ARMSTRONG

GLA

Glycol Make-Up Units

Installation and operating instructions

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GLA MAKE-UP UNIT

The Armstrong automatic glycol makeup unit is designed to maintain the HVAC system pressure by adding the appropriate mix of glycol and water to the system. During the normal operation of the HVAC system, fluid is lost causing a drop in the system pressure.

ESSENTIAL SAFETY REQUIREMENTS

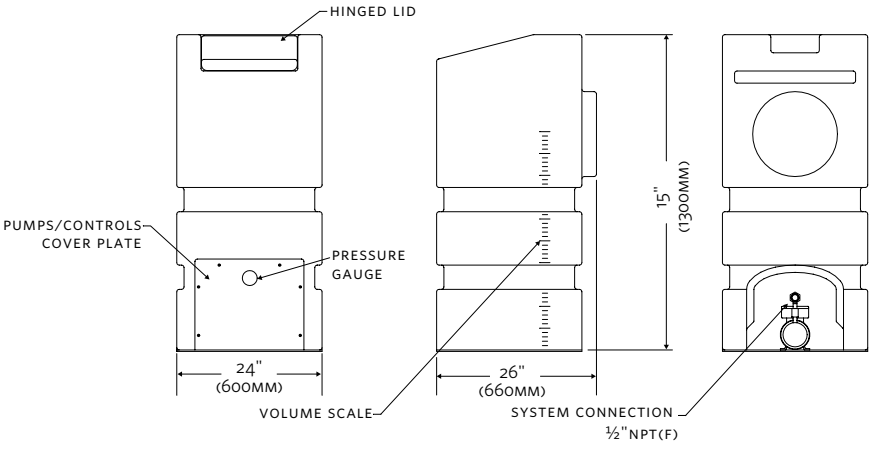
1. Glycol is toxic and the glycol supplier's safety instructions must be adhered to. In critical areas a retaining wall should be used to contain any spillage or leakage. Overflows should be arranged not to contaminate drainage systems.
2. It is recommended that initial commissioning be carried out with water.
3. The flow rates from the unit are designed for make-up rates. It is therefore suggested that the system is back-filled with due precautions taken to avoid contamination.
4. Glycol is sometimes subject to bacterial attack and can become slimy as a result. We recommend the addition of a suitable biocide. The dosage should be calculated on the amount of water glycol mixture added and not the total tank contents. If bacterial attack occurs on untreated mixtures the unit should be drained, flushed and refilled with fresh mixture and dosed with biocide.
5. Locate units in a well-ventilated environment and ensure that ventilation fans and apertures are not obstructed.
6. Check that the supply voltage and overload protection is correct.
7. A competent electrician should perform the electrical installation.
8. Guards and covers must not be removed during operation.

STANDARD UNIT

When the system pressure drops below the set point on the pressure switch, the GLA pump is started adding fluid from the GLA tank into the HVAC system. When the system pressure returns to normal operating conditions, the pump stops.

As the tank empties, a level switch is actuated preventing the pump from running dry.

GLA STANDARD 1 PUMP UNIT



ULTRA UNIT

When the system pressure drops below the set point on the pressure switch, the GLA pump is starts adding fluid from the GLA tank into the HVAC system. When the system pressure returns to normal operating conditions, the pump stops.

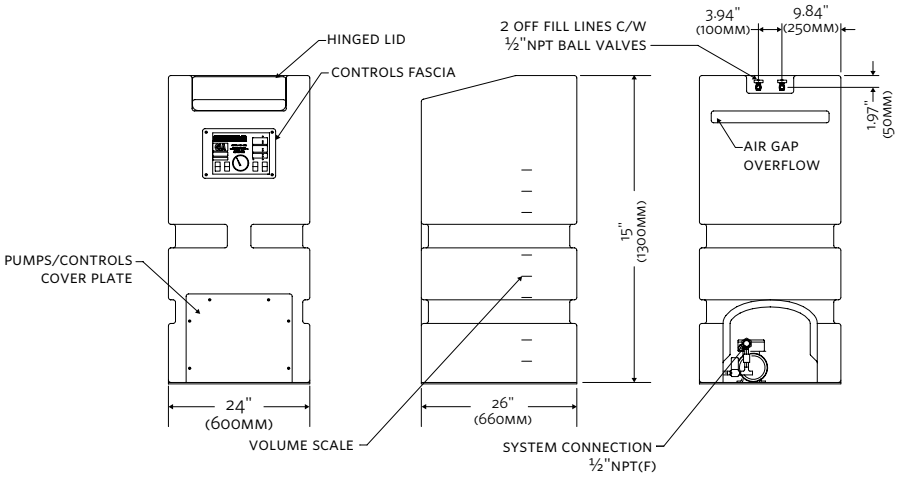
As the tank empties, The LOW level switch is actuated lighting the low level pilot light. If the system is not filled, a second LOW level switch stops the pump(s) preventing the pump(s) from running dry.

Should the system be overfilled, a high level alarm is actuated by THE HIGH level switch.

Dry contacts can be provided for remote indication of the above conditions.

GLA unit features a powered agitation function. For 5 minutes every hour, the mix function is automatically actuated to activate the contents in the GLA tank. This function can also be manually activated by pressing the **push to mix** Button. The mix function is inhibited when there is a system demand for makeup Duplex units are equipped with a manual alternator to equalize wear on the pumps.

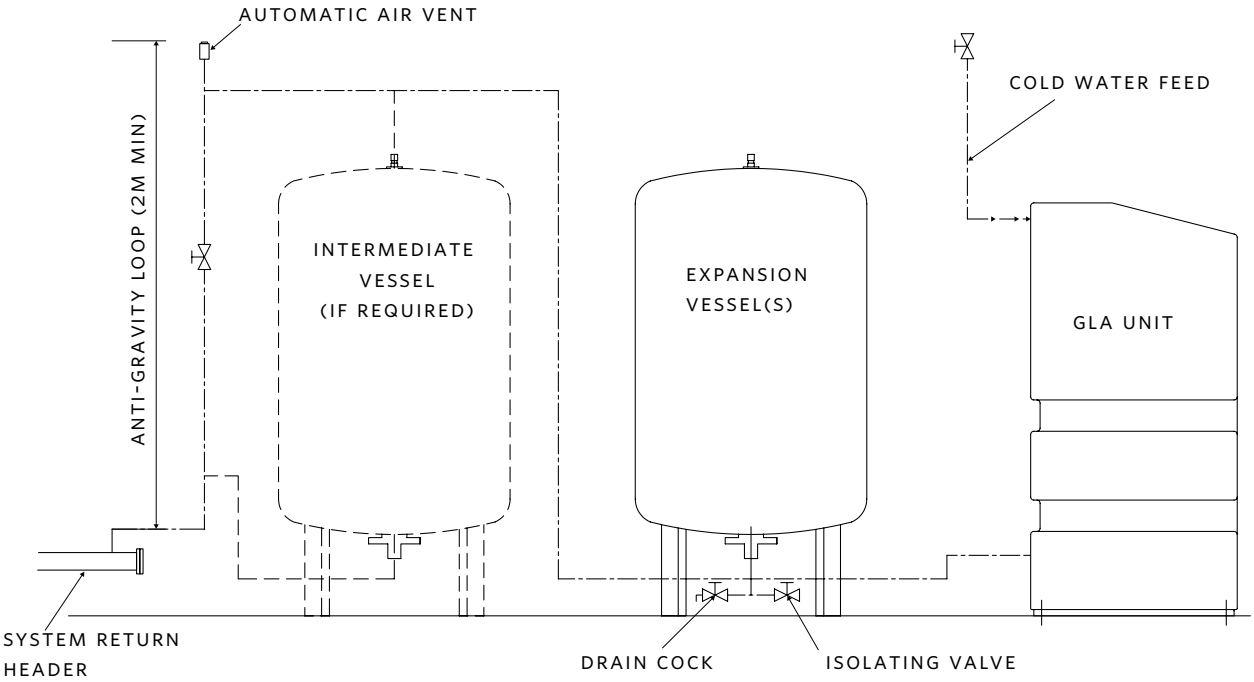
GLA ULTRA 1 PUMP UNIT



INSTALLATION AND COMMISSIONING

For Expansion Vessel Please Refer to separate Armstrong publication for Armstrong vessels.

Install the GLA unit as indicated in the diagram below.



SYSTEM PIPING

1. The pipework from the system to the expansion vessels should not be insulated.
2. For systems operating above 200°F (93°C), an anti-gravity loop with a minimum height of 6 feet, (or an intermediate vessel) should be installed to provide thermal protection to the expansion tanks.
3. For hot water systems, the connections to the intermediate vessel should be reversed, i.e. top to system, and bottom to expansion vessel.
4. The GLA unit is suitable for floor mounting.
5. The ball float valve is fitted with a low-pressure seat; a high-pressure seat is attached to the float valve and should be fitted if required.
6. The pipework to the expansion vessels should be sized according to the size and number of vessels and should be at least the same size as the vessel connection.
7. Where multiple expansion vessels are required it is recommended that each vessel be installed with its own isolating valve and drain cock.

SEQUENCE OF OPERATIONS

1. Close suction isolating valve.
2. Fill the glycol-mixing tank.
3. Remove the upper vent plug from the makeup pump.
4. Open suction isolation valve until water flows out of this tapping.
5. Close Valve and replace plug.
6. Repeat for standby pump(where fitted).
7. Close the system-isolating valve.
8. Open suction isolating valve.
9. Switch on unit, initially both pumps will run. As the pressure reaches the pump will switch off.
10. Check all piping for leaks following shipping.
11. Crack open system valve. The pressure will fall and the pump will start and maintain pressure.

ADJUSTMENTS AND SETTINGS

TOPPING UP WITH GLYCOL

The mixing tank is calibrated in liters and US gallons. The normal top up level is 53 US gallons (200 liters).

1. Calculate the amount of water needed and add or drain to the correct level.
2. Add the required amount of glycol.
3. Operate the manual-agitating switch.
4. Check the mixture percentage.

The unit is now ready for service.

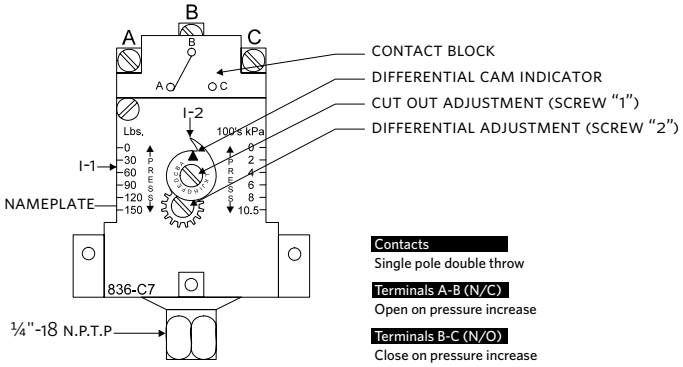
POWERED AGITATION

(ULTRA MODEL ONLY)

A solenoid valve is fitted to provide powered agitation of the mixture. Automatically this valve is periodically opened and the duty pump starts creating circulation through the pump and mixing tank. Automatic mixing is inhibited when there is a system demand for make-up. A switch is provided for manual agitation when adding glycol to the mixing tank.

PRESSURE SWITCH

In order for the GLA unit to maintain the system pressure the pressure switch helps define the cut in and cut off pressure settings.



STEP 1: SETTING UP THE CUT-OUT PRESSURE

- Cut out pressure adjustment (pump stop signal).
- Turn screw **1** clockwise. The approximate pressure setting is shown by indicators on the outer edges of the nameplate.
- Use the screw-1 to set the cut-out pressure. As you rotate the screw-1 clockwise the indicator on the left would show the cut-out pressure. In the below case it is 55 psig (shown in example below). You can view it using **I-1**.

EXAMPLE: Pump to cut-out (stop) at 55 psig. Adjust screws **1** to 55 psig.

Contact A-B opens and B-C closes at 55 psi.

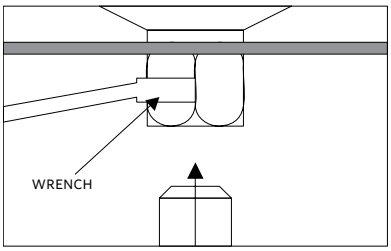
STEP 2: SET-UP CUT-IN PRESSURE

- Cut-in pressure adjustment (pump start signal)
- Turn screw **2** clockwise. Approximate differential value is as shown on the table below i.e. Differential Adjustment vs Approximate Value (PSI). we want to set the cut-in pressure at **G** i.e. 15 psig (as shown in the example below).
- Use the screw-2 to set the cut-in pressure. As you rotate the screw-2 clockwise the indicator **I-2** would show the cut in pressure. In the above case it is 15 psig (for reference only). You can view it using **I-2** i.e. the differential cam indicator

EXAMPLE: Pump to cut-in (start) at 40 psig. Difference in pressure 55 psig-400 psig=15 psig. Turn screw **2** to letter **G** = 15 psi.

Contact A-B closes and B-C opens at 40 psi.

NOTE: With no-flow shutdown cut-out & cut-in (set differential to minimum (A setting.)



CAUTION

The screw **1** should not be adjusted beyond the pressure indicated on the calibrated scale as this may cause the control to malfunction. A support wrench should be used when tightening the pressure connection.

The pressure switch and solid state repeat cycle timer help in adjusting the system pressure by maintaining the pressure and the water glycol mixture consistent.

DIFFERENTIAL ADJUSTMENT	APPROXIMATE VALUE (PSI)
A	0.75
B	1.00
C	1.50
D	1.75
E	5.00
F	10.00
G	15.00
H	20.00
I	25.00
J	27.00
K	32.00
L	35.00

NOTE: For fine adjustment use pressure gauge

SOLID STATE REPEAT CYCLE TIMER

The glycol tank must be monitored and filled the solid state repeat cycle timer assist in this important operation.

ON TIME RANGE	hrs
OFF TIME RANGE	hrs
SCALE	0.1 to 1.0 hr
SET ON (GREEN DIAL)	0.9 hrs
SET OFF (RED DIAL)	0.1 hrs

- A time range (0 to 1.0 hrs) is selected for **ON** and **OFF** time using the time range selector at the lower left corner of the front pane and selected time range appears within the frame of the time setting knob.
- For **ON** time set as per the table above (0.9 hrs)
- For **OFF**-time set as per the table above (0.1 hrs)

SETTING UP THE SOLID STATE CYCLE TIMER

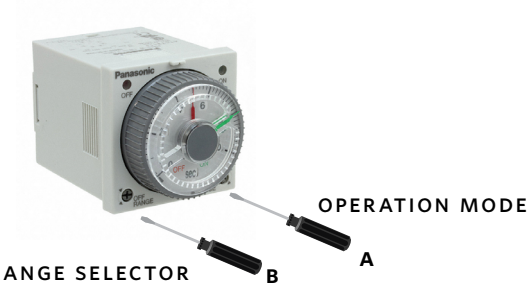


FIG: Solid state cycle diagram(For reference Only)

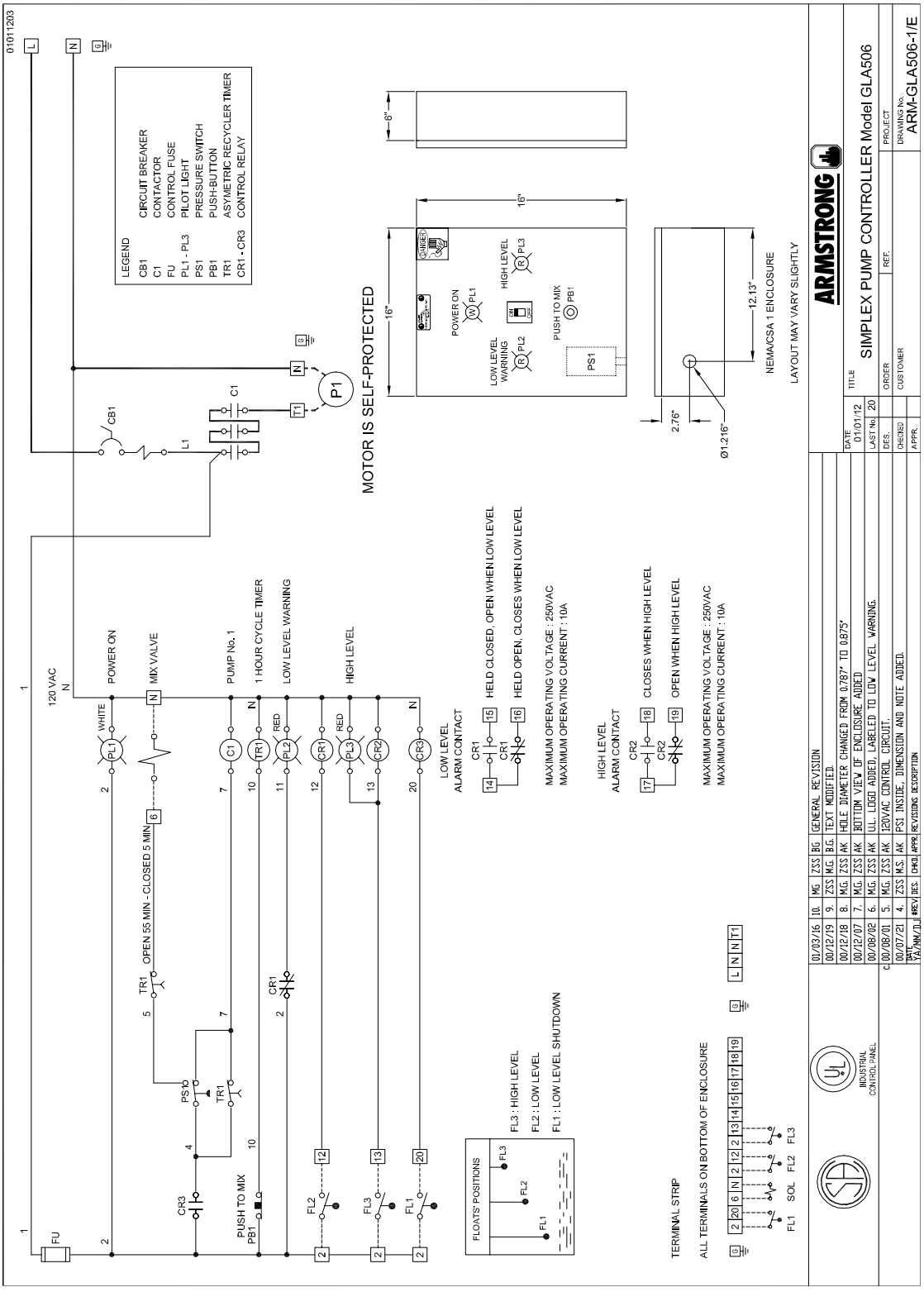
1. Turn the operation mode selector with a screwdriver (position **A** as shown above in the picture)
2. Turn the mode selector to mark until you can check by clicking sound
3. Confirm the mode selector position once it is set as per the requirement
4. If the position is not stable, the timer might operate incorrectly.
5. Turn the time range selector with a screwdriver (position **B** as shown above in the picture), clockwise turning increases the time-range and counterclockwise decreases the time range
6. When the power supply is on, the time range, setting time and operation mode cannot be changed
7. If the position is not stable, the timer might miss-function. To decide the operating time, the green selector and red selector explains it

CAUTION

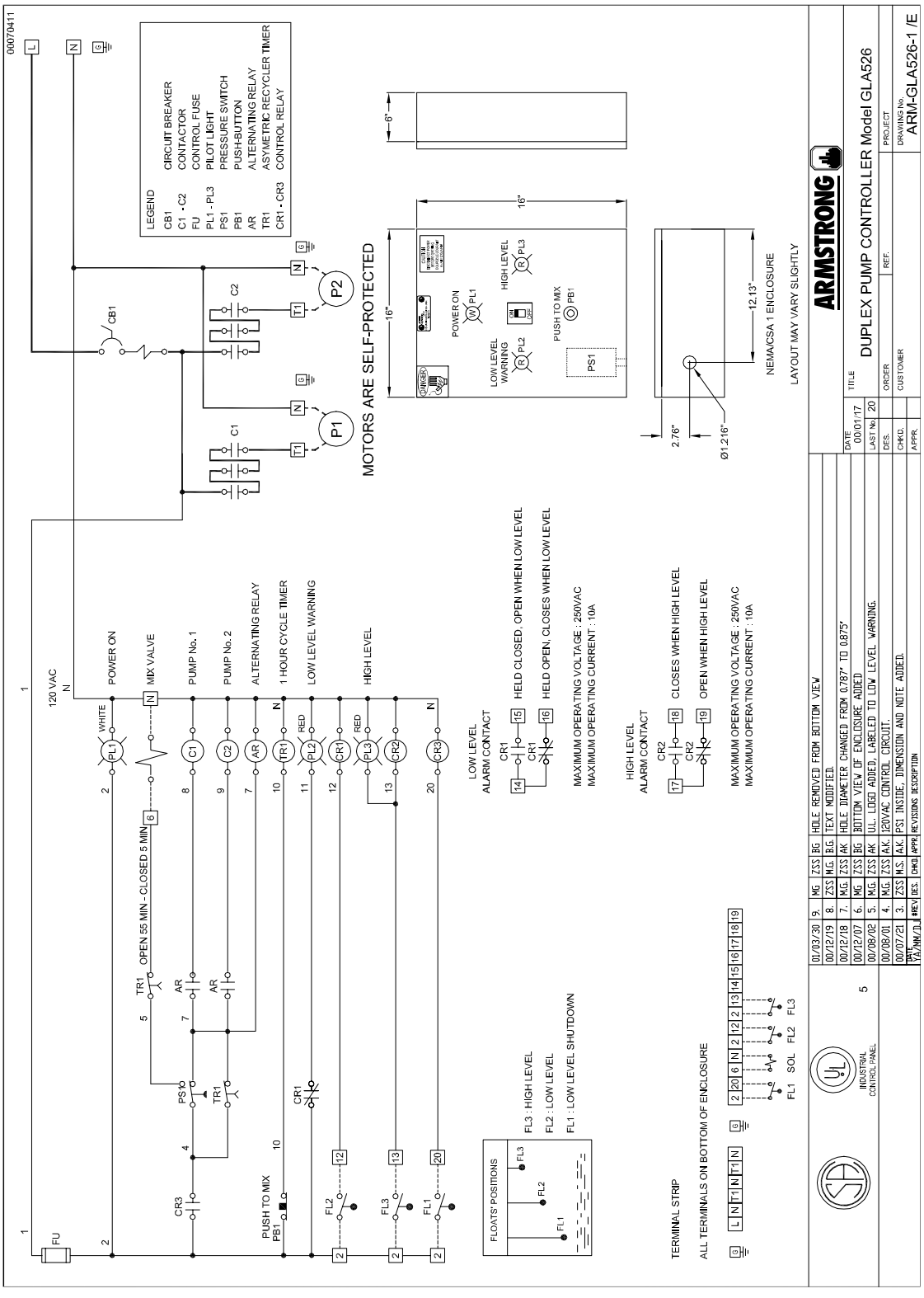
To avoid malfunction or damage, do not change the time unit or time range while the timer is in options. Be sure to turn off power supply to the timer before changing any selections.

WIRING DIAGRAMS

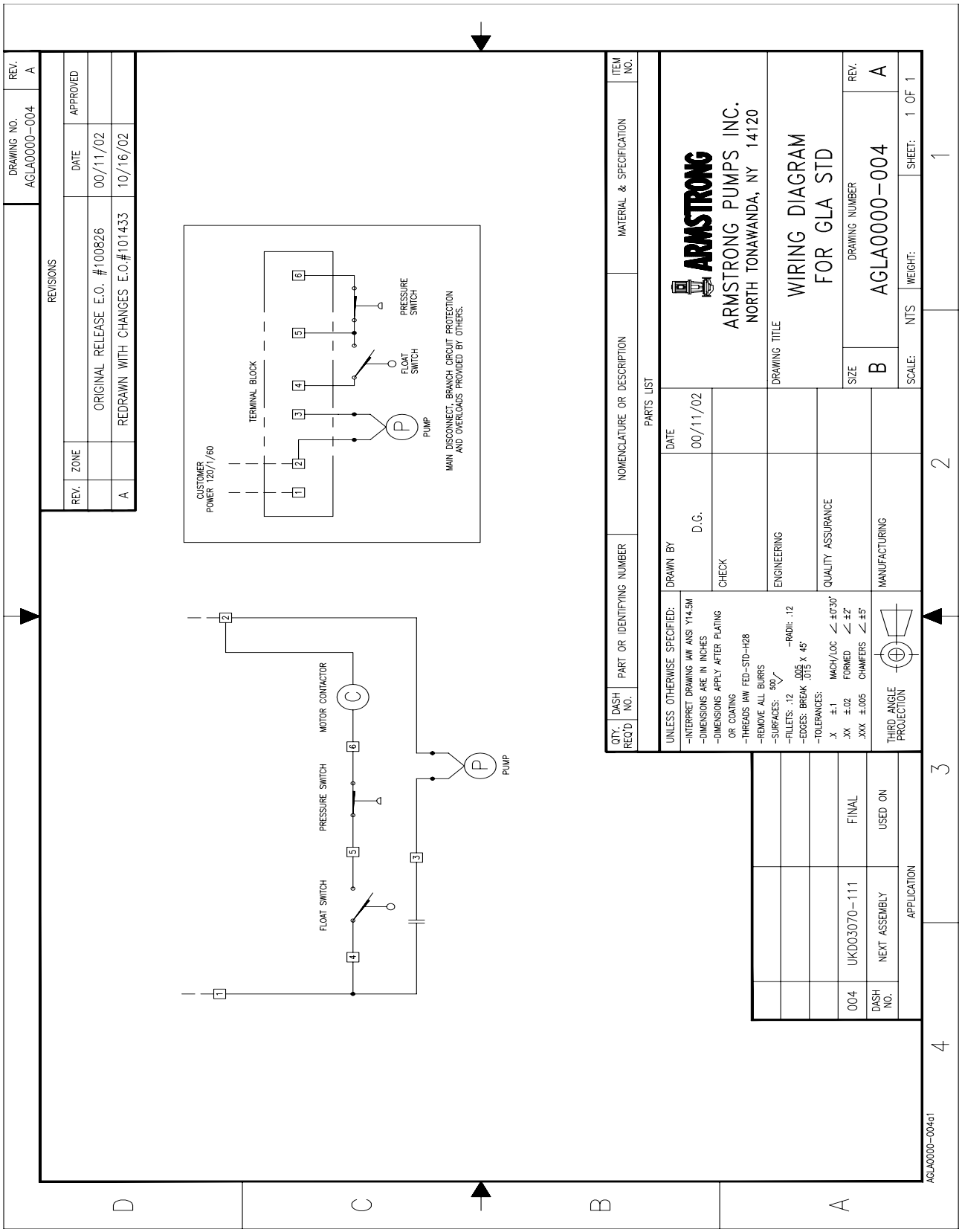
GLA ULTRA- 1 PUMP



GLA ULTRA- 2 PUMP



GLA STANDARD



TORONTO

23 BERTRAND AVENUE
TORONTO, ONTARIO
CANADA, M1L 2P3
+1 416 755 2291

BUFFALO

93 EAST AVENUE
NORTH TONAWANDA, NEW YORK
U.S.A., 14120-6594
+1 716 693 8813

DROITWICH SPA

POINTON WAY,
STONEBRIDGE CROSS BUSINESS PARK
DROITWICH SPA, WORCESTERSHIRE
UNITED KINGDOM, WR9 0LW
+44 8444 145 145

MANCHESTER

WOLVERTON STREET
MANCHESTER
UNITED KINGDOM, M11 2ET
+44 8444 145 145

BANGALORE

#59, FIRST FLOOR, 3RD MAIN
MARGOSA ROAD, MALLESWARAM
BANGALORE, INDIA, 560 003
+91 80 4906 3555

SHANGHAI

UNIT 903, 888 NORTH SICHUAN RD.
HONGKOU DISTRICT, SHANGHAI
CHINA, 200085
+86 21 5237 0909

SÃO PAULO

RUA JOSÉ SEMIÃO RODRIGUES AGOSTINHO,
1370 GALPÃO 6 EMBU DAS ARTES
SAO PAULO, BRAZIL
+55 11 4785 1330

LYON

93 RUE DE LA VILLETTE
LYON, 69003 FRANCE
+33 4 26 83 78 74

DUBAI

JAFZA VIEW 19, OFFICE 402
P.O.BOX 18226 JAFZA,
DUBAI - UNITED ARAB EMIRATES
+971 4 887 6775

MANNHEIM

DYNAMOSTRASSE 13
68165 MANNHEIM
GERMANY
+49 621 3999 9858

JIMBOLIA

STR CALEA MOTILOR NR. 2C
JIMBOLIA 305400, JUD.TIMIS
ROMANIA
+40 256 360 030

ARMSTRONG FLUID TECHNOLOGY
ESTABLISHED 1934

ARMSTRONGFLUIDTECHNOLOGY.COM