

FAA-PMA Approved

Alcor Instruments and Probes

Don't waste your money on cheap instruments and probes. There is a big difference!

Increase engine life and enhance safety through proper monitoring

- Faster responding probes than low dollar alternatives
- Temperature compensated gauges for accuracy all year round at any altitude
- Single gauges monitor one cylinder, dual gauges for twin engine aircraft monitor one cylinder per engine. Add a selector switch to make an economical full engine analyzer *Lighted gauges and custom dials also available!*

Alcor: A name you can trust

- Over 50 years experience – Designed, manufactured and supported in the USA
- Generous warranty: 3 years for gauges, 5 years for grounded probes, 1 year for ungrounded probes
- FAA-PMA/STC approved for all aircraft with reciprocating engines



Simple installation

- No power required from the aircraft (lighted gauges require power)
- Works even with an electrical failure
- Great for homebuilt or antique aircraft with no electrical system
- Gauges include all mounting hardware
- Standard 2 1/4" or 3 1/8" gauge sizes

Full Stock for Fast Delivery!

CHT Gauges

Indicates true temperature from 200-600°F or 100-300°C in 25° increments

P/N	Description	Compatible Thermocouple Type	Size	Calibration 1
46171	CHT Gauge Celsius	J - Black and Yellow	2 1/4"	250C @ 8.0 Ω
46151	CHT Gauge	J - Black and Yellow	2 1/4"	500F @ 8.0 Ω
46127	CHT/CHT Dual Gauge	J - Black and Yellow	2 1/4"	500F @ 8.0 Ω
46157	CHT/CHT Dual Gauge	J - Black and Yellow	3 1/8"	500F @ 8.0 Ω

1 Factory calibrated at the specified temperature for any Alcor type J leads and probes.



Save with kits on the next page!

EGT Gauges

Save on fuel costs with precision leaning!

- Quick visual reference to peak EGT
- Set peak reference with easy in-flight calibration – special calibration screwdriver included!
- Single 2 1/4" and dual 3 1/8" models include an adjustable reference needle
- Two marking options: Relative to peak (lean to peak temperature indicated with an * - must be calibrated in flight) or true temperature from 1200-1700°F in 25° increments



P/N 45993 (Type E)
P/N 46000-1
P/N 46000-3
P/N 46000-7
P/N 46115 (w/light)
P/N 46155

P/N	Description	Compatible Thermocouple Type	Size	True Temp or Relative to Peak	Calibration 1
46000-1	EGT/EGT Dual Gauge	K - Red and Yellow	3 1/8"	TT	1650F @ 8.2 Ω (264") 2
46000-3	EGT/EGT Dual Gauge	K - Red and Yellow	3 1/8"	TT	1550F (100") 2 Front 3.6 Ω Rear 7.8 Ω (250") 2
46000-7	EGT/EGT Dual Gauge	K - Red and Yellow	3 1/8"	TT	1650F @ 7.6 Ω (240") 2
46115	EGT/EGT Dual Gauge w/Light 24V	K - Red and Yellow	3 1/8"	RTP	1600F @ 7.44 Ω 3
46125	EGT/EGT Dual Gauge	K - Red and Yellow	2 1/4"	RTP	1600F @ 7.44 Ω 3
46148	EGT Gauge w/Light 12V	K - Red and Yellow	2 1/4"	RTP	1600F @ 3.63 Ω 3
46149	EGT Gauge w/Light 24V	K - Red and Yellow	2 1/4"	RTP	1600F @ 3.63 Ω 3
46150	EGT Gauge	K - Red and Yellow	2 1/4"	RTP	1600F @ 3.63 Ω 3
46155	EGT/EGT Dual Gauge	K - Red and Yellow	3 1/8"	RTP	1600F @ 7.44 Ω 3
46162	EGT Gauge w/Green Arc	K - Red and Yellow	2 1/4"	TT	1650F @ 3.3 Ω (90") 2
46164	EGT Gauge	K - Red and Yellow	2 1/4"	TT	1650F @ 3.3 Ω (90") 2
46188-3	EGT Dual Gauge w/Light	K - Red and Yellow	2 1/4"	RTP	1600F @ 7.44 Ω 3
45993	EGT/EGT Dual Gauge	E - Red and Brown	3 1/8"	RTP	1550F @ 8.9 Ω 3
46244	EGT Gauge w/Green Arc	K - Red and Yellow	2 1/4"	TT	1650F @ 7.6 Ω (240") 2

1 Factory calibrated at the specified temperature for the specified total probe and lead resistance. Calibration temperature also indicates the location of the * or red line.

2 Factory calibrated for leads of the indicated length but may be recalibrated for different lead lengths either at the factory or with an Alcor 2000 or 2000+ System.

3 Factory calibrated for the specified total lead and probe resistance, but may be easily recalibrated in flight.

Save \$\$ with kits on the next page!

Combination CHT/EGT Gauges

- CHT indicates true temperature from 200-600°F in 25° increments
- EGT indicates temperature relative to peak in 25° increments (lean to peak temperature indicated with an * - must be calibrated in flight)
- 3 1/8" size includes adjustable reference needle for the EGT



P/N 46126



P/N 46156

P/N	Description	Compatible Thermocouple Type	Size	Calibration 1
46126	CHT/EGT Dual Gauge	J - Black and Yellow (CHT) K - Red and Yellow (EGT)	2 1/4"	500F @ 8.0 Ω / 1600F @ 3.63 Ω
46156	CHT/EGT Dual Gauge	J - Black and Yellow (CHT) K - Red and Yellow (EGT)	3 1/8"	500F @ 8.0 Ω / 1600F @ 3.63 Ω

1 Factory calibrated for any Alcor type J leads and probes. EGT Factory calibrated for specified total lead and probe resistance, but may be re-calibrated in flight.

See below for money saving kits!

TIT Gauges

- Dual gauges for twin engine aircraft
- Indicates true temperature from 1200-1700°F in 25° increments



P/N 46243



P/N 46124



P/N 46224
P/N 46000-4

P/N	Description	Compatible Thermocouple Type	Size	Calibration 1
46000-4	TIT/TIT Dual Gauge w/Light 24V	K - Red and Yellow	3 1/8"	Scale 1650F @ 6.2 Ω (192") 2
46224	TIT/TIT Dual Gauge	K - Red and Yellow	3 1/8"	Scale 1650F @ 7.44 Ω (216") 2
46243	TIT Gauge	K - Red and Yellow	2 1/4"	Scale 1650F @ 3.63 Ω (90") 2
46124	TIT/TIT Dual Gauge	K - Red and Yellow	2 1/4"	Scale 1650F @ 7.6 Ω (240") 2

1 Factory calibrated at the specified temperature for the specified total probe and lead resistance. Calibration temperature also indicates the location of the red line.

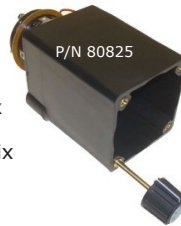
2 Factory calibrated for leads of the indicated length but may be recalibrated for different lead lengths either at the factory or with an Alcal 2000 or 2000+ System.

Universal Cylinder Selector Switches

An inexpensive way to create a full engine monitor!

P/N 80825 for all single 2 1/4" Alcor gauges

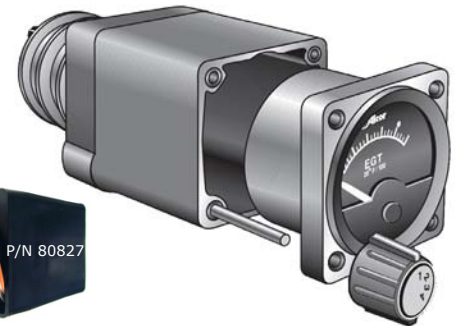
- Allows one gauge to monitor up to seven temperatures
- With a CHT gauge you can monitor CHT for all four or six cylinders for a single engine
- With an EGT gauge you can monitor EGT for all four or six cylinders plus TIT for a turbocharger for a single engine



P/N 80825



P/N 80827



P/N 80827 for all dual 2 1/4" Alcor gauges

- Allows one gauge to monitor up to 14 temperatures
- With a CHT/EGT gauge you can monitor CHT and EGT for all four or six cylinders plus TIT for a turbocharger for a single engine
- With a dual EGT gauge you can monitor EGT for all four or six cylinders plus TIT for a turbocharger for two engines

Can also be used with non-Alcor gauges!

Complete Kits

- Save with complete kits from McFarlane!
- Includes everything you need!



Kit P/N	Description	Kit Contents			
		Gauge	Probes	Leads	Accessories (included)
211-110	2 1/4" EGT, Clamp Probe, 90" Lead	(1) 46150	(1) 86255	(1) 42525	
211-140	2 1/4" EGT, Clamp Probes, 90" Leads, 4 Cylinder Switch	(1) 46150	(4) 86255	(4) 42525	(1) 80825
211-160	2 1/4" EGT, Clamp Probes, 90" Leads, 6 Cylinder Switch	(1) 46150	(6) 86255	(6) 42525	(1) 80825
211-210	2 1/4" EGT, Clamp Probe, 144" Lead	(1) 46150	(1) 86255	(1) 42526	
213-101	2 1/4" CHT, Bayonet Probe, 90" Lead	(1) 46151	(1) 86251	(1) 42535	(1) 28202
213-104	2 1/4" CHT, Bayonet Probes, 90" Leads, 4 Cylinder Switch	(1) 46151	(4) 86251	(4) 42535	(4) 28202, (1) 80825
213-201	2 1/4" CHT, Bayonet Probe, 144" Lead	(1) 46151	(1) 86251	(1) 42536	(1) 28202
222-111	2 1/4" CHT/EGT Bayonet/Clamp Probes, 90" Leads	(1) 46126	(1) 86251, (1) 86255	(1) 42525, (1) 42535	(1) 28202
222-144	2 1/4" CHT/EGT Bayonet/Clamp Probes, 90" Leads, 4 Cylinder Switch	(1) 46126	(4) 86251, (4) 86255	(4) 42525, (4) 42535	(4) 28202, (1) 80827
222-211	2 1/4" CHT/EGT Bayonet/Clamp Probes, 144" Leads	(1) 46126	(1) 86251, (1) 86255	(1) 42526, (1) 42536	(1) 28202
222-266	2 1/4" CHT/EGT Bayonet/Clamp Probes, 144" Leads, 6 Cylinder Switch	(1) 46126	(6) 86251, (6) 86255	(6) 42526, (6) 42536	(6) 28202, (1) 80827
46126-Kit	2 1/4" CHT/EGT Dual Meter Kit	(1) 46126	(1) 86202, (1) 86255	(1) 42525, (1) 42535	
322-111	3 1/8" CHT/EGT Bayonet/Clamp Probes, 90" Leads	(1) 46156	(1) 86251, (1) 86255	(1) 42525, (1) 42535	(1) 28202
1136-B20A	3 1/8" Dual EGT, Screw-In Probes 240" Leads	(1) 46155	(2) 86245	(2) 42527	

FAA-PMA Approved

Thermocouple Probes

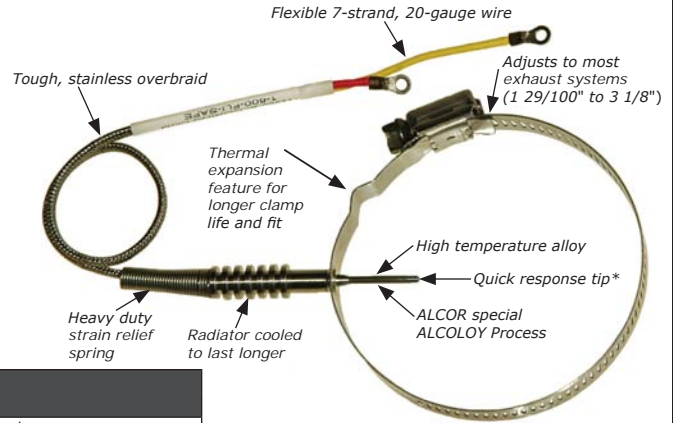
With over 50 years of aviation manufacturing experience, Alcor makes the highest quality, longest lasting, and fastest responding probes.

- Best warranty in the industry (5 year on grounded probes, 1 year on grounded probes)
- Improved design features
- Designed, manufactured and supported in the USA

Thermocouple Types: What's the difference?

A thermocouple is formed by the junction between two metals. When the junction is heated, a very small voltage measured in millivolts (1/1000V) is generated. The higher the temperature, the higher the voltage. Each metal combination is best suited for a specific temperature range. The type of thermocouple indicates the metal combination.

Three types are used in aviation EGT, CHT, and TIT applications:



***Alcor probe tips are the smallest in the industry for the fastest response time**

Save \$\$ with kits see page 89!

Type	Wires			Description
	Color	Polarity	Material	
J	Yellow	-	constantan	Very sensitive. Limited to lower temps. Not for EGT or TIT probes. Standard for CHT probes. Required for all Alcor CHT gauges.
	Black	+	iron	
K	Red	-	alumel	Sensitive over a broad range of temps. Standard for EGT and TIT probes and some amplified or digital CHT gauges from other companies.
	Yellow	+	chromel	
E	Red	-	constantan	Used in older EGT systems. Alcor still supplies Type E gauges and a limited supply of probes, but not supply leads. If new probes or leads are required, it is a good time to upgrade to a Type K system. Brown wire may look tan or silver.
	Brown	+	chromel	

The type of thermocouple must match the type of gauge and lead.

Grounded vs Ungrounded

Grounded probes have the thermocouple junction welded directly to the probe shaft. They have faster response time, longer life, and lower cost, but since they have continuity with the engine ground, they are susceptible to more electrical noise. This noise does not affect Alcor gauges, but can cause problems with some amplified or digital gauges from other manufacturers. All Alcor gauges can use grounded thermocouple, although some airframe manufacturers require ungrounded probes.

Ungrounded probes have the thermocouple junction isolated from the probe shaft so there is no continuity between the thermocouple and the engine ground resulting in less electrical noise. They are required for some amplified or digital gauges from other manufacturers and by some airframe manufacturers.

Connectors

Most probes have ring terminal connectors however some have a Omega style male plug connector. Omega style plugs are **now available** for converting an existing ring terminal installation.

Stagger

The two different color probe wires are typically different lengths to ensure the correct polarity when reattaching them to the lead going to the gauge. Stagger refers to which color wire is longer.

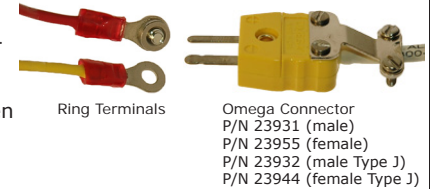
For Type K probes, two options are available:

Normal: The yellow probe wire is longer

Reverse: The yellow probe wire is shorter



Normal and reverse stagger probes and leads are all completely compatible, however, having the correct stagger ensures a neat installation and correct polarity. P/N 42523 EGT Lead Stagger Adapter is available to convert a normal stagger to a reverse stagger.



Alumel EGT Lead Stagger Adapter
P/N 42523
 Converts a probe from normal to reverse stagger

Fiberglass Fire Sleeve
P/N 49297
 Protects wires from engine and exhaust heat. 6" length

CHT Thermocouple Probes

Includes fire sleeve and ring terminal hardware. Two different mount styles are available:

Bayonet Mount

These twist and lock into a screw-in adapter. The probe is spring loaded to ensure contact with metal instead of air. Choose bayonet style if the engine model is equipped with threaded thermowell receptor and/or bayonet adapter in the cylinders. (see below for adapter)

Gasket Mount

These do not require a screw-in adapter. The 18mm gasket fits on many common spark plugs. Some engine designs, such as radial engines, the O-235 and O-200, may prevent the use of bayonet style or may not allow for the use of a bayonet adapter. Choose gasket style if the engine model is NOT equipped with threaded thermowell receptor and/or bayonet adapter in the cylinders.



P/N	Description	Thermocouple Type	Mount	Grounded or Ungrounded	Stagger	Resistance
86251	CHT Probe	J - Black and Yellow	Bayonet	Grounded	Normal	0.24 ± .05 Ω
86202	CHT Probe	J - Black and Yellow	Gasket, 18 mm	Grounded	Normal	0.13 ± .16 Ω - .05 Ω
86252	CHT Probe	K - Red and Yellow	Bayonet	Grounded	Reverse	0.66 ± .10 Ω
86268	CHT Probe	K - Red and Yellow	Gasket, 18 mm	Grounded	Normal	0.60 ± .10 Ω
86268-2	CHT Probe	K - Red and Yellow	Gasket, 14 mm	Grounded	Normal	0.60 ± .10 Ω

1 Does not require bayonet adapter. Screws directly into thermowell.

CHT Bayonet Adapter

P/N 28202 3/8"-24 UNF thread

- Threads into cylinder thermowell
- Adapts to standard bayonet probes



Instruments Probes and Leads

EGT and TIT Thermocouple Probes

Alcor EGT probes are accurate +/-25° at 1500°F. Includes fire sleeve and ring terminal hardware. Two different mount styles are available:

Screw-In Mount

This option provides the neatest installation. Many engines now come with a hole already threaded for a screw-in probe. If not, a threaded weld boss (P/N 28113) can be purchased to retrofit an engine. Alcor screw-in probes are available in 7/16"-20 UNF thread common in Continentals or 1/4"-18 NPT thread common in Lycomings. Some probes are available with adjustable depth to accommodate different weld boss heights. The probe tip should be 3/4" into the tube. Screw-in probes are also available with a 90° bend or an 8° bend to allow for an engine design that will not accommodate the straight-in style.

P/N	Description	Thermocouple Type	Mount	Grounded or Ungrounded	Stagger	Resistance
86143 ¹	EGT/TIT Probe	K - Red and Yellow	Screw-In, 1/4" NPT	Grounded	Normal	0.89 ± .10 Ω
86160 ²	EGT/TIT Probe	K - Red and Yellow	Screw-In, 7/16"-20	Grounded	Reverse	0.70 ± .10 Ω
86161 ¹	EGT/TIT Probe 90° Bend	K - Red and Yellow	Screw-In, 1/4" NPT	Grounded	Reverse	0.70 ± .10 Ω
86230 ¹	EGT/TIT Probe 8° Bend	K - Red and Yellow	Screw-In, 1/4" NPT	Grounded	Normal	0.89 ± .10 Ω
86240	EGT/TIT Probe	K - Red and Yellow	Screw-In, 7/16"-20	Grounded	Normal	0.80 ± .10 Ω
86245 ²	EGT/TIT Probe, 11.56"	K - Red and Yellow	Screw-In, 7/16"-20	Grounded	Reverse	0.70 ± .10 Ω
86307 ^{1,2}	EGT/TIT Probe	K - Red and Yellow	Screw-In, 1/4" NPT	Ungrounded	Normal	0.71 ± .03 Ω
86308 ^{1,2}	EGT/TIT Probe	K - Red and Yellow	Screw-In, 7/16"-20	Ungrounded	Normal	0.71 ± .03 Ω
86309 ²	EGT/TIT Probe, Long Lead	K - Red and Yellow	Screw-In, 7/16"-20	Ungrounded	Normal	1.60 Ω
86341 ¹	EGT/TIT Probe	K - Red and Yellow	Screw-In, 1/8" NPT	Ungrounded	N/A	0.94 ± .10 Ω

- ¹ Adjustable depth tip
- ² Built in radiator

Clamp Mount

This is the most common option because installation is easy and no welding is required. A hole is simply drilled in the exhaust near the mounting flange. The probe is inserted in the hole and a hose-clamp style clamp secures it in place. Clamps are available in various sizes to accommodate different sized exhaust tubes.

P/N	Description	Thermocouple Type	Mount	Grounded or Ungrounded	Stagger	Resistance
86226 ²	EGT/TIT Probe	K - Red and Yellow	Clamp, 3 1/4" Max	Grounded	Reverse	0.70 ± .10 Ω
86255 ^{2,4}	EGT/TIT Probe	K - Red and Yellow	Clamp, 1 1/8" to 3 3/8"	Grounded	Normal	0.80 ± .10 Ω
86275 ²	EGT/TIT Probe, 13.8"	K - Red and Yellow	Clamp, 3 1/4" Max	Grounded	Normal	0.80 ± .10 Ω
86281 ²	EGT/TIT Probe	K - Red and Yellow	Clamp, 3 1/4" Max	Grounded	Normal	0.85 ± .10 Ω
86310 ²	EGT/TIT Probe	K - Red and Yellow	Clamp, 2.35" Max	Ungrounded	Normal	1.60 Ω
86343 ^{2,3}	EGT/TIT Probe	K - Red and Yellow	Clamp, 3 1/4" Max	Ungrounded	Normal	0.80 Ω

- ² Built in radiator
- ³ Omega style male plug connector. Does not include fire sleeve.
- ⁴ Connector hardware kit P/N 38094 contains 2 each Nuts, Washers and Screws. Can be purchased separately and is included with P/N 86255.

Weld Boss Plug

P/N 28204

- Screws into unused weld boss ports
- 7/16"-20 UNF thread



EGT/TIT Weld Boss

P/N 28113

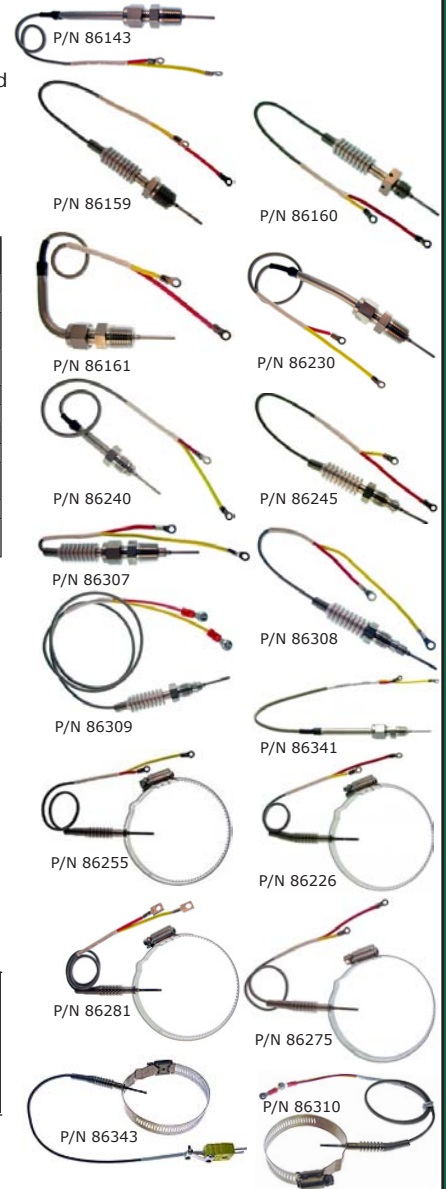
- Weld to exhaust tube to use screw-in probes
- 7/16"-20 UNF thread



Copper Gasket

P/N 70354

Used as a seal with EGT/TIT Probe, P/N 86160 and Weld Boss, P/N 28113.



Leads

- High quality stranded material for flexibility and long life (cheap single stranded leads are prone to break)
- Used to attach a thermocouple probe to a gauge
- Must be of the same type as the thermocouple (e.g., a Type K probe must use Type K leads)
- Do not shorten or splice as this will alter the resistance and require recalibration of the gauge. See calibration note

CHT Leads

- Integrated resistor ensures the same resistance regardless of length
- Choose leads based on the distance from the probe to the gauge

EGT/TIT Leads

- Each length has a different resistance
- Total resistance of the lead and the probe must match the calibration of the gauge
- Choose replacement leads based on the calibration of the existing gauge
- For a new system, choose leads based on the distance from the probe to the gauge and choose a gauge with the corresponding calibration



Bulk wire now available!
P/N 98156 (Type K Thermocouple Extension)
P/N 98204 (Type J)
P/N 98211 (Type K)

CHT Type J Black and Yellow		
P/N	Resistance	Length
42535	7.76 ± .20 Ω	90"
42536	7.76 ± .20 Ω	144"
42543	7.76 ± .20 Ω	216"
42537	7.76 ± .20 Ω	240"

EGT Type K Red and Yellow		
P/N	Resistance	Length
42525	4.34 ± .08 Ω	90"
42526	2.71 ± .06 Ω	144"
42528	6.52 ± .11 Ω	216"
42527	7.25 ± .12 Ω	240"

Calibration note:

EGT gauges with relative lean to peak markings may be easily recalibrated in flight per the instructions provided with the gauge. TIT, CHT and EGT gauges with True Temperature markings must either be recalibrated with an Alcal System Tester or returned to Alcor for recalibration if the total lead and probe resistance does not match the gauge calibration.

Digital or amplified gauges from other manufacturers are not sensitive to lead resistance, therefore leads may be shortened as needed for these applications without requiring recalibration.

Save with kits see page 89!