O'BRIEN / AMETEK®

Complete Freeze Protection for Process Instrumentation

为过程仪表提供全面的防冻保护

Totaal pakket voor de vorstbeveiliging van uw proces instrumentatie

Protection-basse température complète pour l'instrumentation

Kompletter Frostschutz fur Prozess-Instrumentierung

Completa protezione antigelo per strumentazione di processo

Komplett frostsikring av prosess instrumenter

Completa Proteccion Contra Congelacion Para Instrumentacion de Proceso

TRACEPAK®

Design | Enclosures | Supports | **Tubing Bundle** | Installation

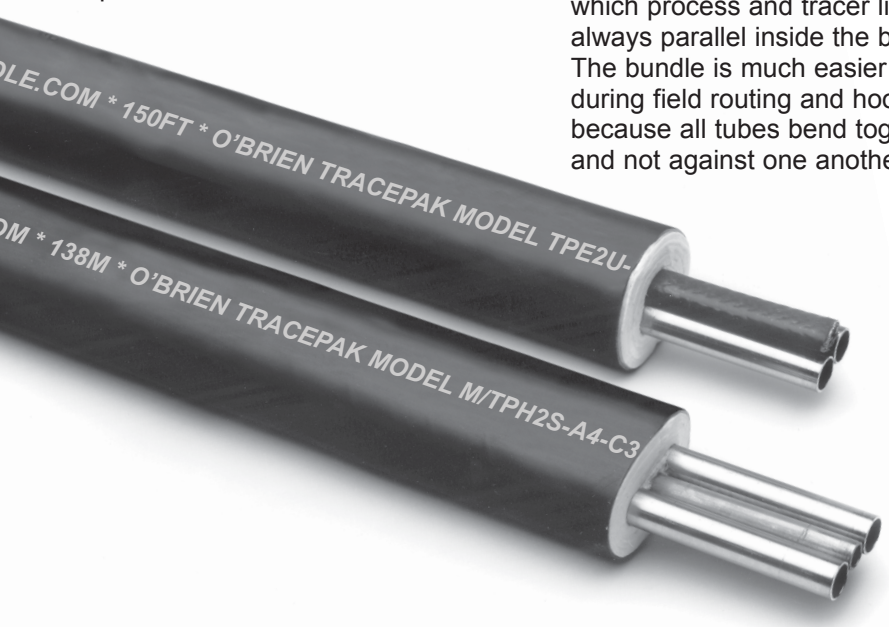
An engineered, preinsulated tubing bundle system

The content of this brochure covers our standardized Tracepak tubing bundle typically used for Instrument impulse lines or mechanical and utility process lines. For more information on sample analyzer or continuous emission monitoring (CEMS) applications please visit our STACKPAK brochure.

TRACEPAK solves problems for analytical, instrumentation and mechanical plant utility applications:

- ▼ Freezing,
- ▼ Dew point Component drop-out,
- ▼ Viscosity,
- ▼ Personnel protection

Freezing, dew point, component drop-out and viscosity control are major considerations in instrument impulse connections, small diameter process lines and analyzer sample transport. A properly designed and selected pretraced tubing bundle offers an effective solution to these problems.



The economical choice to field fabrication

Maintenance free TRACEPAK not only saves money and time during the installation process, but it ensures consistent, repeatable performance. Field fabrication requires a pipe fitter to lay out, measure, cut, dress, bend and install the tubing. Next the tracer (steam or electric) has to be installed and insulation put on the tubing. Finally, a weatherproof covering needs to be applied over the insulation. Clearly the economics of the TRACEPAK system versus field fabrication are significant.

Provides predictable and repeatable performance

O'Brien, long recognized as the leader in providing reliable instrumentation protection, has simplified installation while offering predictable operation. TRACEPAK tube bundles are prefabricated, pre-engineered and preinsulated assemblies.

Installation is simplified by the unique parallel configuration, in which process and tracer lines are always parallel inside the bundle. The bundle is much easier to bend during field routing and hookup because all tubes bend together and not against one another.

Connections are easy because tubing stays round and is not work hardened

TRACEPAK's configuration allows the tubing to stay round and malleable when used in conjunction with compression and flare fittings. The installation of process and instrument connections requires only a simple, one-plane offset bend to engage tubing and fittings.

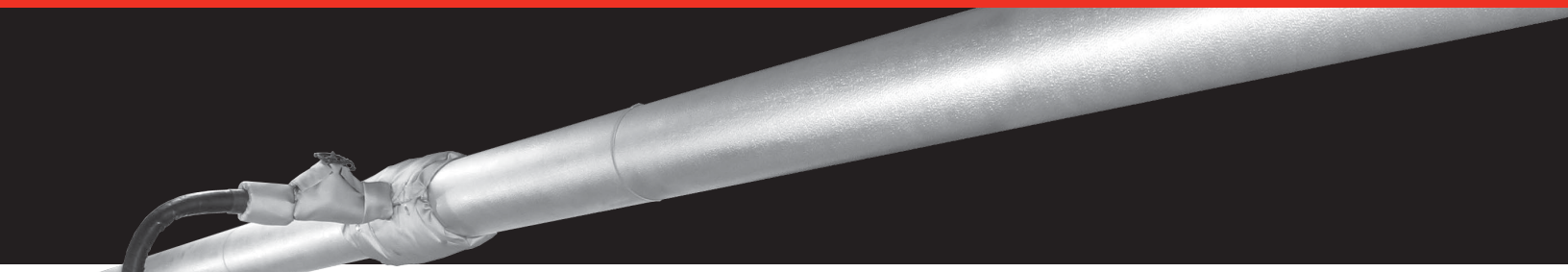
Can be installed at temperatures as low as -40°

O'Brien Corporation utilizes the highest quality materials. Our TPU jacket contains no halogens, eliminating the possibility of chlorides from the jacket causing stress corrosion in stainless steel tubing. This jacket has excellent abrasion and chemical resistance along with a wide, usable temperature range. TRACEPAK can be installed in temperatures as low as -40°.

Common types of pretraced lines:

- ▼ Electric traced lines, TPE, for freeze protection and maintenance of temperature.
- ▼ Steam traced lines, TPL & TPH, for freeze protection and temperature maintenance.
- ▼ Single preinsulated line, S-LINE, primarily for steam supply and condensate return.

Specifications subject to change without notice.



Systems Approach

Protecting instrumentation and tubing from freezing or maintaining process fluids at elevated temperatures involves many components, designs and engineering skills. Instead of specifying and purchasing individual components, have O'Brien provide an integrated solution with one source responsibility.

DESIGN and SUPPORT for impulse lines and instrument freeze protection combined with field support services sets the O'Brien solution apart from all others.

TRACEPAK® engineered, preinsulated tubing bundle for instrument impulse, sample transport, and small diameter process lines.

VIPAK® engineered enclosure system designed for process instrumentation. TRAKMOUNT® and factory installation of instrumentation makes field work easy.

The Typical Way

The O'Brien Solution

Typical applications for the TRACEPAK system:

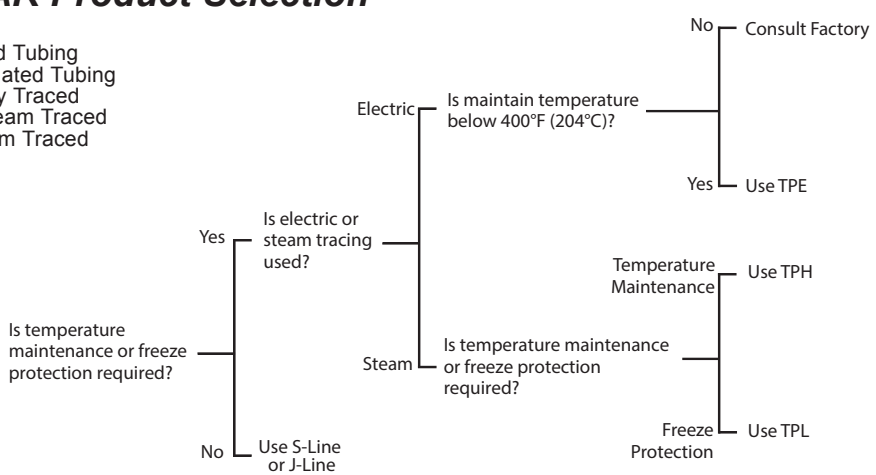
INSTRUMENT IMPULSE LINES
flow transmitters
pressure transmitters
level transmitters
pressure switches
controllers

ANALYZER SAMPLE LINES
STACKPAK is a special subset of TRACEPAK for process analyzers chromatographs and emissions monitoring. See STACKPAK brochure for info

MECHANICAL AND PLANT UTILITY PROCESS LINES
steam supply
condensate return
water purge
chemical feed
air lines

TRACEPAK Product Selection

J-Line = Jacketed Tubing
S-Line = Preinsulated Tubing
TPE = Electrically Traced
TPH = Heavy Steam Traced
TPL = Light Steam Traced



TUBE LIST

Code	OD	Wall	Material
A1	1/8"	0.035"	316/316L SS AVG WALL WELDED
A2	1/4"	0.035"	316/316L SS AVG WALL WELDED
A3	3/8"	0.035"	316/316L SS AVG WALL WELDED
A4	1/2"	0.035"	316/316L SS AVG WALL WELDED
A6	3/4"	0.035"	316/316L SS AVG WALL WELDED
E2	1/4"	0.035"	316/316L SS AVG WALL WELDED
E3	3/8"	0.049"	316/316L SS AVG WALL WELDED
E4	1/2"	0.049"	316/316L SS AVG WALL WELDED
E6	3/4"	0.049"	316/316L SS AVG WALL WELDED
U4	1/2"	0.065"	316/316L SS AVG WALL WELDED
U6	3/4"	0.065"	316/316L SS AVG WALL WELDED
FA1	1/8"	0.020"	316/316L SS AVG WALL SEAMLESS
FL1	1/8"	0.028"	316/316L SS AVG WALL SEAMLESS
F1	1/8"	0.035"	316/316L SS AVG WALL SEAMLESS
F2	1/4"	0.035"	316/316L SS AVG WALL SEAMLESS
F25	5/16"	0.035"	316/316L SS AVG WALL SEAMLESS
F3	3/8"	0.035"	316/316L SS AVG WALL SEAMLESS
F4	1/2"	0.035"	316/316L SS AVG WALL SEAMLESS
B2	1/4"	0.049"	316/316L SS AVG WALL SEAMLESS
B3	3/8"	0.049"	316/316L SS AVG WALL SEAMLESS
B4	1/2"	0.049"	316/316L SS AVG WALL SEAMLESS
B6	3/4"	0.049"	316/316L SS AVG WALL SEAMLESS
K2	1/4"	0.065"	316/316L SS AVG WALL SEAMLESS
K3	3/8"	0.065"	316/316L SS AVG WALL SEAMLESS
K4	1/2"	0.065"	316/316L SS AVG WALL SEAMLESS
K6	3/4"	0.065"	316/316L SS AVG WALL SEAMLESS
K8	1"	0.065"	316/316L SS AVG WALL SEAMLESS
W2	1/4"	0.083"	316/316L SS AVG WALL SEAMLESS
W3	3/8"	0.083"	316/316L SS AVG WALL SEAMLESS
W4	1/2"	0.083"	316/316L SS AVG WALL SEAMLESS
W6	3/4"	0.083"	316/316L SS AVG WALL SEAMLESS
FW2	1/4"	0.035"	316/316L SS MIN WALL SEAMLESS
FW3	3/8"	0.035"	316/316L SS MIN WALL SEAMLESS
FW4	1/2"	0.035"	316/316L SS MIN WALL SEAMLESS
BW2	1/4"	0.049"	316/316L SS MIN WALL SEAMLESS
BW3	3/8"	0.049"	316/316L SS MIN WALL SEAMLESS
BW4	1/2"	0.049"	316/316L SS MIN WALL SEAMLESS
BW6	3/4"	0.049"	316/316L SS MIN WALL SEAMLESS
KW2	1/4"	0.065"	316/316L SS MIN WALL SEAMLESS
KW3	3/8"	0.065"	316/316L SS MIN WALL SEAMLESS
KW4	1/2"	0.065"	316/316L SS MIN WALL SEAMLESS
KA2	1/4"	0.065"	316H SS AVG WALL SEAMLESS
KA3	3/8"	0.065"	316H SS AVG WALL SEAMLESS
KA4	1/2"	0.065"	316H SS AVG WALL SEAMLESS
WA3	3/8"	0.083"	316H SS AVG WALL SEAMLESS
WA4	1/2"	0.083"	316H SS AVG WALL SEAMLESS
BH2	1/4"	0.049"	316H SS MIN WALL SEAMLESS
BH3	3/8"	0.049"	316H SS MIN WALL SEAMLESS
BH4	1/2"	0.049"	316H SS MIN WALL SEAMLESS
KH2	1/4"	0.065"	316H SS MIN WALL SEAMLESS
KH3	3/8"	0.065"	316H SS MIN WALL SEAMLESS
KH4	1/2"	0.065"	316H SS MIN WALL SEAMLESS
AE2	1/4"	0.035"	304L SS AVG WALL WELDED
AE3	3/8"	0.035"	304L SS AVG WALL WELDED
AE4	1/2"	0.035"	304L SS AVG WALL WELDED
UA4	1/2"	0.065"	304L SS AVG WALL WELDED
UA6	3/4"	0.065"	304L SS AVG WALL WELDED
UB4	1/2"	0.049"	304L SS AVG WALL WELDED
UB6	3/4"	0.049"	304L SS AVG WALL WELDED

Code	OD	Wall	Material
J2	1/4"	0.030"	B68/B75 COPPER SEAMLESS
C3	3/8"	0.032"	B68/B75 COPPER SEAMLESS
D3	3/8"	0.035"	B68/B75 COPPER SEAMLESS
D4	1/2"	0.035"	B68/B75 COPPER SEAMLESS
M3	3/8"	0.049"	B68/B75 COPPER SEAMLESS
M4	1/2"	0.049"	B68/B75 COPPER SEAMLESS
M6	3/4"	0.049"	B68/B75 COPPER SEAMLESS
G2S	1/4"	0.030"	PFA EXTRUDED BLACK SENSORTUBE
G3S	3/8"	0.030"	PFA EXTRUDED BLACK SENSORTUBE
H3S	3/8"	0.062"	PFA EXTRUDED BLACK SENSORTUBE
G1	1/8"	0.030"	PFA EXTRUDED
G2	1/4"	0.030"	PFA EXTRUDED
G3	3/8"	0.030"	PFA EXTRUDED
G4	1/2"	0.030"	PFA EXTRUDED
S2	1/4"	0.040"	PFA EXTRUDED
S3	3/8"	0.040"	PFA EXTRUDED
S4	1/2"	0.040"	PFA EXTRUDED
V2	1/4"	0.047"	PFA EXTRUDED
V3	3/8"	0.047"	PFA EXTRUDED
V4	1/2"	0.047"	PFA EXTRUDED
H2	1/4"	0.062"	PFA EXTRUDED
H3	3/8"	0.062"	PFA EXTRUDED
H4	1/2"	0.062"	PFA EXTRUDED
H5	5/8"	0.062"	PFA EXTRUDED
H6	3/4"	0.062"	PFA EXTRUDED
L2	1/4"	0.047"	FEP EXTRUDED
L3	3/8"	0.047"	FEP EXTRUDED
LA2	1/4"	0.040"	PTFE EXTRUDED
LB3	3/8"	0.062"	PTFE EXTRUDED
LB4	1/2"	0.062"	PTFE EXTRUDED
RH3	3/8"	0.0625"	HDPE EXTRUDED
RH4	1/2"	0.0625"	HDPE EXTRUDED
RS2	1/4"	0.040"	HDPE EXTRUDED
AA1	1/8"	0.020"	ALLOY 825 AVG WALL SEAMLESS
AB2	1/4"	0.035"	ALLOY 825 AVG WALL SEAMLESS
AB3	3/8"	0.035"	ALLOY 825 AVG WALL SEAMLESS
AB4	1/2"	0.035"	ALLOY 825 AVG WALL SEAMLESS
AC4	1/2"	0.065"	ALLOY 825 AVG WALL SEAMLESS
AY2	1/4"	0.049"	ALLOY 825 AVG WALL SEAMLESS
AY3	3/8"	0.049"	ALLOY 825 AVG WALL SEAMLESS
AY4	1/2"	0.049"	ALLOY 825 AVG WALL SEAMLESS
AY6	3/4"	0.049"	ALLOY 825 AVG WALL SEAMLESS
AP2	1/4"	0.035"	ALLOY 2507 AVG WALL SEAMLESS
AP3	3/8"	0.035"	ALLOY 2507 AVG WALL SEAMLESS
AP4	1/2"	0.035"	ALLOY 2507 AVG WALL SEAMLESS
AQ2	1/4"	0.049"	ALLOY 2507 AVG WALL SEAMLESS
AQ3	3/8"	0.049"	ALLOY 2507 AVG WALL SEAMLESS
AQ4	1/2"	0.049"	ALLOY 2507 AVG WALL SEAMLESS
AR2	1/4"	0.065"	ALLOY 2507 AVG WALL SEAMLESS
AR3	3/8"	0.065"	ALLOY 2507 AVG WALL SEAMLESS
AR4	1/2"	0.065"	ALLOY 2507 AVG WALL SEAMLESS
N2	1/4"	0.035"	ALLOY 400 AVG WALL SEAMLESS
N3	3/8"	0.035"	ALLOY 400 AVG WALL SEAMLESS
N4	1/2"	0.035"	ALLOY 400 AVG WALL SEAMLESS
P2	1/4"	0.049"	ALLOY 400 AVG WALL SEAMLESS
P4	1/2"	0.049"	ALLOY 400 AVG WALL SEAMLESS
FB2	1/4"	0.035"	ALLOY C276 AVG WALL SEAMLESS
FB3	3/8"	0.035"	ALLOY C276 AVG WALL SEAMLESS
FB4	1/2"	0.035"	ALLOY C276 AVG WALL SEAMLESS
BB4	1/2"	0.049"	ALLOY C276 AVG WALL SEAMLESS

Code	OD	Wall	Material
MA6	6mm	1mm	316/316L SS AVG WALL WELDED
MA8	8mm	1mm	316/316L SS AVG WALL WELDED
MA10	10mm	1mm	316/316L SS AVG WALL WELDED
MA12	12mm	1mm	316/316L SS AVG WALL WELDED
MF6	6mm	1mm	316/316L SS AVG WALL SEAMLESS
MF8	8mm	1mm	316/316L SS AVG WALL SEAMLESS
MF10	10mm	1mm	316/316L SS AVG WALL SEAMLESS
MF12	12mm	1mm	316/316L SS AVG WALL SEAMLESS
MB10	10mm	1.5mm	316/316L SS AVG WALL SEAMLESS
MB12	12mm	1.5mm	316/316L SS AVG WALL SEAMLESS
MR14	14mm	1.6mm	316/316L SS AVG WALL SEAMLESS
MH6	6mm	1mm	316L SS 6% MOLY SEAMLESS
ML10	10mm	2mm	316L SS 6% MOLY SEAMLESS
ML12	12mm	2mm	316L SS 6% MOLY SEAMLESS
MD6	6mm	1mm	B68/B75 COPPER SEAMLESS
MD8	8mm	1mm	B68/B75 COPPER SEAMLESS
MD10	10mm	1mm	B68/B75 COPPER SEAMLESS
MD12	12mm	1mm	B68/B75 COPPER SEAMLESS
MG10	10mm	1mm	PFA EXTRUDED
MG12	12mm	1mm	PFA EXTRUDED
MG6	6mm	1mm	PFA EXTRUDED
MG8	8mm	1mm	PFA EXTRUDED
MP6	12mm	1mm	ALLOY 825 AVG WALL SEAMLESS
MP10	10mm	1mm	ALLOY 825 AVG WALL SEAMLESS
MP12	12mm	1mm	ALLOY 825 AVG WALL SEAMLESS
MQ12	12mm	1.5mm	ALLOY 825 AVG WALL SEAMLESS
MC6	6mm	1mm	ALLOY 2507 AVG WALL SEAMLESS
MC10	10mm	1mm	ALLOY 2507 AVG WALL SEAMLESS
MC12	12mm	1mm	ALLOY 2507 AVG WALL SEAMLESS
ME6	6mm	1.5mm	ALLOY 2507 AVG WALL SEAMLESS
ME10	10mm	1.5mm	ALLOY 2507 AVG WALL SEAMLESS
ME12	12mm	1.5mm	ALLOY 2507 AVG WALL SEAMLESS
MT12	12mm	1mm	316Ti SS AVG WALL WELDED
MV6	6mm	1mm	317L SS AVG WALL SEAMLESS

***** TrueTube *****

Code	OD	Wall	Material
TE1	1/8"	0.020"	316/316L EP 20µin Ra max ID
TE2	1/4"	0.035"	316/316L EP 20µin Ra max ID
TE3	3/8"	0.035"	316/316L EP 20µin Ra max ID
TE4	1/2"	0.049"	316/316L EP 20µin Ra max ID
MTE6	6mm	1mm	316/316L EP 20µin Ra max ID

JACKET INFO

Jacket Material

SV47 is a proprietary thermoplastic formulation that exceeds the requirements of 105C PVC and outperforms other PVC jacket materials in UV resistance as well as providing low temperature flexibility.

TPU is a thermoplastic polyurethane jacket that offers excellent abrasion resistance and extreme cold temperature workability. TPU also contains no chlorides so it should be selected for applications where chloride stress cracking is a problem.

	Standard 105C PVC	O'Brien SV47	TPU
Abrasion Resistance	G	G	E
Tensile Strength PSI	18-1900	2200	6000
Elongation %	250	350	700
Hardness, Shore A	85-90	80	80
Minimum Service Temperature	None Stated	-30°F/-35°C*	-67°F/-58°C
Minimum Installation Temperature	15°F/-9°C	-10°F/-23°C*	-40°F/-40°C
UL94 Flame	V2	V2	V0 to V2
Halogenated (Chlorides)	YES	YES	NO
Maximum Temperature	220°F/105°C	220°F/105°C	250°F/120°C
Water Absorption %	0.1%	0.1%	1.2-1.4%
Aromatic Hydrocarbons	F	F	G
Weathering	G	G	E
UV Resistance	F	G	E

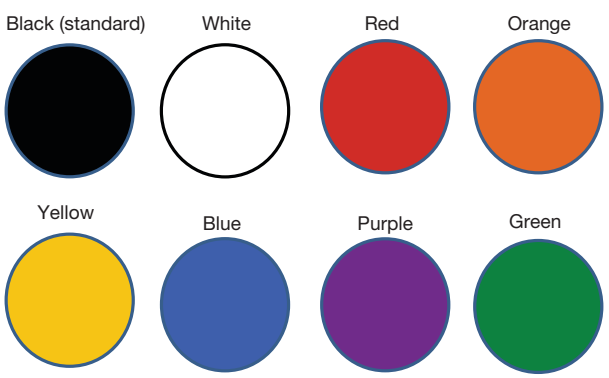
E = Excellent **G = Good** **F = Fair** **P = Poor**

* Minimum service and installation temperature for SV47 have been determined by test on tubing bundles. The base material is rated at –40° by the manufacture when used as jacket for wire and cable. However, this is a false indication of performance when used as a weatherproof jacket on a tubing bundle. Tubing bundles are typically much larger in diameter, more flexible and have a softer 'core' than wire and cable. Consequently the advertised temperatures for what are termed Arctic PVC overstate the useful temperature range on tubing bundles.

Jacket Colors

O'Brien TPU Colors – 14 available

O'Brien PVC Colors – 8 available
Only Available On Large Projects



TPE ELECTRIC TRACED

Preinsulated Tubing Bundle With Electric Heat Tracing

TPE is designed to maintain freeze protection, close temperature tolerances or viscosity control.

It provides an excellent means of maintaining very long, continuous lengths of impulse lines and piping at consistent temperatures end-to-end. TPE should be chosen when electric tracing is preferred, steam is not available or when the steam supply could be interrupted such as during shutdowns.

Our extensive tracer offering allows TPE to be designed according to your specific application and temp requirements. When close temperature control is necessary, TPE can be utilized with an optional line sensing temperature controller.

Buffered Bundle Designs

Special high exposure temp designs available for impulse lines or other applications where steam blowdown is required. Consult factory for these designs.

Specifications

Maintain Temp Range: 50F to 400F (10C to 204C)

Insulation:
Non-hygroscopic fiber glass with water soluble chlorides less than 30 ppm.

Ambient Temperature Limits:

Jacket	Min Installation	Min Service
TPU	-40°F/-40°C	-67°F/-58°C
SV47	-10°F/-23°C	-30°F/-35°C

Maximum Jacket Surface Temperature:
140F (60C) at ambient temperature of 80F (27C) with maximum process or tracer tube temperature

Maximum Tube Exposure Temperature: See Tracer List*
*High exposure temp up to 1100F (593C) available, consult factory.

TPE Part Number Decoder

TPE2U-B4-J5

Bundle Type
TPE = Electric Traced

Process Tube Qty
1
2

Jacket Type
S = SV47
U = TPU

Process Tube Code
See Page 4 for Tube Codes

Tracer Code
See Page 7 for Tracer Codes

TRACER LIST

O'Brien Tracer Designator	Type	Wattage Per foot @ 50F/10C	Voltage Range vac	Maximum Maintain/ Continuous Exposure F/C	Maximum Intermittent Exposure F/C
J3	Self Regulating	3	100-130	150/65	185/85
J5	Self Regulating	5	100-130	150/65	185/85
J8	Self Regulating	8	100-130	150/65	185/85
J10	Self Regulating	10	100-130	150/65	185/85
P3	Self Regulating	3	200-277	150/65	185/85
P5	Self Regulating	5	200-277	150/65	185/85
P8	Self Regulating	8	200-277	150/65	185/85
P10	Self Regulating	10	200-277	150/65	185/85
BR5	Self Regulating	5	100-130	302/150	482/250
BR10	Self Regulating	10	100-130	302/150	482/250
BR15	Self Regulating	15	100-130	302/150	482/250
BR20	Self Regulating	20	100-130	302/150	482/250
NR3	Self Regulating	3	200-277	302/150	482/250
NR5	Self Regulating	5	200-277	302/150	482/250
NR8	Self Regulating	8	200-277	302/150	482/250
NR10	Self Regulating	10	200-277	302/150	482/250
NR12	Self Regulating	12	200-277	302/150	482/250
NR15	Self Regulating	15	200-277	302/150	482/250
NR20	Self Regulating	20	200-277	302/150	482/250
VT5	Self Regulating	5	100-130	400/205	500/260
VT10	Self Regulating	10	100-130	400/205	500/260
VT15	Self Regulating	15	100-130	400/205	500/260
VT20	Self Regulating	20	100-130	400/205	500/260
VH3	Self Regulating	3	200-277	400/205	500/260
VH5	Self Regulating	5	200-277	400/205	500/260
VH8	Self Regulating	8	200-277	400/205	500/260
VH10	Self Regulating	10	200-277	400/205	500/260
VH12	Self Regulating	2	200-277	400/205	500/260
VH15	Self Regulating	15	200-277	400/205	500/260
VH20	Self Regulating	20	200-277	400/205	500/260
VH28	Self Regulating	28	200-277	400/205	500/260
JV5	Power Limiting/Zone style	5	100-120	445/230	n/a
JV10	Power Limiting/Zone style	10	100-120	400/205	n/a
JV15	Power Limiting/Zone style	15	100-120	335/170	n/a
JV20	Power Limiting/Zone style	20	100-120	300/150	n/a
JN5	Power Limiting/Zone style	5	208	455/235	n/a
	Power Limiting/Zone style	5	230	445/230	n/a
	Power Limiting/Zone style	5	240	445/230	n/a
	Power Limiting/Zone style	5	277	435/225	n/a
JN10	Power Limiting/Zone style	10	208	425/220	n/a
	Power Limiting/Zone style	10	230	410/210	n/a
	Power Limiting/Zone style	10	240	400/205	n/a
	Power Limiting/Zone style	10	277	383/195	n/a
JN15	Power Limiting/Zone style	15	208	390/200	n/a
	Power Limiting/Zone style	15	230	356/180	n/a
	Power Limiting/Zone style	15	240	335/170	n/a
	Power Limiting/Zone style	15	277	221/105	n/a
JN20	Power Limiting/Zone style	20	208	300/150	n/a
	Power Limiting/Zone style	20	230	300/150	n/a
	Power Limiting/Zone style	20	240	300/150	n/a

Preinsulated Tubing Bundle With Steam Tracing

TPL - Light Steam Tracing

The tracer tube is wrapped with insulation to purposely reduce heat transfer to process tubes.

It is suited for small diameter process lines such as those used for instrumentation, sampling and additives.

TPL is recommended for freeze protection of instrument impulse lines as well as the process lines for analyzers.

TPH - Heavy Steam Tracing

Heavy tracing keeps the process tubing in direct contact with the tracer and maintains higher process temperatures.

TPH is recommended for use on analyzer sample transport and instrumentation impulse lines. It is also recommended for additives and other small diameter process lines where higher temperature maintenance or viscosity control is necessary.

Specifications

Insulation:
Non-hygroscopic fiber glass with water soluble chlorides less than 30 ppm.

Ambient Temperature Limits:

Jacket	Min Installation	Min Service
TPU	-40°F/-40°C	-67°F/-58°C
SV47	-10°F/-23°C	-30°F/-35°C

Maximum Jacket Surface Temperature:
140F (60C) at ambient temperature of 80F (27C) with maximum process or tracer tube temperature

Maximum Tube Exposure Temperature: 400°F (204°C)*
*High exposure temp up to 1100F (593C) available, consult factory.

TPL / TPH Part Number Decoder

TPH2U-B4-C3

Bundle Type
TPL = Light Steam Traced
TPH = Heavy Steam Traced

Process Tube Qty
1
2

Jacket Type
S = SV47
U = TPU

Process Tube Code
See Page 4 for Tube Codes

Steam Tube Code
See Page 4 for Tube Codes

S-LINE® & J-LINE®

S-LINE: A Weather-Proofed, Preinsulated Single Tubing Line

S-Line is suggested for 1" (25mm) and smaller steam, condensate, liquid and gas transport lines where personnel protection and heat loss are important. S-LINE offers an inexpensive alternative to field insulation and weatherproofing of small diameter lines. High exposure temperature designs up to 1100F (593C) available, consult factory.

J-LINE: A Weather-Proofed, Single Tubing Line

J-Line tubing is designed for pneumatic and hydraulic applications in corrosive atmospheres. Industry standard tubing coated with O'Brien SV47 (PVC) polymer provides increased protection against galvanic and atmospheric corrosion as well as cushioning the tube against wear from vibration.

Specifications

Insulation:
Non-hygroscopic fiber glass with water soluble chlorides less than 30 ppm.

Ambient Temperature Limits:

Jacket	Min Installation	Min Service
TPU	-40°F/-40°C	-67°F/-58°C
SV47	-10°F/-23°C	-30°F/-35°C

Maximum Jacket Surface Temperature (S-Line ONLY):
140F (60C) at ambient temperature of 80F (27C) with maximum process or tracer tube temperature

Maximum Tube Exposure Temperature (S-Line ONLY):
400°F (204°C)*

*High exposure temp up to 1100F (593C) available, consult factory.

S-Line / J-Line Part Number Decoder

S-Line

SF4

Tube Code
See Page 4 for Tube Codes

S-Line Designator
SV47 Jacket (Standard)
*Consult Factory for TPU

J-Line

JC3

Tube Code
See Page 4 for Tube Codes

J-Line Designator
SV47 Jacket (Standard)
*Consult Factory for TPU

TRACEPAK CUSTOM DESIGNS

Solutions For Unique Applications

In addition to conventional TRACEPAK designs, O'Brien can satisfy your needs with custom solutions. Modeling for these designs is verified in our environmental chamber under conditions insuring a tubing bundle that meets your exact requirements, with reliability and accuracy you can depend on.

Custom Capabilities

- Indoor & Outdoor Jackets
- Maintenance Temperatures to 400°F (204°C)
- Custom Lengths
- Factory Finished and Sealed Ends
- Factory Installed Power and Termination Kits
- Factory Installed Temperature Sensors
- Communication, Monitor and Power Wires
- Alternate Jacket Colors
- Cryogenic Applications

Unusual Tube Material & Nonstandard Sizes

TRACEPAK can be manufactured with a wide range of uncommon materials and sizes to conform to your unique material requirements, including but not limited to:

- Fluoropolymer variations such as PTFE, PFA, and TFE.
- Hastelloy
- Incoloy
- Duplex and Super Duplex
- 6% Moly
- Oxygen Cleaned Tubes
- Passivated Stainless Steel with or without SilcoNert 2000
- Electropolished Stainless Steel with or without SilcoNert 2000

Multi-Component Bundles

Complex designs incorporate factory installed temperature sensors such as RTD's, or thermocouples along with multiple process tubes, calibration gas supply tubes, communication wires, power wiring, and heat tracing.

High Temperature Tracers

Specialty tracers such as CPD, MI and resistance wires can be used to provide temperature maintenance up to 400°F (204°C) and to withstand a high temperature blowdown of 1100°F (593°C).

Jacket Materials for Diverse Applications

Jacket materials are available to withstand high operating temperatures, permit installation at low ambients or stand up to constant flexing. Materials include Thermoplastic Polyurethane (TPU), or PVC for indoor or outdoor applications.

Performance Enhancing Designs

Special insulated or buffered designs are available for applications with high intermittent process temperatures. These designs insulate the tracer from the process tube to allow higher maximum exposure temperatures while still providing freeze protection.

Typical Applications

Sampling Systems
Emissions Gas Sampling, Automotive Emissions Testing

Viscosity Control
Petroleum products, Asphalt, Tar, Paint Systems, Printing Ink, Coatings, Spray Foam Insulation

Product Transfer
Polymers, Oils, Urethanes, Waxes, Chemicals, Food Products, Hot Melt Adhesives, Sanitary and High Purity Applications

Corrosion Protection
Jacketed tubing for harsh environments such as Marine and Offshore.

ACCESSORIES Sealing the Bundle

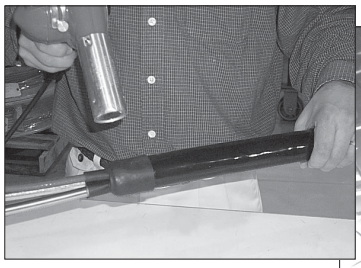
Although TRACEPAK products use a non-hygroscopic, non-wicking insulation, all bundle ends must be sealed to prevent any possible moisture contamination.

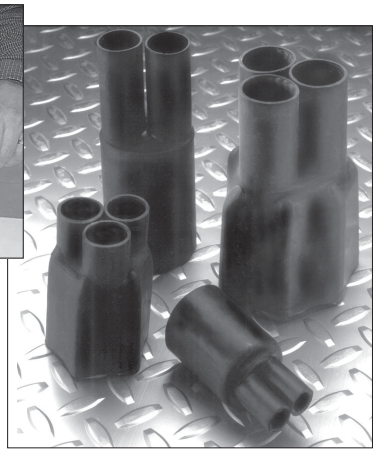
Heat Shrink Boots

The heat-shrinkable boots provide a weatherproof end seal for TRACEPAK tubing bundles. They are made of thermally stabilized, modified polyolefin. Using a heat shrink end seal boot is recommended for all exposed ends. This installation will provide the best weather seal protection. Heat shrink boots have 400F maximum exposure rating.

To Order:

Refer to Heat Shrink Boot Index or Consult Factory





Silicone Sealant

This option is used to seal both ends of the tubing bundle from moisture. It is a black silicone RTV sealant. Cure time is approximately 24 hours at 77°F (25°C). Service temperature ranges from -62°F (-52°C) to 650°F (345°C). TPKSK offers excellent resistance to weather, oil and many chemicals.

To Order:

TPKSK-10 400F continuous / 450F intermittent RTV Sealant, 10 oz. will seal approximately 10 ends

TPKSK-10H 500F continuous / 650F intermittent RTV Sealant, 10 oz. will seal approximately 10 ends

Self Bonding Silicone Tape

This option is used to seal both ends of the tubing bundle from moisture. It is a black silicone, self bonding.

To Order:

TPKJP-SR-B Self Bonding Tape, 36 yd (33m)

TPKJP-SR-B10 Self Bonding Tape, 10ft (3m)

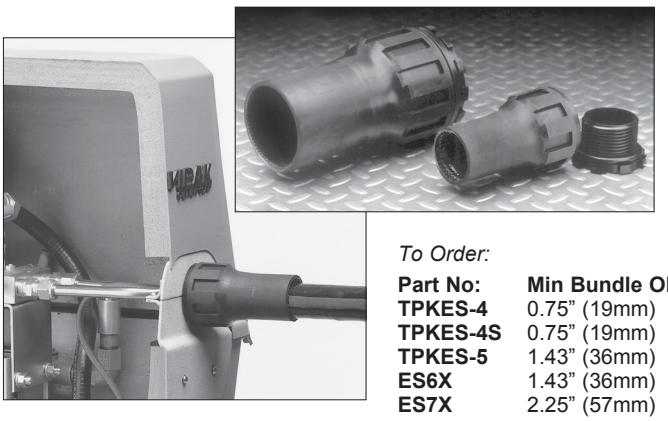
TPKSK-SRT-10 Cold applied end seal kit. 10oz RTV sealant and one 36 yard roll of black self-fusing silicone tape

TPKSK-SRT-10H High temp cold applied end seal kit. 10oz HT-RTV sealant and one 36 yard roll of black self-fusing silicone tape. Rated 500F continuous / 600F intermittent.

High Temperature End Seals

The new and improved O'Brien High Temp End Seal (HTES) is used primarily for TRACEPAK isolated tracer tubing bundle designs, MI cable, or high temperature exposure TRACEPAK bundles above our standard 400ºF exposure temperature. The modular design allows for many configurations with or without electric tracer, and up to 3 process tubes. The integrated heat shrink flange allows for quicker and consistent installation and further guarantees weather protection.

To Order: Refer to HTES Datasheet or Consult Factory



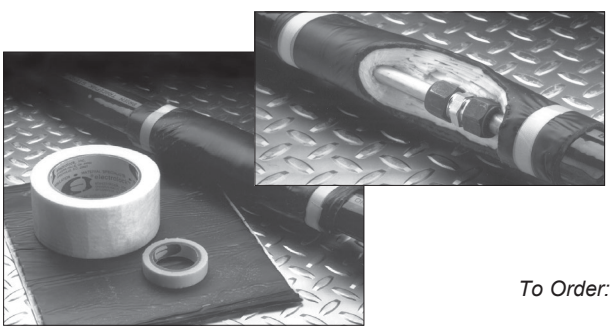
Heat Shrink Entry Seal

The heat-shrinkable entry seal provides a waterproof fitting where TRACEPAK enters an enclosure. They can be added to parting line or surface mounted plates on VIPAK enclosures. The thermally stabilized, modified polyolefin entry seal consists of a threaded assembly that seals at the enclosure and a heat-shrinkable nose that seals to the TRACEPAK bundle.

To Order:

Part No:	Min Bundle OD	Max Bundle OD	Max Panel Thickness	Drill Hole Size
TPKES-4	0.75” (19mm)	1.60” (40mm)	0.50” (12mm)	2.00” (51mm)
TPKES-4S	0.75” (19mm)	2.10” (53mm)	0.50” (19mm)	2.375” (60mm)
TPKES-5	1.43” (36mm)	2.90” (74mm)	0.75” (19mm)	3.50” (90mm)
ES6X	1.43” (36mm)	3.50” (90mm)	1.75” (25mm)	4.50” (114mm)
ES7X	2.25” (57mm)	4.00” (102mm)	1.25” (25mm)	5.50” (140mm)

NOTE: Consult Vipak brochure for entry seals to be used with Vipak instrument enclosures



Jacket Patch Kits

The jacket patch kits are used to seal a splice in a bundle or to extend the insulation and weatherproof jacket should the bundle be cut back too far during installation. They are used as a repair patch for any incidental field damage to bundles. The jacket patch kit is required with the optional line temperature sensing thermostat. Each kit contains thermal insulation, fiberglass tape and a self-sealing patch.

To Order:

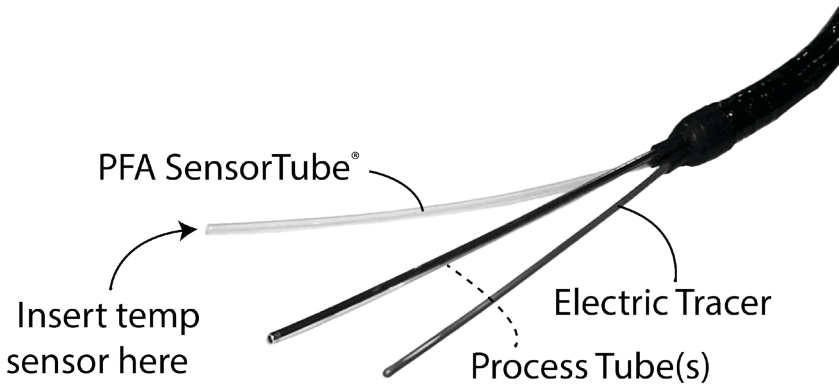
	Bundles up to 400ºF (204ºC)	Bundles up to 1100ºF(593ºC)
Small 8” x 12”	**TPKJP-1**	**TPKJP-3**
Large 8” x 96”	**TPKJP-2**	**TPKJP-4**

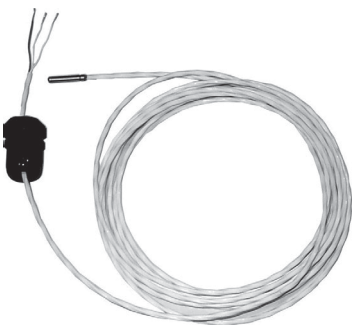
Temperature Control

Design Option: SensorTube™

G2S - 1/4” x 0.030 PFA
H3S - 3/8” x 0.062 PFA

SensorTube is a design option that **must be requested at time of quote.** An additional PFA tube in the heated core creates a pathway for a temp sensor to be inserted up to 20’ (6m) from the control end without any special tools. This eliminates cutting into the bundle with field installed sensors. The sensor can be inserted through more than five ninety degree bends without problems.





RTD Kit

RTD Kits include a 100 Ohm PT100, 3 wire sensor with 30ft leads and an entry seal. Use single RTD with G2S and dual RTDs with H3S SensorTube.

RTDKIT30 - NEC/CEC standards with 30’ fluoropolymer jacketed leads.
RTDKIT30-EX - ATEX Ⓔx II 2 G Ex e IIC T6..T1 Gb and IECEx Ex IIIC T6..T1 Gb standards with 9 meter Kapton jacketed leads.

10380 Series Controllers

The 10380 Series controller is a compact, full-featured, touch screen based, single-point heat-tracing controller. It provides control and monitoring of Electric Heat Tracing (EHT) circuits for both freeze protection and process temperature maintenance. This controller can monitor and alarm on high and low temperature, high and low current, ground-fault levels, voltage. RTD input or thermocouple with the use of signal converter with junction box. Up to 4 signal converters can be housed in each junction box. This controller holds global approvals for use in hazardous areas.

To Order: **10380-002** 10380 series controller with FRP Enclosure
10380-004 10380 series controller with Stainless Steel Enclosure
10380-JB Junction box for thermocouple signal converters
10380-TYPE-K Type K Signal Converter
10380-TYPE-J Type J Signal Converter

Elexant 5010i Controller

The Elexant 5010i is an electronic heat-tracing control unit featuring the benefits of local control and the capability for central monitoring. It can be used for single phase circuits up to 25 A and is approved for use in hazardous areas. It provides tight temperature control and has optional IEC 61508-SIL 2 classified safety temperature limiter. It measures the temperature with up to two RTD (s) connected to the unit.

To Order: **2000002132** Elexant 5010i series controller without limiter
2000002133 Elexant 5010i series controller with limiter

Thermostats

When used with electrically traced tubing bundles, optional thermostats are used to control the temperature of the process tube or to turn on the heater circuit at a specified ambient temperature. They are approved and certified for use in hazardous areas.

Note:
Models shown are typical of thermostats supplied.
Units received may differ depending on approvals.

Ambient Sensing

The ambient sensing thermostat has an adjustable set point of 15°F to 140°F(-9°C to 60°C) and can withstand ambient temperatures of -40°F to 160°F (-40°C to 71°C). It has a fluid filled stainless steel probe and the SPDT switch is rated for 22A at 125/250/480 VAC.

To Order: **TPKTS-A-7** Ambient Sensing Thermostat, NEMA 7 Housing, 22 amp 125/250 VAC

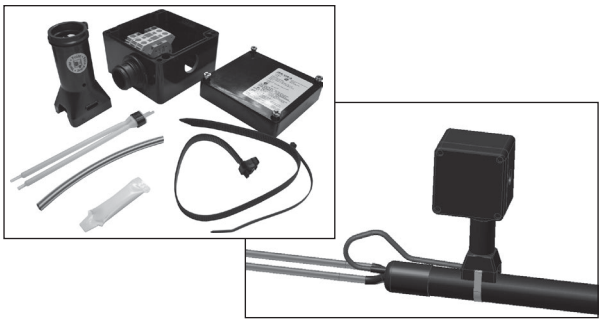
Line Sensing

The line sensing thermostat controls the temperature of the process tubes.

To Order: **TPKTS-B-7** 9ft Capillary Style, 25-325F Setpoint, NEMA 7 Housing, 22 Amp
EX-02 3mt Capilary Style, Zone 1 & 2, -4 to 163C Setpoint, IP65 Rated, 22 Amp
ETS-05-XX-X* RTD Style Line Sensing, IP66 Rated, 24 Amp
Ambient sensing capabilities on European version only.

*The "X's" are placholders to be filled in depending on approvals, voltage and setpoint range. Consult factory for the right configuration

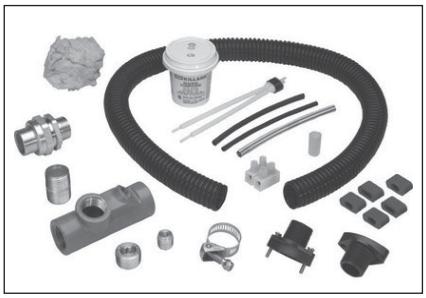
Power Connection Kits



Single Entry Power Connection Kit

Power connection kit for use with any wattage J, P, BR, NR, VT, VH, JV or JN tracer. Includes junction box and bundle mounting bracket with adjustable straps. Junction box also includes surface mounting feet.

To Order: ***T210-PC*** CSA/FM C1D2 Approved Power Connection
JBS-100-E Zone 1 and 2 Approved Power Connection



Class 1 Div 1 Power Connection Kit

CSA and FM Certified Class I Div. 1 power connection or end termination kit for use with any wattage J, P, BR, NR, VT, VH, JV, or JN tracer. Installs in separately supplied junction box with 3/4" npt hub.

To Order: ***HAK-C-100*** CSA/FM C1D1 Approved Power Connection kit
HAK-JB3-100 CSA/FM C1D1 Approved Junction Box
263757-000 Universal Pipe Mounting Bracket

Cold Applied Power Connection Kit

ATEX standards approved power connection kit for use with any wattage J, P, BR, NR, VT, VH, JV or JN tracer. For use with customer supplied junction box.

To Order: ***T9355-PC*** Zone 1 and 2 Approved Power Connection

---

End Termination Kits

Low Profile Termination Kit

FM Approved and CSA Certified Class I Div. 2, and ATEX EEx eII listed electric tracer termination kit for use with any wattage J, P, BR, or NR, tracer.

To Order: ***T210-ET*** CSA/FM C1D2 Approved Termination Kit

High Temp Termination Kit

A re-entrable and accessable electric tracer termination kit for use with any wattage J, P, BR, NR, VT, VH, JV or JN tracer.

To Order: ***T250-ET*** CSA/FM C1D2 Approved, without light
E-100-L-A CSA/FM C1D2 Approved, with light
T355-ET Zone 1 and 2 Approved, without light
E-100-L-E Zone 1 and 2 Approved, with light

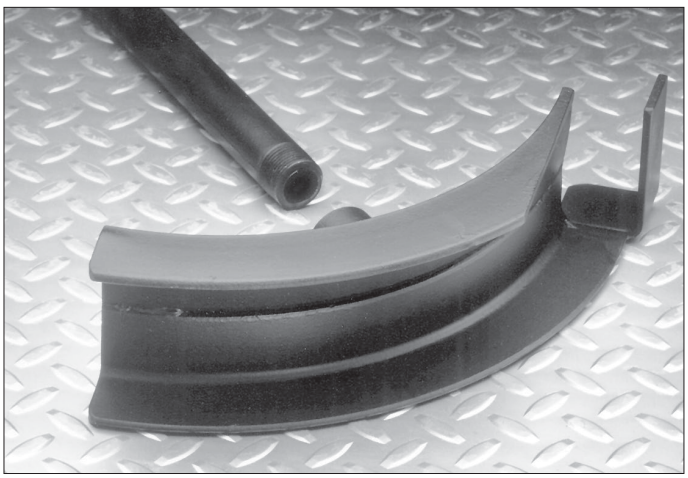
Heat Shrink Termination Kit

These kits employ easy to use heat-shrinkable tubing with an adhesive, that when heated forms a semi-flexible moisture proof encapsulation. These are typically used for under-insulation applications and cannot be re-used.

To Order: ***E-20*** FM-CUS, EAC, and ATEX approved for use with J and P tracers.
E-40 FM-CUS, EAC, and ATEX approved for use with BR, NR, VT, VH, JV, JN tracers.

Installation Tools

TRACEPAK is designed to be installed using standard bending tools. We offer two specialized tools that make installation of TRACEPAK tube bundles easier and more compact.



Bundle Bending Tool

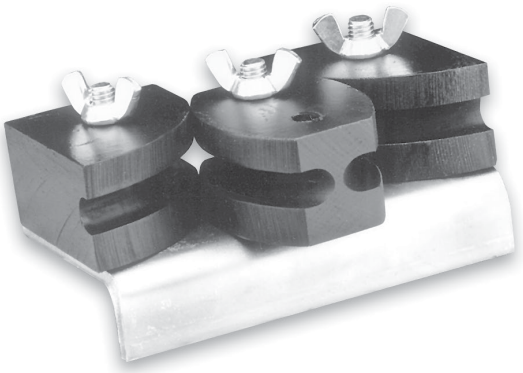
Similar to a common electrical conduit bender, this tool is compact and easy to use. It eliminates the need for larger and heavier benders.

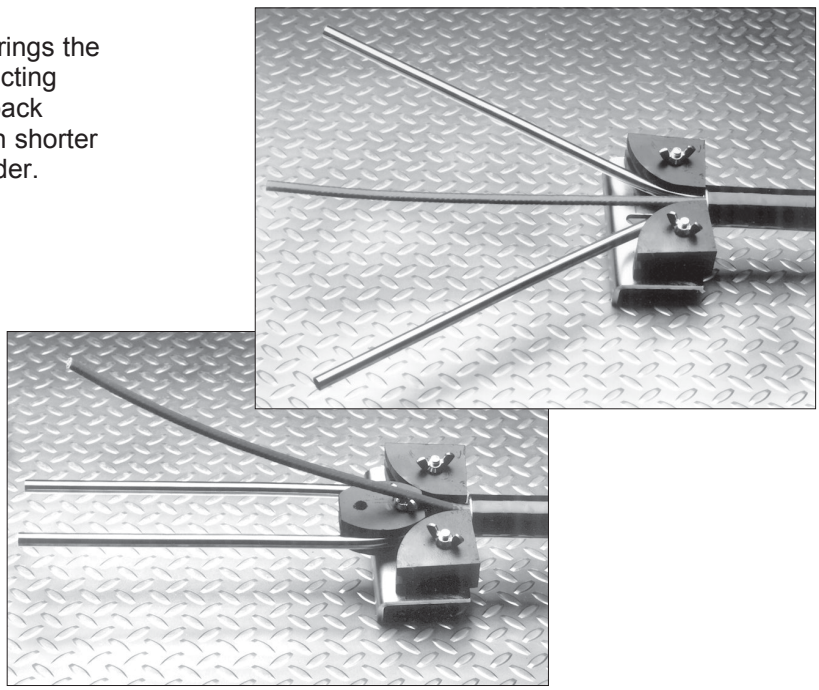
To Order:
BB8 Bending Tool with 8" (203mm) Radius. Max bundle OD of 1.8"
BB12 Bending Tool with 12" (305mm) Radius. Max Bundle OD of 2.75"
BB14 Bending Tool with 14" (355mm) Radius. Max Bundle OD of 4"

2 1/8" (54mm) Centerline Tool

A replacement for the standard tube bender, it brings the process tubes to the correct centerline for connecting to typical transmitters. This tool makes back-to-back bends easier accomplishing the bends in a much shorter distance than possible with a standard tube bender.

To Order: **Centerline-Tool**





DESIGN REQUEST

O'BRIEN

TRACEPAK™ Design Request

Name: _____
Email: _____
Date Required: _____
Company: _____
Bundle Needed on Site by: _____

When completing this form, please indicate units of measurement whenever they are applicable.

°F or °C | ft or m | in or mm | Psig or Barg

Site Conditions

Outdoor ◯ Indoor ◯

Low Ambient _____
High Ambient _____

Application

Instrument Impulse Line ☐ Sample Line ☐
Other _____

Quantity

Quantity Required _____
Continuous Lengths _____
_____

Heating Conditions

Desired Maintenance Temperature _____
Maximum Tube Exposure Temperature _____

If Electric Tracing

Available Voltage(s) _____ VAC
Required Approvals _____

Temperature Sensor?
Type (if requested) _____ Sensor Location(s) _____

If Steam Tracing

Steam Pressure _____
Steam Temperature _____

Process Tube(s)

Tube 1	**Tube 2**	**Steam Tube** (if applicable)
Outside Diameter _____	Outside Diameter _____	Outside Diameter _____
Wall Thickness _____	Wall Thickness _____	Wall Thickness _____
Material _____	Material _____	Material _____

Special Notes

Accessories

☐ Power Connection Kit	☐ Heat Shrink Boot	☐ Thermostat/Controller	☐ Jacket Patch Kit
☐ End Termination Kit	☐ Entry Seal	☐ Tracer Splice Kit	☐ Silicone End Sealant

Customer Service

O'Brien's reputation as a customer oriented problem solver has been long recognized.

Our customer-oriented approach offers:

- Responsive, knowledgeable personnel.
- Unparalleled delivery service.
- Dependable, tested results of all product lines.

ISO 9001:2015

Unparalleled quality system to current ISO 9001:2015 standards.

O'Brien's adherence to recognized international standards is your strongest assurance of our quality.

Total Solution

O'Brien products and solutions improve instrument accuracy. Our total engineering package will reduce field installation costs and provide a dependable solution for your needs.

USA • SERBIA • FRANCE • CHINA • SINGAPORE • SOUTH KOREA • INDIA • UAE

www.obcorp.com

Specifications subject to change without notice.

 OB-BRC-TP-24R3 • JUNE 2024

O'BRIEN / AMETEK®

sales.obrien@ametek.com

Certified System ISO 9001