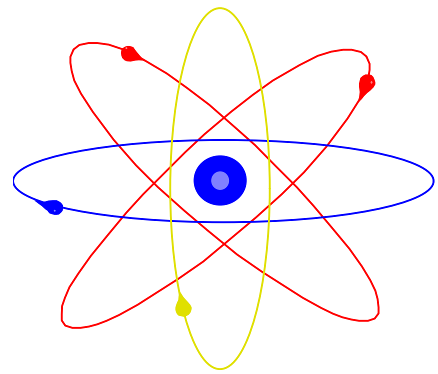
H-A-S Static
Phase Conversion System

INSTALLATION INSTRUCTIONS

230 & 460 Volt Models

12 Lead Motor Required

For 230 Volt Operation
Motor must be
Wye (Star) Wound 12 Leads
For 460 Volt Operation
Motor may be either
Wye (Star) or Delta Wound 12 Leads



The H-A-S Static Phase Convertor allows three phase motors to operate on single phase power. The H-A-S Static Phase Convertor does not produce three phase power, instead through its special connection diagram with a 12 lead motor, it converts a three phase motor into what is known as an unbalanced two phase motor. This conversion process has been successful with thousands of motor applications. But due to its technical requirements, (i.e. 12 leads, 230/460 dual voltage winding, etc.), it cannot be applied to all three phase motors. Some foreign made motors are designed with different alloys or maybe wound differently, which can cause a problem in mating with this type convertor. Submersible pump motors with sealed windings cannot accomodate the 12 lead requirement. On applications such as these, the Rotary Phase Convertor is the best choice.

FOR CONNECTION WITH 12 LEAD MOTORS ONLY!

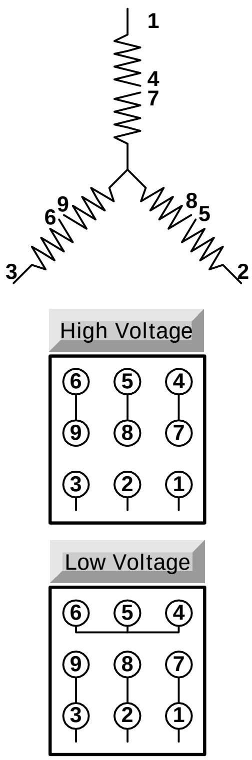
Steelman Industries, Inc.
PO Box 1461 2800 Hwy. 135 North Kilgore, TX 75662 Telephone (903) 984-3061

Motor Type Identification

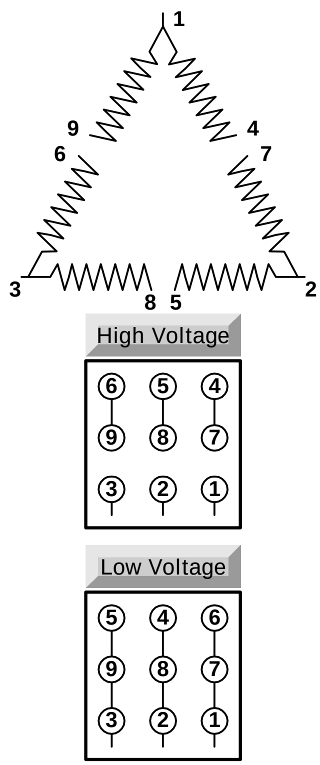
Wye (Star) Connected Motor & Delta Connected Motor

NOTE: Connection diagrams shown below are for motor type identification purposes only and are not to be used for connection of the H-A-S Static phase convertors. Compare the connections below with those listed on the motor nameplate to identify whether the motor is a wye or delta wound motor.

EXCEPTION: Oil Field Pumping Unit Motor -- The 12 lead, Triple Voltage (230/460/796) Oil Field Pumping Unit Motor may be used with the 460 Volt H-A-S Static without modification. However, this is a Delta connected motor and must be used on 480 Volt Single Phase.



WYE (STAR)
CONNECTED MOTOR
(Use with 230 or 460 Volt H-A-S Static)



DELTA
CONNECTED MOTOR
(Use with 460 Volt H-A-S Static Only)

CONSIDER THE 460 VOLT H-A-S STATIC ON LARGE MOTOR INSTALLATIONS:

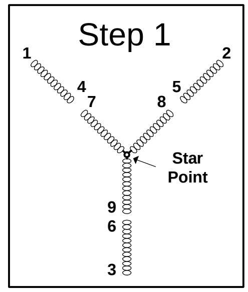
A 460 Volt installation will require smaller service and can be used with either a wye (star) or delta connected motor.

CONSULT POWER SUPPLIER AS REGARDING AVAILABLE SERVICE:

Incoming service must match the phase convertor being used. i.e. - When using a 460 Volt H-A-S Static, service must be 480/1/60, and when using a 230 Volt H-A-S Static, incoming service must be 240/1/60. The 230 Volt H-A-S Static will not operate on 208 Volt Service.

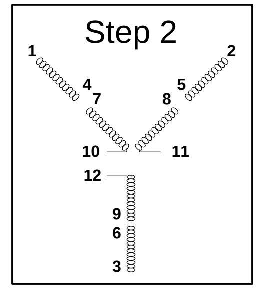
Motor Modifications

For a 230/460 Volt, Single Speed, 9 Lead, 3 Phase Motor



Wye (Star) Connected Motor

For Use With 230 & 460 Volt H-A-S Static Convertor

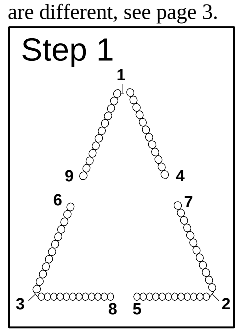


Step 1. After removing the rear end bell of the motor, the point in the winding that was formed by joining the three internal ends of the three phases together must be located. This point is commonly known as the "Star Point", as indicated in the figure Step 1. It is readily identified by three wires or groups of wires in individual sleevings joined together electrically and mechanically inside the motor winding.

Step 2. After the Star Point is located, the three ends are then separated. The ends of the nine motor leads are also separated, so that no two ends are touching (for testing purposes). Care must be exercised when two and four circuit windings are encountered, as these sometimes have more than three ends joined together to form the Star Point. All ends must be separated.

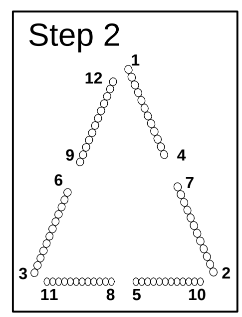
By using an ohmmeter or test light, the Star Point end or ends, that show continuity to motor lead #7 should be located and a length of motor lead wire attached to this end, or ends, and permanently marked as motor lead #10. The end of # 8 should be located, and a lead wire attached (in the same manner) and permanently marked as motor lead #11. The end of #9 should be located and a lead wire attached (in the same manner) and permanently marked as motor lead #12. This completes the modification of the motor as shown by the diagram above marked Step 2. The three additional leads are brought out into the motor connection box resulting in a total of 12 leads emerging from the motor winding.

With the motor modified per the above procedure, it may now be used with either a 230 Volt or 460 Volt H-A-S Static Convertor. The wiring connections, however are different, see page 3.



Delta Connected Motor

For Use With 460 Volt H-A-S Static Convertor



Step 1. After removing the rear end bell of the motor, the delta can be identified by the end of each phase connected to the start of another phase, forming the delta. The ends are readily identified, being joined at motor leads #1, #2, and #3.

Step 2. After the delta is identified, the two windings of each joint should be separated. The ends of all 9 motor leads should also be separated so that no two ends are touching (for testing purposes). Care must be exercised when more than one circuit winding is being used. Each phase winding must be separated as illustrated in Step 2. The three motor leads forming the delta will have twice as many ends joined as the other six motor leads; i.e., a one circuit delta will have two ends joined to lead #1; whereas a two circuit delta will have four ends joined at lead #1.

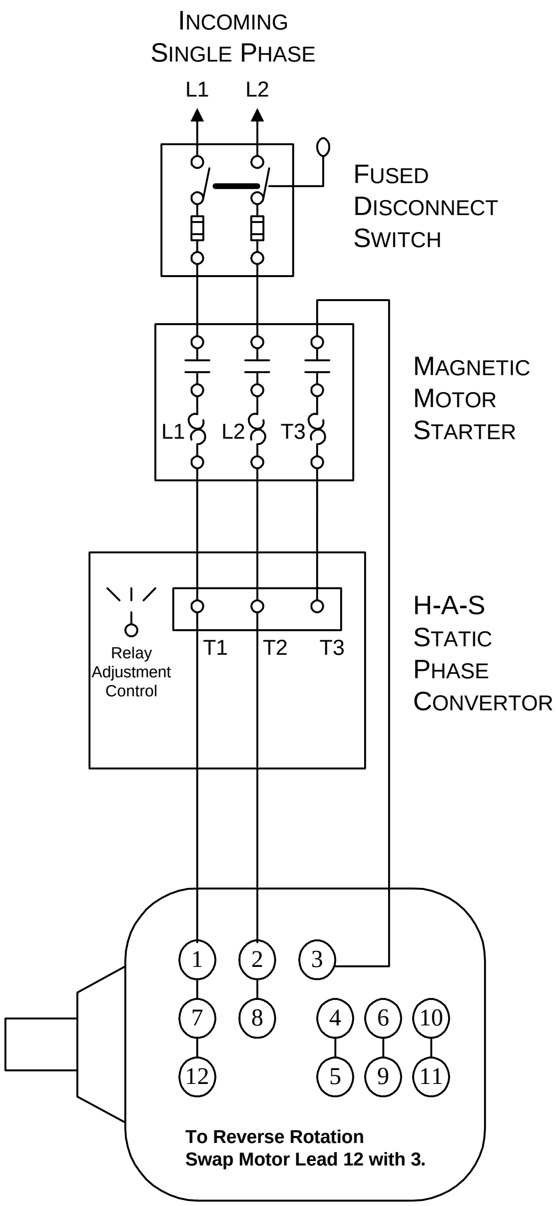
By using an ohmmeter or test light, lead #1 will show continuity with lead #4, and the end or ends disconnected from lead #1 will show continuity with lead #9. A length of lead wire should be attached to this and marked #12. You will find that #2 will show continuity with lead #5 and the end or ends disconnected from lead #2 will show continuity with lead #7. A lead wire should be attached and marked lead #10. Lead #3 will show continuity with lead #6 and the end or ends disconnected from #3 will show continuity with lead #8. A lead wire should be attached and marked lead #11.

The three additional leads are brought out into the motor connection box resulting in a total of 12 leads emerging from the motor winding.

With the motor modified per the above procedure, it may now be used with a 460 Volt H-A-S Static Convertor only. See page 3 for connections.

INSTALLATION INSTRUCTIONS

For models manufactured in 1999 or earlier.



230 Volt Connection of NEMA 12 Lead 230/460 Volt **WYE CONNECTED**, Three Phase Motor (Use with 230 Volt H-A-S Static)

In the schematic diagram pictured, the H-A-S Static Convertor is installed between the motor and the magnetic starter. The wiring diagrams on Page 5 show other correct types of installations for reversing applications. Carefully connect each wire as shown by the appropriate diagram. Any incorrect connections will result in unsatisfactory operation.

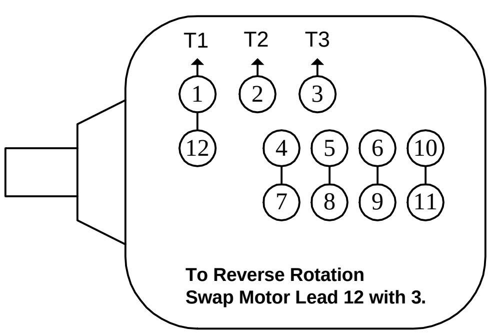
NOTE: Do not expect three phase amperages values for T1, T2, or T3. See explanation of Operation on Page 6.

See Page 4 for recommended heater coil, wire and system component sizing information.

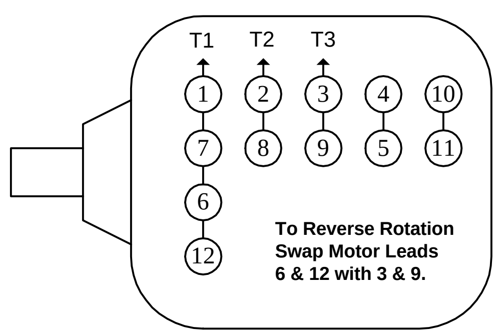
The H-A-S Static Convertor when connected properly, performs as an integral part of the motor. For this reason, the H-A-S Static Convertor must be of the same HP rating as the motor. Do not use a smaller or larger HP rated H-A-S Static Convertor than the HP rating of the motor used. A mismatch in size will result in unsatisfactory performance.

IMPORTANT: The Relay Adjustment Control is an adjustment for the relay which controls the starting cycle. This adjustment should be made when the motor is under the maximum starting load, (if done properly this adjustment should not be necessary again unless the motor is moved or the starting load is changed greatly). The adjustment is made as follows. Turn the control knob to the extreme right (clockwise), then start the motor. If the relay chatters, or pulls in too soon, turn the knob in a counter clockwise direction until the relay pulls in with a clean snap. The relay is adjusted properly when it pulls in just as the motor reaches its rated speed.

CAUTION: The starting capacitors must not remain in the circuit longer than 15 seconds. Damage may result if this limit is exceeded.



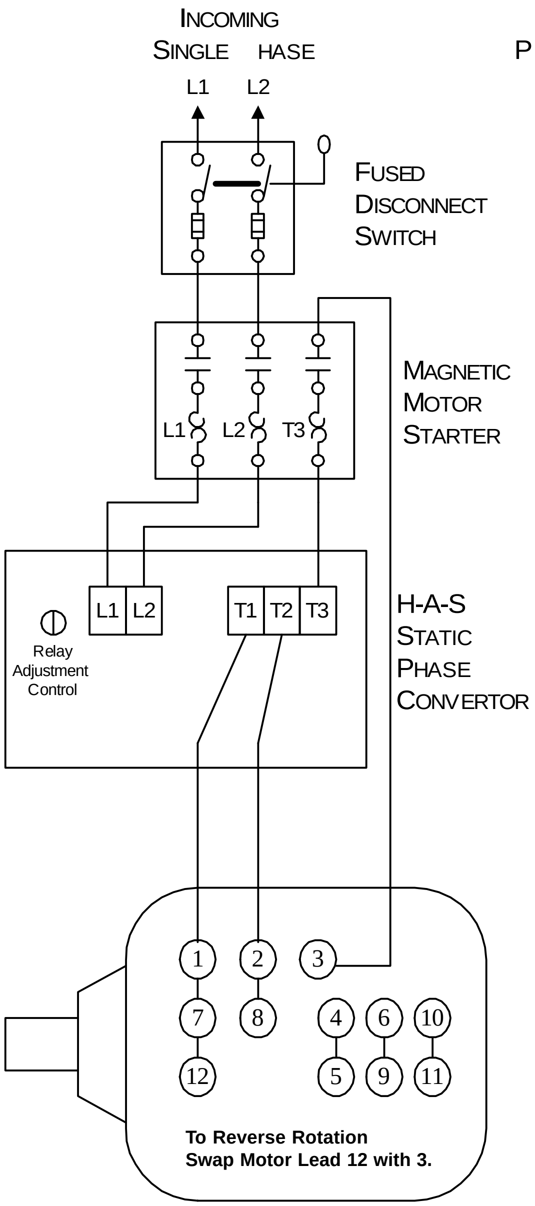
460 Volt Connection of NEMA 12 Lead 230/460 Volt **WYE CONNECTED**, Three Phase Motor (Use with 460 Volt H-A-S Static)



460 Volt Connection of NEMA 12 Lead 230/460 Volt **DELTA CONNECTED**, Three Phase Motor (Use with 460 Volt H-A-S Static)

INSTALLATION INSTRUCTIONS

For models manufactured in 2000 or later.



230 Volt Connection of NEMA 12 Lead 230/460 Volt **WYE CONNECTED** , Three Phase Motor (Use with 230 Volt H-A-S Static)

In the schematic diagram pictured, the H-A-S Static Convertor is installed between the motor and the magnetic starter. The wiring diagrams on Page 5 show other correct types of installations for reversing applications. Carefully connect each wire as shown by the appropriate diagram. Any incorrect connections will result in unsatisfactory operation.

NOTE: Do not expect three phase amperages values for T1, T2, or T3. See explanation of Operation on Page 6.

See Page 4 for recommended heater coil, wire and system component sizing information.

The H-A-S Static Convertor when connected properly, performs as an integral part of the motor. For this reason, the H-A-S Static Convertor must be of the same HP rating as the motor. Do not use a smaller or larger HP rated H-A-S Static Convertor than the HP rating of the motor used. A mismatch in size will result in unsatisfactory performance.

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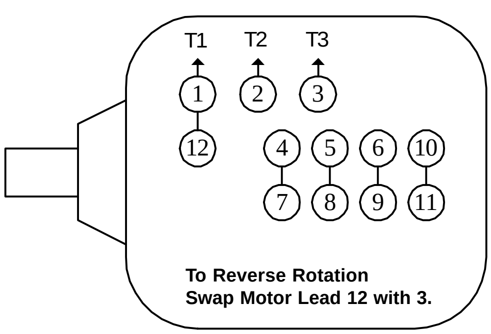
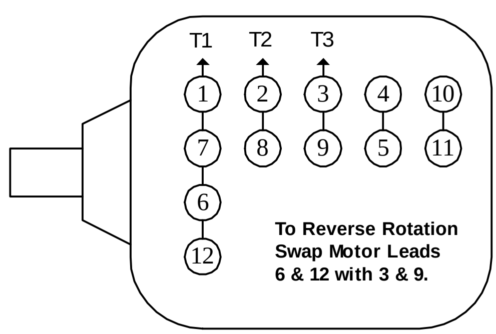


460 Volt Connection of NEMA 12 Lead 230/460 Volt **WYE CONNECTED** , Three Phase Motor (Use with 460 Volt H-A-S Static)



460 Volt Connection of NEMA 12 Lead 230/460 Volt **DELTA CONNECTED** , Three Phase Motor (Use with 460 Volt H-A-S Static)

H-A-S STATIC SYSTEM COMPONENT SIZING

230 VOLT SYSTEM

HP	Minimum Wire Size			Full Load Amperage for Heater Coil Selection		NEMA Size Magnetic Starter	Max Amps Dual Element Fuses	Fused Switch Size
	L1,L2,T1	T2	T3	L1 & L2	T3			
1	14	14	14	5	2.7	0	10	30
2	14	14	14	9.5	5.1	0	15	30
3	14	14	14	13.4	7.2	1	20	30
5	10	12	14	21.3	11.4	1	30	30
75	8	10	12	30.8	16.5	2	40	60
10	8	8	10	39.2	21	2	50	60
15	6	6	8	58.8	31.5	3	70	100
20	4	6	8	75.6	40.5	3	90	100
25	3	4	6	95.2	51	4	125	200
30	2	3	6	112	60	4	150	200
40	1/0	2	4	146	78	5	175	200
50	3/0	1/0	3	182	97.5	5	210	400
60	4/0	2/0	1	216	116	5	250	400
75	300MCM	4/0	1/0	269	144	6	300	400
100	500MCM	300MCM	3/0	347	186	6	425	600

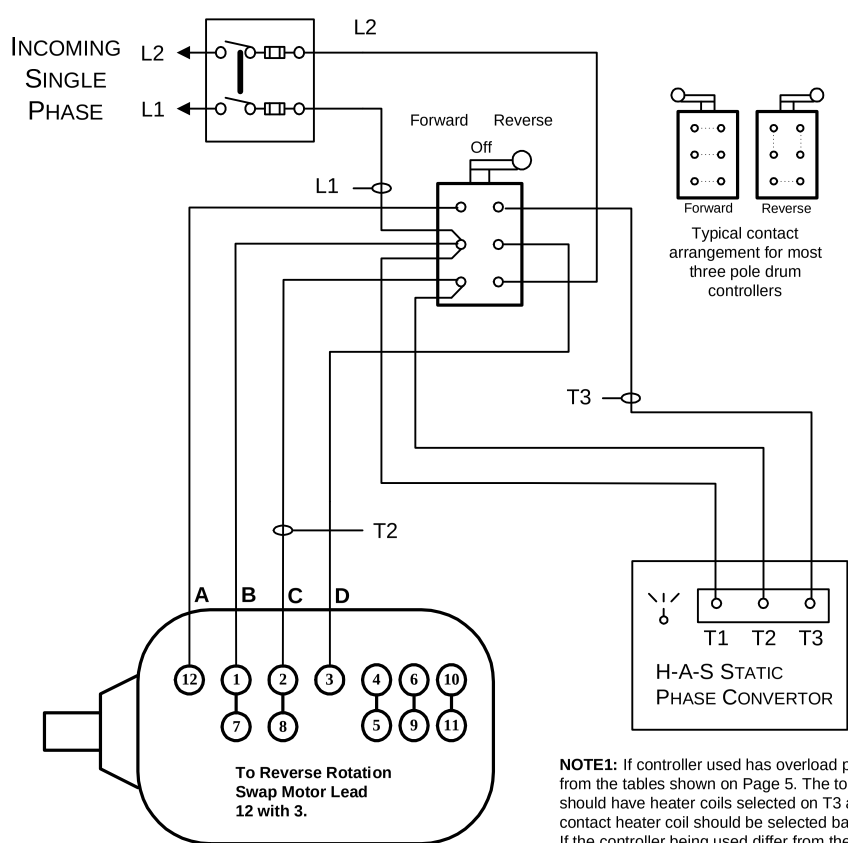
NOTE: Amperages shown are based on National Electric Code standard. For more exact selection, amperages should be calculated as follows: L1 & L2 Full Load Amperage = 1.82 x 3 Phase Power Factor x 3 Phase FLA. T3 Full Load Amperage = .75 x FLA. Minimum Transformer KVA must be sized for 1 KVA per HP.

460 VOLT SYSTEM

HP	Minimum Wire Size			Full Load Amperage for Heater Coil Selection		NEMA Size Magnetic Starter	Max Amps Dual Element Fuses	Fused Switch Size
	L1,L2,T1	T2	T3	L1 & L2	T3			
1	14	14	14	2.5	1.6	0	5	30
2	14	14	14	4.8	3.1	0	7	30
3	14	14	14	6.7	4.3	0	10	30
5	14	14	14	10.6	6.8	1	15	30
7.5	12	12	14	15.4	9.9	1	20	30
10	10	10	14	19.6	12.6	2	30	30
15	8	8	10	29.4	18.9	2	40	60
20	8	8	10	37.8	24.3	2	50	60
25	6	6	8	47.6	30.6	3	70	100
30	6	6	8	56	36	3	80	100
40	4	4	6	72.8	46.8	3	90	100
50	3	3	6	91	58.5	4	110	200
60	2	2	4	108	69.3	4	125	200
75	1/0	1/0	3	134	86.4	5	175	200
100	3/0	3/0	1	174	112	5	225	400

NOTE: Amperages shown are based on National Electric Code standard. For more exact selection, amperages should be calculated as follows: L1 & L2 Full Load Amperage = 1.82 x 3 Phase Power Factor x 3 Phase FLA. T3 Full Load Amperage = .90 x FLA. Minimum Transformer KVA must be sized for 1 KVA per HP.

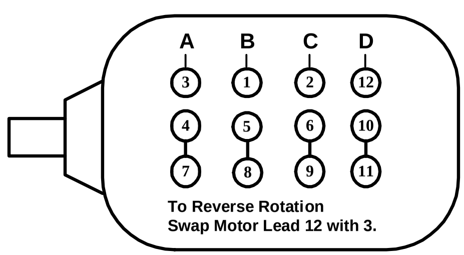
H-A-S Static Phase Convertor
Used with a Reversing Drum Controller



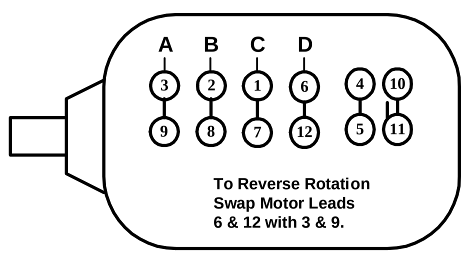
230 Volt Connection of NEMA 12 Lead 230/460 Volt **WYE CONNECTED**, Three Phase Motor (Use with 230 Volt H-A-S Static)

Typical contact arrangement for most three pole drum controllers

NOTE1: If controller used has overload protection, select heater coils from the tables shown on Page 5. The top two contacts shown above should have heater coils selected on T3 amperage, and the bottom contact heater coil should be selected based on L2 amperage.
If the controller being used differ from the controller pictured, the proper terminals should be chosen that perform the contact sequences shown.
CAUTION: The circuit breaker or safety switch should be open before disconnecting any wiring.

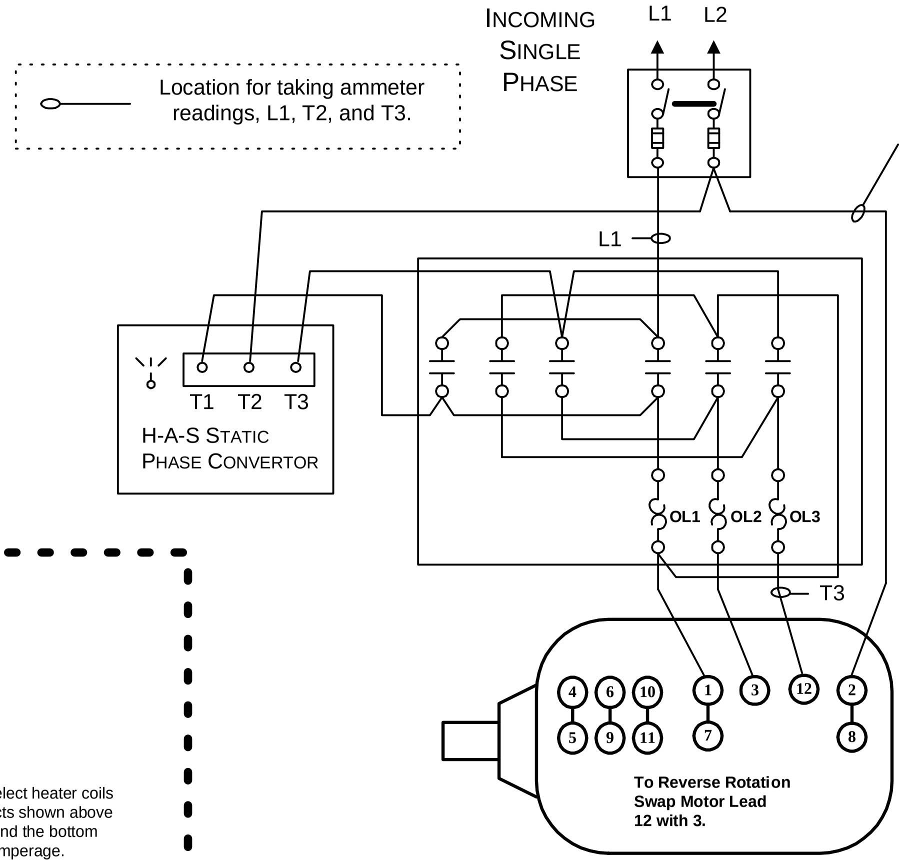


460 Volt Connection of NEMA 12 Lead 230/460 Volt **WYE CONNECTED**, Three Phase Motor (Use with 460 Volt H-A-S Static)



460 Volt Connection of NEMA 12 Lead 230/460 Volt **DELTA CONNECTED**, Three Phase Motor (Use with 460 Volt H-A-S Static)

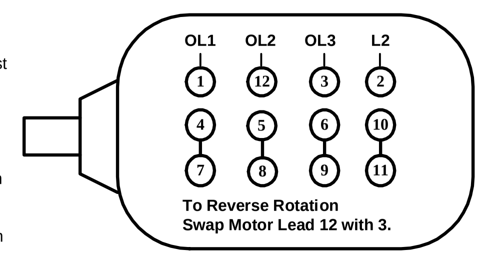
H-A-S Static Phase Convertor
Used with a Reversing Magnetic Starter Controller



230 Volt Connection of NEMA 12 Lead 230/460 Volt **WYE CONNECTED**, Three Phase Motor (Use with 230 Volt H-A-S Static)

NOTE2: When using common control (or control power from CPT), be sure to use control power from L1 and L2. (L2 must be brought from load side of disconnect switch.)

NOTE3: Size OL1 per L1 column from table on Page 5. Size OL2 and OL3 per T3 column from table on Page 5.



460 Volt Connection of NEMA 12 Lead 230/460 Volt **WYE CONNECTED**, Three Phase Motor (Use with 460 Volt H-A-S Static)

EXPLANATION OF OPERATION - H-A-S STATIC CONVERTOR

The ampere reading on the input side (L1 & L2) of the H-A-S Static Convertor will read as expected with any single phase equipment. That is, as the load increases, amperage will increase and both lines will be carrying the same amount of amperage. It is important to remember that these two lines will be carrying more amperage than the nameplate of a three phase motor will indicate. This is true because it will be carrying the same total power on two lines that it would be carrying on three lines when operating on three phase. The current required from single phase lines times 1.73 delivers the same power as three phase provided that the system efficiency and power factors are the same. For an H-A-S Static Convertor-motor combination, the exact full load amperage taken from the single phase lines is calculated as follows:

$$\text{Converted Motor FLA} = \frac{1.73}{PF_{H\text{-}A\text{-}S}} \times PF_{3Phase} \times \frac{Eff_{3Phase}}{Eff_{H\text{-}A\text{-}S}} \times FLA_{3Phase}$$

Where:

$PF_{H\text{-}A\text{-}S}$ = Power Factor of H-A-S Static Convertor and motor combination
PF_{3Phase} = Power Factor of H-A-S Static Convertor and motor combination
Eff_{3Phase} = Efficiency of three phase motor from nameplate or motor data
$Eff_{H\text{-}A\text{-}S}$ = Efficiency of H-A-S Static Convertor and motor combination
FLA_{3Phase} = Three phase full load amps from motor nameplate

At full load conditions, it has been found that the power factor of the H-A-S Static Convertor - motor combination is approximately .95 and its efficiency to be very nearly the same as when the motor is operated on three phase. The ratio of $Eff_{3Phase}/Eff_{H\text{-}A\text{-}S}$ then becomes unity and our equation simplifies as follows:

$$\text{Converted Motor FLA} = \frac{1.73}{.95} \times PF_{3Phase} \times FLA_{3Phase} = 1.82 \times PF_{3Phase} \times FLA_{3Phase}$$

The above relationship should be used to determine maximum L1 and L2 heater coil and fuse sizing. The amperages from the tables on page 4 for L1 and L2 are based on the National Electric Code and are conservative values for protection. Although L1 and L2 values selected from the tables should not allow a motor overload, selection of heater coils and fuses from those vaules may not permit an output of 100% of the horsepower rating of the motor. This is because of the large range of design characteristics from motor manufacturers.

The T1 amperage to the motor will be the same as the L1 and L2 current taken from the line. At first thought, it would appear that this amperage is excessive; but it must be remembered that due to the winding connections, the I2R losses are spread out over all the motor windings.

The T3 amperage may read higher than T1 amperage at no load or partial loads. This condition is normal and will not damage the motor or the convertor. The T3 amperage will decrease as the load on the motor increases, while T1 and T2 amperages will increase as the motor approaches full load conditions. Although the actual amperages for L1 and L2 may be easily calculated as shown above, the amperage to use for the proper heater coil sizing for T3 is not so easily obtained. For practical purposes, however, the maximum T3 amperages should be calculated as follows:

T3 Amperage = .75 x FLA (230 Volt convertor-motor combinations)
T3 Amperage = .90 x FLA (460 Volt convertor-motor combinations)

The overall input wattage (I2R) of the motor at full load when operated with an H-A-S Static Convertor does not exceed the overall input wattage of the motor when operated on three phase. For this reason, at full load conditions, the motor will have the same approximate temperature rise as if operated on three phase power.

NORMAL OPERATING SEQUENCE

230 & 460 Volt H-A-S Static Convertor

This sequence of operation will begin when voltage is applied across terminals T1 & T2 of the H-A-S Static Convertor (when properly connected to the motor).

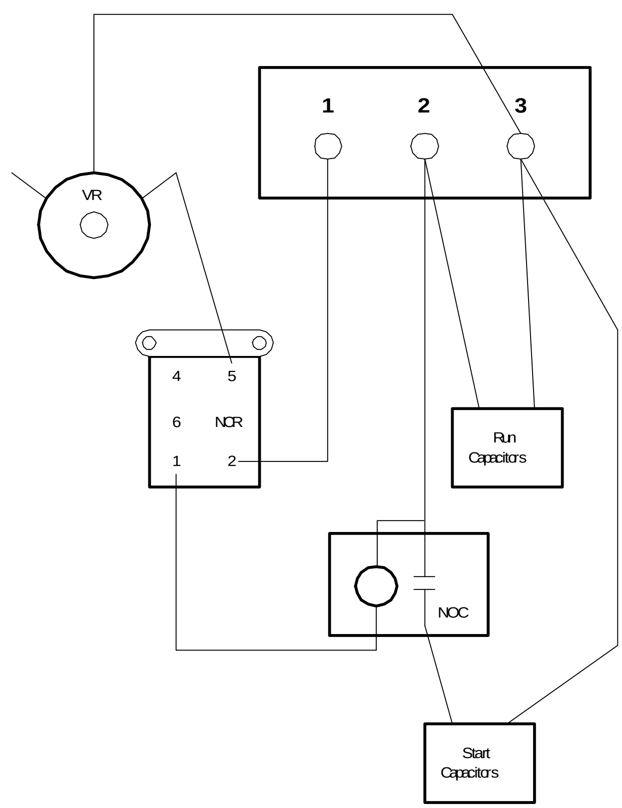
1. At the time that the power reaches the H-A-S Static Convertor, it flows across the contacts of the Normally Closed Relay (NCR) and energizes the Normally Open Contactor and closes the Normally Open Contacts which provides power to the Electroyltic Capacitors.
2. The Motor starts and comes up to full speed as on three phase current.
3. When 75 to 80% of the full speed is reached, the NCR will energize and open the circuit to the Normally Open Contactor and open the Normally Open Contact. When the Normally Open contact opens, the Electrolytic Capacitors are removed from the circuit.
4. The Motor continues to operate at full speed.

Note: On older models of the H-A-S Static Phase Convertor (Serial Numbers prior to 95000), for motors 5 HP and less, the NCR relay also operated as the capacitor start relay (NOC). Therefore on older models, to replace the relay will require adding a NOC Relay, as well as changing the variable resistor.

IMPORTANT NOTE: The starting cycle should not exceed a duration of 15 seconds or 6 starts per hour, (the only exception is when using a heavy duty model that is designed for long starting cycle applications).

Internal Wiring Schematic

VR - Variable Resistor
NCR - Normally Closed Relay
NOC - Normally Open Contactor



TROUBLE SHOOTING GUIDE

Trouble: Motor does not start (does not hum).

1. Check all motor controls for proper wiring. Make sure magnetic starter coil is energized by voltage between L1 & L2 or by control power from a separate source. DO not have one side of coil wired to T3.
2. Check all fuses and heaters for proper sizing as shown on Page 5. Replace if necessary.
3. Check all connections from convertor terminals to motor. Connections should be as shown on Pages 3 or 5.
4. Check voltage between terminals T1 & T2. Voltage should be 220 - 250 Volts for 230 Volt H-A-S and should be 430 - 480 Volts for 460 Volt H-A-S.

Trouble: Motor does not start (but does hum or rotate slowly).

1. Check for incorrect or crossed wires between motor and convertor.
2. VERY IMPORTANT! Using an accurate voltmeter, check voltage between T1 & T2 on the H-A-S while motor is trying to start! If the voltage drops below 210 Volts for 230 Volt H-A-S or below 420 Volts for the 460 Volt H-A-S, the service wire or the transformer is too small. The transformer should be at least 1 KVA per horsepower. The table on Page 5 lists wire sizes for installations that do not exceed 50 feet.
3. Check all parts per procedure shown below.

Trouble: Motor starts but slows down after full speed has been reached or re-enters the starting cycle.

1. Check voltage from T1 & T2. Voltage must be at least 210 Volts for 230 Volt H-A-S and 420 Volts for the 460 Volt H-A-S.
2. Check Run Capacitors and replace if defective (see Checking Parts below).
3. Motor may be overloaded if this problem is not encountered under "no load" conditions. (see Installation Checkout Instructions on Page 10 for no load conditions). Check full load amps T1 prior to re-entering the starting cycle, and if amperage exceeds vaule calculated from Explanation of Operation on Page 6, the motor is overloaded. Reduce load or replace motor and convertor with a larger HP size. Remember, the convertor must be the same HP size as the motor.

Trouble: Motor starts and runs properly except heaters trip overload relay.

1. Check for undersized heater coils. See Explanation of Operation on Page 6 for calculation of heater coil sizes.
2. Check for overload. If L1 amperage calculated in 1 above is exceeded when measured with an ammeter, the motor is overloaded.
3. Check for excessive amperage for T3 with an ammeter. If amperage calculated in 1 above is exceeded under normal load conditions, the convertor requires adjustment of its run capacitance. Complete Factory Troubleshooting Data Sheet on Page 9 and consult factory.

Trouble: Relay Chatters.

1. Adjust the Relay Control according to Instructions on Page 3.
2. Check voltage from T1 to T3. Compare reading to values shown on Installation Checkout Instructions on Page 10. If value does not fall within the range given, complete Factory Troubleshooting Data Sheet on Page 9.

Trouble: Motor heats abnormally.

1. Check for overload (See appropriate table for amperages on Page 4.)
2. Check for low voltage.
3. Check for improper or loose connections.
4. If problem is not solved by 1,2, or 3 above, complete Factory Troubleshooting Data Sheet on Page 9 and consult factory.

Trouble: Run Capacitors repeatedly become defective.

1. Complete Factory Troubleshooting Data Sheet on Page 9, and consult factory.

Trouble: Electrolytic Capacitors repeatedly become defective.

1. Check duration of starting cycle (must not exceed 15 seconds).
2. Check motor for severe overload (the motor may re-enter the starting cycle repeatedly).
3. Check for burned discharge resistors. Resistors should read approximately 10,000 ohms each.
4. If a problem is not solved, complete Factory Troubleshooting Data Sheet on Page 9 and consult factory.

PROCEDURES FOR CHECKING PARTS

Electrolytic Capacitors

1. Remove capacitors completely from circuit and check for sorts (use ohmmeter only).
2. Look for traces of oil oozing from capacitors. This indicates capacitor has been overheated and capacitor may be defective. Check for short circuits.

Run Capacitors

1. If capacitor is swollen or disfigured, it is definitely bad and should be replaced.
2. Check amperage in leads going to capacitor when in operation. If capacitor is open, no amperage will flow.
3. Remove from circuit and check for short circuits or grounds (use ohmmeter only).

Variable Resistor

1. Using ohmmeter, check control for continuity, opens, or grounds.
2. A good resistor should read approximately 2500 Ohms across its two outside terminals.

Relay, Normally Closed

1. Check coil with an ohmmeter for opens or grounds.
2. Check armature for sticking or for faulty contacts.

Contactor, Normally Open

1. Check same as for normally closed relay.
2. If contactor is checked by energizing coil, remember that contactor must be in a vertical or upright position for proper operation.

FACTORY TROUBLESHOOTING

H-A-S STATIC PHASE CONVERTOR

Should it become necessary to consult the factory regarding your H-A-S Static Phase Convertor installation, please furnish as much of the following information as possible. This information will make it possible for the factory to properly diagnose the problem.

1.Model Number of the H-A-S Static Phase Convertor:
Serial Number of the unit:

2. Name of the firm that purchased unit from Steelman Industries:

3. What is the application?

4. What is the problem?

5. Is the motor a 12 lead motor?

6. Motor Data: (copy from motor nameplate to which H-A-S Static is mated).

Motor Manufacturer
Voltage Rating
Horsepower
RPM
Full Load Amps
Design
Type Motor Winding (Wye (star) or Delta connected)
(See page 2 for means to identify motor winding type)

Frame
Efficiency
Service Factor
Starting Code
Power Factor

7. Voltage and Amperage Information: (with power on and motor connected to H-A-S).

	Motor Unloaded	Motor Loaded
Voltage (T1 to T2)	________________	________________
Voltage (T2 to T3)	________________	________________
Voltage (T1 to T3)	________________	________________
Amperage (L1 or L2)	________________	________________
Amperage (T1)	________________	________________
Amperage (T2)	________________	________________
Amperage (T3)	________________	________________

8. System Information:

Single Phase Transformer KVA ________
Disconnect Fuse Size ________
Magnetic Starter Size ________
Wire Type ________

Wire Size:
L1, L2, & T1 ________
T2 ________
T3 ________

INSTALLATION CHECKOUT INSTRUCTIONS

Check Voltage at Terminals T1, T2, and T3. With convertor and motor connected, and with power on, but no load on motor; voltages should read as follows:

230 Volt H-A-S Static
T1 to T2 - 220 - 240 Volts T1 to T3 - 300 - 350 Volts T2 to T3 - 400 - 450 Volts Wye (Star) Motor Only

460 Volt H-A-S Static
T1 to T2 - 440 - 480 Volts T1 to T3 - 250 - 320 Volts T2 to T3 - 550 - 650 Volts (Wye Motor) T2 to T3 - 520 - 600 Volts (Delta Motor)

Motor must be connected to convertor to get the voltage readings above

DO NOT OVERLOAD

Compute Maximum FLA (Full Load Amperage) for each motor by multiplying the 3 Phase FLA, from the motor nameplate x 1.4 (i.e. - for a 7.5 HP motor with a 3 phase FLA of 20/10) the converted motor FLA would be 28.2 (230 Volt) and 14.1 (460 Volt).

For more exact converted motor Full Load Amperage, see formula shown on page 4.

For the best possible protection, size dual element fuses, and heater coils from actual amperages by checking loaded motor with an ammeter.

DO NOT EXCEED CONVERTED MOTOR FULL LOAD AMPERAGE UNDER CONTINUOUS RUNNING!