

# DT-30K SERIES SENSOR INSTALLATION INSTRUCTIONS

These instructions cover all the sensors that can be used with Digatron instruments. Some may not pertain to your particular model.

Do not operate your instrument unless all the sensors are connected. Inputs that are left open can cause erratic display readings and possible instrument damage. Any unused instrument inputs, except the remote store switch, must be terminated at the back of the instrument with a shorting plug available from Digatron.

## CABLE ROUTING NOTES

This section applies to the sensor cables that run from the engine compartment to the instrument. These cables should always be routed as far away as possible from the ignition system components (plug wires, spark plugs, ignition coils, distributor or magneto). Sensor cables too close to these components may pick up radiated electrical interference and cause erratic instrument readings and operation. A distance of at least 6 " from these components is desirable in all installations.

When routing sensor cables through any panels, be sure to use a rubber grommet to keep the cables from being cut by a sharp edge.

If any of your cables are too long to route back to your instrument fully extended, we recommend sending your sensors back to Digatron to be cut to the appropriate length for your needs or coiling them each separately. If you do coil your sensors, keep the coils away from the engine.

If you experience erratic readings after installing your instrument, it is usually helpful to separate individual sensor cables as much as possible.

## ERRATIC READINGS

Erratic readings are usually caused by ignition noise getting into the instrument. This noise can cause the stored data to be incorrect. In extreme cases a large noise spike can cause the limits and tach calibration to reprogram themselves.

To avoid erratic readings, keep your temperature and tach leads separated by at least 3 ". Do not wrap leads together, this can induce noise into the system. Route these leads as far away as possible from the ignition coil. Install the tach lead on the plug wire at least 2 " back from the plug boot. If you still have a problem, try a different location on the plug wire.

Running your leads through separate sections of fuel line will protect them from cuts and abrasions, but will not shield them from ignition noise.

Be sure that all sensors are connected to the instrument, and that all connectors fit together snugly.

## TACH SENSORS

*TS-106 & TS-106B:* These are our standard tach sensors. To install them, clamp or tie-rape the end of the tach sensor to a plug wire, 1 " from the spark plug end. Try to keep the end of the sensor parallel to the plug wire and route the cable as far away from the ignition coil as possible.

Route the sensor cable from the motor to the rear of your instrument and secure with cable ties. Plug into the pigtail with the "push-on" type connector.

*TS-110:* This tach sensor is for use on motors with very noisy ignition systems. It is installed by securing the cable to the plug wire or in a spot adjacent to the plug wire and approximately 6 " away from the ignition coil. Ground the black wire from the sensor to the block or the head. Coil the green wire around the plug wire and hold it in place with a tie wrap. If the tach reading is erratic, trim the green wire back one inch at a time until the reading stabilizes.

For best results, keep the tach sensor cable separated as much as possible from any other cables running to your instrument.

## CHT SENSOR

*SS-102:* Only air cooled engines use this sensor.

Remove the spark plug from the cylinder you wish to monitor and discard the plug washer.

Check the surface of the head around the spark plug hole for a smooth, flat finish to assure a good seal when the sensor is installed.

Position the sensor over the spark plug hole and check to be sure you have sufficient clearance around the outside of the sensor body to avoid damage when the plug is installed and tightened. This may require some minor machining on some installations.

Install the spark plug finger tight to hold the sensor in position. Finish tightening with a plug wrench to the same torque as normally recommended. **Do not allow the sensor to turn as you tighten the plug.** The sensor is easily damaged if forced into a cooling fin.

Route the sensor cable from the motor to the instrument. Secure the cable to the frame of the kart with cable ties. Connect to the RF style pigtail on the instrument and turn the connector until tight.

## EGT SENSOR

*EXT-102B:* Install the sensor clamp assembly on the exhaust header. Position the clamp so that the sensor will be in the center of the header and approximately 2 " from the head side of the exhaust flange.

Using the fitting on the clamp assembly as a drill bushing, drill a 3/16 " hole through the header. Remove the clamp assembly from the header and redrill the hole to 13/64 ". Reinstall the clamp assembly aligning it with the hole just drilled.

Insert the EXT-102B sensor into the fitting so that the tip of the sensor extends 1/4" past the center of the header. Tighten the compression nut to lock it in place. Connect the black wire to any clean, unpainted metal surface on the engine (it is important that this is a good electrical connection).

Route the sensor cable from the motor to the instrument. Secure the cable with cable ties to prevent excessive movement. **The thermocouple cable is brittle and will break at the flex points if not properly tied down.** It is also a good practice to protect the cable with a short piece of fuel line at any point that it may rub against a hard surface.

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### SPEEDOMETER SENSOR

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*MPH-102AS:* Mount the sensor bracket so that the nylon arm is parallel to, centered on and approximately 1" away from the drive shaft.

Trim the flexible collar to the proper length so that it can wrap around your drive shaft. Mount it on the shaft so that the edge with the magnets is centered on the sensor mounting hole in the bracket. Use the collar as is for 1 1/2" shafts. Cut at the first mark for 1 1/4" shafts, the second mark for 1 1/8" or the third mark for 1" shafts. Secure the collar to the shaft with a cable tie.

Mount the sensor in the bracket so that the end of the sensor is within 1/8" of the collar and the slots in the sensor are in line with the edge of the collar. Secure the sensor in this position with the nuts and lock washers provided.

Route the cable assembly to the instrument and secure it with cable ties to keep it away from moving parts.

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### SPEEDOMETER CALIBRATION

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The following tire circumference measurement will be used to calibrate your speedometer when your instrument is in Set Limits mode. **Your tire circumference will be rounded to the nearest tenth of an inch.**

To measure your tire's circumference, place a drop of oil on the top of the tire to be measured. With the driver in the kart, push the kart forward at least one complete revolution of the tire. Now measure from the center of one oil spot, to the center of the next oil spot.

**NOTE 1:** Tire circumference will increase from 2% to 4% during a race depending on how hot the day is. For highest accuracy, you should add approximately 3% to your tire circumference to account for this expansion.

**NOTE 2:** If your speedometer collar has **4 magnets**, you must divide your tire circumference by 2.

Refer to the SETTING FUNCTION LIMITS section of your OPERATING INSTRUCTIONS for details on setting the instrument's calibration.

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### WATER TEMP. SENSORS

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*WT-102:* The WT-102 water temperature sensor can be used in place of the SS-102 CHT sensor. Water temperature should be taken from a point well below the water level in the block, or from a fitting provided for this purpose in the head (do not use the radiator). The sensor can also be placed inline in the hose where coolant exits the engine. This is not recommended, but if

this is the only location available, be sure the inline pipe is grounded to the engine block. The compression fitting provided with the sensor is an 1/8" NPT. You may need to use a reducing bushing in some applications to adapt the compression fitting to an available water temperature port. When installing the sensor, be sure that at least 1" of the probe is in the water.

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### REMOTE STORE

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*SA-C:* The remote store switch should be mounted to the steering wheel within thumbs reach of the driver. This switch requires a 15/32" mounting hole for installation. Mount the switch in a position that will provide easy access while driving.

Tie the coil cord to the steering column where needed to prevent it from interfering with the driver. If the remote store switch is not used, leave its input connector open; do not use a shorting plug.

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### OVER LIMIT WARNING LIGHT

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The panel mount "over limit" light is designed to be mounted in a dash panel or in a bracket. It should be mounted directly facing you in a place where it is in your normal field of vision while driving. It requires a 1/2" mounting hole, and is held in place with the "push on" nut supplied with the light.

The helmet mount version of the light has a suction cup that is designed to stick on the side of your face shield at eye level and out of your direct line of sight. Experiment to find the best location on your face shield and then attach the suction cup. Use a dab of petroleum jelly or baby oil on the suction cup for best adhesion.

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### REPAIRS

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If you have any questions about the operation of your instrument or sensors, please call us. One of our technicians will be happy to help you.

Your instrument is warranted to be free from factory defects and electronic failure for one year from the date of purchase. Physical damage during normal usage is not covered under the warranty. Be sure to fill out and return your warranty card for our records. If we do not have a card on file for your instrument, you will be charged for repairs unless you can provide us with a proof of purchase date.

When returning an instrument for repair, enclose a note indicating your return address, phone number and a detailed description of the problem. Send your instrument and sensors so that we can check the complete system. Repairs will normally be completed within ten working days.

Send repairs to:

**Digatron**

**8102 N. Freya St.**

**Spokane, WA 99217**

**Phone: (509) 467-3128 Fax: (509) 467-2952**

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