PAYNE ENGINEERING
Rt. 29 • Scott Depot WV • 25560-0070
E-MAIL - sales@payneng.com
www.payneng.com
APPLICATION ASSISTANCE - 304/757-7354
24 HOUR FAX - 304/757-7305

Model 36TBP
DC Power Control

MODEL 36TBP

- **Description:** solid state variable rectifier
- **Product Range:** 5 & 10 amps, 120 or 240 VAC input
- **Application:** resistive or inductive DC loads

FEATURES

- All solid state construction
- Compact size
- Silent, arcless switching
- Full-wave rectification
- Infinitely variable DC output
- Self-Protecting design

TYPICAL APPLICATIONS

- D.C. clutches
- Magnetic chucks
- Brakes
- Magnet excitation
- Field excitation

Model 36TBP controls provide a full-wave rectified, infinitely variable DC output voltage from a single-phase AC input. Phase-angle control via power semiconductors varies the AC input voltage, which in turn is full-wave rectified. The result is the infinitely variable DC output. Because power semiconductors replace contacts and brushes to switch electric power without moving parts, there is no MTBF or life expectancy rating on these devices as long as they are operated within their stated ratings for current, voltage, and temperature.

SELF-PROTECTING DESIGN

36TBP controls utilize an exclusive "self-protecting" design to provide maximum unit protection against potentially destructive conditions.

1> Special fast-acting fuses protect against load-fault damage.

2> The unit case serves as an integral chassis heatsink to allow continuous operation at nameplate rating in ambients to 50°C.

3> MOV overvoltage protection.

SPECIFICATIONS

Power Circuit: full-wave single-phase bridge.

Control Circuit: r-c network with variable resistance potentiometer adjusts firing capacitor into bi-lateral diode connected to power TRIAC gate for stable full-range control.

Mains Frequency: 50/60 Hz.

Output Voltage: 0-95% of input.

Overall Efficiency: 99%.

Power Loss: approximately 1.5 watts/amp.

Voltage Drop Across Power Semiconductor at 100% Output: 1-2 volts.

Control Input: variable resistance potentiometer.

Control Power: 1 watt.

Terminal Connections: Bakelite or thermoplastic blocks.

SELF-PROTECTING FEATURES

Fuse Protection: 2 millisecond I^2t fuses are factory-tested and coordinated with all power semiconductors, considering:

a) fuse element melt time, t_{melt}.
b) peak melt current, I_{melt}.
c) arc quench time, t_{arc}.
d) peak arc current, I_{arc}.

Ambient Temperature Range: -10 to +50°C.

SIZING CONSIDERATIONS

Model 36TBP controls are rated for use with resistive or inductive loads requiring DC power. Size by actual load current, not kW.

1> Always use maximum possible load current for sizing purposes.

2> Current draw must not exceed the fuse rating at any time.

3> Rated voltage of connected load should match maximum possible output voltage of control.

SIZING EXAMPLE

Application: excitation of DC clutch drawing 2.5 amps at 90 VDC. Available voltage is 120 VAC, single-phase, 60 HZ.

Model Number Selection:

a. DC output voltage: 36

b. Panel-mount: TBP

c. 120 VAC input: -1-

d. 2.5 amp load: -5

Model number: 36TBP-1-5

WHEN ORDERING, SPECIFY:

- Model Number
- Input Voltage
- Load Specifications

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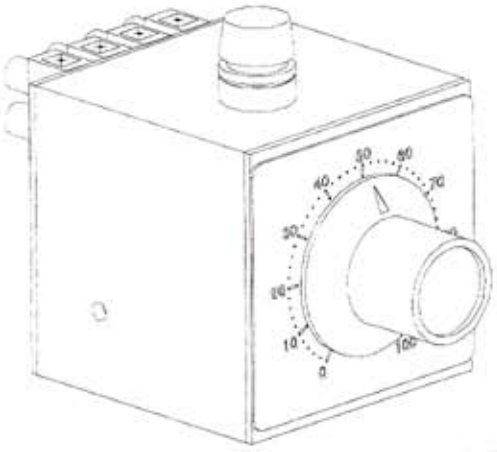
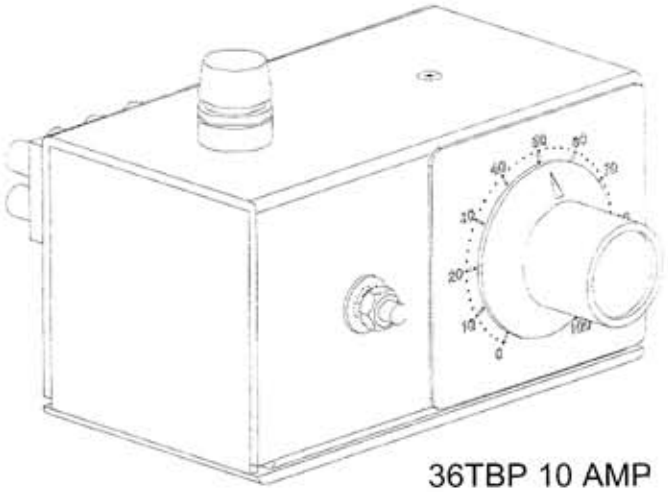
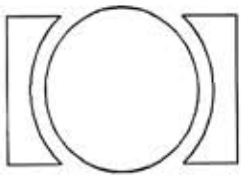
MODEL NUMBER	AMPS (FUSE)	kVA@ MAX. RATED VOLTAGE	FUSE PART NUMBER	DIMENSIONS (INCHES) HEIGHT	WIDTH	DEPTH
120 VAC SINGLE-PHASE INPUT, 0-90 VDC OUTPUT, 50/60 Hz						
36TBP-1-5	5	0.6	49C25-5	3.25	2.65	3.4
36TBP-1-10	10	1.2	49C25-10	3.33	4.5	3.1
240 VAC SINGLE-PHASE INPUT, 0-215 VDC OUTPUT, 50/60 Hz (also for 208/220/230 VAC input)						
36TBP-2-5	5	1.2	49C25-5	3.25	2.65	3.4
36TBP-2-10	10	2.4	49C25-10	3.33	4.5	3.1



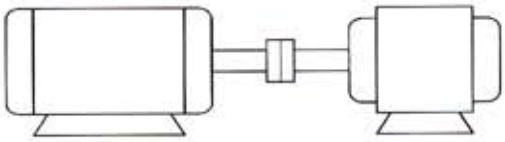
36TPB 5 AMP



36TBP 10 AMP

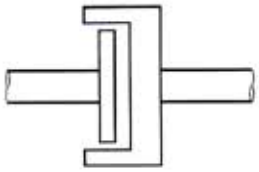


DC Braking

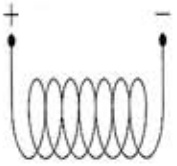


M-G Set Replacement

Electrolytic Cell



DC Clutch



DC Field

Typical 36TBP Applications