove plug base and insulator clamp from the plug housing. Note orientation of insulator clamp before complete removal.
3. Remove the four clamp screws from the insulator clamp.
4. Slide plug housing over cord. The self-sealing neoprene bushing will adjust to the cord diameter.
5. Strip the cable jacket and individual conductors as below:

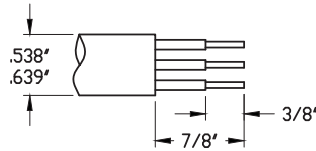


FIGURE 2

6. Fasten the individual conductor wires to the proper terminals (in the plug base assembly) as follows:

For 125 V: GREEN wire to lug terminal "G".

(terminal with grounding strap)

WHITE wire to lug terminal with WHITE DOT.

BLACK wire to remaining lug terminal.

For 250 V: GREEN wire to lug terminal "G".

(terminal with grounding strap)

Other two wires to remaining lug terminals.

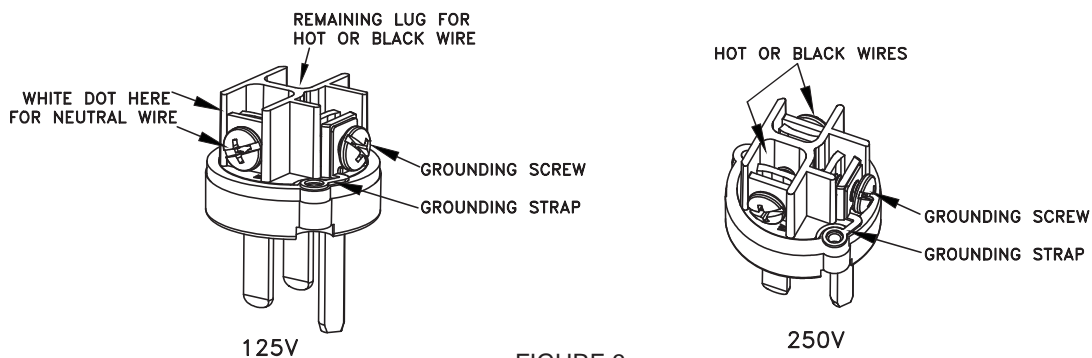


FIGURE 3

Tighten the terminal screws to a torque of 15 in.-lb.

7. Slide insulator clamp down the cord and position over terminals. The insulator clamp has two slots which engage with the arc barrier walls, providing proper orientation. Continue to slide the insulator clamp over the cord until it seats against the plug base gasket.

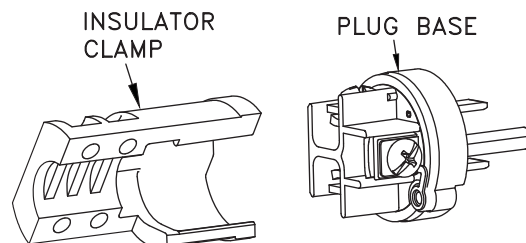


FIGURE 4

**NOTE:** Configuration of the plug housing is such that the plug base assembly and insulator clamp assembly can only be installed in one position.

8. Place the cord clamp according to the cable diameter (0.538–0.639 inch) and tighten the four clamp screws to a torque of 15 in.-lb.

**NOTE:** DO NOT attempt to over-tighten the screws or bottom the clamp.

9. Slide the plug housing over the insulator clamp assembly and tighten the two retaining screws.

## Electrical Testing

All wiring must be checked and tested to ensure that all circuits are according to plan and that there are no unwanted opens, shorts, or grounds.

**Do not apply power until the following steps are complete:**

1. Test the continuity of wiring to verify the correct phasing and grounding connections.
2. Measure the insulation resistance to ensure that the system does not have any short circuits or unwanted grounds.

## Maintenance

### **WARNING**

Electrical power must be turned OFF before and during installation and maintenance. Failure to do so may result in serious or fatal injuries due to electrocution.

Electrical and mechanical inspection of all components must be performed regularly. It is recommended that inspections be performed once a year (minimum).

In addition to these required maintenance procedures, we recommend an Electrical Preventive Maintenance program as described in the National Fire Protection Association Bulletin NFPA No. 70B.

### **WARNING – MODIFICATIONS**

Do not modify these devices in any way. Replace any missing or broken parts with proper Appleton replacement parts. Modification of these devices or substitution of parts with non-standard parts may result in serious or fatal personal injury from electrocution.

### **WARNING – PRODUCT DAMAGE**

If any part of the plug appears to be missing, broken, or show signs of damage—discontinue use immediately! This condition could cause serious or fatal personal injury due to electrocution and/or equipment damage. Repair with the proper Appleton replacement part(s) before continuing service.

**During the inspections, perform the following steps:**

1. Inspect all contact wire terminals for tightness and retorque if necessary. **NOTE:** Discoloration due to excessive heat is an indicator of potential issues and should be thoroughly investigated and repaired as necessary.
2. ECP Plugs: Check grounding and bonding for correct installation. Secure connections and retorque if necessary.
3. Check gaskets for deterioration and replace if necessary.
4. Clean exterior surfaces to ensure the nameplates remain legible.
5. Inspect cable grip tightness to ensure proper cord/cable gripping.
6. Torque all screws as described in the “Installation” section before reusing the device.
7. Inspect all parts and replace those which are broken or excessively worn.
8. Check the contacts for signs of excessive arcing or burning and replace if necessary.

## Features

- Solderless lugs on all terminals are pressure-type to facilitate wiring.
- Heavy-duty cable grip exceeds UL Standard 1203, 150 lb. pull-out test for classified locations.
- Twisting plug locks in place and cannot be accidentally pulled out.
- Longer plug housing for better gripping and easier plug insertion/withdrawal.
- Special neoprene plug bushing accommodates flexible cord ranging from 0.538 to 0.639 inch diameter.

Shaded areas below indicate plug is suitable for Class I, Group B in addition to Class I, Groups C and D; Class II, Group F, G; and Class III

The following plugs are designed for use in Class I, Groups B, C, and D; Class II Group F, G; and Class III, Div. I and Div. II hazardous locations and any standard U-Ground receptacle in non-hazardous areas.

Plug catalog numbers ECP-1523, ECP-2023, NCP-1523 and NCP-2023 are for use with the following receptacles. (Cat. No. followed by "M" indicates malleable iron receptacle housing.)

EFS150-2023	EFSC150-2023	EFSB150-2023	EFSCB150-2023	EFS250-2023	EFSC250-2023
EFS175-2023	EFSC175-2023	EFSB175-2023	EFSCB175-2023	EFS275-2023	EFSC275-2023
EFS110-2023	EFSC110-2023	ECCL-2023	ECH-2023	EFS210-2023	EFSC210-2023
EFSR2023	ECC-2023	N1D75-2023	ECHT-2023	N2D75-2023	
		N1DC75-2023		N2DC75-2023	

Plug catalog numbers ECP-1523 and NCP-1523 may also be used with the standard 15 Amp and 20 Amp, 125 V.A.C. U-Ground receptacles in non-hazardous areas, and plug catalog numbers ECP-2023 and NCP-2023 may also be used with the standard 20 Amp, 125 V.A.C. U-Ground receptacle in non-hazardous areas.

Plug catalog numbers ECP-20232 and NCP-20232 are for use with the following receptacles. (Cat. No. followed by "M" indicates malleable iron receptacle in non-hazardous areas.)

EFS150-20232	EFSC150-20232	EFSB150-2023	EFSCB150-20232	EFS250-20232	EFSC250-20232
EFS175-20232	EFSC175-20232	EFSB175-20232	EFSCB175-20232	EFS275-20232	EFSC275-20232
EFS110-20232	EFSC110-20232	ECCL-20232	ECH20232	EFS210-20232	EFSC210-2023
EFSR-20232	ECC-2023	N1D75-20232	ECHT20232	N2D75-20232	
		N1DC75-20232		N2DC75-20232	




Plug catalog numbers ECP-20232 and NCP-20232 may also be used with the standard 20 Amp, 250 V.A.C. U-Ground receptacle in non-hazardous areas.

The ECP and NCP plugs should be wired with three-conductor rubber-covered No 12 thru 14 type 14 type SO cords. They have a self-sealing neoprene bushing which accommodates flexible cord ranging from 0.538 to 0.639 inch diameter.

## Operation

1. Lift the receptacle door and insert the plug all the way into the receptacle.
2. Turn the plug clockwise (limit 37 degrees). This will close the internal contacts and complete the circuit.
3. To remove the plug, push it inward and turn counter-clockwise.

## Specifications

Table 1: Specifications					
Ampere	NEMA Configuration*	Wire & Pole	Cable Diameter	Catalog Number	
				125 V	250 V
15	 5-15-P	2W, 3P	0.538-0.639 in.	ECP-1523	---
20	 5-20-P	2W, 3P		ECP-2023	---
20	 6-20-P	2W, 3P		---	ECP-2032

\*Plugs also fit NEMA 5-15R, 5-20R or 6-20R receptacles in non-classified areas.

## Intermateability – Plugs & Receptacles

Table 2									
Appleton Plug Rating	Appleton “ECP” Plug Cat. No.	Appleton “NCP” Plug Cat. No.	Receptacle Rating	Appleton Receptacle Cat. No.	Killark Receptacle Cat. No.	Crouse-Hinds Receptacle Cat. No.	No. of Conduit Openings	Hub Size in.	No. of Gangs
125 V, 15 A, 1hp	ECP-1523	NCP-1523	125 V, 20 A, 1hp	EFSR-2023	UGRO-20231	ENR-5201	---	---	---
125 V, 20 A, 1hp 125 V, 15 A, 1hp	ECP-2023 ECP-1523	NCP-2023 NCP-1523	125 V, 20 A, 1hp 125 V, 20 A, 1hp	EFS150-2023	UGR1-20231	ENR-11201	1	½	1
125 V, 20 A, 1hp 125 V, 15 A, 1hp	ECP-2023 ECP-1523	NCP-2023 NCP-1523	125 V, 20 A, 1hp 125 V, 20 A, 1hp	EFS175-2023	UGR2-20231	ENR-21201	1	¾	1
125 V 20 A, 1hp 125 V, 15 A, 1hp	ECP-2023 ECP-1523	NCP-2023 NCP-1523	125 V, 20 A, 1hp 125 V, 20 A, 1hp	EFS110-2023	UGR3-20231	ENR-31201	1	1	1
125 V, 20 A, 1hp 125 V, 15 A, 1hp	ECP-2023 ECP-1523	NCP-2023 NCP-1523	125 V, 20 A, 1hp 125 V, 20 A, 1hp	EFSC150-2023	UGR4-20231	ENRC-11201	2	½	1
125 V, 20 A, 1hp 125 V, 15 A, 1hp	ECP-2023 ECP-1523	NCP-2023 NCP-1523	125 V, 20 A, 1hp 125 V, 20 A, 1hp	EFSC175-2023	UGR5-20231	ENRC-21201	2	¾	1
125 V, 20 A, 1hp 125 V, 15 A, 1hp	ECP-2023 ECP-1523	NCP-2023 NCP-1523	125 V, 20 A, 1hp 125 V, 20 A, 1hp	EFSC110--2023	UGR6-20231	ENRC-31201	2	1	1
125 V, 20 A, 1hp 125 V, 15 A, 1hp	ECP-2023 ECP-1523	NCP-2023 NCP-1523	125 V, 20 A, 1hp 125 V, 20 A, 1hp	EFS250-2023	UGR7-20231	ENR-12201	1	1/2	2
125 V, 20 A, 1hp 125 V, 15 A, 1hp	ECP-2023 ECP-1523	NCP-2023 NCP-1523	125 V, 20 A, 1hp 125 V, 20 A, 1hp	EFS275-2023	UGR8-20231	ENR-22201	1	¾	2
125 V, 20 A, 1hp 125 V, 15 A, 1hp	ECP-2023 ECP-1523	NCP-2023 NCP-1523	125 V, 20 A, 1hp 125 V, 20 A, 1hp	EFS210-2023	UGR9-20231	ENR-32201	1	1	2
125 V, 20 A, 1hp 125 V, 15 A, 1hp	ECP-2023 ECP-1523	NCP-2023 NCP-1523	125 V, 20 A, 1hp 125 V, 20 A, 1hp	EFSC250-2023	UGR10-2023	ENRC-12201	2	1/2	2
125 V, 20 A, 1hp 125 V, 15 A, 1hp	ECP-2023 ECP-1523	NCP-2023 NCP-1523	125 V, 20 A, 1hp 125 V, 20 A, 1hp	EFSC275-2023	UGR11-2023	ENRC-22201	2	¾	2
125 V, 20 A, 1hp 125 V, 15 A, 1hp	ECP-2023 ECP-1523	NCP-2023 NCP-1523	125 V, 20 A, 1hp 125 V, 20 A, 1hp	EFSC210-2023	UGR12-20231	ENRC-32201	2	1	2
125 V, 20 A, 1hp	ECP-2023	NCP-2023	125 V, 20 A, 1hp						
250 V, 20 A, 2hp	ECP-20232		250 V, 20 A, 2hp	EFSR-20232	UGR0-20232	ENR-6202	–	–	–
250 V, 20 A, 2hp	ECP-20232		250 V, 20 A, 2hp	ERFS150-20232	UGR1-20232	ENR-11202	1	½	1
250 V, 20 A, 2hp	ECP-20232		250 V, 20 A, 2hp	EFS175-20232	UGR2-20232	ENR-21202	1	¾	1
250 V, 20 A, 2hp	ECP-20232		250 V, 20 A, 2hp	EFS110-20232	UGR3-20232	ENR-31202	1	1	1
250 V, 20 A, 2hp	ECP-20232		250 V, 20 A, 2hp	EFSC150-20232	UGR4-20232	ENRC-11202	2	½	1
250 V, 20 A, 2hp	ECP-20232		250 V, 20 A, 2hp	EFSC175-20232	UGR5-20232	ENRC-21202	2	¾	1
250 V, 20A, 2hp	ECP-20232		250 V, 20 A, 2hp	EFSC110-20232	UGR6-20232	ENRC-31202	2	1	1
250 V, 20 A, 2hp	ECP-20232		250 V, 20 A, 2hp	EFS250-20232	UGR8-20232	ENR-12202	1	1/2	2
250 V, 20 A, 2hp	ECP-20232		250 V, 20 A, 2hp	EFS275-20232	UGR8-20232	ENR-22202	1	¾	2
250 V, 20 A, 2hp	ECP-20232		250 V, 20 A, 2hp	EFS210-20232	UGR9-20232	ENR-32202	1	1	2
250 V, 20 A, 2hp	ECP-20232		250 V, 20 A, 2hp	EFSC250-20232	UGR10-20232	ENRC-12202	2	½	2
250 V, 20 A, 2hp	ECP-20232		250 V, 20 A, 2hp	EFSC275-20232	UGR11-20232	ENRC-22202	2	¾	2
250 V, 20 A, 2hp	ECP-20232		250 V, 20 A, 2hp	EFSC210-20232	UGR12-20232	ENRC-32202	2	1	2

**NOTE:** The Appleton “ECP” or “NCP” “D” Plug and “EFS” Receptacle is a UL Listed Combination. The Appleton Series “ECP” or “NCP” Model “D” Plug with Killark UL Listed “UGR” Series Receptacle or with Crouse-Hinds UL Listed “ENR” Series Receptacle is a UL Listed Classified Combination.

# Product Safety Information

## Signal Words Defined

**DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.

**WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION** indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

**NOTICE** is used to address practices not related to physical injury.

## Safety Instructions

### **WARNING—MODIFICATIONS**

Do not modify these devices in anyway. Replace any missing or broken parts with proper Appleton replacement parts. Modification of these devices or substitution of parts with non-standard parts may result in serious or fatal person injury from electrocution.

### **WARNING—PRODUCT DAMAGE**

If any part of the plug appears to be missing, broken, or show signs of damage—discontinue use immediately! This condition could cause serious or fatal personal injury due to electrocution and/or equipment damage. Repair with the proper replacement part(s) before continuing service.

### **WARNING—ELECTRICAL**

Electrical power must be turned OFF before and during installation and maintenance. Failure to do so may result in serious or fatal injuries due to electrocution

### **WARNING—WIRING**

Plug and cord connectors are rated for use with Type SO cord with copper conductors ONLY.

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