

TECHNICAL INFORMATION

The TURBO Easy-Start is a combination multiple-value, thin film, metallized polypropylene, high microfarad capacitor (ranging up to 324 MFD) with a potential relay, both encapsulated in our patented viscous fluid with an aluminum housing.

The TES uses a UL810 recognized safety interrupter (as used in all AmRad fluid-filled motor-run capacitors).

The metallized film capacitor meets, and far exceeds, both EIA standards (No. 456 for metallized film capacitors and No. 463 for electrolytic capacitors).

The TES "film" capacitors have been tested per EIA463, paragraph 16, Table A for Type 1 Heavy-Duty capacitors for motor starting applications and have exceeded over 400,000 cycles. [NOTE: This standard only requires a maximum of 40,000 cycles.]

The potential relay is UL/CSA approved (File No. E251539) and has been tested well beyond 1,000,000 cycles under load. [NOTE: Capacitor/relay combination.]

The simple Two-Wire (one black, one white) connection from the TES to the terminals of a motor-run capacitor provides voltage feedback to the relay. As the compressor motor reaches an optimum running range, the internal contacts of the relay "open" and (electrically) remove the high microfarad TES capacitor element from the circuit. Later, when the compressor motor shuts off, the contacts close and reconnect the two parts of the TES (relay and capacitor), thereby making it immediately available for the next restart of the compressor.

IMPORTANT NOTE: Metallized film capacitors can sustain high "in-rush" currents and are capable of being energized multiple times for a continuous period without failure (unlike electrolytic start-capacitors which are designed for intermittent-duty only).

The TES utilized ALL BRASS terminals which have been plated and will never rust or corrode!



TURBO® Easy-Start

INSTRUCTION GUIDE



ONE UNIVERSAL EASY-START
can be used in place of any one
of the **FOUR** commonly used
Hard-Start kits on the market today!

*Can be used in over 90% of refrigeration
and air conditioning applications.*



Exclusive  Distributor

For technical questions, please contact AmRad at 1.800.445.6033
or www.amradmanufacturing.com

Turbo Easy-Start CAPACITANCE (MFD) RANGE REQUIRED	JUMPER WIRE REQUIRED
108 to 130 mfd	NONE
<p>NOTE: THE WIRES FROM THE COMPRESSOR AND THE FAN TO THE MOTOR-RUN CAPACITOR ARE <u>NOT SHOWN</u> IN THIS ILLUSTRATION.</p>	<p>Turbo Easy-Start CONNECTED TO STANDARD DUAL-VALUE MOTOR-RUN CAPACITOR</p> <p>Step 1: No jumper wires required.</p> <p>Step 2: Connect the black wire (common) from Turbo Easy-Start to the COMMON (C) terminal of the standard dual-value motor-run capacitor as shown.</p> <p>Step 3: Connect the white wire from the Easy-Start to the HERM terminal of the standard dual-value motor-run capacitor as shown.</p> <p>[Shown connected to a 50+7.5mfd dual-value capacitor]. [Typical Air Conditioning Application]</p>

Turbo Easy-Start CAPACITANCE (MFD) RANGE REQUIRED	JUMPER WIRE REQUIRED
108 to 130 mfd	NONE
<p>NOTE: THE WIRES FROM THE COMPRESSOR AND THE FAN TO THE TURBO*200 MOTOR-RUN CAPACITOR ARE <u>NOT SHOWN</u> IN THIS ILLUSTRATION.</p>	<p>Turbo Easy-Start CONNECTED TO A TURBO*200 UNIVERSAL CAPACITOR</p> <p>Step 1: No jumper wires required (on the Easy-Start).</p> <p>Step 2: Connect the black wire (common) from the Easy-Start to the COMMON (C) terminal of the Turbo*200 Universal Capacitor as shown.</p> <p>Step 3: Connect the white wire from the Easy-Start to the 20MFD terminal of the Turbo*200 Universal capacitor as shown.</p> <p>[Shown connected to a Turbo*200 which has been wired to provide 50mfd for the herm (compressor) and a 7.5mfd fan value]. [Typical Air Conditioning Application]</p>

Turbo Easy-Start CAPACITANCE (MFD) RANGE REQUIRED	JUMPER WIRE REQUIRED
108 to 130 mfd	NONE
<p>NOTE: THE WIRES FROM THE COMPRESSOR AND THE FAN TO THE MOTOR-RUN CAPACITOR ARE <u>NOT SHOWN</u> IN THIS ILLUSTRATION.</p>	<p>Turbo Easy-Start CONNECTED TO A STANDARD SINGLE-VALUE MOTOR-RUN CAPACITOR</p> <p>Step 1: No jumper wires required (on the Easy-Start).</p> <p>Step 2: Connect the black wire (common) from the Easy-Start to one of the terminals of the standard single value motor-run capacitor as shown.</p> <p>Step 3: Connect the white wire from the Easy-Start to the other terminal of the standard single value motor-run capacitor as shown.</p> <p>[Shown connected to a 50mfd single-value capacitor]. [Typical Commercial Refrigeration Application]</p>

TURBO EASY-START CAPACITANCE (MFD) RANGE REQUIRED	JUMPER WIRE REQUIRED
189 to 227 mfd	Green Jumper Wire
<p>NOTE: THE WIRES FROM THE COMPRESSOR AND THE FAN TO THE MOTOR-RUN CAPACITOR ARE <u>NOT SHOWN</u> IN THIS ILLUSTRATION.</p>	<p>Turbo Easy-Start CONNECTED TO STANDARD DUAL-VALUE MOTOR-RUN CAPACITOR</p> <p>Step 1: Using the green jumper wire, connect the purple and yellow terminals to the corresponding colored terminals on the Easy-Start as shown.</p> <p>Step 2: Connect the black wire (common) from the Turbo Easy-Start to the COMMON (C) terminal of the standard dual-value motor-run capacitor as shown.</p> <p>Step 3: Connect the white wire from the Turbo Easy-Start to the HERM terminal of the standard dual-value motor-run capacitor as shown.</p> <p>[Shown connected to a 60+7.5mfd dual-value capacitor]. [Typical Air Conditioning Application]</p>

TURBO EASY-START CAPACITANCE (MFD) RANGE REQUIRED	JUMPER WIRE REQUIRED
189 to 227 mfd	Green Jumper Wire
<p>NOTE: THE WIRES FROM THE COMPRESSOR AND THE FAN TO THE TURBO*200 MOTOR-RUN CAPACITOR ARE <u>NOT SHOWN</u> IN THIS ILLUSTRATION.</p>	<p>Turbo Easy-Start CONNECTED TO A TURBO 200 UNIVERSAL CAPACITOR</p> <p>Step 1: Using the green jumper wire, connect the purple and yellow terminals to the corresponding colored terminals on the Easy-Start as shown.</p> <p>Step 2: Connect the black wire (common) from the Turbo Easy-Start to the COMMON (C) terminal of the Turbo*200 Universal Capacitor as shown.</p> <p>Step 3: Connect the white wire from the Turbo Easy-Start to the 20MFD terminal of the Turbo*200 Universal capacitor as shown.</p> <p>[The Turbo Easy-Start is shown connected to a Turbo*200 which has been wired to provide 60mfd for the herm (compressor) and a 7.5mfd fan value]. [Typical Air Conditioning Application]</p>

TURBO EASY-START CAPACITANCE (MFD) RANGE REQUIRED	JUMPER WIRE REQUIRED
189 to 227 mfd	Green Jumper Wire
<p>NOTE: THE WIRES FROM THE COMPRESSOR AND THE FAN TO THE MOTOR-RUN CAPACITOR ARE <u>NOT SHOWN</u> IN THIS ILLUSTRATION.</p>	<p>Turbo Easy-Start CONNECTED TO A STANDARD SINGLE-VALUE MOTOR-RUN CAPACITOR</p> <p>Step 1: Using the green jumper wire, connect the purple and yellow terminals to the corresponding colored terminals on the Easy-Start as shown.</p> <p>Step 2: Connect the black wire (common) from the Turbo Easy-Start to one of the terminals of the standard single value motor-run capacitor as shown.</p> <p>Step 3: Connect the white wire from the Turbo Easy-Start to the other terminal of the standard single value motor-run capacitor as shown.</p> <p>[Shown connected to a 60mfd single-value capacitor]. [Typical Commercial Refrigeration Application]</p>

AMRAD'S UNIVERSAL TURBO EASY-START WIRING INSTRUCTIONS

IMPORTANT NOTE: IF THE EXISTING MOTOR-RUN CAPACITOR HAS RUSTED TERMINALS, IT SHOULD BE REPLACED PRIOR TO INSTALLING THE TURBO EASY-START.

TURBO EASY-START CAPACITANCE (MFD) RANGE REQUIRED	JUMPER WIRE REQUIRED
233 to 280 mfd	Red Jumper Wire
<p>NOTE: THE WIRES FROM THE COMPRESSOR AND THE FAN TO THE MOTOR-RUN CAPACITOR ARE <u>NOT SHOWN</u> IN THIS ILLUSTRATION.</p>	<p>Turbo Easy-Start CONNECTED TO STANDARD DUAL-VALUE MOTOR-RUN CAPACITOR</p> <p>Step 1: Using the red jumper wire, connect the purple, yellow and red terminals to the corresponding colored terminals on the Easy-Start as shown.</p> <p>Step 2: Connect the black wire (common) from the Turbo Easy-Start to the COMMON (C) terminal of the standard dual-value motor-run capacitor as shown.</p> <p>Step 3: Connect the white wire from the Turbo Easy-Start to the HERM terminal of the standard dual-value motor-run capacitor as shown.</p> <p>[Shown connected to a 80+10mfd dual-value capacitor]. [Typical Air Conditioning Application]</p>

TURBO EASY-START CAPACITANCE (MFD) RANGE REQUIRED	JUMPER WIRE REQUIRED
233 to 280 mfd	Red Jumper Wire
<p>NOTE: THE WIRES FROM THE COMPRESSOR AND THE FAN TO THE TURBO*200X MOTOR-RUN CAPACITOR ARE <u>NOT SHOWN</u> IN THIS ILLUSTRATION.</p>	<p>Turbo Easy-Start CONNECTED TO A TURBO*200 UNIVERSAL CAPACITOR</p> <p>Step 1: Using the red jumper wire, connect the purple, yellow and red terminals to the corresponding colored terminals on the Easy-Start as shown.</p> <p>Step 2: Connect the black wire (common) from the Turbo Easy-Start to the COMMON (C) terminal of the Turbo*200X Universal Capacitor as shown.</p> <p>Step 3: Connect the white wire from the Turbo Easy-Start to the 50MFD terminal of the Turbo*200X Universal capacitor as shown.</p> <p>[The Turbo Easy-Start is shown connected to a Turbo*200X which has been wired to provide 80mfd for the herm (compressor) and a 10mfd fan value]. [Typical Air Conditioning Application]</p>

TURBO EASY-START CAPACITANCE (MFD) RANGE REQUIRED	JUMPER WIRE REQUIRED
233 to 280 mfd	Red Jumper Wire
<p>NOTE: THE WIRES FROM THE COMPRESSOR AND THE FAN TO THE MOTOR-RUN CAPACITOR ARE <u>NOT SHOWN</u> IN THIS ILLUSTRATION.</p>	<p>Turbo Easy-Start CONNECTED TO A STANDARD SINGLE-VALUE MOTOR-RUN CAPACITOR</p> <p>Step 1: Using the red jumper wire, connect the purple, yellow and red terminals to the corresponding colored terminals on the Easy-Start as shown.</p> <p>Step 2: Connect the black wire (common) from the Turbo Easy-Start to one of the terminals of the standard single value motor-run capacitor as shown.</p> <p>Step 3: Connect the white wire from the Turbo Easy-Start to the other terminal of the standard single value motor-run capacitor as shown.</p> <p>[Shown connected to a 80mfd single-value capacitor]. [Typical Commercial Refrigeration Application]</p>

TURBO EASY-START CAPACITANCE (MFD) RANGE REQUIRED	JUMPER WIRE REQUIRED
270 to 324 mfd	Yellow Jumper Wire
<p>NOTE: THE WIRES FROM THE COMPRESSOR AND THE FAN TO THE MOTOR-RUN CAPACITOR ARE <u>NOT SHOWN</u> IN THIS ILLUSTRATION.</p>	<p>Turbo Easy-Start CONNECTED TO STANDARD DUAL-VALUE MOTOR-RUN CAPACITOR</p> <p>Step 1: Using the yellow jumper wire, connect the purple, yellow, red and brown terminals to the corresponding colored terminals on the Easy-Start as shown.</p> <p>Step 2: Connect the black wire (common) from the Turbo Easy-Start to the COMMON (C) terminal of the standard dual-value motor-run capacitor as shown.</p> <p>Step 3: Connect the white wire from the Turbo Easy-Start to the HERM terminal of the standard dual-value motor-run capacitor as shown.</p> <p>[Shown connected to a 55+10mfd dual-value capacitor]. [Typical Air Conditioning Application]</p>

TURBO EASY-START CAPACITANCE (MFD) RANGE REQUIRED	JUMPER WIRE REQUIRED
270 to 324 mfd	Yellow Jumper Wire
<p>NOTE: THE WIRES FROM THE COMPRESSOR AND THE FAN TO THE TURBO*200 MOTOR-RUN CAPACITOR ARE <u>NOT SHOWN</u> IN THIS ILLUSTRATION.</p>	<p>Turbo Easy-Start CONNECTED TO A TURBO 200 UNIVERSAL CAPACITOR</p> <p>Step 1: Using the yellow jumper wire, connect the purple, yellow, red and brown terminals to the corresponding colored terminals on the Easy-Start as shown.</p> <p>Step 2: Connect the black wire (common) from the Turbo Easy-Start to the COMMON (C) terminal of the Turbo*200 Universal Capacitor as shown.</p> <p>Step 3: Connect the white wire from the Turbo Easy-Start to the 20MFD terminal of the Turbo*200 Universal capacitor as shown.</p> <p>[The Turbo Easy-Start is shown connected to a Turbo*200 which has been wired to provide 55mfd for the herm (compressor) and a 10mfd fan value]. [Typical Air Conditioning Application]</p>

TURBO EASY-START CAPACITANCE (MFD) RANGE REQUIRED	JUMPER WIRE REQUIRED
270 to 324 mfd	Yellow Jumper Wire
<p>NOTE: THE WIRES FROM THE COMPRESSOR AND THE FAN TO THE MOTOR-RUN CAPACITOR ARE <u>NOT SHOWN</u> IN THIS ILLUSTRATION.</p>	<p>Turbo Easy-Start CONNECTED TO A STANDARD SINGLE-VALUE MOTOR-RUN CAPACITOR</p> <p>Step 1: Using the yellow jumper wire, connect the purple, yellow, red and brown terminals to the corresponding colored terminals on the Easy-Start as shown.</p> <p>Step 2: Connect the black wire (common) from the Turbo Easy-Start to one of the terminals of the standard single value motor-run capacitor as shown.</p> <p>Step 3: Connect the white wire from the Turbo Easy-Start to the other terminal of the standard single value motor-run capacitor as shown.</p> <p>[Shown connected to a 55mfd single-value capacitor]. [Typical Commercial Refrigeration Application]</p>