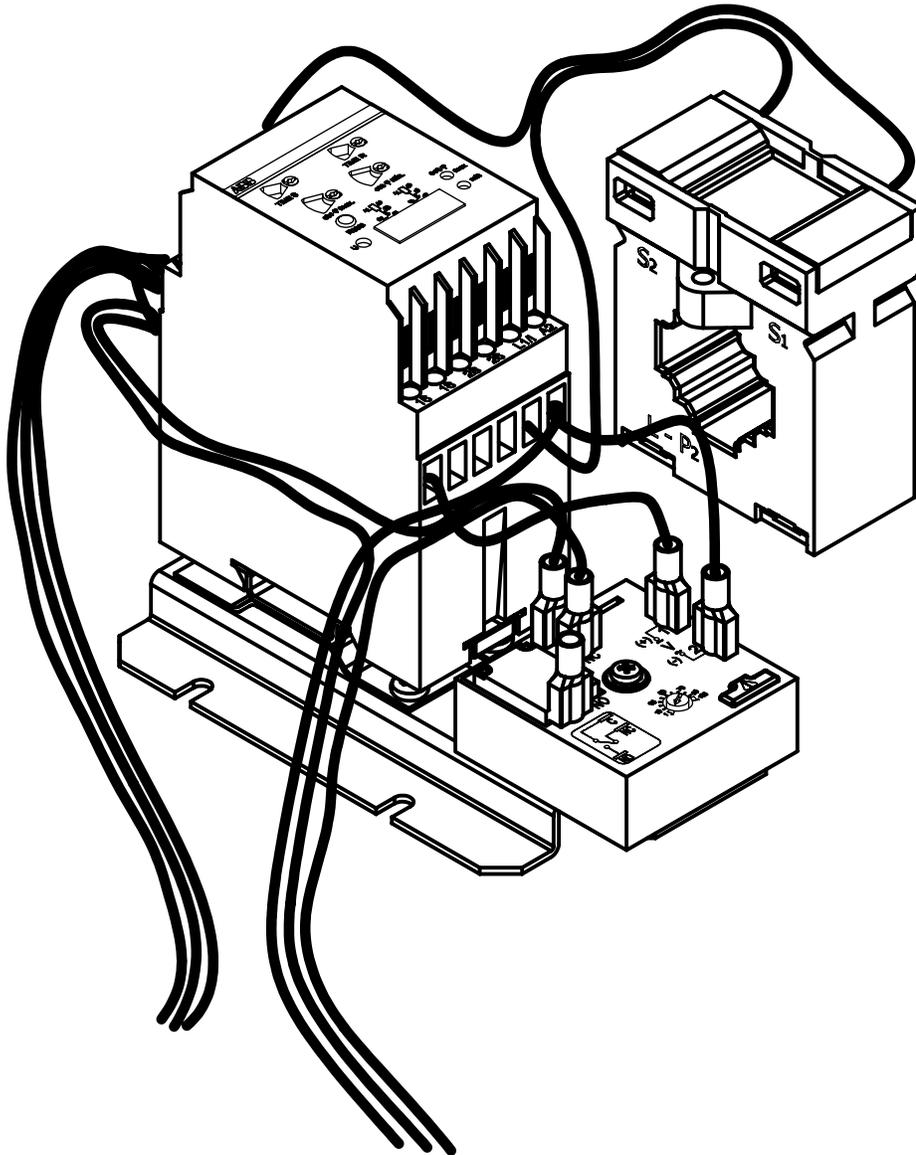# INSTRUCTIONS
FOR
630G-001A
MOTOR LOAD MONITOR

SHIVVERS

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INTRODUCTION

The 630G-001A Motor Load Monitor Kit provides a normally closed contact which opens when the load on a motor drops below a certain level for a selectable time delay (1-100 seconds). It could also be used to detect an overload on a motor but that feature is not normally used.

The kit was originally designed to be used in a Low Level Control Box (630C-001A) for shutting down augers when the wet storage tank ran out of grain. It may have other applications such as monitoring motor loads on transfer augers.

The load monitor can be used with 240 volt, single phase motors, up to 10 Hp. It can be used with 240 volt, 3 phase motors, up to 15 Hp, or 460 volt, 3 phase motors, up to 30 Hp. Contact the factory for other applications. The load monitor requires a 120 volt control voltage. The current transformer supplied with this kit is rated for 50 Amps maximum.

WIRING MOTOR LOAD MONITOR
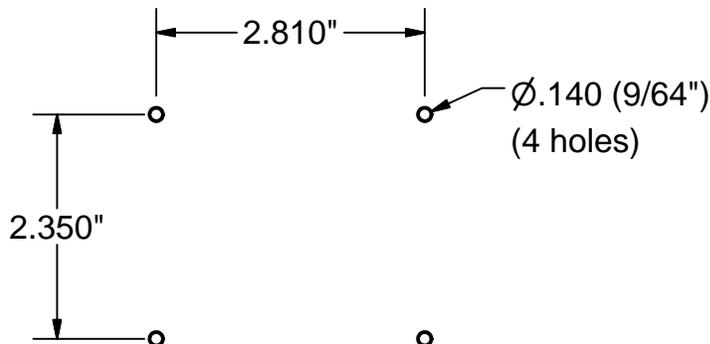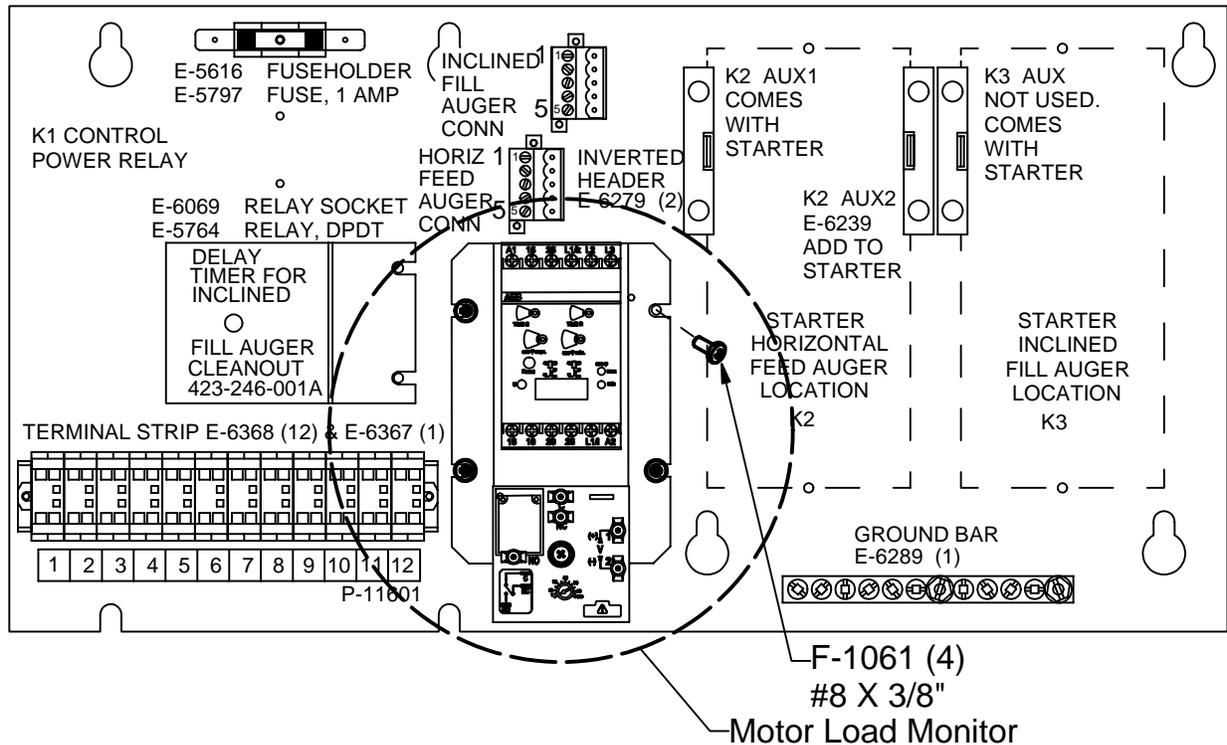# TO LOW LEVEL CONTROL
(for wet bin empty shutdown)

⚠ DANGER **Electrocution Hazard** - Make sure all power is disconnected and locked off.
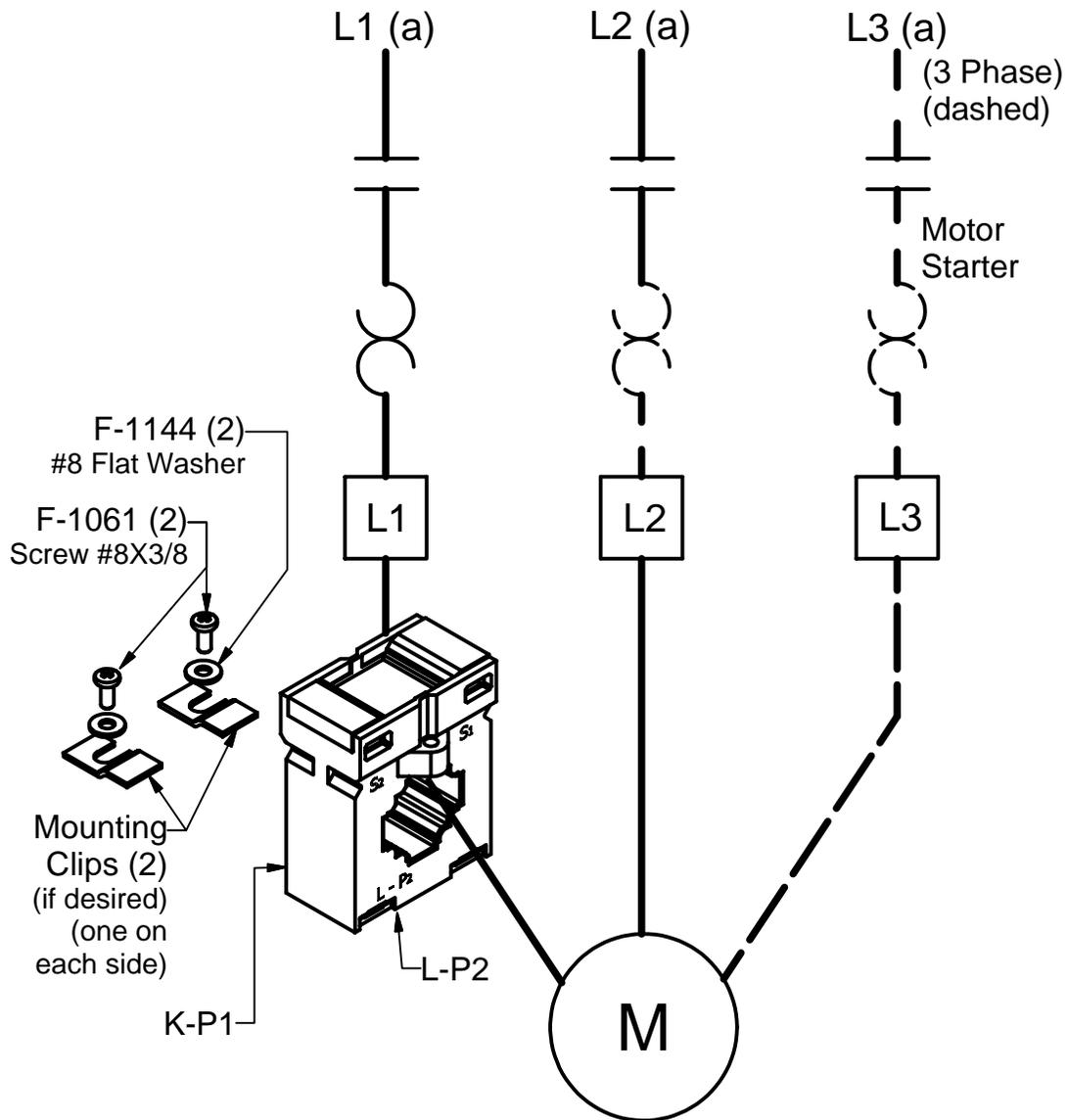
1. Mount the Motor Load Monitor as shown. If there isn't room because of other installed equipment, a separate mounting enclosure may have to be provided.

630C-001A LOW LEVEL GRAIN DRYING CONTROL SYSTEM

E-5616 FUSEHOLDER
E-5797 FUSE, 1 AMP

INCLINED FILL AUGER CONN

K2 AUX1 COMES WITH STARTER

K3 AUX NOT USED. COMES WITH STARTER

K1 CONTROL POWER RELAY

HORIZ FEED AUGER CONN

INVERTED HEADER E-6279 (2)

K2 AUX2 E-6239 ADD TO STARTER

E-6069 RELAY SOCKET
E-5764 RELAY, DPDT

DELAY TIMER FOR INCLINED FILL AUGER CLEANOUT 423-246-001A

STARTER HORIZONTAL FEED AUGER LOCATION K2

STARTER INCLINED FILL AUGER LOCATION K3

TERMINAL STRIP E-6368 (12) & E-6367 (1)

1 2 3 4 5 6 7 8 9 10 11 12
P-11001

GROUND BAR E-6289 (1)

F-1061 (4)
#8 X 3/8"

Motor Load Monitor

2.810"

Ø.140 (9/64")
(4 holes)

2.350"

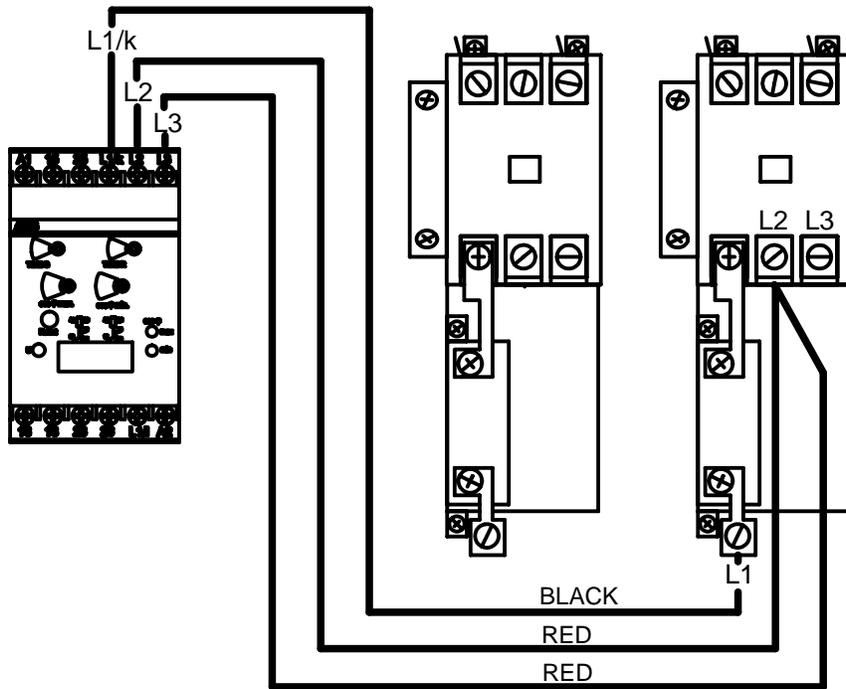Dimensions for mounting holes (if mounting in a separate enclosure).

2

2. It is usually best to monitor the inclined or longest auger as it will have the greatest differential between loaded and unloaded conditions. Mount the Current Transformer and feed the L1 motor lead through the hole. It is OK to just let the current transformer hang on the wire without using the mounting clips. The starter side of the current transformer will be marked K-P1. The motor side will be marked L-P2.

L1 (a)　　　　L2 (a)　　　　L3 (a)

(3 Phase)
(dashed)

Motor
Starter

F-1144 (2)
#8 Flat Washer

F-1061 (2)
Screw #8X3/8

L1　　　　L2　　　　L3

S2

S1

Mounting
Clips (2)
(if desired)
(one on
each side)

L-P2

L-P2

K-P1

M

Low Level Control Box Terminal Strip

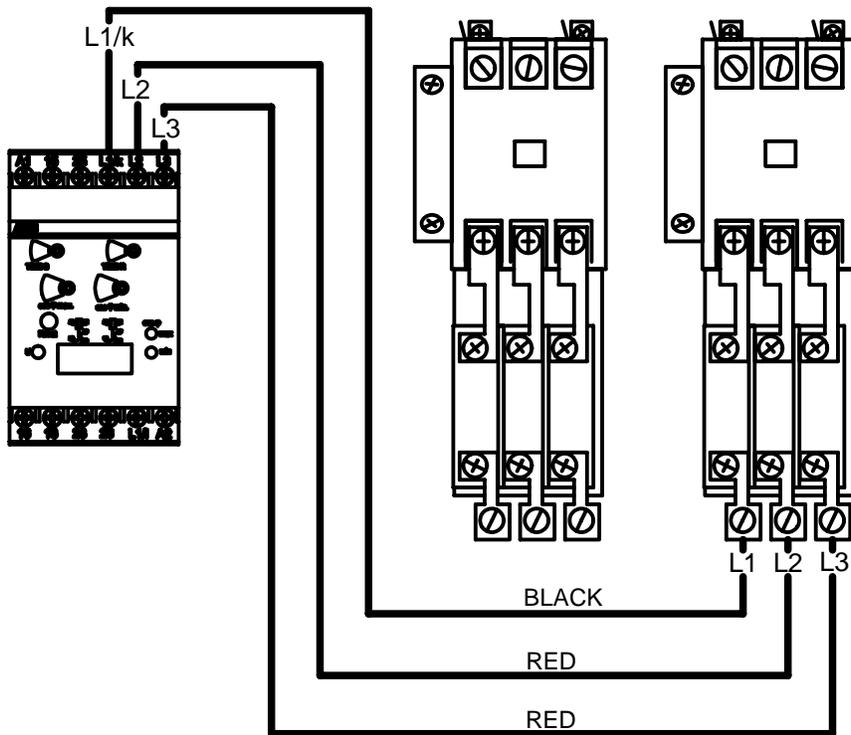| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

A1

A2

C

NC

NO

BROWN

BLUE

WHITE

3. Connect the white (Neutral) wire to terminal strip #2, 3, or 4.

4. Connect the blue wire to terminal strip #5.

5. Connect the brown wire to terminal strip #6

SINGLE PHASE

L1/k

L2

L3

L2 L3

L1

BLACK

RED

RED

THREE PHASE

L1/k

L2

L3

L1 L2 L3

BLACK

RED

RED

6. Connect the black wire to L1 on the bottom of the starter.
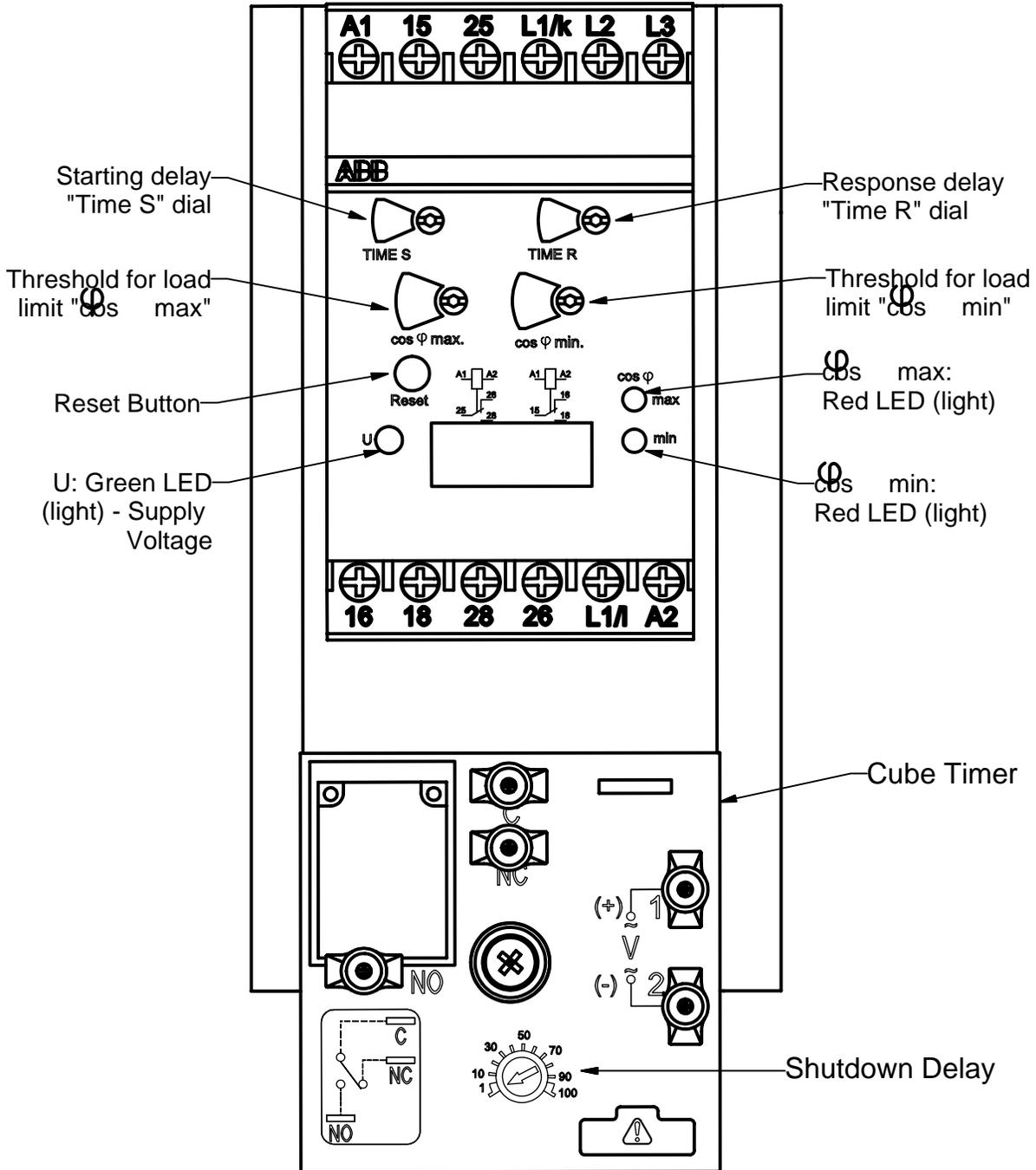
7. For single phase, twist the 2 red wires together and connect to L2 on the bottom of the starter. For three phase, keep the red wires separate and connect one to L2 and the other to L3 on the bottom of the starter.

SETTING THE TRIP LEVEL

DANGER **Electrocution Hazard -** Settings should only be done by trained electrical personnel.

Note: It is best to do settings with an empty auger and then with a full auger of the driest grain expected.

Starting delay "Time S" dial

Response delay "Time R" dial

Threshold for load limit "cos φ max"

Threshold for load limit "cos φ min"

Reset Button

cos φ max: Red LED (light)

U: Green LED (light) - Supply Voltage

cos φ min: Red LED (light)

TIME S

TIME R

cos φ max.

cos φ min.

Reset

cos φ max

min

A1 15 25 L1/k L2 L3

16 18 28 26 L1/l A2

Cube Timer

Shutdown Delay

1. Set the shutdown delay on the cube timer to about 10-20 seconds.

2. Set the "cos max" dial to 1.0 or maximum setting.

3. Set the "cos min" dial to 0 (zero) or minimum setting.

4. Set the response delay " Time R" dial to 2 seconds or maximum setting.

5. Set the starting delay " Time S" dial to 6 seconds.

6. Close the input of the auger to be monitored so it won't have any grain. Make sure everyone is clear of the augers, and apply power to the system.

7. On the Low Level Control Box, set the "WET TANK" switch to AUTO. Set both auger switches to OFF. Press the "Control Power" switch to RUN, then START and release. The RUN light should come on and stay on.

8. Turn on the switch for the auger to be monitored. Note, it may be necessary to turn on the other auger as well if there is a chance of grain plugging the auger to be monitored.

9. Wait for the starting delay (Time S) (about 6 seconds for this test) to elapse.

10. Slowly start increasing the "cos min" dial until the cos min Red LED comes on, then slowly decrease the "cos min" dial until the cos min Red LED starts flashing. Press the Reset button and the cos min Red LED should go out. Increase the "cos min" dial one mark every 3-4 seconds until the cos min Red LED comes back on. Write down this setting. This is the minimum setting. After the cube timer delay (10-20 seconds), the auger should shut down. If it doesn't, re-check wiring.

11. Open the input of the auger to be monitored so it will have grain, if possible. If not possible, go to Step 14. It is best if the grain is the driest expected. Turn on any necessary augers/spreaders so the grain has a place to go.

12. Restart the Low Level Control Box. The auger to be monitored should now be filling with grain. Wait until the auger is fully loaded. If the cos min Red LED is flashing, press the Reset button.

13. Slowly start increasing the "cos min" dial until the cos min Red LED comes on, then slowly decrease the "cos min" dial until the cos min Red LED starts flashing. Press the Reset button and the cos min Red LED should go out. Increase the "cos min" dial one mark every 3-4 seconds until the cos min Red LED comes back on. Write down this setting. This is the maximum setting. After the cube timer delay (10-20 seconds), the auger will shut down full, so shut off the input grain. The more difference there is between the minimum and maximum setting, the better the chance of the device working properly.

14. Set the "cos min" dial to about 1/4 of the way between the minimum and maximum settings (or slightly above minimum if there wasn't any grain to test with). If the cos min Red LED is flashing, press the Reset button. The LED should go out and stay out as long as the auger is full.

Date	Step 10 Setting Minimum	Step 13 Setting Maximum	Step 14 Setting (set 1/4 of the way between minimum and maximum)
example	0.3	0.7	0.4

15. Set the starting delay "Time S" dial to the desired startup delay (usually set at 30 seconds, the maximum delay).
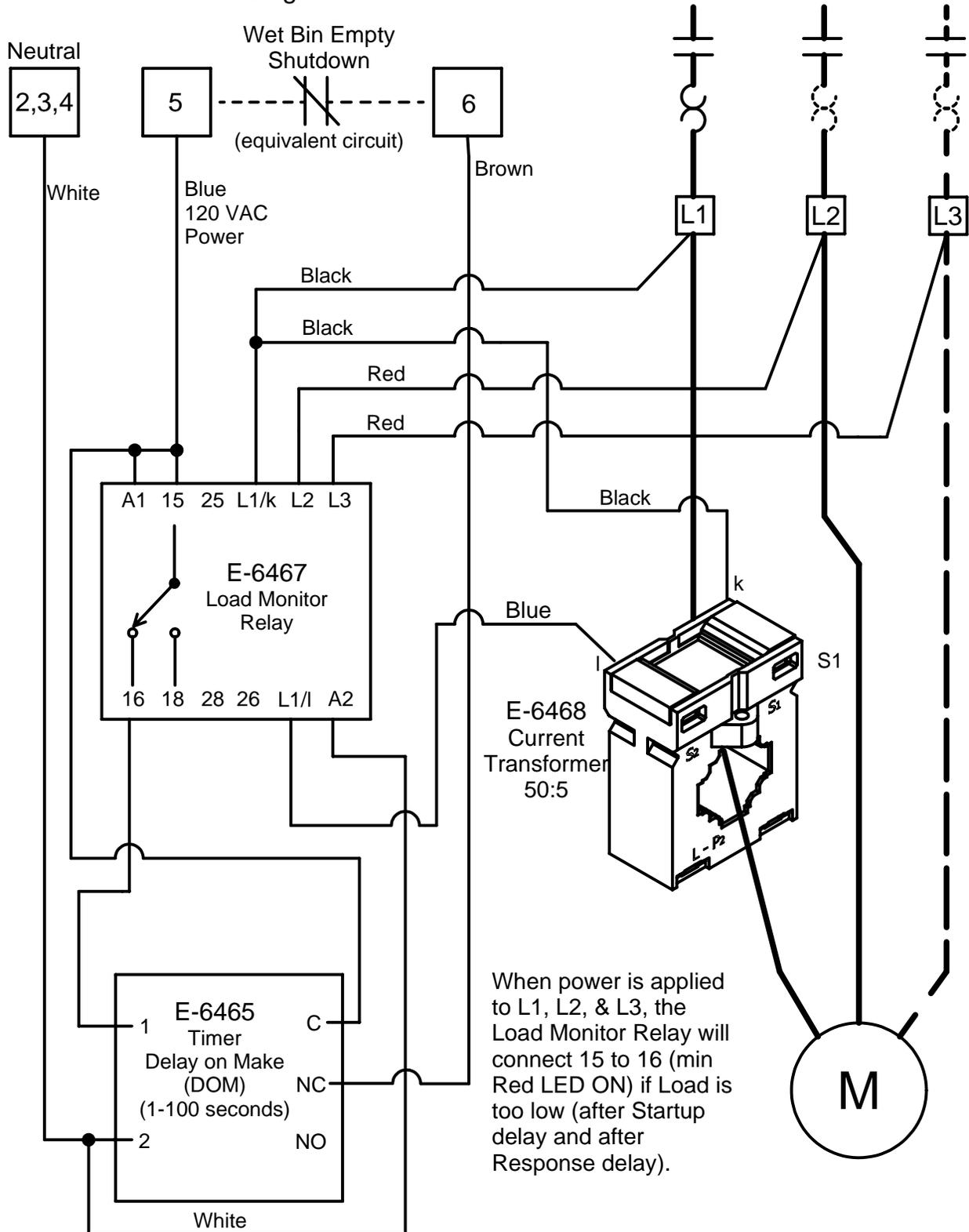
16. Set the cube timer shutdown delay to the desired setting (usually from 30 to 60 seconds, could go as high as 100 seconds).

17. Run auger empty periodically throughout season to make sure adjustment is correct.

LOAD MONITOR SCHEMATIC

3 Phase wiring shown.
For Single Phase: Connect both red wires to L2.

Neutral

2,3,4

5

Wet Bin Empty
Shutdown

(equivalent circuit)

6

Brown

White

Blue
120 VAC
Power

L1

L2

L3

Black

Black

Red

Red

Black

A1   15   25   L1/k   L2   L3

E-6467
Load Monitor
Relay

16   18   28   26   L1/l   A2

k

Blue

l

S1

E-6468
Current
Transformer
50:5

1   E-6465   C
Timer
Delay on Make
(DOM)   NC
(1-100 seconds)

2   NO

White

When power is applied
to L1, L2, & L3, the
Load Monitor Relay will
connect 15 to 16 (min
Red LED ON) if Load is
too low (after Startup
delay and after
Response delay).

M

Time Delay starts when power is applied to
terminal #1. After Delay Period, C & NC open.

☐ = Low Level Control
Box Terminal

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