



DISTRIBUTED BY TORQ

CALL (800) 899-5533 FOR TORQ'S EVERYDAY LOW PRICES FOR SINPAC SWITCHES!

- **Completely Solid State** - With no moving parts, SINPAC Switches have no physical constraints to affect their operation.
- **Speed Sensitive** - SINPAC Switches cut out the start winding at approximately 80% of synchronous speed.
- **Restart Capability** - When motor speed drops below 50% of synchronous speed, the start winding is brought back into the circuit to reinitiate starting torque.
- **Environmentally Protected** - SINPAC Switches are immune to moisture, dust, shock, and vibration.
- **Universal Design** - SINPAC Switches will work on 2, 4, 6 or more pole motors of any manufacturer. It also means that foreign and obsolete motors can be easily retrofitted with SINPAC Switches.
- **Unlimited Mounting Locations** - SINPAC Switches offer a variety of external and internal conduit box mountings and external endbell mountings. The mountings are not affected by the motor position (shaft up or shaft down). SINPAC Switches can also be mounted at locations remote from the motor.
- **Installation Instructions** - Included with switches.

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SINPAC SWITCHES FOR MOTORS WITH 230 VOLT START WINDING				
SERIES	CATALOG NUMBER	TYPICAL MAXIMUM MOTOR HP	TYPICAL FULL LOAD MOTOR NAMEPLATE CURRENT	MAXIMUM START WINDING CURRENT
<b>2PV SERIES</b> For Split Phase Motors Only	2PV-16-60	1/2	4	16
<b>2CV SERIES</b> For Capacitor Start Motors Only	2CV-35-260	3	17	35
	2CV-35-310	3	17	35
	2CV-50-260	5	25	50
	2CV-50-310	5	25	50
<b>2VR SERIES</b> For Capacitor Start/ Capacitor Run Motors Only	2VR-35-260	3	17	35
	2VR-35-310	3	17	35
	2VR-50-260	5	25	50
	2VR-50-310	5	25	50
<b>2CVR SERIES</b> For Capacitor Start AND Capacitor Start/ Capacitor Run Motors Only	2CVR-70-260	5 - 7-1/2	35	70
	2CVR-70-310	5 - 7-1/2	35	70
	2CVR-90-260	UP TO 10	45	90
	2CVR-90-310	UP TO 10	45	90



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SINPAC SWITCHES FOR MOTORS WITH 115 VOLT START WINDING				
SERIES	CATALOG NUMBER	TYPICAL MAXIMUM MOTOR HP	TYPICAL FULL LOAD MOTOR NAMEPLATE CURRENT	MAXIMUM START WINDING CURRENT
<b>PV SERIES</b> For Split Phase Motors Only	PV-16-10	1/3	8	16
	PV-16-30	1/3	8	16
	PV-25-30	1/2	12	25
	PV-40-30	3/4	20	40
<b>CV SERIES</b> For Capacitor Start Motors Only	CV-16-130	1/2	8	16
	CV-16-165	1/2	8	16
	CV-25-130	1	12	25
	CV-25-165	1	12	25
	CV-40-130	2	20	40
	CV-40-165	2	20	40
	CV-50-130	3	25	50
	CV-50-165	3	25	50
<b>CVR SERIES</b> For Capacitor Start AND Capacitor Start/ Capacitor Run Motors Only	CVR-40-130	2	20	40
	CVR-40-165	2	20	40
	CVR-50-130	3	25	50
	CVR-50-165	3	25	50
	CVR-80-130	3-5	50	80
	CVR-80-165	3-5	50	80
<b>IR SERIES</b> For Instant Reverse Capacitor Start Motors Only	IR-25-130	1/2	12	25
	IR-25-147	1/2	12	25
	IR-25-165	1/2	12	25
	IR-40-130	2	20	40
	IR-40-147	2	20	40
	IR-40-165	2	20	40

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# Distributor for Stearns® SINPAC® Switches

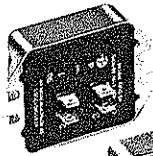
Easy Steps to Replace Mechanical Switches with SINPAC Electronic Switches



**TORQ CORPORATION**

32 WEST MONROE STREET  
BEDFORD, OHIO 44146-3649 USA  
(216) 232-4100 Fax: (216) 232-4104

**CVR Series  
12 Block**



**PV and CV Series  
11 Block  
(PV has three terminals)**



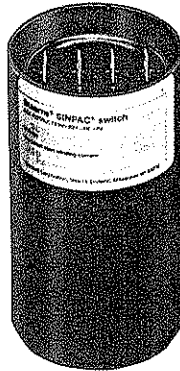
**Mounting  
Gasket**



**IR, 2CV and 2VR  
Series  
15 Block**



**2CVR Series  
17 Block**



## Selection Procedure

Motor hp ratings are typical. For an accurate selection procedure, measure start winding current during a normal start or at locked rotor and select a SINPAC Switch with higher maximum current rating than that measured.

1. Be sure switch series matches motor type.
2. Be sure switch voltage rating matches auxiliary (start) winding voltage rating.
3. Selection can be based on actual measurement of start capacitor current or two times the motor nameplate FLA rating.
4. Switch current rating must match or exceed the motor start capacitor current requirements. Always select a SINPAC Switch with the next higher current rating for:
  - a) High cycling applications.
  - b) Long acceleration time.
  - c) High ambients: Greater than 55°C.
5. To assure proper motor operation, the voltage across the start winding must reach the SINPAC Switch cut out voltage for capacitor start and cut in for split phase between 70% to 85% of motors synchronous speed.
 

**Caution:** SINPAC Switches are line voltage compensated. Changes in the line voltage will not affect system operation unless an overload condition causes reduced running speed along with reduced voltage on the start winding.
6. Higher current switches can be used in place of lower rated switches of the same series.

Series	Typical Maximum Motor hp	Typical Full Load Motor Nameplate Current Rating (amps)		Switch Rating and Permissible Maximum Start Winding Current (amps)	Start Winding Voltage	Catalog Number	Kit Part Number	Cut Out Voltage	Cut In Voltage	Package Style	
		115 Volts	230 Volts								
PV Series for Split Phase Motors Only	1/8	8	-	16	115	PV-16-30	4-7-11016-11-UOK	-	30	11	
	1/4	8	-	16	115	PV-16-10	4-7-11016-11-UJK	-	10	11	
	1/2	-	4	16	230	2PV-16-60	4-7-12016-11-NHK	-	60	11	
	1/2	12	-	25	115	PV-25-30	4-7-11025-11-UOK	-	30	11	
	3/4	20	-	40	115	PV-40-30	4-7-11040-11-UOK	-	30	11	
CV Series for Capacitor Start Motors Only	1/2	8	-	16	115	CV-16-130	4-7-21016-11-UAK	130	29	11	
	1/2	8	-	16	115	CV-16-165	4-7-21016-11-UOK	165	37	11	
	1	12	-	25	115	CV-25-130	4-7-21025-11-UAK	130	29	11	
	1	12	-	25	115	CV-25-165	4-7-21025-11-UOK	165	37	11	
	2	20	-	40	115	CV-40-130	4-7-21040-11-UAK	130	29	11	
	2	20	-	40	115	CV-40-165	4-7-21040-11-UOK	165	37	11	
	3	25	-	50	115	CV-50-130	4-7-21050-11-UAK	130	29	11	
	3	25	-	50	115	CV-50-165	4-7-21050-11-UOK	165	37	11	
	3	-	up to 17.5	35	230	2CV-35-260	4-7-22035-15-UOK	260	70	15	
	3	-	up to 17.5	35	230	2CV-35-310	4-7-22035-15-UOK	310	70	15	
	5	-	up to 25	50	230	2CV-50-260	4-7-22050-15-UOK	260	70	15	
	5	-	up to 25	50	230	2CV-50-310	4-7-22050-15-UOK	310	70	15	
	CVR Series for Capacitor Start and Capacitor Start/Capacitor Run Motors	2	20	-	40	115	CVR-40-130	4-7-41040-12-UAK	130	29	12
		2	20	-	40	115	CVR-40-165	4-7-41040-12-UOK	165	37	12
		3	25	-	50	115	CVR-50-130	4-7-41050-12-UAK	130	29	12
3		25	-	50	115	CVR-50-165	4-7-41050-12-UOK	165	37	12	
3-5		50	-	80	115	CVR-80-130	4-7-41080-15-NAK	130	29	15	
3-5		50	-	80	115	CVR-80-165	4-7-41080-15-NOK	165	37	15	
5 to 7 1/2		-	35	70	230	2CVR-70-260	4-7-42070-17-NCK	260	70	17	
5 to 7 1/2		-	35	70	230	2CVR-70-310	4-7-42070-17-NCK	310	70	17	
5 to 10		-	45	90	230	2CVR-90-260	4-7-42090-17-NCK	260	70	17	
up to 10		-	45	90	230	2CVR-90-310	4-7-42090-17-NCK	310	70	17	
2VR Series for Capacitor Start/ Capacitor Run Motors	3	-	up to 17.5	35	230	2VR-35-260	4-7-72035-15-UOK	260	70	15	
	3	-	up to 17.5	35	230	2VR-35-310	4-7-72035-15-UOK	310	70	15	
	5	-	up to 25	50	230	2VR-50-260	4-7-72050-15-UOK	260	70	15	
	5	-	up to 25	50	230	2VR-50-310	4-7-72050-15-UOK	310	70	15	
	IR Series for Instant Reverse Capacitor Start Motor Only	1/2	12	-	25	115	IR-25-130	4-7-51025-15-UAK	130	29	15
1/2		12	-	25	115	IR-25-165	4-7-51025-15-UOK	165	37	15	
2		20	-	40	115	IR-40-130	4-7-51040-15-UAK	130	29	15	
2		20	-	40	115	IR-40-165	4-7-51040-15-UOK	165	37	15	

EASY STEPS	WIRING OF MOTOR EQUIPPED WITH MECHANICAL SWITCH	EASY WIRING OF MOTOR EQUIPPED WITH SINPAC ELECTRONIC SWITCH	MOTOR LEADWIRE NUMBERING												
<p><b>Split Phase Motors</b></p> <ol style="list-style-type: none"> <li>1. Disconnect the mechanical switch lead which is connected to the start winding and reconnect this lead to SINPAC Switch terminal three (3).</li> <li>2. Disconnect other mechanical switch lead marked T<sub>5</sub> and reconnect this lead to SINPAC Switch terminal two (2).</li> <li>3. Join SINPAC Switch terminal one (1) with motor lead T<sub>8</sub>.</li> </ol> <p>Use on only the following model series: PV-16, PV-25 PV-40 &amp; 2PV-16</p>	<p>Single Voltage with Thermal Protection</p>		<table border="1"> <tr> <td></td> <td>L1</td> <td>L2</td> <td>Join</td> </tr> <tr> <td>Counterclockwise rotation</td> <td>P1</td> <td>T4, T5</td> <td>T1, T8</td> </tr> <tr> <td>Clockwise rotation</td> <td>P1</td> <td>T4, T8</td> <td>T1, T5</td> </tr> </table>		L1	L2	Join	Counterclockwise rotation	P1	T4, T5	T1, T8	Clockwise rotation	P1	T4, T8	T1, T5
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<p><b>SYMBOL KEY:</b> M = Main winding, ST = Start winding, Cs = Start capacitor, CR = Run capacitor, Cs1 = Lead between SINPAC Switch terminal three (3) and start capacitor (Cs), Cs2 = Lead between SINPAC Switch terminal four (4), start capacitor (Cs) and start winding (ST)</p>															

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<p><b>Capacitor Start Motors</b></p> <ol style="list-style-type: none"> <li>1. Disconnect the mechanical switch lead (Cs1) which is connected to the start capacitor and reconnect this lead to SINPAC Switch terminal three (3).</li> <li>2. Disconnect other mechanical switch lead marked T5 and reconnect this lead to SINPAC Switch terminal two (2).</li> <li>3. Join SINPAC Switch terminal one (1) with motor lead T8.</li> <li>4. Join SINPAC Switch terminal four (4) with the lead off the start winding and start capacitor. (Labeled in the connection diagram as Cs2.)</li> </ol> <p>Use on only the following model series:</p> <p>CV-16 CV-25 CV-40 CV-50 2CV-35 2CV-50 2CVR-70 2CVR-90</p>	<p>Single Voltage with Thermal Protection</p>		<table border="1"> <thead> <tr> <th></th> <th>L1</th> <th>L2</th> <th>Join</th> </tr> </thead> <tbody> <tr> <td>Counterclockwise rotation</td> <td>P1</td> <td>T4, T5</td> <td>T1, T8</td> </tr> <tr> <td>Clockwise rotation</td> <td>P1</td> <td>T4, T8</td> <td>T1, T5</td> </tr> </tbody> </table>		L1	L2	Join	Counterclockwise rotation	P1	T4, T5	T1, T8	Clockwise rotation	P1	T4, T8	T1, T5												
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<p><b>Capacitor Start/ Capacitor Run Motors</b></p> <ol style="list-style-type: none"> <li>1. Disconnect the mechanical switch lead (Cs1) which is connected to the start capacitor and reconnect this lead to SINPAC Switch terminal three (3).</li> <li>2. Disconnect other mechanical switch lead marked T5 and reconnect this lead to SINPAC Switch terminal two (2).</li> <li>3. Join SINPAC Switch terminal one (1) with motor lead T8.</li> <li>4. Join SINPAC Switch terminal four (4) with the lead off the start winding, start capacitor and run capacitor. (Labeled in the connection diagram as Cs2.)</li> <li>5. Make sure the other side of the run capacitor is connected to the motor lead T5 along with SINPAC Switch terminal two (2).</li> </ol> <p>Use on only the following model series:</p> <p>CVR-40 CVR-50 CVR-80 2VR-35 2VR-50 2CVR-70 2CVR-90</p>	<p>Single Voltage with Thermal Protection</p>		<table border="1"> <thead> <tr> <th></th> <th>L1</th> <th>L2</th> <th>Join</th> </tr> </thead> <tbody> <tr> <td>Counterclockwise rotation</td> <td>P1</td> <td>T4, T5</td> <td>T1, T8</td> </tr> <tr> <td>Clockwise rotation</td> <td>P1</td> <td>T4, T8</td> <td>T1, T5</td> </tr> </tbody> </table>		L1	L2	Join	Counterclockwise rotation	P1	T4, T5	T1, T8	Clockwise rotation	P1	T4, T8	T1, T5												
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Lower name-plate voltage	Counterclockwise rotation	T1, T3, & T8	T2, T4, & T5																								
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**SYMBOL KEY:** M = Main winding, ST = Start winding, Cs = Start capacitor, CR = Run capacitor, Cs1 = Lead between SINPAC Switch terminal three (3) and start capacitor (Cs), Cs2 = Lead between SINPAC Switch terminal four (4), start capacitor (Cs) and start winding (ST)