









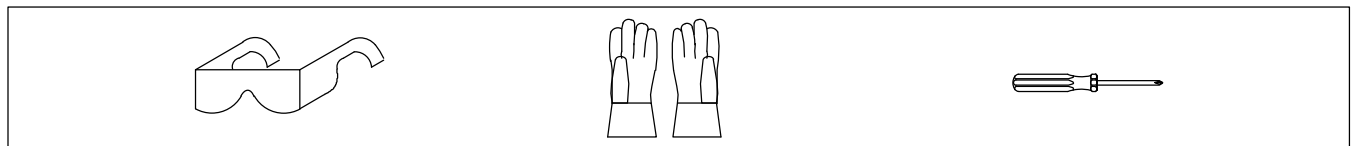
Use above FORM number when ordering extra manuals.

ProHeat™ Air-Cooled Cables (301542030, 301542050, 301542080)

1. Safety Symbol Definitions

	<p>DANGER! – Indicates a hazardous situation which, if not avoided, will result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.</p> <p>DANGER! - Indique une situation dangereuse qui, si elle n'est pas évitée, entraînera la mort ou des blessures graves. Les éventuels risques sont représentés par les symboles joints ou expliqués dans le texte.</p> <p style="text-align: right;">Fsafe1 2013-10</p>		<p>Beware of electric shock from wiring. Disconnect input power before installing this kit. Reinstall all panels and covers.</p> <p>Attention aux décharges électriques au contact des câbles. Couper l'alimentation électrique avant d'installer ce kit. Réinstaller tous les panneaux et couvercles.</p> <p style="text-align: right;">Fsafe7 2013-10</p>
	<p>Indicates a hazardous situation which, if not avoided, could result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.</p> <p>Indique une situation dangereuse qui, si elle n'est pas évitée, entraînera la mort ou des blessures graves. Les éventuels risques sont représentés par les symboles joints ou expliqués dans le texte.</p> <p style="text-align: right;">Fsafe2 2013-10</p>		<p>Wear safety glasses with side shields.</p> <p>Porter des lunettes de sécurité avec écrans latéraux.</p> <p style="text-align: right;">Fsafe8 2013-10</p>
<p>NOTICE</p> 	<p>Indicates statements not related to personal injury.</p> <p>Signale des consignes non associées aux dommages corporels.</p> <p>Indicates special instructions.</p> <p>Fournit des instructions spéciales.</p> <p style="text-align: right;">Fsafe3 2013-10</p>		<p>Have only trained and qualified persons install, operate, or service this unit. Read the safety information at the beginning of these instructions and in each section. Call your distributor if you do not understand the directions. For WELDING SAFETY and EMF information, read owner's manual(s).</p> <p>Ne confiez l'installation, l'exploitation ou l'entretien de cet appareil qu'à des personnes compétentes et qualifiées. Lire les directives de sécurité au début de ces instructions et dans chaque section. Appeler votre distributeur si vous ne comprenez pas les directives. Lire le(s) manuel(s) d'utilisateur pour des renseignements sur la SÉCURITÉ DE SOUDAGE et les champs électromagnétiques.</p> <p style="text-align: right;">Fsafe15 2013-10</p>
	<p>Electric and magnetic fields (EMF) from high current can affect Implanted Medical Devices. Wearers of Pacemakers and other Implanted Medical Devices should consult their doctor and the device manufacturer before going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations.</p> <p>Les CHAMPS ÉLECTROMAGNÉTIQUES (CEM) peuvent affecter les implants médicaux. Les porteurs de stimulateurs cardiaques ou d'autres appareils médicaux implantés doivent consulter leur médecin et le fabricant de l'appareil avant d'approcher d'un arc de soudage, d'un soudage par point, d'un gougeage, d'un découpage au plasma ou d'un chauffage par induction.</p> <p style="text-align: right;">Fsafe12 2018-01</p>		<p>Hot parts can burn. Allow cooling period before working on equipment. Do not touch hot parts bare handed. To handle hot parts, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.</p> <p>Les pièces chaudes peuvent provoquer des brûlures. Prévoir une période de refroidissement avant de travailler à l'équipement. Ne pas toucher à mains nues les parties chaudes. Ne pas toucher aux pièces chaudes, utiliser les outils recommandés et porter des gants de soudage et des vêtements épais pour éviter les brûlures.</p> <p style="text-align: right;">Fsafe13 2013-10</p>
<p>CALIFORNIA PROPOSITION 65 WARNINGS</p> <p>WARNING: Cancer and Reproductive Harm – www.P65Warnings.ca.gov</p> <p>PROPOSITION CALIFORNIENNE 65 AVERTISSEMENTS</p> <p>AVERTISSEMENT : cancer et troubles de la reproduction – www.P65Warnings.ca.gov.</p> <p style="text-align: right;">Fsafe26 2018-01</p>			

2. Tools Needed




3. Dimensions And Weights

A. ProHeat Air-Cooled Heating Cables

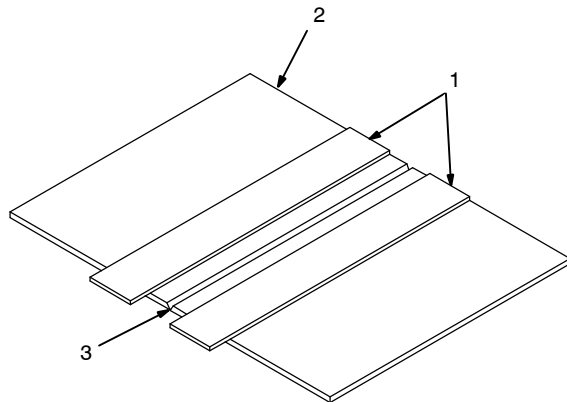
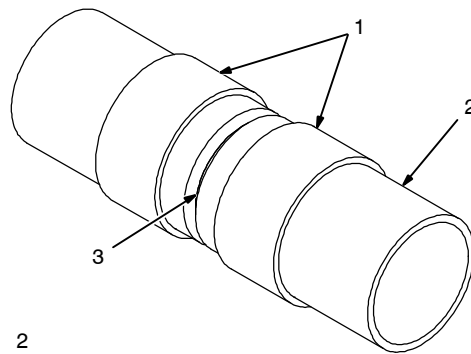
Part No.	Dimensions	Weight
301452030	Length: 30 ft (9.1 m)	15 lb (7 kg)
301452050	Length: 50 ft (15.2 m)	24 lb (11 kg)
301452080	Length: 80 ft (24.4 m)	37 lb (17 kg)


B. ProHeat Air-Cooled Preheat Cable Covers


Part No.	Dimensions	Weight
204611	Length: 30 ft (9.1 m)	5 lbs
204614	Length: 50 ft (15.2 m)	9 lbs
204620	Length: 80 ft (24.4 m)	15 lbs

 The preheat cover is for mechanical protection only (abrasion and weld spatter). It is not for thermal protection.

4. Installing Preheat Insulation



 Install preheat insulation before installing air-cooled cable if temperature will be above 302 °F / 150 °C.

 If using welded thermocouples, attach them prior to installing insulation.

- 1 Preheat Insulation
- 2 Workpiece
- 3 Weld Joint

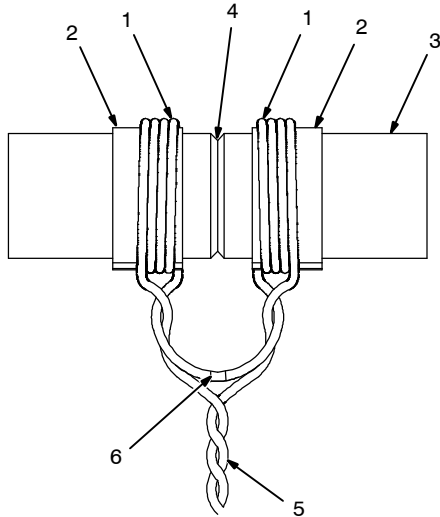
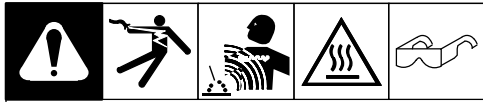
Wrap preheat insulation around the pipe or on the workpiece where you plan to place the heating tool.

Part Temp		1/2" Preheat Insulation Required
°F	°C	ProHeat Air-Cooled Cable
122	50	-
212	100	-
302	150	1 Layer
392	200	1 Layer
482	250	2 Layers
572	300	2 Layers
600	315	2 Layers

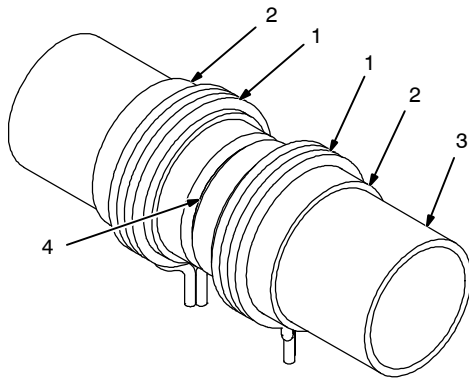
Ref. 282308-A

5. Installing Proheat Air-Cooled Cables

C. Pipe Installation



☞ This is an example of a typical Air-Cooled coil on small diameter pipe using a single heating cable.



☞ Do not use metal wire or straps to secure cables in place. Instead, use plastic cable ties, tape or non conductive strap to secure cables.

⚠ Do not hang cables on steel brackets, hangers, or other mechanisms.

⚠ Turn off heater output.

⚠ Use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.

☞ Keep heating tool leads between air-cooled cables and workpiece together to increase heating performance and minimize unintentional heating of nearby objects.

☞ Read welding power source before installing cables.

- 1 Air-Cooled Cable(s)
- 2 Preheat Insulation
- 3 Workpiece
- 4 Weld Joint
- 5 Twisted Leads
- 6 Tape marking center of cable

☞ Prior to placing heating cable on part, a preheat cover is recommended to protect the air-cooled cable from abrasion and weld spatter.

- Wrap preheat cover around the air-cooled cable, note this does not act as a layer of insulation but helps protect from job site and workpiece abrasion.

- Put a piece of fiberglass tape or clearly identify the middle of the cable on the wrap to make the cable wrap process more efficient.

- If insulation is being used, apply the heating tool over the insulation.

- To decrease heating time, place the heating tool closer to the weld joint.

☞ Move heating tool away from joint when welding to protect from weld heat.

- Insulation can be secured in place with a non conductive strap or tape such as fiberglass reinforced tape. Do not use metal straps or wire.

Installing Heating Cables:

A. Locate the center of the heating cable.

B. Route the center of the cable over the top of the pipe and pull it through underneath to start the first turn. Route the cable over the top of the pipe again working toward the joint to start the second turn. If there is enough cable, a third wrap can be added by routing the center of the cable over the top of the pipe again.

C. Once the desired number of turns are applied, route the outer loose ends of the cable through the center loop a few times each (depending on the loop length) to bring the leads together.

D. Twist the remainder of the cables together from the coil to the TC extension cable to cancel the magnetic field between them and minimize incidental heating of nearby metal objects.

☞ A typical induction coil will have 2-4 turns on each side of the joint. Pipe diameters larger than 24" will usually require 2 separate heaters depending on target temperature and time to temp requirements.

If using Thermocouple (TC) Probes, position them under the insulation (under the heating cable) in direct contact with the workpiece.

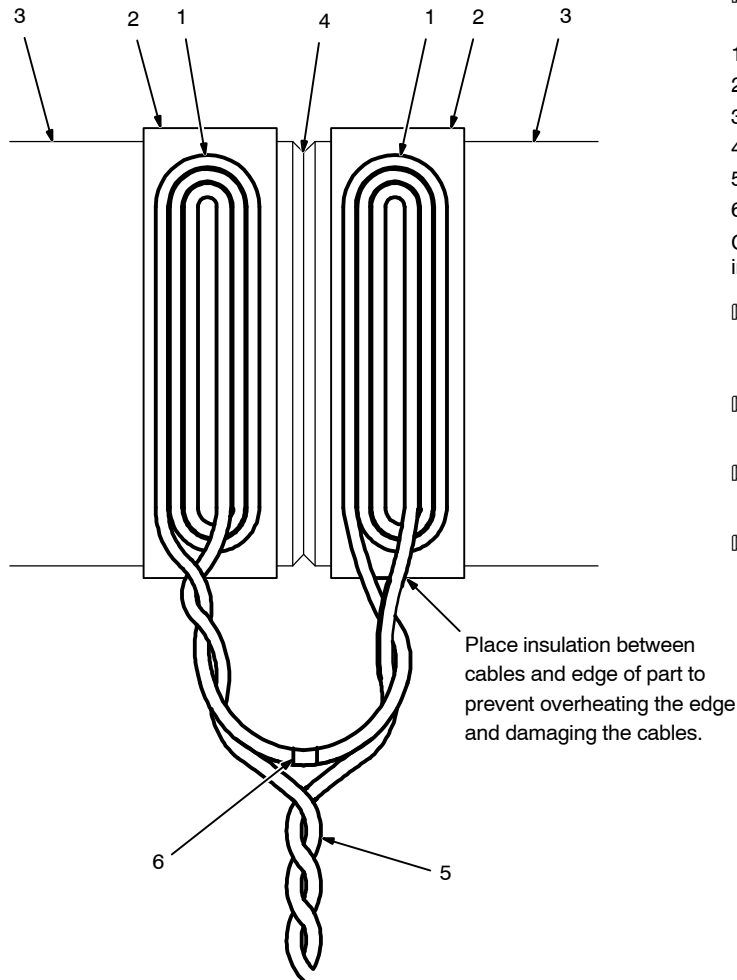
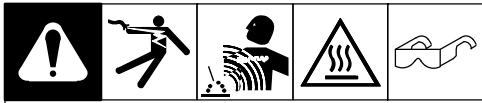
D. Cable Length Installation Chart

☞ Cable lengths determined with:

- Insulation - 1 in.(2.5cm)
- Cable Loop Distance - 24 in.(61cm)
- Cable Off Pipe - 24 in.(61cm)

NPS Pipe Size in.(cm)	Cable Length Required For 2 Turns Per Side ft(m)	Cable Length Required For 3 Turns Per Side ft(m)	Cable Length Required For 4 Turns Per Side ft(m)
0.5 (1.3)	30 (9)	30 (9)	30 (9)
0.75 (1.9)	30 (9)	30 (9)	30 (9)
1 (2.5)	30 (9)	30 (9)	30 (9)
1.25 (3.2)	30 (9)	30 (9)	30 (9)
1.5 (12.7)	30 (9)	30 (9)	30 (9)
2 (5.1)	30 (9)	30 (9)	30 (9)
2.5 (6.4)	30 (9)	30 (9)	30 (9)
3 (7.6)	30 (9)	30 (9)	30 (9)
3.5 (8.9)	30 (9)	30 (9)	30 (9)
4 (10.2)	30 (9)	30 (9)	30 (9)
5 (12.7)	30 (9)	30 (9)	30 (9)
6 (15.2)	30 (9)	30 (9)	30 (9)
8 (20.3)	30 (9)	30 (9)	50 (15)
10 (25.4)	30 (9)	30 (9)	50 (15)
12 (30.5)	30 (9)	50 (15)	50 (15)
14 (35.6)	30 (9)	50 (15)	50 (15)
16 (40.6)	30 (9)	50 (15)	50 (15)
18 (45.7)	30 (9)	50 (15)	50 (15)
20 (50.8)	50 (15)	50 (15)	80 (24)
22 (55.9)	50 (15)	50 (15)	80 (24)
24 (61)	50 (15)	50 (15)	80 (24)
26 (66)	50 (15)	80 (24)	80 (24)
28 (71.1)	50 (15)	80 (24)	80 (24)
30 (76.2)	50 (15)	80 (24)	80 (24)
32 (81.3)	50 (15)	80 (24)	80 (24)
34 (86.4)	50 (15)	80 (24)	2 - 50 (15) Cables
36 (91.4)	50 (15)	80 (24)	2 - 50 (15) Cables

E. Flat Plate Installation



- ⚠ Turn off heater output.**
- ⚠ Use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.**

☞ Read welding power source and ProHeat owner's manual before installing cables.

- 1 Air-Cooled Cables
- 2 Preheat Insulation
- 3 Metal Plate
- 4 Weld Joint
- 5 Twisted Leads
- 6 Tape marking center of cable

☞ Coil the air-cooled cables on top of the preheat insulation already installed.

☞ Position the heating cables closer to the weld joint to decrease the time spent to reach the desired temperature.

☞ Twist leads exiting part together to cancel magnetic fields.

☞ Use a welding blanket to protect from abrasion and spatter.

☞ Coils may be moved away from joint while maintaining target temperature, but the control thermocouples must be moved with them.

☞ Do not use metal wire or straps to secure cables in place.

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F. Series Adapter Installation



- ⚠ Turn off power source and disconnect input power.
- ⚠ Use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.

☞ Read power source Owner's Manual before installing series adapter.

☞ Used to connect two heating cables on large parts.

- 1 Air-Cooled Cables
- 2 Preheat Insulation
- 3 Pipe
- 4 Air-Cooled Cable Connectors
- 5 Series Adapter Connectors
- 6 Orange Jacketed Series Adapter

On large parts, heating cables can be connected in series using a series adapter.

Route the ends of the heating cables away from the heat zone.

In order to cancel any magnetic fields between the cables, keep the cables close together.

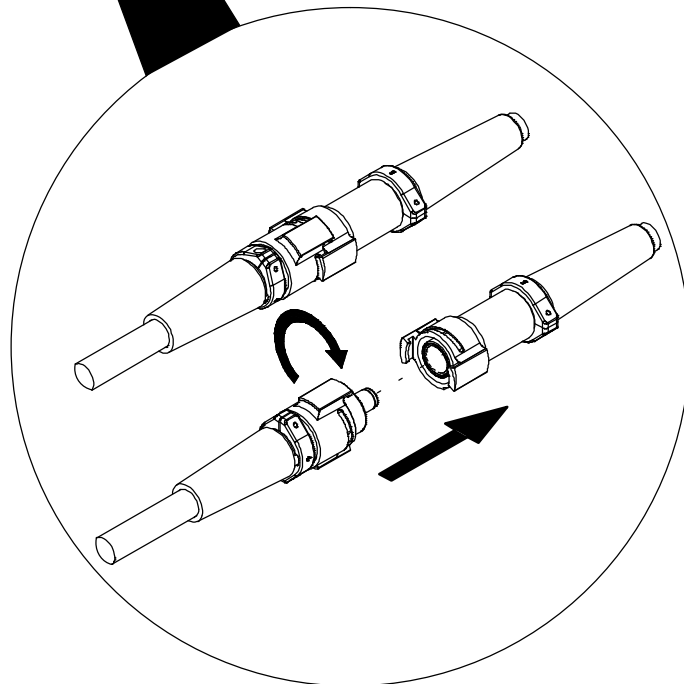
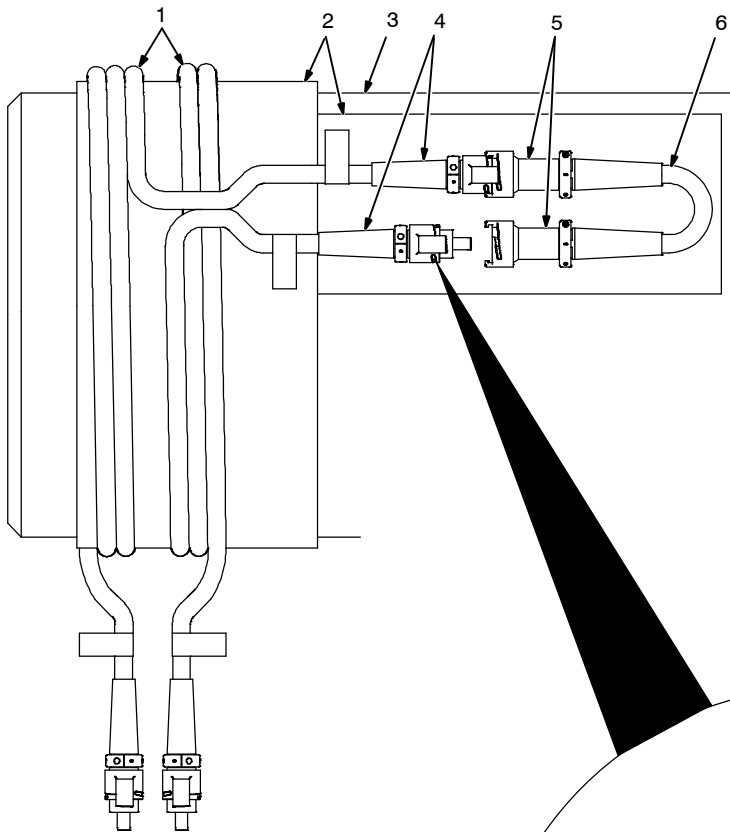
Connect the cables together using the series adapter.

Secure cables in place with high temp rope.

☞ Use insulation to protect the cable and connectors from the heat of the part.

☞ Use orange jacketed series adapter to withstand heat generated in the system.

☞ Do not use metal wire or straps to secure cables in place.



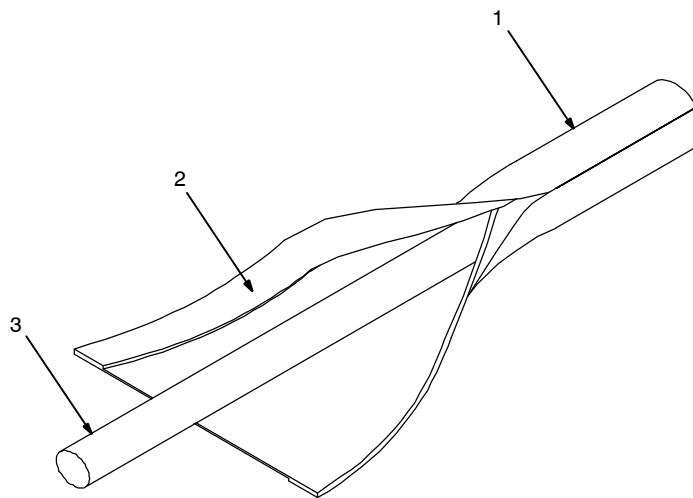
G. Installing Preheat Cover



☞ A preheat cover can be added to protect the heating cables from cuts, abrasion and weld spatter.

☞ The preheat cover is for mechanical protection only. It does not provide thermal protection from the part being heated. The hook and loop fastener similar to Velcro has a temperature limit of 225 °F (107 °C) continuous. Ensure adequate insulation is used on the part being heated to prevent damaging the hook and loop fastener.

- 1 Preheat Cover
- 2 Hook and Loop Fastener
- 3 ProHeat Air-Cooled Cable



Ref. 282308-A

6. Routine Maintenance



⚠ Disconnect power before maintaining.

☞ Maintain more often during severe conditions.

⌚	✓ = Check	Δ = Repair	☆ = Replace
Daily	<p>✓☆ Labels</p>		<p>☞ If braid or red jacket are visible, stop using cable and have it repaired.</p> <p>☞ See cable repair options at: www.MillerWelds.com/InductionCableRepair</p> <p>✓Δ ☆Cables And Cords</p>

7. Parts List

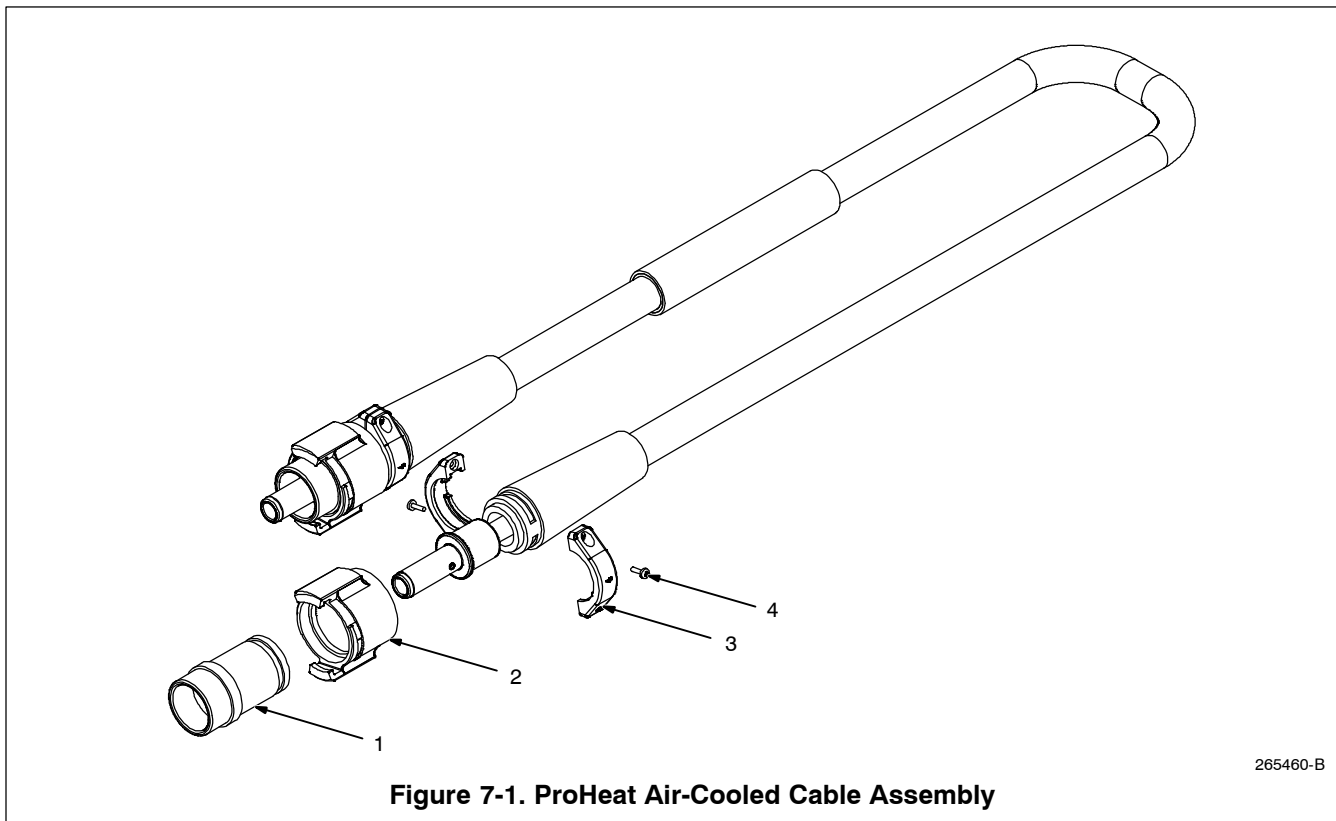


Figure 7-1. ProHeat Air-Cooled Cable Assembly

265460-B

Item No.	Part No.	Description	Quantity
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Figure 7-1. ProHeat Air-Cooled Cable Assembly

...	1	254889	.. Shell, Connector Cable Male	2
...	2	254890	.. Collar, Coupling	2
...	3	224258	.. Clamp, Strain Relief Pin	2
...	4	228296	.. Screw, KA35 x 10 Pan Hd-Phl Sst Pln Pt Thread Forming	4

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

8. Accessories List

Part No.	Description
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Equipment And Options

.....	195437	.. Series Cable Adapter , 18 in. (46 cm) for connecting two cables in series	...
.....	194968	.. Thermocouple Extension , Cable, ext, 6 pair type K, 50 ft (15.2 m)
.....	200201	.. Thermocouple Extension , Cable, ext, 1 TC type K, 25 ft (7.6 m) armored	..
.....	204669	.. Preheat Insulation , 1/2 x 6 x 120 in. (1.3 x 15 x 305 cm)
.....	195376	.. Preheat Insulation , 1/2 x 6 x 240 in. (1.3 x 15 x 610 cm)
.....	211474	.. Preheat Insulation , 1/2 x 12 x 120 in. (1.3 x 31 x 305 cm)
.....	301334	.. Preheat Insulation w/Cable Harness , 1/2 x 16 x 120 in. (1.3 x 15 x 305 cm)	..
.....	204611	.. Preheat Cable Cover , 30 ft (9.1 m)
.....	204614	.. Preheat Cable Cover , 50 ft (15.2 m)
.....	204620	.. Preheat Cable Cover , 80 ft (24.4 m)
.....	204611	.. High Temp. Rope , 1 in. (2.5 cm) wide x 50 ft (15.2 m) roll