



AERODYN **ENGINEERING**

VOLUME 1 **INSTRUMENTATION** **PRODUCTS**

www.aerodyn-global.com

INSTRUMENTATION

Aerodyn Engineering Inc. provides design, fabrication, and installation of sensors to meet the most challenging applications. We routinely design for harsh environments with high levels of temperature, pressure, and vibration.

A partial listing of our instrumentation capabilities are:

- Strain Gage Application – low and high temperature, dynamic and static
- Temperature Sensors – thermocouples, thermistors, and RTDs
- Pressure Sensors – dynamic and static
- Rake and Probe Assemblies – AEI design or build to print
- Custom Force Transducers – bearing thrust, shaft torque, shaft bending
- Rotating Sensors – strain, temperature, pressure, and acceleration up to 400,000 Gs
- Airfoil Sensors – leading edge and embedded
- Vibration – accelerometers, proximity sensors
- Tip Clearance Sensors – capacitive, DC, and dynamic
- Slip Ring Systems – hardware and installation design
- Telemetry Systems – design, fabrication, and calibration
- Spin Test Capability – proof and performance verification

AEI can define, design, and machine modifications to engine hardware required for sensor installation and lead wire routing paths. We can assist with engine assembly, wire routing, and termination of sensors, either at our facility or on-site. As we also provide data acquisition services, we have a complete system approach to instrumentation and test. We anticipate the needs and requirements of the entire project, ultimately benefiting the customer.

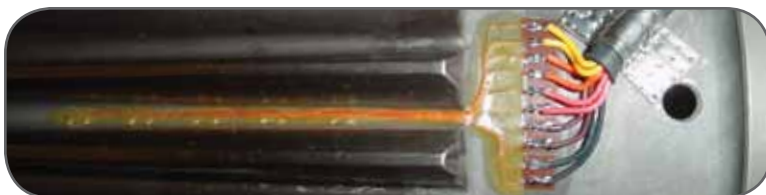


ENGINEERING CAPABILITIES

- Instrumentation and sensor
- Aeronautical
- Mechanical
- Finite element analysis
- Data acquisition
- Electrical
- CAD design and drafting
- Modal analysis

FABRICATION

AEI is dedicated to providing our customers with the highest quality craftsmanship available. We offer an extensive, responsive, and innovative fabrication service. We manufacture our own designs or build to print. By maintaining our operations in-house, we control costs, quality, and schedule. The result is a reliable and timely delivery to our customers. We accept orders in quantities from prototype to production lot sizes.

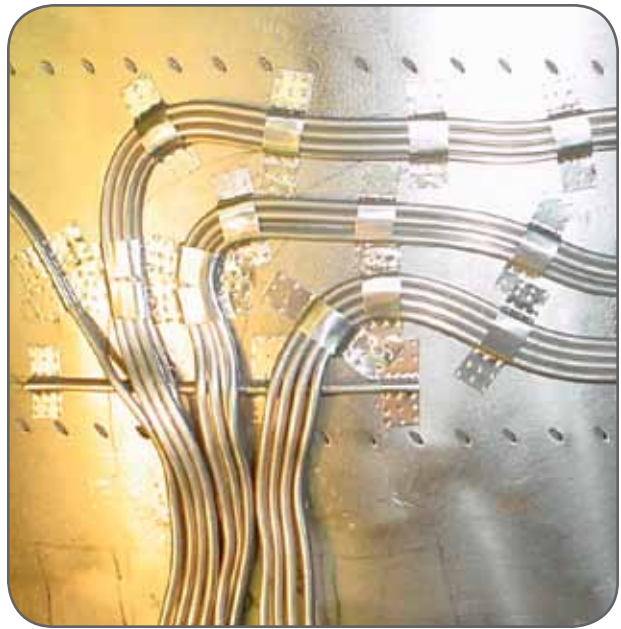


MACHINING CAPABILITIES

- CNC Milling
- CNC Turning
- ID/OD Grinding
- Electrical Discharge (EDM)
- Assembly
- Sheet Metal Forming
- Welding and Brazing
- Balancing
- Surface Grinding
- Inspection

AEROSHIM

Aeroshim are preformed segments of metal foil used to secure hard or soft cylindrical sensor leads by tack welding to a surface. Standard Aeroshim covers a wide range of common lead diameters and numbers of leads placed side by side. The temperature environment and substrate material to be welded to dictates the material of shim needed, but standard Aeroshim, made of Inconel 600 alloy, is very versatile. Customers are amazed at how much time and money can be saved by taking advantage of this simple and widely used product. For requirements not met by standard Aeroshim, Aerodyn is especially capable of fabricating a custom type in a cost-effective manner.



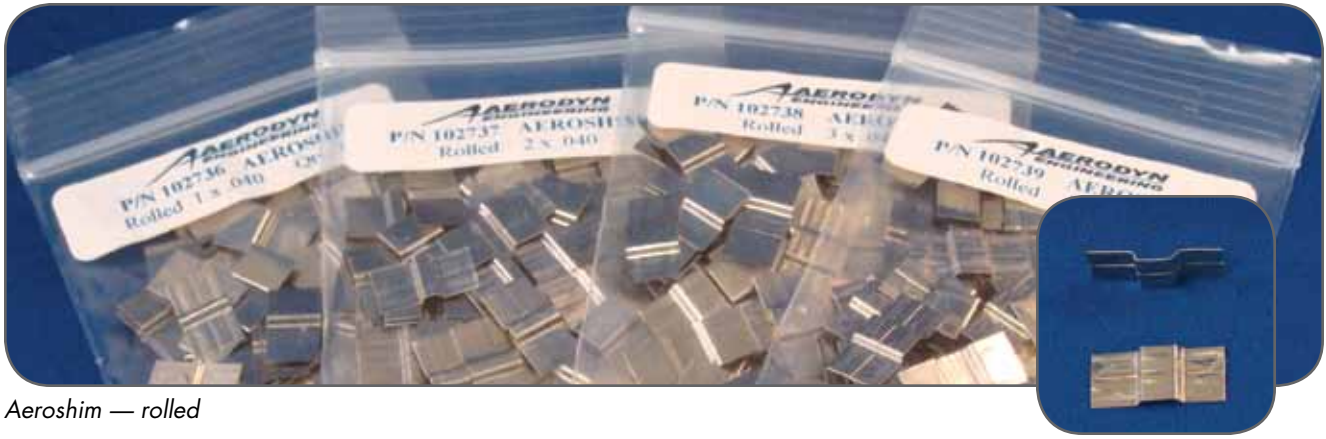
STRUCTURAL AND MECHANICAL ANALYSIS

AEI understands that a structural failure of instrumentation installed in a critical location can lead to a catastrophic failure of machinery. We can perform a structural, thermal, and mechanical analysis of the instrumentation hardware utilizing our in-house Ansys® and Modal Analysis capabilities, reducing the risk to expensive equipment and increasing the safety of on-site personnel.

THE COMPLETE SOLUTION

Our customers realize their greatest benefit when they contract us for the entire sensor system, from design and fabrication to instrumentation application and test. Concurrent design and manufacture allow all parts to be trial fitted and proven to work prior to delivery, eliminating unforeseen problems and costly delays during on-site testing. Examples of these types of systems include slip ring installations with adapting hardware, telemetry systems, rig hardware rework, and instrumentation assemblies.

AEROSHIM PARTS LIST



Aeroshim — rolled

CATEGORY	AE P/N	DESCRIPTION	QUANTITY
Aeroshim - Regular			
Reg 1x x .020"	104462	Aeroshim Package, 1x x .020", Regular	100/bag
Reg 2x x .020"	104463	Aeroshim Package, 2x x .020", Regular	100/bag
Reg 3x x .020"	104464	Aeroshim Package, 3x x .020", Regular	100/bag
Reg 4x x .020"	104465	Aeroshim Package, 4x x .020", Regular	100/bag
Reg 1x x .032"	104466	Aeroshim Package, 1x x .032", Regular	100/bag
Reg 2x x .032"	104467	Aeroshim Package, 2x x .032", Regular	100/bag
Reg 3x x .032"	104468	Aeroshim Package, 3x x .032", Regular	100/bag
Reg 4x x .032"	104469	Aeroshim Package, 4x x .032", Regular	100/bag
Reg 1x x .040"	102728	Aeroshim Package, 1x x .040", Regular	100/bag
Reg 2x x .040"	102729	Aeroshim Package, 2x x .040", Regular	100/bag
Reg 3x x .040"	102730	Aeroshim Package, 3x x .040", Regular	100/bag
Reg 4x x .040"	102731	Aeroshim Package, 4x x .040", Regular	100/bag
Reg 1x x .062"	102732	Aeroshim Package, 1x x .062", Regular	100/bag
Reg 2x x .062"	102733	Aeroshim Package, 2x x .062", Regular	100/bag
Reg 3x x .062"	102734	Aeroshim Package, 3x x .062", Regular	100/bag
Reg 4x x .062"	102735	Aeroshim Package, 4x x .062", Regular	100/bag
Aeroshim - Rolled			
Rolled 1x x .020"	105236	Aeroshim Package, 1x x .020", Rolled	100/bag
Rolled 2x x .020"	105237	Aeroshim Package, 2x x .020", Rolled	100/bag
Rolled 3x x .020"	105238	Aeroshim Package, 3x x .020", Rolled	100/bag
Rolled 4x x .020"	105239	Aeroshim Package, 4x x .020", Rolled	100/bag
Rolled 1x x .032"	105240	Aeroshim Package, 1x x .032", Rolled	100/bag
Rolled 2x x .032"	105241	Aeroshim Package, 2x x .032", Rolled	100/bag
Rolled 3x x .032"	105242	Aeroshim Package, 3x x .032", Rolled	100/bag
Rolled 4x x .032"	105243	Aeroshim Package, 4x x .032", Rolled	100/bag
Rolled 1x x .040"	102736	Aeroshim Package, 1x x .040", Rolled	100/bag
Rolled 2x x .040"	102737	Aeroshim Package, 2x x .040", Rolled	100/bag
Rolled 3x x .040"	102738	Aeroshim Package, 3x x .040", Rolled	100/bag
Rolled 4x x .040"	102739	Aeroshim Package, 4x x .040", Rolled	100/bag
Rolled 1x x .062"	102740	Aeroshim Package, 1x x .062", Rolled	100/bag
Rolled 2x x .062"	102741	Aeroshim Package, 2x x .062", Rolled	100/bag
Rolled 3x x .062"	102742	Aeroshim Package, 3x x .062", Rolled	100/bag
Rolled 4x x .062"	102743	Aeroshim Package, 4x x .062", Rolled	100/bag

INSTRUMENTATION PRODUCTS



Aeroshim ribbon — regular



Aeroshim ribbon — rolled



Shim Forming Pliers

CATEGORY	AE P/N	DESCRIPTION	QUANTITY
Aeroshim - Ribbon			
Aeroshim Ribbon	104351	Aeroshim Ribbon, Spool, Regular	100 ft
Aeroshim Ribbon	102138	Aeroshim Ribbon, Spool, Rolled	100 ft
Aeroshim - Kits			
Aeroshim Rolled Kit	103749	Kit – 100 (1x), 100 (2x), 75 (3x), 50 (4x), 25 Ribbons (6")	Each
Aeroshim Regular Kit	103750	Kit – 100 (1x), 100 (2x), 75 (3x), 50 (4x), 25 Ribbons (6")	Each
Aeroshim Forming Pliers			
Forming Tools	104879	Shim Forming Pliers, 1x, .020"	Each
Forming Tools	104880	Shim Forming Pliers, 2x, .020"	Each
Forming Tools	104881	Shim Forming Pliers, 3x, .020"	Each
Forming Tools	104882	Shim Forming Pliers, 4x, .020"	Each
Forming Tools	104655	Shim Forming Pliers, 1x, .032"	Each
Forming Tools	104656	Shim Forming Pliers, 2x, .032"	Each
Forming Tools	104657	Shim Forming Pliers, 3x, .032"	Each
Forming Tools	104658	Shim Forming Pliers, 4x, .032"	Each
Forming Tools	103760	Shim Forming Pliers, 1x, .040"	Each
Forming Tools	103761	Shim Forming Pliers, 2x, .040"	Each
Forming Tools	103762	Shim Forming Pliers, 3x, .040"	Each
Forming Tools	103763	Shim Forming Pliers, 4x, .040"	Each
Forming Tools	103745	Shim Forming Pliers, 1x, .062"	Each
Forming Tools	103746	Shim Forming Pliers, 2x, .062"	Each
Forming Tools	103747	Shim Forming Pliers, 3x, .062"	Each
Forming Tools	103748	Shim Forming Pliers, 4x, .062"	Each
Forming Tools	104350	Shim Forming Pliers, Custom Made per Customer Request	Each
AeroWeld			
Discharge Welder	105993	Capacitive Discharge Welder	Each
Plug	102330	Plug, 3-pin, WPI	Pkg
Pedal Trigger	105992	Foot Pedal Trigger	Each
Ground Cables	103753	Welding Ground Cable, 8' Length	Pkg
Welder Handpiece	103252	Welder Handpiece, #4	Each
Welder Handpiece	102322	Welder Handpiece, #8	Each
Welder Tips	101551	Electrode Tip, Spot Weld	Pkg
Gold Terminals	103263	Gold-Plated Terminal Ring, 4 awg	Pkg
Gold Terminals	103238	Gold-Plated Terminal Ring, 8 awg	Pkg

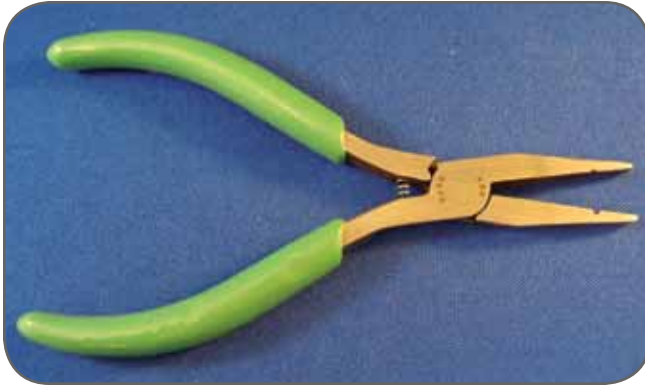
INSTRUMENTATION PRODUCTS



Micro Pencil Torch

CATEGORY	AE P/N	DESCRIPTION	QUANTITY
Brazing/Soldering Supplies			
Pencil Torch	101467	Micro Pencil Torch	Each
Braze Flux	101506	High Temp Braze Flux	Each
Braze Flux	101507	Low Temp Braze Flux	Each
Brazing Paste	101742	Silver Brazing Paste	Each
Soldering Iron	101777	Weller Soldering Iron	Each
Solder	105923	Solder with Water-Soluble Flux Core, 63% Tin, 37% Lead, .020" Wire dia, 361 deg	Each
Solder	105733	Solder, Rosin Flux Core, 63% Tin, 37% Lead Comp, .025" dia, 361 deg	Each
Solder Tip	105994	NT1S .010" Conical Tip for WD1 and WSL	Each
Solder Tip	105995	NT1X .010" Bent Round Tip for WD1 and WSL	Each
Solder Tip	105996	NTC 1/8" Chisel Tip for WD1 and WSL	Each
Solder Tip	105997	ETS 1/64" Long Conical Tip for WES51	Each
Solder Tip	105998	ETU 1/64" Flat Tip for WES51	Each
Solder Tip	105999	ETCC 1/8" Flat Tip for WES51	Each
Hydrogen Torch	105715	Hydrogen/Water Torch	Each
Flux	103731	Solder Flux w/Dispensing Bottle (TT-758CH011)	Each
Flux Remover	103740	50/50 Isopropanol and Toluene in Plastic Bottle	Each
Flux Remover	103741	Acetone in Plastic Bottle	Each
Adhesives/Epoxy/Silicone			
Epoxy Resin Adhesive	101472	A-661 Epoxy Resin Adhesive	Each
Tak-Pak	101510	Loctite Tak-Pak #444, 20 Gram Bottle	Each
Tak-Pak Accelerator	101511	Loctite Instant Adhesive Accelerator	Each
Silicone	101512	GE RTV Silicone #102, White, 2.8 oz	Each
Polypropylene	101526	Polypropylene Vial, 1/16 oz	Pkg
EA934	101542	EA 934, 1 pint	Each
MBond	101587	M-Bond 610 Kit	Each
Tak-Pak	101656	382 Tak Pak w/Accelerometer Kit	Each
Mbond	101774	M-Bond 200	Each
Epoxy Resin	101815	A-2 Epoxy Resin	Qt
Silicone	101874	GE RTV Silicone #106, Red	Each
Activator	102595	Activator E	Pt
Activator	102596	Activator W	Pt
Silicone	100798	RTV, Dow 3140 (non-corrosive), 3.0 oz, Clear	Each
Silicone	102599	RTV, Dow 3145 (non-corrosive), 3.0 oz, Clear or Grey	Each
Wire Stripping – Chemical			
Dip Strip Chemical	101750	Dip Strip Chemical, 1 kg	Each
Cleaner	101751	Dip Strip Cleaner	Each
Neutralizer	101752	Dip Strip Neutralizer	Each
Wire Strip Pot	102621	Wire Stripper, Chemical, Pot with Thermal Control	Each

INSTRUMENTATION PRODUCTS



MGO Pliers



MGO Strippers



MGO Cutters

CATEGORY	AE P/N	DESCRIPTION	QUANTITY
Wire Stripping – Manual			
Nippers	101778	Wire Nippers, 15 awg	Each
Wire Strippers	100601	Multisize Wire Strippers, 10-20 awg	Each
Wire Strippers	100600	Multisize Wire Strippers, 20-30 awg	Each
Wire Stripping – Lathe Tools			
Wire Stripper	107021	Thermocouple Wire Stripper, .020"	Each
Wire Stripper	107022	Thermocouple Wire Stripper, .032"	Each
Wire Stripper	107023	Thermocouple Wire Stripper, .040"	Each
Wire Stripper	107024	Thermocouple Wire Stripper, .062"	Each
Wire Stripper	107025	Thermocouple Wire Stripper, .093"	Each
Wire Stripper	101753	Thermocouple Wire Stripper, .125"	Each
Wire Cutters	104056	T/C Wire/Tubing Cutting Tool (MGO Cutters)	Each
MGO Pliers	105713	MGO Pliers, .020"	Each
MGO Pliers	107015	MGO Pliers, .032"	Each
MGO Pliers	107016	MGO Pliers, .040"	Each
MGO Pliers	107017	MGO Pliers, .062"	Each
MGO Pliers	107018	MGO Pliers, .093"	Each



Aeroblaster

CATEGORY	AE P/N	DESCRIPTION	QUANTITY
Wire Stripping – Aeroblasters			
Aeroblaster	104958	Aeroblaster	Each
Aeroblaster	104953	Aeroblaster Replacement Tips	Each
Tubulations			
Tubulations		.040" Tubulation, Brass	Ft
Tubulations		.063" Tubulation, Teflon, 1" L	Ft
Tubulations		.063" Tubulation, Nylon, 1" L	Ft
Tubulations		.125" Teflon Tubulation	Ft
Tubulations		.125" Nylon Tubulation	Ft
Tubulation Tubing		Tubing for Use on SS Tubulations	Ft

INSTRUMENTATION PRODUCTS

CATEGORY	AE P/N	DESCRIPTION	QUANTITY
General Supplies			
Safety Glasses	101476	Safety Glasses	Pkg
Cotton Swabs	101486	Cotton Swabs, Small, 1/8" dia	Pkg
Cotton Swabs	101487	Cotton Swabs, Reg, 3/16" dia	Pkg
Latex Gloves	101493	Latex Gloves	Pkg
Syringe Needle	101514	SS Dispensing Needle, 14 awg, 1/2"	Pkg
Syringe Needle	101515	SS Dispensing Needle, 14 awg, 1"	Pkg
Syringe Needle	101516	SS Dispensing Needle, 14 awg, 1 1/2"	Pkg
Syringe Needle	101517	SS Dispensing Needle, 22 awg, 1"	Pkg
Syringe Needle	101518	SS Dispensing Needle, 16 awg, 1 1/2"	Pkg
Syringe	101519	Plastic Syringe w/Luer Lock, 3 cc	Pkg
Syringe	101520	Plastic Syringe w/Luer Lock, 10 cc	Pr
Syringe	101521	Plastic Syringe w/Luer Lock, 20 cc	Pkg
Syringe	101522	Plastic Syringe w/Luer Lock, 30 cc	Pkg
Syringe	101523	Plastic Syringe w/Luer Lock, 5 cc	Each
Orange Sticks	101530	Angle Tipped Wooden Sticks	Pkg
Eye Dropper	101572	Eye Dropper	Pkg
Side Shields	101749	Side Shields for Safety Glasses	Pkg
Replacement Lens	101771	Replacement Lens for Headband Magnifier	Pkg
Headband Magnifier	101772	Headband Magnifier w/Light, 2.75x Mag	Pkg
Cotton Swabs	101817	Cotton Swabs, Tapered Tip	Pkg
Tape, Kapton	101490	Kapton Tape, 1" Wide, 36 Yards, .0025" Thick	Each
Tape, Kapton	101489	Kapton Tape, 1/2" Wide, 25 Yards, .0025" Thick	Each
Tweezers	105712	Needle-Nose Tweezers	Each
Silk Cutting Kit	105730	Silk Cutting Kit (Incl. Board, 2 Scissors, and 2 Diff. Cloths)	Each
"Silk"	105726	Fiberglass Cloth, Plain Weave, .58 oz, 2 Yards	Each
"Silk"	105727	Fiberglass Cloth, Plain Weave, .73 oz, 2 Yards	Each
Self-Healing Cut Mat	105728	Cutting Mat For Silk	Each
Rotary Scissors	105729	45mm Cutting Scissors	Each
Airbrush Kit for H Cement	105718	Airbrush Kit for H Cement	Each
Alum. Oxide Grit Media	105719	150 Grit Alum. Oxide Sandblast Media, 50 lb	Each
SIC Media	101552	Silicon Carbide Paper, 320 Grit, 1" x 100'	Each



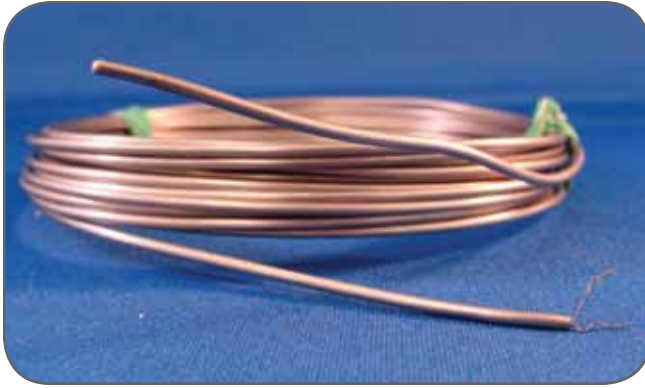
Safety Supplies



Test Box

CATEGORY	AE P/N	DESCRIPTION	QUANTITY
Lab Equipment			
Multimeter	101821	Fluke 87-5 Industrial Multimeter w/Temp	Each
Micro-Blaster	105732	Dual Tank Micro-Blaster	Each
Water Torch	105715	Hydrogen/Water Torch	Each
Strain Gage Tool Kit	105734	Strain Gage Tool Kit	Each
Test Box	105399	Pressure Test Box	Each

INSTRUMENTATION PRODUCTS



T/C Wire

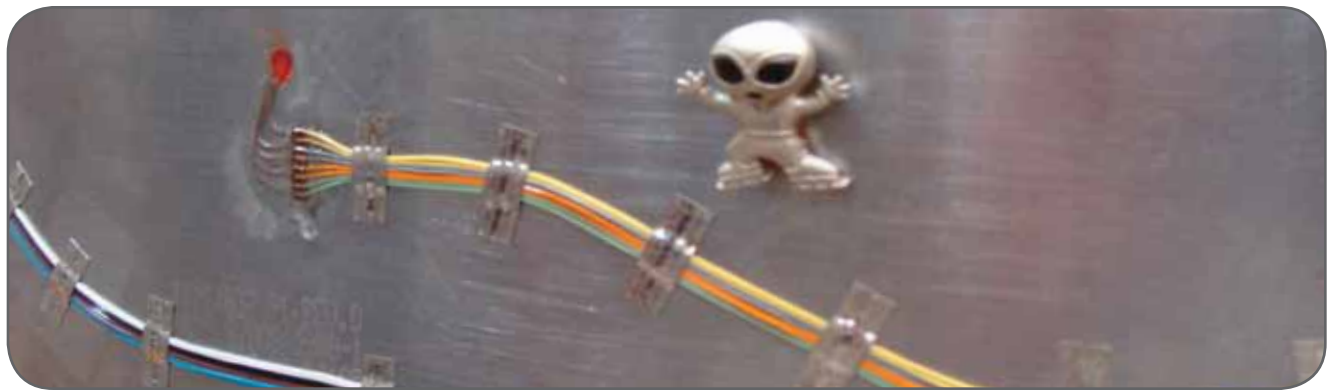


Prandtl Tube

CATEGORY	AE P/N	DESCRIPTION	QUANTITY
T/C Wire			
T/C Wire	102645	T/C Wire, Type K, Metal Sheathed, .020" dia, Inco	Ft
T/C Wire	101702	T/C Wire, Type K, Metal Sheathed, .032" dia, Inco	Ft
T/C Wire	103742	T/C Wire, Type K, Metal Sheathed, .040" dia, Inco	Ft
T/C Wire	101755	T/C Wire, Type K, Metal Sheathed, .062" dia, Inco	Ft
T/C Wire	103033	T/C Wire, Type K, Metal Sheathed, .125" dia, Inco	Ft
T/C Wire	102275	T/C Wire, Type K, Metal Sheathed, .188" dia, Inco	Ft
T/C Wire	103034	T/C Wire, Type K, Metal Sheathed, .250" dia, Inco	Ft
Pre-Made T/C	103073	Pre-Made T/C, Type K, Metal Sheathed, .020", Grnd, 15' Length	Each
Pre-Made T/C	103068	Pre-Made T/C, Type K, Metal Sheathed, .020", UNGrnd, 15' Length	Each
Pre-Made T/C	103075	Pre-Made T/C, Type K, Metal Sheathed, .032", Grnd, 15' Length	Each
Pre-Made T/C	103070	Pre-Made T/C, Type K, Metal Sheathed, .032", UNGrnd, 15' Length	Each
Pre-Made T/C	103074	Pre-Made T/C, Type K, Metal Sheathed, .040", Grnd, 15' Length	Each
Pre-Made T/C	103162	Pre-Made T/C, Type K, Metal Sheathed, .040", UNGrnd, 15' Length	Each
Pre-Made T/C	103072	Pre-Made T/C, Type K, Metal Sheathed, .062", Grnd, 15' Length	Each
Pre-Made T/C	103071	Pre-Made T/C, Type K, Metal Sheathed, .062", UNGrnd, 15' Length	Each
Pre-Made T/C	106030	Pre-Made T/C, Type K, Metal Sheathed, .020", Grnd, 20' Length	Each
Pre-Made T/C	106031	Pre-Made T/C, Type K, Metal Sheathed, .020", UNGrnd, 20' Length	Each
Pre-Made T/C	106032	Pre-Made T/C, Type K, Metal Sheathed, .032", Grnd, 20' Length	Each
Pre-Made T/C	106033	Pre-Made T/C, Type K, Metal Sheathed, .032", UNGrnd, 20' Length	Each
Pre-Made T/C	106034	Pre-Made T/C, Type K, Metal Sheathed, .040", Grnd, 20' Length	Each
Pre-Made T/C	106035	Pre-Made T/C, Type K, Metal Sheathed, .040", UNGrnd, 20' Length	Each
Pre-Made T/C	106036	Pre-Made T/C, Type K, Metal Sheathed, .062", Grnd, 20' Length	Each
Pre-Made T/C	106037	Pre-Made T/C, Type K, Metal Sheathed, .062", UNGrnd, 20' Length	Each
Pre-Cut Tubing			
Pressure Tube	103423	Pressure Tube, .062" x .010"w, Inco 600 Smls, 10' Length	Each
Prandtl Tube	103424	Prandtl Tube, .062" x .010"w, Inco 600 Smls, 10' Length	Each

INSTRUMENTATION PRODUCTS

CATEGORY	AE P/N	DESCRIPTION	QUANTITY
Cable/Wire			
3-Conductor Cable	102600	Mi Cable, 3-Conductor, Ni Clad Cu, .062" dia	Ft
3-Conductor Cable	102601	Mi Cable, 3-Conductor, Ni Clad Cu, .040" dia	Ft
2-Conductor Cable	102602	Mi Cable, 2-Conductor, Ni Clad Cu, .062" dia	Ft
2-Conductor Cable	102603	Mi Cable, 2-Conductor, Ni Clad Cu, .040" dia	Ft
Kapton Wire	102608	Kapton Wire, 30 awg, Stranded (7/38) SPC, .020" dia, Blk	100'
Kapton Wire	102609	Kapton Wire, 30 awg, Stranded (7/38) SPC, .020" dia, Brown	100'
Kapton Wire	102610	Kapton Wire, 30 awg, Stranded (7/38) SPC, .020" dia, Red	100'
Kapton Wire	102611	Kapton Wire, 30 awg, Stranded (7/38) SPC, .020" dia, Orange	100'
Kapton Wire	102612	Kapton Wire, 30 awg, Stranded (7/38) SPC, .020" dia, Yellow	100'
Kapton Wire	102613	Kapton Wire, 30 awg, Stranded (7/38) SPC, .020" dia, Green	100'
Kapton Wire	102614	Kapton Wire, 30 awg, Stranded (7/38) SPC, .020" dia, Blue	100'
Kapton Wire	102615	Kapton Wire, 30 awg, Stranded (7/38) SPC, .020" dia, Violet	100'
Kapton Wire	102616	Kapton Wire, 30 awg, Stranded (7/38) SPC, .020" dia, Grey	100'
Kapton Wire	102617	Kapton Wire, 30 awg, Stranded (7/38) SPC, .020" dia, White	100'
Wire for Blades or Rings	100117	Multifilar Wire, Magnet, 34 awg	Ft
3-Wire Twisted Cable	105167	3-Wire Twisted Cable, 30 awg	100'



CATEGORY	AE P/N	DESCRIPTION	QUANTITY
Tubing			
Inco Tubing		Inconel Tubing, .020" x .005"w	Ft
Inco Tubing	102619	Inconel Tubing, .032" x .006"w	Ft
Inco Tubing	102618	Inconel Tubing, .040" x .006"w	Ft
Inco Tubing	101158	Inconel Tubing, .062" x .010"w	Ft
Inco Tubing	103158	Inconel Tubing, .083" x .010"w	Ft
Inco Tubing	102340	Inconel Tubing, .125" x .012"w	Ft
Inco Tubing	103171	Inconel Tubing, .187" x .020"w	Ft
Steel Tubing	100228	304 SS Tubing, .062" x .010"w	Ft

