

Application and Analysis Sheet

Trombetta Motion Technologies offers a variety of work solenoids, electronic controls and contactors. We also offer engineered products specifically designed to your application needs. In order to assure that the Trombetta product selected is satisfactory or whether further engineering may be required, detailed information concerning your application is required. Trombetta's representative will be developing this information with you.

We appreciate the opportunity to discuss your application needs.

Work Solenoid -A solenoid is essentially an electromagnet with at least one moving part capable of doing some useful work. The work output of a solenoid is characterized by limited motion, i.e. a few inches of travel or less and fast response time, i.e. milliseconds.

Electronic Control - Trombetta's electronic controls are developed to enhance solenoid performance by increasing force capability and reducing temperature. Trombetta can also develop electronic controls for non-solenoid applications.

Contactors - An electromagnetic switch that routes electric current to a high current load (motor, starter) when a switch (key switch) is turned on or pushed on an automobile, motorcycle, lawn tractor or any other device that uses a battery.

General Project Information:

1. Company: _____
Name: _____ Title: _____
2. Contacts Involved in Project/Approval: (purchasing agent, engineer, QC, service, etc.)
Name: _____ Title: _____
3. Has your company any special development criteria requirements, such as ISO or QS Certification? _____
4. Briefly describe the application: _____

What are the Work Solenoid and/or Electronic Control Operating Requirements?

(If question is N/A based on application please indicate)

1. Voltage: _____ Max Ampere Limit: _____ AC/DC: _____ Hertz: _____
2. Power Source (e.g.: battery): _____ Distance of power source from solenoid: _____
3. Stroke Length in inches: _____ Push or Pull when energized? _____
4. Load (in pounds) at Start of Stroke: _____ at Mid-Stroke: _____ At Hold/Seated: _____
5. Is the load returned by gravity? _____ spring? _____ (spring force required at beginning of stroke: _____) other? _____
6. Cycle Rate "On" time: _____ "Off" time: _____
7. Cycles Per: Second: _____ Minute: _____ Hour: _____ Year: _____ Other: _____
Product life desired: _____
8. Specific pull-in time required? Max: _____ Drop-out time (release time) Max: _____
9. How is solenoid mounted? Horizontal? _____ Vertical (Plunger up or down)? _____
Angled (Attitude)? _____
10. Size Restrictions - H: _____ W: _____ L: _____ Dia: _____ Weight: _____

If Contactor application, what are the DC Contactor Operating Requirements?

1. Voltage _____
2. Maximum sustained duty cycle _____
3. Nominal Carry _____ Peak Carry _____
4. Contact Peak Inrush current capability _____
5. Running current _____
6. Pull in voltage (at 25 C) _____
7. Hold voltage (at 25 C) _____
8. Nominal coil resistance (at 25 C) _____
9. Contact material: Copper _____ Silver alloy _____
10. Standard operating temperature range: _____

- 11. Grounding method: Isolated_____ Through bracket_____
- 12. Number of terminals: 3____ 4____ 5____ 6____
- 13. Life cycles: Electrical_____ Mechanical_____
- 14. Mounting position of solenoid: Vertical _____ Horizontal_____
- 15. Mounting means of contactor: Flat bracket_____ Curved bracket_____ Other_____
- 16. Break Current_____

What Environmental Factors need to be Considered?

- 1. Ambient Temperature (°F) - Max: _____ Min: _____
- 2. Are rapid temperature swings anticipated? _____
- 3. What heat dissipation factors affect the solenoid? Enclosures? _____ Heat sinks or sources? _____
- 4. Briefly describe the operating environment: _____
- 5. Please identify extreme operating conditions (e.g.: high temperature, minimum supply voltage)? _____
- 6. Check all that apply:

Moisture: _____	Dust: _____	Side Loading: _____
Dirt: _____	Humidity: _____	Ultraviolet Light: _____
Salt Spray: _____	Shock: _____	Electrical Noise: _____
Oil: _____	Vibration: _____	

What Safety and Testing Requirements are there?

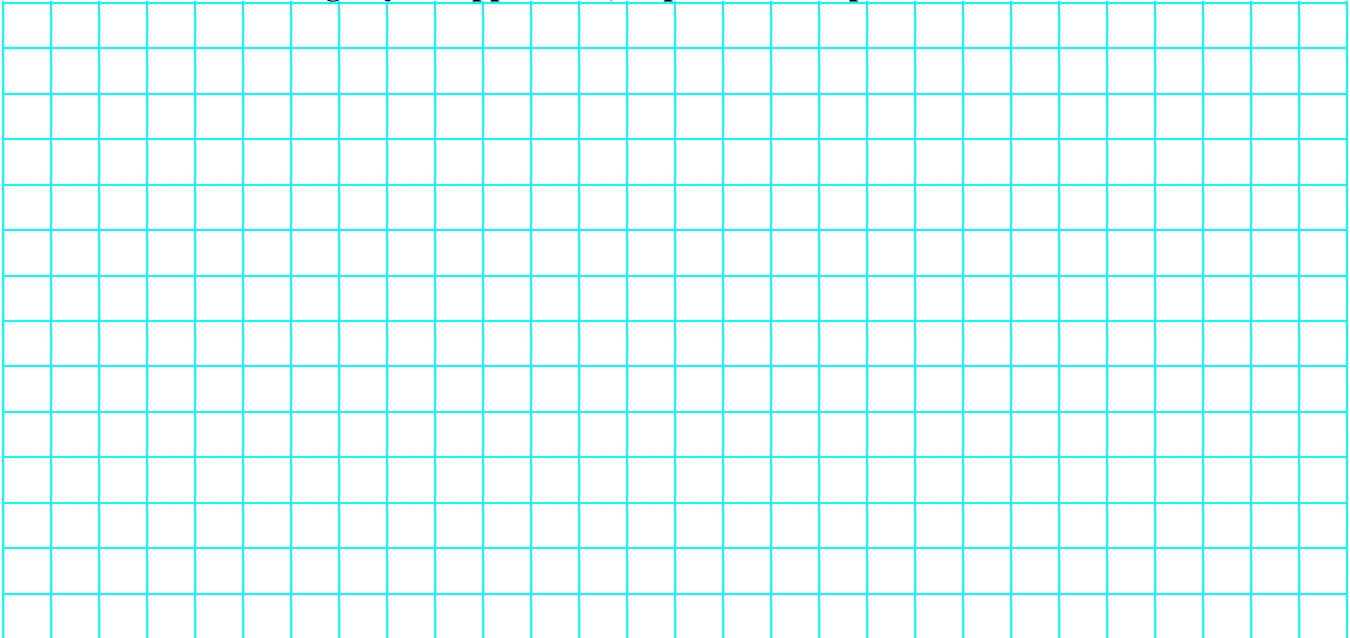
- 1. Could personnel come into contact with the solenoid housing? _____
- 2. What happens if the solenoid fails to energize, de-energize, or move; can personal injury or mechanical damage occur? _____

CUSTOMER IS RESPONSIBLE FOR ANY AGENCY APPROVALS OR CERTIFICATIONS

Project Data:

- 1. What is the projected annual production volume? _____
- 2. Are prototypes and pre-production units required? _____
- 3. What are the price targets? _____
- 4. What development target dates are there for prototypes, pre-production and production? _____

Please attach a drawing of your application, or provide a simple sketch below.



Thank you for considering Trombetta Motion Technologies.