

# INSTALLATION and OPERATION SUPPLEMENT

## for AB-120A, AB-180A, AB-250A, AB-350A, and AB-500A GRAIN DRYERS

### GENERAL INFORMATION

This Supplement provides the required operator information for the AB-120A, AB-180A, AB-250A, AB-350A, and AB-500A model dryers manufactured later than July of 1993. These dryers are equipped with an improved cycle timer arrangement and ASC panel layout, as shown in the figure below. The information in this bulletin supersedes some of the cycle timer instructions included within the Operators Manual and the previous timer supplements, AB/CT-01-2 and AB/CT-02-2. Please read this information thoroughly and retain for future reference.

**NOTE:** Make sure to follow the charts and recommendations within the Dryer manual, except for the instructions and diagrams within this bulletin.

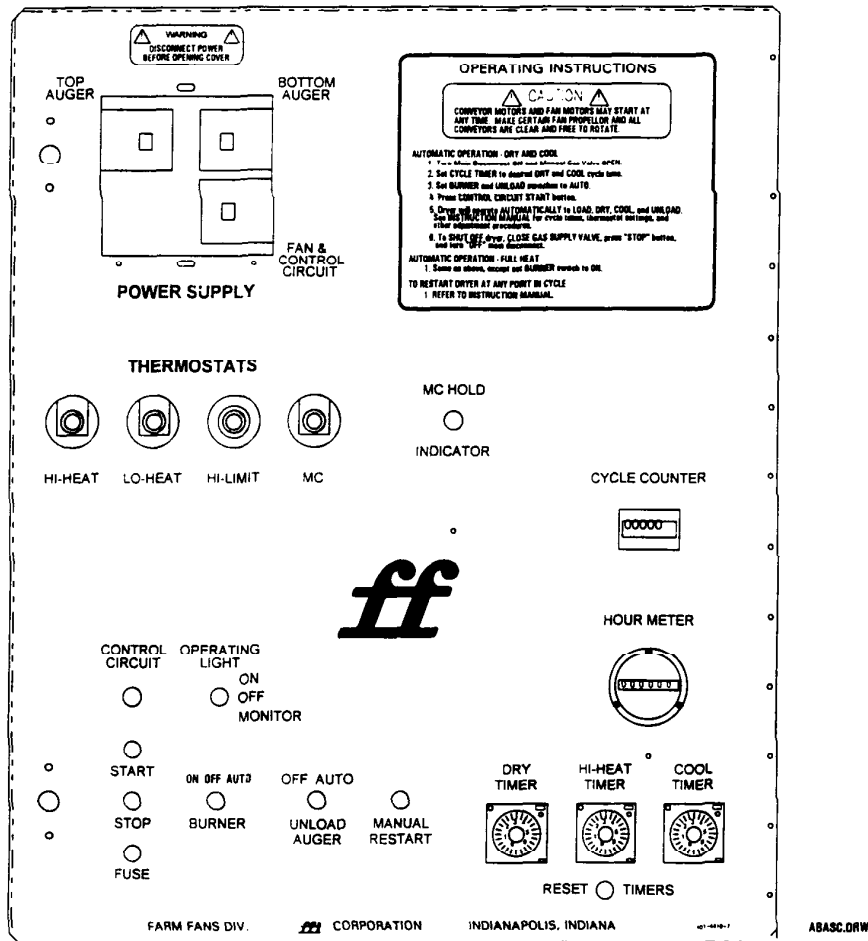


Fig. 1 AB-120/AB-180 Series ASC control panel.

## TIMER FUNCTIONS

**Dry Timer:** The DRY TIMER sets the total drying time desired, as suggested by the "Cycle Time Chart" in the Operator's Manual. The DRY TIME period is the sum of the High-Heat time setting plus the Low-Heat time.

**High-Heat Timer:** The HIGH-HEAT time setting is the initial time period of the total dry time setting. The LOW-HEAT time is the remaining interval between the end of the High-Heat to the end of the Dry Time setting.

**Cool Timer:** The selected COOLING time will occur at the completion of the Dry Time (if not being held by the "MC" thermostat).

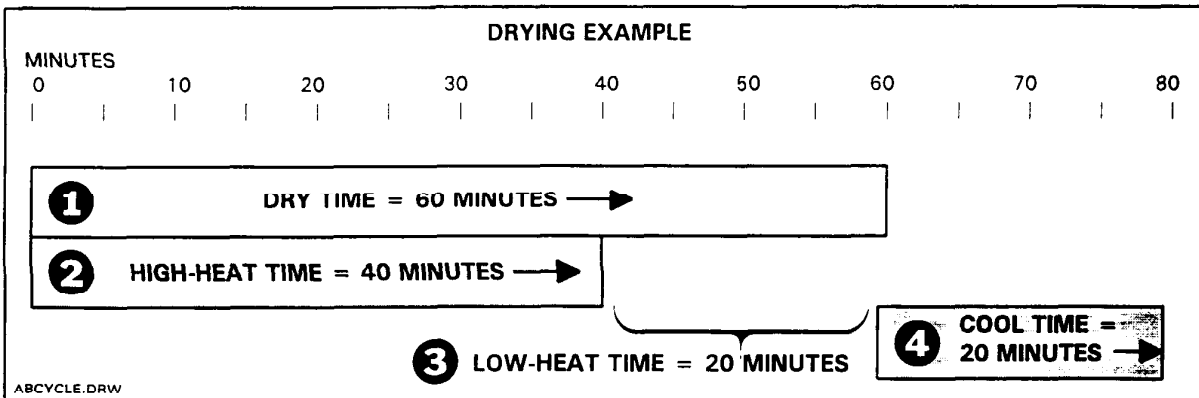
## OPERATING INFORMATION

When operating with these newer timers, refer to the suggested total time listings shown within the CYCLE TIME CHART of the manual for the "INITIAL CYCLE TIMES" and the "TOTAL DRYING TIME." Then, instead of adjusting one cycle timer as listed in the manual, simply adjust each of the three timers as suggested in the following instructions.

**DRY TIMER:** Set DRY TIMER to the same time listed under "Total Drying Time."

**HIGH HEAT TIMER:** As a general recommendation, the HIGH HEAT timer setting should be approximately 2/3 of the DRY TIMER setting. This adjustment would allow the remaining 1/3 of the drying time for the LOW HEAT portion of the drying cycle.

**EXAMPLE:** If the Cycle Time Chart in the Dryer Manual listed a 60-minute total drying time, this would require a 60-minute Dry Timer setting and a 40-minute High Heat setting. A 90-minute drying time would consist of 90 minutes DRY TIME and an approximate 60-minute High Heat setting.



**COOL TIMER:** For normal Dry-and-Cool operation, the Cool timer should be set as suggested by the Operator's Manual (see lower box in Cycle Time Chart). Cool time is normally 18 to 20 minutes, depending on the model of dryer.

For Full-Heat operation, the Cool timer should be set at 0 (zero) minutes. If partial cooling or extra cooling is desired, the Cool timer can be readjusted as desired.

## TIMER SETTINGS and ADJUSTMENT

Current factory production AB Series dryers are shipped with the Dry, High-Heat, and Cool cycle timers set in the 3h (3-hour) mode of operation. It may be desirable to change the range of the Cool timer to the 30m (30-minute) mode to allow more accurate setting of the Cool time, typically 18 to 20 minutes. See ADJUSTING the DRYING TIME RANGE and HERTZ below for how to change the range setting.

### DRYING TIME ADJUSTMENT

To adjust the time on Omron timers, simply rotate the outer dial face to the desired setting when the timer is not energized. The No. 1 mark equals 1/3 of the selected range (for example, 1/3 of the 30-min. range = 10 min.). The timer normally begins timing when power is applied to the control circuit Start button (in the AB mode). Cycle progress is tracked during operation by the "in-progress" indicator. If the dryer is shut down by pressing the control circuit Stop button or by a safety circuit shut-down, the Dry timer will retain its memory and resume its cycle when the dryer is turned back on. If the dryer is turned off due to the fan breaker being turned off, main power to the dryer being disconnected, or the ASC panel Timer Reset button being pressed, the Dry timer's "in-progress" memory will be lost because it is held by power from the 5A control fuse.

**NOTE:** When timer is energized, the time setting may be immediately decreased manually, but cannot be increased until after timer has been de-energized and becomes reset.

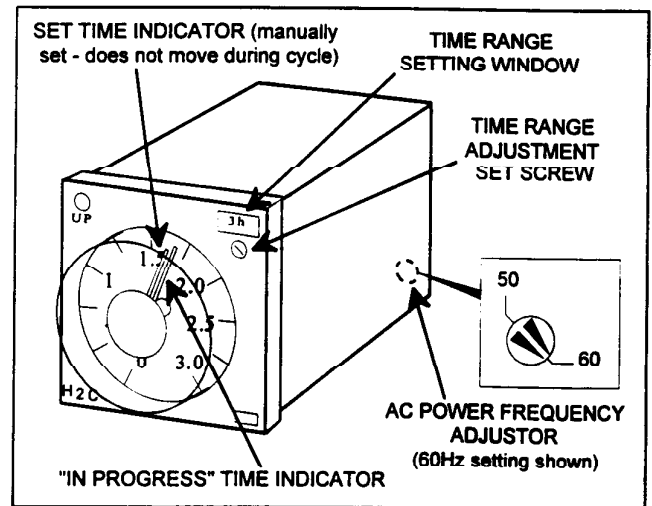
### ADJUSTING the DRYING TIME RANGE and HERTZ

To adjust the time RANGE (not the time setting) of the Omron timer:

- Use a small screwdriver to rotate the time range adjustment screw to the desired range (30m or 3h).

To change the Hertz setting:

- Use a small screwdriver to rotate the Hertz adjustment screw to either 50 or 60 Hertz.



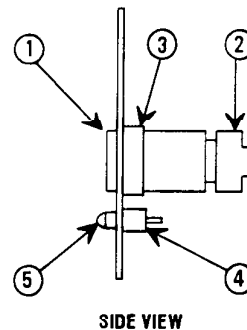
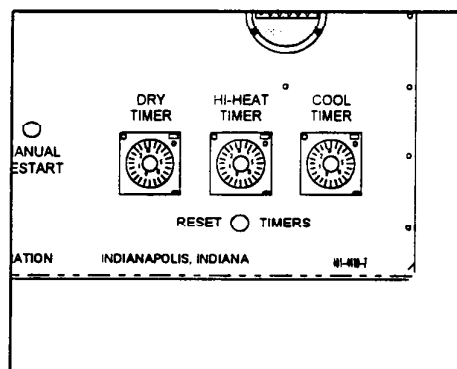
OMRON.DRW

Fig. 2 Omron cycle timer.

## RESETTING the OMRON TIMERS AFTER a SAFETY SHUTDOWN

Stage of Operation	Timer's Reaction	Required Operator Correction
Loading	- None -	- None -
High Heat	High-Heat and Dry Times stay where they stopped.	Restart dryer and continue the high-heat drying cycle; press the Manual Restart button on the ASC panel.
Low Heat	High-Heat and Dry Timers stay where they stopped.	Restart and continue low-heat drying cycle. Press the Manual Restart button.
Cooling	All three timers stay where they stopped.	The Cool Timer will resume the cool cycle. Restart dryer and press the Manual Restart button.
Unloading	All three timers stay where they stopped.	NOTE: Dryer will continue unloading after panel is re-energized.

NOTE: Upon main power failure, all timer memory is lost. Turn Dry and Cool timers down to zero and unload enough grain to get a good representative sample. Test the grain for moisture and then check the dryer manual's Cycle Time Chart for the correct Dry timer setting required to reach the target moisture level. When the batch is completed, reset timers to their normal settings.



ABTMRPTS.DRW

ITEM	PART NO.	DESCRIPTION	QTY.
1	056-1981-2	TIMER - 3-MIN/30-MIN/3-HR	3
2	056-1983-8	SOCKET - 11-PIN BASE	3
3	056-1984-6	ADAPTER PANEL MOUNTING	3
4	056-1584-4	SWITCH - PUSH BUTTON	1
5	006-1150-9	BOOT - PUSH BUTTON	1

Fig. 3 Cycle timer parts list.

## DRYING TIME TABLES

DRYING TIME TABLE - AB-120A & AB-180A						
SHELLED CORN to 15% — DRY & COOL (230/170°F plenum temps.)						
% Moisture Reduction	Total Dry Time		AB-120A Capacity BPH		AB-180A Capacity BPH	
	Min.	Hrs.	Dry	Wet	Dry	Wet
2	17	0.28	151	154	209	214
4	27	0.45	125	131	175	184
5	32	0.53	115	122	162	172
6	37	0.62	106	114	151	162
8	47	0.78	93	102	132	146
10	58	0.97	81	92	117	132
12	73	1.22	69	81	100	117
14	91	1.52	59	71	86	103
15	102	1.70	54	66	79	96
16	115	1.92	49	61	72	89
18	145	2.42	41	52	60	76
SHELLED CORN to 15% final — FULL HEAT (230/170°F plenum temps.)						
% Moisture Reduction	Total Dry Time		AB-120A Capacity BPH		AB-180A Capacity BPH	
	Min.	Hrs.	Dry	Wet	Dry	Wet
2	15	0.25	259	265	342	350
4	25	0.42	190	200	260	272
5	29	0.48	172	183	237	252
6	33	0.55	157	169	218	234
8	42	0.70	131	145	184	203
10	51	0.85	113	128	160	181
12	66	1.10	91	106	131	152
14	83	1.38	75	90	108	130
15	94	1.57	67	82	98	119
16	106	1.77	61	75	88	109
18	133	2.22	49	63	72	92
20	163	2.72	41	54	60	79
<ol style="list-style-type: none"> <li>Suggested drying times are based on (Hi-Heat/Low-Heat) plenum temperatures shown. Lower drying temperatures may be required for lower initial moistures.</li> <li>Actual drying time varies with grain's physiological factors (kernel size, chemical composition, seed variety, seasonal weather), weather conditions during drying, and other operating variables; lower final moisture significantly increases drying time.</li> <li>Hi-Heat Timer should be set at 2/3 of Dry Timer setting.</li> <li>Dry/Cool capacity based on 18 minute Cool time. Capacity includes load and unload times for standard auger capacities:            AB-120    1500 BPH load    900 BPH unload            AB-180    1500 BPH load    1150 BPH unload</li> </ol>						

**DRYING TIME TABLE, SMALL GRAINS - AB-120 & AB-180**

WHEAT, MILO to 13% — DRY & COOL (175/140°F plenum temps.) SOYBEANS, ROUGH RICE — DRY & COOL (140/120°F plenum temps.)

% Moisture Reduction	Total Dry Time		AB-120A Capacity BPH		AB-180A Capacity BPH	
	Min.	Hrs.	Dry	Wet	Dry	Wet
3	27	0.45	125	129	175	254
5	42	0.70	99	105	141	273
7	57	0.95	82	89	118	342

WHEAT, MILO TO 13% — DRY & COOL (175/140°F plenum temps.)  
SOYBEANS, ROUGH RICE to 13% — FULL HEAT (140/120°F plenum temps.)

% Moisture Reduction	Total Dry Time		AB-120A Capacity BPH		AB-180A Capacity BPH	
	Min.	Hrs.	Dry	Wet	Dry	Wet
3	35	0.58	151	156	209	217
5	50	0.83	115	122	162	172
7	60	1.00	99	108	141	153

1. Suggested drying times are based on (Hi-Heat/Low-Heat) plenum temperatures shown. Lower drying temperatures may be required for lower initial moistures.
2. Actual drying time varies with grain's physiological factors (kernel size, chemical composition, seed variety, seasonal weather), weather conditions during drying, and other operating variables; lower final moisture significantly increases drying time.
3. Hi-Heat Timer should be set at 2/3 of Dry Timer setting.
4. Dry/Cool capacity based on 18 minute Cool time. Capacity includes load and unload times for standard auger capacities:  

AB-120	1500 BPH load	900 BPH unload
AB-180	1500 BPH load	1150 BPH unload

DRYING TIME TABLE - AB-250A, AB-350A, & AB-500A								
SHELLED CORN to 15% — DRY & COOL (230/170°F plenum temps.)								
% Moisture Reduction	Total Dry Time		AB-250A Capacity BPH		AB-350A Capacity BPH		AB-500A Capacity BPH	
	Min.	Hrs.	Dry	Wet	Dry	Wet	Dry	Wet
2	17	0.28	281	288	368	377	474	486
4	28	0.47	233	245	308	324	404	424
5	33	0.55	216	230	287	305	379	402
6	38	0.63	202	217	269	289	356	383
8	48	0.80	178	196	238	263	318	351
10	60	1.00	156	177	210	238	282	320
12	75	1.25	135	157	182	212	247	288
14	93	1.55	116	139	158	189	215	258
15	105	1.75	106	129	145	176	198	241
16	118	1.97	97	120	133	164	183	225
18	148	2.47	81	103	112	142	154	196
SHELLED CORN to 15% final — FULL HEAT (230/170°F plenum temps.)								
% Moisture Reduction	Total Dry Time		AB-250A Capacity BPH		AB-350A Capacity BPH		AB-500A Capacity BPH	
	Min.	Hrs.	Dry	Wet	Dry	Wet	Dry	Wet
2	15	0.25	479	491	599	613	773	792
4	26	0.43	355	372	456	478	602	632
5	30	0.50	324	344	419	446	558	592
6	34	0.57	298	321	388	418	519	558
8	43	0.72	253	279	333	368	449	496
10	54	0.90	213	242	284	321	386	437
12	68	1.13	178	207	238	278	327	380
14	85	1.42	148	177	200	239	276	330
15	96	1.60	134	162	181	220	250	304
16	108	1.80	121	149	164	202	228	280
18	136	2.27	98	125	135	171	188	238
20	167	2.78	82	107	112	147	157	206
<ol style="list-style-type: none"> <li>Suggested drying times are based on (Hi-Heat/Low-Heat) plenum temperatures shown. Lower drying temperatures may be required for lower initial moistures.</li> <li>Actual drying time varies with grain's physiological factors (kernel size, chemical composition, seed variety, seasonal weather), weather conditions during drying, and other operating variables; lower final moisture significantly increases drying time.</li> <li>Hi-Heat Timer should be set at 2/3 of Dry Timer setting.</li> <li>Dry/Cool capacity based on 18 minute Cool time. Capacity includes load and unload times for standard auger capacities:  AB-250      1785 BPH load    1900 BPH unload  AB-350      2095 BPH load    2090 BPH unload  AB-500      2520 BPH load    2520 BPH unload</li> </ol>								

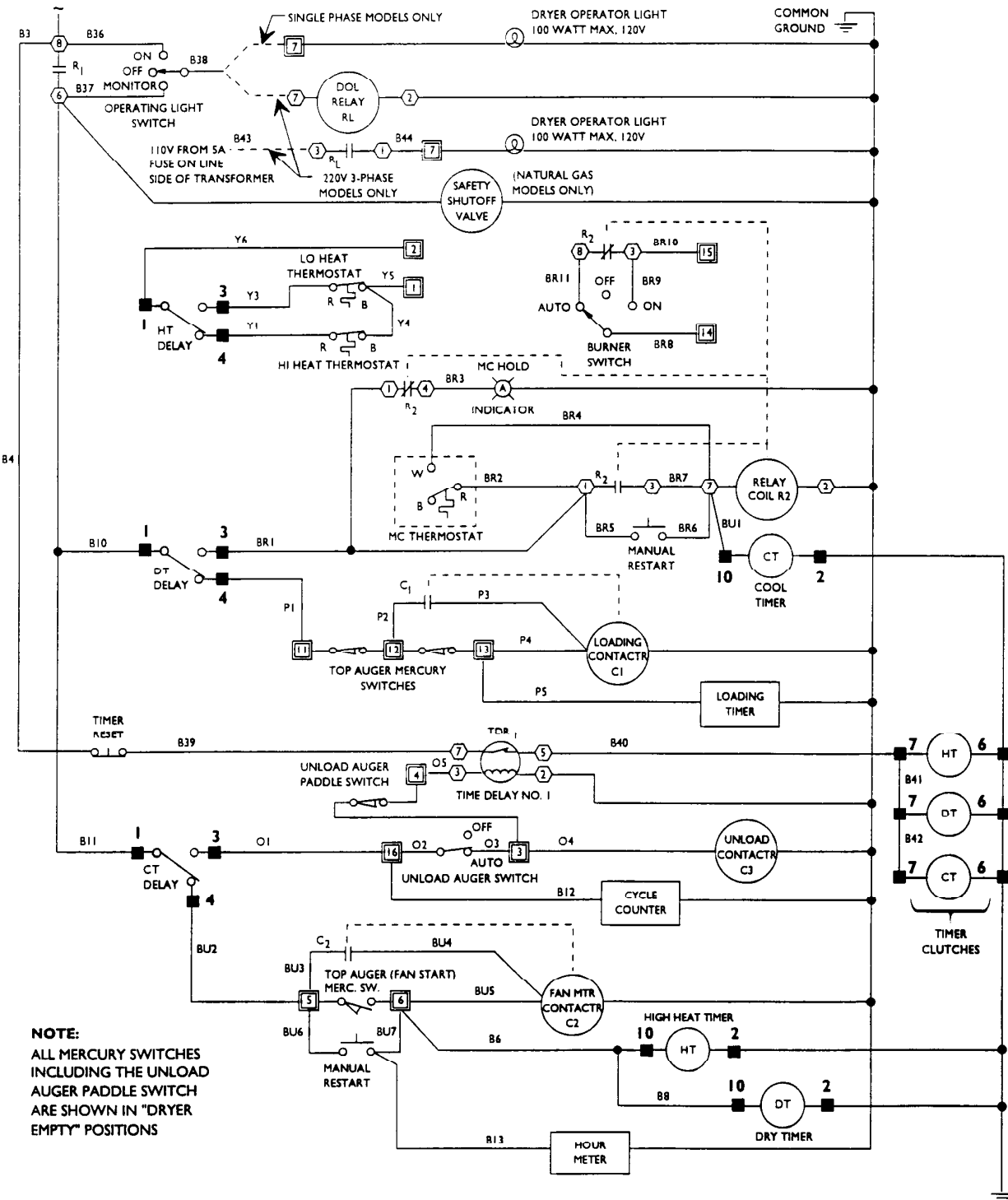
<b>DRYING TIME TABLE, SMALL GRAINS - AB-250, AB-350, &amp; AB-500</b>																	
WHEAT, MILO to 13% — DRY & COOL (175/140°F plenum temps.) SOYBEANS, ROUGH RICE to 13% — DRY & COOL (140/120°F plenum temps.)																	
% Moisture Reduction	Total Dry Time		AB-250A Capacity BPH		AB-350A Capacity BPH		AB-500A Capacity BPH										
	Min.	Hrs.	Dry	Wet	Dry	Wet	Dry	Wet									
3	27	0.45	237	245	313	324	424	439									
5	42	0.70	192	203	256	271	350	371									
7	57	0.95	161	175	216	235	298	324									
WHEAT, MILO TO 13% — DRY & COOL (175/140°F plenum temps.) SOYBEANS, ROUGH RICE to 13% — FULL HEAT (140/120°F plenum temps.)																	
% Moisture Reduction	Total Dry Time		AB-250A Capacity BPH		AB-350A Capacity BPH		AB-500A Capacity BPH										
	Min.	Hrs.	Dry	Wet	Dry	Wet	Dry	Wet									
3	35	0.58	292	303	381	395	510	528									
5	50	0.83	226	240	300	318	406	431									
7	60	1.00	197	214	262	285	358	389									
<ol style="list-style-type: none"> <li>1. Suggested drying times are based on (Hi-Heat/Low-Heat) plenum temperatures shown. Lower drying temperatures may be required for lower initial moistures.</li> <li>2. Actual drying time varies with grain's physiological factors (kernel size, chemical composition, seed variety, seasonal weather), weather conditions during drying, and other operating variables; lower final moisture significantly increases drying time.</li> <li>3. Hi-Heat Timer should be set at 2/3 of Dry Timer setting.</li> <li>4. Dry/Cool capacity based on 18 minute Cool time. Capacity includes load and unload times for standard auger capacities: <table border="0" style="margin-left: 40px;"> <tr> <td>AB-250</td> <td>1785 BPH load</td> <td>1900 BPH unload</td> </tr> <tr> <td>AB-350</td> <td>2095 BPH load</td> <td>2090 BPH unload</td> </tr> <tr> <td>AB-500</td> <td>2520 BPH load</td> <td>2520 BPH unload</td> </tr> </table> </li> </ol>									AB-250	1785 BPH load	1900 BPH unload	AB-350	2095 BPH load	2090 BPH unload	AB-500	2520 BPH load	2520 BPH unload
AB-250	1785 BPH load	1900 BPH unload															
AB-350	2095 BPH load	2090 BPH unload															
AB-500	2520 BPH load	2520 BPH unload															



# AB-120A and AB-180A GENERAL CONTROL CIRCUIT

JULY 1993 and LATER MODELS

115V FROM SA FUSE - SEE POWER & SAFETY CONTROL CIRCUITS



**NOTE:**  
ALL MERCURY SWITCHES INCLUDING THE UNLOAD AUGER PADDLE SWITCH ARE SHOWN IN "DRYER EMPTY" POSITIONS

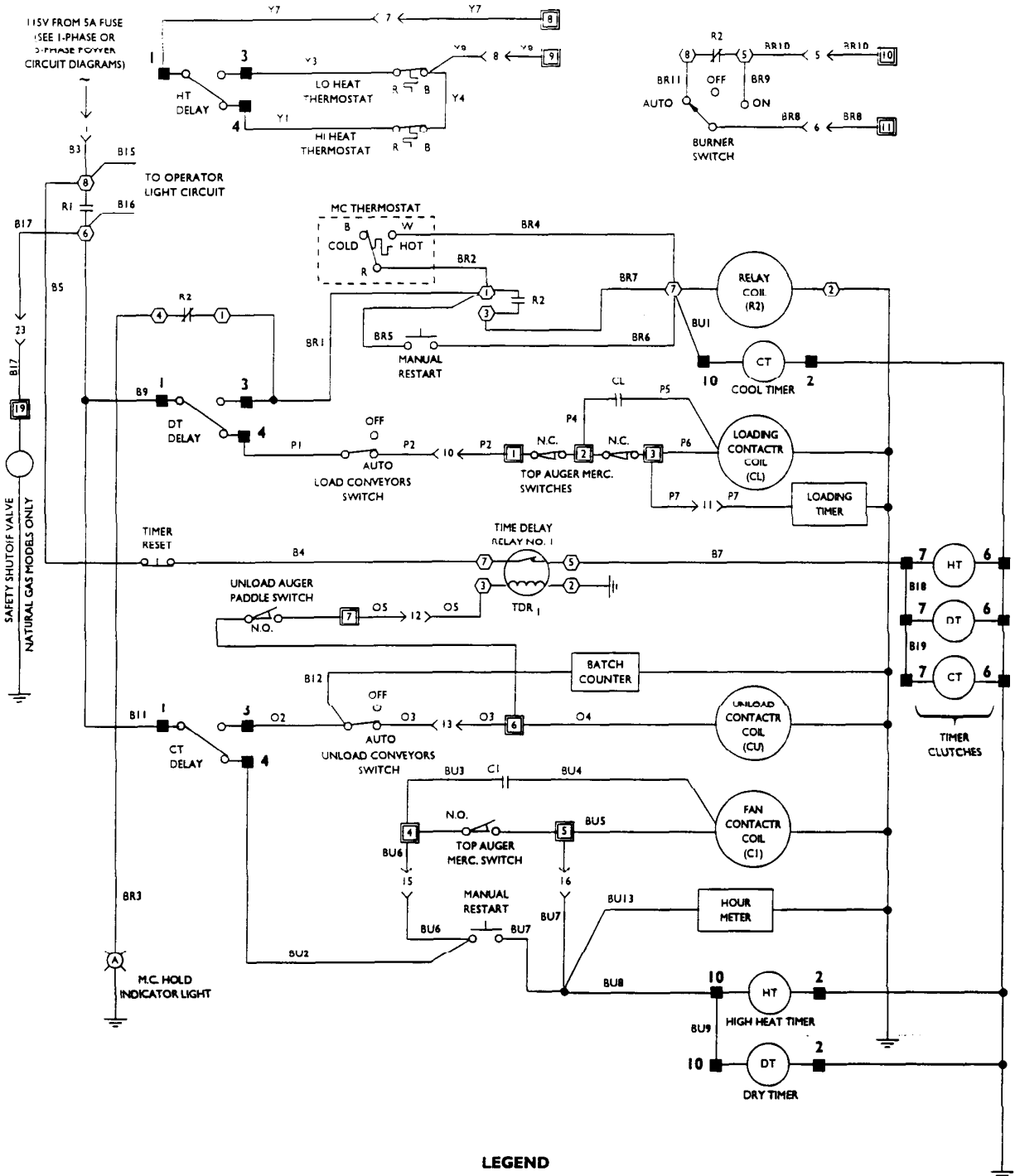
### LEGEND

(C <sub>1</sub> ) COIL LOADING CONTACTOR	(7) NO. 7 TERMINAL ON NOTED RELAY BASE	(A) AMBER PILOT LIGHT
(C <sub>2</sub> ) COIL FAN CONTACTOR	(-T) OMRON CYCLE TIMER	(R <sub>L</sub> ) NOTED RELAY COIL
(C <sub>3</sub> ) COIL UNLOADING CONTACTOR	■ CYCLE TIMER TERMINAL	(4) NO. 4 CONTROL TERMINAL

AB12NEW.DRW

# AB-250A GENERAL CONTROL CIRCUIT

JULY 1993 and LATER MODELS

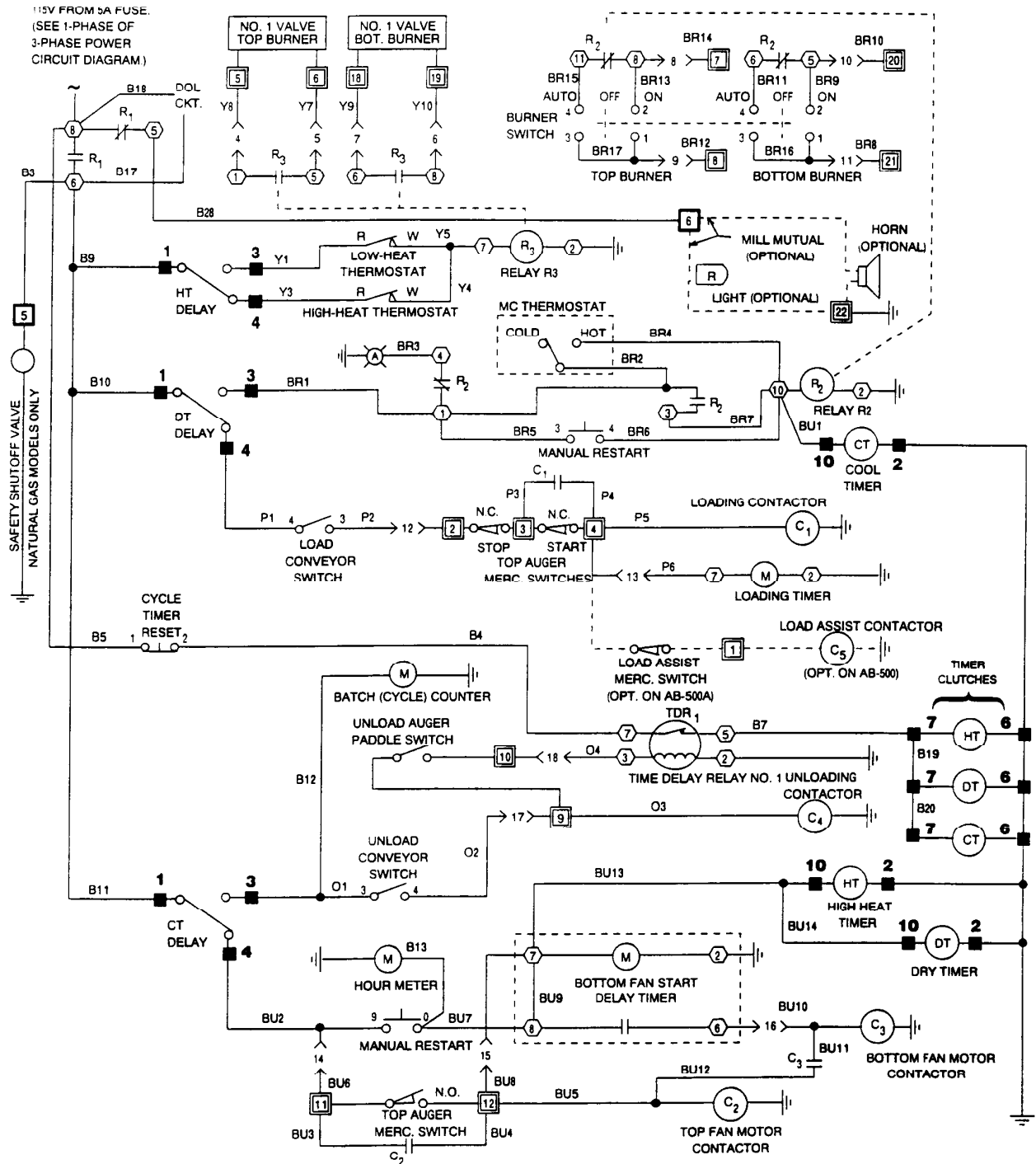


### LEGEND

OMRON CYCLE TIMER	CONTROL TERMINALS	CONNECTOR PIN & SOCKET (CHASSIS)
CYCLE TIMER TERMINAL	INDICATOR LIGHT, A-AMBER, G-GREEN	RELAY CONTACTS, NORMALLY CLOSED
RELAY TERMINALS		RELAY CONTACTS, NORMALLY OPEN

# AB-350A and AB-500A GENERAL CONTROL CIRCUIT

JULY 1993 and LATER MODELS



## LEGEND

No. 9 TERMINAL ON BOTTOM TERMINAL STRIP	INDICATOR LIGHT. A-AMBER, G-GREEN	COIL LOADING CONTACTOR	COIL ASSIST AUGER (OPTIONAL)
No. 6 TERMINAL ON TOP TERMINAL STRIP	OMRON CYCLE TIMER	COIL TOP FAN	NOTED RELAY COIL
No. 7 TERMINAL ON NOTED RELAY SOCKET BASE	CYCLE TIMER TERMINAL	COIL BOTTOM FAN	No. 4 TERMINAL ON CONTROL PANEL SWITCH
< 9 ← CONNECTOR PIN SOCKET		COIL UNLOADING CONTACTOR	

AB35NEW.DRW

REV. 11-95



# **FARM FANS**

Division of ffi CORPORATION

5900 ELMWOOD AVE. • INDIANAPOLIS, IN 46203

© 1993 ffi CORPORATION

Printed in U.S.A.