Apollo 3000

Set-up, Installation & Parts Manual

Safety Operation

In case of damage to your Dispenser or Pump, which creates a safety hazard the following procedures **Must** be followed.

A Turn Off Pump at Console then….

Isolate power to the Dispenser or Pump.
Using the remote control switch located on the main electrical supply board.

Lock switch if lock mechanism provided, or take measures to ensure isolator will not be turned on prior to the safety hazard being rectified

Isolate power to the Submersible Turbine Pump
by the remote control switch located on the main electrical supply board.

Lock switch if lock mechanism provided, or take measures to ensure isolator will not be turned on prior to the safety hazard being rectified

Note: The isolation of the Submersible Turbine Pump could affect other dispenser on the forecourt.

Call your site manager or company representative immediately for further information.

B Do Not Apply power to the Dispenser without a full service inspection.

If there is a fire or injury, call : **Emergency Services.**

Caution

Should the word "**FLUId"** appear in Display immediately implement part A & B of this section Refer page 06 of this Manual Apollo 3000 Set Up Procedure Std. Fuel paragraph 06 for details

Caution

This equipment contains components that can be damaged by Electrostatic Discharge.
Should you ever need to service this equipment, you must follow full anti-static precautions.
Prior to servicing, earth all equipment and wear an anti-static strap.
Component must be transported in anti-static material.

Apollo 3000 Manual Pt No. 89903 v2

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This is an Interim Manual intended to cover Apollo trial sites, and will be reviewed once trials are complete and design is finalised.

Note also that the Apollo units are based on PEC standards 1000 & 8000 Dispensers and therefore this manual should be used in conjunction with PEC Modular Pumps Installation & Service Manual 87386

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BP Apollo 3000 Dispenser
Supply & Installation Procedure

Stage 1 Under Ground Sump Enclosure Installation

Components supplied by PEC to site.

Components include;

Sump Enclosure Box Assy with, Cable Duct, Delivery Ducts with Internal Delivery Pipe Assys. fitted.
Bulkhead Seals (Pre fitted into Sump Enclosure)
Sump Box Lid with Handles
Sump Cover & Sub-frame, Securing Screws & divider skirt fitted
Main Wiring Looms & Junction Box (Fitted into Sump Box)
Float Switch & Cable Assy (Fitted to Mtg. Brkt.)

Installation Procedure

- Establish proposed/final Forecourt ground level, mark this point on Column.
- Install Sump Box Enclosure into correct position below proposed ground level as shown in figs 1,2 &3
- Ensure Pipe Delivery Ducts protrude 50mm above ground level & 20mm proud of Column. Also ensure top edge of Sump is 60 mm below ground & level. End face of Enclosure is 300 mm out from Column (Fig 1) ***Note*** Ensure underside of Enclosure is firmly packed to prevent Enclosure sinking or moving.
- Pack filling material around Sump Enclosure approximately up to a point just under Bulkhead Fittings, this is to ensure Enclosure does not move while further work is being conducted.
- Plug or cover Pipe Delivery Ducts to stop any foreign matter entering.
- Install Main Product Feed Lines Into Sump (refer Apollo Hydraulic & Intrinsic Connections Pg. 27 NZ & Pg. 28 Aus.) for correct positioning etc. (Refer page 09 for Feed Line installation Details)
    - T connector terminated with ¾" Ball Valve & ¾ - ¾" BSP Elbow

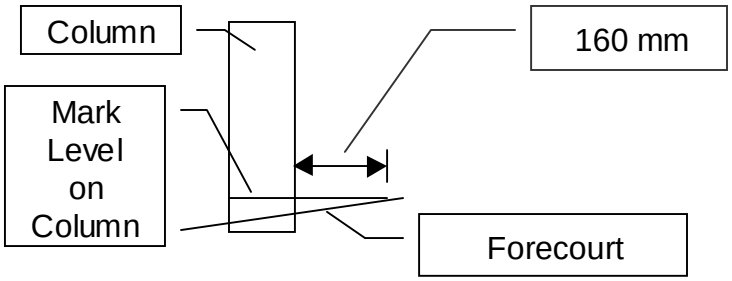
    B22 22 12 12
    - Ensure Ball Valves Face toward BOTTOM of Sump no more than 10 dec. off Vertical, with lever side towards Column
    - Check & tighten all Seals
    - Check for Leaks
- Recheck Sump position in relation to Column & Forecourt Surface as per Refer Figs. 1, 2 & 3.
- Secure Pipe Delivery Ducts & Main Feed Lines into position to prevent movement while Back Filling.
- Temporarily pack internal side walls of Sump using timber or similar to eliminate walls collapsing inwards during back filling.
- Install all Servicing Cabling & Pipe work as required for operation. Ensure all services are positioned correctly to clear Vent Box, Head Mtg. & GRP Cladding etc. Ref. fig 2 & 3 for details.
- Recheck Seals & Sump Position.
- Backfill to cover Feed Lines & secure Sump Enclosure position.
- Position & Secure Sump Lid Frame (Centralise around Sump Box) check with Forecourt Level (Note Frame & cover can be raised locally above general Forecourt level if required to prevent water ingress.(Possibly 10 – 20 mm above general Forecourt level
- Back Fill & Compact to within 150 mm of Forecourt surface, 30 – 50 mm up Skirting walls
- Concrete Forecourt as per Site requirements.

Stage 2 Vertical Delivery Pipe Assys Installation Procedure

Components Supplied by PEC

Front & Rear Vertical Pipe Assys
Head Cabinet Assy. (Fitted with Grade ID Decals)
Head Cabinet mtg. Brkts
Flexible Safety Hose Assys
External Hose Assy, fitted with Nozzles, Grade Covers & Gas Guards
Nozzle Grade ID Decals
Vent Box Assy Front & Rear (2 x Top Caps)
Serial Name Plate. (Name Plate to be Adhered to Top LH corner of GRP head access Door)

- **Installation Procedure**
- Using a Sprit level find the highest point on Forecourt out to a distance of 160 mm from Main Column(in any direction).Transfer this point onto Front face of Column (Front =Sump @ right hand side of Column) clearly mark as datum point on Column Face. (This is a datum point to start measuring from regards positions of components & mtg. brkts. etc. (See Sketch below) This point must be established to obtain mounting heights & ground clearances etc. for Final Cladding.



- From the above, mentioned Datum Line, transfer & mark a point 2.3 m Vertically up Column. If preferred a second but lower point could be marked @ 1.405m.up Having both these Datum points marked on Column could be advantageous as they could then both serve as a double checks. Note: Marks should be made Horizontally, as they will later be used to align Vertical Pipe & Holster Assy Mtg. Brkts. etc. (Details refer Fig 4)
- Place Front Vertical Pipe Assy 89826 onto front face of Column, top angled section of Pipe Assy. should be pointing out to right hand side. (eg. towards Sump) (*Note: Front of Dispenser = Column on Left with Sump on Right*) Both of the middle two Mounting brkts on Vertical Pipe Assy have a right angle Lug welded to them, these Lugs are location lugs & should be positioned up against right hand face of column.
- With Lugs positioned against Column side face, slide Pipe Assy up until top face of second horizontal Brkt. up Assy aligns with lower mark 1405.4mm Son Column and/or top face of second horizontal Brkt. down Assy aligns with upper mark on Column. Secure into position with “G” or “F” Clamps. (Or Ratchet Ties)
- Check Column Stops on second & third horizontal brkts are hard against Column Face, also check Vertical Pipe Assy is vertical. (If not this could indicate Column is not truly Vertical, in this instance move either top or bottom of Pipe Assy. to obtain true Vertical reading, secure Clamps, recheck heights from Forecourt datum marks.

- **Stage 2 Vertical Delivery Pipe Assys & Modules Installation Procedure Continued**
- Drill pilot holes into Column through holes provided in horizontal fixing Brkts. (Min. 2 per Brkt. required) Uses 12 Gauge 32mm (12/24 x 23 Hex Hd. Buildx 500 Series or similar Screw**.**
- Repeat process on rear side. Ensuring brackets on rear Pipe Assy. are horizontal with front set. Also ensure Column Stops on rear Pipes are positioned exactly in same relationship from Column as per front set.
- Assemble Head Cabinet Mounting Brkts. 89711 (Pg. 20) onto Head Cabinet, over M5 Studs provided in Head Cabinet, Nuts supplied. Note: Cut out section of brkts positioned towards bottom of Cabinet.
- Position lower Head mtg. brkt. onto top face of second horizontal fixing Brkt of Vertical Pipe Assy. Cut out section in lower Head Mtg. Brkt. locates over fixing brkts as mentioned above.(Pg. 21)
- Secure Head into position with Clamps, drill pilot holes & fix with Screw as per Vertical Pipe Assy. (Refer Fig 4
- Attach Logic Box Assy to under side of Head Cabinet Assy. (Studs pre positioned) ,(Pg. 18)

Stage 3 Vent Box Installation

Refer Fig 5 (pg.25) for details. (Dispenser Front shown)

- With top Cap removed insert Vertical Pipes into gap in Body, & manoeuvre Vent Box up behind Vertical Pipe Assy. into position as shown fig 5. Ensuring base edge contacts against Forecourt.
- Place Top Cap into gap of Vent Box as shown in Fig 5 (Ensure Cap is fitting correctly into recess.)
- Cut a 70 mm long section of 50 mm wide Aluminium Adhesive Tape. Fold in half length wise into the non adhesive side (eg. folded along length with adhesive sides exposed to out side & non Adhesive sides touching)
- Place the hinge or folded side of above mentioned tape section up into the inside of vent Box at the junction of the Top Cap and inside wall, equally space length over width of Cap. Manoeuvre tape to adhere to either to top or side wall inner face, then unfold tape section to adhere onto adjacent face also. Press tape into place to seal. Repeat process on opposite side
- Cut a section of tape to the approximately length of the Box Width, adhere this section equally over under side of long joint between Box Body & Top Cap. Shorter pieces could also be applied to under side joints between & on each end of where Vertical Pipes protrude through Assy.(Refer Fig 5)
- Using a Bostik Matrix 600 or 700FC Polyurethane Sealant, Seal all joints as indicated in Fig 5 Ensure a good size Fillet @ intersection of Vent Box to Forecourt.(Note: Ensure inside of Vent Box Assy. is seal sufficiently to eliminate the potential to leak out into the inside of Dispenser Cladding.
- Fit Safety Flex Hose Assys between Delivery Pipe Assys (in Ducting) & Vertical Pipe Assy's. (Fig 6)
- Repeat above process @ Rear side of Dispenser.

Stage 4 Modules & Delivery Pipe Assys Installation Procedure

Components Supplied by PEC

Meter Module Assy. including AC Control Box Assy. (Per Addressed)
Module Hinge Pin
Product Feed Line Hose Assys. x 3 (Feed Line to Modules)
Product Delivery Hose Assys 3 Sets. (Module to Delivery Pipe Assys in Ducts)

Installation Procedure

(*Start with Module C closest to Column*)

- (Ensure Product Position is Correct (Refer Pg. 27 NZ or 28 Aus.) **Apollo 3000 Hydraulic & Intrinsic Connections**
- Connect Internal Delivery Hoses to Internal Delivery Pipe Assys (these exit into Sump from Ducts) (Refer Pg18) **Inside Enclosure Layout**
- Attach Internal Product Feed Hose Assys x 3 to Fixed Main Feed Lines through Sump.
- Install Module Assy. "C" fit Hinge Pin lift module & Position Hold Up Brace (Refer Pg. 27 NZ or 28 Aus. to Ensure Correct Feed Path.)
- Attach Feed & Delivery Hoses to Meter Module.
- Repeat previous procedure for Module "B" then Module "A"
- Connect Mains & Switched Phase Cables into AC Control Boxes (Refer Drawing Mains & Switched Active Cabling Layout Pg. 29. Secure Cables into Trunking provided, refer Pg. 18 & 19 (Inspection of Cabling required)
- Assemble Float Switch/Bracket Assy onto Studs provided @ RH. end of Sump Enclosure. Position Float down into Secondary Sump as low as possible. Ensure Float is free to travel upwards without obstructions etc.
- Using a Draw Cord, Pull Encoder, Float Switch & AC Signal Cables through Cable Duct. Also feed Steel Wire Amour Cable up Cable Duct.
- Plug Cables into Logic PCB Assy (see Drawing Control Logic Box Distribution PCB 87111 Pg. 30) (Cables are Marked.)
- Fit Steel Wire Armoured Cable, Mains Feed Line into Head Cabinet via Flp. Gland connect as per Drawing Pg. 29 (inspection of connections required) (Note Glands into Head Cabinet not Supplied)
- Insert Pump & LAN Comm's Cables into Head Cabinet & Connect (through FLP. Glands)

Pump Comms Refer Pg. 32. Plug LAN Comms. direct to FST unit (Plug Supplied with FST)

- Attach Nozzle Holster Switch Cables to Logic Box (see Drawing Pg.30 + Pg17.)
- Check all Hydraulic & Electrical connections (Electrical connection etc. to be Certified)
- Program Dispenser as per pages 6,7 & 8 (Also refer PEC Modular Pumps Manual 87372)

- **External Cladding to be fitted. Refer instructions from FDL (Fibreglass Development Ltd**
- **Note**: External Hoses can be fitted at this stage if required for testing etc. However they will need to be remove to assemble GRP Cladding
- Once Cladding & External Hoses fitted Test run checking for leaks etc. (Use Pump Stack test Pg. 08)
- Check operation of Float Switch by lifting to activate. (if software VA 2.30P or greater fitted, Dispenser will fatal error with **FLUid** showing in Dollar display. **Power down to reset**.(Refer Pg. 6, 7 & 42 for details & explanation)
- Check Cover is replaced over Power Supply PCB.

Apollo 3000 Set Up Procedure Standard Fuel

1. Set Up Addresses Dip Switches

Set addresses on AC Control PCB as shown in table below

Note AC Control Boxes number from right to Left as viewed with Column on your left, refer Apollo 3000 Hydraulic & Intrinsic Connections layout Section Pg. 28 & 29

Box no.	Dip Switches			
	4	3	2	1
A	on	on	on	off
B	on	on	off	on
C	on	on	off	off

2. Preset Display PCB Dip Switch Setting

3 Product front = 3,5 & 12 are on rest are off

3 Product rear = all set off

3. Power up

Apply Power, for Software Version VA 2.21 & > listen for single beep -pause-single- followed by six short beeps

Displays should show as follows

FRONT	Pn - A	REAR	Pn - b
	Fn - _ _		Fn - _ _

Note if you get FUEL OFF then toggle Managers Switch to get required display.

4. Setting Hoses Active.

Empty RAM by Switching managers Swt. & pressing Service Agent Button, enter 10-Fill-Fill . wait for Displays to return as per above.

Activate as follows.

Hose F1 = Enter 22-Fill-1-Fill Hose R1 = Enter 23-Fill-1-Fill

Hose F2 = Enter 42-Fill-1-Fill Hose R2 = Enter 43-Fill-1-Fill

Hose F3 = Enter 62-Fill-1-Fill Hose R3 = Enter 63-Fill-1-Fill

5. Check Pricing Displays read as indicated on Graphic Panel

Cents per Litre = "0.0" for Cents & Dollars per Litre = 0.000 for Dollars

Refer PEC Manual 87372 section "Dip Switch Settings Multipec" for corrections

Set Product Price

Product A = Enter 31-Fill-$ amount (eg 993-Fill = 99.3c)

Product B = Enter 51-Fill-$ amount-Fill

Product C = Enter 71-Fill-$ amount-Fill

Note To test Comms. And Console control is working correctly, enter a non real price for each product and then switch unit over to Console control price should then change as set on console. Check both sides

6 Pump Number (Comms. Connection)

To connect to Console unit has to be numbered both front & rear.

To number Front Enter 20-Fill (Display shows PF-00)

Enter Required # (Display shows = PF- (number entered)- enter Fill

To number Rear Enter 21-Fill (Display shows = PF-00)

Enter Required # (Display shows = PF- (number entered)- enter Fill

Switch Managers Switch to normal

Note (#) = Pump/Console number

Apollo 3000 Set Up Procedure Standard Fuel continued

7 Plug in Batteries

8 Test Diagnostics (Refer Pg.08)

9 Version VA 2.30P or Greater Software

Version VA 2.30P has optional settings between Air Sense & Fluid Float Switch Operation.

Explanation of operation:

Air Sense Operation = No Link present or Link Cut @ position 10 @ Dip Switches positioned on Front Preset Display PCB Assy.

Fluid/Float Switch Operation = With Link in place @ position 10 @ Dip Switches positioned on Front Preset Display PCB Assy.. **Air Sense Operation** This mode allows for Air to be detected when an Air Sense device is fitted. Air Sense operate such that when Air is detected, the Main Valve of the fluid being dispensed will shut down for a period of one Minute, delivering on Final/Slow stage only. Should the Air source not be eliminated within that period of one minute then Pump will shut down completely & display Fatal Error between 32 & 37 depending on product being dispensed (Air Sense operation set with No Link or Link Cut @ position 10)

Fluid/Float Switch operation allow for a Float Switch which is positioned within under ground Sump Enclosure, to detect the presents of Fluid which then shuts Dispenser down. (Reset required)

If Dispenser is in idle stage (eg. Non Delivery) & Float Switch is activated (Fluid detected), FLUId with appear immediately in both Front & Rear Main Displays.

However if one side of Dispenser is operational (delivering) & Float Switch is activated (Fluid detected), Dispenser will shut down immediately with FLUId appearing in opposite side Display to that being used. On the side that was operational, Displays will retain present delivery values but will start to flash once Nozzle has been returned to Holster for a period of 1 minute. FLUId will appear in that side Display only once Nozzle has been removed.

Power should be immediately shut off to Dispenser.

To reset Dispenser : Remove fluid from Sump Enclosure, repair source of Fluid leak , ensure Float Switch is returned to normal operating position. Return Power to Dispenser, operation should commence as normal.

Note To switch Dispenser to LOCAL mode (Non Console control)
With Managers Switch on Enter 04-Fill middle display shows LOCAL enter Fill again, Switch Managers Switch to normal.
(Note Comms Cable must be disconnected for Local mode to operate)

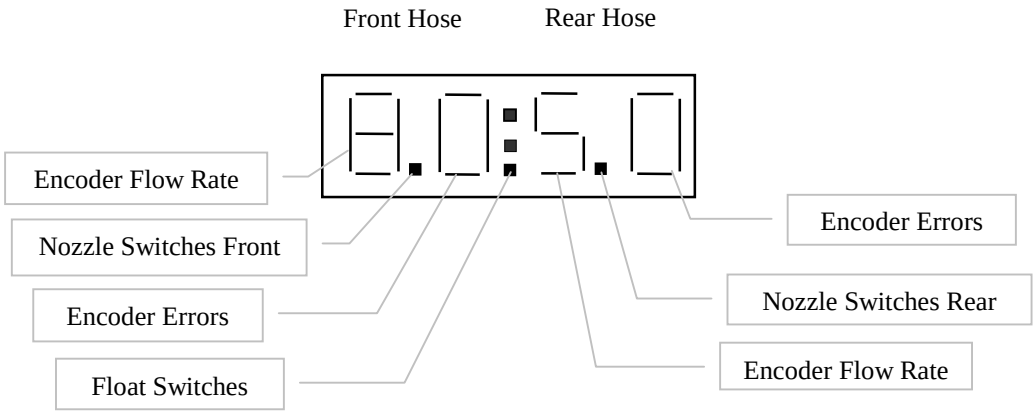
Pump stack test 30*

50* 70*

This test cheeks the operation of the pump motors (internal or submersible).
The motor can be switched on and off, as can the slow and fast flow rates.
The flow rate is displayed in the *Price per litre* display.

Pump motor	Function number
F1 & R1	*30*
F2 & R2	*50*
F3 & R3	70

Initially, the display appears as shown in the illustration. Decimal points between each set of two figures indicate whether nozzles switches are open. A central decimal point indicates air in the flow detected by the air sensor (if installed). The first digit gives the rate of flow for the hose, in tens of litres per minute, and the second digit counts the number of encoder errors received.



Note Encoder errors can be any number
but must not change (eg change indicates error)

Diagnostic Testing of Motor & Valve Operation

This function can be used to turn Motor, Final & main stages of Solenoid valves idea for checking connection and correct operation etc.

Note Managers Switch must be on to access these functions & Diagnostic Switch pressed

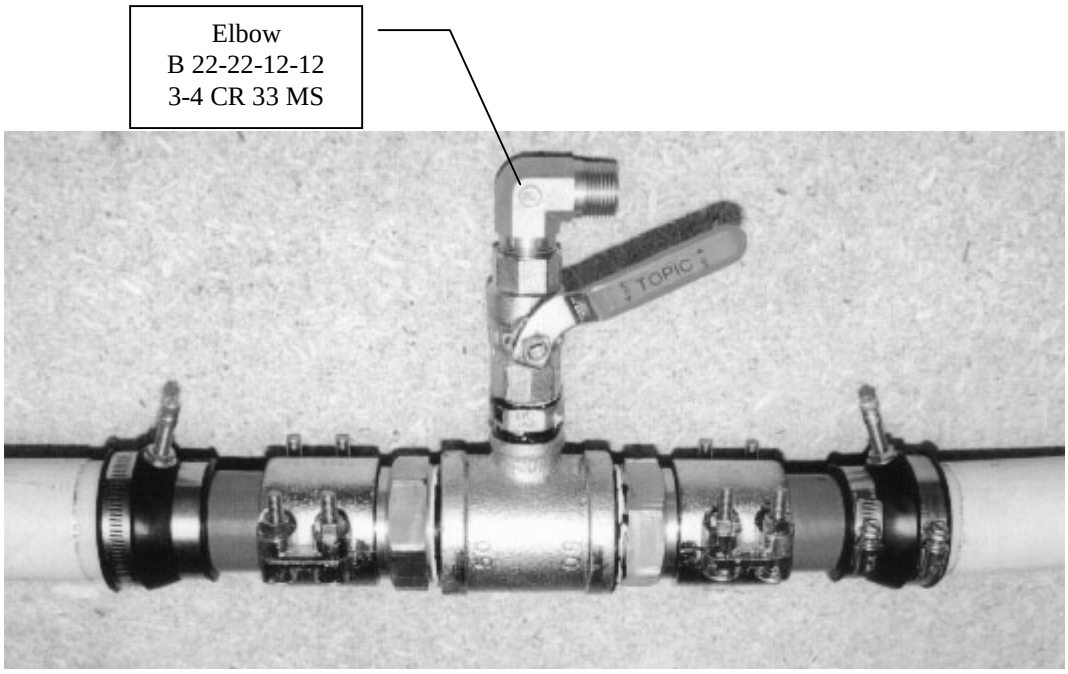
Function 30 for Product 'A'
Function 50 for Product 'B'
Function 70 for Product 'C'

Once in any of the above Function press key once as listed below to activate and a second time to deactivate.

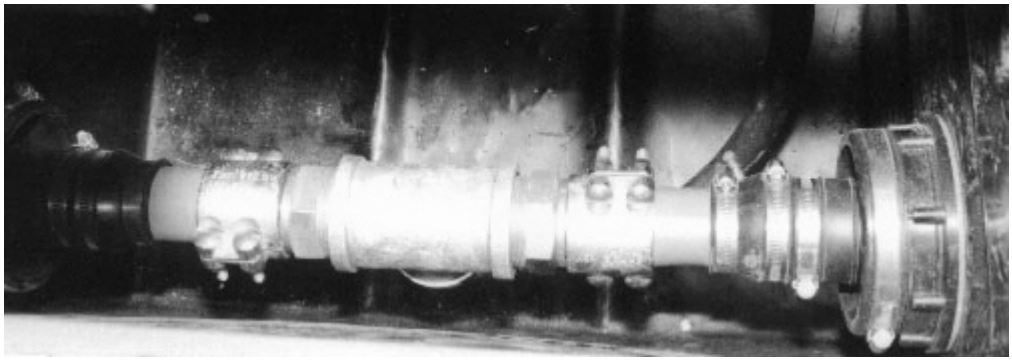
Note Numbers being activated show in 'Dollars Display"

Key	Function
1	Motor
2	Sol/Valve final stage (front)
3	Sol/Valve main stage (front)
4	Sol/Valve final stage (rear)
5	Sol/Valve main stage (rear)

Feed Line Detail



Note distance between test point seals on assy. shown above must be min possible .
Inside distance between Bulkhead Seals in Hydraulic Enclosure is, 0.432m
therefore feed line Tee termination arrangement must fit within this distance.



Above view is as viewed from enclosure (sump) end away from Column (RH end).
Tee & Shut off Valve hang down towards floor of enclosure with ¾ Elbow facing to back face of enclosure. Handle of shutoff valve operates in the same plan as feed line, (eg front to rear.

Rear Grade ID

89717 Graphic Panel Rear
89716 Graphic Panel front (not shown)

89937 Unleaded
or
89922 Pre. Unleaded
or
89954 Ultmate Hi

89934 “Super”
or
89921 “Pre. Unleaded”
or
89952 “Ultmate Hi” NZ

89939 “BP Ultimate” or
89941 “Diesel”
or
89919 Low Sulp. Diesel

89938 “:BP Ultimate”
or
89940 “Diesel”
or
89918 Low Sulp. Diesel

89935 “Super”

89936
Unleaded

Cover
EK 144 = Black
EK 144/GD = Gold
EK 144/G = Green
EK 144/S = Silver
EK 144/R = Red

Tote grade ID Decal not shown front only

- - 1 + V1
Swivel x 6

89947 Hol Panel
+
89825 Holster. Panel Mtg Brkt
(Not Shown)

89883 Hose Assy “C” Short
@ 3.025m x 2 *

83780 Holster Assy
83694 Holster only

89884 Hose Assy “B” Mid
@ 3.25m x 2 *

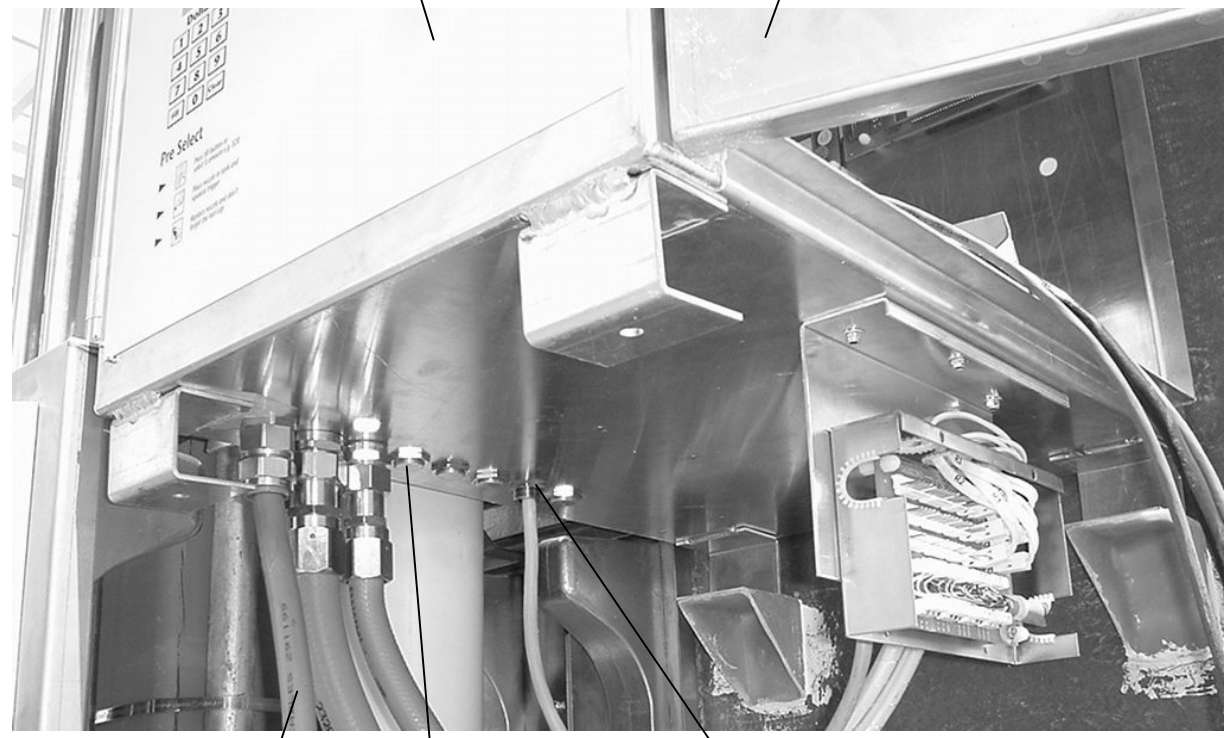
89885 Hose Assy “A” Long
@ 3.4m x 2 *

ID Roundals (Badge)
EK 145
Pre. Unleaded 89923
Super LRP 89932
Diesel 89931
Ultmate 89930
Unleaded 89929

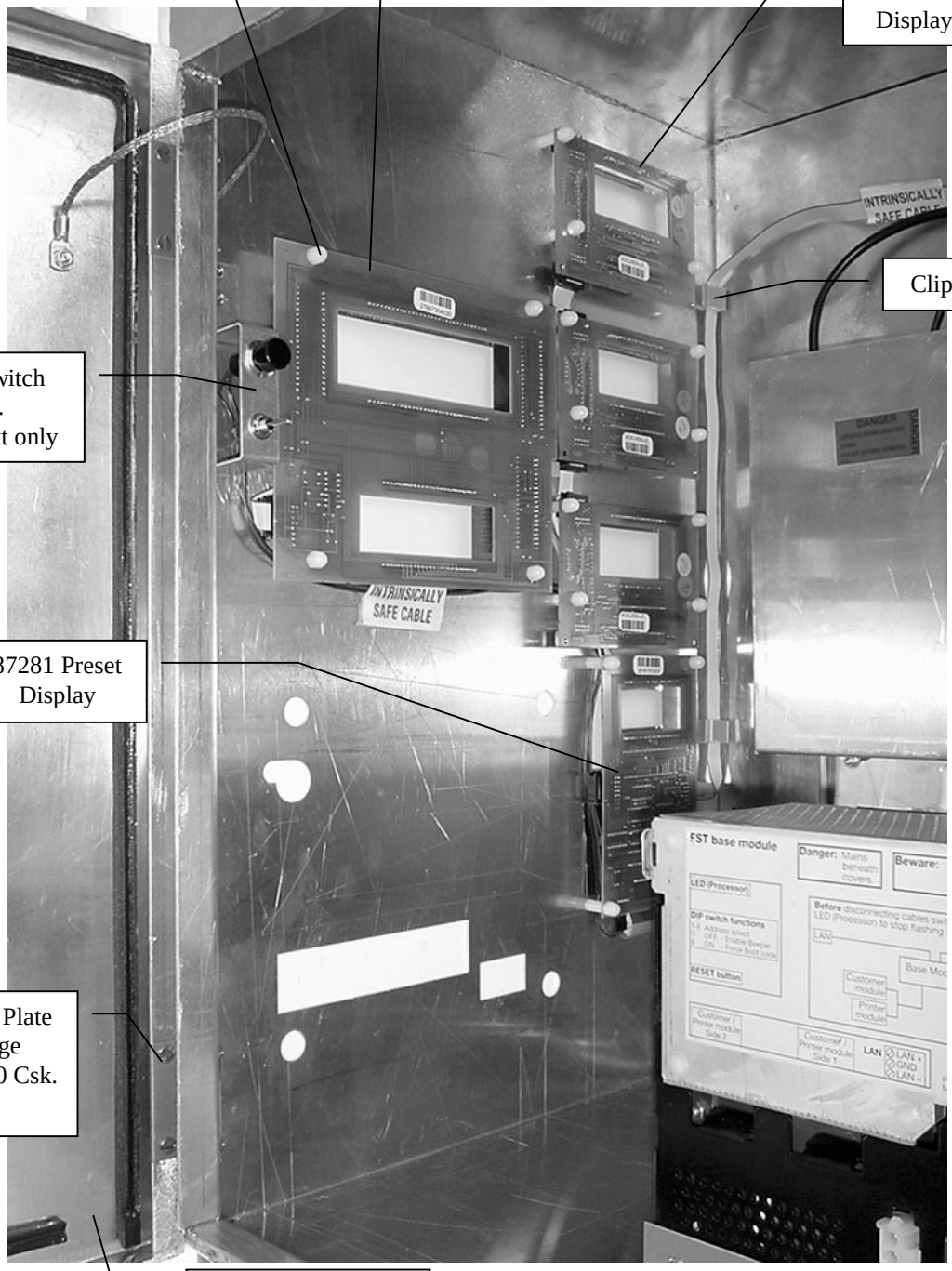
- + 87793 Drybreak Hose Assy x 6
+ ..3360 Inline Safety Break x 6

Float Switch

Head Cable Entry

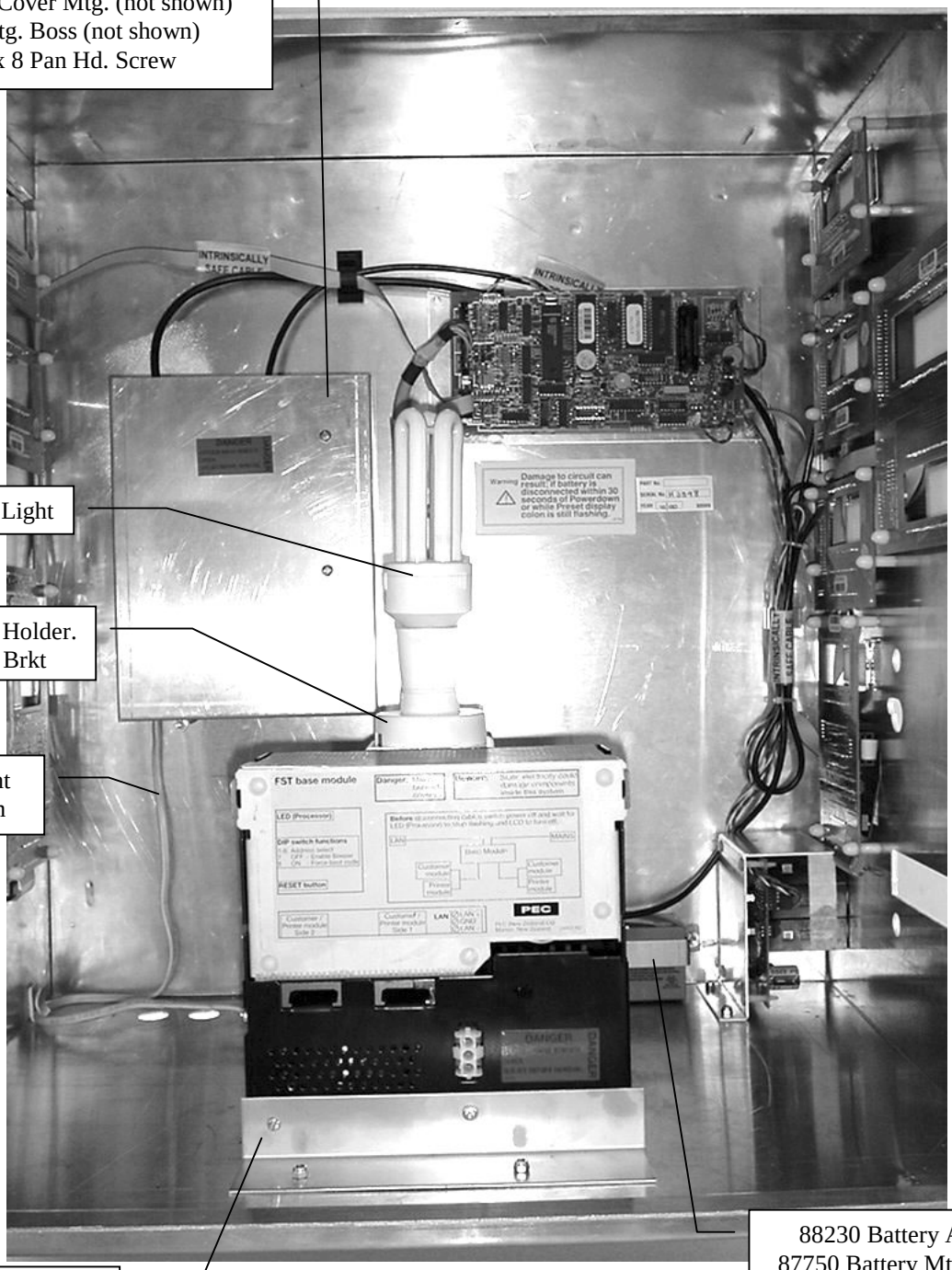


Head Cabinet Rear Display



Head Cabinet Inside View

87151 Pwr. Sup PCB Assy (not shown)
89752 Cover
862820 Terminal Strip (not shown)
83665 PCB Cover Mtg. (not shown)
83638 Mtg. Boss (not shown)
+ M3 x 8 Pan Hd. Screw



859570 Fluo. Light

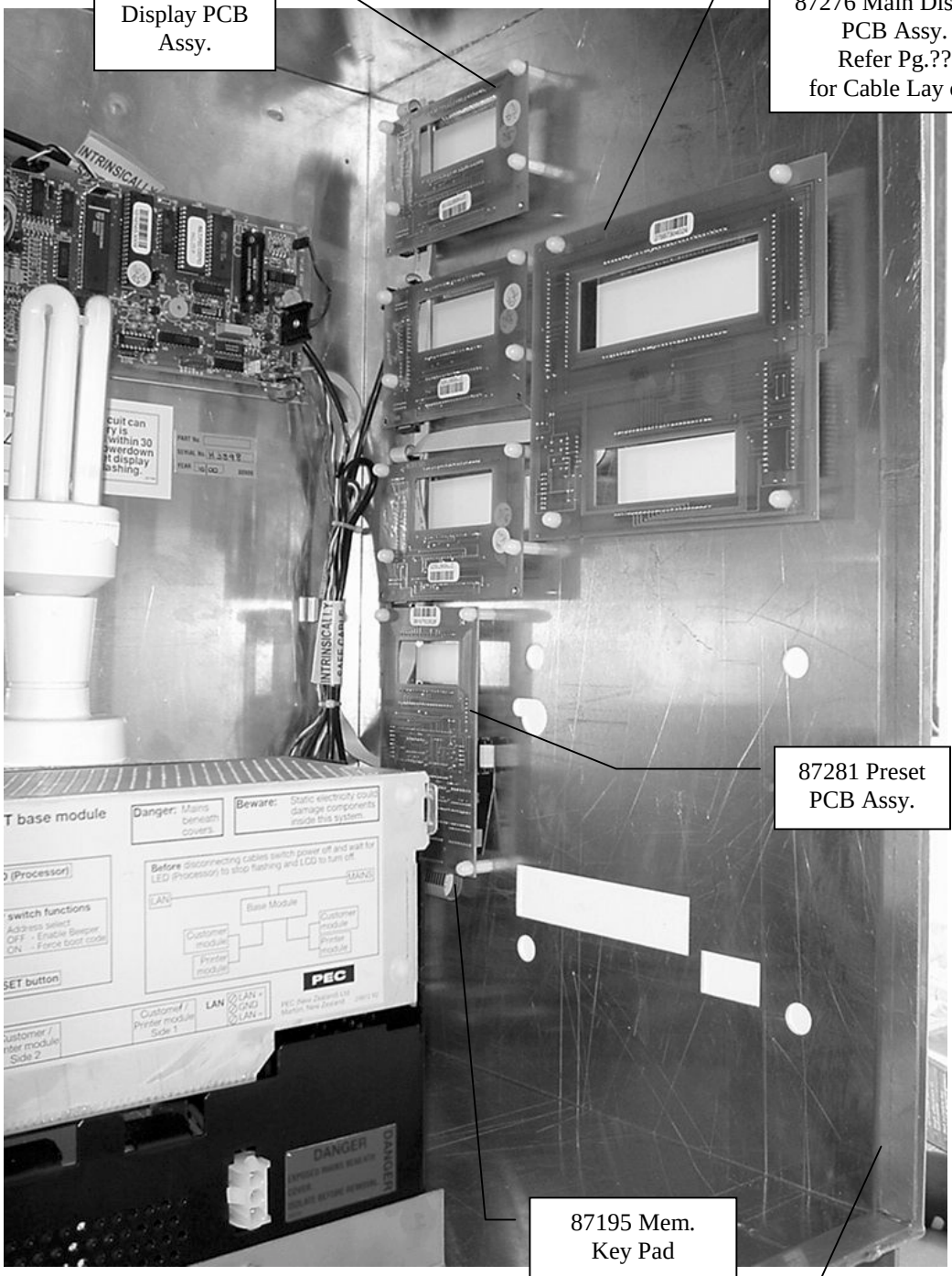
859615 Batten Holder.
89719 Mtg. Brkt

867105 Light
Cable @ 1m

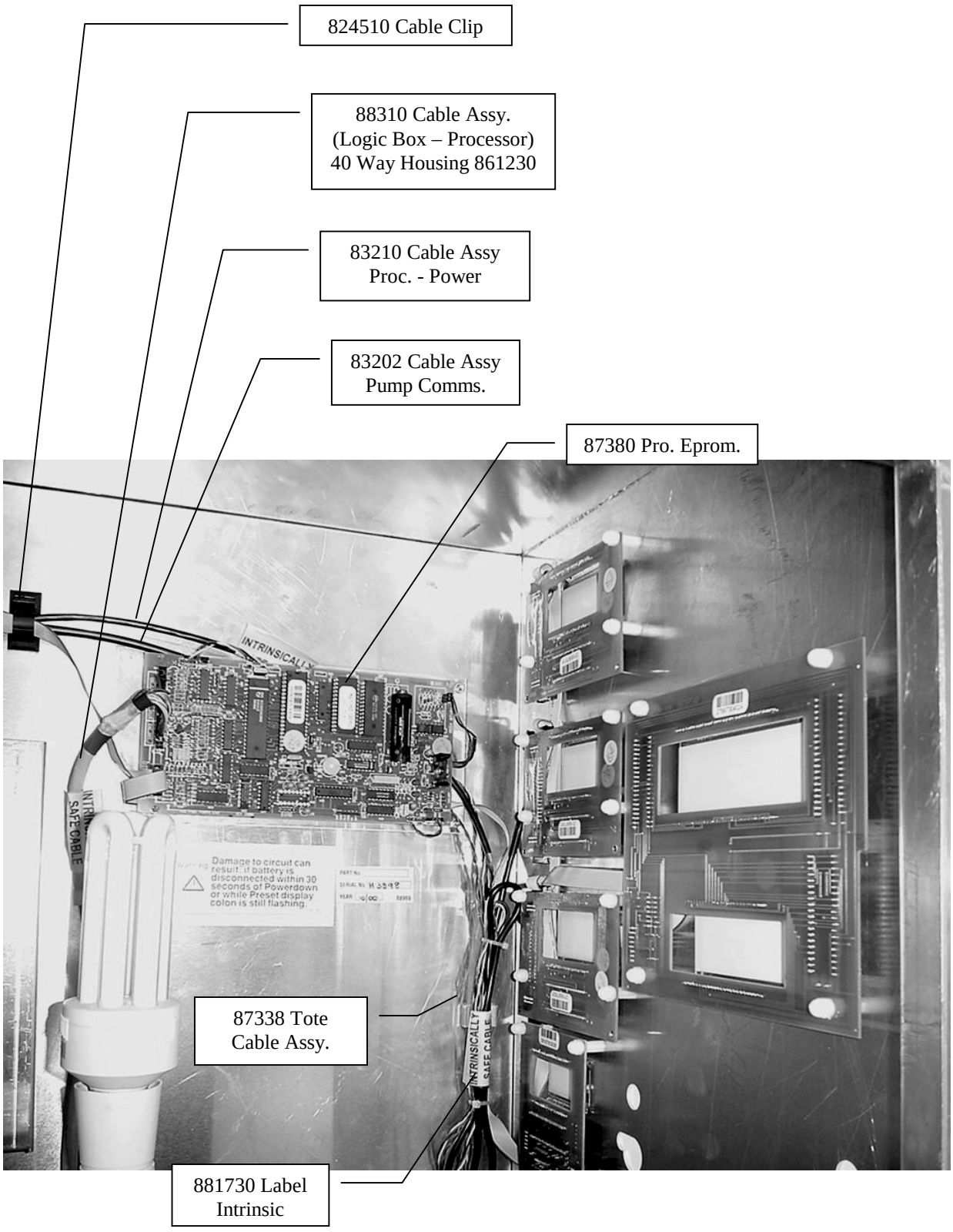
88230 Battery Assy
87750 Battery Mtg Brkt

89779 FST Mtg. Brkt.
800620 Screw M4 x 10
Pn. Hd
802220 Screw Self Tap.
AB Pan. Hd 6 x ¼”

Head Cabinet Front Displays



Head Cabinet Internal



Logic Box

878913 Logic Box Base.
87914 Logic Box Lid.
(not shown

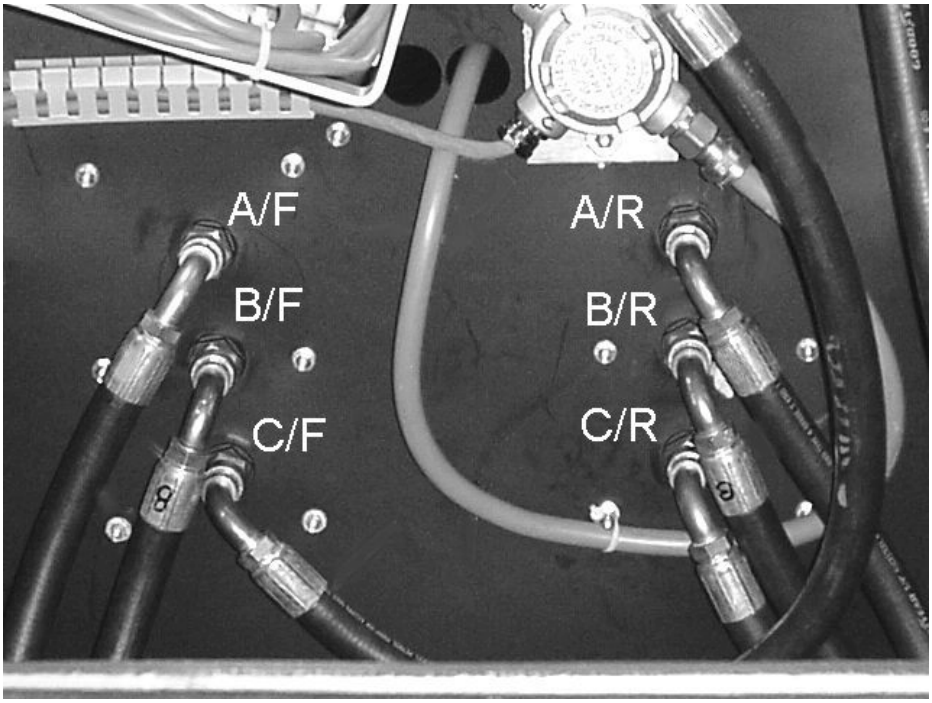
89732 Logic Box Mtg.

89737 Nozzle
Cable Assy

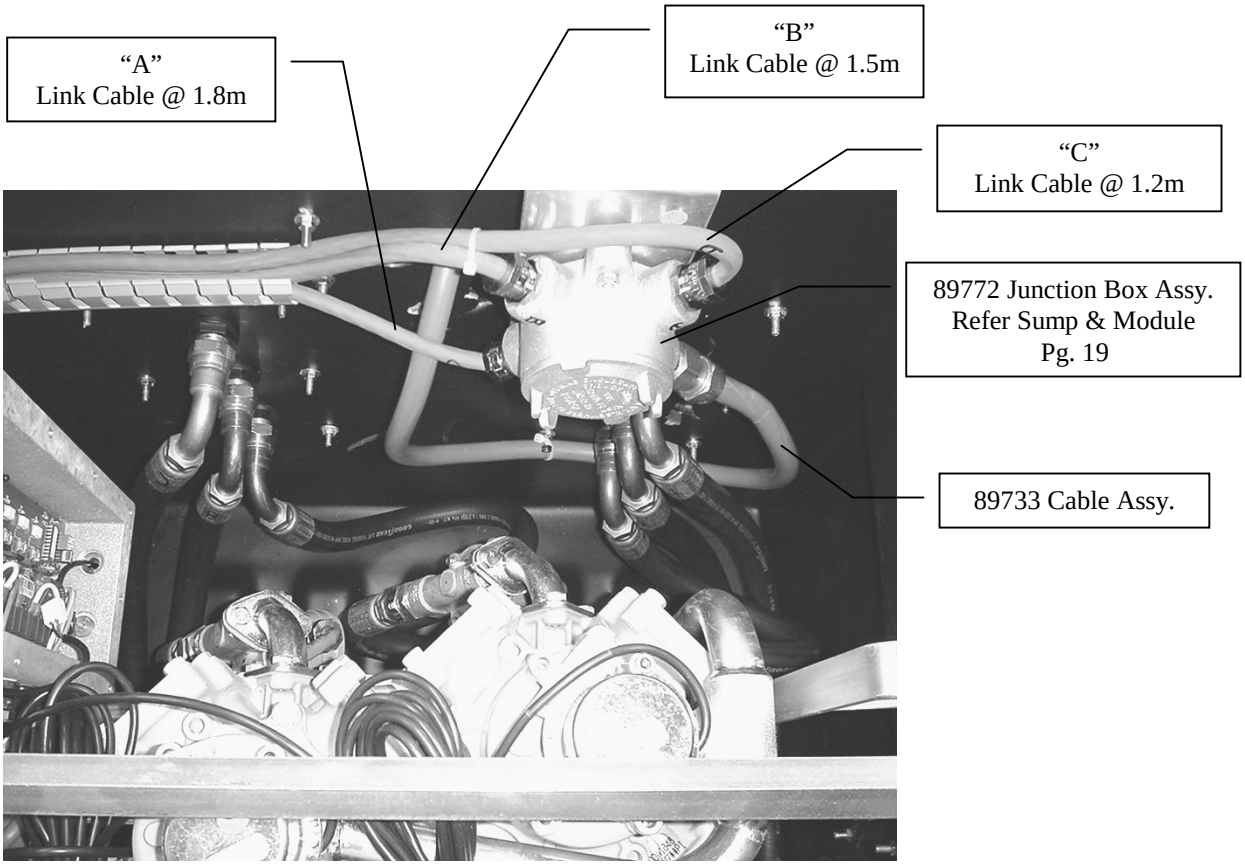
87111 Logic
PCB Assy

88310 Cable Assy

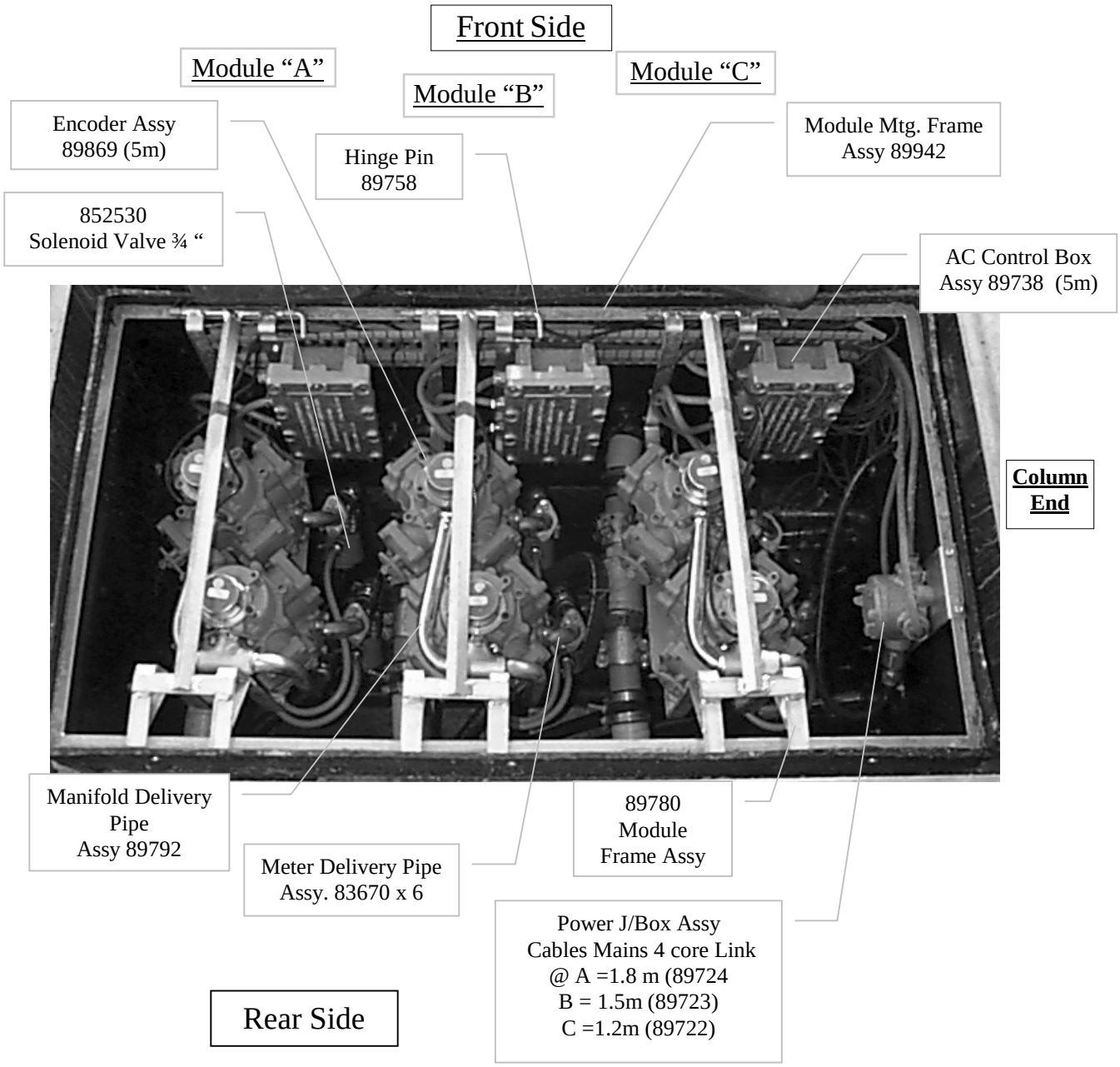
Inside Enclosure Layout



Rerfer Pg. 27 & 28 For Hydraulic Layout
Refer Pg.34- For Hose Specs.



Apollo Sump & Module Assy 3000



Delivery Hose Lengths

89744 A/F&R = ¾ Hose @ 1.67m - ¾ Swivel Nut 19243/12/12/AU - F/Swivel 90 Elbow 1B243-12-12
89743 B/F&R = ¾ Hose @ 1.39m - ¾ Swivel Nut 19243/12/12/AU - F/Swivel 90 Elbow 1B243-12-12
89742 C/F&R = ¾ Hose @ 0.9m - ¾ Swivel Nut 19243/12/12/AU - F/Swivel 90 Elbow 1B243-12-12

Internal Supply Hose Lengths

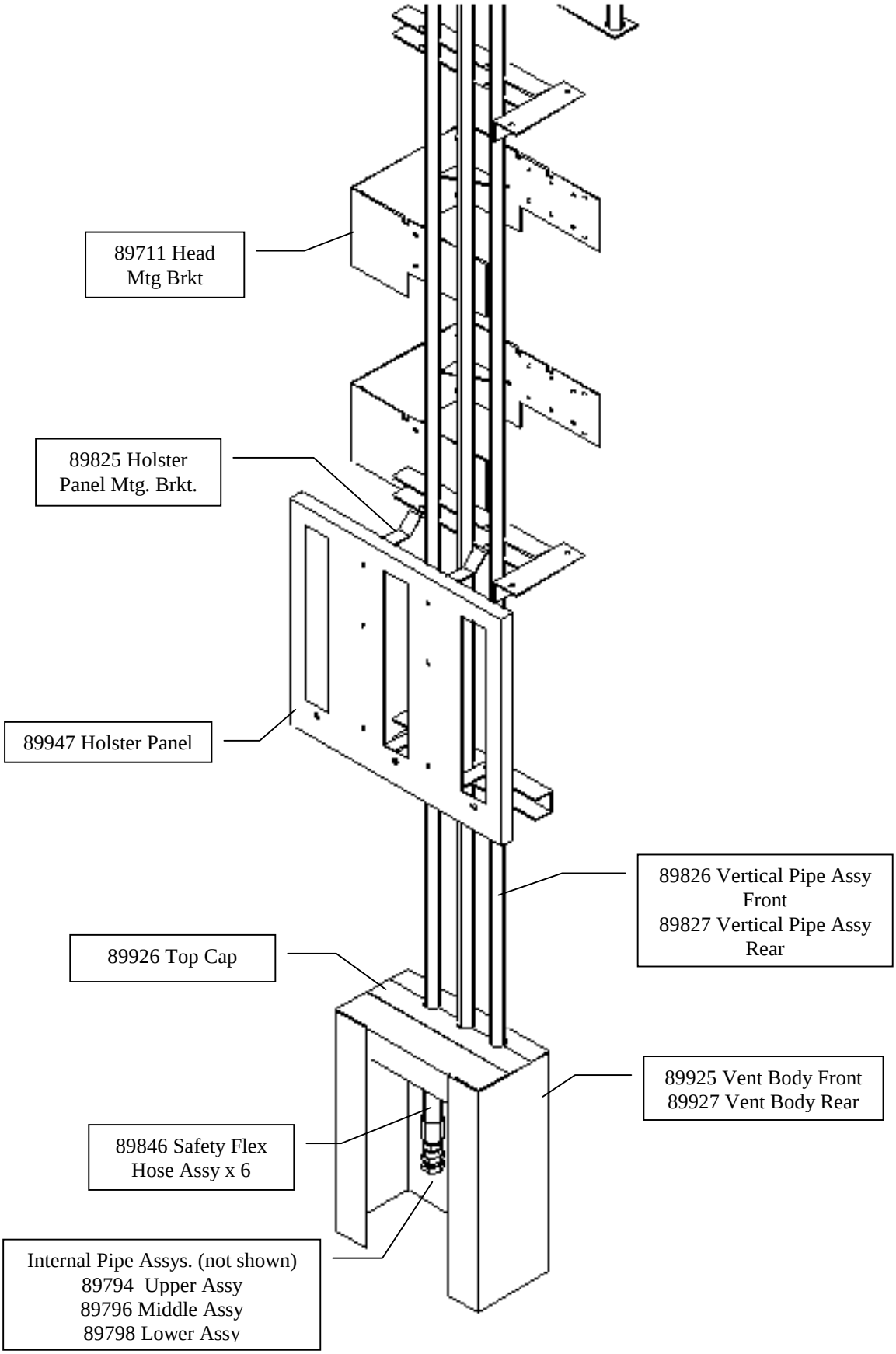
89748 ¾ Hose @ 1.05m - ¾ Swivel Nut 19243/12/12/AU (x3)

Pipe Assys are as follows:

"A" = 89794 Internal Pipe Assy Upper
"B" = 89796 Internal Pipe Assy Middle
"C" = 89798 Internal Pipe Assy Lower

Note These Pipe Assys run up inside Ducting to connect to Vertical Pipe Assys attached to Column.

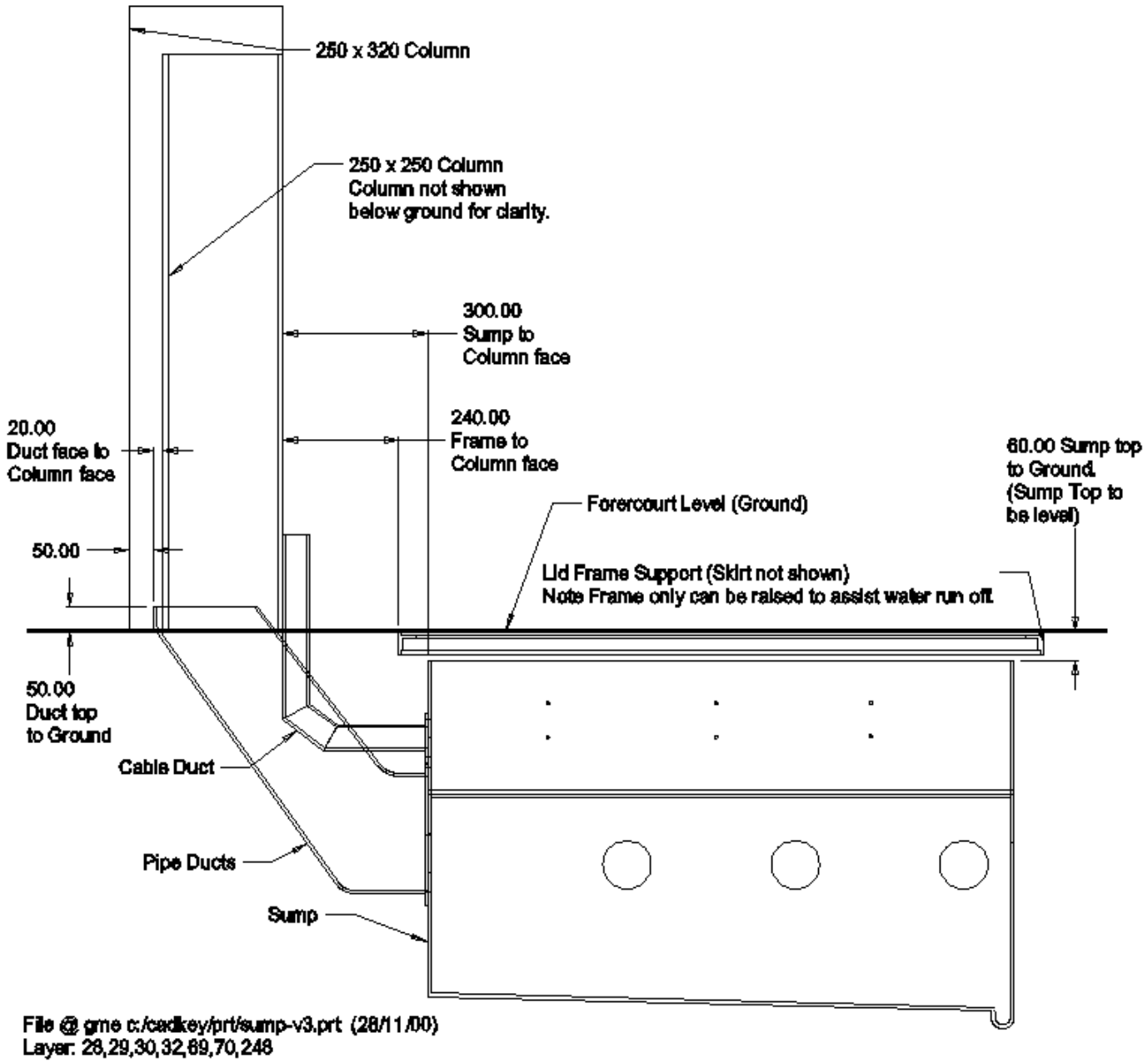
Vertical Pipe / Vent Box Assy (Front Shown)



Stage 1 Installation Procedure
Sump Position

Fig 1

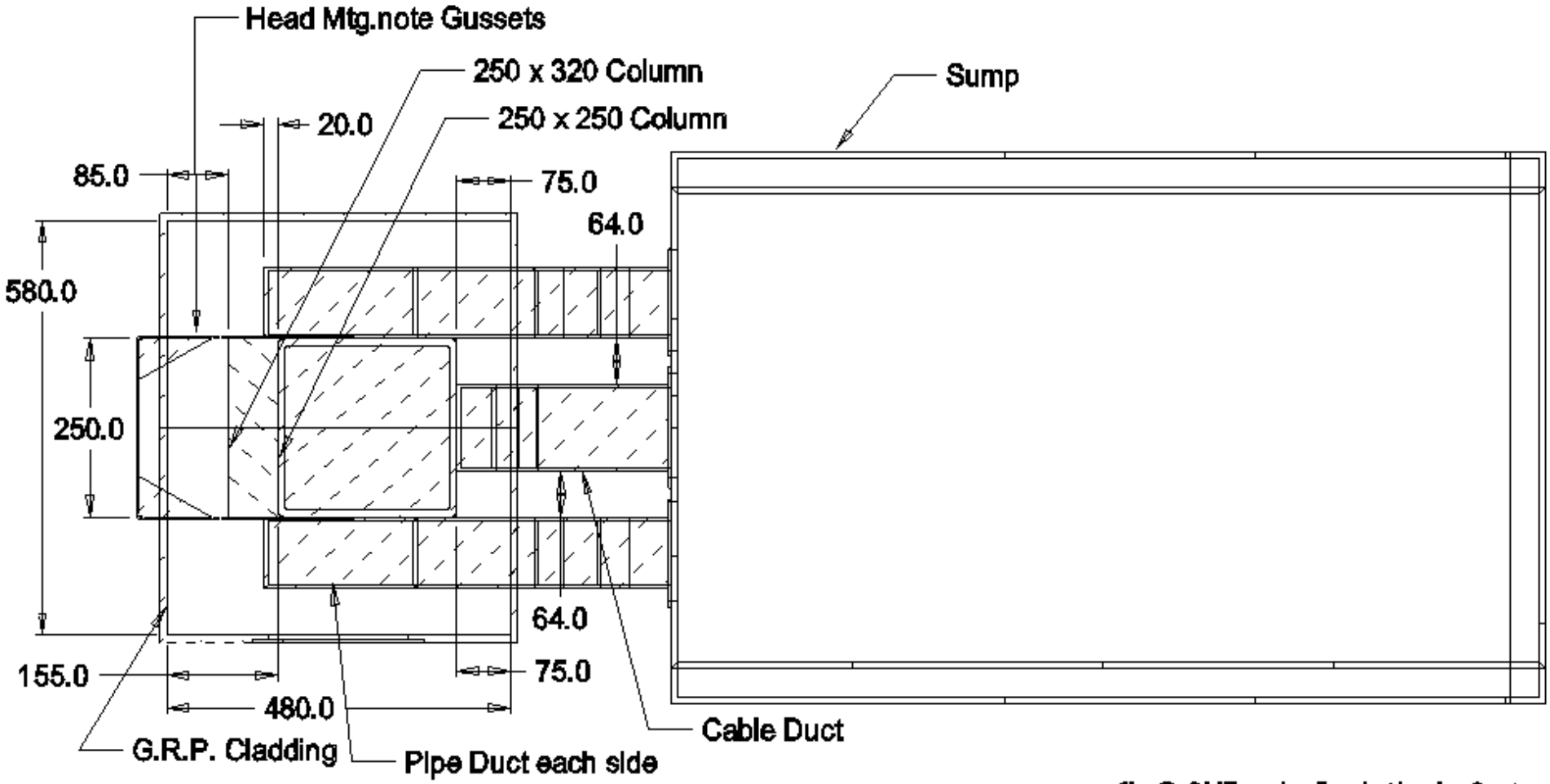
Under Ground Front View Apollo Sump



File @ gme d:/docum/pec/apollo2/fig 1.doc

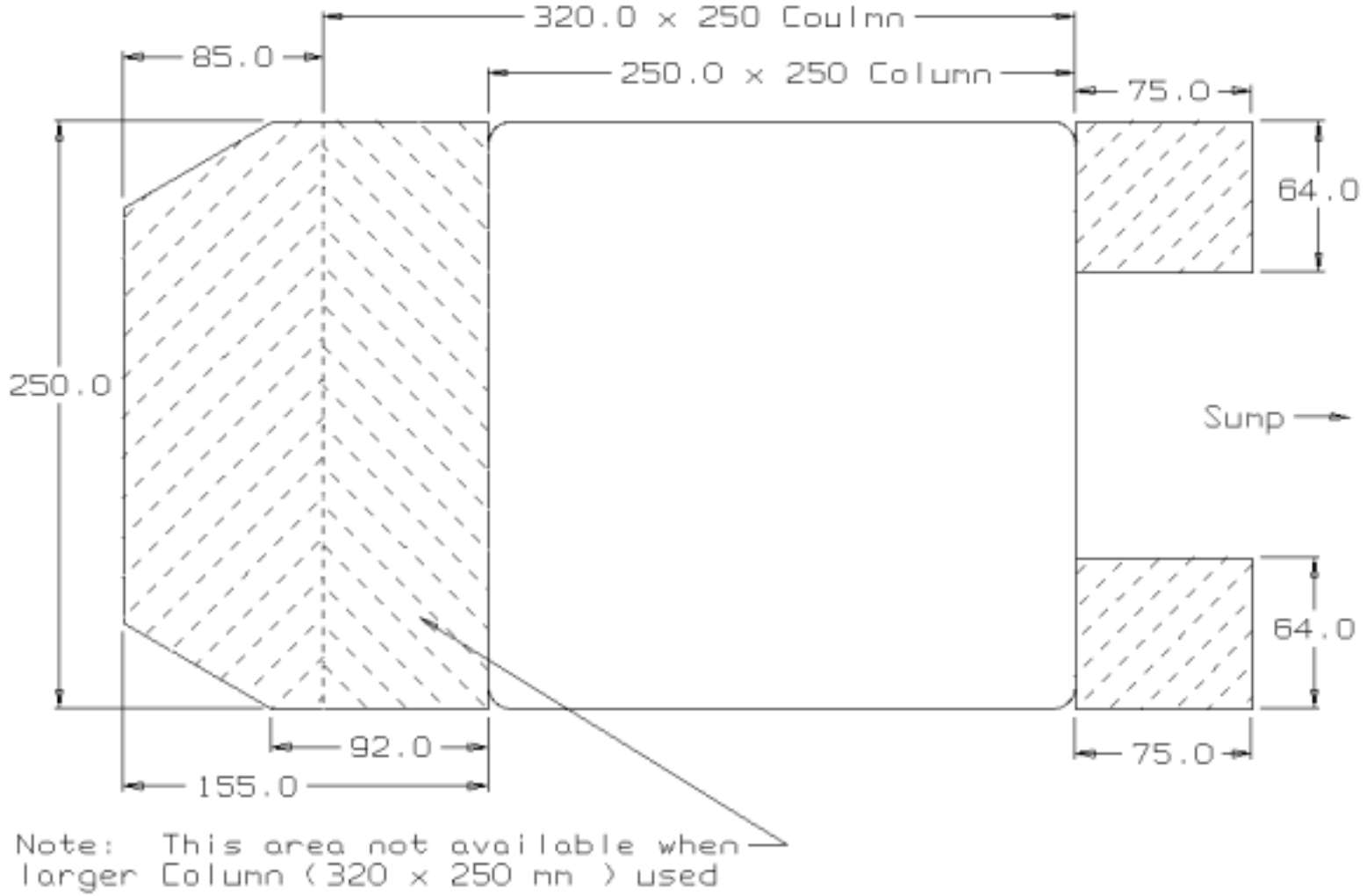
Stage 1 Installation Procedure
Sump/Column Position

Fig 2



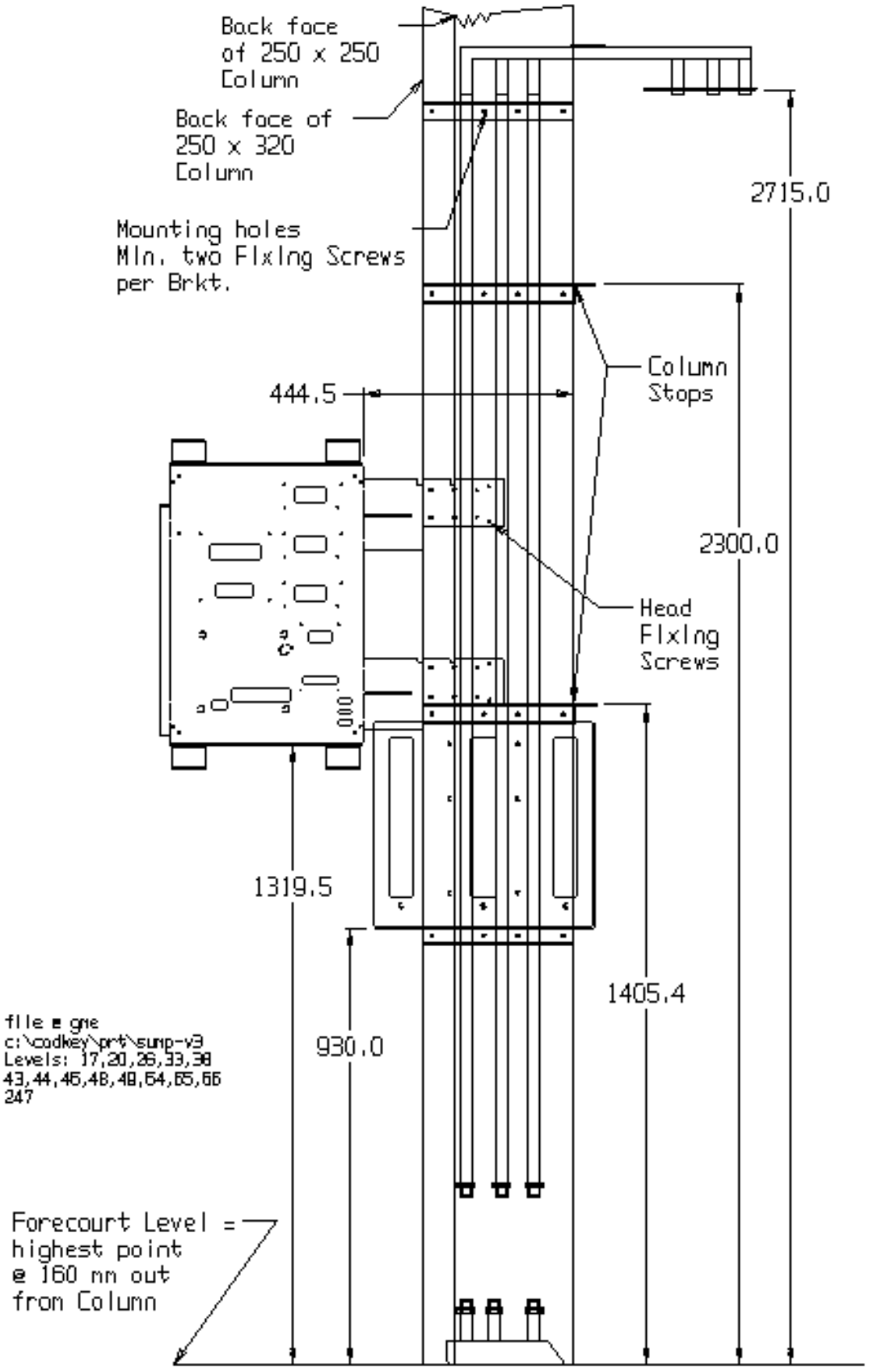
Stage 1 Installation
Service Area Spec.

Fig 3



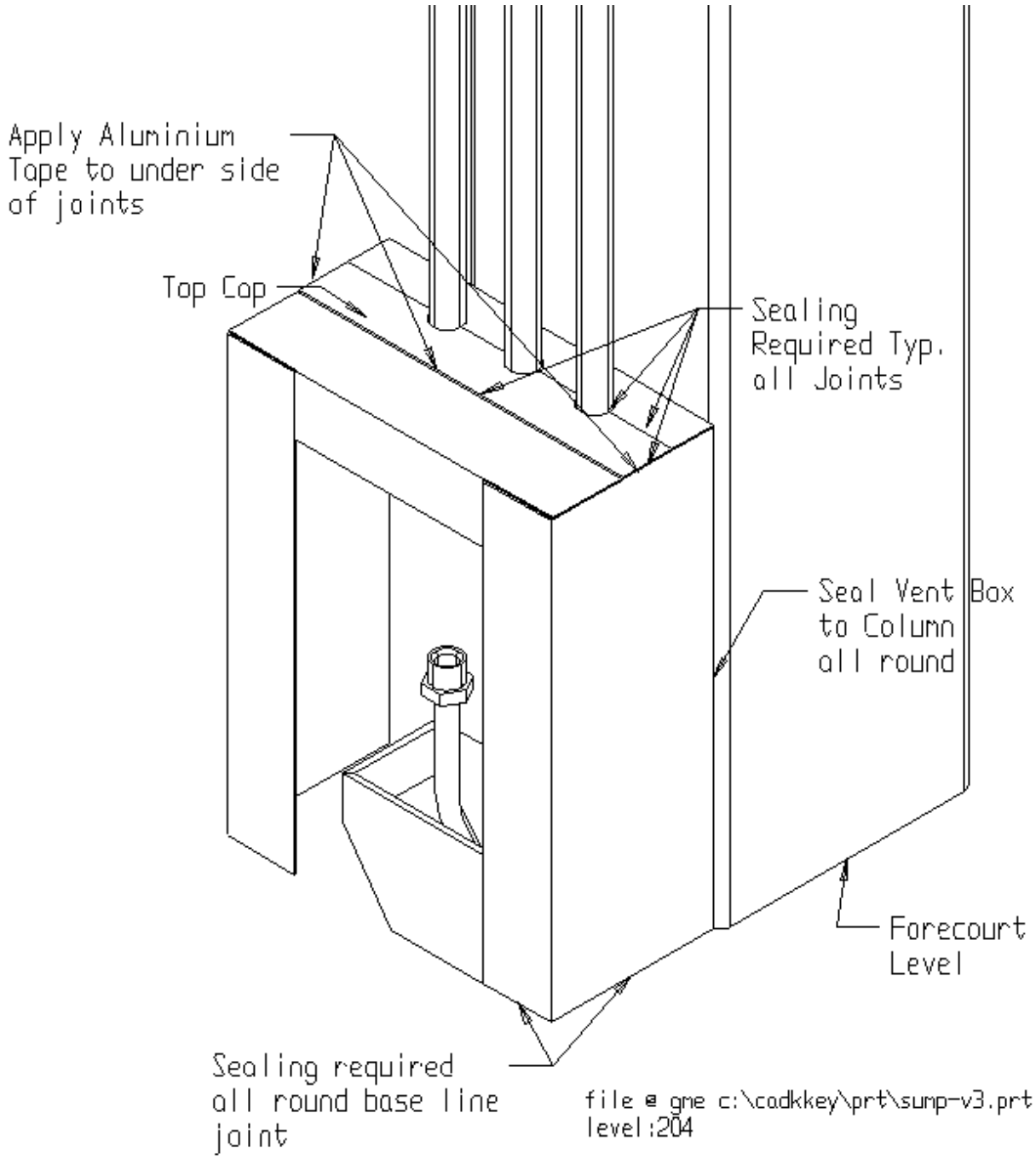
Stage 1 Installation Procedure
<u>Mounting Positions</u>

Fig 4



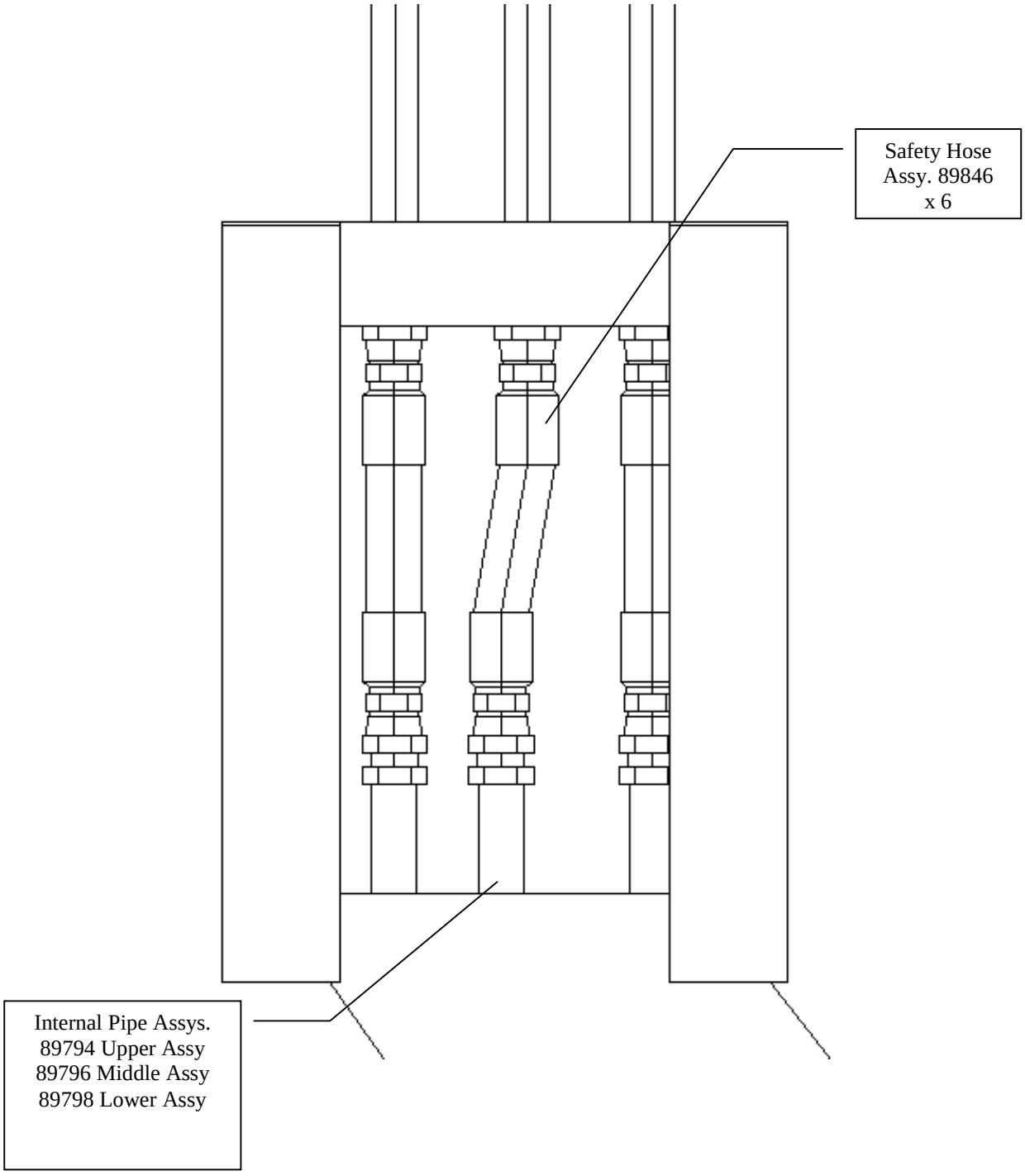
Stage 3 Vent Box Installation
<u>Vent Box Position & Sealing Spec</u>.

Fig 5



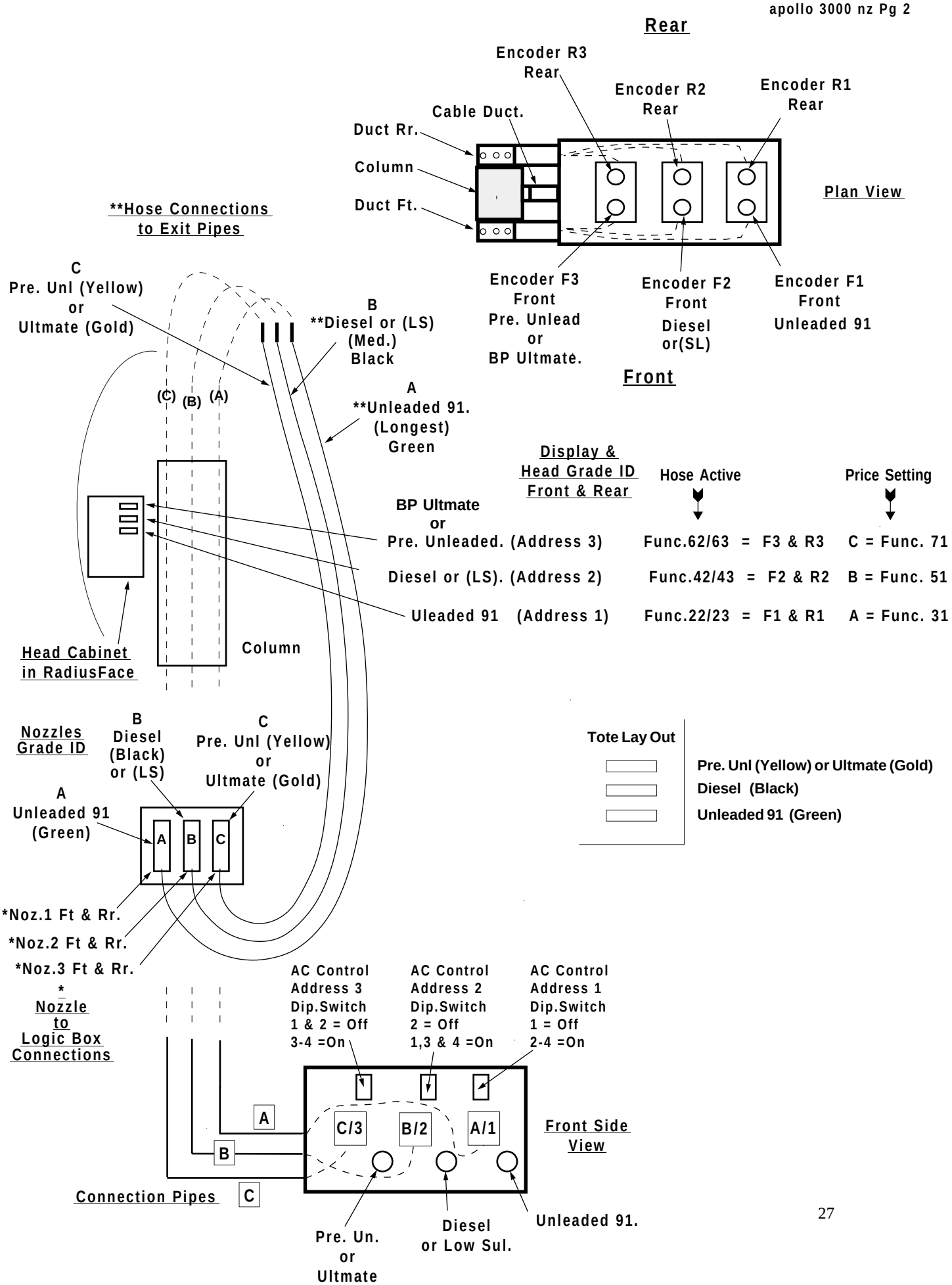
Stage 3 Vent Box Installation
<u>Safety Hose Position</u>.

Fig 6

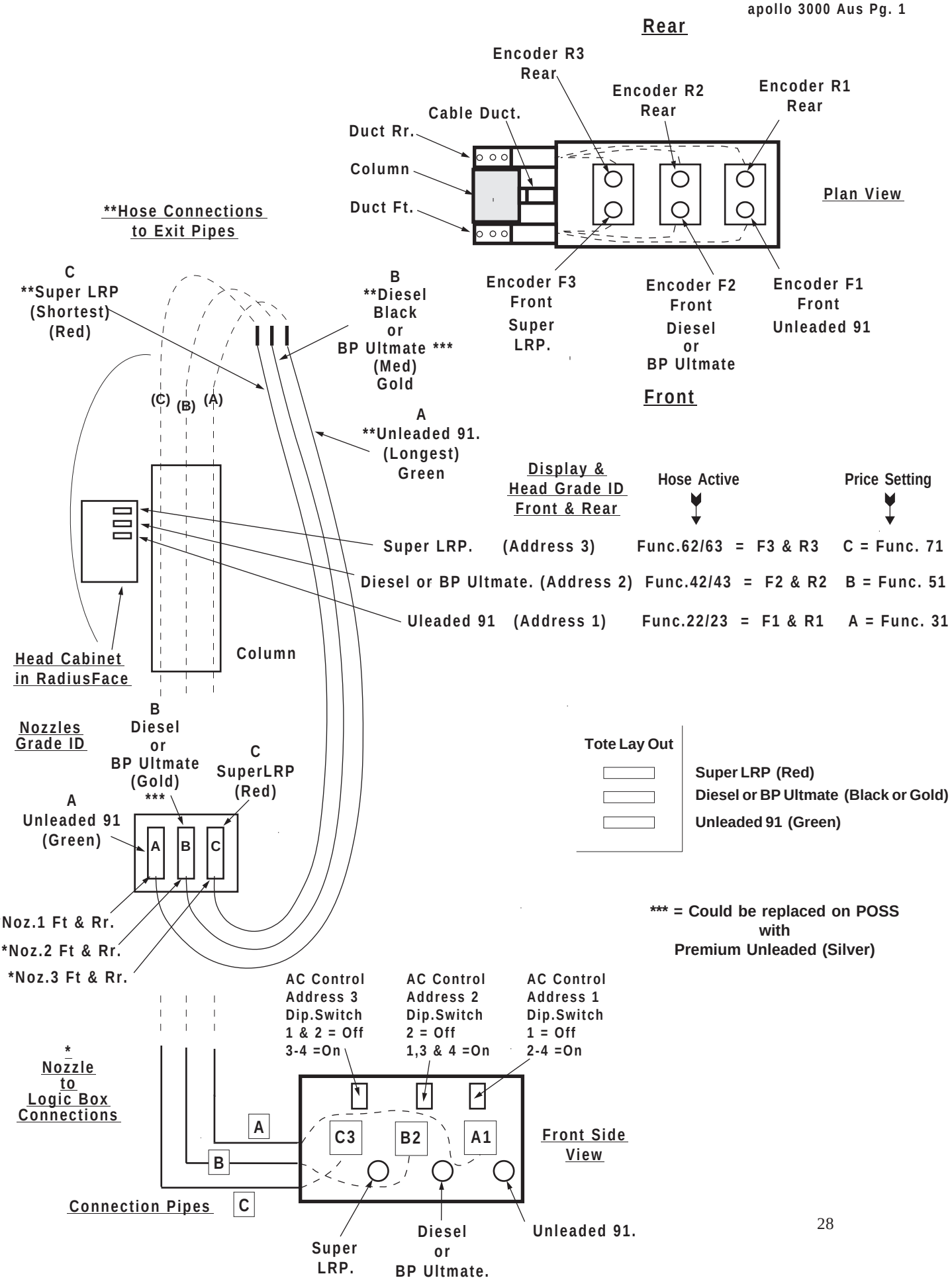


Apollo 3000 Hydraulic & Intrinsic Connections New Zealand

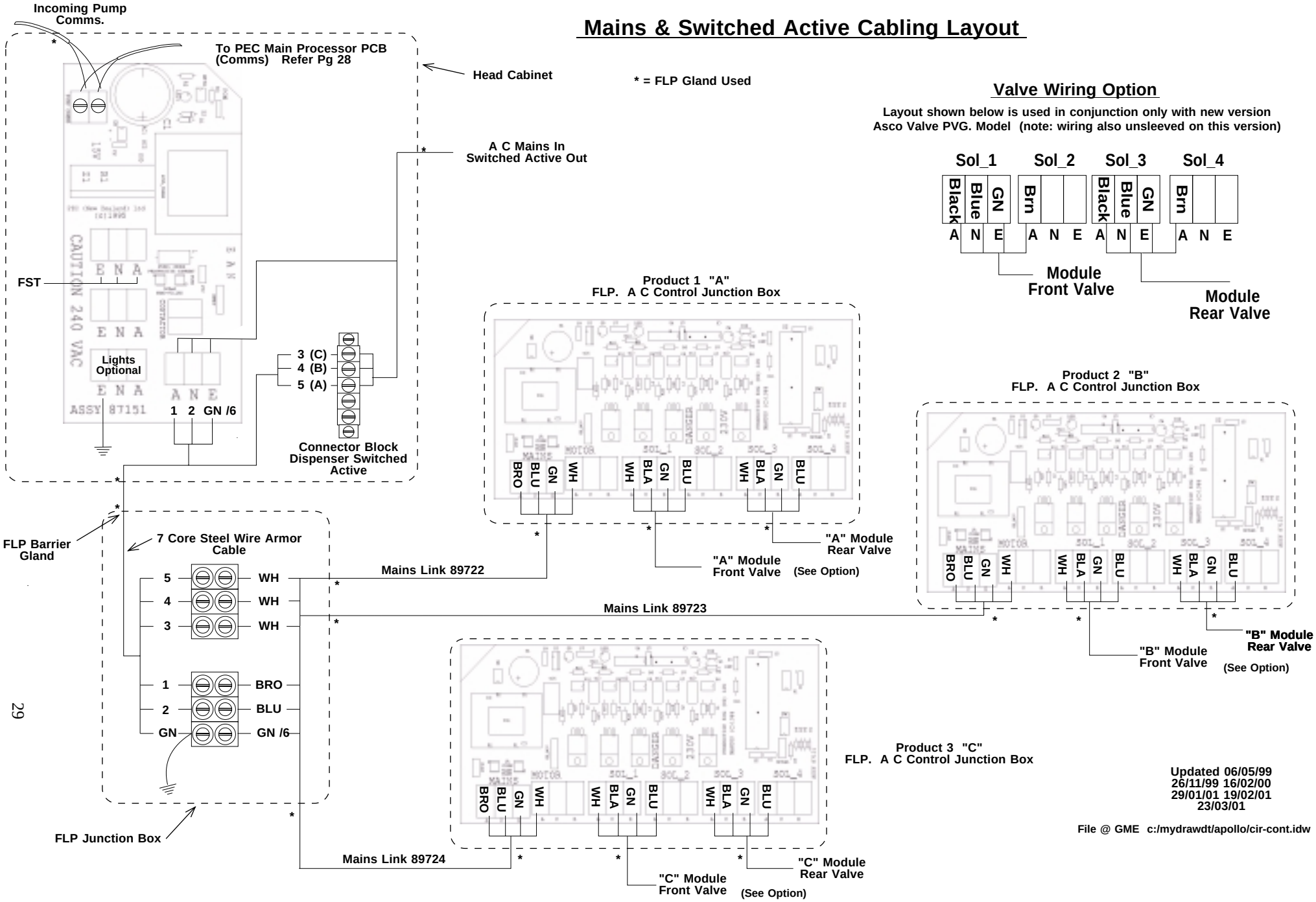
GME 08/02/00
Updated 09/03/01
File @ GME
c:/mydrawdt/apollo/lay-3000.idw
apollo 3000 nz Pg 2



Apollo 3000 Hydraulic & Intrinsic Connections Australia



Mains & Switched Active Cabling Layout



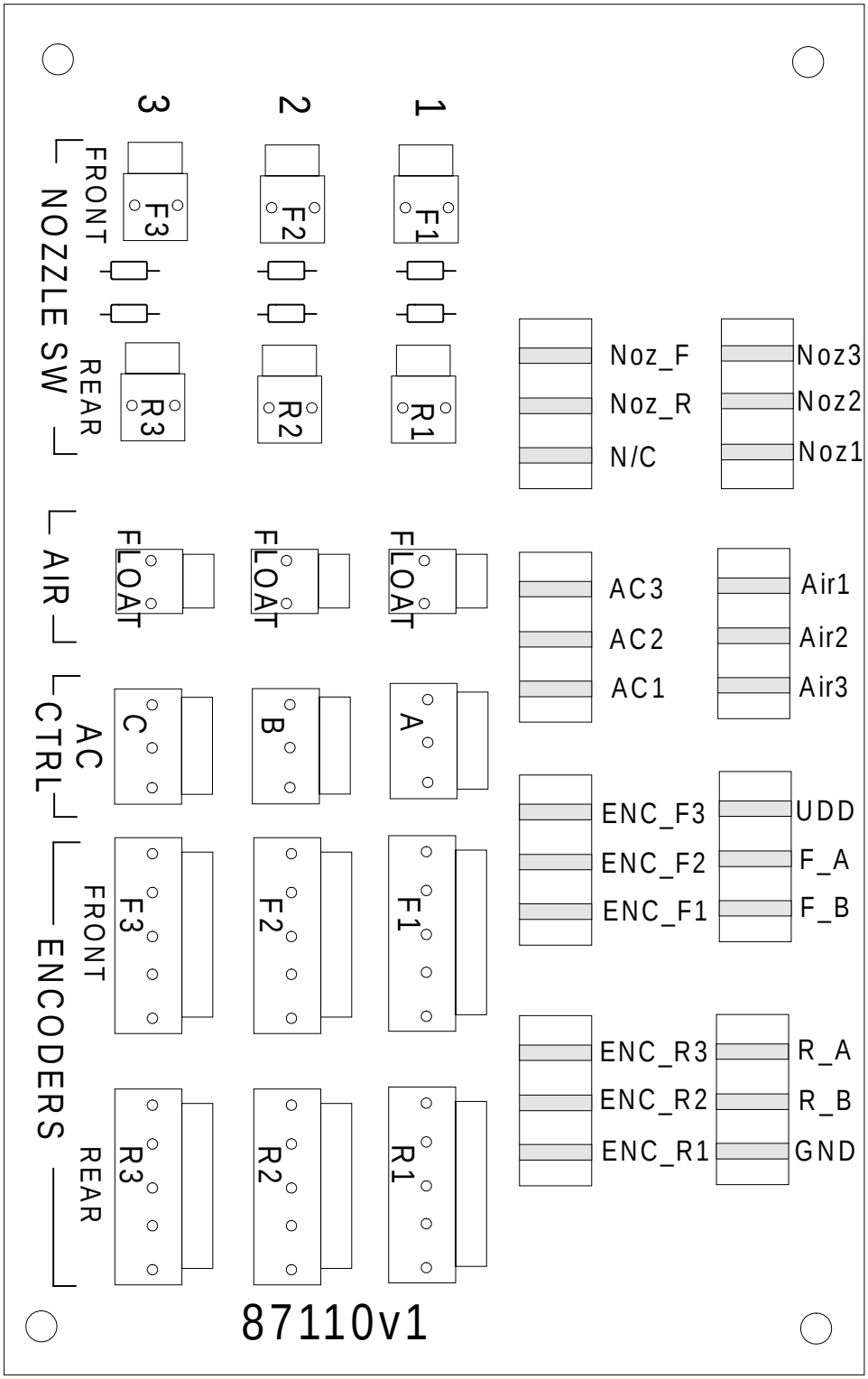
Valve Wiring Option

Layout shown below is used in conjunction only with new version Asco Valve PVG. Model (note: wiring also unsleeved on this version)

Updated 06/05/99
26/11/99 16/02/00
29/01/01 19/02/01
23/03/01

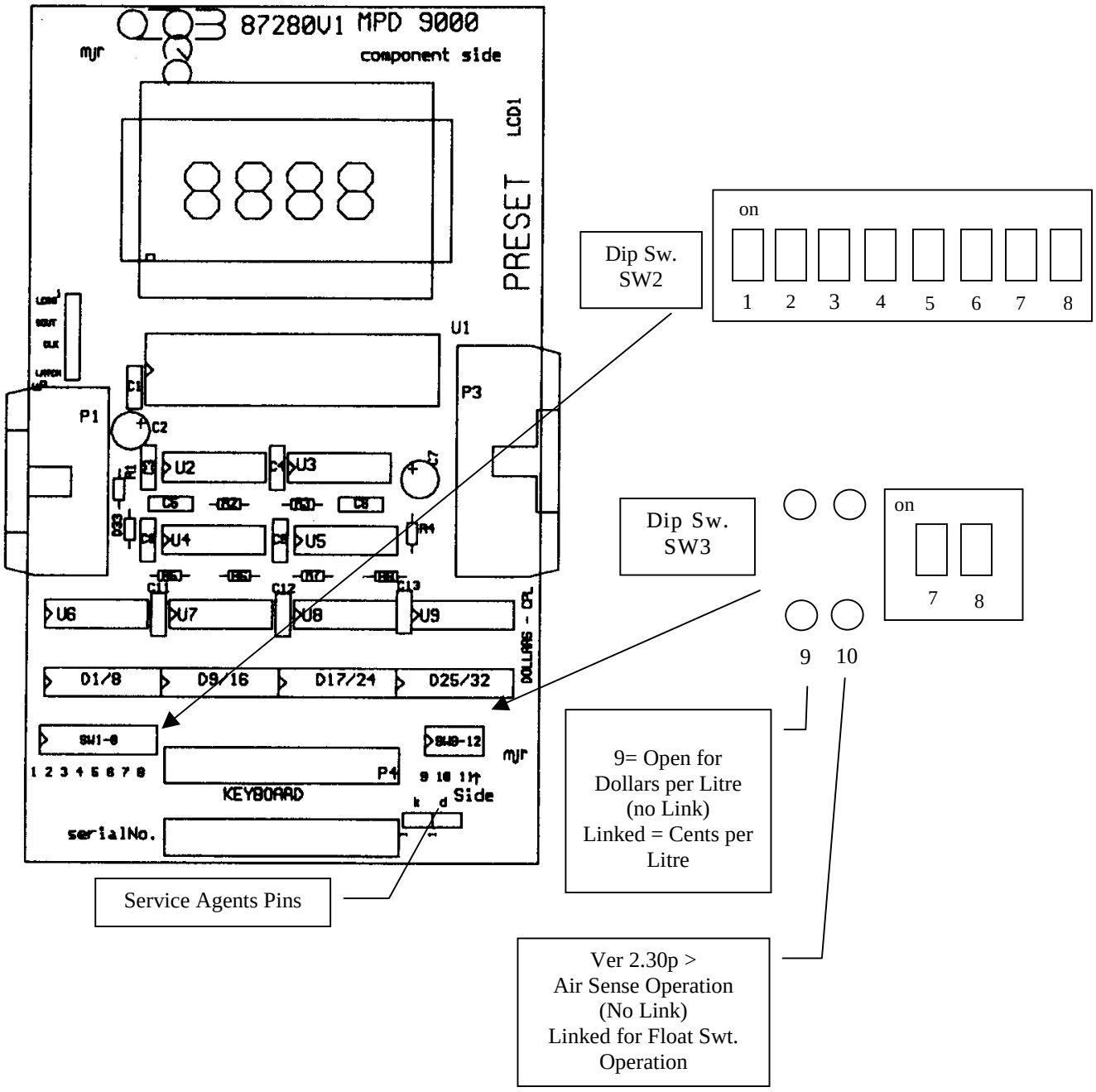
File @ GME c:/mydrawdt/apollo/cir-cont.idw

Control Logic Distribution PCB Assy 87110



Display Dip Switch Location
on
Front Preset Display PCB Assy

File: Display Dip Switch.doc



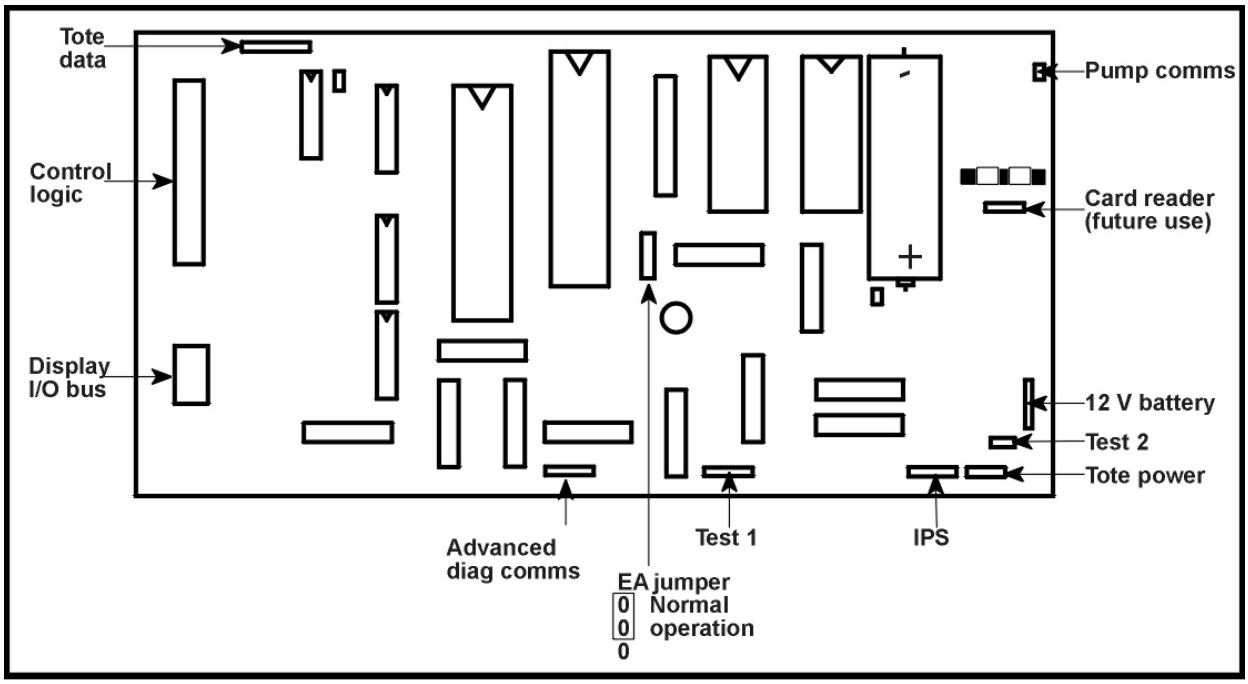
Main Processor Board

Information & Connections

Part Number 87101

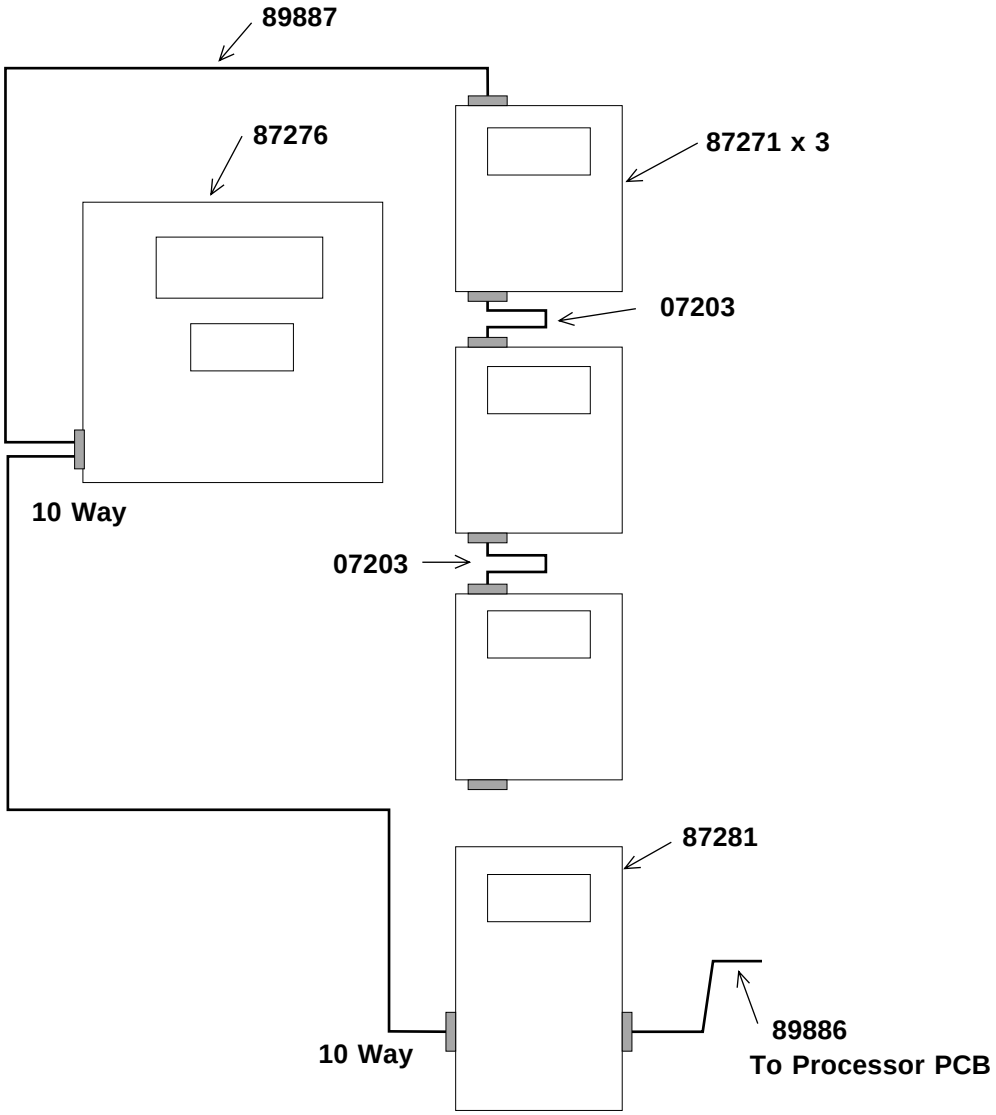
The main Processor Board controls all Pump operations, either alone or together with an input Processor Board The basic elements are :

80c31 or 80c32 Processor
64K external program Memory (Eprom)
32K Static Ram (Battery backed
2692 DUART
Encoder Interface
Power Control
Display I/O Interface
External / Internal program Selection
Diagnostic communications
AC Control
Pump Communications Interface
Auxiliary I/O



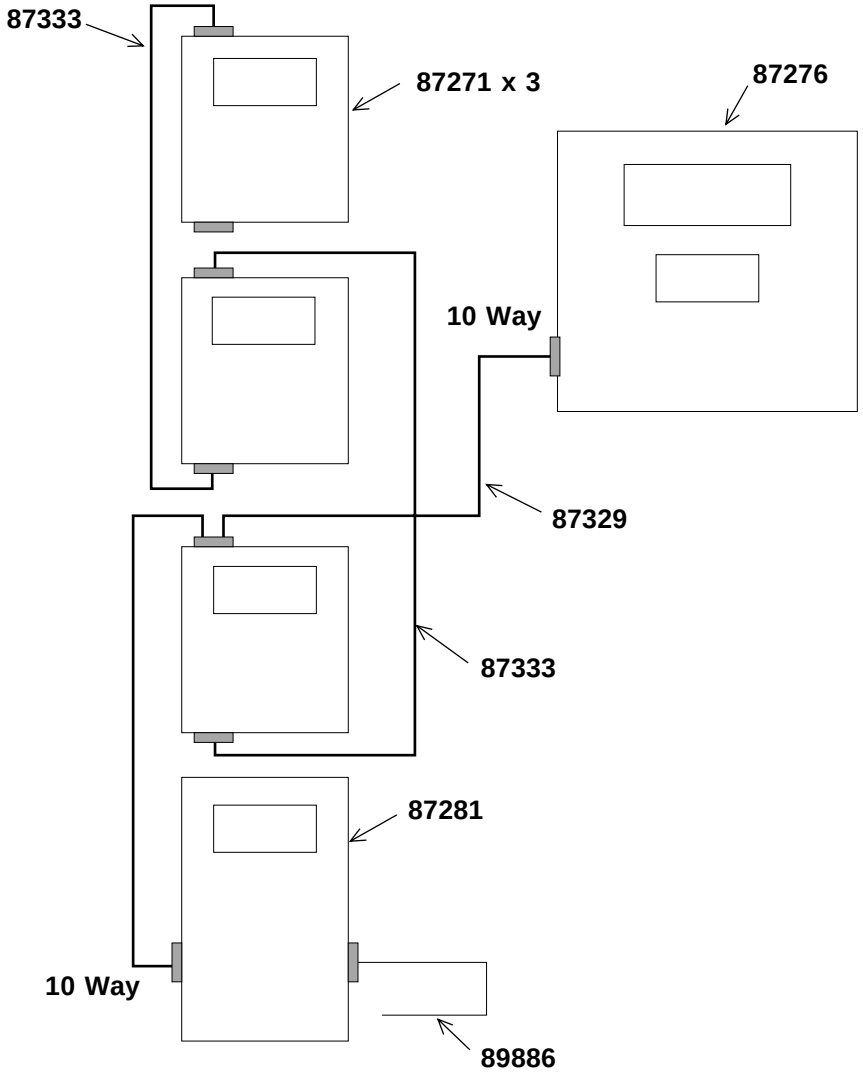
Main processor connections

Apollo 3000 Display Layout



Apollo 3000 Rear Assy

Inside View



Apollo 3000 Front Assy

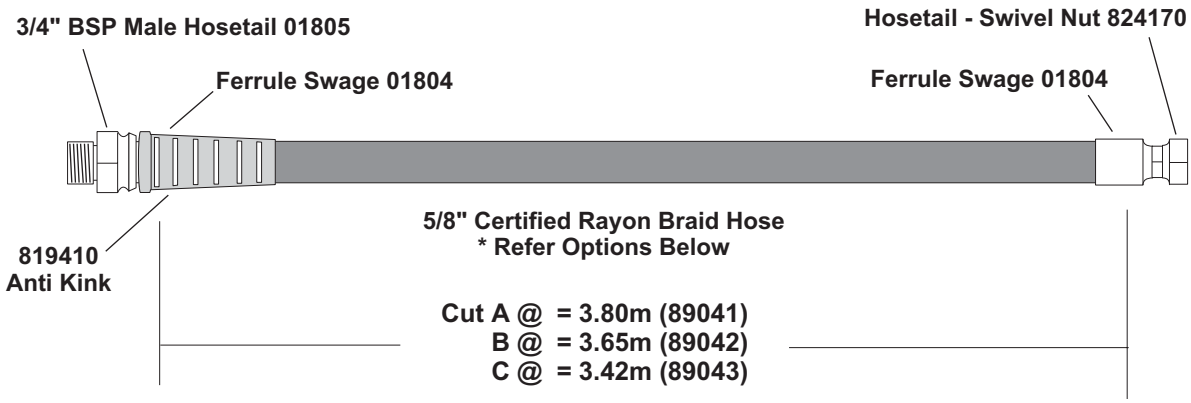
Inside View

29/01/01

File @ GME c:/mydrawdt/apollo/3000-dis.idw

Issued 29/01/01
Update 15/05/01,30/09/04
File @
GME h:\mydrawdt\corel\draw\hose-3k.cdr

5/8” Hose Assy fitted with @ Nozzle ES-Break



Note: Lengths to suit Elaflex ES-Break

5/8” External Hose Assy Specifications (Original fitted with Inline Dry-Break)

Note: Above Bry Break 1 per each external hose: 5/8 ID Hose @ 250 mm 7/8 SAE Sw/Nut (824170) - 3/4 BSPP Fittings

Hose Assy "A" : 5/8 ID Hose @ 3.4 m 3/4 BSPP (01805) - 3/4 BSP Female (01803) Fittings. Assy PEC Pt. # 89885

Hose Assy "B": 5/8 ID Hose @ 3.25 m 3/4 BSPP (01805) - 3/4 BSP Female (01803) Fittings. Assy PEC Pt. # 89884

Hose Assy "C": 5/8 ID Hose @ 3.025 m 3/4 BSPP (01805) - 3/4 BSP Female (01803) Fittings. Assy PEC Pt. # 89883

Internal Hose Assy Specifications 3000

Product Delivery Hose Assy - 3/4 ID Hose - 3/4 Female Swivel Nut 19243/12/12/AU & 3/4 F/Swivel 90 Elbow 1B243-12-12

Hose cut as below

"A" Module : Pt. # 89744 @ 1.67 m x 2

"B" Module : Pt. # 89743 @ 1.39 m x 2

"C" Module : Pt. # 89742 @ 0.9 m x 2

Internal Feed Supply Hose Assy Specifications 3000

Product Feed Hose Assy: - 3/4 ID Hose @ 1.05 m - 3/4 Female Sw/Nut both ends (3 per unit) (Feed Line to Modules)

PEC Pt. # 89748

Safety Flex Hose Assy Specifications 3000

Safety Flex Hose Assy: - 3/4 ID Hose @ 150 mm - 3/4 Female Sw/Nut both ends (6 per unit) (Feed Line to Modules)

PEC Pt. # 89846

Errors

This chapter contains the full list of error codes, in numerical order.
Errors are normally indicated by the error code (number) being displayed. The error is displayed as **ERRxx**, where **xx** is the code number. Errors are also written to an error log. You can check logged errors using Function 02 as detailed in chapter 4.

Startup System Errors

Error codes (01..09) are reserved for startup errors. This type of error is detected before the displays are initialised, and is reported using beep codes (pump beeps once for error 01, twice for error 02, etc.)
Some of these codes can also be dynamically checked during normal operation, in which case they will be reported in the normal way (i.e., they will display the **ERR xx** message and stop all deliveries).
These errors are fatal errors (processor halted) and require the pump to be reset. Power down and wait for 5 seconds before switching on the pump.

00 Start up log

This is not really an error it contains the number of startups.

01 Processor Error

This is a sequential IRAM address test which is performed at startup. It tests the processor's 4 register banks, and halts the processor if an error is found.
This check is performed in the **init** module.

02 Internal Ram error

Error 02 is a sequential IRAM address test which is performed at startup. It covers all IRAM excluding the 4 register banks, and halts the processor if an error is found.
This check is performed in the **init** module.

03 Eprom Error

Error 03 indicates a checksum error. This may occur either at startup or dynamically during operation. In either case the processor is halted if an error is found.

04 External RAM Error

This is a walking bit test of the XRAM. This test is performed both at startup (entire XRAM checked) and dynamically (one address per call from main loop). In either case the processor is halted if an error is found.

05 Non Volatile Setup

Error 05 is a check of the non volatile variables. These are the set up variables which must remain unchanged during a power failure. They remain constant unless changed by a diagnostic function. They are checked (against their backup variables) both at startup (all non-vol variables checked) and dynamically (one byte checked each call from main loop). If an error is found, the non volatile variables are all reset to their default values and (if not found during startup) the system restarts.

06 Delivery variables lost

This is a startup check of the current/last delivery related variables. These variables are overwritten with each new delivery, but in case of power loss, must be present between deliveries.
Unlike the non-vol variables, during deliveries, these are continually changing and are therefore not checked dynamically. At startup, these are checked (for corruption of XRAM during power loss) against their backup variables. If an error is found, the non volatile variables are all reset to their default values.

07 Keyboard Error

This is a startup check of local or remote (input processor) DIP switch setting validity, and for the presence of the relevant keyboards. This error is non-fatal error which serves as an audible warning to reconfigure DIP switches or replace keyboards and restart the system.

08..09 Not used

Errors 08 and 09 are reserved.

Fatal Errors (excluding fatal startup errors)

Errors 10 through to 29 all cause the processor to stop. The errors are displayed but beeps are not sounded. The pump must be reset after one of these errors.

10..15 Pump Control State Errors (Pump A..F)

This indicates an attempt to enter an undefined side control state on a particular pump number.

16 Stack Error

The stack is continuously checked. If a stack overflow occurs, error 16 will be displayed.
This check is performed in the **dynchk** module.

17 Display Error

If a Display error is indicated, a translation error occurred when writing to one of the 7 segment LCD displays.

18 Variable Range Error

Error 18 indicates a global software parameter (ie pump, grade or price etc) is not within its normal range. This can be a result of corruption of the internal data RAM, which may cause unpredictable results.
This check is not limited to any particular module, but is used by any procedure that requires range checking.

19 Dollar Maths Error

At the end of a delivery, the delivery dollar calculations are performed (ie price per litre multiplied by litres equals dollars). Error 19 indicates an error occurred in the calculations. A likely cause for this would be a price change (or corruption of the price variable) during a delivery.

20 Litres Maths Error

At the end of a delivery, the delivery quantity accumulation calculation is made (ie, total number of encoder counts for the delivery time multiplied by the encoder constant equals the litres displayed). Error 20 indicates an error occurred in the accumulation.
If this is not the case, it is probable that the encoder is going too fast, such that the incoming encoder counts (which are accumulated under interrupt control) are not being "consumed" quickly enough by the maths routines to prevent a rollover.

21 Clock Error

A Clock Error indicates that the current time variable (which is used to time tag events) is not incrementing.

22 Motor Control Error

Error 22 indicates that an attempt was made to turn a motor on or off when it was already in that state (according to the software).

23 Solenoid Control Error

This indicates that an attempt was made to open or close a solenoid valve when it was already in that state (according to the software). It will also occur (except in diagnostic mode) if an attempt is made to turn on a solenoid valve when the corresponding motor is not on.

24 Power Fail

This error indicates the system entered its main initialisation procedure (which should only happen on power up or as a result of certain diagnostic functions), but the power fail flag does not show power failed.
This may occur in the event of a total power loss (including the lithium battery) such that the XRAM was corrupted, or if the power fail procedures are not functioning correctly.

25 Input Processor to main failure

This error will occur if the system expects an Input Processor to be present (i.e., it was auto-detected at power up) but is no longer receiving any comms response from it.
This would be caused by either a fatal error in the input processor, or a physical loss of connection on the serial link between the two processor boards.

26 Main to Input Processor failure

This error will occur if the system expects an Input Processor to be present (i.e., it was auto-detected at power up) and is receiving comms response from it, but the Input Processor is not receiving data from the main processor.

This would be caused by either a fatal error in the input processor, or a physical loss of connection on the serial link between the two processor boards.

27 Remote Parameters Failure

Error 27 will be displayed if the pump is not within the diagnostics functions and the remote rx_param block that was sent from the input microprocessor is different to the set stored by the you.

28 Display pointers corrupted

A constant check is dynamically made, of the display information. This error indicates an error has occurred which could cause incorrect information to be displayed on the LCDs.

29 Not used

These error codes are reserved.

Single Pump Number Fatal Errors

Errors 30 through to 59 do not cause a complete system crash, as they relate to a single pump number only. They cause the related pump to stop delivery, and its displays to flash. This continues until the nozzle is replaced and any nozzle on that pump number is removed again. The **ERRxx** message is then displayed on that pump number and all further processing of the pump ceases.
Note that all other pump numbers can continue unaffected. To use the affected pump again, the pump unit must be reset (powered off for at least 5 seconds).

30 LPG Temperature Probe 1 Error

This is caused by either an open circuit, short circuit or out of range error being detected on probe 1 by the input processor. This error is fatal only to the pump numbers associated with the LPG grade.

31 LPG Temperature Probe 2 Error

Error 31 is caused by either an open circuit, short circuit or out of range error being detected on probe 2 by the input processor. This error is fatal only to the pump numbers associated with the LPG grade.

Note Errors 32 – 37 apply to units fitted with software version lower than va 2.30p only
Units fitted with Software va 2.30p & greater & Float Switches fitted, Fatal Error as FLUId Ref. Pg 41

32 Grade 1 Front hose Detected Fluid Present bottom of Hydraulic Sump Enclosure (Pump A1)

During a Grade 1 delivery, Float was activated for more than 1 minute.

33 Grade 1 Rear hose Detected Fluid Present bottom of Hydraulic Sump Enclosure (Pump B1)

During a Grade 1 delivery, Float was activated for more than 1 minute

34 Grade 2 Front hose Detected Fluid Present bottom of Hydraulic Sump Enclosure (Pump C2)

During a Grade 2 delivery, Float was activated for more than 1 minute.

35 Grade 2 Rear hose Detected Fluid Present bottom of Hydraulic Sump Enclosure (Pump D2)

During a Grade 2 delivery, Float was activated for more than 1 minute.

36 Grade 3 Front hose Detected Fluid Present bottom of Hydraulic Sump Enclosure (Pump E3)

During a Grade 3 delivery, Float was activated for more than 1 minute

37 Grade 3 Rear hose Detected Fluid Present bottom of Hydraulic Sump Enclosure (Pump F3)

During a Grade 3 delivery, Float was activated for more than 1 minute

38 Grade 1 Front encoder error (Pump A1)

Grade 1 front encoder inputs out of sequence for more than 1 count in 512 (0.19% minimum error rate). This could be due to the encoder missing a count, the rotation being backwards, etc.

39 Grade 1 Rear encoder error (Pump B1)

The Grade 1 rear encoder inputs were out of sequence.

40 Grade 2 Front encoder error (Pump C2)

Grade 2 front encoder inputs out of sequence for more than 1 count in 512 (0.19% minimum error rate). This could be due to the encoder missing a count, the rotation being backwards, etc.

41 Grade 2 Rear encoder error

(Pump D2)

The Grade 2 rear encoder inputs were out of sequence.

42 Grade 3 Front encoder error
(Pump E3)

The Grade 3 front encoder inputs were out of sequence.

43 Grade 3 Rear encoder error
(Pump F3)

The Grade 3 rear encoder inputs were out of sequence.

44 Grade 1 Front encoder too fast
(Pump A1)

This error indicates an overflow of either encoder counts or encoder errors was detected for the Grade 1 front encoder.

45 Grade 1 Rear encoder too fast
(Pump B1)

There was an overflow of either encoder counts or encoder errors detected for the Grade 1 rear encoder.

46 Grade 2 Front encoder too fast
(Pump C2)

There was an overflow of either encoder counts or encoder errors detected for the Grade 2 front encoder.

47 Grade 2 Rear encoder too fast
(Pump D2)

There was an overflow of either encoder counts or encoder errors detected for the Grade 2 rear encoder.

48 Grade 3 Front encoder too fast
(Pump E3)

There was an overflow of either encoder counts or encoder errors detected for the Grade 3 front encoder.

49 Grade 3 Rear encoder too fast
(Pump F3)

There was an overflow of either encoder counts or encoder errors detected for the Grade 3 rear encoder.

50 Grade 1 Front encoder run on
(Pump A1)

Flow did not stop (the encoder was still rotating) at the end of a Grade 1 front hose delivery (i.e. after the "get dribble" state has timed out).
Possible fault could be leaking valves.

51 Grade 1 Rear encoder run on
(Pump B1)

Flow did not stop (the encoder was still rotating) at the end of a Grade 1 rear hose delivery.

52 Grade 2 Front encoder run on
(Pump C2)

Flow did not stop (the encoder was still rotating) at the end of a Grade 2 front hose delivery.

53 Grade 2 Rear encoder run on
(Pump D2)

Flow did not stop (the encoder was still rotating) at the end of a Grade 2 rear hose delivery.

54 Grade 3 Front encoder run on
(Pump E3)

Flow did not stop (the encoder was still rotating) at the end of a Grade 3 front hose delivery.

55 Grade 3 Rear encoder run on
(Pump F3)

Flow did not stop (the encoder was still rotating) at the end of a Grade 3 rear hose delivery.

56 LPG Overspeed

Flow rate detected during delivery exceeded overspeed trip setting. Note that this error on one LPG pump will display on both, regardless of whether the other is delivering or not.

57 Loss of encoder constant or LPG specific gravity setting

One of these values is corrupt, and has not yet been set back to a valid value (using the appropriate diagnostic function).

58 LPG Sensor failure

The LPG sensor has stopped providing or is providing incorrect information, to the input processor.

59 LPG system vapour present

During an LPG delivery vapour was sensed in the system for more than one minute.

Non Fatal System Errors

Errors 60 through to 89 do not cause any loss of system functionality. They are logged only (for service use).

Comms Channel A errors

60 Channel A Receiver Parity Error

This indicates a parity error was detected in one or more of the received message bytes.

61 Channel A Receiver Framing Error

Character was received for which no stop bit was detected.

62 Channel A Receiver Break Error

A steady low (space) signal has appeared at a receiver, indicating a break condition at the transmitting end, causing this error code. The formal definition is that an all zero character with no stop bit has been received.

63 Channel A Receiver Overrun Error

This indicates an overflow of the 3 byte FIFO buffer for a receiving channel. This means that the processor is not reading the incoming data fast enough to prevent overwriting this stack.

64 Channel A Receiver Checksum Error

This error indicates the message received had a checksum error.

65 Channel A Receiver Data Error

Error 65 indicates the polling message received from the Console is an invalid type, i.e., a new feature has been added to a console which is not yet supported, or the comms line has been corrupted (in which case a checksum error will probably also occur).

66 Channel A Receiver Overflow Error

The message received was too long for the buffer, causing this error. This may happen if no EOM character or sequence is detected.

67 Channel A Transmitter Overflow Error

The transmitter has tried to send a message which is too long. This means that the transmit buffer's last position was reached, but an EOM character or sequence was not present.

68 Channel A Receive Timeout Error

This indicates that the receiver is expecting a character from the Console, but has not received one for more than 1 second.

69 Channel A Transmit Timeout Error

This timeout error indicates that the transmitter is attempting to send a message to the Console, but there has been a delay of more than 1 second since the last character was transmitted.

Comms Channel B errors

70 Channel B Receiver Parity Error

Error 70 indicates a parity error was detected in one or more of the received message bytes.

71 Channel B Receiver Framing Error

A character was received for which no stop bit was detected.

72 Channel B Receiver Break Error

A steady low (space) signal has appeared at a receiver, indicating a break condition at the transmitting end. The formal definition is that an all zero character with no stop bit has been received.

73 Channel B Receiver Overrun Error

This indicates an overflow of the 3 byte FIFO buffer for a receiving channel. This means that the processor is not reading the incoming data fast enough to prevent overwriting this stack.

74 Channel B Receiver Checksum Error

The message received had a checksum error.

75 Channel B Receiver Data Error

This indicates that the polling message received from the Input Processor is an invalid type (or that the comms line has been corrupted, in which case a checksum error will probably also occur).

76 Channel B Receiver Overflow Error

The message received was too long for the buffer. This may happen if no EOM character or sequence is detected.

77 Channel B Transmitter Overflow Error

The transmitter has tried to send a message which is too long. This means that the transmit buffer's last position was reached, but an EOM character or sequence was not present.

78 Channel B Receive Timeout Error

This indicates that the receiver is expecting a character from the Input Processor, but has not received one for more than 1 second.

79 Channel B Transmit Timeout Error

This indicates that the transmitter is attempting to send a message to the Input Processor, but there has been a delay of greater than 1 second since the last character was transmitted.

General log only system errors

Errors 80 through 89 are general system errors. They are logged only; they do not cause the system to crash.

80 Grade 1 Front Preset Overrun

This indicates that the delivery on the Grade 1 Front hose did not stop at the preset or allocation limit. When this happens, the cutover point at which slow flow is entered automatically adjusts to compensate.
Note the difference from the encoder run-on error: encoder run-on is a continued flow after the end of delivery state has been reached, whereas preset overrun indicates that the end of delivery state was not reached in time to prevent excess fuel being delivered.

81 Grade 1 Rear Preset Overrun

This indicates that the delivery on the Grade 1 Rear hose did not stop at the preset or allocation limit.

82 Grade 2 Front Preset Overrun

This overrun error indicates that the delivery on the Grade 2 Front hose did not stop at the preset or allocation limit.

83 Grade 2 Rear Preset Overrun

Error 83 indicates that the delivery on the Grade 2 Rear hose did not stop at the preset or allocation limit.

84 Grade 3 Front Preset Overrun

This indicates that the delivery on the Grade 3 Front hose did not stop at the preset or allocation limit.

85 Grade 3 Rear Preset Overrun

This indicates that the delivery on the Grade 3 Rear hose did not stop at the preset or allocation limit.

86 Lost Reply (Console)

A Lost Reply error indicates that the pump comms are trying to reply to a poll from the Console, but did not succeed in sending a reply within 4 clock ticks (0.08s) of receiving the poll message.
This means that the main loop tasks (other than comms) are taking up too much processor time, so that the comms do not get serviced often enough.

87..99 Not used

These error codes are reserved.

PEC Fuel Pump Fluid/Float Switch operation.
in
Apollo Dispensers

Software required:

LPG Apollo requires: Input Processor Assy = VI 1.21S (or >) This also allows for Single Temperature Probe operation. Dip Switch # 2 @ SW3 set "ON"

Main Processor Assy = VA 2.30P (or >)

Apollo Std Petrol/Diesel Dispensers requires: Main Processor Assy = VA 2.30P (or >)

Hardware required:

LPG requires = Float Switch Assy. with Foam Extension added, & mounted as low as possible to base/floor of Underground Sump Enclosure. Dip Switch #2 @ SW3 set "ON"

Apollo Std Petrol/Diesel Dispensers requires = Float Switch Assy mounted as low as possible to base/floor of Underground Sump Enclosure (note: Link must be fitted @ position 10 on Display for Fluid operation)

Operation Description: (when Float is activated)

Dispenser with one side only operational (delivering)

Unused Side – Display shows "**FLUId"**

Side in uses – Dispenser shuts down immediately (including Valves & Motor) Display sit stationary showing sale value.

Dispenser will begin to Beep after a period of 1 Min. if Nozzle in not returned then Beep

Once Nozzle is returned, Displays will then Flash until Nozzle is again removed, at this point Displays will then show word "**FLUId"**

Refer to Resetting below.

Dispenser with both sides operational (delivering) (when Float is activated)

Both sides stop delivering immediately with Displays stationary displaying delivery values @ point when delivery stopped.

Again Dispenser will start to Beep if Nozzles not returned within a Minute period.

Once Nozzle is returned, Displays with Flash until Nozzle is removed, Displays with then show "**FLUId"**

In both above cases Sale value remains on Console until sale is actioned/completed. Dispenser will also show on Console as being Off Line

Dispenser Non operational (no delivery) (when Float is activated)

"**FLUId** will be displayed on both sides of Dispenser

Console Displays Dispenser as Off Line.

Refer to Resetting below.

Testing Float Switch Operation:

Testing can be conducted by manually lifting Float with wire Hook or similar. Display should show **FLUId** with Dispenser going into Fatal error (Shut Down) Dispenser will require a Power shut down for a period of **One Minute** to **Reset** Normal operation can then commence.

Resetting Dispenser Procedure

If **FLUId** is displayed @ Dispenser, Power to that unit should be immediately removed, with Isolating Switch locked out to avoid being turned back on accidentally. **Call Service Provider**

Sump Enclosure should then be checked, removing Fluid present & source of leak repaired

Reconnect Power for Operation, should not need to reprogram if back up Battery still connected.

If pump Beeps: Hang up Nozzle.

If Displays Flash: Lift Nozzle then return to display Error

If Pump Off Line: Check for Error @ Pump (see above)

file @ gme c:/docum/pec/apollo2/float-desc.doc
23/02/01
Update: 01/03/01 02/04/02

Apollo 2000

Set-up, Installation & Parts Manual

Safety Operation

In case of damage to your Dispenser or Pump, which creates a safety hazard the following procedures **Must** be followed.

A Turn Off Pump at Console then….

Isolate power to the Dispenser or Pump.
Using the remote control switch located on the main electrical supply board.

Lock switch if lock mechanism provided, or take measures to ensure isolator will not be turned on prior to the safety hazard being rectified

Isolate power to the Submersible Turbine Pump
by the remote control switch located on the main electrical supply board.

Lock switch if lock mechanism provided, or take measures to ensure isolator will not be turned on prior to the safety hazard being rectified

Note: The isolation of the Submersible Turbine Pump could affect other dispenser on the forecourt.

Call your site manager or company representative immediately for further information.

B Do Not Apply power to the Dispenser without a full service inspection.

If there is a fire or injury, call : **Emergency Services.**

Caution

Should the word "**FLUId"** appear in Display immediately implement part A & B of this section Refer page 06 of this Manual Apollo 3000 Set Up Procedure Std. Fuel paragraph 06 for details

Caution

This equipment contains components that can be damaged by Electrostatic Discharge.
Should you ever need to service this equipment, you must follow full anti-static precautions.
Prior to servicing, earth all equipment and wear an anti-static strap.
Component must be transported in anti-static material.

Apollo Manual

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Page 34	Hose Assy Specifications (Also refer pg. 9-11)
Page 35	Display Cable Layout

Note

This is an Interim Manual intended to cover Apollo trial sites, and will be reviewed once trials are complete and design is finalised.

Note also that the Apollo units are base on PEC standards 1000 & 8000 Dispensers and therefore this manual should be used in conjunction with PEC Modular Pumps Installation & Service Manual 87386

First Issued 06/08/98 updated 08/09/98
15/09/98 06/05/99
10/02/00
File @ gme c:/pec/apollo/intal1.doc

BP Special Version Dispenser
Supply & Installation Procedure

Updated 24/06/98 / 21/07/98 / 30/04/99 05/05/99
File @ GME c:/pec/apollo/instal1.doc

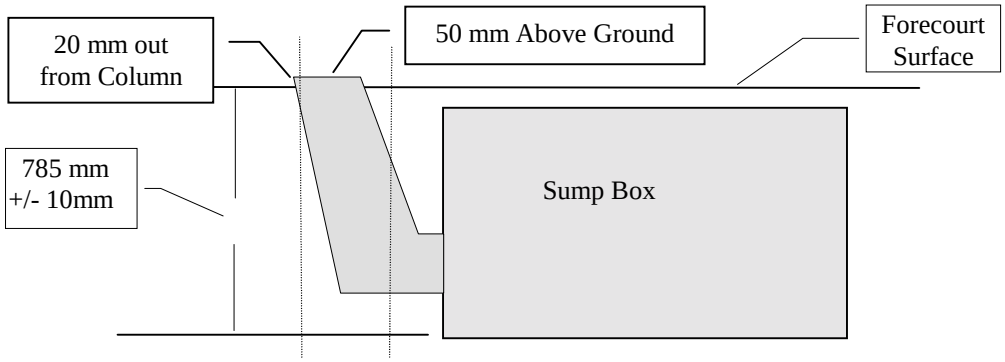
PEC will supply required Components to site.

Components include;

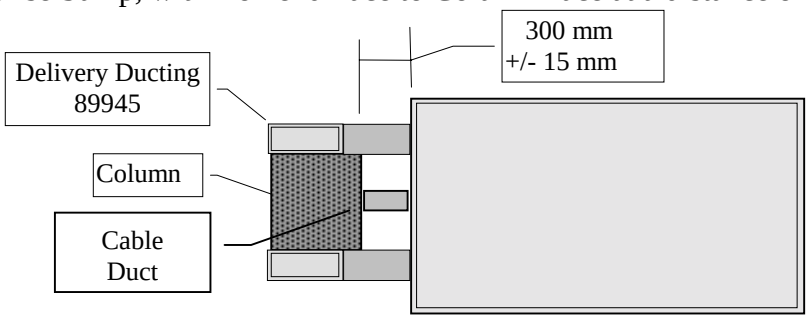
Sump Box with Delivery Ducts & Internal Delivery Pipe Assys fitted
Sump Box Lid
Bulkhead Seals
Sump Box Lid with Handles
Sump Cover & Sub-frame with divider skirt fitted
Main Wiring Looms & Junction Box (fitted into Sump Box)
Cable Feed Flexible Conducts (40 & 50 mm Dia) with Fittings

Stage 1 - Installation Procedure

- Install Sump Box into position below ground level as shown



- Centralise Sump, with Box end Face to Column Face at a distance of 300mm



- Secure Cable feed Flexible Conduit to Sump Box (if not already fitted) (Later version one piece fixed Cable Duct)

- Install Internal Delivery Pipe Assys into ducting (if not already fitted)

- Plug or cover Delivery Ducts to stop foreign matter entering

Stage 1 - Installation Procedure continued

- Install Main Feed Lines Into Sump (refer Pg. 16 NZ & Pg. 17 Aus.) for correct positioning etc. (Refer page 33 for Feed Line Details)
    - T connector terminated with ¾ Ball Valve & ¾ -3/4 BSP Elbow B22 22 12 12
    - Ensure Ball Valves Face toward BOTTOM of Sump, lever side towards Column
    - Check & tighten all Seals
    - Check for Leaks

- Recheck Sump position in relation to Column & Forecourt Surface as per Pg. 2

- Secure Delivery Ducts & Main Feed Lines into proposed Position

- Temporarily pack internal side walls of Sump using timber or similar to eliminate walls collapsing inwards during back filling

- Backfill with Sand to cover Feed Lines & secure Sump position

- Secure Mains & Data Cable Flex Conduits to Column to avoid movement

- Position & Secure Sump Lid Frame (Centralise around Sump Box) check with Forecourt Level

- Recheck Seals & Sump Position

- Back fill with sand to within 150mm of Forecourt Surface Level 30 - 50 mm up Skirting walls

- Concrete Forecourt Surface

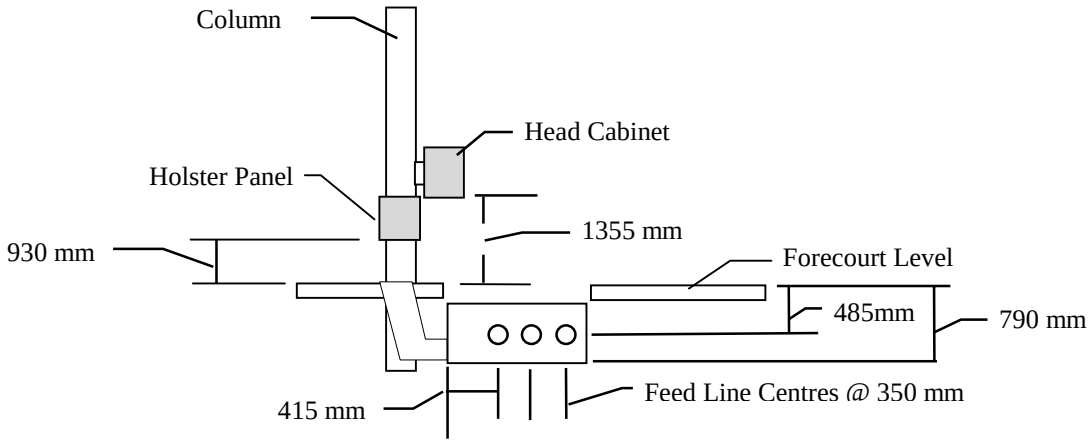
Stage 2 - <u>Installation Procedure Modules & Delivery Pipe Assys</u>

Components Supplied

Front & Rear Vertical Pipe Assys
Head Cabinet Assy
Hydraulic Module Assy (Addresses pre-set) & with Data Cables fitted
Flexible Safety Hose Assys x 6
Internal Supply Line Hose Assys x 2 Sets
Internal Delivery Hose Assys x 3

- Temporally fix Vertical Pipe & Holster Assy to Column in approx. position.

Front Assy 89790 with top angle section pointing out to left from front view & Rear Assy 89791 pointing out to right as viewed from rear. (Note Fig. below viewed as front)
930 mm underside of Nozzle Holster Panel to Forecourt level (see Fig below)
(Use Rope, Ratchet Tie or Bungy Cord).



- Fit Safety Flex Hose Assys to Delivery Pipe Assys (in Conduit) & Vertical Pipe 89790 & 89791
- Centralise & position Vertical Pipe Assys on Column
- Permanently attach Vertical Delivery Pipe Assys to Column with Bandit Strapping (See Fig for position) Options Drill & Screw Brackets to Column or use threaded draw rods (not supplied)
- Mount Logic Box to bracket on Vertical Pipe Assy under Head Cabinet
- Position & attach Head Cabinet to Column (hold temporarily with Ratchet Tie or similar) Fix permanently with Bandit Strapping. Option: Drill & Screw to Column
- (Bottom of Head Cabinet to be 1355mm from Forecourt Surface refer Fig above)
- Assemble External Hoses to Internal Delivery Pipe Assys in Ducting (Refer Pg.11)

(Ensure Product Position is Correct Refer Pg. 16 or 17) **Hydraulic & Intrinsic Connections**) or to Special Version eg. *Sump on opersite side of Column.*

- Attach Internal Feed Hose Assys x 3to Fixed Feed Lines in Sump
- (Ensure Product Position Is Correct)

Stage 2 - <u>Installation Procedure Modules & Delivery Pipe Assys Continues</u>

(Start with Module A closest to Column) (Refer Pg. 16 or 17)

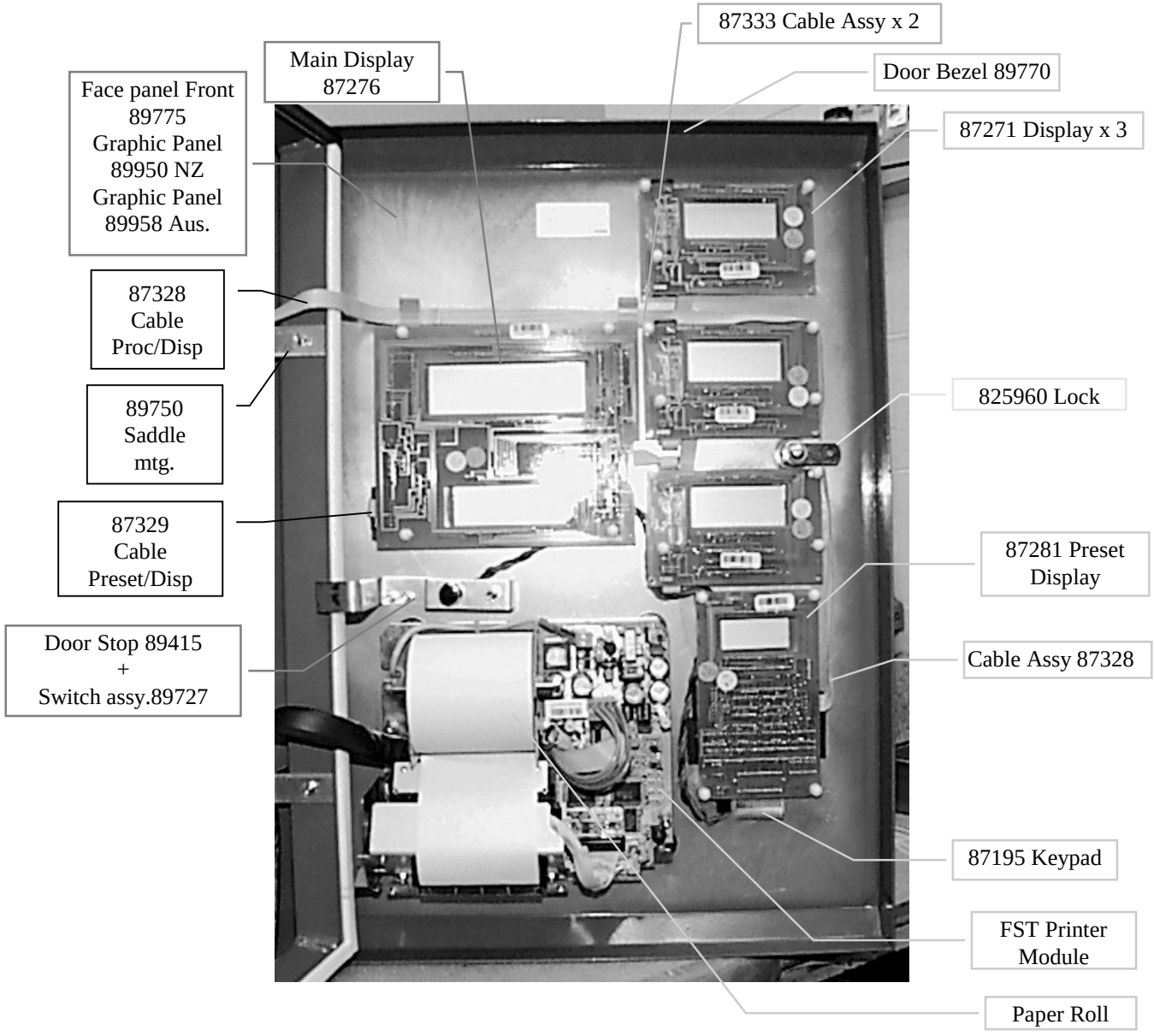
- Install Module Assy. fit Hinge Pin lift module & Position Hold Up Brace (Refer pg. 9)
- Attach Feed Line & Delivery Lines to Meter Module

  (Ensure Correct Feed Path - See Drawing Provided Pg. 16 or 17)
- Repeat previous procedure for the B Module then the C Module
- Connect Mains & Switched Phase Cables into AC Control Boxes (see Drawing Pg. 31) (Inspection required)
- Using Draw Cord Pull Encoder, Float Switch & AC Signal Cables through Cable Duct roll up & secure surplus cable
- Plug Cables into Logic PCB (see Drawing Pg. 32) Cables are Marked
- Fit Steel Wire Armoured Cable Mains Feed Line to Head Cabinet (Gland FLP.) connect as per Drawing Pg. 31 (inspection required) (Gland not Supplied)
- Insert Data Cable into Head Cabinet via Gland
- Insert Pump & LAN Comm's Cable into Head Cabinet & Connect

Pump Comms Refer Pg. 29 & 31 LAN Comms. Direct to FST unit (Plug Supplied)

- Install Earth Bonding Cable between Column & Head Cabinet
- Attach Nozzle Holster Switch Cables to Logic Box (see Drawing Pg. 32) + pg.16 & 17
- Check all Hydraulic & Electrical connections (Electricals to be Certified)
- Program Dispenser as per pages 13-18- (Also refer PEC Modular Pumps Manual 87372
- Test run checking for leaks etc.
- Check Cover is replaced over Power Supply PCB.

Apollo Door Assy (Front) 89801 First issue 28.07.98



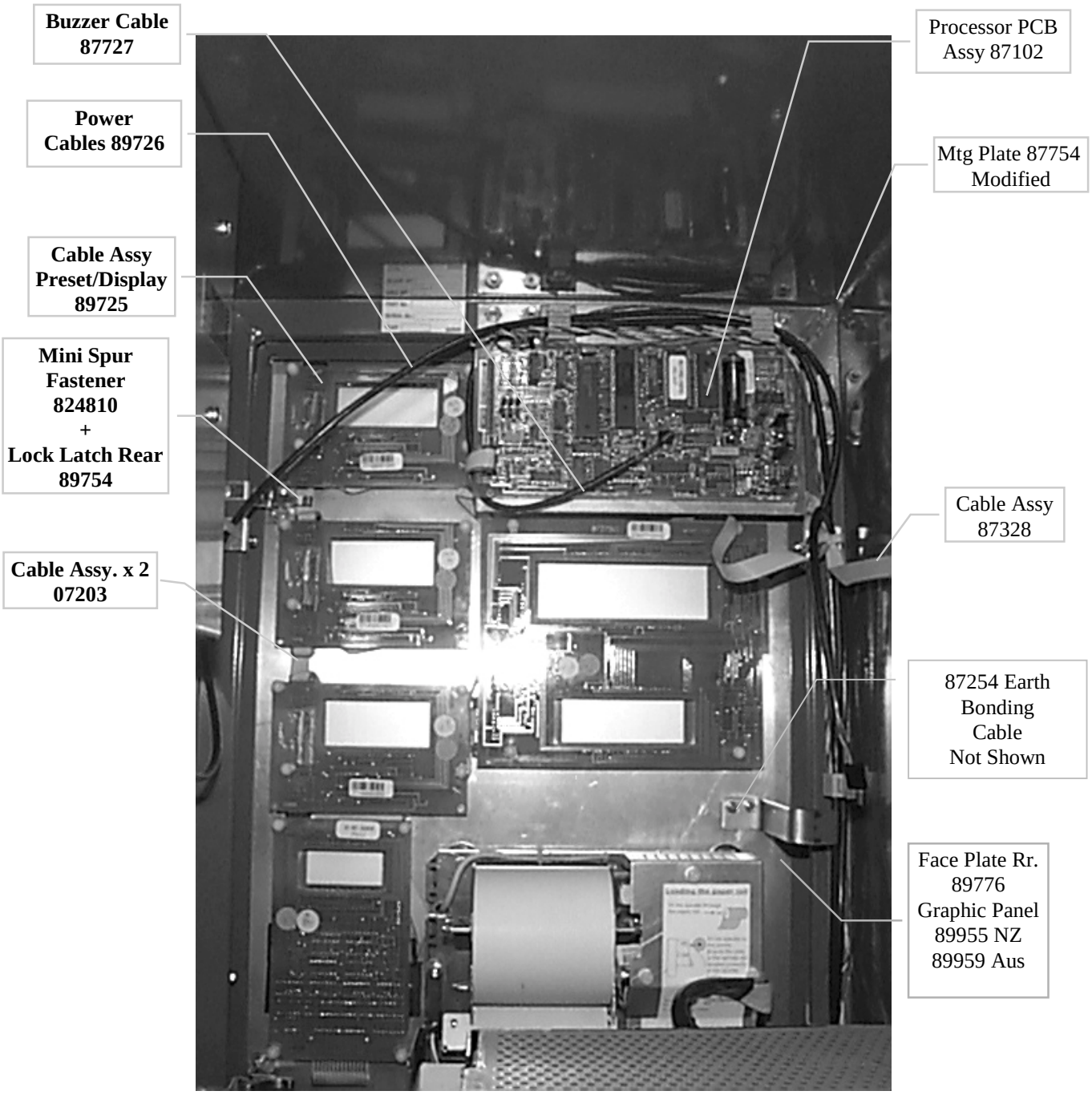
Refer Page 15 for Cabling Layout

Cable 87328 comes from Master Processor PCB to Right hand side (as viewed) of Preset Display 87281

Cable 87329 goes from left hand side of Main Display PCB 87276 (as viewed) to left hand side of Preset Display 87281 & then to top of the bottom Price Display 87271

Cable 87333 goes from bottom of Price Display 87271 to top of Price Display above it (repeats).

Apollo Door /Head Assy 89802 (Rear View) First issue 29/07/98

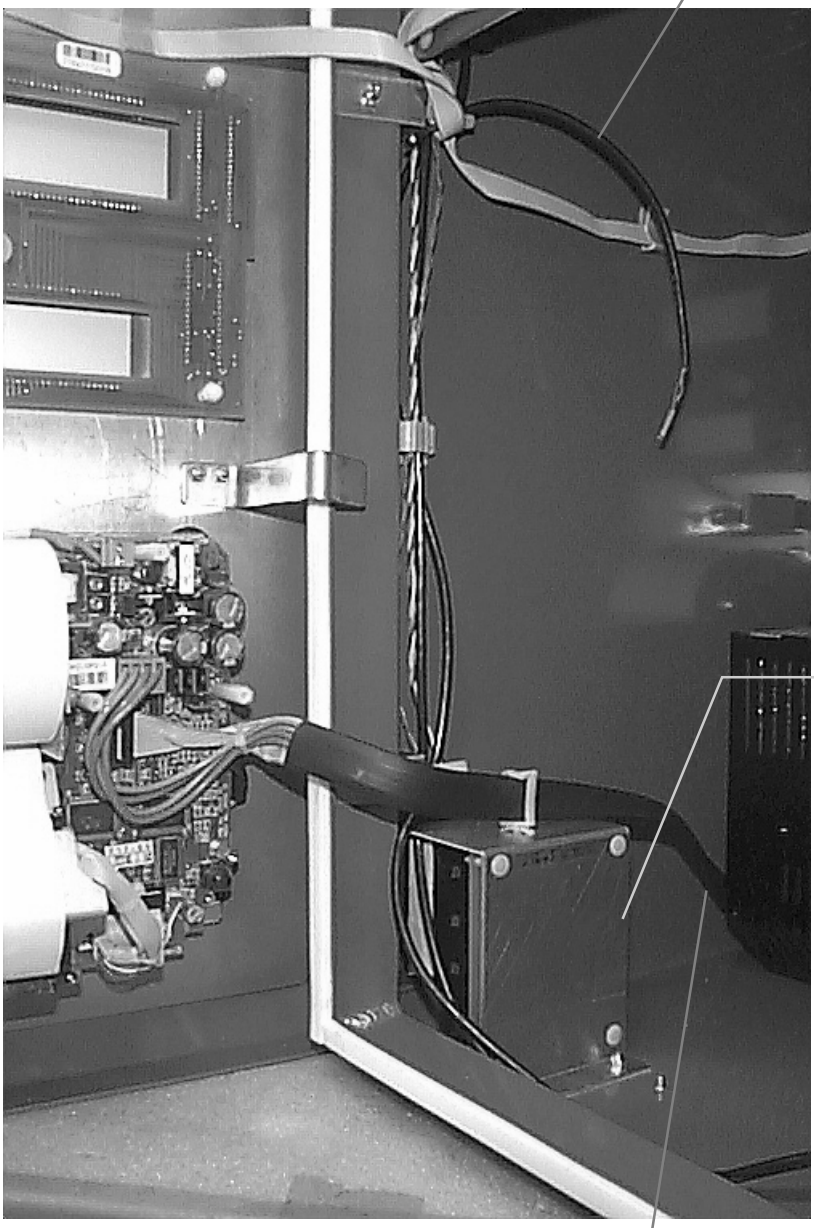


Display & Preset PCB's as per Front Door Assy Pg 6

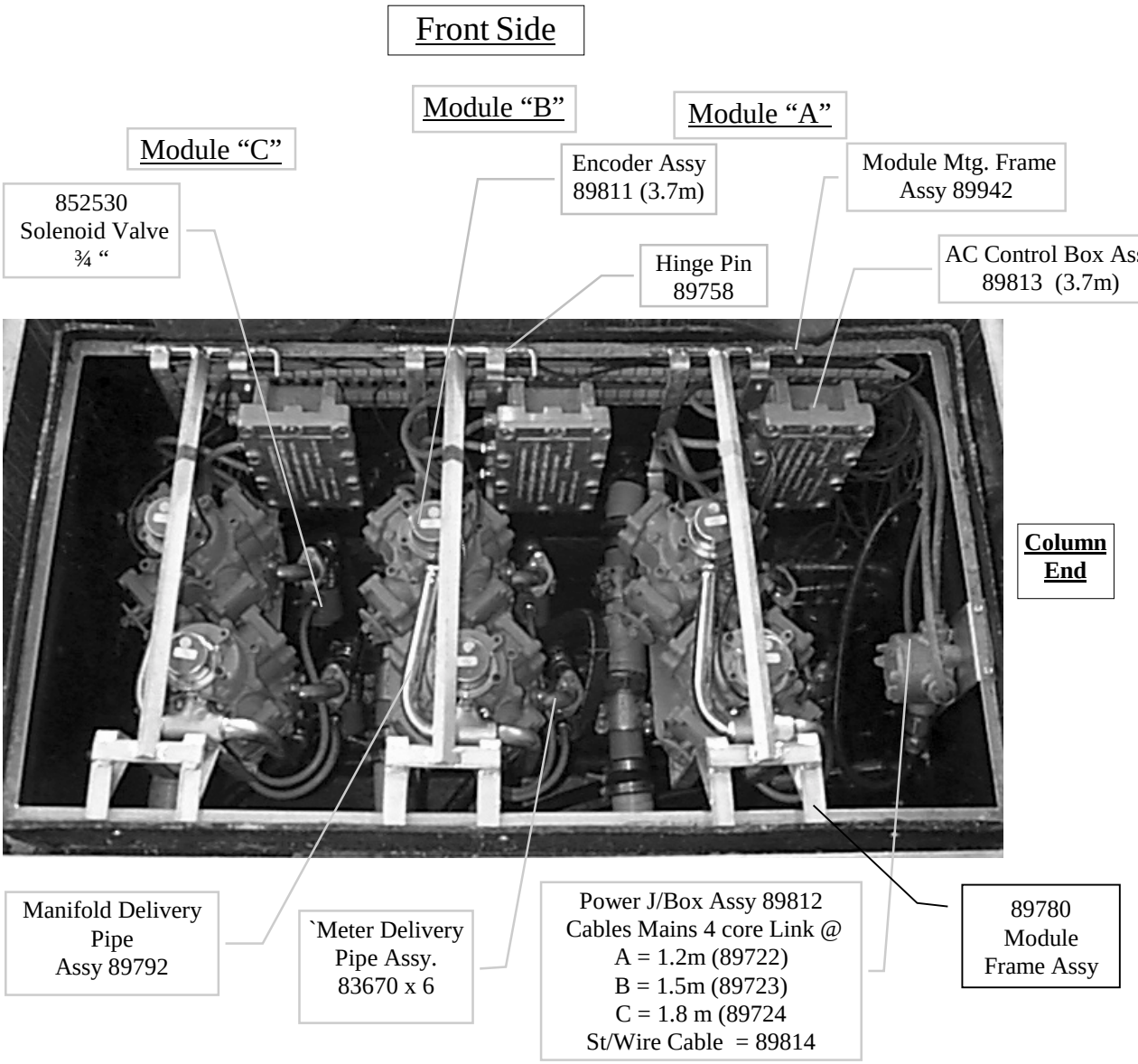
Cable 87328 comes from Processor PCB 87102 & connects to right side of Preset PCB as viewed.

Rear Display Cable 700mm centre connector comes form left hand side of Main Display 87276 to top connector of top Price Display 87271 & then to left hand connector of Preset Display 87281 as viewed.Cables 87333 goes from top connector of bottom Price Display 87271 to bottom connector of Price Display above it. (repeat)

Apollo Head Assy Internal First issued 29.07.98



Apollo Sump & Module Assy



Produce Feed Hose Assy - ¾ in Hose - ¾ Female/Female Sw/nut - 1.050 m ¾ (Feed Line to Module) x 3

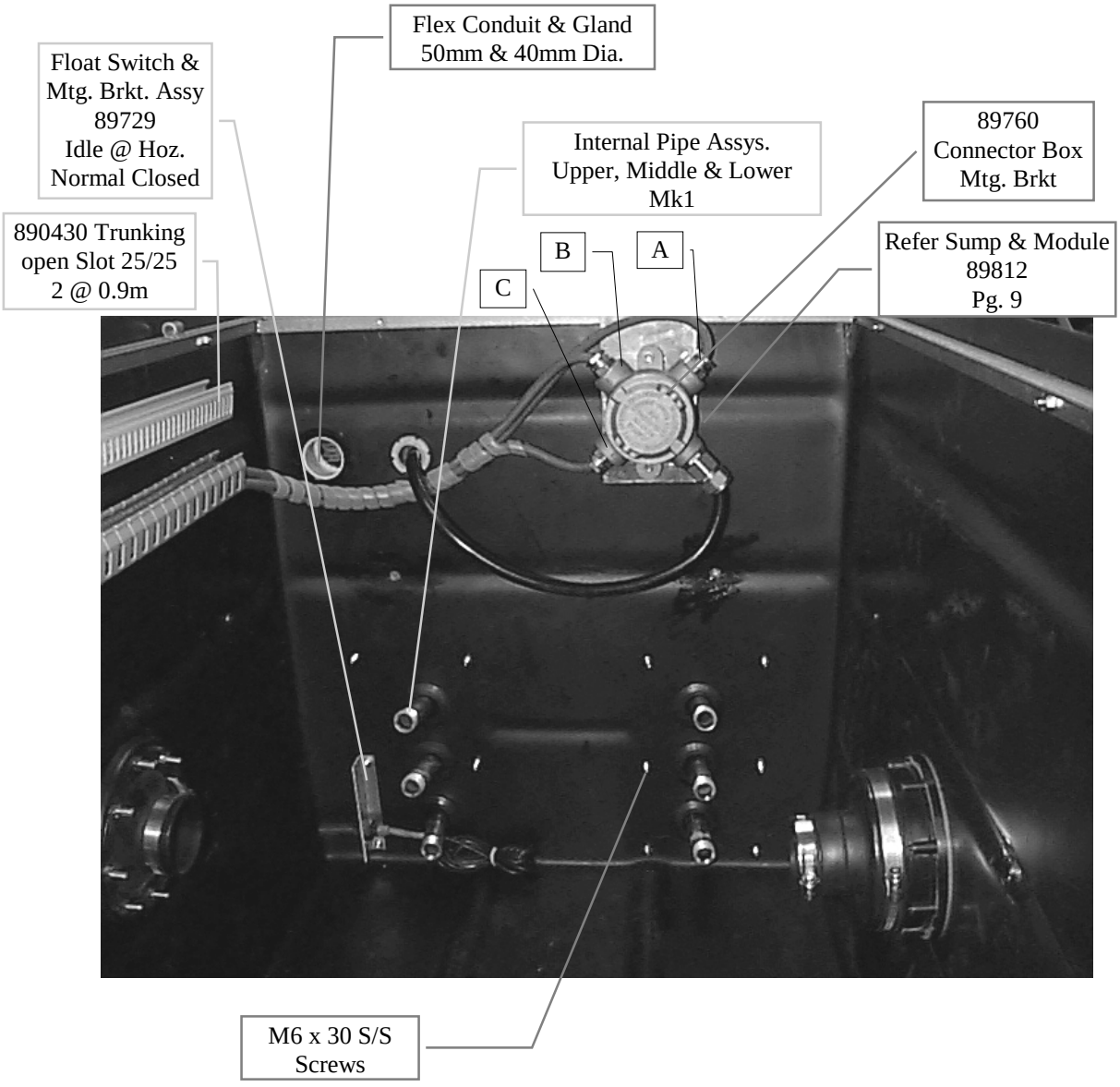
Product Delivery Hose Assy -¾ in Hose- ¾ Female/Female Sw/Nut as below

"A" Module Hose = 0.9 m x 1 _("A/F" 1 with ¾ F. Sw/Nut -3/4 Male) **Mk11 "A" Hose = 0.9 m x 2**

"B" Module Hose = 1.1 m x 2 **Mk 11 "B" Hose = 1.39 m x 2**

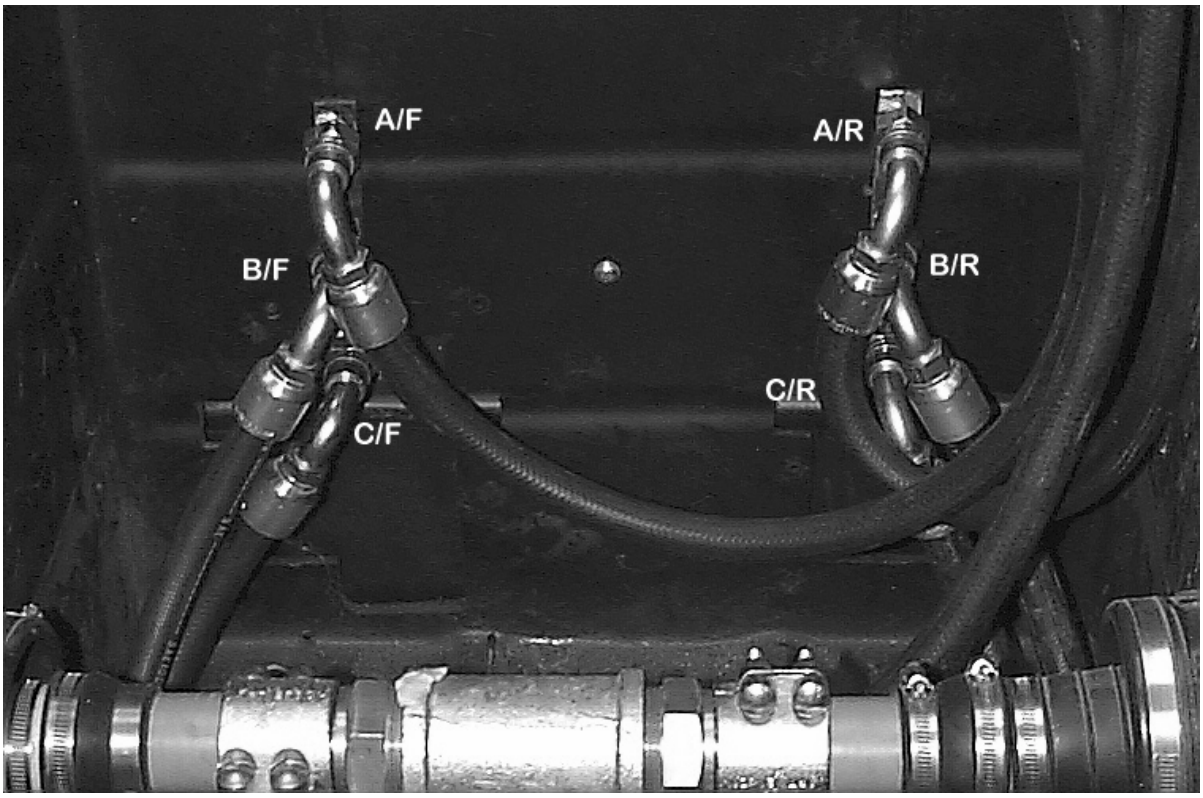
"C" Module Hose = 1.46 m x 2 **Mk 11 "C' Hose = 1.67 m x 2**

Inside Sump



Bulkhead Seals for Product Feed line & Internal Delivery Pipes are fitted at PEC as part of original Sump assy. Specifications for these can be obtained on request.

Refer Page ?? for Mk11 Version



Mk 11 Inside Enclosure

Delivery Hose Lengths

89742 A/F&R = ¾ Hose @ 0.9m - ¾ Swivel Nut 19243/12/12/AU - F/Swivel 90 Elbow 1B243-12-12

89743 B/F&R = ¾ Hose @ 1.39m - ¾ Swivel Nut 19243/12/12/AU - F/Swivel 90 Elbow 1B243-12-12

89744 C/F&R = ¾ Hose @ 1.67m - ¾ Swivel Nut 19243/12/12/AU - F/Swivel 90 Elbow 1B243-12-12

Internal Supply Hose Lengths

89748 ¾ Hose @ 1.05m - ¾ Swivel Nut 19243/12/12/AU (x3)

Pipe Assys are as follows:

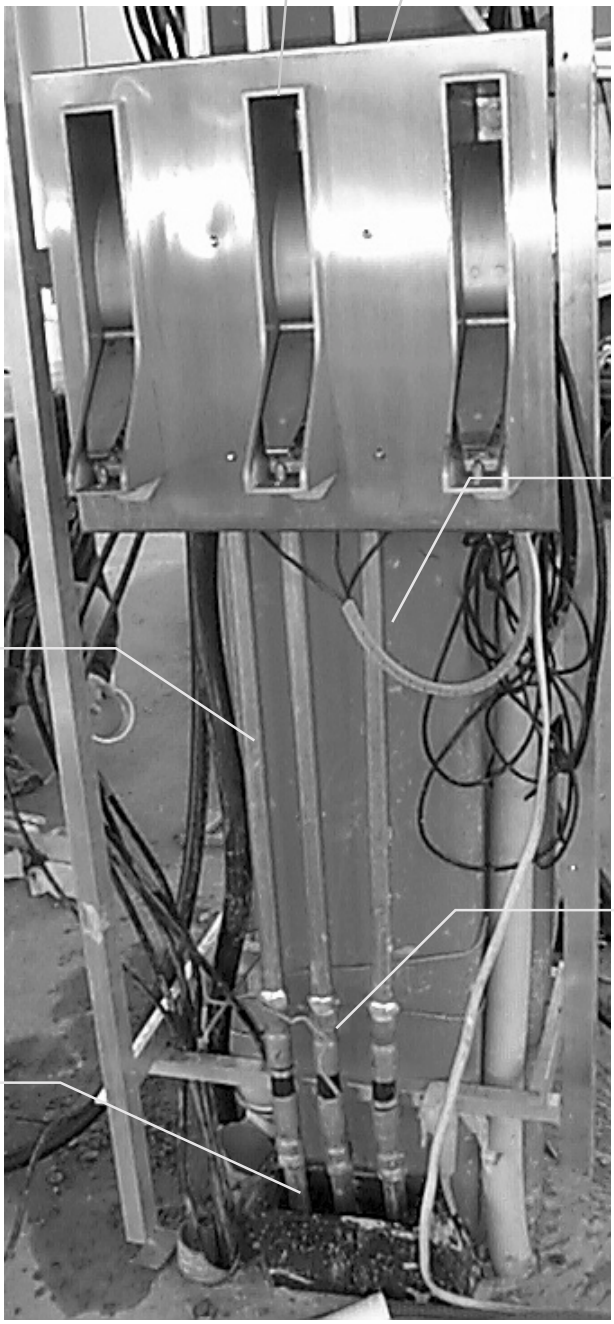
"A" = 89794 Internal Pipe Assy Upper

"B" = 89796 Internal Pipe Assy Middle

"C" = 89798 Internal Pipe Assy Lower

Note These pipe assys run up inside Ducting to connect to Vertical Pipe Assys attached to Column

Nozzle Holster & Delivery Pipe Assy



Apollo Set Up Procedure Standard Fuel

1. Set Up Addresses Dip Switches

   Set addresses on AC Control PCB as shown in table below

   Note AC Control Boxes number from Left to right as viewed with Column on your left, refer Apollo Hydraulic & Intrinsic Connections layout Section Pg. 16 & 17

Box no.	Dip Switches			
	4	3	2	1
A	on	on	on	off
B	on	on	off	on
C	on	on	off	off

2. Preset Display PCB Dip Switch Setting (Ref. Pg. 30 Factory Preset)

   3 Product front = 3,5 & 12 are on rest are off

   3 Product rear = all set off

3. Power up

   Apply Power, listen for long beep followed by five short beeps.

   For Software Version VA 2.21 & > listen for single beep -pause-single- followed by six short beeps

   Displays should show as follows

   FRONT Pn- A REAR Pn - b

   Fn - _ _ Fn - _ _

   Note if you get FUEL OFF then toggle Managers Switch to get required display.

4. Setting Hoses Active.

   Empty RAM by pressing Diagnostic switch and enter 10-Fill-Fill (Note This operation not required for Software versions later than 2.21)

   Activate as follows.

   Hose F1 = Enter 22-Fill-1-Fill Hose R1 = Enter 23-Fill-1-Fill

   Hose F2 = Enter 42-Fill-1-Fill Hose R2 = Enter 43-Fill-1-Fill

   Hose F3 = Enter 62-Fill-1-Fill Hose R3 = Enter 63-Fill-1-Fill

5. Check Pricing Displays read as indicated on Graphic Panel

   Cents per Litre = “000.0” for Cents & Dollars per Litre = 0.000 for Dollars

Refer PEC Manual 87372 section “Dip Switch Settings Multipec” for corrections

Set Product Price

Product A = Enter 31-Fill-$ amount(eg 0.86)-Fill

Product B = Enter 51-Fill-$ amount-Fill

Product C = Enter 71-Fill-$ amount-Fill

Note To test Comms. And Console control is working correctly, enter a non real price for each product and then switch unit over to Console control price should then change as set on console. Check both sides

7. Pump Number (Comms. Connection)

To connect to Console unit has to be numbered both front & rear.

To number Front Enter 20-Fill display = PF-00

Enter (#) display = PF- (number entered)- enter Fill

To number Rear Enter 21-Fill display = PF-00

Enter (#) display = PF- (number entered)- enter Fill Switch Managers Switch to normal

Note (#) = Pump/Console number

Note To switch Dispenser to LOCAL mode (Non Console control)

With Managers Key on Enter 04-Fill middle display shows LOCAL enter Fill again Switch Managers Switch to normal and wait 1 Minute

8. Plug in Battery

9. Test (Diagnostics)

Refer Pg.15

Pump stack test 30*

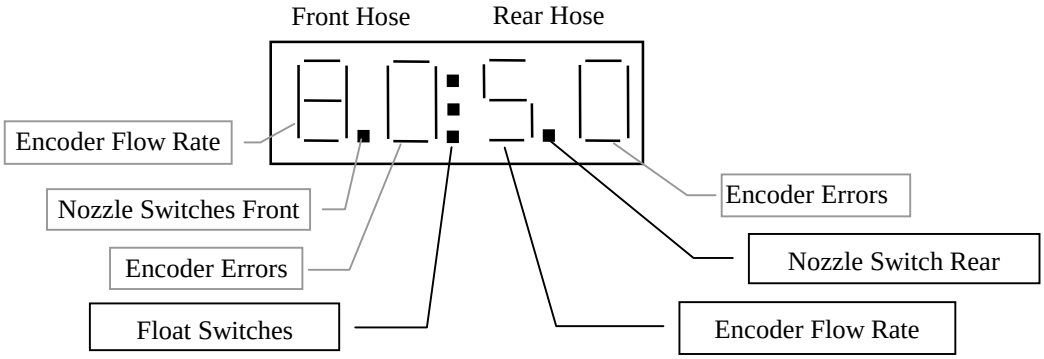
50* 70*

This test cheeks the operation of the pump motors (internal or submersible).
The motor can be switched on and off, as can the slow and fast flow rates.
The flow rate is displayed in the *Price per litre* display.

Pump motor Function number

F1 & R1	*30*
F2 & R2	*50*
F3 & R3	70

Initially, the display appears as shown in the illustration. Decimal points between each set of two figures indicate whether nozzles switches are open. A central decimal point indicates air in the flow detected by the air sensor (if installed). The first digit gives the rate of flow for the hose, in tens of litres per minute, and the second digit counts the number of encoder errors received.



Note Encoder errors can be any number
but must not change (eg change indicates error)

Diagnostic Testing of Motor & Valve Operation

This function can be used to turn Motor, Final & main stages of Solenoid valves idea for checking connection and correct operation etc.

Note Managers Switch must be on to access these functions & Diagnostic Switch pressed

Function 30 for Product 'A'
Function 50 for Product 'B'
Function 70 for Product 'C'

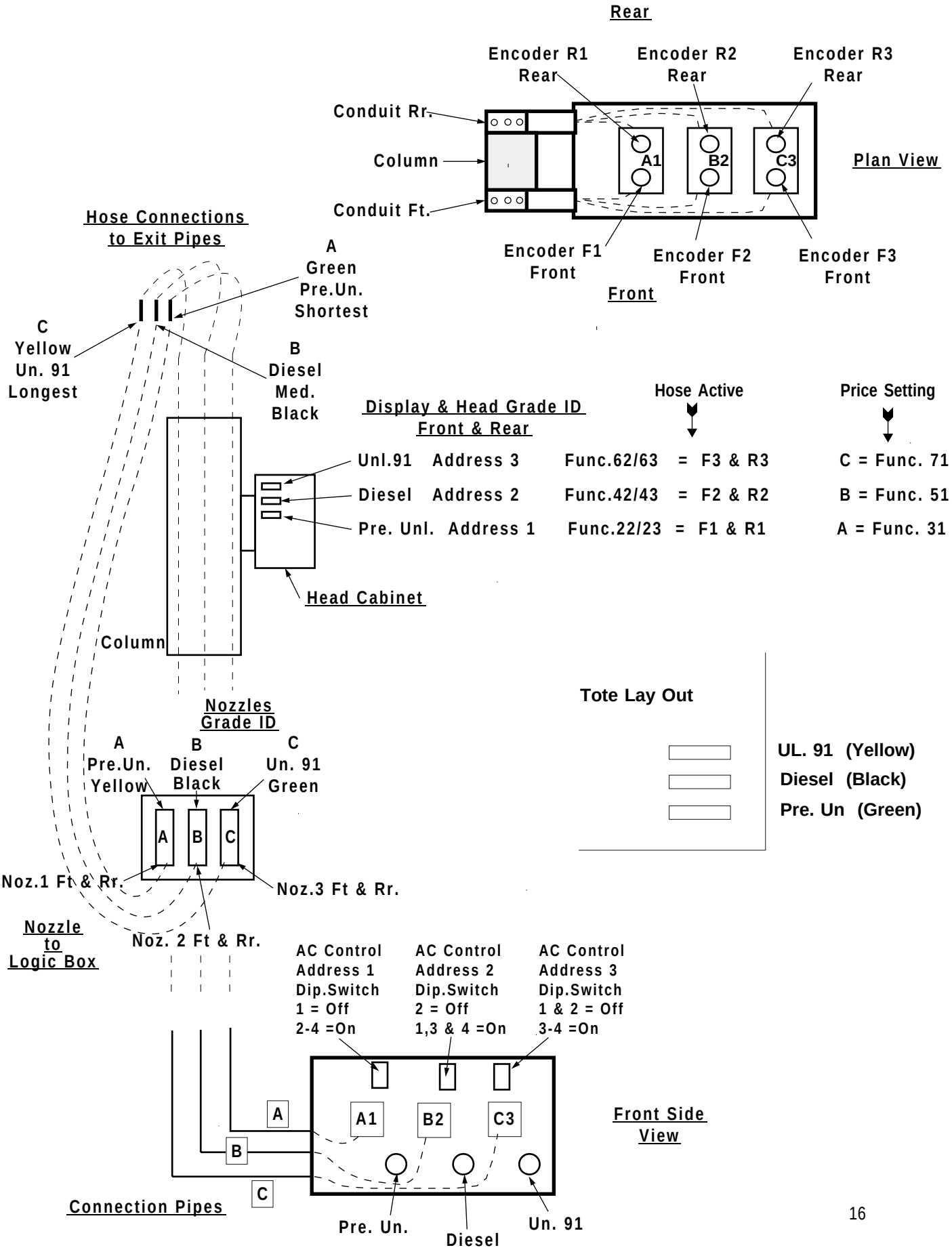
Once in any of the above Function press key once as listed below to activate and a second time to deactivate.

Note Numbers being activated show in 'Dollars Display"

Key	Function
1	Motor
2	Sol/Valve final stage (front)
3	Sol/Valve main stage (front)
4	Sol/Valve final stage (rear)
5	Sol/Valve main stage (rear)

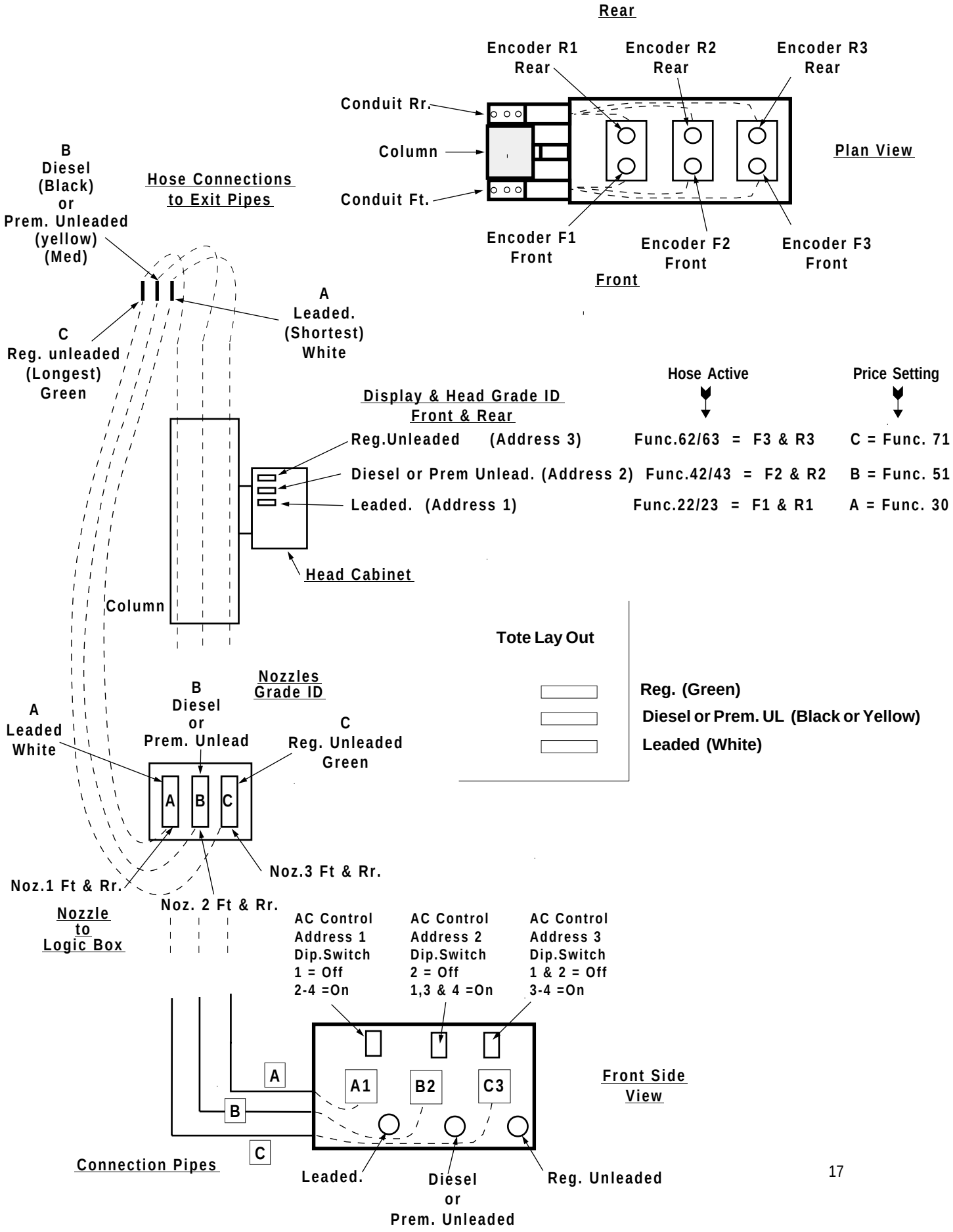
Apollo Hydraulic & Intrinsic Connections New Zealand

GME 05/06/98
up date 6/8/9, 15/09/98, 05/05/99,
10/02/00, 25/03/01
File @ GME
c:/mydrawdt/apollo/lay-out.idw (Pg 1)



Apollo Hydraulic & Intrinsic Connections Australia

GME 05/06/98
up date 6/8/98, 15/09/98, 05/05/99, 10/02/00, 25/03/01
File @ GME
c:/mydrawdt/apollo/lay-out.idw(Pg 5)



Errors

This chapter contains the full list of error codes, in numerical order.
Errors are normally indicated by the error code (number) being displayed. The error is displayed as **ERRxx**, where **xx** is the code number. Errors are also written to an error log. You can check logged errors using Function 02 as detailed in chapter 4.

Startup System Errors

Error codes (01..09) are reserved for startup errors. This type of error is detected before the displays are initialised, and is reported using beep codes (pump beeps once for error 01, twice for error 02, etc.)
Some of these codes can also be dynamically checked during normal operation, in which case they will be reported in the normal way (i.e., they will display the **ERR xx** message and stop all deliveries).
These errors are fatal errors (processor halted) and require the pump to be reset. Power down and wait for 5 seconds before switching on the pump.

00 Start up log

This is not really an error it contains the number of startups.

01 Processor Error

This is a sequential IRAM address test which is performed at startup. It tests the processor's 4 register banks, and halts the processor if an error is found.
This check is performed in the **init** module.

02 Internal Ram error

Error 02 is a sequential IRAM address test which is performed at startup. It covers all IRAM excluding the 4 register banks, and halts the processor if an error is found.
This check is performed in the **init** module.

03 Eprom Error

Error 03 indicates a checksum error. This may occur either at startup or dynamically during operation. In either case the processor is halted if an error is found.

04 External RAM Error

This is a walking bit test of the XRAM. This test is performed both at startup (entire XRAM checked) and dynamically (one address per call from main loop). In either case the processor is halted if an error is found.

05 Non Volatile Setup

Error 05 is a check of the non volatile variables. These are the set up variables which must remain unchanged during a power failure. They remain constant unless changed by a diagnostic function. They are checked (against their backup variables) both at startup (all non-vol variables checked) and dynamically (one byte checked each call from main loop). If an error is found, the non volatile variables are all reset to their default values and (if not found during startup) the system restarts.

06 Delivery variables lost

This is a startup check of the current/last delivery related variables. These variables are overwritten with each new delivery, but in case of power loss, must be present between deliveries. Unlike the non-vol variables, during deliveries, these are continually changing and are therefore not checked dynamically. At startup, these are checked (for corruption of XRAM during power loss) against their backup variables. If an error is found, the non volatile variables are all reset to their default values.

07 Keyboard Error

This is a startup check of local or remote (input processor) DIP switch setting validity, and for the presence of the relevant keyboards. This error is non-fatal error which serves as an audible warning to reconfigure DIP switches or replace keyboards and restart the system.

08..09 Not used

Errors 08 and 09 are reserved.

Fatal Errors (excluding fatal startup errors)

Errors 10 through to 29 all cause the processor to stop. The errors are displayed but beeps are not sounded. The pump must be reset after one of these errors.

10..15 Pump Control State Errors (Pump A..F)

This indicates an attempt to enter an undefined side control state on a particular pump number.

16 Stack Error

The stack is continuously checked. If a stack overflow occurs, error 16 will be displayed.
This check is performed in the **dynchk** module.

17 Display Error

If a Display error is indicated, a translation error occurred when writing to one of the 7 segment LCD displays.

18 Variable Range Error

Error 18 indicates a global software parameter (ie pump, grade or price etc) is not within its normal range. This can be a result of corruption of the internal data RAM, which may cause unpredictable results.
This check is not limited to any particular module, but is used by any procedure that requires range checking.

19 Dollar Maths Error

At the end of a delivery, the delivery dollar calculations are performed (ie price per litre multiplied by litres equals dollars). Error 19 indicates an error occurred in the calculations. A likely cause for this would be a price change (or corruption of the price variable) during a delivery.

20 Litres Maths Error

At the end of a delivery, the delivery quantity accumulation calculation is made (ie, total number of encoder counts for the delivery time multiplied by the encoder constant equals the litres displayed). Error 20 indicates an error occurred in the accumulation.
If this is not the case, it is probable that the encoder is going too fast, such that the incoming encoder counts (which are accumulated under interrupt control) are not being "consumed" quickly enough by the maths routines to prevent a rollover.

21 Clock Error

A Clock Error indicates that the current time variable (which is used to time tag events) is not incrementing.

22 Motor Control Error

Error 22 indicates that an attempt was made to turn a motor on or off when it was already in that state (according to the software).

23 Solenoid Control Error

This indicates that an attempt was made to open or close a solenoid valve when it was already in that state (according to the software). It will also occur (except in diagnostic mode) if an attempt is made to turn on a solenoid valve when the corresponding motor is not on.

24 Power Fail

This error indicates the system entered its main initialisation procedure (which should only happen on power up or as a result of certain diagnostic functions), but the power fail flag does not show power failed.
This may occur in the event of a total power loss (including the lithium battery) such that the XRAM was corrupted, or if the power fail procedures are not functioning correctly.

25 Input Processor to main failure

This error will occur if the system expects an Input Processor to be present (i.e., it was auto-detected at power up) but is no longer receiving any comms response from it.
This would be caused by either a fatal error in the input processor, or a physical loss of connection on the serial link between the two processor boards.

26 Main to Input Processor failure

This error will occur if the system expects an Input Processor to be present (i.e., it was auto-detected at power up) and is receiving comms response from it, but the Input Processor is not receiving data from the main processor.

This would be caused by either a fatal error in the input processor, or a physical loss of connection on the serial link between the two processor boards.

27 Remote Parameters Failure

Error 27 will be displayed if the pump is not within the diagnostics functions and the remote rx_param block that was sent from the input microprocessor is different to the set stored by the you.

28 Display pointers corrupted

A constant check is dynamically made, of the display information. This error indicates an error has occurred which could cause incorrect information to be displayed on the LCDs.

29 Not used

These error codes are reserved.

Single Pump Number Fatal Errors

Errors 30 through to 59 do not cause a complete system crash, as they relate to a single pump number only. They cause the related pump to stop delivery, and its displays to flash. This continues until the nozzle is replaced and any nozzle on that pump number is removed again. The **ERRxx** message is then displayed on that pump number and all further processing of the pump ceases.

Note that all other pump numbers can continue unaffected. To use the affected pump again, the pump unit must be reset (powered off for at least 5 seconds).

30 LPG Temperature Probe 1 Error

This is caused by either an open circuit, short circuit or out of range error being detected on probe 1 by the input processor. This error is fatal only to the pump numbers associated with the LPG grade.

31 LPG Temperature Probe 2 Error

Error 31 is caused by either an open circuit, short circuit or out of range error being detected on probe 2 by the input processor. This error is fatal only to the pump numbers associated with the LPG grade.

Note Errors 32 – 37 apply to units fitted with software version lower than va 2.30p only
Units fitted with Software va 2.30p & greater & Float Switches fitted, Fatal Error as FLUId Ref. Pg 41

32 Grade 1 Front hose Detected Fluid Present bottom of Hydraulic Sump Enclosure (Pump A1)

During a Grade 1 delivery, Float was activated for more than 1 minute.

33 Grade 1 Rear hose Detected Fluid Present bottom of Hydraulic Sump Enclosure (Pump B1)

During a Grade 1 delivery, Float was activated for more than 1 minute

34 Grade 2 Front hose Detected Fluid Present bottom of Hydraulic Sump Enclosure (Pump C2)

During a Grade 2 delivery, Float was activated for more than 1 minute.

35 Grade 2 Rear hose Detected Fluid Present bottom of Hydraulic Sump Enclosure (Pump D2)

During a Grade 2 delivery, Float was activated for more than 1 minute.

36 Grade 3 Front hose Detected Fluid Present bottom of Hydraulic Sump Enclosure (Pump E3)

During a Grade 3 delivery, Float was activated for more than 1 minute

37 Grade 3 Rear hose Detected Fluid Present bottom of Hydraulic Sump Enclosure (Pump F3)

During a Grade 3 delivery, Float was activated for more than 1 minute

38 Grade 1 Front encoder error (Pump A1)

Grade 1 front encoder inputs out of sequence for more than 1 count in 512 (0.19% minimum error rate). This could be due to the encoder missing a count, the rotation being backwards, etc.

39 Grade 1 Rear encoder error (Pump B1)

The Grade 1 rear encoder inputs were out of sequence.

40 Grade 2 Front encoder error (Pump C2)

Grade 2 front encoder inputs out of sequence for more than 1 count in 512 (0.19% minimum error rate). This could be due to the encoder missing a count, the rotation being backwards, etc.

41 Grade 2 Rear encoder error

42 Grade 3 Front encoder error (Pump E3)

The Grade 3 front encoder inputs were out of sequence.

43 Grade 3 Rear encoder error (Pump F3)

The Grade 3 rear encoder inputs were out of sequence.

44 Grade 1 Front encoder too fast (Pump A1)

This error indicates an overflow of either encoder counts or encoder errors was detected for the Grade 1 front encoder.

45 Grade 1 Rear encoder too fast (Pump B1)

There was an overflow of either encoder counts or encoder errors detected for the Grade 1 rear encoder.

46 Grade 2 Front encoder too fast (Pump C2)

There was an overflow of either encoder counts or encoder errors detected for the Grade 2 front encoder.

47 Grade 2 Rear encoder too fast (Pump D2)

There was an overflow of either encoder counts or encoder errors detected for the Grade 2 rear encoder.

48 Grade 3 Front encoder too fast (Pump E3)

There was an overflow of either encoder counts or encoder errors detected for the Grade 3 front encoder.

49 Grade 3 Rear encoder too fast (Pump F3)

There was an overflow of either encoder counts or encoder errors detected for the Grade 3 rear encoder.

50 Grade 1 Front encoder run on (Pump A1)

Flow did not stop (the encoder was still rotating) at the end of a Grade 1 front hose delivery (i.e. after the "get dribble" state has timed out).
Possible fault could be leaking valves.

51 Grade 1 Rear encoder run on (Pump B1)

Flow did not stop (the encoder was still rotating) at the end of a Grade 1 rear hose delivery.

52 Grade 2 Front encoder run on (Pump C2)

Flow did not stop (the encoder was still rotating) at the end of a Grade 2 front hose delivery.

53 Grade 2 Rear encoder run on (Pump D2)

Flow did not stop (the encoder was still rotating) at the end of a Grade 2 rear hose delivery.

54 Grade 3 Front encoder run on (Pump E3)

Flow did not stop (the encoder was still rotating) at the end of a Grade 3 front hose delivery.

55 Grade 3 Rear encoder run on (Pump F3)

Flow did not stop (the encoder was still rotating) at the end of a Grade 3 rear hose delivery.

56 LPG Overspeed

Flow rate detected during delivery exceeded overspeed trip setting. Note that this error on one LPG pump will display on both, regardless of whether the other is delivering or not.

57 Loss of encoder constant or LPG specific gravity setting

One of these values is corrupt, and has not yet been set back to a valid value (using the appropriate diagnostic function).

58 LPG Sensor failure

The LPG sensor has stopped providing or is providing incorrect information, to the input processor.

59 LPG system vapour present

During an LPG delivery vapour was sensed in the system for more than one minute.

Non Fatal System Errors

Errors 60 through to 89 do not cause any loss of system functionality. They are logged only (for service use).

Comms Channel A errors

60 Channel A Receiver Parity Error

This indicates a parity error was detected in one or more of the received message bytes.

61 Channel A Receiver Framing Error

Character was received for which no stop bit was detected.

62 Channel A Receiver Break Error

A steady low (space) signal has appeared at a receiver, indicating a break condition at the transmitting end, causing this error code. The formal definition is that an all zero character with no stop bit has been received.

63 Channel A Receiver Overrun Error

This indicates an overflow of the 3 byte FIFO buffer for a receiving channel. This means that the processor is not reading the incoming data fast enough to prevent overwriting this stack.

64 Channel A Receiver Checksum Error

This error indicates the message received had a checksum error.

65 Channel A Receiver Data Error

Error 65 indicates the polling message received from the Console is an invalid type, i.e., a new feature has been added to a console which is not yet supported, or the comms line has been corrupted (in which case a checksum error will probably also occur).

66 Channel A Receiver Overflow Error

The message received was too long for the buffer, causing this error. This may happen if no EOM character or sequence is detected.

67 Channel A Transmitter Overflow Error

The transmitter has tried to send a message which is too long. This means that the transmit buffer's last position was reached, but an EOM character or sequence was not present.

68 Channel A Receive Timeout Error

This indicates that the receiver is expecting a character from the Console, but has not received one for more than 1 second.

69 Channel A Transmit Timeout Error

This timeout error indicates that the transmitter is attempting to send a message to the Console, but there has been a delay of more than 1 second since the last character was transmitted.

Comms Channel B errors

70 Channel B Receiver Parity Error

Error 70 indicates a parity error was detected in one or more of the received message bytes.

71 Channel B Receiver Framing Error

A character was received for which no stop bit was detected.

72 Channel B Receiver Break Error

A steady low (space) signal has appeared at a receiver, indicating a break condition at the transmitting end. The formal definition is that an all zero character with no stop bit has been received.

73 Channel B Receiver Overrun Error

This indicates an overflow of the 3 byte FIFO buffer for a receiving channel. This means that the processor is not reading the incoming data fast enough to prevent overwriting this stack.

74 Channel B Receiver Checksum Error

The message received had a checksum error.

75 Channel B Receiver Data Error

This indicates that the polling message received from the Input Processor is an invalid type (or that the comms line has been corrupted, in which case a checksum error will probably also occur).

76 Channel B Receiver Overflow Error

The message received was too long for the buffer. This may happen if no EOM character or sequence is detected.

77 Channel B Transmitter Overflow Error

The transmitter has tried to send a message which is too long. This means that the transmit buffer's last position was reached, but an EOM character or sequence was not present.

78 Channel B Receive Timeout Error

This indicates that the receiver is expecting a character from the Input Processor, but has not received one for more than 1 second.

79 Channel B Transmit Timeout Error

This indicates that the transmitter is attempting to send a message to the Input Processor, but there has been a delay of greater than 1 second since the last character was transmitted.

General log only system errors

Errors 80 through 89 are general system errors. They are logged only; they do not cause the system to crash.

80 Grade 1 Front Preset Overrun

This indicates that the delivery on the Grade 1 Front hose did not stop at the preset or allocation limit. When this happens, the cutover point at which slow flow is entered automatically adjusts to compensate.
Note the difference from the encoder run-on error: encoder run-on is a continued flow after the end of delivery state has been reached, whereas preset overrun indicates that the end of delivery state was not reached in time to prevent excess fuel being delivered.

81 Grade 1 Rear Preset Overrun

This indicates that the delivery on the Grade 1 Rear hose did not stop at the preset or allocation limit.

82 Grade 2 Front Preset Overrun

This overrun error indicates that the delivery on the Grade 2 Front hose did not stop at the preset or allocation limit.

83 Grade 2 Rear Preset Overrun

Error 83 indicates that the delivery on the Grade 2 Rear hose did not stop at the preset or allocation limit.

84 Grade 3 Front Preset Overrun

This indicates that the delivery on the Grade 3 Front hose did not stop at the preset or allocation limit.

85 Grade 3 Rear Preset Overrun

This indicates that the delivery on the Grade 3 Rear hose did not stop at the preset or allocation limit.

86 Lost Reply (Console)

A Lost Reply error indicates that the pump comms are trying to reply to a poll from the Console, but did not succeed in sending a reply within 4 clock ticks (0.08s) of receiving the poll message. This means that the main loop tasks (other than comms) are taking up too much processor time, so that the comms do not get serviced often enough.

87..99 Not used

These error codes are reserved.

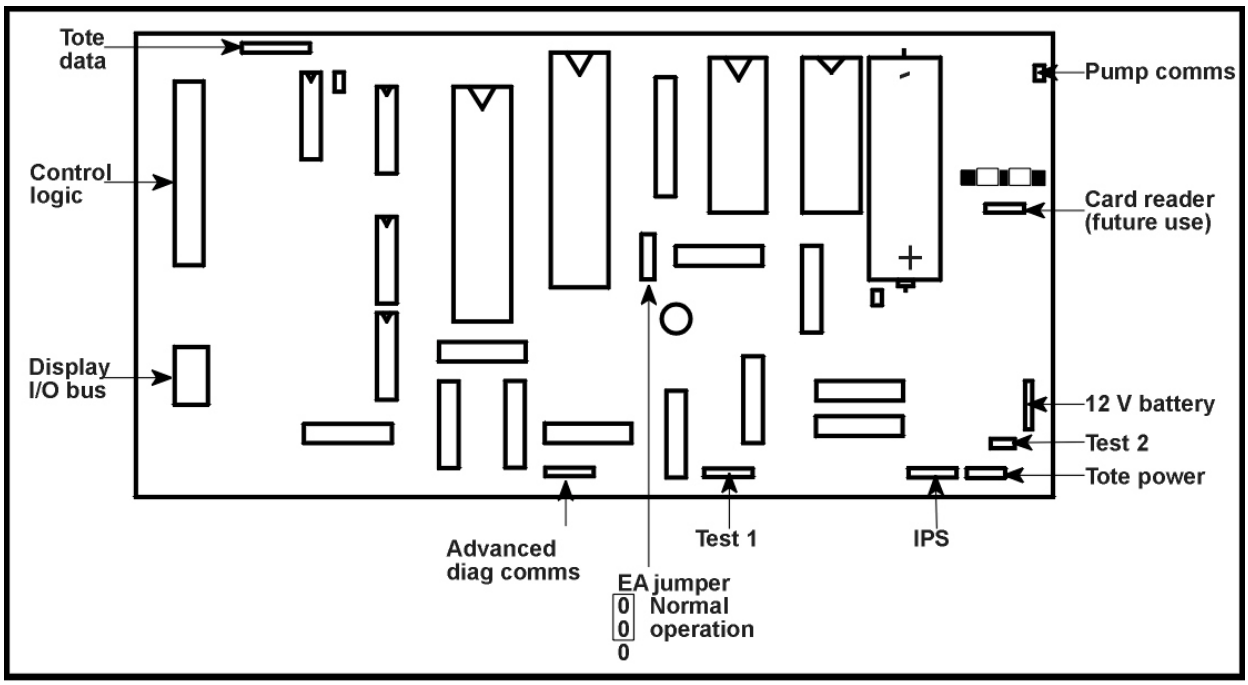
Main Processor Board

Information & Connections

Part Number 87101

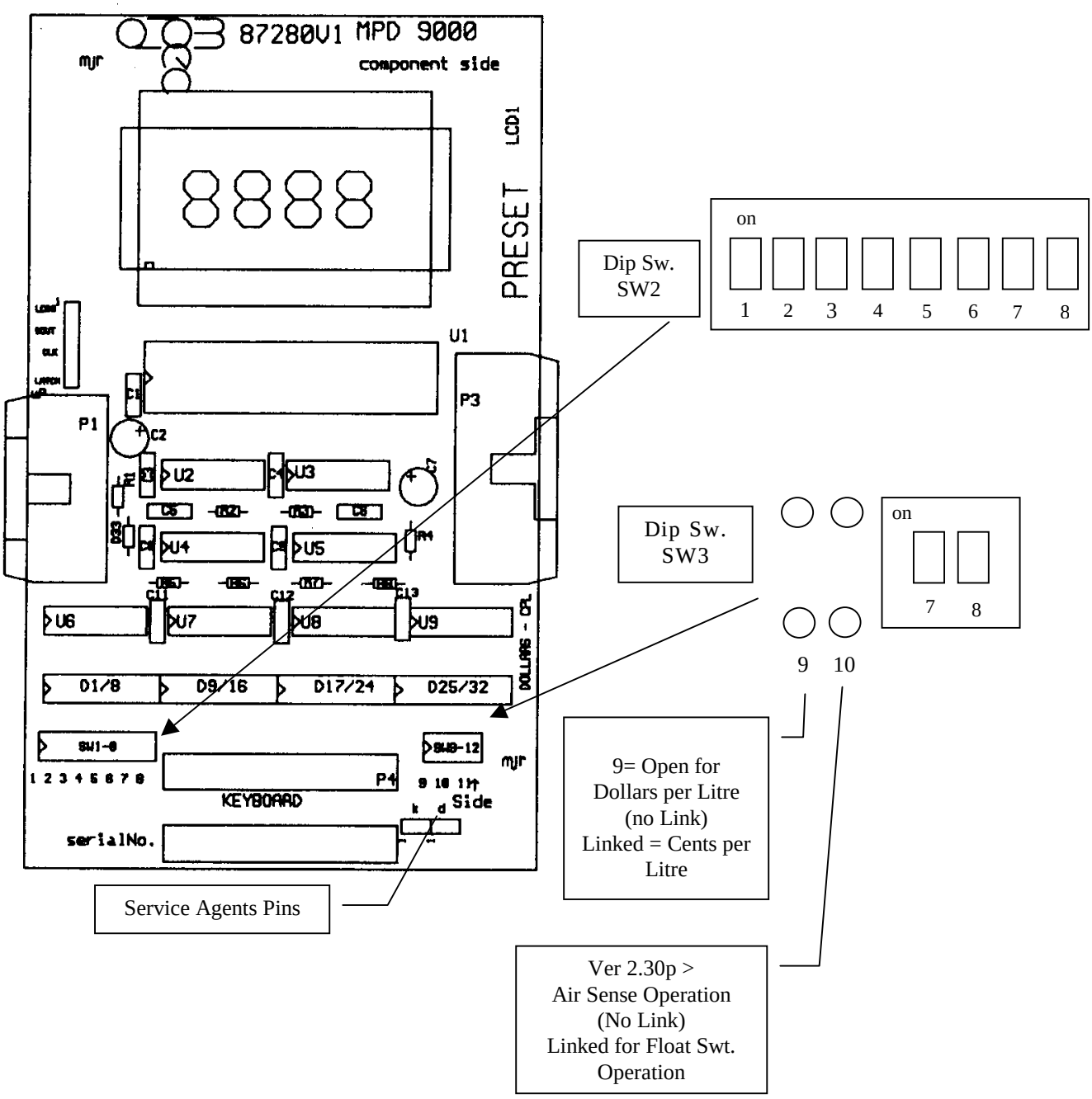
The main Processor Board controls all Pump operations, either alone or together with an input Processor Board The basic elements are :

80c31 or 80c32 Processor
64K external program Memory (Eprom)
32K Static Ram (Battery backed
2692 DUART
Encoder Interface
Power Control
Display I/O Interface
External / Internal program Selection
Diagnostic communications
AC Control
Pump Communications Interface
Auxiliary I/O

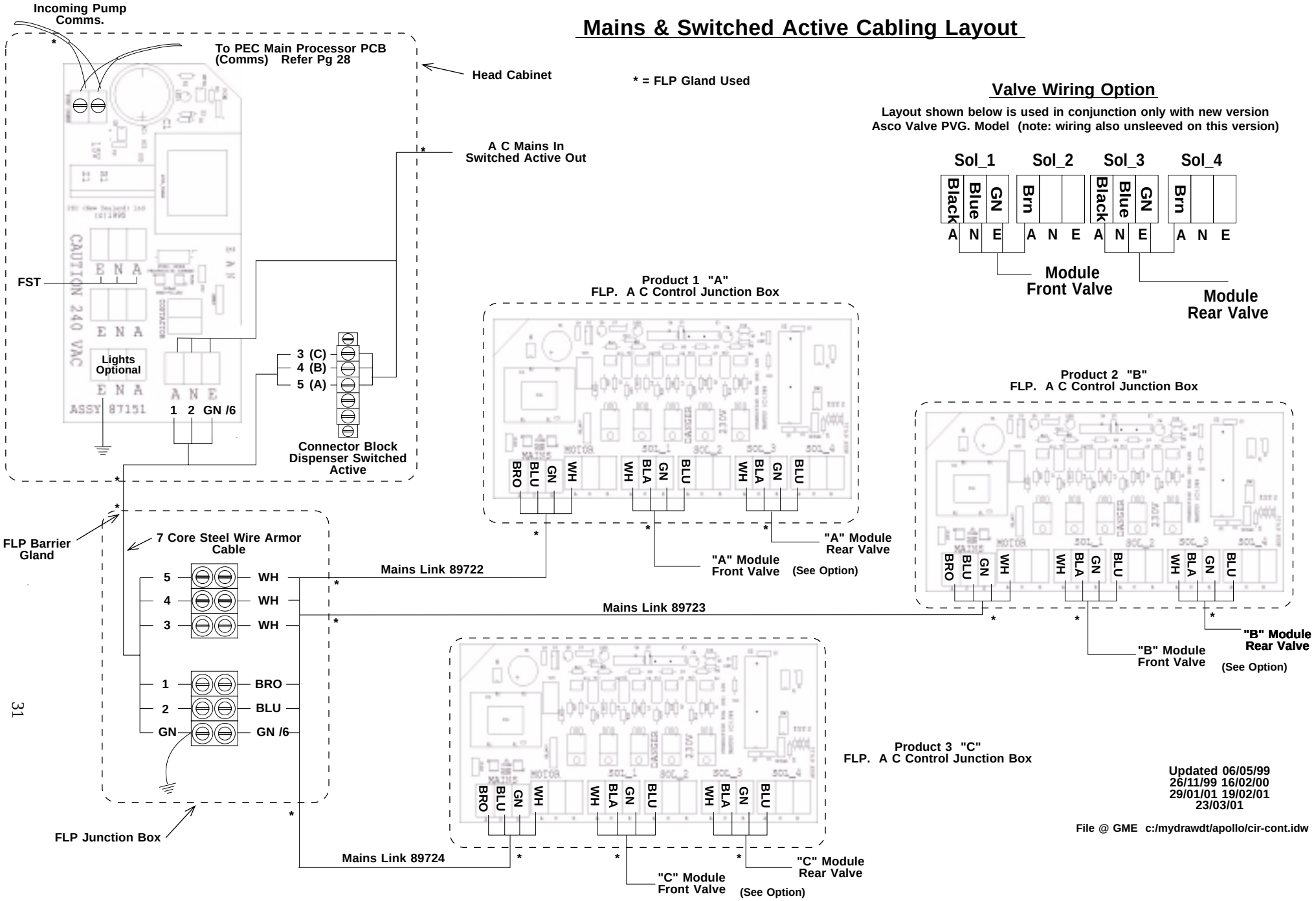


Main processor connections

Display Dip Switch Location
on
Front Preset Display PCB Assy



Mains & Switched Active Cabling Layout



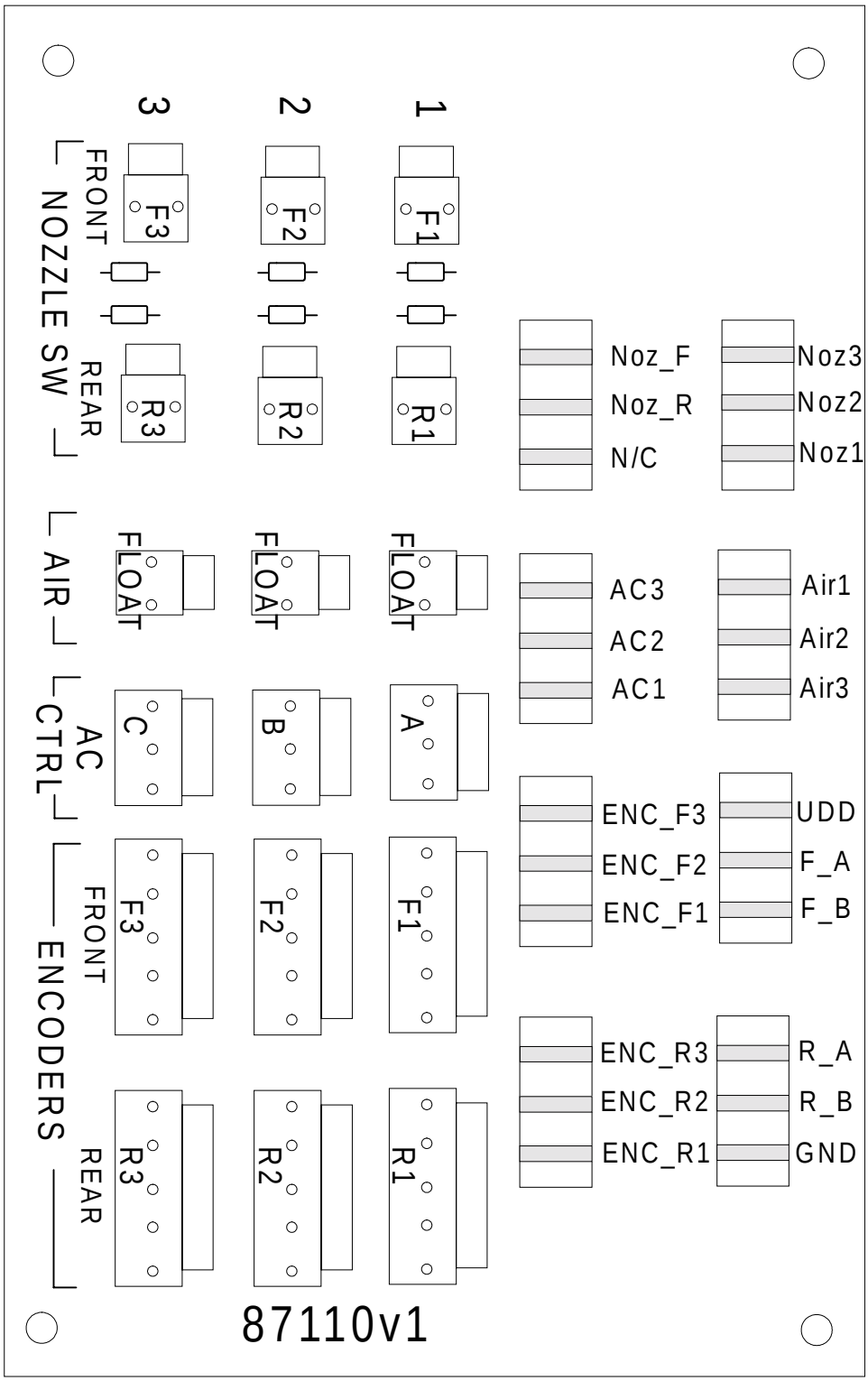
Valve Wiring Option

Layout shown below is used in conjunction only with new version Asco Valve PVG. Model (note: wiring also unsleeved on this version)

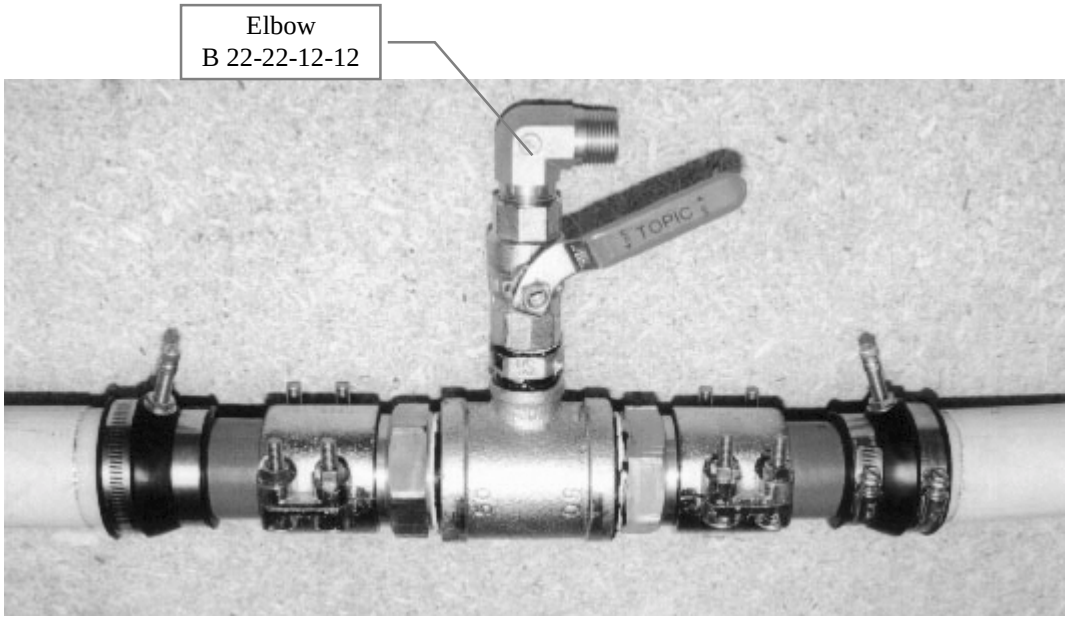
Updated 06/05/99
26/11/99 16/02/00
29/01/01 19/02/01
23/03/01

File @ GME c:/mydrawdt/apollo/cir-cont.idw

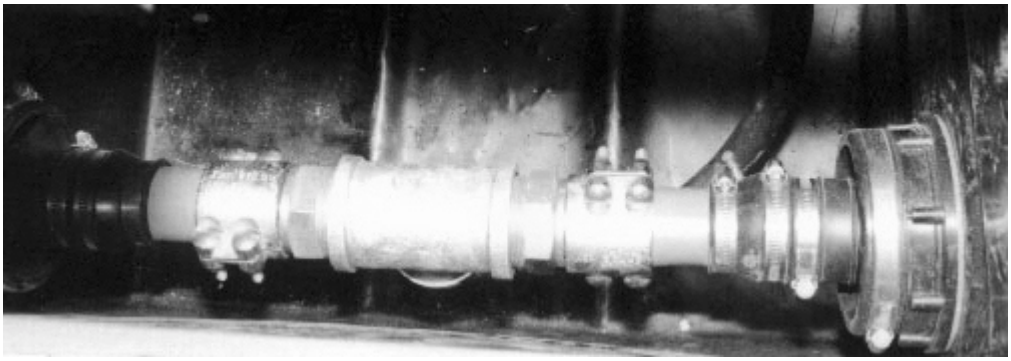
Control Logic Distribution PCB Assy 87110



Feed Line Detail



Note distance between test point seals on assy. shown above must be min possible .
Inside distance between Bulkhead Seals in Hydraulic Enclosure is, 0.432m
therefore feed line Tee termination arrangement must fit within this distance.



Above view is as viewed from enclosure (sump) end away from Column (RH end).
Tee & Shut off Valve hang down towards floor of enclosure with ¾ Elbow facing to back face of enclosure. Handle of shutoff valve operates in the same plan as feed line, (eg front to rear.

External Hose Assy Specifications

Above Bry Break Note 1 per each external hose: 5/8 ID Hose @ 250 mm 7/8 SAE Sw/Nut (824170)- 3/4 BSPP Fittings

Hose Assy "A" : 5/8 ID Hose @ 3.15 m 3/4 BSPP (01805) - 3/4 BSP Female (01803) Fittings

Hose Assy "B": 5/8 ID Hose @ 3.3 m 3/4 BSPP (01805) - 3/4 BSP Female (01803) Fittings

Hose Assy "C": 5/8 ID Hose @ 3.5 m 3/4 BSPP (01805) - 3/4 BSP Female (01803) Fittings

Internal Hose Assy Specifications

Product Feed Hose Assy: - 3/4 ID Hose @ 1.05 m - 3/4 BSP Female Sw/Nut both ends (3 per unit) (Feed Line to Modules)

Safety Hose Assy. Pt. # 89740 Cut hose @ 250mm Fittings as above

Product Delivery Hose Assy - 3/4 ID Hose - 3/4 Female Swivel Nut fittings both ends (see A/F option)

"A" Module : @ 0.9 m x 1 Note " A/F" : 1 x 3/4 Hose @ 0.9 m - 3/4 Female S/Nut - 3/4 BSPT Male fitting)

"B" Module : @ 1.1 m x 2

"C" Module : @ 1.46 m x 2

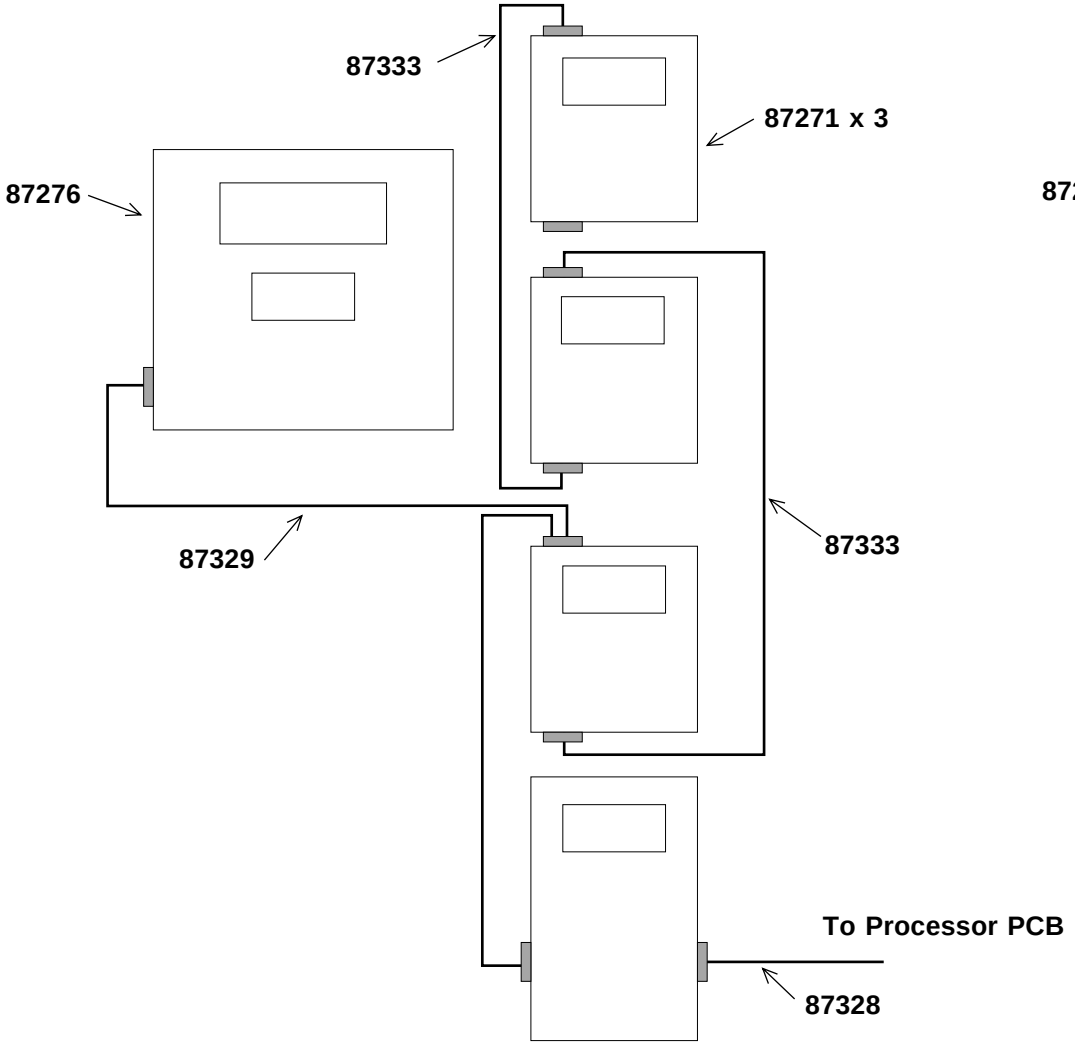
Internal Hose Assy Specifications Mk11

Product Delivery Hose Assy - 3/4 ID Hose - 3/4 Female Swivel Nut 19243/12/12/AU & 3/4 F/Swivel 90 Elbow 1B243-12-12
Hose cut as below

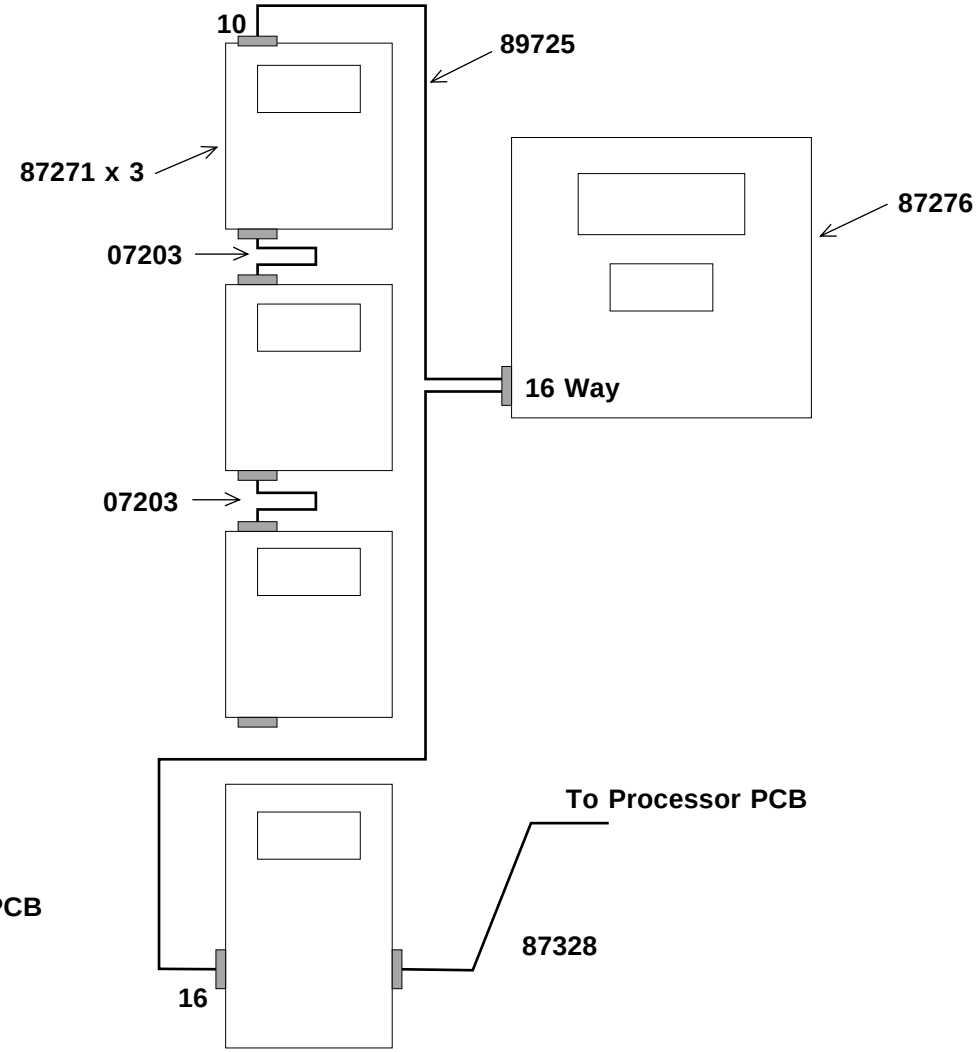
"A" Module : 89742 @ 0.9 m x 2

"B" Module : 89743 @ 1.39 m x 2

"C" Module : 89744 @ 1.67 m x 2



Apollo Front Door Assy
Inside View



Apollo Rear Door Assy
Inside View

16/04/99

File @ GME c:/mydrawdt/draw/apollo/display.idw