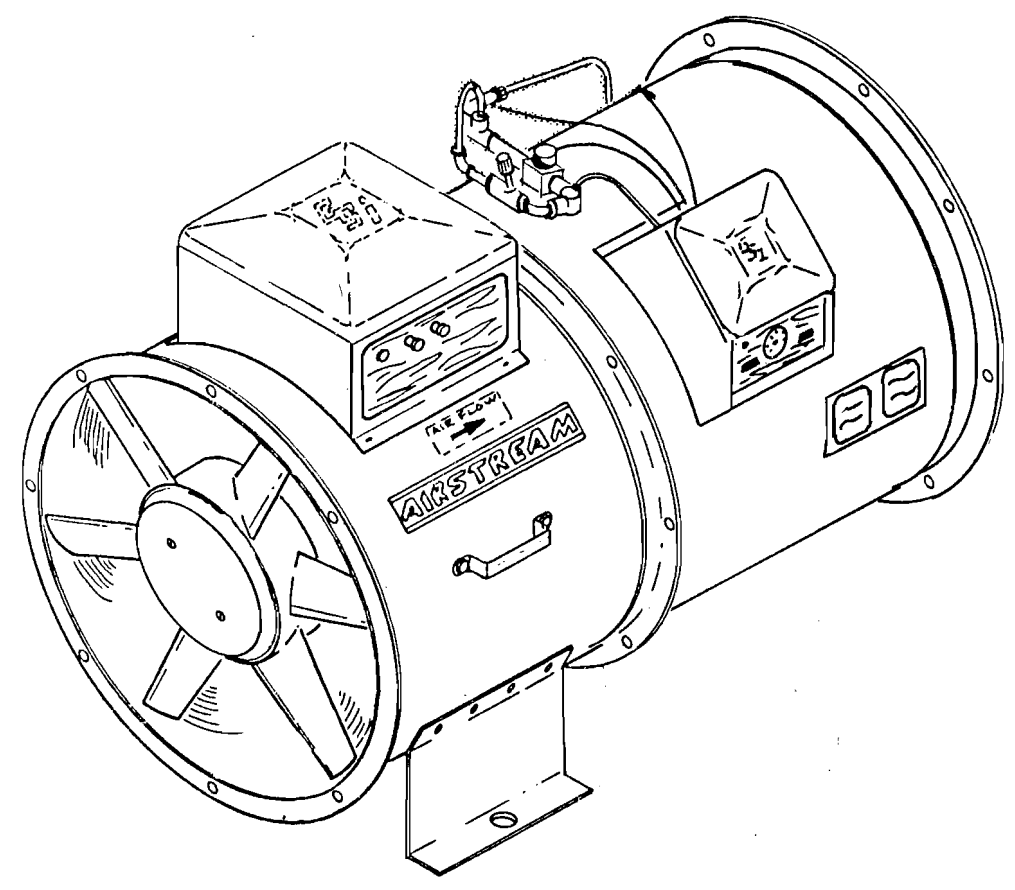




TOP DRY



# FANS & HEATERS



## FAN MODEL NO.'s

- |            |            |
|------------|------------|
| TF-2024-1C | TF-2036-3C |
| TF-2024-3C | TF-2036-5C |
| TF-2024-5C | TF-2042-1C |
| TF-2028-1C | TF-2042-3C |
| TF-2028-3C | TF-2042-5C |
| TF-2028-5C | TF2042-33C |
| TF-2036-1C | TF2042-35C |

## HEATER MODEL NO.'s

- |             |             |
|-------------|-------------|
| THF-4024LPC | THF-4036LPC |
| THF-4024VC  | THF-4036VC  |
| THF-4024NC  | THF-4036NC  |
| THF-4028LPC | THF-4042LPC |
| THF-4028VC  | THF-4042NC  |
| THF-4028NC  |             |

# OWNER'S MANUAL

## for CANADIAN MODELS



## **WARRANTY**

GRAIN SYSTEMS, INC. warrants all products manufactured by GRAIN SYSTEMS, INC. to be free of defects in materials and workmanship under usual and customary service. GRAIN SYSTEMS, INC. only obligation is to repair or replace products returned on a prepaid basis within 12 months after retail sale, and, in our opinion, found to be defective due to material of workmanship. If defective, the product will be repaired or replaced without charge, F.O.B. factory, this constituting and fulfilling our warranty obligation. Expenses incurred without authorization of GRAIN SYSTEMS, INC. shall be the sole responsibility of the bearer. Under no circumstances will GRAIN SYSTEMS, INC. be liable for any kind of special or consequential damages, nor will the liability ever exceed the selling price of the product.

This warranty does not cover products or parts which have been damaged by negligent use, misuse, alteration or accident. All products supplied by outside manufacturers are warranted separately by the respective manufacturer. This warranty is exclusive and in lieu of all other warranties, expressed or implied. GRAIN SYSTEMS, INC. reserves the right to make design or specification changes at any time, without an contingent obligation to purchasers or products already sold.

All instructions shall be construed as recommendations only; because the actual installation may vary according to local conditions and GRAIN SYSTEMS, INC. assumes no liability for results arising from the use of such recommendations.

GRAIN SYSTEMS, INC. assumes no responsibility for field modifications or erection defects which create structural or storage quality problems. If any field modifications are necessary which are not specifically covered by the contents of this manual, contact GRAIN SYSTEMS, INC. for recommendations and approval. Any unauthorized modification or erection defect which effects the structural integrity of the G.S.I. bin will be cause for immediate nullification of the G.S.I. bin warranty.

### **ROOF DAMAGE WARNING**

GRAIN SYSTEMS, INC. cannot warrant any roof damages due to excessive vacuum or internal pressure caused by fans or other air moving systems. Adequate ventilation and/or "make-up air" devices should be provided for all powered air handling systems. GRAIN SYSTEMS, INC. does not recommend the use of downward flow systems (suction). Severe roof structural damage can result from any blockage of air passages. Running of fans during certain high humidity/cold weather conditions can cause freezing over of air exhaust or intake ports.

THIS EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT INSTALLATION CODES FOR GAS BURNING APPLIANCES AND EQUIPMENT, CAN1-B149.1 AND B149.2, OR APPLICABLE PROVINCIAL REGULATIONS WHICH SHOULD BE CAREFULLY FOLLOWED IN ALL CASES. AUTHORITIES HAVING JURISDICTION SHOULD BE CONSULTED BEFORE INSTALLATIONS ARE MADE.

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# GENERAL SPECIFICATIONS

	TF-2024-C	TF-2028-C	TF-2036-C	TF-2042-C	TF-2042-3C
Length (in inches)	20	21	24.5	30.375	30.375
Diameter (in inches)	24	28	36	42	42
Weight (in pounds)*	259/231	371/311	583/537	693/648	867
Fan Horsepower	7.5-10	10-14	15	15	30
Motor Speed	3500	3500	1750	1750	1750
Full Load Amps 240V 1 Phase	39	57	53	53	--
Full Load Amps 208V 3 Phase	25	32	46	46	85
Full Load Amps 575V 3 Phase	6.8	12	16	16	30
Center Line to Bottom of Legs (in inches)	15.375	19.5	25.25	25.25	25.25"
Minimum Wiring Conductor Size**					
50' Run	10/12	8/10	6/8	6/8	2
100' Run	6/10	4/6	2/4	2/4	2
200' Run	4/6	3/4	1/3	1/3	1
300' Run	2/4	1/3	0/2	0/2	0
Fuse Size for Motor Branch Circuit Protection (Time Delay)*	60/30	125/60	150/90	150/90	150
<p>GSI recommends that you contact your local power company and have a representative survey your installation so that your wiring will be compatible with their system and so that you will have adequate power supplied to your unit.</p> <p>* First value given is for single phase units, second value is for three phase units.</p> <p>** Values given are for copper wire, if aluminum wire is used increase wire sizes by 2.</p>					

# FAN PERFORMANCE SPECIFICATIONS

	AIR VOLUME (CFM) AT INDICATED STATIC PRESSURE										
	.50"	1.00"	1.50"	2.00"	2.50"	3.00"	3.50"	4.00"	4.50"	5.0"	5.5"
TFC-2024	14850	14350	13800	13200	12400	11450	10150	7500	5350	4350	4000
TFC-2028	18250	17300	16500	15600	14500	13600	12400	11100	9550	7350	5700
TFC-2036	27000	26000	24400	22600	20600	18100	12600	10700	8000	6700	5800
TFC-2042 (10-16 HP)	38000	35000	32000	28500	24000	17500	14000	11000	8500	5000	2000
TFC-2042 (30 HP)	44500	43000	42000	40000	39000	37000	34500	31000	26200	17500	8000

# **FAN INSTALLATION**

Top Dry series fans are designed primarily for use with Top Dry systems, although they are suitable for many other crop drying applications.

2. Install unit as shown in Top Dry manual. For any other type installations consult factory or your dealer for recommendations.
3. Be sure that adequate electrical supply is provided to operate the unit. Undersized wiring can cause overheating and thus shorten the life of the motor. Use wire size chart in specifications to determine wire size required.
4. On initial start up of fan, run it momentarily to make sure that the fan blade is rotating in the proper direction and air flow is correct.
5. A qualified electrician should make all fan installations.
6. It is very important that adequate exhaust opening is supplied to prevent structural damage to bin.
7. Electrical installation shall be in accordance with the CSA C22.1 Canadian Electrical Code Part I and/or local codes.

# **FAN SERVICE**

All Airstream fans are constructed of durable weather-resistant materials, so a minimum amount of service should be required; however before the unit is started for the first time each season there are a few items that need to be checked out. All damaged parts should be repaired or replaced.

1. Shut off and lock out all electrical power. Open control box lid and inspect all components for moisture, vibration, or rodent damage. Remove any accumulated foreign material present. Inspect and tighten all loose terminal connections. Replace any damaged wiring.
2. Remove grill guard and inspect propellor for freedom of rotation and uniform tip clearance. Inspect inside of hub for accumulated dirt or insect nests that may seriously affect the balance of the propellor and cause excessive vibration.
3. Check propellor for free side play. Any side play is an indication of defective motor bearings that should be replaced to prevent complete motor failure.

4. Motor bearings should be greased periodically depending upon usage. Under normal conditions it is a good idea to have motor serviced at an authorized service center every three to four seasons.

Note: It is important that motor bearings are greased with high quality motor bearing grease available from an authorized service center.

5. Check magnetic starter for dirt or other corrosion on contact points. If points show signs of wear they should be replaced.

## **FUNCTION OF FAN PARTS**

PROPELLOR: Specially designed to move air through grain.

SPLIT TAPER BUSHING: Locks fan blade to motor shaft.

ELECTRIC MOTOR: Provides power and mounting for fan blade.

MOTOR CONTROL: Provides start and stop of fan.

RED LIGHT: Indicates that fan is running.

OVER LOADS: Kicks out motor controls in event of motor overload situation.

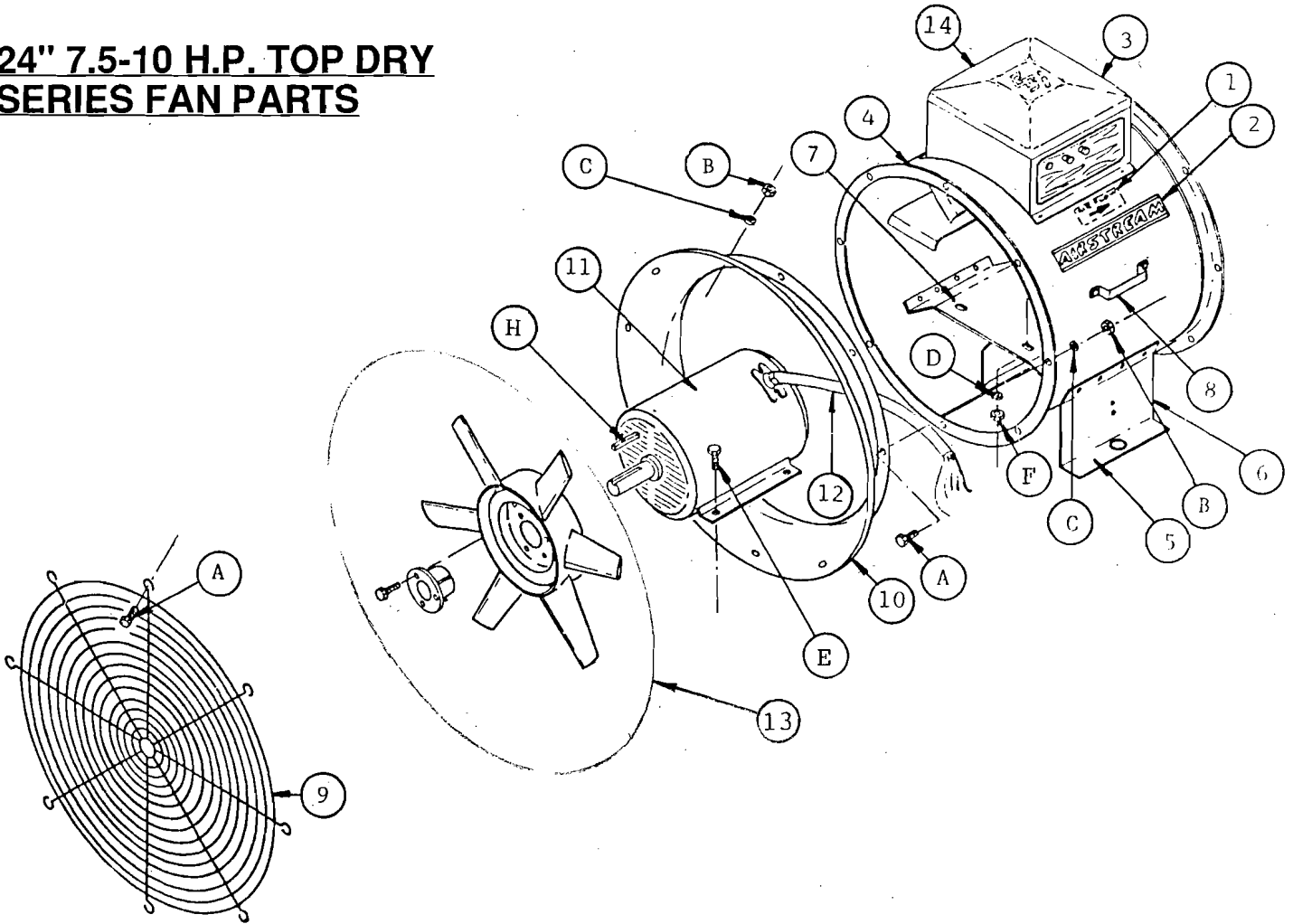
VENTURI: Increases efficiency of fan.

CAPACITORS: (SINGLE PHASE) Provide correct electrical characteristics for single phase motors

# TROUBLESHOOTING CHART

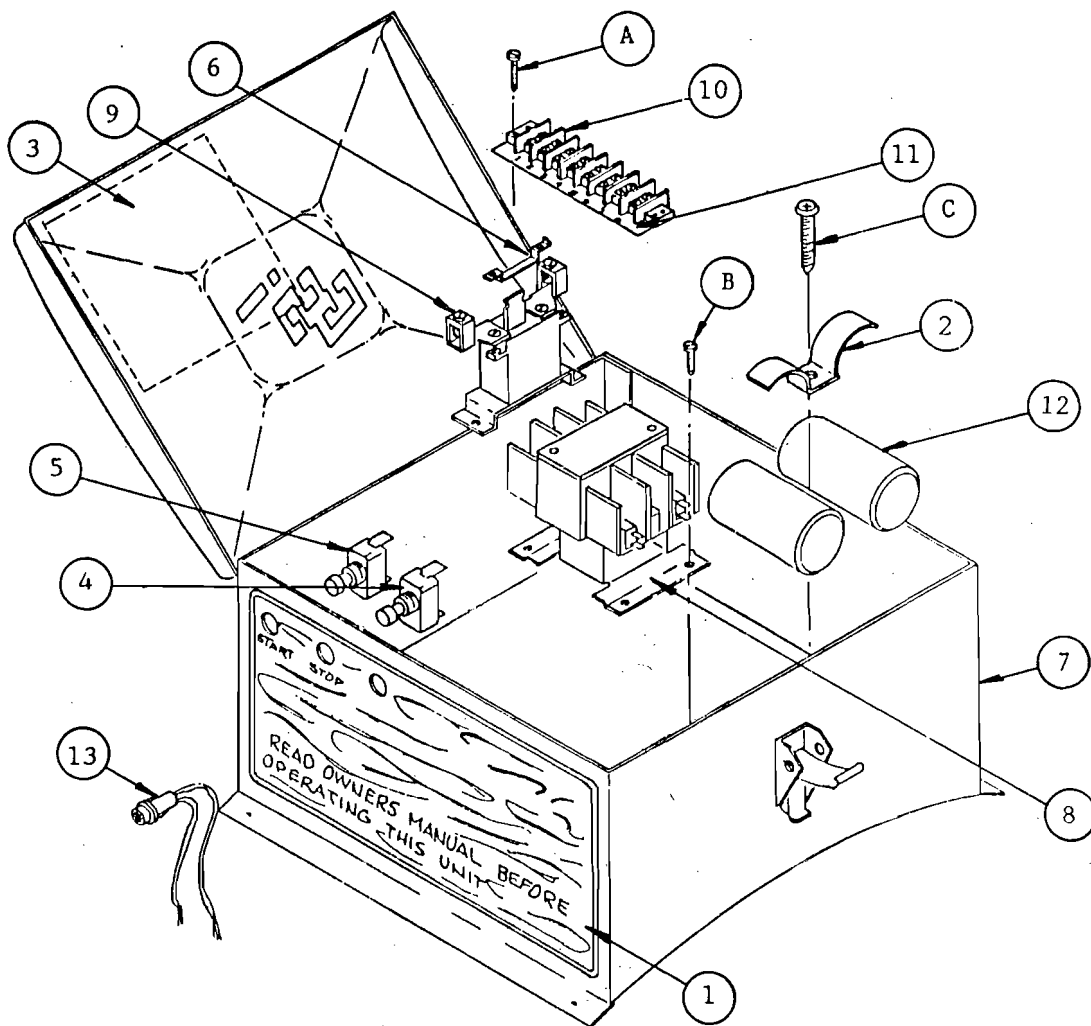
TROUBLE	PROBABLE CAUSE	CHECK-OUT PROCEDURE AND CORRECTION
Motor starter chatters or does not close	Power supply	Check supply voltage across terminals L1 and L2 on single phase and L3 on three phase units. It should be within 10% of that shown on the motor nameplate. Inspect power for blown fuses etc. Call the power company.
	Start or stop switch or auxiliary contacts	Run an insulated jumper wire from terminals L1 to 3 on the motor starter. If contactor closes then problem is probably in the start or stop switch or the auxiliary contacts. Replace necessary parts.
	Open overload relay	push red or green reset button(s) on relay
	Overload relay	Run an insulated jumper wire from terminal L2 to pull in coil. Wire must go to the side of the coil that is connected to the overload relay. If contactor does close when start button is pressed then trouble is in the overload relay. Replace overload if defective.
	Motors with internal thermostat	Run an insulated jumper wire from L2 to the the overload relay Wire must go to the side of the overload relay that DOES NOT go the pull in coil. If contactor does not close trouble is in the motor internal protection. Replace defective part.
	Motor contactor	Connect power supply leads directly to motor leads, if motor runs properly the problem must be in the contactor. Replace necessary parts or complete contactor if defective.
Starter closes but fan runs slow and blows fuses or will not run at all.	Power supply	If fuses continue to blow during starting, check size and type. Use time delay type fuses. See "Specifications" for proper size.
	Power supply	Check voltage across terminals T1 and T2 on single phase and T3 on three phase after pushing start button. It should be within 10% of that shown on nameplate. Check wiring to unit to insure adequate voltage during starting.
	Contacts or contactor	If voltage is not as specified, but checked out all right on line side, then problem is probably in contacts or contactor. Replace defective parts.
	Motor connections	Check motor lead connections with that shown on the motor nameplate. Correct lead connection.
	Capacitors 1 phase	Check for evidence of capacitor overheating. Replace capacitors. Check for adequate starting voltage.
	Motor	Check for freedom of rotation and excessive bearing noise by turning fan blade by hand. Take motor to authorized service station.
Fan runs backwards	Wiring	Compare rotation with arrow on fan blade. Make certain motor lead connections are as shown on motor nameplate.
	Wiring	Compare rotation with arrow on fan blade. Interchange any two power leads (three phase motors only)
Fan vibrates	Mounting	Be sure fan is mounted securely to platform or pad.
	Fan blade	Check for dirt deposits or other irregularities that may cause fan to run out of balance. Correct problem or install new blade.
	Motor shaft	Check for bent motor shaft. If shaft is bent then take motor to authorized service center or replace motor.

**24" 7.5-10 H.P. TOP DRY  
SERIES FAN PARTS**



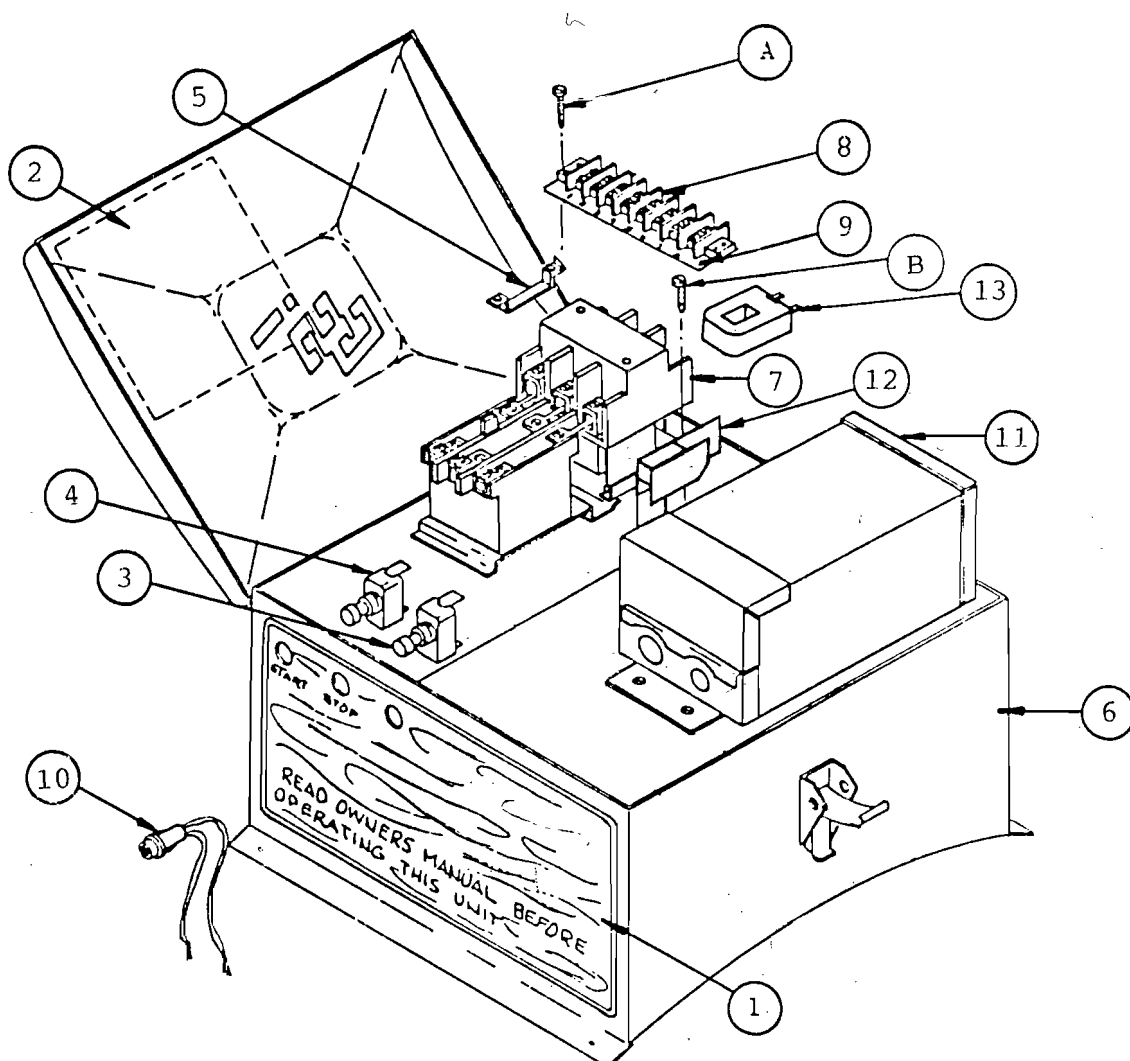
ITEM	PART NO.	DESCRIPTION	QTY.
1	DC-113	AIR FLOW DECAL .....	1
2	DC-159	AIRSTREAM DECAL .....	2
3	DC-163	IMPORTANT DECAL .....	1
4	TFH-1110	24" TOP DRY FAN HOUSING WELDMENT.....	1
5	F-975	24" BASE MOUNT LEG .....	2
6	F-976	24" BASE MOUNT STRAP .....	1
7	F-974	24" MOTOR MOUNT .....	1
8	PR-331	PEAK CAP HANDLE .....	2
9	TFH-2015	24" GRILLE GUARD .....	1
10	TF-1197	24" VENTURI .....	1
11	FH-5647	7.5-10 H.P. MOTOR - 240 VOLT 1 PHASE .	1
11	FH-5648	7.5-10 H.P. MOTOR - 208 VOLT 3 PHASE .	1
11	TFH-2070	7.5-10 H.P. MOTOR - 575 VOLT 3 PHASE .	1
12	FH-6563	3/4" SEALTITE CONDUIT .....	1
13	TF-1112	24" FAN BLADE AND HUB ASSEMBLY .....	1
14	TECF-24-1	24" ELECTRICAL BOX - 240 VOLT 1 PHASE	1
14	TECF-24-3	24" ELECTRICAL BOX - 208 VOLT 3 PHASE	1
14	TECF-24-5	24" ELECTRICAL BOX - 575 VOLT 3 PHASE	1
STANDARD HARDWARE PARTS - (PURCHASE LOCALLY)			
A	S-4275	5/16"-18 X 3/4" BIN BOLT .....	24
B	S-396	5/16"-18 NUT .....	24
C	S-1147	5/16" LOCKWASHER .....	24
D	S-1054	3/8" LOCKWASHER .....	4
E	S-2071	3/8"-16 X 1-1/4" BOLT .....	4
F	S-456	3/8"-16 NUT .....	4
G	S-248	3/8" FLAT WASHER .....	4
H	-----	MOTOR KEY (SUPPLIED WITH MOTOR) .....	1





**24" 7.5-10 H.P. 1 PHASE FAN CONTROL BOX PARTS**

ITEM	PART NO.	DESCRIPTION	QTY.
1	DC-381	CANADIAN FAN ELECTRICAL BOX DECAL . . . .	1
2	F-747	CAPACITOR RETAINER CLIP . . . . .	1
3	DC-437	24" 1 PHASE WIRING DIAGRAM DECAL . . . .	1
4	TFC-0028	STOP SWITCH . . . . .	1
5	TFC-0029	START SWITCH . . . . .	1
6	TFC-0063	HEATER STRIP . . . . .	1
7	TF-1185	24" FAN BOX WELDMENT . . . . .	1
8	TFC-0057	CONTACTOR . . . . .	1
9	TFC-0044	OVERLOAD RELAY . . . . .	1
10	TFC-0018	TERMINAL STRIP . . . . .	1
11	TFH-2052	TERMINAL STRIP MARKER . . . . .	1
12	-----	START CAPACITORS (BALDOR) . . . . .	AR
13	TFC-0012	RED LIGHT . . . . .	1
STANDARD HARDWARE PARTS - (PURCHASE LOCALLY)			
A	S-6557	#8-32 X 3/4" SHEET METAL SCREW . . . . .	2
B	S-1040	#8-32 X 1/4" SHEET METAL SCREW . . . . .	6
C	S-2605	1/4"-20 X 1-1/4" SHEET METAL SCREW . . .	1

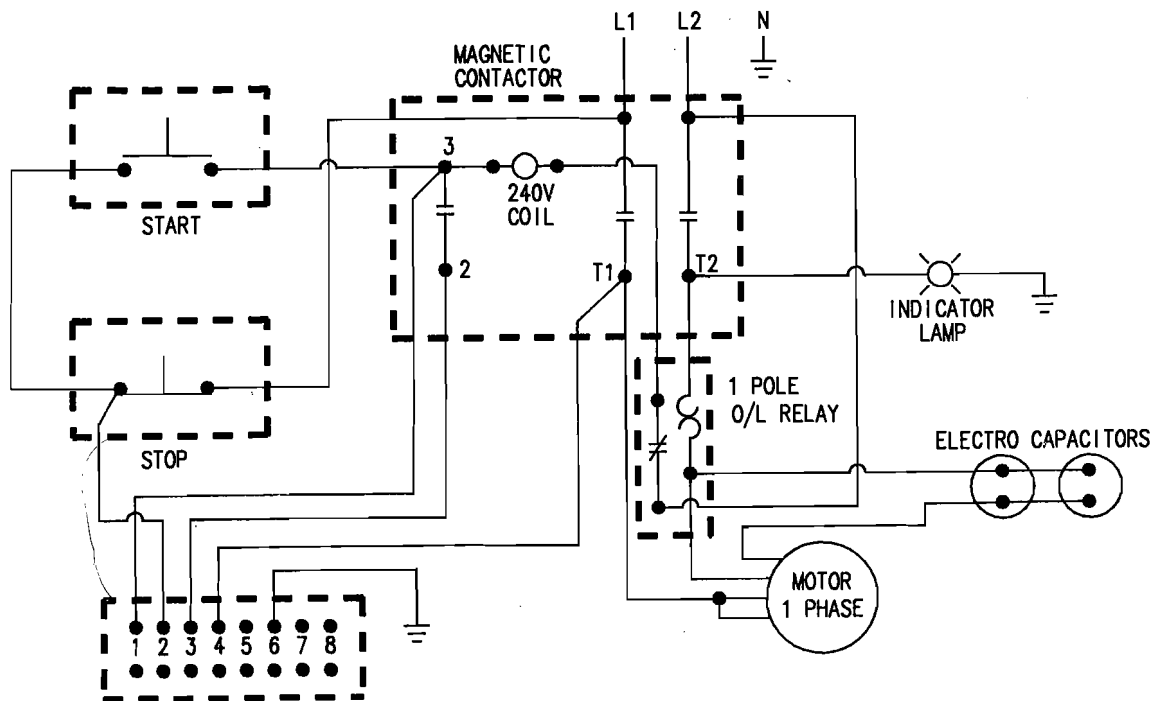


24" 7.5-10 H.P. 208 & 575 VOLT 3 PHASE FAN CONTROL BOX PARTS

ITEM	PART NO.	DESCRIPTION	QTY.
1	DC-381	CANADIAN FAN ELECTRICAL BOX DECAL . . . .	1
2	DC-379	208 VOLT 3 PHASE WIRING DIAGRAM DECAL.	1
2	DC-380	575 VOLT 3 PHASE WIRING DIAGRAM DECAL.	1
3	TFC-0028	STOP SWITCH . . . . .	1
4	TFC-0029	START SWITCH . . . . .	1
5	TFC-0041	HEATER STRIP (208 VOLT ONLY) . . . . .	3
5	TFC-0065	HEATER STRIP (575 VOLT ONLY) . . . . .	3
6	TF-1185	24" FAN CONTROL BOX WELDMENT . . . . .	1
7	TFC-0059	CONTACTOR . . . . .	1
8	TFC-0018	TERMINAL STRIP . . . . .	1
9	TFH-2052	TERMINAL STRIP MARKER . . . . .	1
10	TFC-0012	RED LIGHT . . . . .	1
11	TFC-0039	TRANSFORMER 575-120 V (575 VOLT ONLY) .	1
12	TFC-0042	AUXILIARY POINTS (575 VOLT ONLY) . . . .	1
13	TFC-0043	COIL - 120 VOLTS (575 VOLT ONLY) . . . .	1
STANDARD HARDWARE PARTS - (PURCHASE LOCALLY)			
A	S-6557	#8-32 X 3/4" SHEET METAL SCREW . . . . .	4
B	S-1040	#8-32 X 1/4" SHEET METAL SCREW . . . . .	4

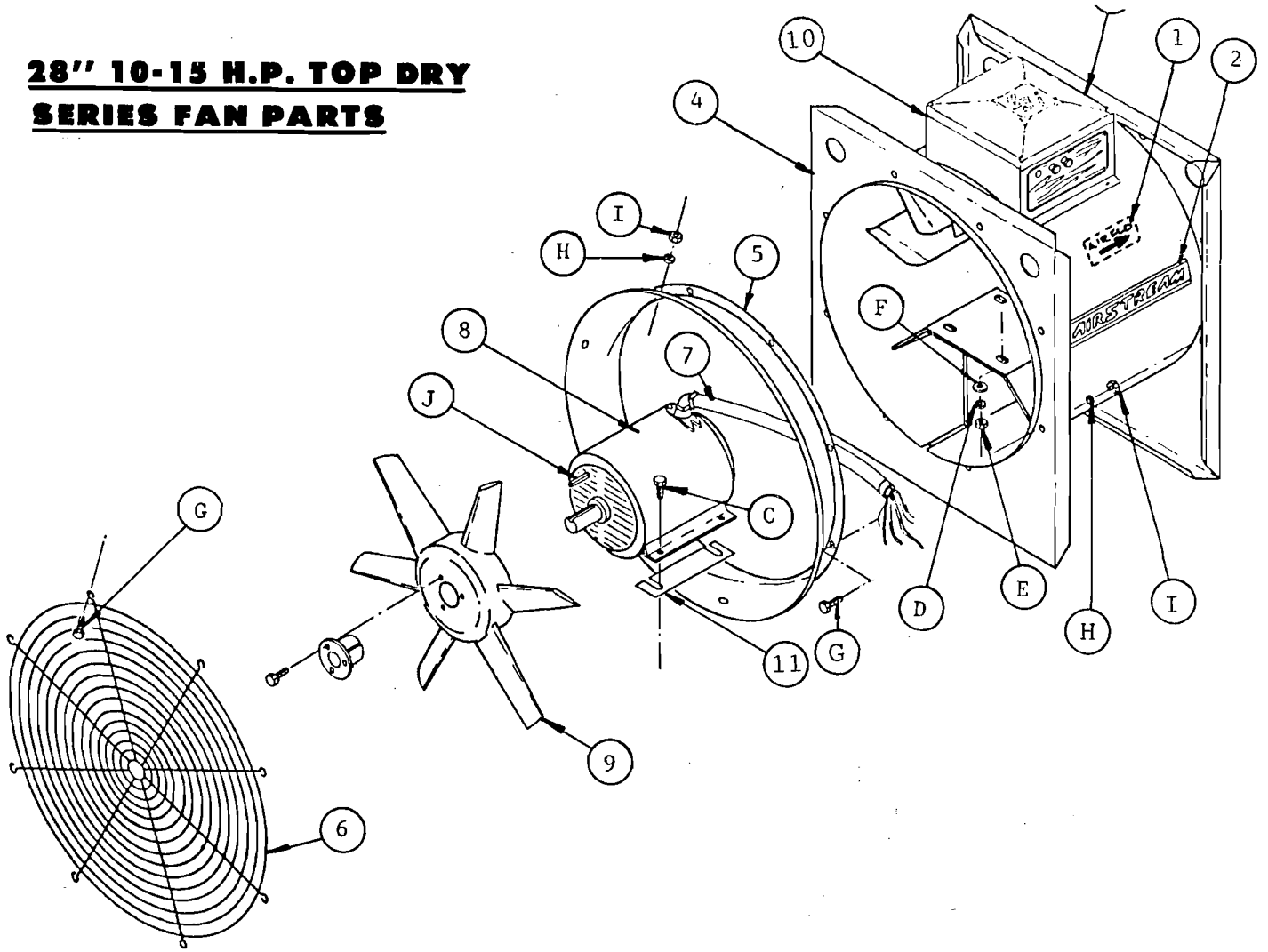
## 220 VOLT 1 PHASE WIRING DIAGRAM

**24" TOP DRY FAN  
(9.75 H.P. 3400 RPM BALDOR MOTOR)**

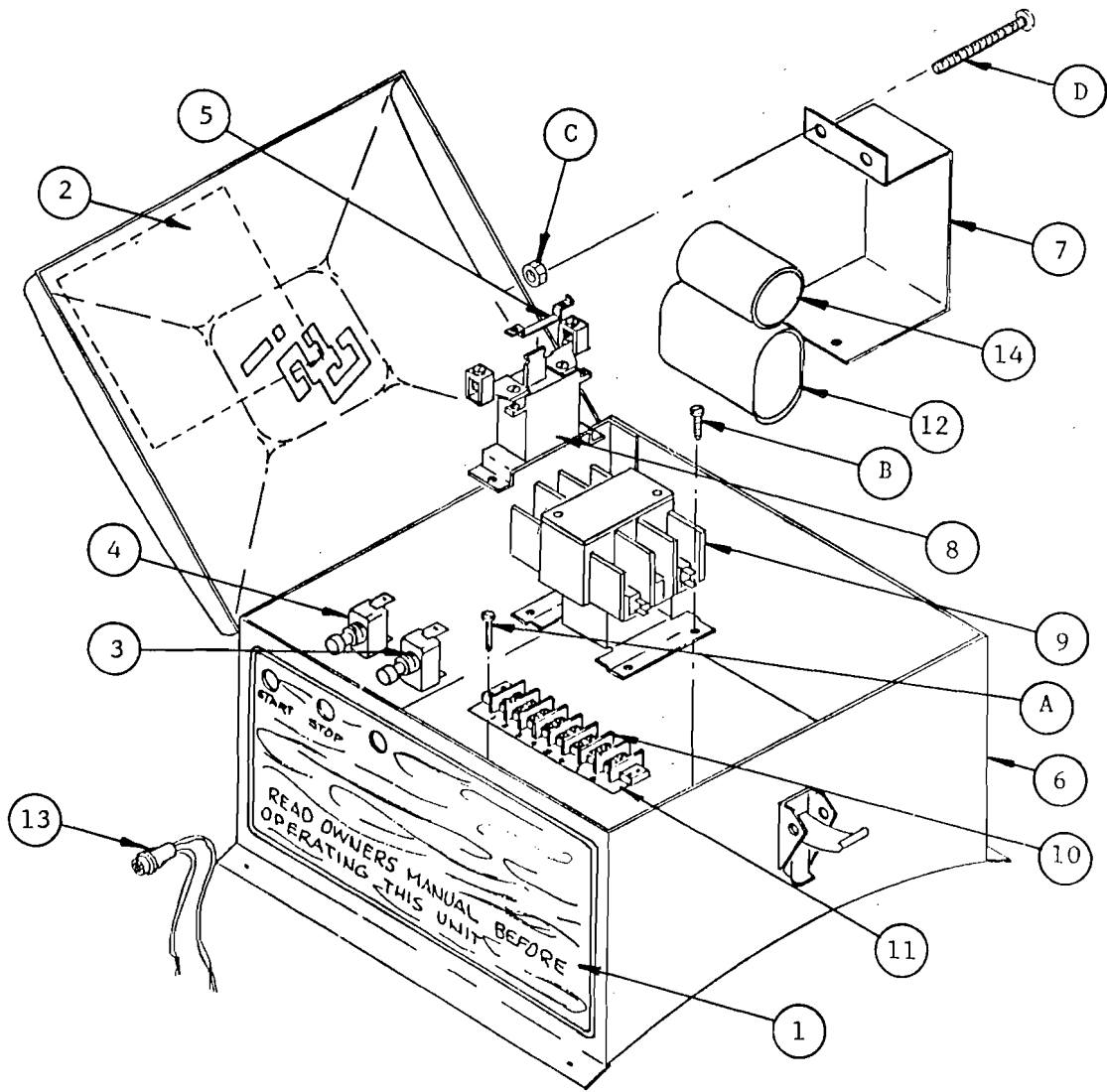


**NOTE: POSITIVE GROUND IS REQUIRED FOR PROPER OPERATION.**

**28" 10-15 H.P. TOP DRY**  
**SERIES FAN PARTS**

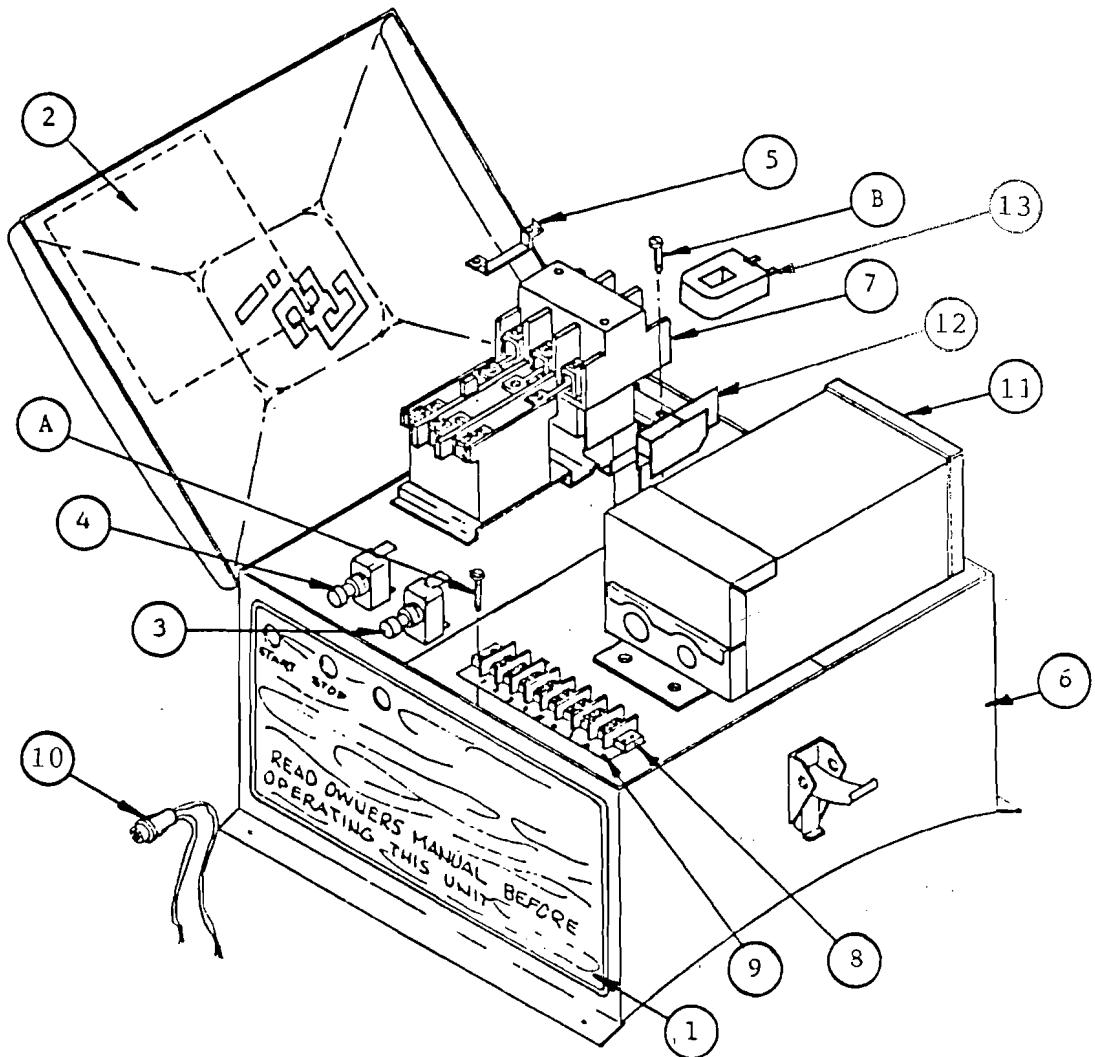


ITEM	PART NO.	DESCRIPTION	QTY.
1	DC-113	AIR FLOW DECAL .....	1
2	DC-159	AIRSTREAM DECAL .....	2
3	DC-163	IMPORTANT DECAL .....	1
4	TF-1092	28" FAN HOUSING WELDMENT .....	1
5	TF-1108	28" VENTURI .....	1
6	TFH-2007	28" GRILLE GUARD .....	1
7	FH-6563	3/4" SEALTITE CONDUIT .....	1
8	FH-5649	10-15 H.P. MOTOR - 240 VOLT 1 PHASE .	1
8	TFH-2071	10-15 H.P. MOTOR - 208 VOLT 3 PHASE .	1
8	TFH-2072	10-15 H.P. MOTOR - 575 VOLT 3 PHASE .	1
9	TF-1101	28" BLADE & HUB ASSEMBLY .....	1
10	TECF-28-1	28" ELECTRICAL BOX - 240 VOLT 1 PHASE	1
10	TECF-28-3	28" ELECTRICAL BOX - 208 VOLT 3 PHASE	1
10	TECF-28-5	28" ELECTRICAL BOX - 575 VOLT 3 PHASE	1
11	TF-1109	10-15 H.P. MOTOR SHIM .....	AR
STANDARD HARDWARE PARTS - (PURCHASE LOCALLY)			
A	S-2071	3/8"-16 X 1-1/4" GR 5 BOLT .....	4
B	S-1054	3/8" LOCKWASHER .....	4
C	S-456	3/8"-16 NUT .....	4
D	S-248	3/8" FLAT WASHER .....	4
E	S-275	5/16"-18 X 3/4" BIN BOLT .....	24
F	S-1147	5/16" LOCKWASHER .....	24
G	S-396	5/16"-18 NUT .....	24
H	-----	MOTOR KEY (SUPPLIED WITH MOTOR) .....	1



**28" 10-15 H.P. 1 PHASE FAN CONTROL BOX PARTS**

ITEM	PART NO.	DESCRIPTION	QTY.
1	DC-381	CANADIAN FAN ELECTRICAL BOX DECAL . . . .	1
2	DC-436	28" 1 PHASE WIRING DIAGRAM DECAL . . . . .	1
3	TFC-0028	STOP SWITCH . . . . .	1
4	TFC-0029	START SWITCH . . . . .	1
5	TFC-0045	HEATER STRIP . . . . .	1
6	TF-1187	28" FAN CONTROL BOX WELDMENT . . . . .	1
7	TF-1096	CAPACITOR HALF CLAMP (BALDOR) . . . . .	2
8	TFC-0044	OVERLOAD RELAY . . . . .	1
9	TFC-0001	CONTACTOR . . . . .	1
10	TFC-0018	TERMINAL STRIP . . . . .	1
11	TFH-2052	TERMINAL STRIP MARKER . . . . .	1
12	-----	BALDOR RUN CAPACITORS (OIL) . . . . .	AR
13	TFC-0012	RED LIGHT . . . . .	1
14	-----	BALDOR START CAPACITORS (ELECTRO) . . . .	AR
STANDARD HARDWARE PARTS - (PURCHASE LOCALLY)			
A	S-6557	#8-32 X 5/8" SHEET METAL SCREW . . . . .	2
B	S-1040	#8-32 X 1/4" SHEET METAL SCREW . . . . .	8
C	S-1102	1/4"-20 NUT . . . . .	2
D	S-4627	1/4"-20 X 2-1/2" MACHINE SCREW . . . . .	2

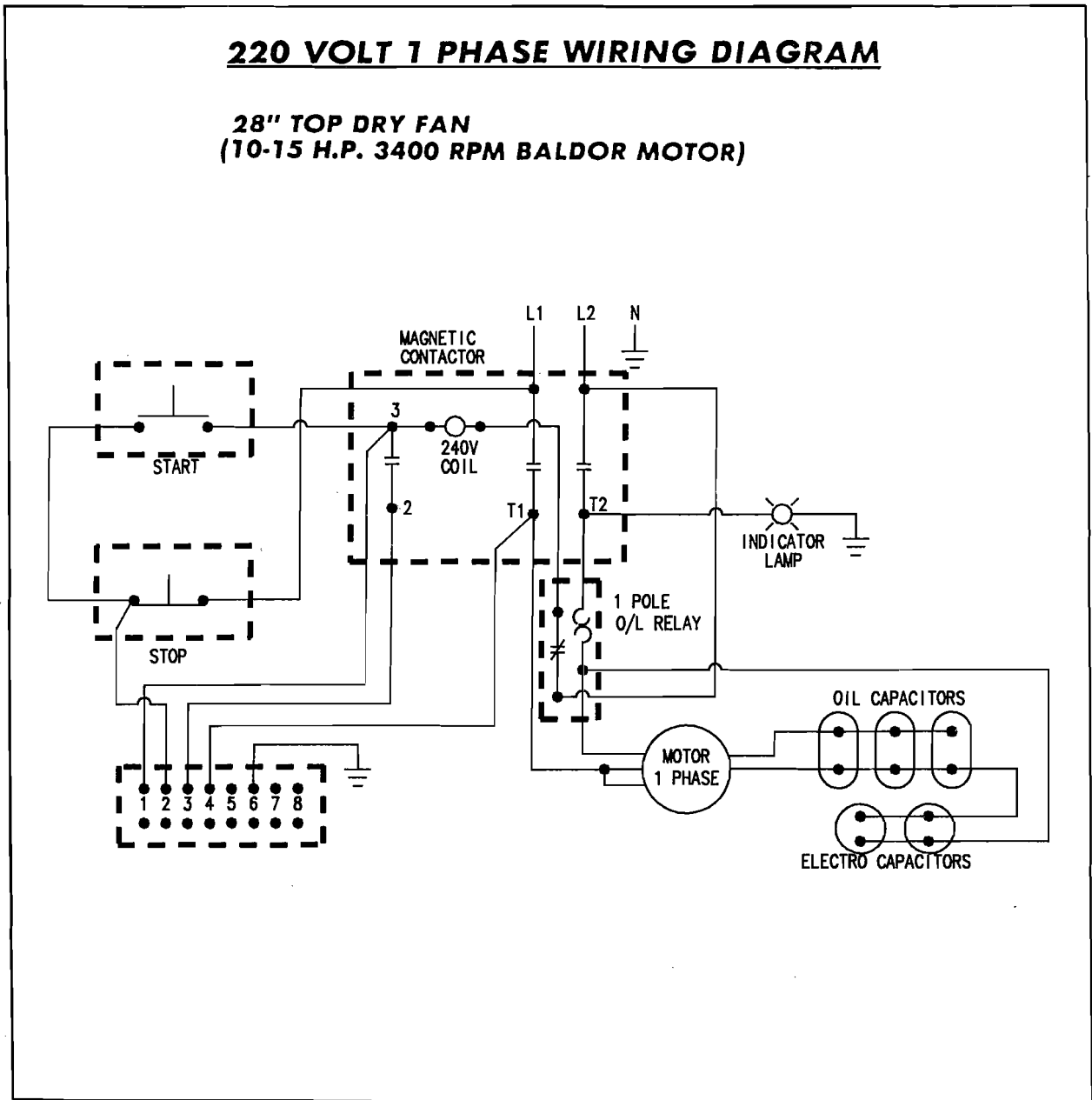


28" 10-15 H.P. 208 & 575 VOLT 3 PHASE FAN CONTROL BOX PARTS

ITEM	PART NO.	DESCRIPTION	QTY.
1	DC-381	CANADIAN FAN ELECTRICAL BOX DECAL . . . .	1
2	DC-379	208 VOLT 3 PHASE WIRING DIAGRAM DECAL	1
2	DC-380	575 VOLT 3 PHASE WIRING DIAGRAM DECAL	1
3	TFC-0028	STOP SWITCH . . . . .	1
4	TFC-0029	START SWITCH . . . . .	1
5	TFC-0061	HEATER STRIP (208 VOLT ONLY) . . . . .	3
5	TFC-0064	HEATER STRIP (575 VOLT ONLY) . . . . .	3
6	TF-1187	28" FAN CONTROL BOX WELDMENT . . . . .	1
7	TFC-0050	CONTACTOR (208 VOLT ONLY) . . . . .	1
7	TFC-0059	CONTACTOR (575 VOLT ONLY) . . . . .	1
8	TFC-0018	TERMINAL STRIP . . . . .	1
9	TFH-2052	TERMINAL STRIP MARKER . . . . .	1
10	TFC-0012	RED LIGHT . . . . .	1
11	TFC-0039	TRANSFORMER 575-120V (575 VOLT ONLY) .	1
12	TFC-0042	AUXILIARY POINTS (575 VOLT ONLY) . . . .	1
13	TFC-0043	COIL - 120 VOLTS (575 VOLT ONLY) . . . .	1
STANDARD HARDWARE PARTS - (PURCHASE LOCALLY)			
A	S-6557	#8-32 X 3/4" SHEET METAL SCREW . . . . .	2
B	S-1040	#8-32 X 1/4" SHEET METAL SCREW . . . . .	6

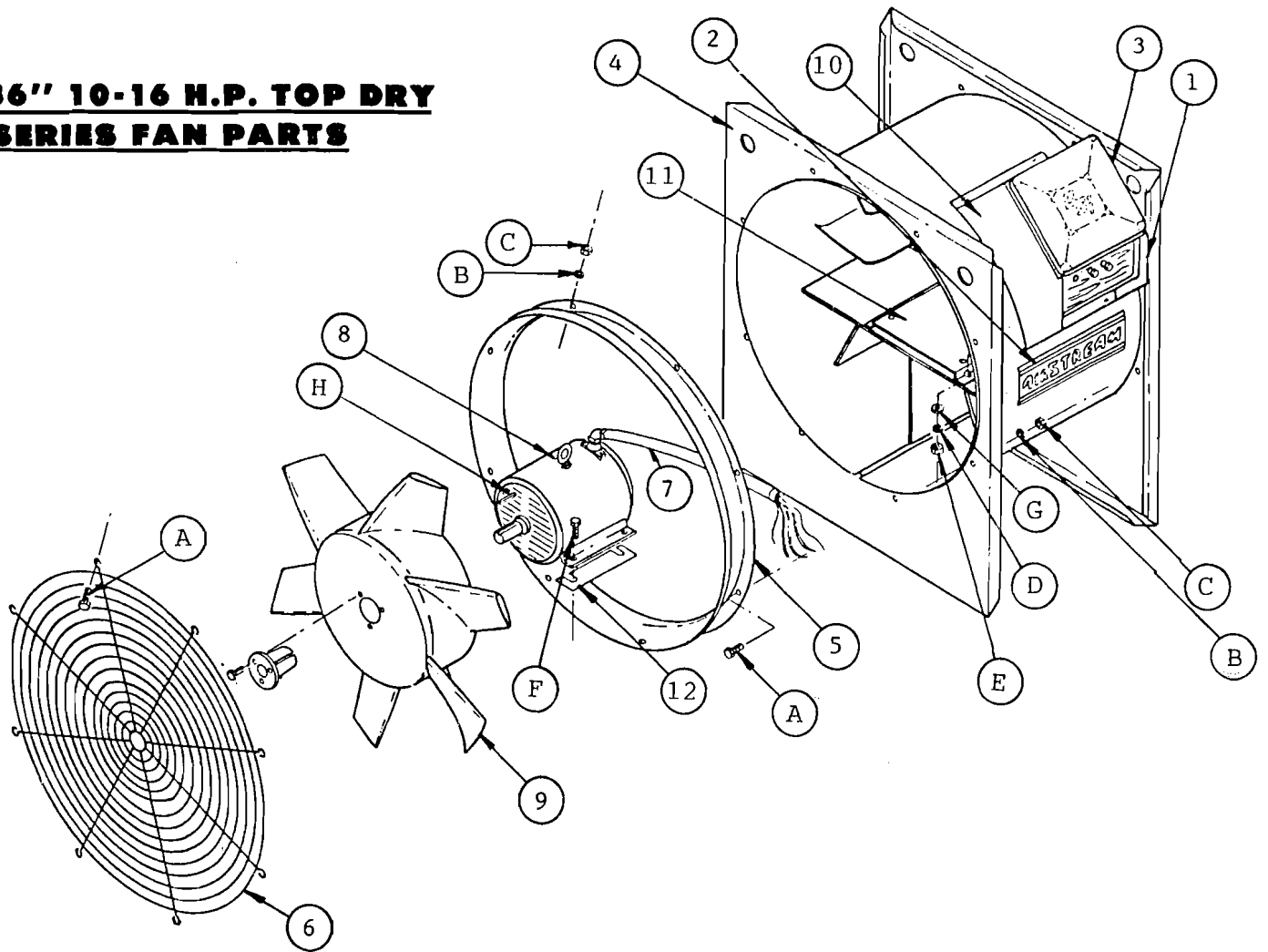
## 220 VOLT 1 PHASE WIRING DIAGRAM

**28" TOP DRY FAN  
(10-15 H.P. 3400 RPM BALDOR MOTOR)**



**NOTE: POSITIVE GROUND IS REQUIRED FOR PROPER OPERATION.**

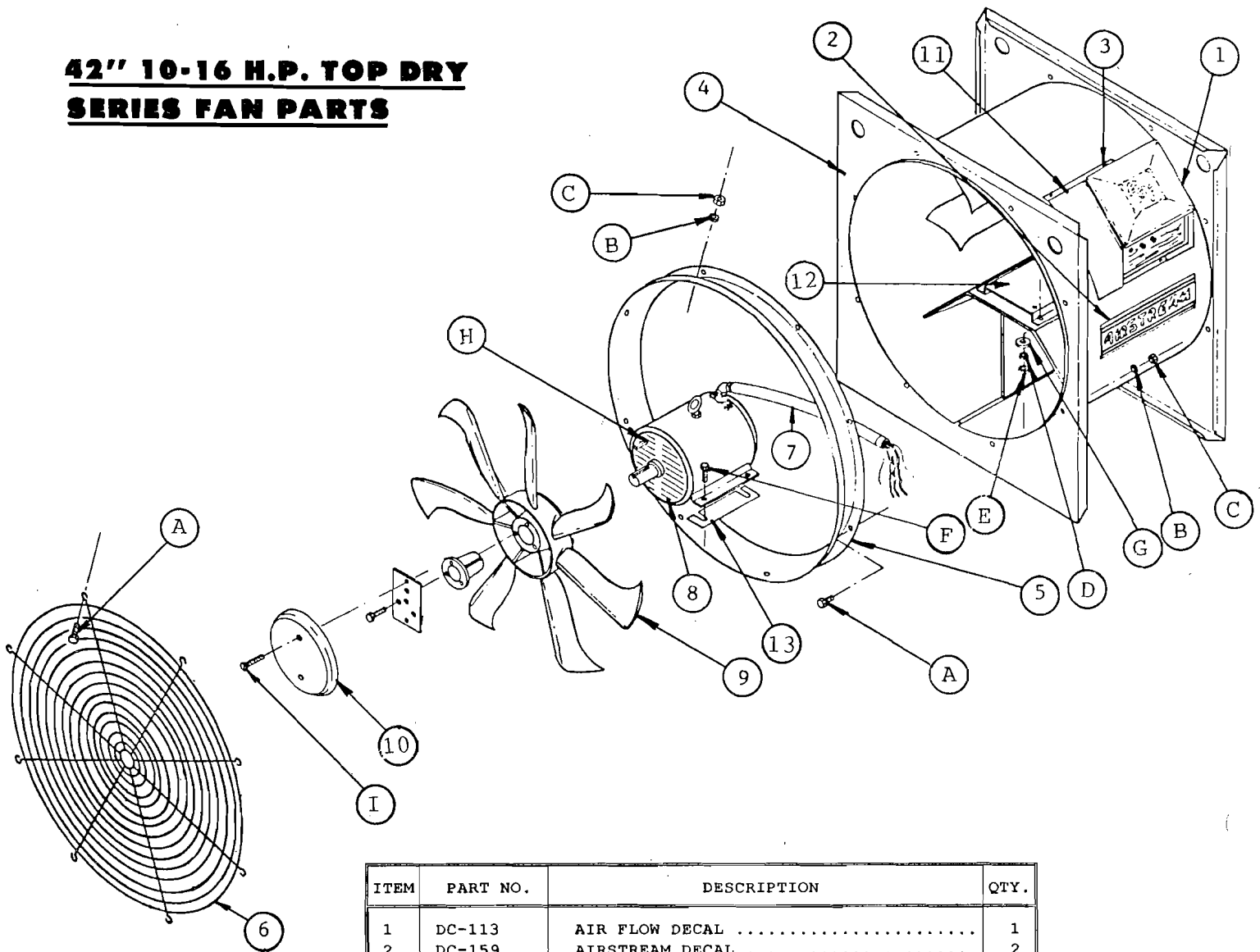
**36" 10-16 H.P. TOP DRY  
SERIES FAN PARTS**



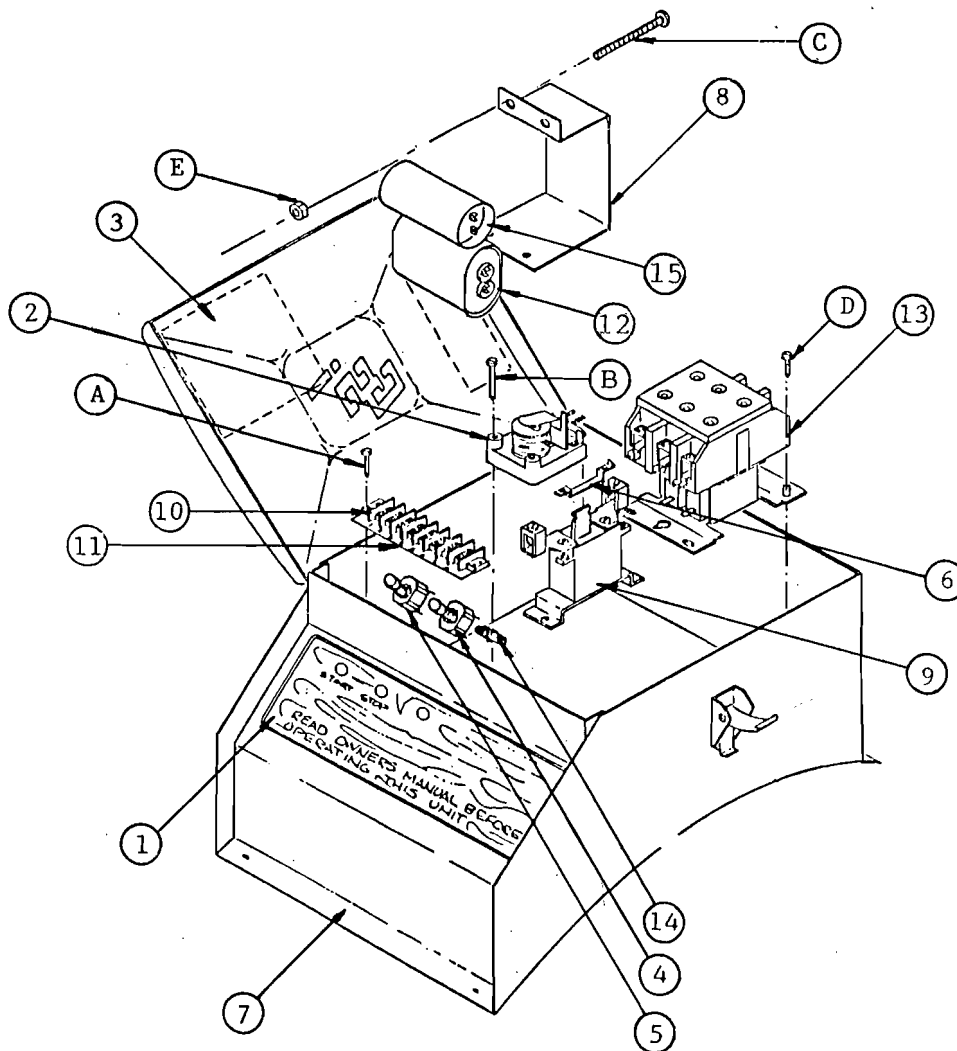
ITEM	PART NO.	DESCRIPTION	QTY.
1	DC-113	AIR FLOW DECAL .....	1
2	DC-159	AIRSTREAM DECAL .....	2
3	DC-163	IMPORTANT DECAL .....	1
4	TF-1017	36" FAN HOUSING WELDMENT .....	1
5	TF-1050	36" VENTURI .....	1
6	TFH-2002	36" GRILLE GUARD .....	1
7	FH-6564	1" SEALTITE CONDUIT .....	1
8	TFH-2054	10-16 H.P. MOTOR - 240 VOLT 1 PHASE .	1
8	TFH-2068	10-16 H.P. MOTOR - 208 VOLT 3 PHASE .	1
8	TFH-2066	10-16 H.P. MOTOR - 575 VOLT 3 PHASE .	1
9	TF-1053	36" FAN BLADE & HUB ASSEMBLY .....	1
10	TECF-36-1	36" ELECTRICAL BOX - 240 VOLT 1 PHASE	1
10	TECF-36-3	36" ELECTRICAL BOX - 208 VOLT 3 PHASE	1
10	TECF-36-5	36" ELECTRICAL BOX - 575 VOLT 3 PHASE	1
11	TF-1116	3 PHASE ADAPTOR (3 PHASE ONLY) .....	1
12	TF-1037	10-16 H.P. MOTOR SHIM .....	AR
STANDARD HARDWARE PARTS - (PURCHASE LOCALLY)			
A	S-4275	5/16"-18 X 3/4" BIN BOLT .....	24
B	S-1147	5/16" LOCKWASHER .....	24
C	S-396	5/16"-18 NUT .....	24
D	S-1054	3/8" LOCKWASHER .....	4
E	S-456	3/8"-16 NUT .....	4
F	S-2071	3/8"-16 X 1-1/4" BOLT .....	4
G	S-248	3/8" FLAT WASHER .....	4
H	-----	MOTOR KEY (SUPPLIED WITH MOTOR) .....	1



**42" 10-16 H.P. TOP DRY  
SERIES FAN PARTS**

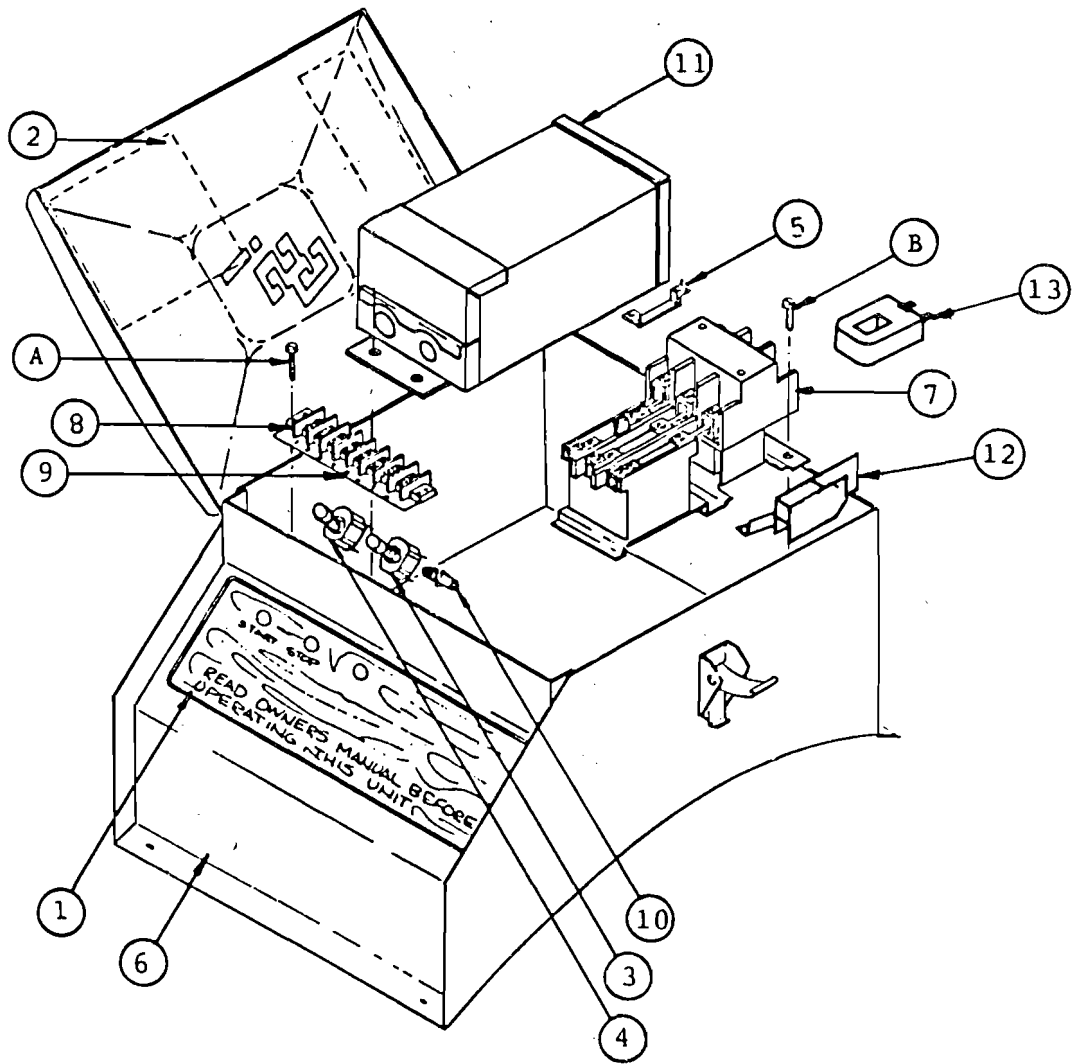


ITEM	PART NO.	DESCRIPTION	QTY.
1	DC-113	AIR FLOW DECAL .....	1
2	DC-159	AIRSTREAM DECAL .....	2
3	DC-163	IMPORTANT DECAL .....	1
4	TF-1121	42" 10-16 H.P. FAN HOUSING WELDMENT ..	1
5	TF-1082	42" VENTURI .....	1
6	TFH-2003	42" GRILLE GUARD .....	1
7	FH-6564	1" SEALTITE CONDUIT .....	1
8	TFH-2054	10-16 H.P. MOTOR - 240 VOLT 1 PHASE ..	1
8	TFH-2068	10-16 H.P. MOTOR - 208 VOLT 3 PHASE ..	1
8	TFH-2066	10-16 H.P. MOTOR - 575 VOLT 3 PHASE ..	1
9	TF-1086	42" FAN BLADE & HUB ASSEMBLY .....	1
10	FH-1108	BLADE HUB CAP .....	1
11	TECF-42-1	42" ELECTRICAL BOX - 240 VOLT 1 PHASE	1
11	TECF-42-3	42" ELECTRICAL BOX - 208 VOLT 3 PHASE	1
11	TECF-42-5	42" ELECTRICAL BOX - 575 VOLT 3 PHASE	1
12	TF-1116	3 PHASE ADAPTER (3 PHASE ONLY) .....	1
13	TF-1037	10-16 H.P. MOTOR SHIM .....	AR
STANDARD HARDWARE PARTS - (PURCHASE LOCALLY)			
A	S-4275	5/16"-18 X 3/4" BIN BOLT .....	24
B	S-1147	5/16" LOCKWASHER .....	24
C	S-396	5/16"-18 NUT .....	24
D	S-1054	3/8" LOCKWASHER .....	4
E	S-456	3/8"-16 NUT .....	4
F	S-2071	3/8"-16 X 1-1/4" BOLT .....	4
G	S-248	3/8" FLAT WASHER .....	4
H	-----	MOTOR KEY (SUPPLIED WITH MOTOR) .....	1
I	HH-1830	1/4"-20 X 1-1/2" FLAT HD MACH. SCREW ..	2



**36" & 42" 10-16 H.P. 1 PHASE FAN CONTROL BOX PARTS**

ITEM	PART NO.	DESCRIPTION	QTY.
1	DC-325	TOP DRY FAN ELECTRICAL BOX DECAL . . . . .	1
2	-----	MOTOR START RELAY . . . . .	1
3	DC-435	36"/42" 1 PHASE WIRING DIAGRAM DECAL . . . . .	1
4	TFC-0028	STOP SWITCH . . . . .	1
5	TFC-0029	START SWITCH . . . . .	1
6	TFC-0047	HEATER STRIP . . . . .	1
7	TF-1189	36" FAN CONTROL BOX WELDMENT . . . . .	1
7	TF-1191	42" FAN CONTROL BOX WELDMENT . . . . .	1
8	TF-1096	CAPACITOR HALF CLAMP (BALDOR) . . . . .	2
9	TFC-0044	OVERLOAD RELAY . . . . .	1
10	TFC-0018	TERMINAL STRIP . . . . .	1
11	TFH-2052	TERMINAL STRIP MARKER . . . . .	1
12	-----	BALDOR RUN CAPACITORS (OIL) . . . . .	AR
13	TFC-0002	CONTACTOR . . . . .	1
14	TFC-0012	RED LIGHT . . . . .	1
15	-----	BALDOR START CAPACITORS (ELECTRO) . . . . .	AR
STANDARD HARDWARE PARTS - (PURCHASE LOCALLY)			
A	S-6557	#8-32 X 3/4" SHEET METAL SCREW . . . . .	2
B	S-4805	#8-32 X 1-1/4" MACHINE SCREW . . . . .	2
C	S-4627	1/4"-20 X 2-1/2" MACHINE SCREW . . . . .	2
D	S-1040	#8-32 X 1/4" SHEET METAL SCREW . . . . .	8
E	S-1102	1/4"-20 NUT . . . . .	2

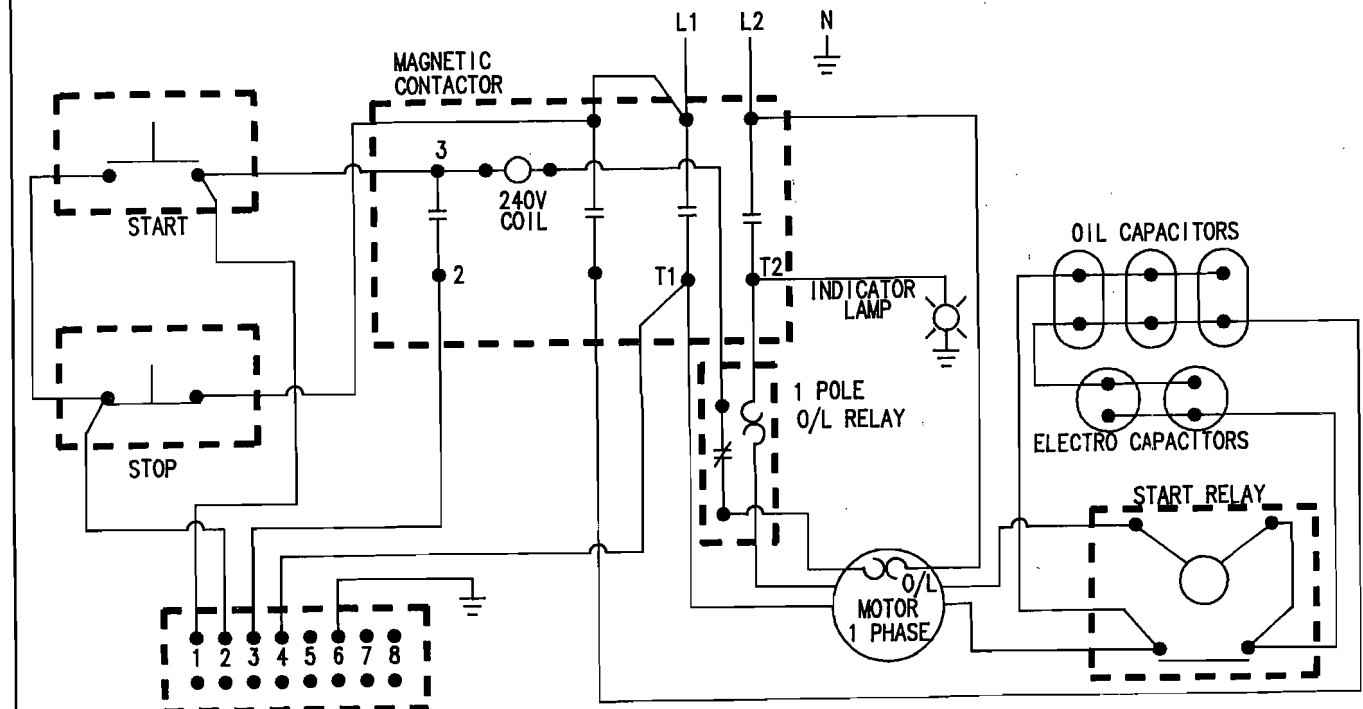


**36" & 42" 10-16 H.P. 3 PHASE FAN CONTROL BOX PARTS**

ITEM	PART NO.	DESCRIPTION	QTY.
1	DC-325	TOP DRY FAN ELECTRICAL BOX DECAL . . . . .	1
2	DC-379	208 VOLT 3 PHASE WIRING DIAGRAM DECAL	1
2	DC-380	575 VOLT 3 PHASE WIRING DIAGRAM DECAL	1
3	TFC-0028	STOP SWITCH . . . . .	1
4	TFC-0029	START SWITCH . . . . .	1
5	TFC-0058	HEATER STRIP (208 VOLT ONLY) . . . . .	3
5	TFC-0046	HEATER STRIP (575 VOLT ONLY) . . . . .	3
6	TF-1189	36" FAN CONTROL BOX WELDMENT . . . . .	1
6	TF-1191	42" FAN CONTROL BOX WELDMENT . . . . .	1
7	TFC-0060	CONTACTOR (208 VOLT ONLY) . . . . .	1
7	TFC-0059	CONTACTOR (575 VOLT ONLY) . . . . .	1
8	TFC-0018	TERMINAL STRIP . . . . .	1
9	TFH-2052	TERMINAL STRIP MARKER . . . . .	1
10	TFC-0012	RED LIGHT . . . . .	1
11	TFC-0039	TRANSFORMER 575-120V (575 VOLT ONLY) .	1
12	TFC-0042	AUXILIARY POINTS (575 VOLT ONLY) . . . . .	1
13	TFC-0043	COIL - 120 VOLTS (575 VOLT ONLY) . . . . .	1
STANDARD HARDWARE PARTS - (PURCHASE LOCALLY)			
A	S-6557	#8-32 X 3/4" SHEET METAL SCREW . . . . .	2
B	S-1040	#8-32 X 1/4" SHEET METAL SCREW . . . . .	6

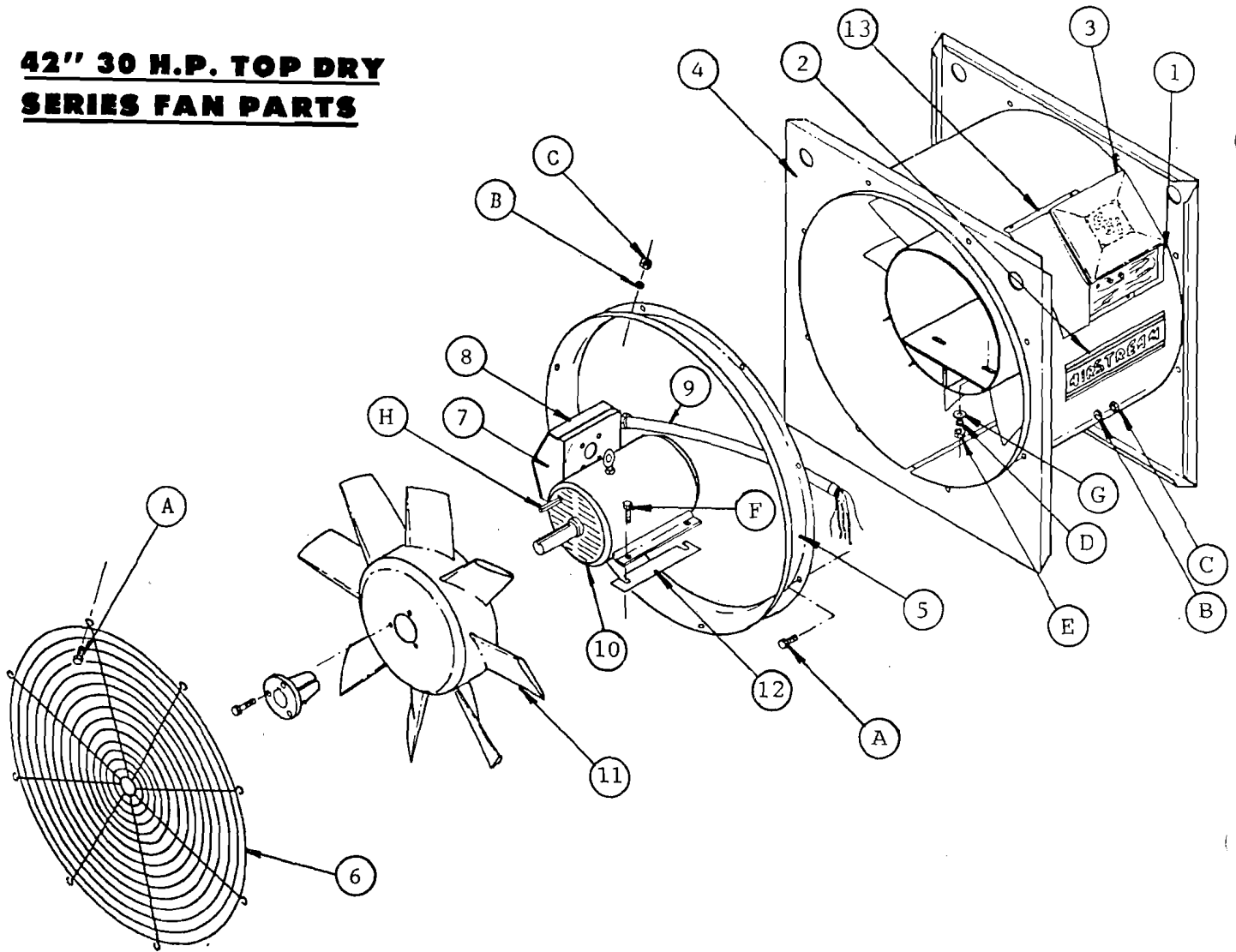
## 220 VOLT 1 PHASE WIRING DIAGRAM

**36" & 42" TOP DRY FANS  
(10-16 H.P. 1725 RPM BALDOR MOTOR)**

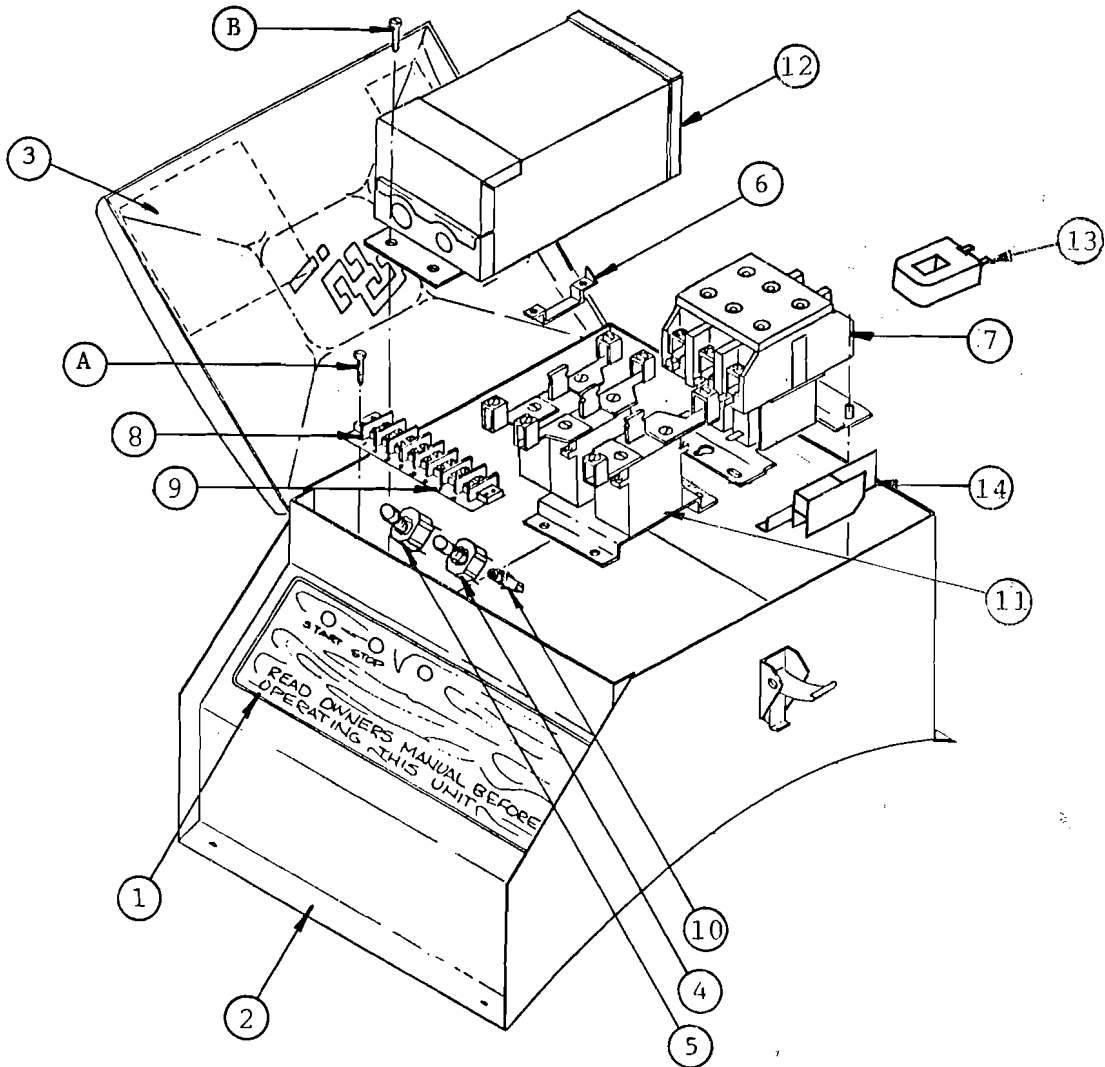


**NOTE: POSITIVE GROUND IS REQUIRED FOR PROPER OPERATION.**

**42" 30 H.P. TOP DRY  
SERIES FAN PARTS**



ITEM	PART NO.	DESCRIPTION	QTY.
1	DC-113	AIR FLOW DECAL .....	1
2	DC-159	AIRSTREAM DECAL .....	2
3	DC-163	IMPORTANT DECAL .....	1
4	TF-1000	42" 30 H.P. FAN HOUSING WELDMENT .....	1
5	TF-1082	42" VENTURI .....	1
6	TFH-2003	42" GRILLE GUARD .....	1
7	TF-1011	42" FAN ELECTRIC BOX .....	1
8	TF-1012	ELECTRIC BOX COVER .....	1
9	FH-6564	1" SEALTITE CONDUIT .....	1
10	TFH-2073	30 H.P. MOTOR - 208 VOLT 3 PHASE .....	1
10	TFH-2074	30 H.P. MOTOR - 575 VOLT 3 PHASE .....	1
11	TF-1087	42" 30 H.P. FAN BLADE & HUB ASSEMBLY ..	1
12	TF-1036	30 H.P. MOTOR SHIM .....	AR
13	TECF-42-33	30 H.P. ELECTRICAL BOX - 208 VOLT ....	1
13	TECF-42-35	30 H.P. ELECTRICAL BOX - 575 VOLT ....	1
STANDARD HARDWARE PARTS - (PURCHASE LOCALLY)			
A	S-4275	5/16"-18 X 3/4" BIN BOLT .....	24
B	S-1147	5/16" LOCKWASHER .....	24
C	S-396	5/16"-18 NUT .....	24
D	S-1054	3/8" LOCKWASHER .....	4
E	S-456	3/8"-16 NUT .....	4
F	S-2071	3/8"-16 X 1-1/4" BOLT .....	4
G	S-248	3/8" FLAT WASHER .....	4
H	-----	MOTOR KEY (SUPPLIED WITH MOTOR) .....	1

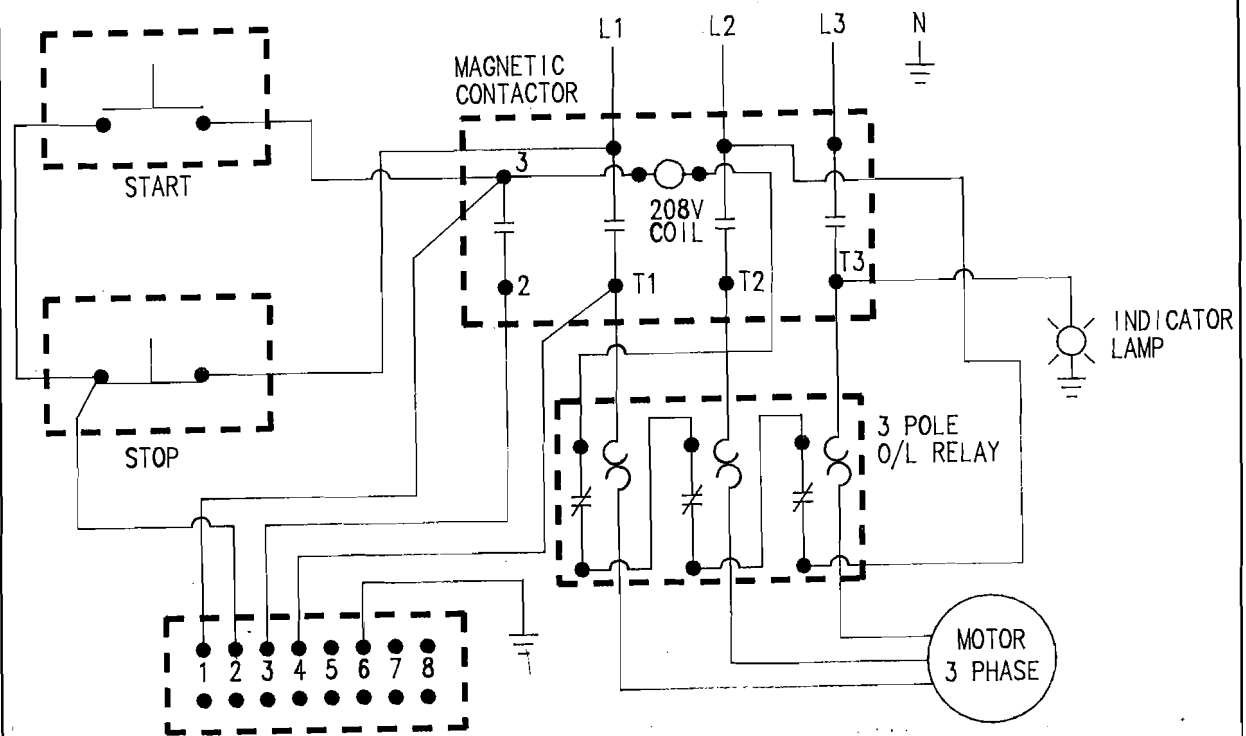


**42" 30 H.P. 3 PHASE FAN CONTROL BOX PARTS**

ITEM	PART NO.	DESCRIPTION	QTY
1	DC-325	TOP DRY FAN ELECTRICAL BOX DECAL . . . . .	1
2	TF-1191	42" 30 H.P. FAN CONTROL BOX WELDMENT .	1
3	DC-379	208 VOLT 3 PHASE WIRING DIAGRAM DECAL	1
3	DC-380	575 VOLT 3 PHASE WIRING DIAGRAM DECAL	1
4	TFC-0028	STOP SWITCH . . . . .	1
5	TFC-0029	START SWITCH . . . . .	1
6	TFC-0066	HEATER STRIP (208 VOLT ONLY) . . . . .	3
6	TFC-0063	HEATER STRIP (575 VOLT ONLY) . . . . .	3
7	TFC-0052	CONTACTOR (208 VOLT ONLY) . . . . .	1
7	TFC-0050	CONTACTOR (575 VOLT ONLY) . . . . .	1
8	TFC-0018	TERMINAL STRIP . . . . .	1
9	TFH-2052	TERMINAL STRIP MARKER . . . . .	1
10	TFC-0012	RED LIGHT . . . . .	1
11	TFC-0056	OVERLOAD RELAY (208 VOLT ONLY) . . . . .	1
12	TFC-0039	575-120V TRANSFORMER (575 VOLT ONLY) .	1
13	TFC-0043	120V COIL (575 VOLT ONLY) . . . . .	1
14	TFC-0042	AUXILIARY POINTS (575 VOLT ONLY) . . . . .	1
STANDARD HARDWARE PARTS - (PURCHASE LOCALLY)			
A	S-6557	#8-32 X 3/4" SHEET METAL SCREW . . . . .	2
B	S-1040	#8-32 X 1/4" SHEET METAL SCREW . . . . .	6

# 208 VOLT 3 PHASE WIRING DIAGRAM

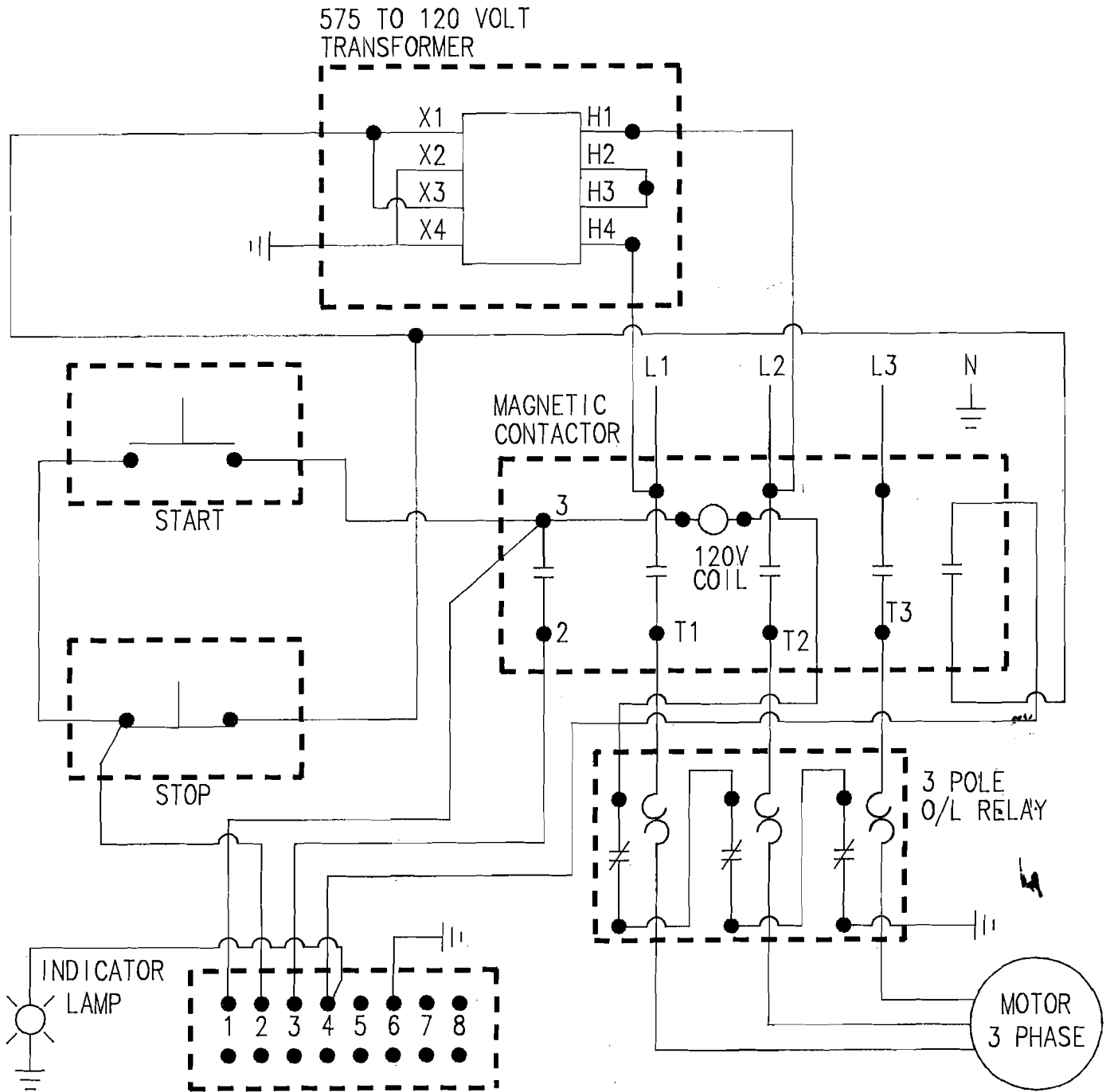
24", 28", 36" & 42" TOP DRY FANS  
(BALDOR MOTORS)



**NOTE: POSITIVE GROUND IS REQUIRED FOR PROPER OPERATION.**

# 575 VOLT 3 PHASE WIRING DIAGRAM

**24", 28", 36" & 42" TOP DRY FANS  
(BALDOR MOTORS)**



**NOTE: POSITIVE GROUND IS REQUIRED FOR PROPER OPERATION.**



## **SPECIFICATIONS**

DIAMETER		24"	28"	36"	42"
BTU RATING		2000000	3000000	4000000	5000000
WIEGHT		110	145	228	286
LIQUID MODELS	MAX FUEL FLOW (GPH)	21	32	43	59
	ORIFICE SIZE	.177"	.25"	.25"	.438"
	MIN OPERATING PRESSURE	1	3	5	1
	MAX OPERATING PRESSURE	30	18	30	6
	MIN LINE SIZE	3/8"	3/8"	1/2"	1/2"
VAPOR MODELS	MAX FUEL FLOW (CU FT/HR)	800	1185	1590	-----
	ORIFICE SIZE	.177"	.25"	.25"	-----
	MIN OPERATING PRESSURE	1	3	5	-----
	MAX OPERATING PRESSURE	30	18	30	-----
	MIN LINE SIZE	3/4"	1"	1"	-----
NAT GAS MODELS	MAX FUEL FLOW (CU FT/HR)	2100	3000	4200	5000
	ORIFICE SIZE	.25"	.375"	.375"	.500
	MIN OPERATING PRESSURE	1	1	3	1
	MAX OPERATING PRESSURE	10	6	10	5
	MIN LINE SIZE	1"	1-1/4"	1-1/2"	2"

## **HEATER CONTROL SPECIFICATIONS**

<u>SPARK PLUG</u>	Double electrode 1/8" gap
<u>FUSES</u>	5 amp 250 volt
<u>HI-LIMIT HOUSING</u>	Opens circuit at 200 degrees f.
<u>HI-LIMIT VAPOR</u>	Opens circuit at 180 degrees f
<u>SOLID STATE IGNITION BOARD</u>	110 v works on flame rectification principle to prove flame. suply 15000 v to spark plug for ignition.

## **FUNCTION OF HEATER PARTS**

HEATER HIGH LIMIT - Shuts down heater in event housing temperature exceeds 200 degrees. (This might occur if fan motor were to fail.)

PRESSURE GAUGE - Allows the manifold pressure to be monitored for regulator adjustment.

HI-FLAME SOLENOID VALVE - When closed forces gas to go to bypass and through adjustable flow control for low flame. When opened it allows gas to flow straight through to orifice.

LO-FLAME SOLENOID VALVE - Closes in event that the low flame would get to hot.

SPARK PLUG - Provides electric spark for ignition.

BURNER SWITCH - Switches on power to heater unit.

PURGE RELAY - Provides a ten second delay to allow all gas to be purged from heater and fan to come up speed before first igniting burner.

ELECTRONIC IGNITION BOARD - Provides high voltage to spark plug for ignition and also provides flame proving through flame rectification.

FLAME SENSOR - Senses flame and sends signal back to ignition board.

RESET - Locks out system after repeated trials for ignition.

RED LIGHT - Indicates that electronic ignition board is receiving power.

## **FUNCTION OF VAPORIZER PARTS**

STRAINER - Filters out any foreign matter from gas line that could lodge in gas solenoid valve.

SHUT-OFF VALVE - Starts or Stops flow of liquid to vaporizer.

SAFETY RELIEF VALVE - Releases pressure should blockage or pressure build up occur.

SOLENOID VALVE - Shuts off flow of liquid should vapor get overheated in cooling coil.

VAPOR HIGH LIMIT - Senses overheating in cooling coil and sends signal to solenoid valve to close, shutting off flow of liquid to heater.

COOLING COIL - Allows hot vapor to cool slightly before combustion.

VAPORIZER SUPPORT WELDMENT - Provides lateral and vertical movement of vaporizer coil.

# HEATER INSTALLATION

1. Top Dry series heaters are designed primarily for use with Top Dry systems, although they are suitable for many other crop drying applications. Instructions given in this manual will assume that heater is being installed on a Top Dry.
2. Bolt heater to downwind side of fan. (If required) Use 3/8" x 1-1/4" bolts, nuts and lockwashers. (not included)
3. Hoist fan and heater unit up onto fan and heater platform.
4. If fan and heater unit is 36" or 42" then the unit should bolt directly to transition sheet. For a 24" or 28" fan and heater, unit must be shimmed under the legs in order to gain height required to bolt to transition.
5. Wire fan as per fan manual and CSA C22.1 Canadian Electrical Code Part I and/or local codes.
6. Wire heater to fan as shown on the wiring diagram. This should be all that is required for wiring on heater. (see dual heater control instructions for wiring more than 1 fan and heater.)

## FUEL CONNECTION

IMPORTANT - DO NOT USE PROPANE TANKS WHICH HAVE PREVIOUSLY BEEN USED FOR AMMONIA UNLESS THEY HAVE BEEN PURGED ACCORDING TO PROCEDURES OF THE NATIONAL L.P. ASSOCIATION.

INVESTIGATE TO BE SURE THAT FUEL SUPPLY SYSTEM COMPLYS WITH ALL LOCAL CODES FOR L.P. GAS INSTALLATIONS.

## LIQUID PROPANE MODELS

1. LP models are designed to run on liquid propane, with liquid draw from the propane tank. Avoid using propane supply tanks that have been used for vapor draw for long periods of time. When using liquid draw systems any moisture that may be present in tank or lines may freeze when system used in cold weather. To avoid this the usual precaution is to purge the system with methanol.
2. Run proper size line (see specifications) to liquid pipe train on heater. Have qualified gas service man inspect installation to be sure that every thing is installed according to local codes and ordinances.
3. After installation is complete check all connections for leaks.

## PROPANE VAPOR MODELS

1. Propane vapor models are designed to run either directly off of supply tank or from a separate external vaporizer.
2. A high pressure (0-30 lbs.) regulator should be installed in line to regulate gas flow to heater. 24" model heaters have regulator installed on heater at factory.
3. Run proper size line (see specifications) to pipe train on heater. Have a qualified gas service man inspect installation to be sure that everything is installed according to local codes and ordinances.
4. After installation is complete check all connections for leaks.

## NATURAL GAS MODELS

1. Natural gas models are similar to vapor models, but have a larger orifice to accommodate lower pressures sometimes found with Natural gas.
2. Pressure regulator must be installed ahead of heater to adjust gas flow. This regulator must be capable of supplying the required pressure and maximum gas flow. (see specifications)
3. Run proper size lines (see specifications) to pipe train on heater. Have qualified gas service man inspect installation to be sure that everything is installed according to local codes and ordinances.
4. After installation is complete check all connections for leaks.

# **HEATER OPERATION**

All Top Dry heaters have standard a HI-LO type pipe train. This style of burner should burn constantly cycling in and out the high flame. Follow these instructions when first starting up your unit.

1. The thermostat plugs must be plugged into heater control box for heater to operate. (see thermostat instructions)
2. Open all manual shut-off valves to heater unit.
3. Start fan. This should supply power to heater on/off switch.
4. Depress heater on/off switch. Switch should stay in. To release push up on red tab below the button.
5. After 10 seconds red indicator light should light up, indicating that there is power to the ignition board.

6. Heater should now be lit. If not check to see that all gas is on and both thermostats are plugged in.
7. Turn thermostat dial to its highest setting so that heater should be on high flame.
8. Open adjustable flow control valve all the way. (On propane models this is the small red top adjustable valve, on natural gas models this is the ball valve with the lever handle.)
9. Turn thermostat dial to lowest setting so that heater should be on low flame.
10. Adjust flow control valve so that low flame pressure is at desired setting.
11. Turn thermostat dial back to a very high setting and wait for bin plenum to come up to temperature. Then turn thermostat back slowly until heater goes to low flame.
12. Low flame should be adjusted so that it drops slowly until burner goes back to high flame.
13. Watch plenum temperature as burner goes through a few cycles, to be sure that it is operating properly.
14. Refer to Top Dry Control Center manual for further instructions on drying with a Top Dry System.

## **HEATER SERVICE**

All AIRSTREAM heaters are constructed of durable weather-resistant materials, so a minimum amount of service should be required; however before the unit is started for the first time each season there are a few items that need to be checked out. All damaged parts should be repaired or replaced.

1. Disconnect main power supply. Open control box lid and inspect all components for moisture, vibration, or rodent damage. Inspect and tighten all loose terminal connections. Replace any damaged wiring.
2. Remove burner orifice tube and inspect for dirt or foreign material. Clean out if necessary.
3. Remove burner cup from burner venturi and inspect for foreign material in any of the ports. Clean these parts out if necessary. Any foreign material blocking burner cup ports may seriously impair the performance of the heater.
4. Inspect the spark plug and flame sensor for corrosion and damage. Clean or replace if necessary.

## **ADJUSTING PRIMARY AIR DAMPER PLATE**

### **(42" HEATER ONLY)**

The 42" heater is equipped with an air damper plate. It is located on top of the heater inside of the can. The brass orifice tube goes down through this plate. This plate is adjustable up and down to control the quality of the flame.

1. With heater on adjust gas pressure to desired setting. Observe flame through access door. If flame is a clear blue color air damper is adjusted correctly.
2. Stop fan and heater. Damper plate may be adjusted from heater outlet or from access cover.
3. Loosen wingnuts and readjust damper. Secure again with wingnuts.
4. Operate heater and recheck flame. Readjust plate if necessary.

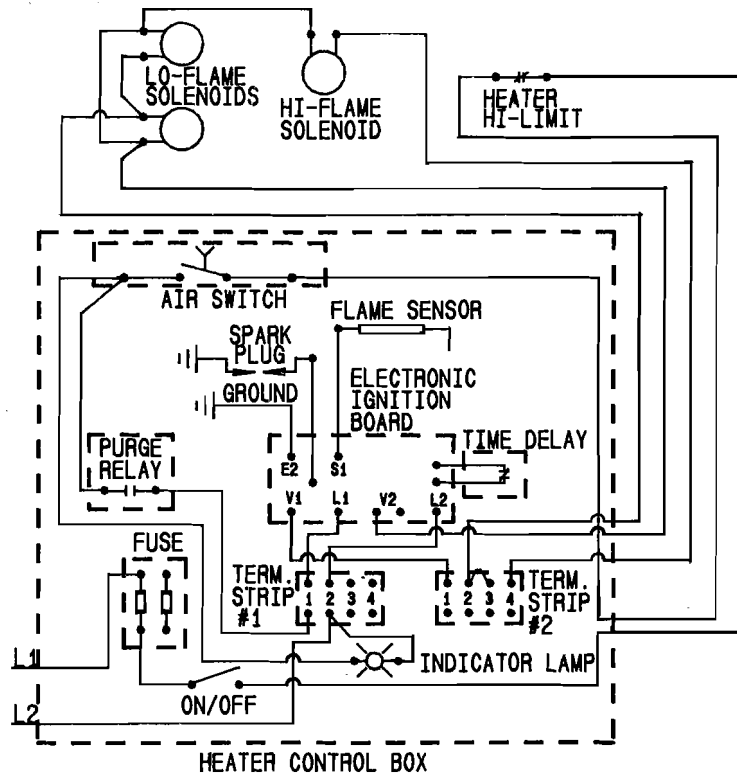
Flame should be checked periodically through-out drying season and adjusted if necessary.

# TROUBLESHOOTING CHART

TROUBLE	PROBABLE CAUSE	CHECK-OUT PROCEDURE AND CORRECTION
Burner will not fire no gas pressure to orifice after 30 seconds of fan operation. (Red light does not come on at all.)	Heater not plugged in.	Plug heater cord into fan control box.
	Purge relay	Remove wires from purge relay and tie them together. If purge relay was bad red light should come on immediately after pressing on/off switch. If purge relay is bad replace
	Blown fuse	Check fuse visually or with ohm meter if bad replace.
	High limit (heater housing)	Press red reset button on hi-limit if this does not correct situation check hi-limit with ohm meter. If hi-limit shows open circuit then replace. (Remove wires before checking.)
	Fan and Heat unit not grounded properly.	Fan and Heat unit must be grounded for proper operation.
Burner will not fire, no gas pressure to orifice. (Red light comes on after 15 seconds of operation.)	Hi-limit reset on HI-LO thermostat	Depress red button on HI-LO thermostat. If this does not correct situation jump around thermostat to determine whether thermostat is bad.
	Vapor Hi-limit	Jump around the Hi-limit and if this corrects situation replace Hi-limit.
	Time Delay Reset (on control box)	Reset button
	Liquid solenoid valve	Feel top of valve to see if it clicks this would indicate that valve is working electrically. If valve does not click, connect 110 volts to valve if this causes valve to click open then valve should be okay. If not replace valve or valve coil.
	Lo-flame solenoid valve	Check out the same as liquid solenoid valve.
	Electronic ignition board	Remove wires from V1 and V2. Push start switch on heater after red light comes on there should be 110 volts between V1 and V2 for 4 seconds. If this is true then board should be okay. If not check power supply to board to make sure that is okay. If power supply checks out replace board.
	Obstruction in line	Remove obstruction.
Gauge shows gas pressure but unit will not fire.	Spark plug	Remove plug wire from spark plug. Carefully holding plug wire by insulation try to get an arc between end of wire and heater housing.  HIGH VOLTAGE - STAY CLEAR OF END OF IGNITION WIRE.  If spark is present replace or clean plug.
	Spark plug wire	If no spark was present after checking spark plug then problem may be faulty spark plug wire. Remove spark plug from ignition board Ground one end of a screwdriver to frame then bring the shaft of the screwdriver to within 1/8 inch of terminal on board. Turn power on to unit. If arc is established then replace spark plug wire. If arc is not established then replace board.
Heater starts properly but shuts after 10 seconds or solenoids cycle rapidly.	Flame sensor not in proper position.	Move flame probe into flame.
	Flame probe in bad condition.	Replace flame probe wire.
	Flame probe wire bad	Replace flame probe wire.
Lines freeze while starting.	Moisture in fuel	Call qualified gas serviceman to check tank
Cooling coil gets very hot and heater shuts off.	Vaporizer getting too hot.	Adjust vaporizer out of flame. Move small amount at a time and allow heater to run for a few minutes before checking cooling coil.

TOP DRY HEATER WIRING FOR CGA APPROVED  
NATURAL GAS & VAPOR HEATERS

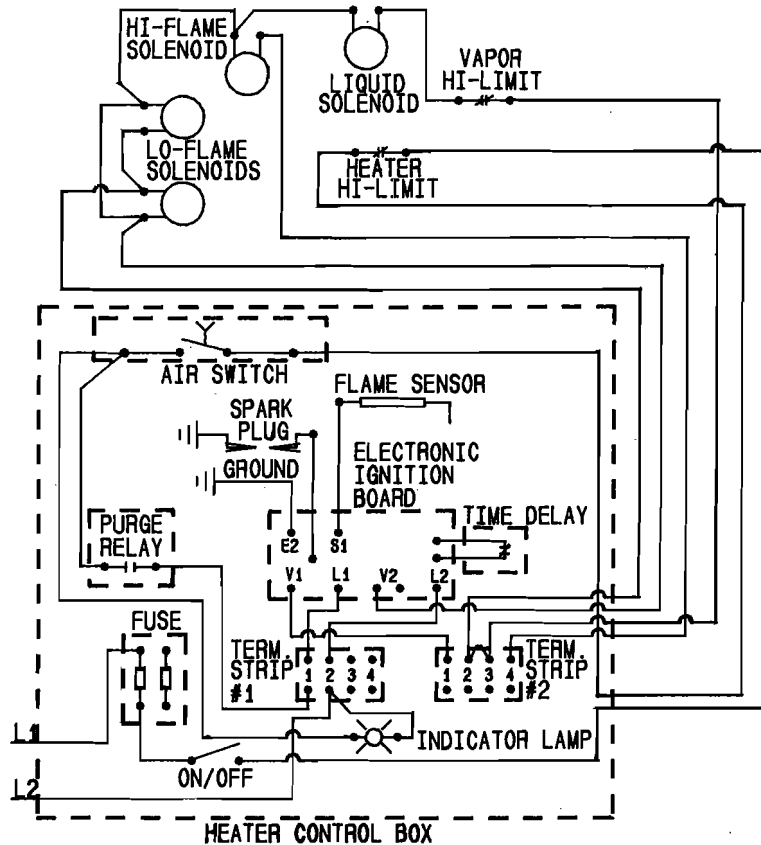
DC-378



NOTES: BIN HI-LIMIT WIRES INTO TERMINALS 1 & 2 ON TERMINAL STRIP #2.  
CYCLING THERMOSTAT WIRES INTO TERMINALS 3 & 4 ON TERMINAL STRIP #2.

TOP DRY HEATER WIRING FOR CGA APPROVED  
LIQUID PROPANE HEATERS

DC-377



NOTES: BIN HI-LIMIT WIRES INTO TERMINALS 1 & 2 ON TERMINAL STRIP #2.  
CYCLING THERMOSTAT WIRES INTO TERMINALS 3 & 4 ON TERMINAL STRIP #2.



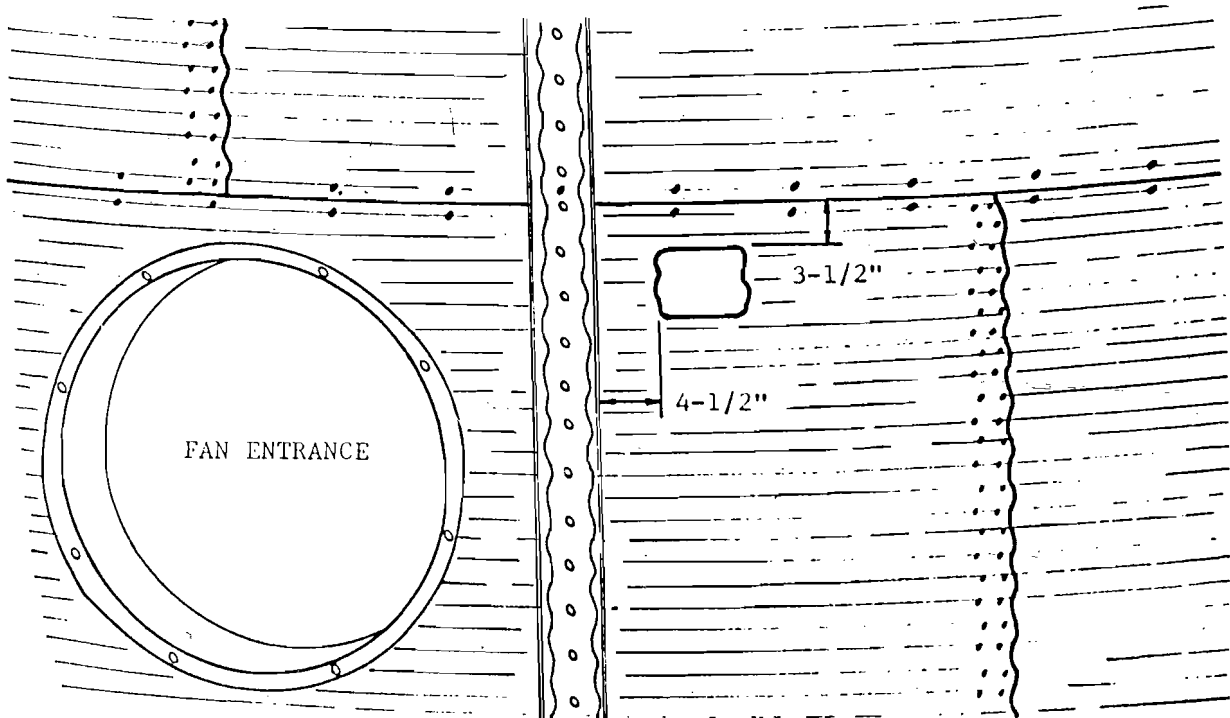
# HI-LO THERMOSTAT

The HI-LO Thermostat is designed for use with GSI HI-LO fire heaters. It comes with 2 thermostats one is adjustable and cycles the HI-flame in and out. The other is a manually resetting HI-limit. It is not adjustable and is set to shut down heater should plenum exceed temperature of 200 degrees. The HI-LO thermostat also comes with a thermometer for monitoring the plenum temperature.

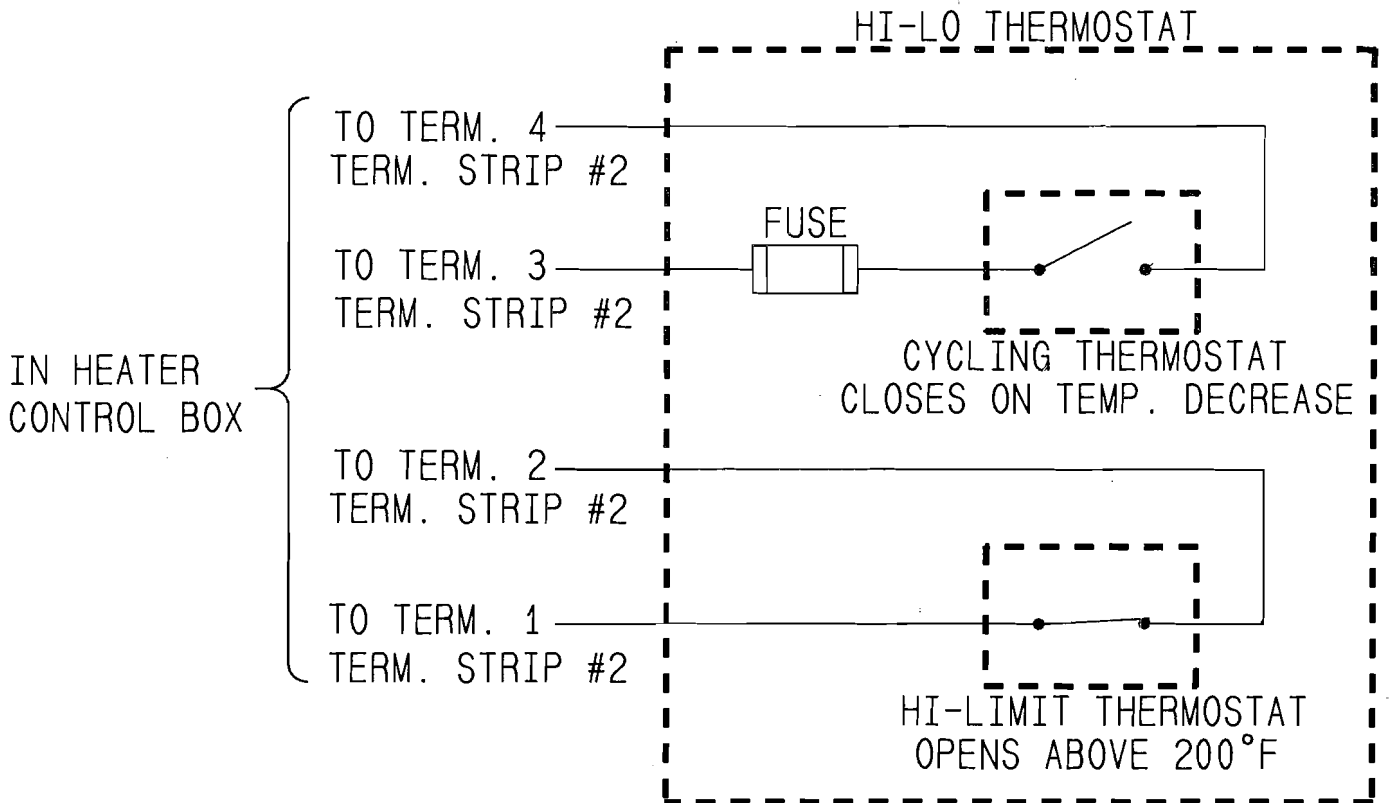
## INSTALLATION

1. Locate mounting position of thermostat as shown in diagram.
2. Use template supplied to cut hole in sidewall.
3. Cut a piece of screen proper size to fit over opening cut in sidewall. (Screen door wire (aluminum) 12" x 12" will work) Cut holes for probes and thermostat in screen wire.
4. Apply rope caulk to sides and top of plastic housing. Leave bottom open to let moisture escape.
5. Secure housing to sidewall using self drilling screws supplied. Be careful not to overtighten this may crack housing.
6. Connect wiring as shown in wiring diagram.

This completes installation instructions for the HI-LO thermostat. For operating instructions see heater operating instructions.



# HI-LO THERMOSTAT WIRING DIAGRAM





RECOMMENDED CUT-OUT FOR HI-LO THERMOSTAT

**MOUNTING TEMPLATE HI-LO THERMOSTAT**





MAKERS OF TOP QUALITY  
DRYING/STORING SYSTEMS