

Stearns®

Brakes, Clutches and Electronic Components

E-Letter December 2009

Hazardous Location Motor Brakes

Stearns offers brakes designed for use in Division 1 and Division 2 rated hazardous environments. The brakes carry the UL listed mark.

The Stearns print and on-line catalogs have a chart listing the UL certified brakes available by Division, Class, Group, and T-code for dust and gas and vapors ignition temperatures. Motor mount brakes are available from 1.5 to 330 lb-ft in 56TC through a 405TC frame size.



Stearns Division 1 brake features include:

- The brake contains and internally isolates any potential combustion through controlled machining of the enclosure, the closed shaft mount hub and the sealed lead-wire exit.
- Limit brake temperature with an internal bi-metallic thermostat.
- An epoxy vacuum encapsulated solenoid coil with screw terminals which allows change of coil without disturbing the leadwires.
- Options include: space heater, mechanical status switch (NO or NC), encoder and a gasketed enclosure.

Stearns Division 2 brakes features include:

- Limit brake temperature with an internal thermostat.
- An epoxy vacuum encapsulated solenoid coil with screw terminals which allows change of coil without disturbing the leadwires.

Brakes are mounted directly to a C-face on the opposite drive end (ODE) of a motor. Brakes are available with internal bearing support for fan guard mount. Bearing support is also recommended when using mounting adapters due to the increased shaft length. UL rated hazardous environment brakes are not available in a coupler style. The brakes do not contain any sparking element and have a thermostat to limit the brake temperature.



Pictures:

Division 1 UL certified 1-065-300 hazardous hub has a precision fit into the flame path of the endplate.
(right) Division 1 UL certified 1-087-300-02 with internal bearing support for motor fan mount.

Division 1 brake hubs are end of shaft mount. The hubs fit a specific non-standard shaft length. The hub has a precision fit within the brake and the shaft does not extend beyond the hub. The shaft length is listed in the catalog by brake series. Shaft length is considered in initial selection as well as potential retrofit or replacement.



Pictures:

(left) 1-087-000 hub with electroless nickel finish next to a phosphotize finish 1-087-300 hub.
(right) Hazardous environment brake hubs include the 1-087-300 full spline and square hub shapes, and the 1-065-300 splined hub.
Note the shaft can pass through the standard hub while the shaft does not pass through a Division 1 rated hub. The Division 1 hub has tapped holes at the face to help in potential hub removal.

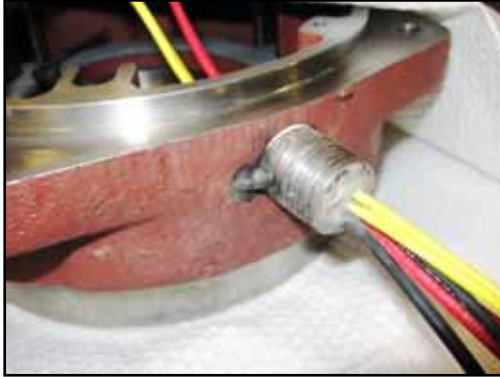
Division 1 and Division 2 brakes have a bi-metallic thermostat to sense internal temperature. The sensing temperature is selected based on the brake exterior temperature within the Class and Group temperature requirements.



Pictures

(left) NO & NC thermostats in the 1-065-300 endplate.
(right) NC switch inserted in a 1-087-300 pressure plate.

Leadwires are sealed with a Crouse-Hinds Chico sealing compound which restricts gas, vapor or flame propagation. The coil, thermal switch and any Division 1 modifications such as the optional heater, status switch or encoder leadwires are sealed as the leadwires exit. Since the leadwires are sealed, it is necessary to pre-select the number of leadwires and the exit side at the time of order.



Picture:

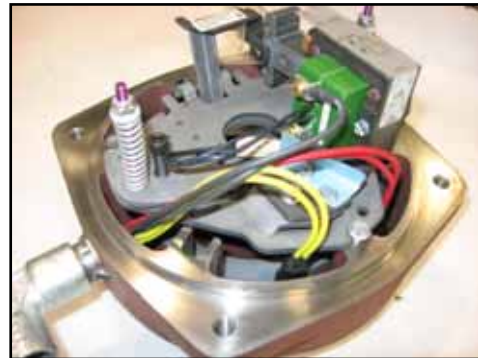
A threaded pipe nipple is tack welded to the Division 1 brake endplate. Leadwires are sealed with chico material. An elbow is added once the chico has cured.

UL certified Division 2 brakes are similar to the standard solenoid style, cast enclosure brakes. A thermostat monitors internal brake temperature. If a status switch or heater is required, a Division 1 rated product can be used.

Picture:

1-065-300 brake.

Note the green encapsulated vacuum molded construction coil with leadwire terminals. The thermostat yellow & red leads and the black solenoid leads are routed through the external elbow. The coil can be changed without disturbing the leadwire exit.



The National Electrical Code (NEC) Handbook article 500 describes hazardous (classified) locations in detail. Stearns brakes are evaluated and marked by UL to the standard requirements. Suitability, installation and repair are controlled by the Authority having jurisdiction (AHJ).

Specifying and installing a Stearns UL certified brake organizes and simplifies sourcing of Division 1 and 2 hazardous rated brakes.

Prior e-letter tech sheets are posted on the Stearns web site: www.stearns.rexnord.com

Stearns®: Reliable brakes through design, manufacture and support.

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