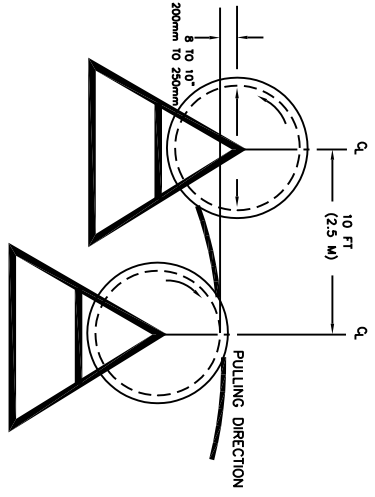
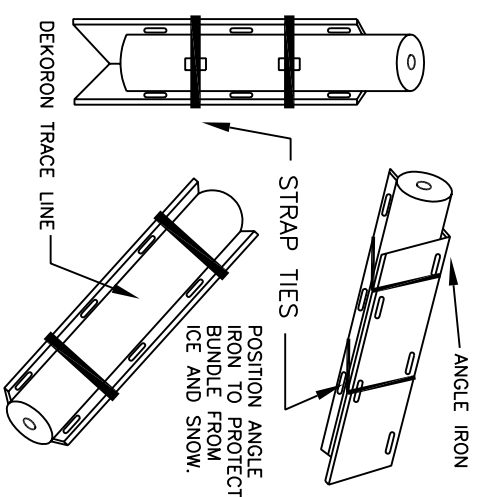


STRAIGHTENING BUNDLES
 STRAIGHTENING BUNDLES WITH HEAVY WALLED OR MULTIPLE STAINLESS STEEL TUBES WILL IMPROVE EASE OF INSTALLATION.



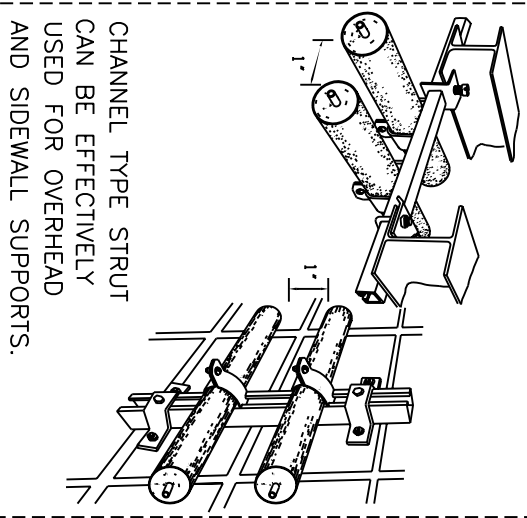
USING ANGLE IRON FOR SUPPORT



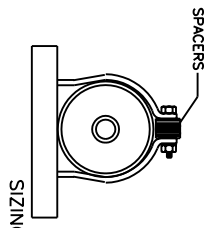
ANGLE IRON AND CHANNEL IRON CAN BE USED FOR SUPPORT. USE 2" (50mm) ANGLE IRON FOR BUNDLES WITH 1.4" (36mm) OD OR LESS. USE 3" (75mm) ANGLE IRON FOR LARGER BUNDLES. CHANNEL IRON SHOULD BE SIZED SO THAT MINIMUM SPACING BETWEEN MULTIPLE BUNDLES IS MAINTAINED. STRAP TIES SHOULD NOT COMPRESS THE BUNDLE JACKET.

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ROUTING AND SUPPORTING

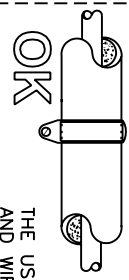


CHANNEL TYPE STRUT CAN BE EFFECTIVELY USED FOR OVERHEAD AND SIDEWALL SUPPORTS.



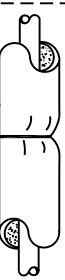
SPACERS

SIZING STRUT CLAMPS:
 FOR HORIZONTAL RUN - USE CLAMP ONE STANDARD SIZE LARGER THAN BUNDLE.
 VERTICAL RUN - USE CLAMP ONE STANDARD SIZE SMALLER THAN BUNDLE.
 USE SPACERS IF CLAMP IS TOO TIGHT.



OK

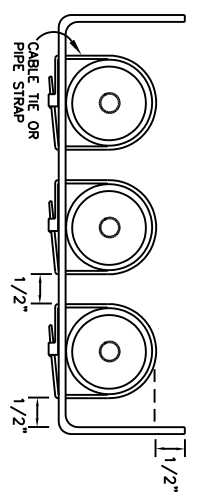
THE USE OF CABLE TIES AND WIRE FOR CLAMPING BUNDLES IS NOT RECOMMENDED. IMPROPER TIGHTENING CAN COMPRESS THE BUNDLE. THIS REDUCES EFFECTIVENESS AND CAN CAUSE OVERHEATING.



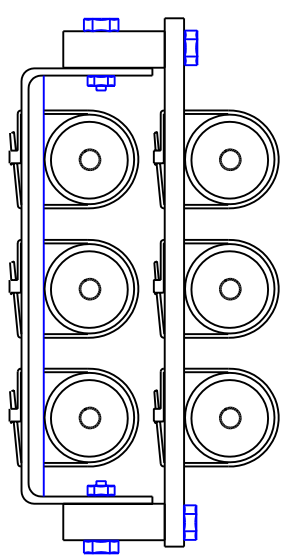
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ANY CHANGE TO THIS DOCUMENT MUST BE APPROVED BY FM APPROVALS PRIOR TO THE CHANGE		ECO	BY	DATE
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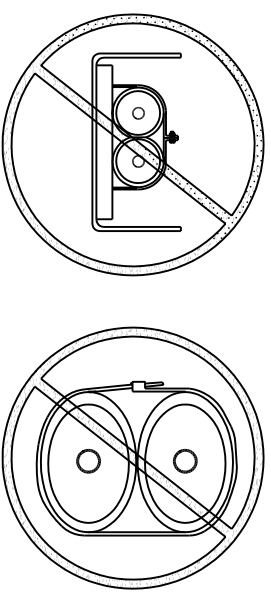
INSTALLING MULTIPLE BUNDLES IN CABLE TRAY



INCREASED SPACING IS RECOMMENDED ON BUNDLES OPERATING ABOVE 400°F (204°C).



EXTENSION TO CABLE TRAY FOR ADDED BUNDLES

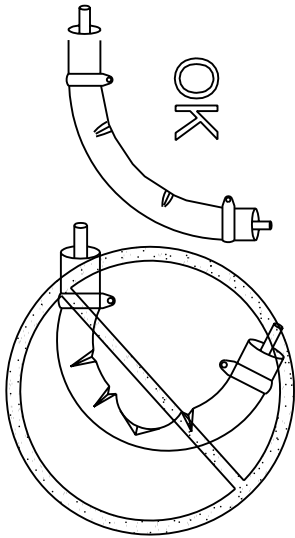


NOTE: IF USING CABLE TIES TO SECURE BUNDLE TO CABLE TRAY, DO NOT OVERTIGHTEN. BUNDLE JACKET SHOULD NOT BE COMPRESSED MORE THAN 1/8" (3mm).

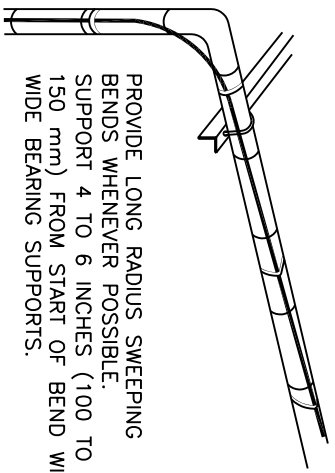
DESCRIPTION: INSTALLATION INSTRUCTIONS PREINSULATED TUBING BUNDLES
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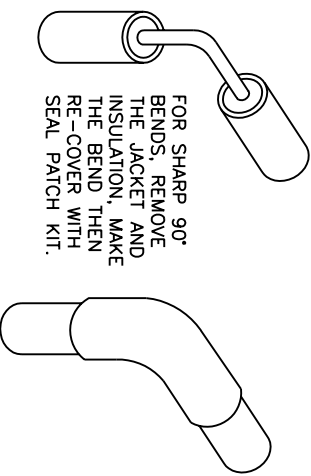
BENDING BUNDLES



SLIGHT WRINKLING OF THE OUTER JACKET IS NORMAL WHEN THE PRODUCT IS BENT. EXCESSIVE WRINKLING OR FOLDING OF THE JACKET INDICATES THAT THE MINIMUM BEND RADIUS HAS BEEN EXCEEDED. USE A LARGER BEND RADIUS OR SEAL PATCH KIT TO PREVENT EXCESSIVE HEAT LOSS.



PROVIDE LONG RADIUS SWEEPING BENDS WHENEVER POSSIBLE. SUPPORT 4 TO 6 INCHES (100 TO 150 mm) FROM START OF BEND WITH WIDE BEARING SUPPORTS.

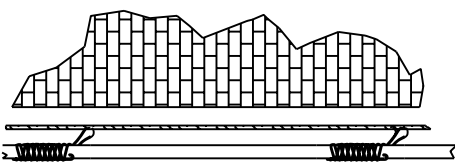


FOR SHARP 90° BENDS, REMOVE THE JACKET AND INSULATION, MAKE THE BEND THEN RE-COVER WITH SEAL PATCH KIT.

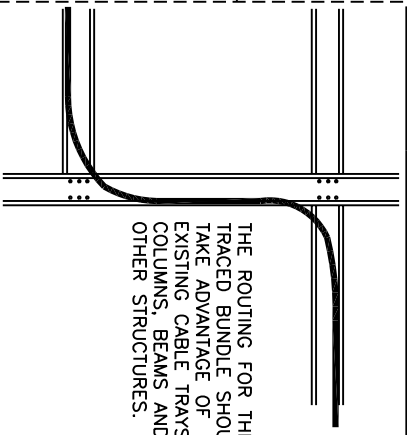
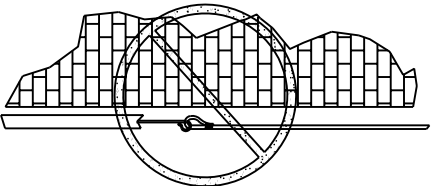
INSTALLING BUNDLES ON VERTICAL RUNS



STANDARD MESH CABLE PULLING GRIPS SHOULD BE INSTALLED ALONG BUNDLE AT 35FT (10M) INTERVALS TO SUPPORT BUNDLE DURING A VERTICAL PULL. THESE GRIPS ARE USED ONLY DURING THE INSTALLATION. BUNDLE MUST BE SECURED WITH STRUT CLAMPS OR OTHER APPROVED METHOD.

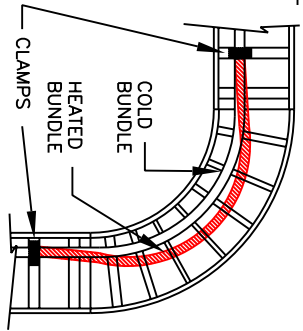


DO NOT ATTACH DRAW CABLE TO TUBES.

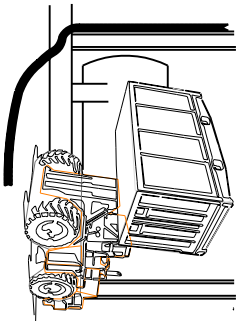


THE ROUTING FOR THE TRACED BUNDLE SHOULD TAKE ADVANTAGE OF EXISTING CABLE TRAYS, COLUMNS, BEAMS AND OTHER STRUCTURES.

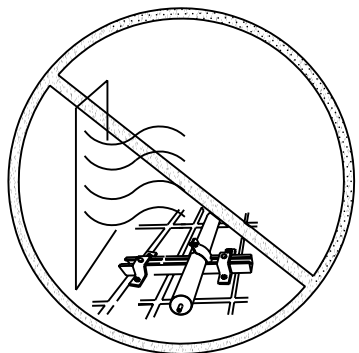
EXPANSION IN BENDS



ALLOW EXTRA SPACE IN BENDS FOR BUNDLE MOVEMENT. BUNDLES WILL EXPAND OUTWARD WHEN HEATED. DO NOT CLAMP THE BUNDLE IN THE CENTER OF THE BEND.



DO NOT ROUTE BUNDLE IN TRAFFIC AREAS WHERE IT CAN BE DAMAGED BY EQUIPMENT OR PEDESTRIANS.



DO NOT ROUTE BUNDLES OVER FURNACE VENTS OR OTHER HIGH HEAT SOURCES.

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DESCRIPTION: INSTALLATION INSTRUCTIONS
PREINSULATED TUBING BUNDLES

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GENERAL BUNDLE INFORMATION

INSTALLATION TEMPERATURE

BUNDLES MUST STABILIZE AT OR ABOVE THE TEMPERATURE LISTED BELOW BEFORE THEY ARE INSTALLED. ATTEMPTING DE-REELING AND INSTALLATION OF BUNDLES BELOW THIS TEMPERATURE MAY DAMAGE THE OUTER JACKET

JACKET MATERIAL	MIN INSTALL TEMP
FR-PVC	+15°F (-10°C)
LOW TEMP FR-PVC	-25°F (-32°C)
FR-POLYETHYLENE	-58°F (-50°C)
FR-THERMOPLASTIC ELASTOMER	-50°F (-45°C)
FR-THERMOPLASTIC URETHANE	-45°F (-43°C)

MINIMUM BENDING RADIUS

THE MINIMUM BENDING RADIUS IS DEPENDENT UPON THE OUTER JACKET MATERIAL. THE FOLLOWING TABLE SHOWS THE "MBR" FOR STANDARD BUNDLES. CONTACT UNITHERM FOR MBR ON HIGH-TEMP OR SPECIAL BUNDLES.

JACKET MATERIAL	MIN BENDING RADIUS
FR-PVC	6 X OD
LOW TEMP FR-PVC	6 X OD
FR-POLYETHYLENE	13 X OD
FR-THERMOPLASTIC ELASTOMER	8 X OD
FR-THERMOPLASTIC URETHANE	5 X OD

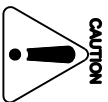
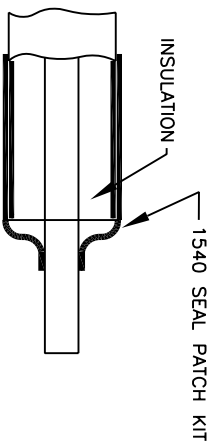
BUNDLE SUPPORTS

SUPPORT DISTANCE REDUCED IF BUNDLE CONTAINS MULTIPLE POWER CABLES.

	W/O CABLES	W/MULTIPLE POWER CABLES
MAXIMUM DISTANCE BETWEEN HORIZONTAL SUPPORTS	6 FT (1.8M)	4 FT (1.2M)
MAXIMUM DISTANCE BETWEEN VERTICAL SUPPORTS	15 FT (4.6M)	10 FT (3 M)

SEAL PATCH KIT

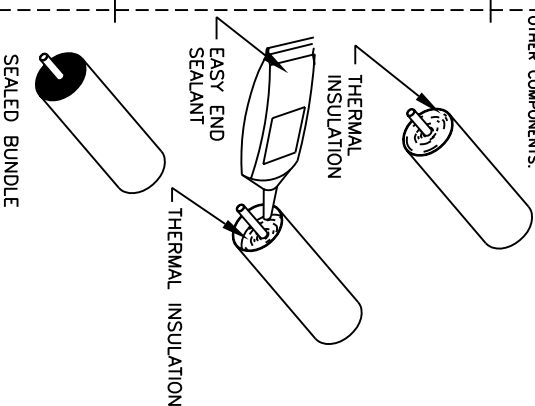
THE SEAL PATCH KIT CAN BE USED TO SEAL SPLICES, BUNDLE TERMINATIONS, AND TAPS.



INSTALLATION SHOULD BE PERFORMED ONLY BY SKILLED PERSONNEL OR BY PERSONNEL TRAINED IN THE PROPER PROCEDURES.

SEALING END OF BUNDLES

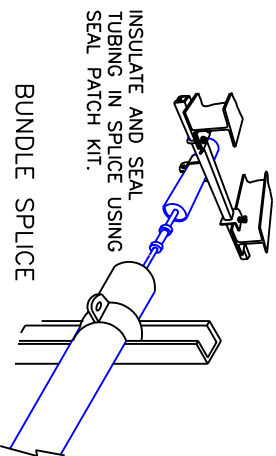
BUNDLES MUST BE SEALED AT EACH END TO PREVENT MOISTURE AND CORROSIVE ATMOSPHERES FROM DAMAGING THE TUBING, HEATER AND OTHER COMPONENTS.



DEKORON/UNITHERM EASY END SEALANT CAN BE USED TO QUICKLY SEAL MOST HEAT TRACED BUNDLES. HEAT SHRINK BOOT SEALS AND SEAL PATCH KITS ARE ALSO AVAILABLE. CONTACT UNITHERM FOR INFORMATION.



- DO PROVIDE LONG, SWEEPING BENDS WHERE POSSIBLE.
 - DO SEAL ALL EXPOSED INSULATION WITH RIV END SEALANT.
 - DO SEAL FITTINGS AND SPLICES WITH A SEAL PATCH
 - DO STRIP JACKET TO MAKE TIGHT 90 BENDS—USE A UNION ELBOW WHERE TIGHT BENDS ARE NECESSARY AND SEAL INSULATION.
 - DO USE A MANDREL TO ASSURE CONSTANT RADIUS BENDS WHERE POSSIBLE.
 - DO SLOPE FOR CONDENSATE, 1 INCH PER FOOT RUN.
 - DO CHECK THAT ALL ELECTRICAL CONNECTIONS ARE TIGHT AND SEALED.
 - DO CHECK THAT ALL CONNECTION BOX COVERS HAVE GASKETS AND ARE FASTENED TIGHTLY.
 - DO SECURE END KITS WHEN USING TEFLON TUBE TRACE PRODUCTS TO REDUCE STRAIN ON THE FITTINGS.
- ### Don'ts
- DO NOT EXCEED MINIMUM BEND RADIUS.
 - DO NOT EXCEED RECOMMENDED SUPPORT CENTERS.
 - DO NOT OVERTIGHTEN SUPPORT CLAMPS—JACKET SHOULD NOT BE PINCHED.
 - DO NOT THE MULTIPLE BUNDLES TOGETHER TO FORM ONE BUNDLE—PROPER SPACING (1/2" MINIMUM) IS REQUIRED FOR HEAT DISSIPATION.
 - DO NOT SEVERELY CRIMP JACKET AS THIS MAY AFFECT INSULATION PROPERTIES. SOME SLIGHT CRIMPING CAN BE EXPECTED WITH HAND-FORMED BENDS.
 - DO NOT REMOVE EXCESSIVE AMOUNTS OF JACKET AND INSULATION AT FITTINGS.
 - DO NOT ALLOW THE HEATING ELEMENT TO BE IN CONTACT WITH THE SENSOR
 - DO NOT ROUTE ELECTRIC TRACE BUNDLES WHERE THE AMBIENT WILL BE ABOVE 110 ° F



INSULATE AND SEAL TUBING IN SPLICE USING SEAL PATCH KIT.

BUNDLE SPLICE

DESCRIPTION: PREINSULATED TUBING BUNDLES

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