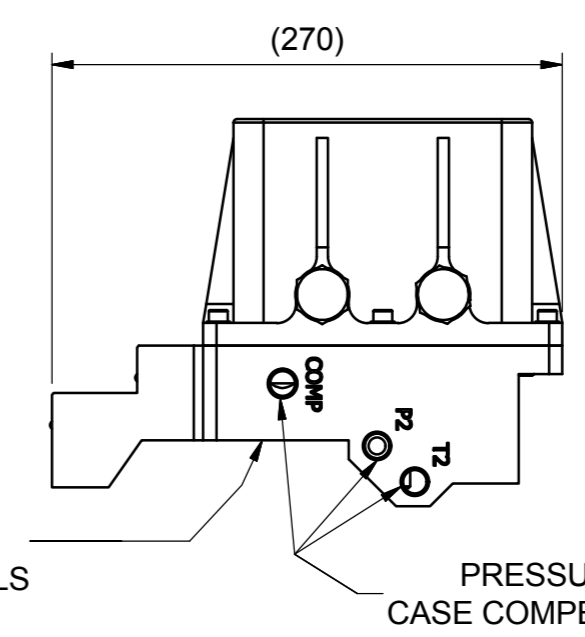
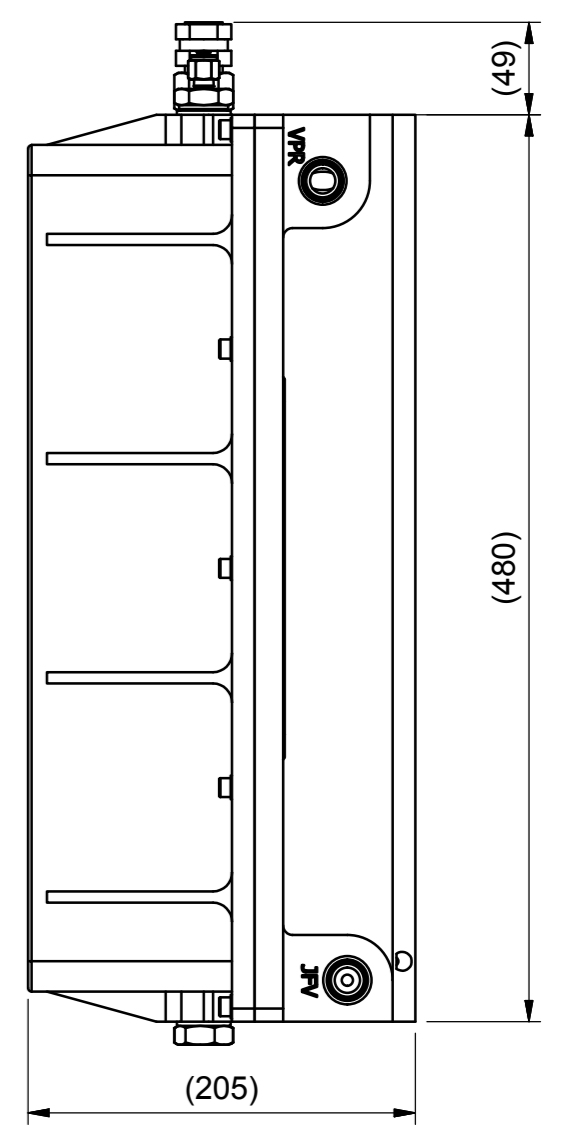
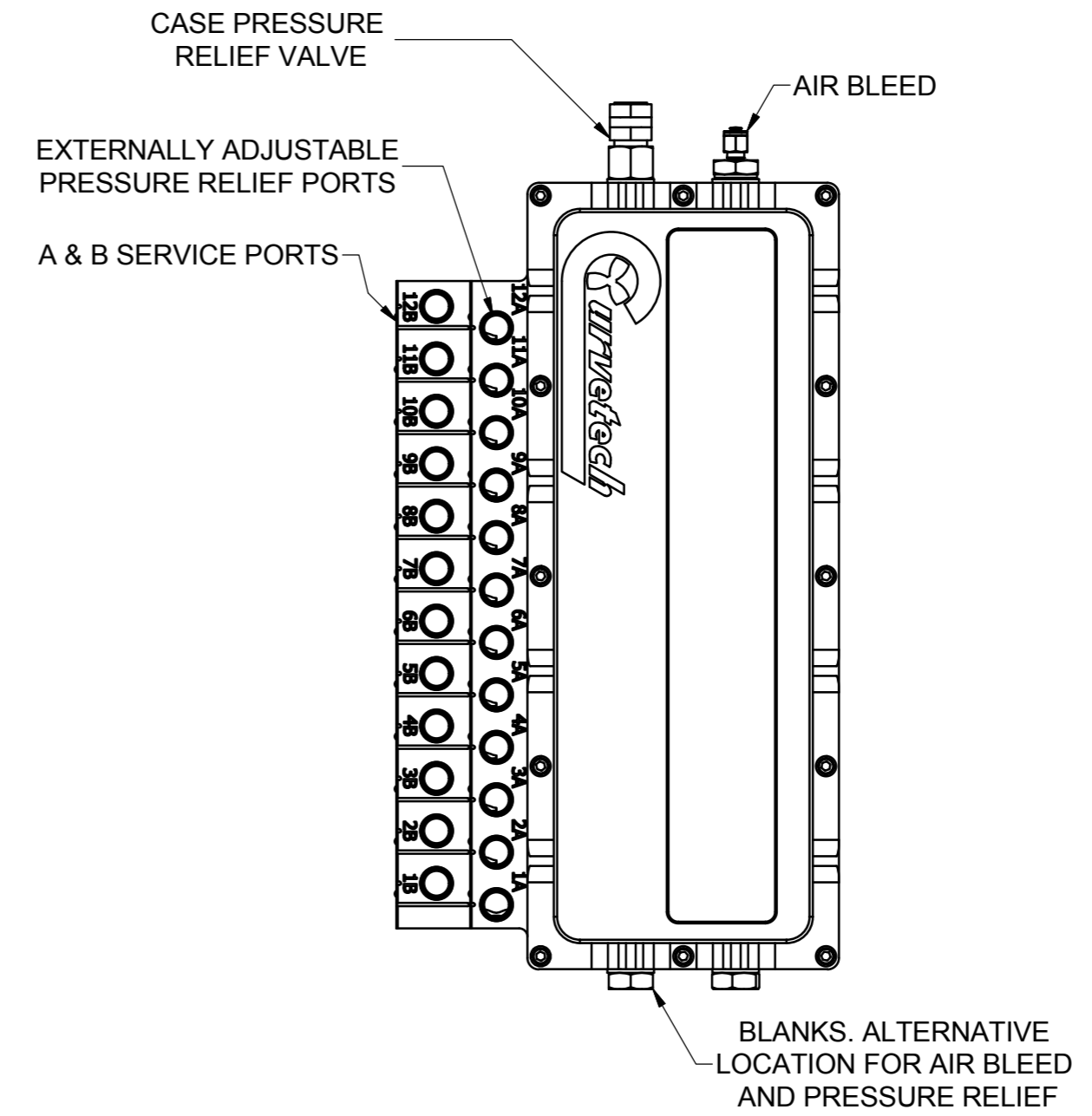
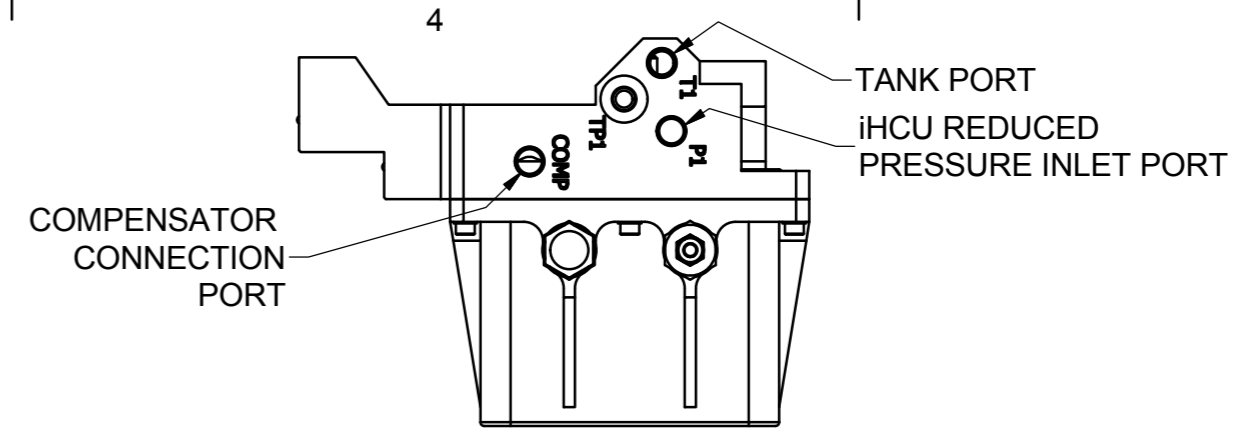
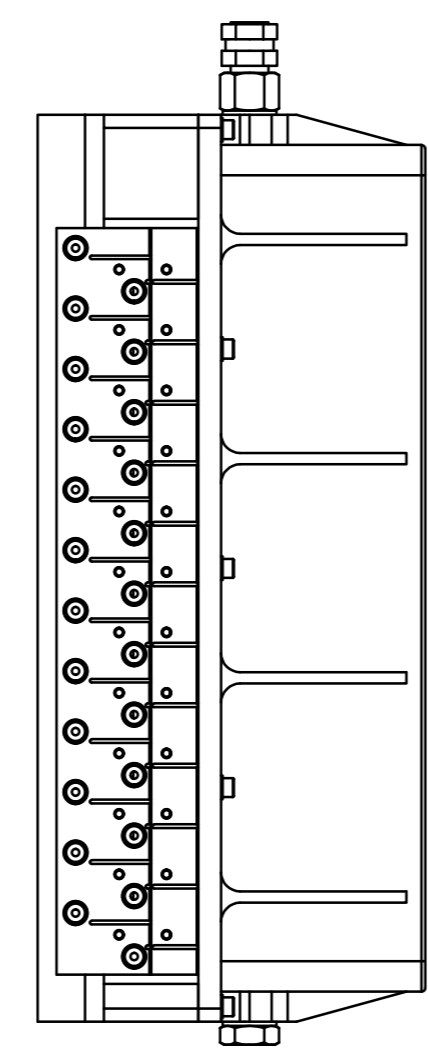
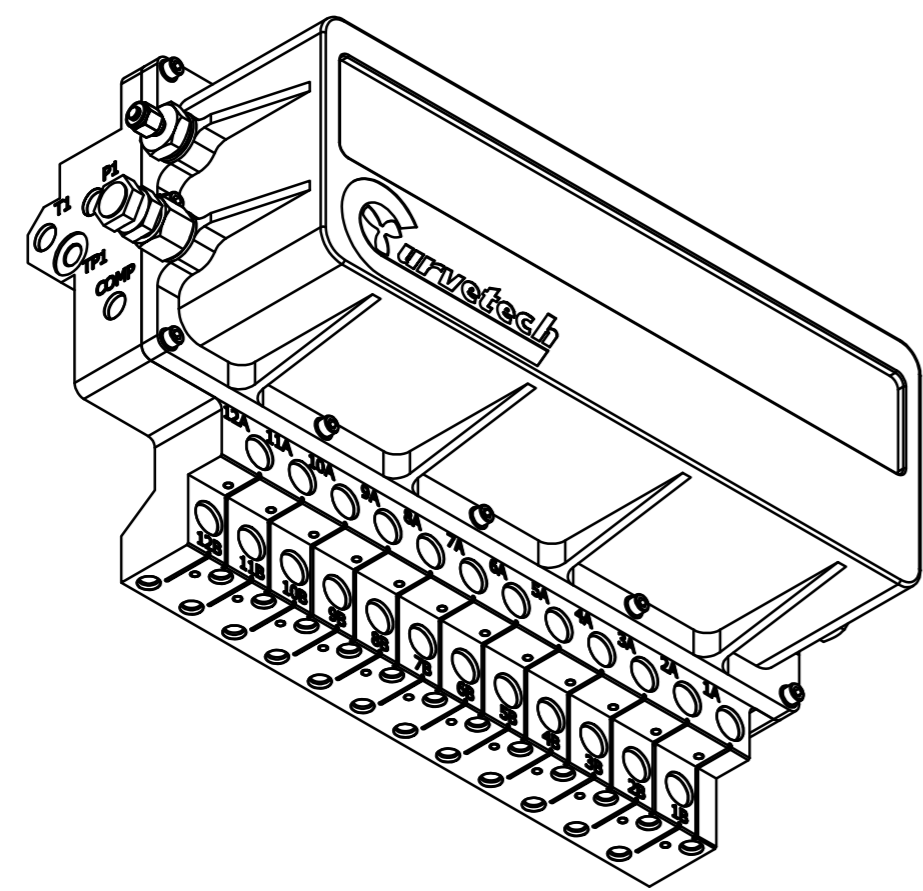
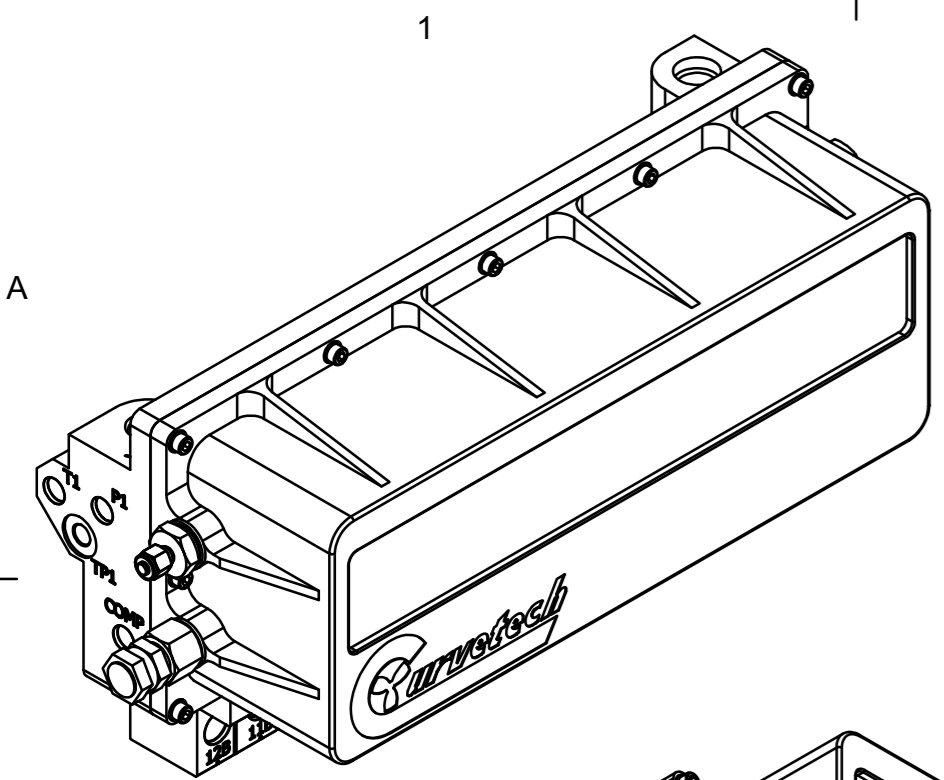


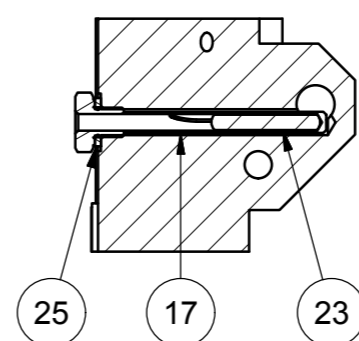
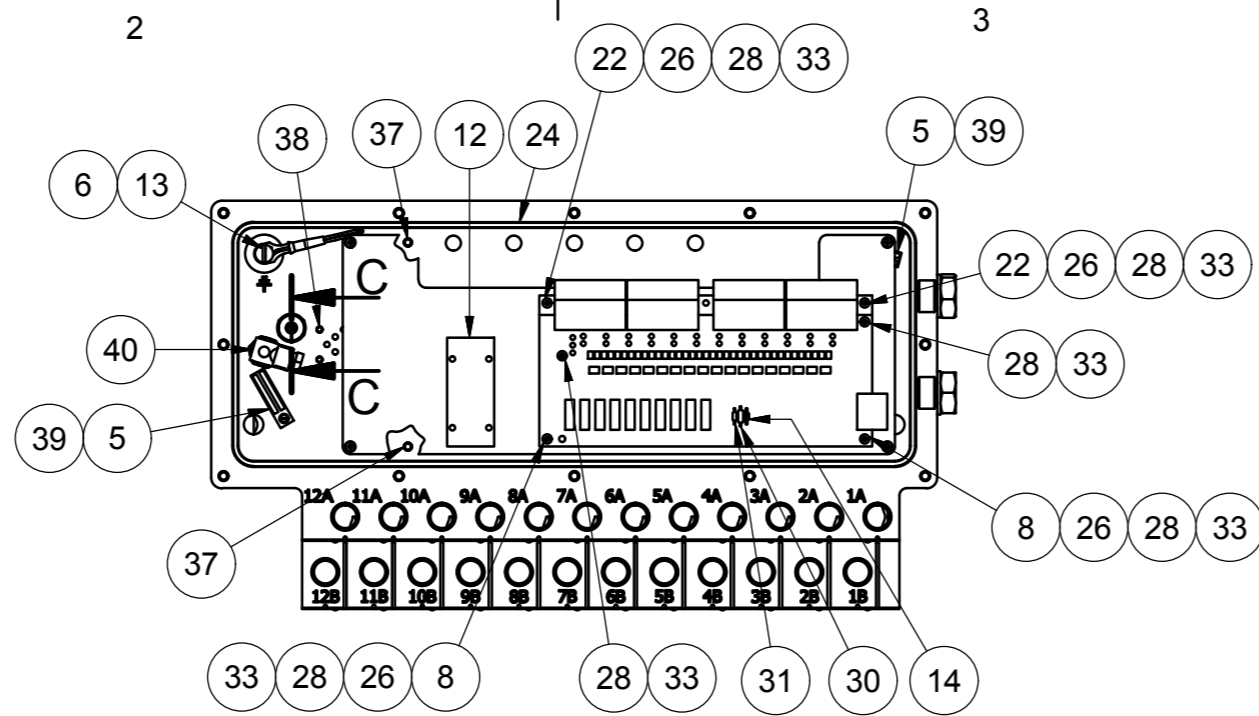
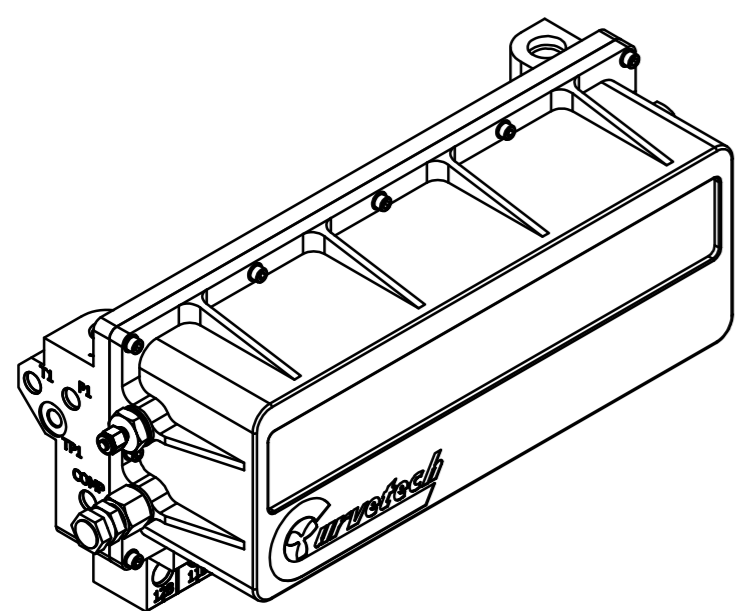
NOTES:
 1. THE CORE VALVE PACK HERE IS UNPOPULATED. SEE SHEET 3 FOR VALVE OPTIONS AVAILABLE.
 2. FOR ASSEMBLY INFORMATION SEE SHEET 2.



GENERAL SPECIFICATION - 12 STATION iHCU

ITEM	VALUE
LAYOUT	OIL FILLED VALVE TANK, ANODISED ALUMINIUM 12 STATION - NG3 (MINI-3)
DEPTH RATING	3000m - STANDARD 6000m - AT REQUEST
OPERATING TEMPERATURE	-10°C to +50°C AMBIENT
STORAGE TEMPERATURE	-20°C to +50°C AMBIENT
PRESSURE RATING	250bar MAX. WORKING PRESSURE 210bar STANDARD OPERATIONAL
CONNECTION PORT SIZES	SEE PAGE 3
POWER	+24 VDC
COMMUNICATION	RS485
EXTERNAL I/O CONFIGURATION (STANDARD CONFIGURATION)	1 OFF - MAIN SYSTEM CONNECTION 1 OFF - MULTI-DROP CONNECTION FOR 2ND iHCU 3 OFF - 4-20mA OR 0-10V CONFIGURABLE INPUTS
INTERNAL I/O CONFIGURATION	1 OFF P-LINE - SYSTEM PRESSURE 1 OFF T-LINE - OIL TEMPERATURE (OPTION) 1 OFF - CASE WATER INGRESS DETECTION
ADDITIONAL iHCU FEATURES	INLET PRESSURE REDUCING VALVE (OPTION) 1 OFF - JAW FLOAT VALVE (OPTION)

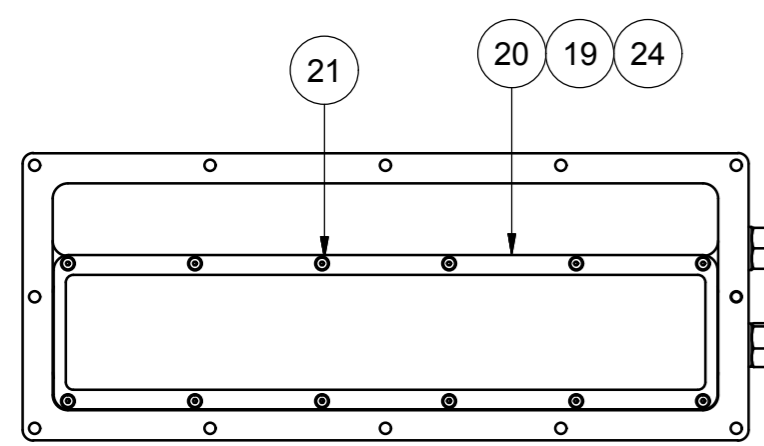
REV	DATE	CHANGE COMMENT	ZONE	DRAWN	CHECKED	APPD	DATE	EST. MASS	DIMENSIONS	SCALE	PROJECTION 3RD	TITLE
3	23 FEB 17	SHEET 1 ADDED	ALL	MvZ	NRC	NRC	27-JUN-12	19.9 kg	mm	1:4		ASSEMBLY CORE 12-STATION iHCU
DESIGNED	DRAWN	TOLERANCES UNLESS OTHERWISE STATED										
PIB	LO	DIMENSIONS mm	UP TO 100	100 TO 300	300 TO 1000	OVER 1000	MATERIAL:-					
CHECKED	APPROVED	FABRICATION	± 1.0	± 1.5	± 2.0	± 3.0	DO NOT SCALE	DRAWING No	REV No.	SIZE		
POT	POT	MACHINED PART	± 0.15	± 0.4	± 0.8	± 1.0	IF IN DOUBT ASK	AG1372	3	A2		
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SHEET 1 OF 2												



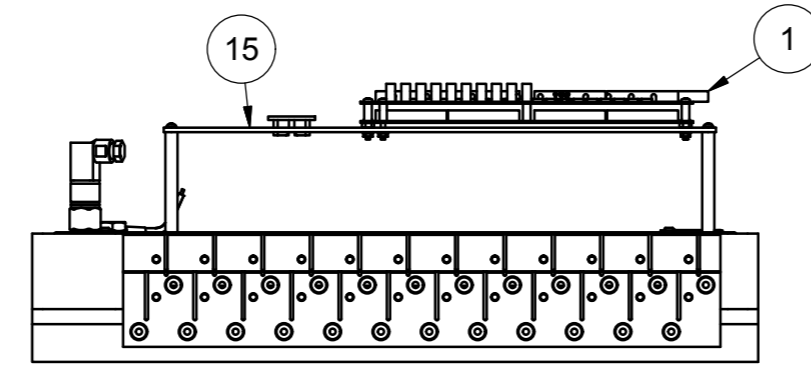
SECTION C-C
(SCALE 1 : 2.5)

- NOTES :-
1. ASSEMBLE IN ACCORDANCE WITH SMD SPECIFICATION W100
 2. TORQUE SUN REDUCING VALVE TO 45-50Nm
 3. APPLY 1 1/2 TURNS OF PTFE TAPE TO RELIEF VALVE THREADS PRIOR TO ASSEMBLY

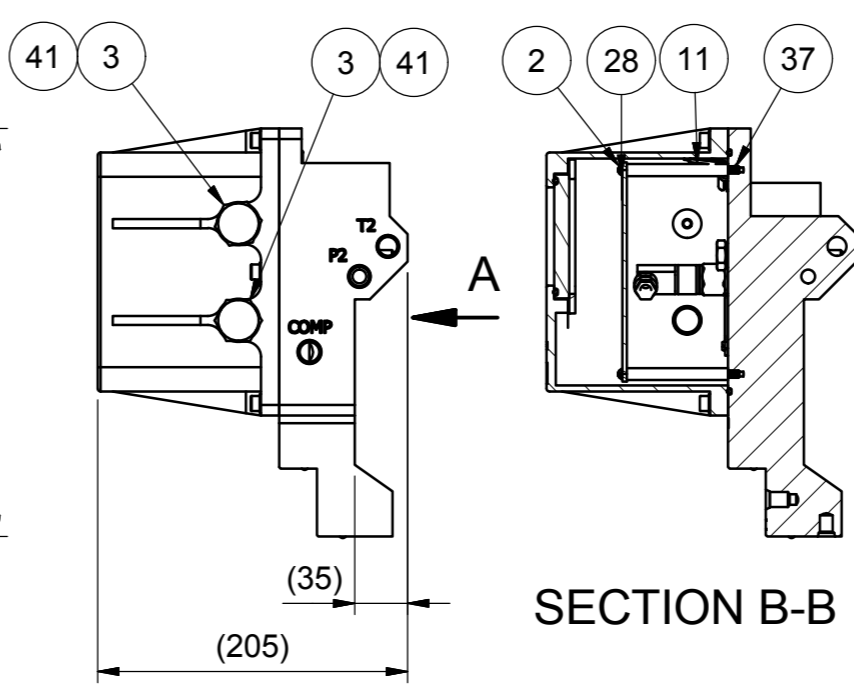
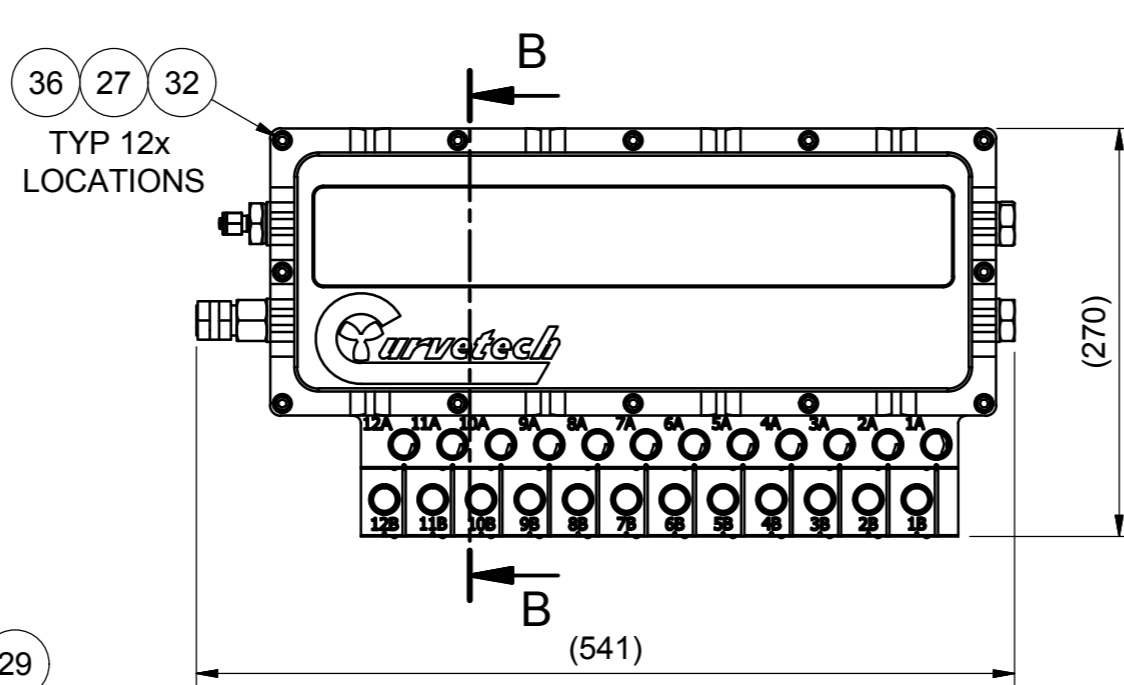
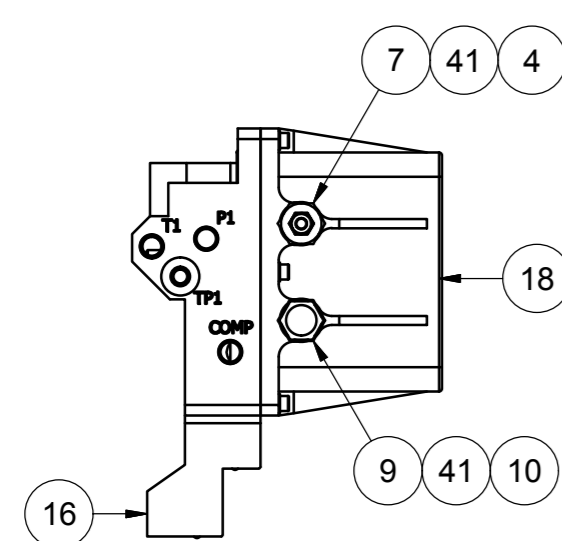
PARTS LIST			
ITEM	PART No	DESCRIPTION	QTY
1	AA0439	PCB MULTIFUNCTION VALVE CONTROLLER	1
2	AA2575	BOLT M3x10 POZIDRIVE PAN HEAD SS	4
3	AA3136	FITTING PLUG 1/2"BSPP SS	2
4	AA3195	FITTING PLUG 1/4" SS A4 - SWAGELOK SS-400-P	1
5	AA9979	PCB WATER INGRESS SENSOR	2
6	AB0941	CABLE ACC RING CRIMP RED M6	1
7	AC0834	CONNECTOR MALE 1/2"BSP - 1/4" TUBE	1
8	AC3163	BOLT M3 x 25 PAN HD SS	2
9	AC6646	ADAPTOR 1/2" BSPP M - 1/2" NPT F	1
10	AC6652	VALVE RELIEF 15psi (1/2"NPT)	1
11	AD7983	STAND HCU PCB	4
12	AD8251	PCB PT100 CONDITIONING CARD	1
13	AE1504	BOLT M6 x 8 SLTD PAN HD SS A2-70	1
14	AE6690	RESISTOR CARBON 120R 0.4WATT	1
15	AE7379	PLATE PCB MOUNT HCU	1
16	AF4656	MANIFOLD 12-STATION iHCU	1
17	AF6139	HOUSING TEMPERATURE WELL	1
18	AG3024	COVER HCU 12-STATION	1
19	AG3184	WINDOW 12ST iHCU	1
20	AG3185	PLATE WINDOW RETAINER	1
21	OB_5101	BOLT M4 x 10 SKT CSK HD SS A4-80	12
22	OC_31222	BOLT M3x12 POZIDRIVE PAN HEAD A2 SS	2
23	OC_9301	TEMPERATURE PROBE PT100	1
24	OR_1040	O RING CORD 3mm	3
25	OW_1028	BONDED SEAL 1/8"BSPP SS	1
26	PA0483	NUT M4 SS	4
27	PA0546	WASHER M6 FLAT BS4320 FORM B SS A2	12
28	PA4812	WASHER M3 FLAT BS4320 FORM A SS A2	10
29	PB5435	BLANK KOENIG 5mm	25
30	PB7876	RESISTOR 4K7	1
31	PB7878	RESISTOR 10K	1
32	PB9266	BOLT M6 x 20 SHCS SS A2-70	12
33	PC7718	NUT M3 SS	6
34	PD0360	BLANK KOENIG 6mm	1
35	PD5642	INSERT HELICOIL M8 x 1.5D SS	4
36	PD5645	INSERT HELICOIL M6 x 1.5D SS	20
37	PD5648	INSERT HELICOIL M5 x 1.5D SS	6
38	PD5953	HELICOIL INSERT M4x 1.5D SS	36
39	PD8585	BOLT M3 X 12 SLTD PAN HD SS A2-70	2
40	PK4444	PRESSURE SENSOR 0-400 bar 4-20mA	1
41	WA1079	SEAL BONDED 1/2"BSP SS-1.4436 (316S33) SELF CENTERING NBR90	4



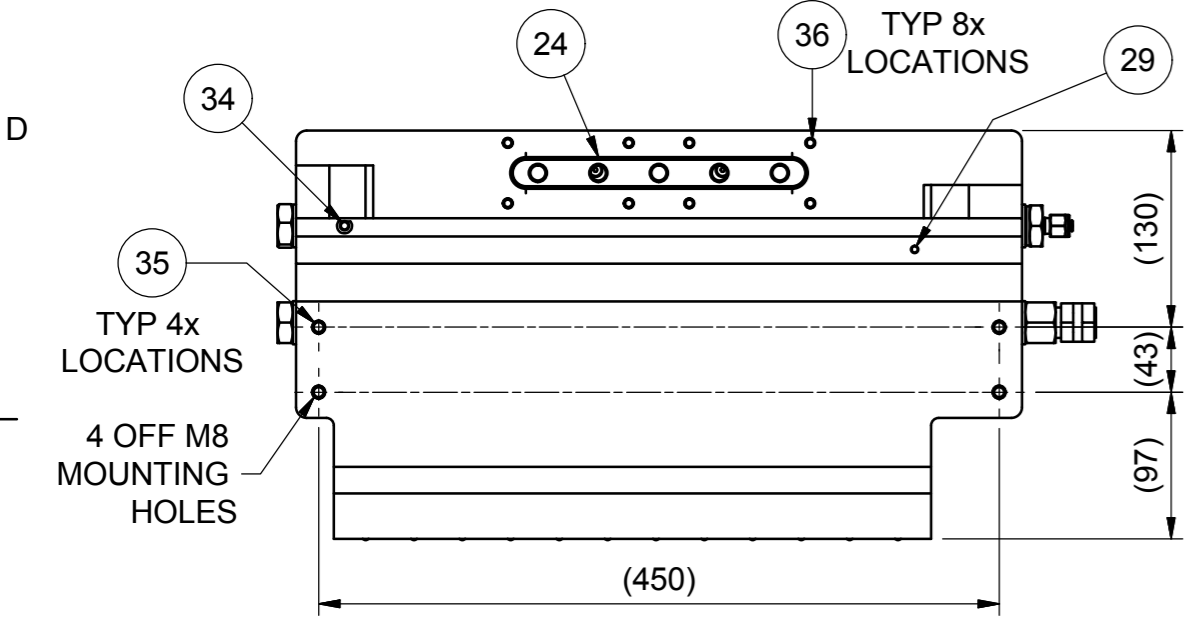
VIEW ON INSIDE OF COVER



COVER OMITTED FROM ABOVE VIEWS TO SHOW INTERNALS



SECTION B-B



VIEW ON A

REV	DATE	CHANGE COMMENT	ZONE	DRAWN	CHECKED	APPD
1	17 AUG 12	COVER & WINDOW CHANGED	-	JPG	NRC	NRC
2	13 MAR 14	ITEM PD5648 QTY WAS 4.	A2	LO	NRC	NRC
3	23 FEB 17	SHEET 1 ADDED. MOUNTING HOLE DIMS ADDED	D1	MVZ	NRC	NRC

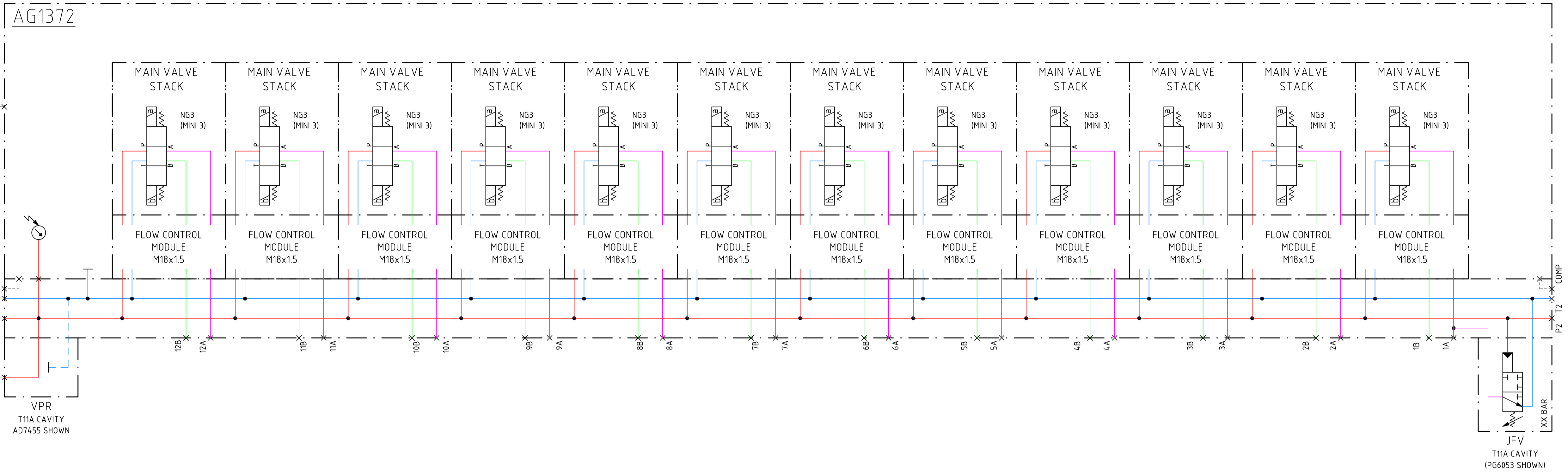
DATE	EST. MASS	DIMENSIONS	SCALE	PROJECTION 3RD	TITLE		
27-JUN-12	19.9 kg	mm	1:5		ASSEMBLY CORE 12-STATION iHCU		
DESIGNED	DRAWN	TOLERANCES UNLESS OTHERWISE STATED			MATERIAL:- N/A		
PIB	LO	DIMENSIONS mm	UP TO 100	100 TO 300		300 TO 1000	OVER 1000
CHECKED	APPROVED	FABRICATION	± 1.0	± 1.5	± 2.0	± 3.0	DO NOT SCALE IF IN DOUBT ASK
POT	POT	MACHINED PART	± 0.15	± 0.4	± 0.8	± 1.0	

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DRAWING No	REV No.	SIZE
AG1372	3	A2

SHEET 2 OF 2



HYDRAULIC PORTS
 PORTS A1 - A12 7/16"UNF
 PORTS B1 - B12 7/16"UNF
 PORTS T1 & T2 9/16"UNF
 PORTS P1 & P2 9/16"UNF
 TP1 1/4"BSPP
 COMP 9/16"UNF

		F12	F11	F10	F9	F8	F7	F6	F5	F4	F3	F2	F1
MAIN STACK (SEE DRAWING AK2234 FOR OPTIONS)													
EXTERNAL FLOW CONTROL REQUIRED - YES. (AD3858) NOT REQUIRED - NO. (AD4302)	A	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO
	B	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO	YES / NO
VPR - VALVE PRESSURE REDUCING (CIRCLE OPTION REQUIRED. SEE NOTE 5)		BLANKED (AD7455) 10-315 BAR (AD2284). SETTING:bar											
JFV - JAW FLOAT VALVE (CIRCLE OPTION REQUIRED. SEE NOTE 6)		BLANKED (AG3173) REQUIRED (PG6053). SETTING:bar											
ELECTRICAL CONNECTOR ASSEMBLY		BURTON - AE7035 SUBCONN / IMPULSE (E2-E5 ONLY) - AF4214 SEACON - AF6695											

NOTES

- AG1372 IS AN UNPOPULATED 12 STATION iHCU VALVE-PACK. USE THIS TABLE TO SELECT THE REQUIRED VALVES AND OTHER FEATURES APPROPRIATE TO THE INTENDED APPLICATION.
- ALL VALVE STACKS AND PORTS MUST BE POPULATED OR BLANKED PRIOR TO FIRST USE OF THE VALVE PACK
- THE VALVE PACK SHOULD BE BUILT & TESTED BY QUALIFIED PERSONNEL, TO SMD STANDARDS PRIOR TO FIRST USE ON A VEHICLE.
- SEE DRAWING AG2291 FOR STANDARD WIRING CONFIGURATION.
- THE VPR (VALVE PRESSURE REDUCING) ALLOWS A HIGH PRESSURE INPUT FROM THE ROV MAIN CIRCUIT TO BE REDUCED TO A LOWER PRESSURE FOR ALL iHCU STATIONS. FOR EXAMPLE AN ROV WITH 250 BAR MAIN CIRCUIT CAN CONTROL TOOLING WITH 210BAR MAXIMUM WORKING PRESSURE
- THE JFV (JAW FLOAT VALVE) ACTS ON STACK 1. WHEN INCORPORATED (IE. USING PG6053) SERVICE LINE 1A IS CONNECTED TO THE TANK LINE WHEN PRESSURE IS LOST IN THE ROV MAIN CIRCUIT REGARDLESS OF THE MAIN STACK. WHEN MAIN CIRCUIT PRESSURE IS ABOVE THE JFV VALVE SETTING THE MAIN STACK OPERATES AS NORMAL. TYPICALLY THIS IS USED ON A MANIPULATOR CLOSE FUNCTION - IN THE EVENT OF A DEAD ROV THE MANIPULATOR JAW CAN FLOAT ALLOWING THE ROV TO BE RECOVERED

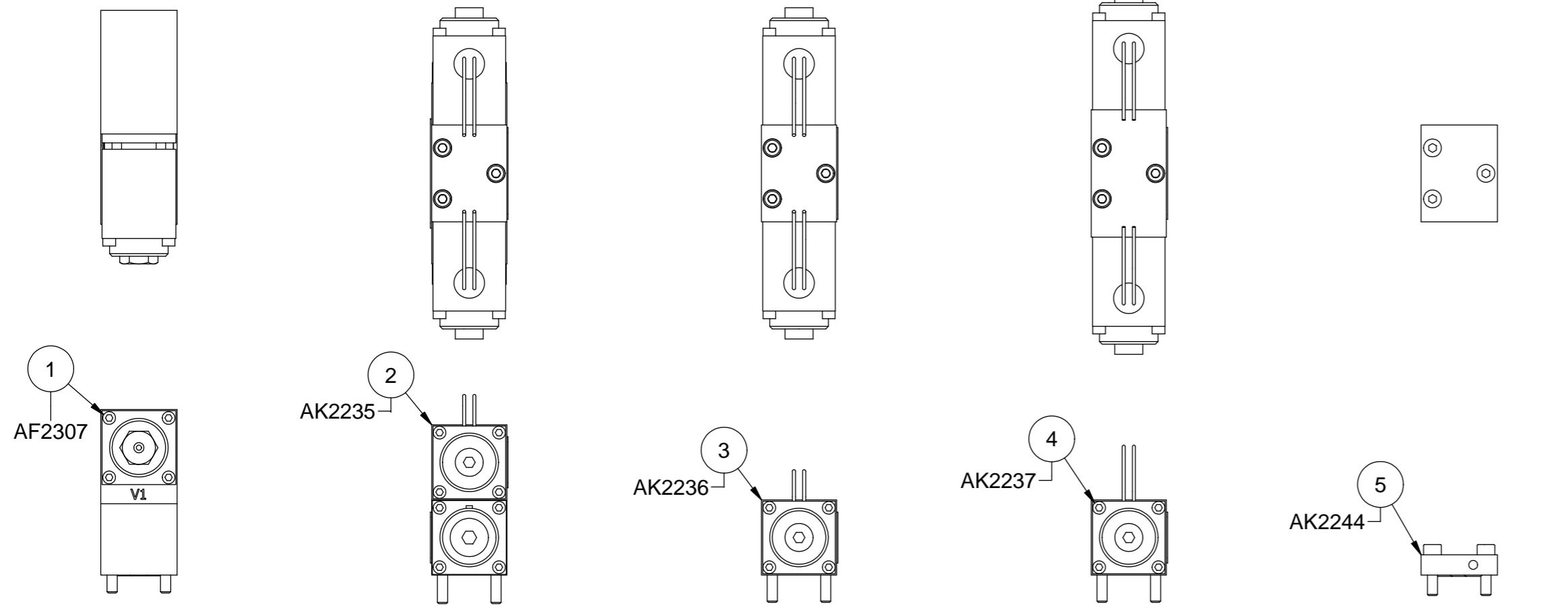
REV NO	DATE	CHANGE	ZONE	DRAWN	CHECK	APPD	DATE	EST. MASS	DIMENSIONS	SCALE	PROJECTION 3RD	TITLE					
							01/03/2017	N/A	mm	N/A		DRAWING 12ST iHCU - SALES TABLE AND HYDRAULIC SCHEMATIC					
DESIGNED	MvZ	DRAWN	MvZ	TOLERANCES UNLESS OTHERWISE STATED				MATERIAL:- N/A									
CHECKED	APPROVED	FABRICATION	± 1.0	± 1.5	± 2.0	± 3.0	DO NOT SCALE										
NRC	NRC	MACHINED PART	± 0.15	± 0.4	± 0.8	± 1.0	IF IN DOUBT ASK										
<table border="1"> <tr> <td>DRAWING NO.</td> <td>REV NO.</td> <td>SIZE</td> </tr> <tr> <td>AK2360</td> <td>0</td> <td>A1</td> </tr> </table>												DRAWING NO.	REV NO.	SIZE	AK2360	0	A1
DRAWING NO.	REV NO.	SIZE															
AK2360	0	A1															

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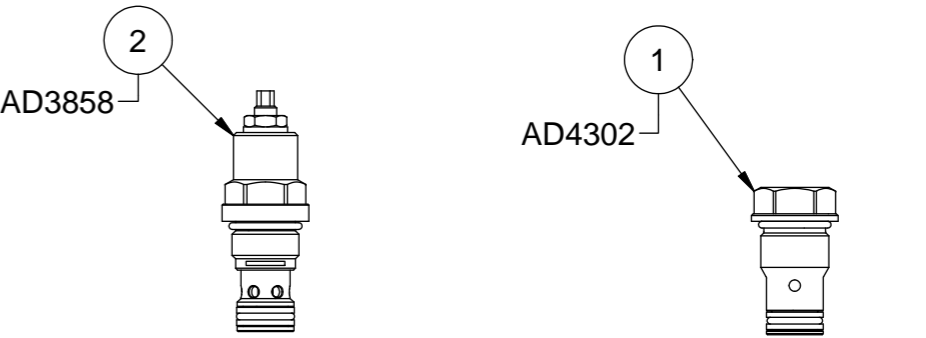
MAIN VALVE STACKS NG3 / MINI-3

PARTS LIST				
ITEM	QTY	PART No	DESCRIPTION	
1	1	AF2307	ASSEMBLY PROP PRESSURE RELIEF VALVE	
2	1	AK2235	ASSEMBLY MINI 3 DIR+PO / DO	
3	1	AK2236	ASSEMBLY MINI 3 DIR / D	
4	1	AK2237	ASSEMBLY MINI 3 PROP / P	
5	1	AK2244	ASSEMBLY BLANKING PLATE NG3 (CETOP MINI-3)	

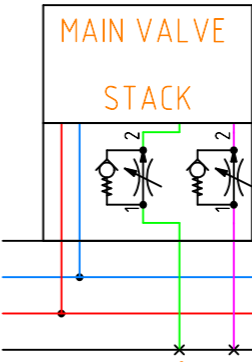
PARTS LIST				
ITEM	QTY	PART No	DESCRIPTION	
1	1	AD4302	VALVE CAVITY PLUG DNSPM18 SS	
2	1	AD3858	VALVE THROTTLE DRSPM18-25-K9-Z251	



FLOW CONTROLS

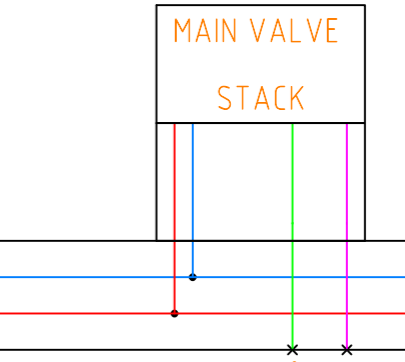


MAIN VALVE
STACK

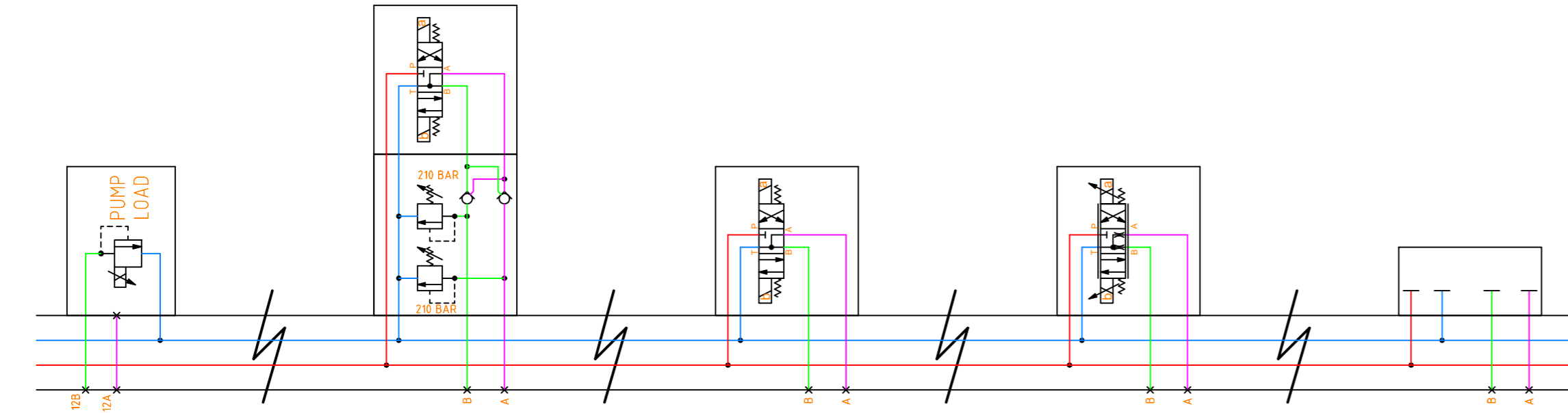


MAX. PRESSURE: 350bar
MAX FLOW: 25 lpm
VARIABLE METER-IN
FLOW CONTROL TO
CONTROL ACTUATOR
MAX. SPEEDS

MAIN VALVE
STACK

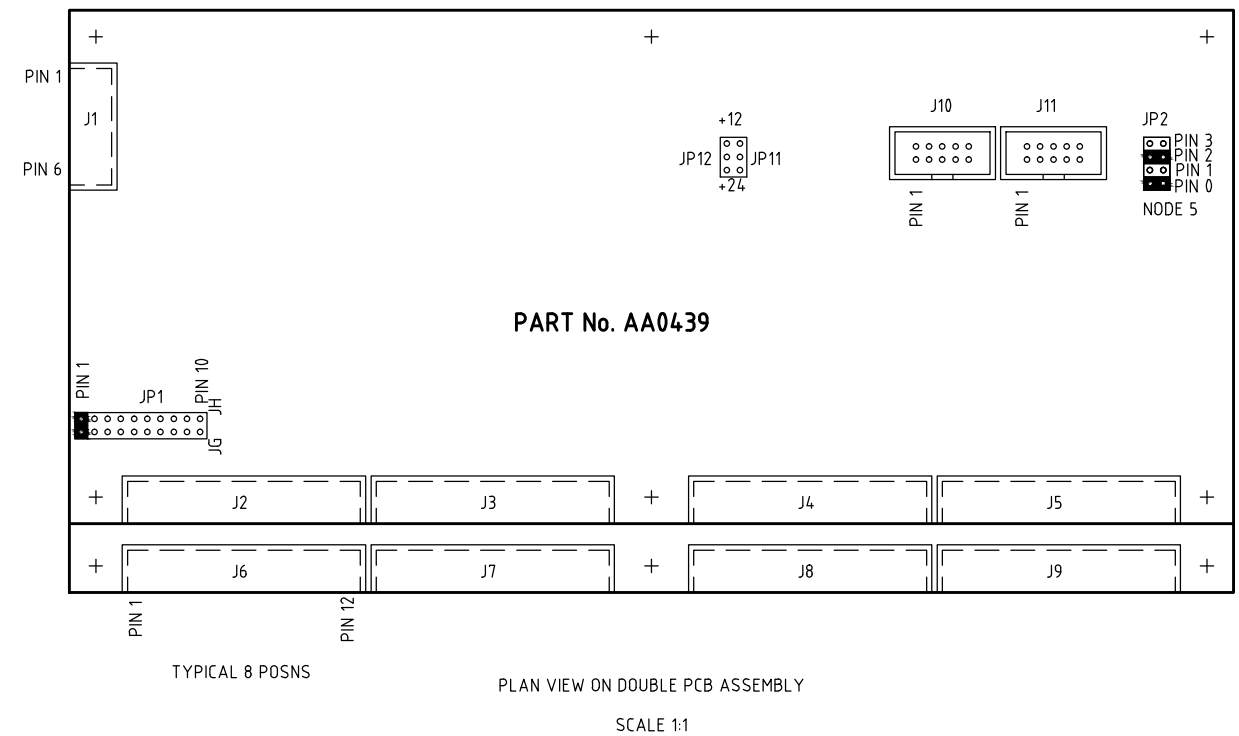
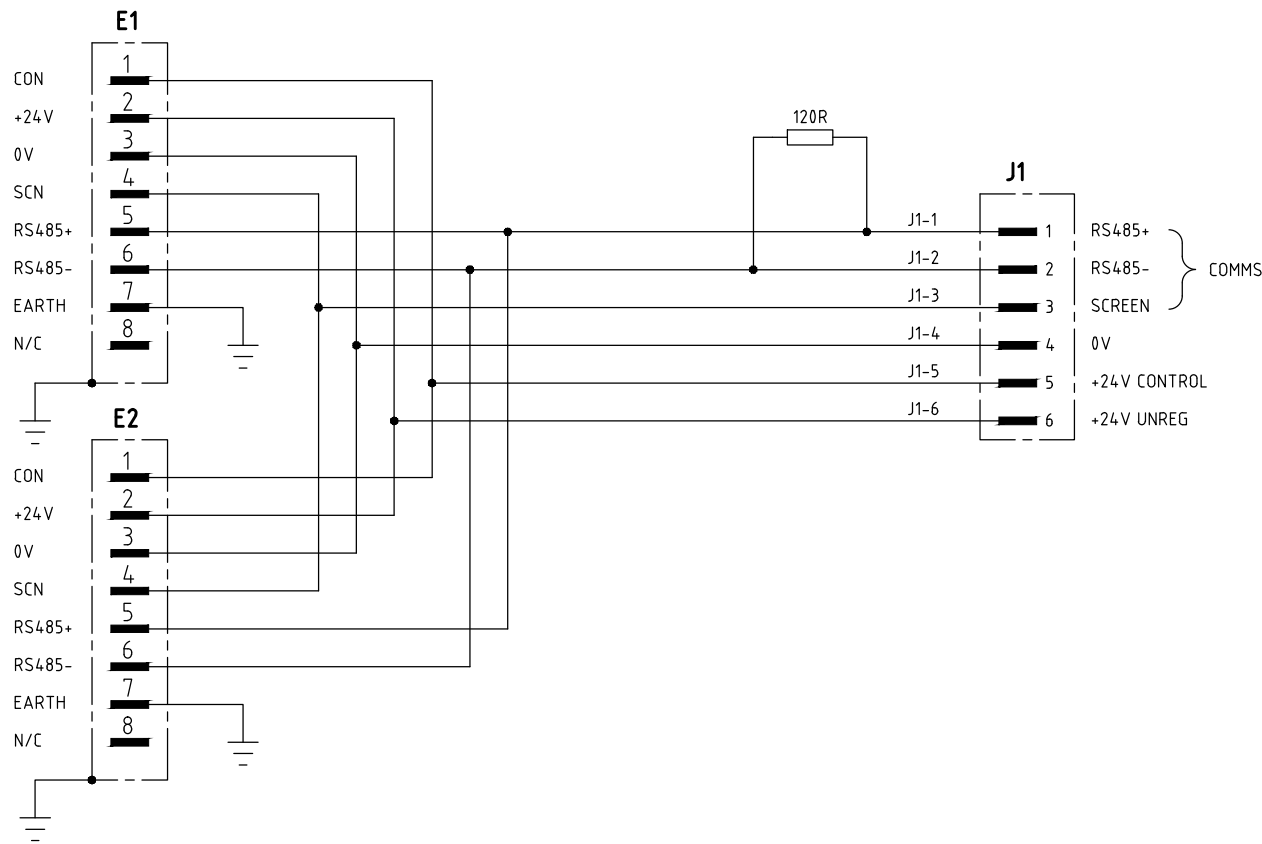


MAX. PRESSURE: 350bar
MAX FLOW: 25 lpm
CAVITY PLUG
NO RESTRICTIONS



<p>MAX. PRESSURE: 210bar MAX FLOW: 8 lpm</p> <p>RELIEF VALVE. USED FOR SYSTEM PUMP SWASH CONTROL</p>	<p>MAX. PRESSURE: 315bar MAX FLOW: 8 lpm</p> <p>TYPICALLY USED FOR CONTROL OF CYLINDERS, GRABBERS AND SIMILAR. WILL LOAD HOLD & INCLUDES RELIEF CAPABILITY TO ABSORB SMALL IMPACTS</p>	<p>MAX. PRESSURE: 350bar MAX FLOW: 15 lpm</p> <p>USED FOR CONTROL OF CYLINDERS, SMALL TOOLS & SIMILAR. WHEN DE-ENERGISED CYLINDERS CAN FLOAT</p>	<p>MAX. PRESSURE: 315bar MAX FLOW: 8 lpm</p> <p>PROPORTIONAL VALVE FOR FINE CONTROL OF ACTUATORS. TYPICALLY USED FOR P&T's, MANIPULATORS, ETC.</p>	<p>BLANKING PLATE</p>
--	--	--	--	-----------------------

REV	DATE	CHANGE COMMENT	ZONE	DRAWN	CHECKED	APPD	DATE	EST. MASS	DIMENSIONS	SCALE	PROJECTION 3RD	TITLE	
							23/02/17	N/A	mm	1:2		ASSEMBLY NG3 VALVE STACKS - SALES DRAWING	
							DESIGNED	DRAWN	TOLERANCES UNLESS OTHERWISE STATED				
							MvZ	MvZ	DIMENSIONS mm	UP TO 100	100 TO 300	300 TO 1000	OVER 1000
							CHECKED	APPROVED	FABRICATION	± 1.0	± 1.5	± 2.0	± 3.0
							NRC	NRC	MACHINED PART	± 0.15	± 0.4	± 0.8	± 1.0
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										DO NOT SCALE IF IN DOUBT ASK	DRAWING No	REV No.	SIZE
											AK2234	0	A2
SHEET 1 OF 1													



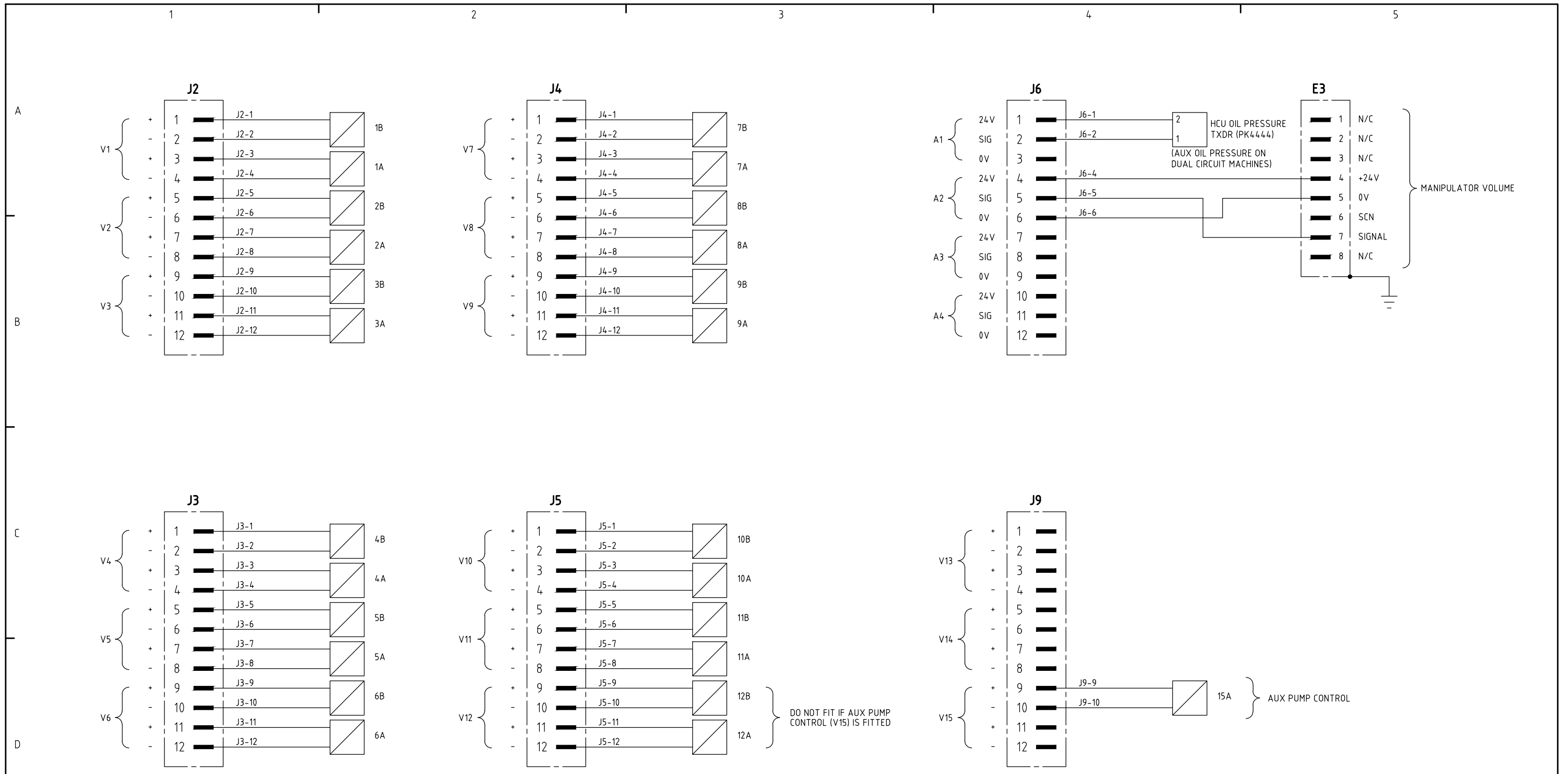
NOTE:
WANDFLUH VALVES - SOLENOID "A"
OPENS PORT "B" AND VICE VERSA

RELEASED FOR MANUFACTURE

REV No	DATE	CHANGE	ZONE	DRAWN	CHECKED	APPROVED	TITLE						
1	29-AUG-12	DRAWING TITLE CHANGED TO BURTON TYPE ONLY	-	AT	MMc	PDW	DRAWING ELECTRICAL WIRING 10&12 WAY HCU BURTON						
2	09-OCT-12	NO CHANGES TO THIS SHEET.	-	MMC	AT	KS							
3	11-DEC-12	NO CHANGES TO THIS SHEET.	-	DH	AT	KS							
4	12-SEPT-13	NO CHANGE TO THIS SHEET	-	AT	KS	PDW	DESIGNED	DRAWN	CHECKED	APPROVED	DATE	DRAWING NO.	REV No.
5	21-JAN-14	NO CHANGE TO THIS SHEET	-	JGC	IMP	IMP	P.D.W.	P.D.W.	A.T.	K.S.	21/08/12	AG2291	6
6	23-JAN-14	NO CHANGE TO THIS SHEET	-	LO	NRC	NRC						SHEET 1 OF 3	

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RELEASED FOR MANUFACTURE

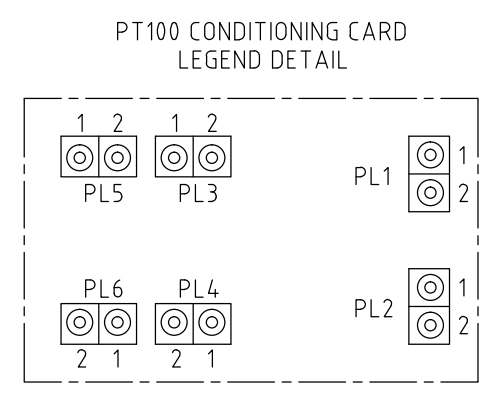
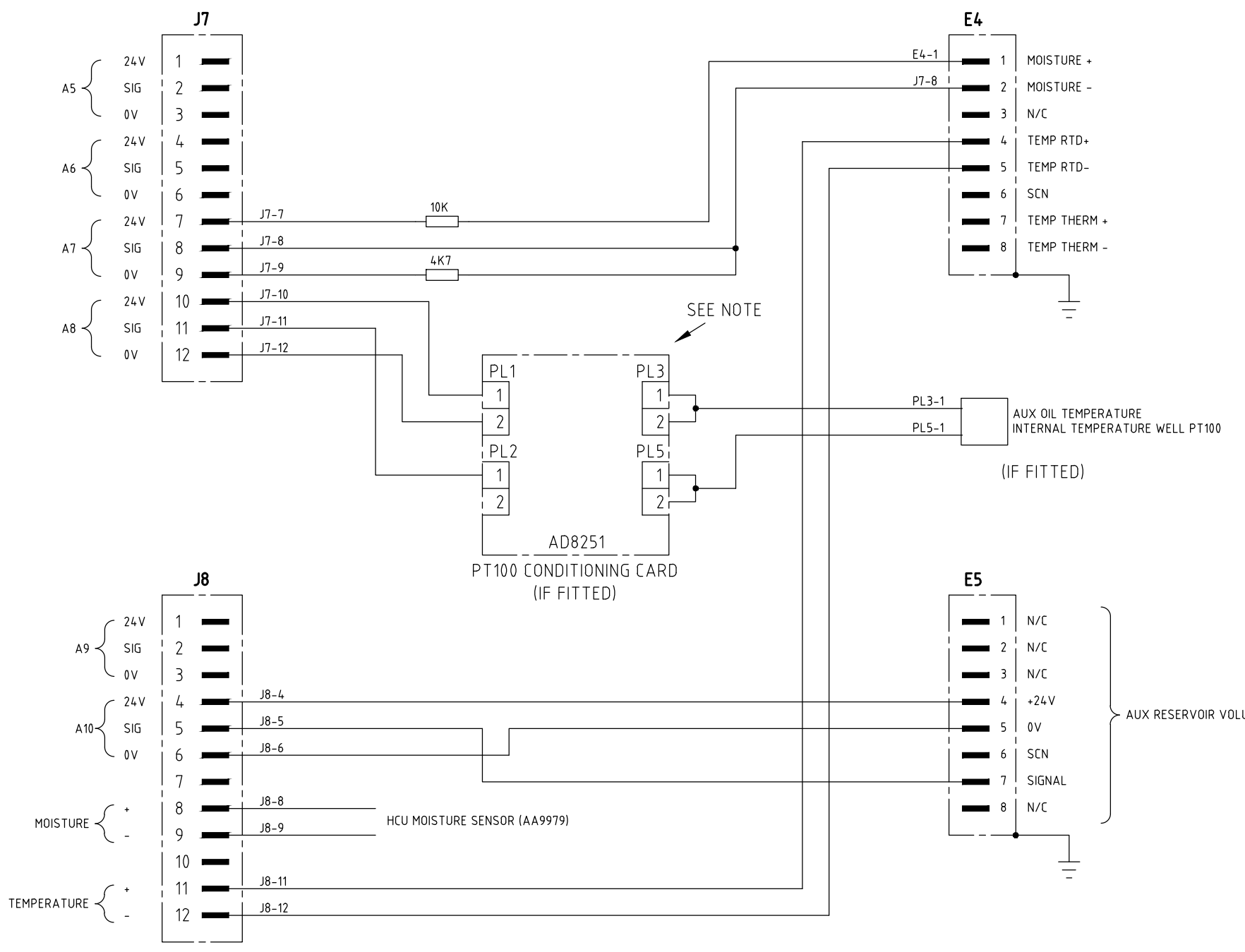
REV No	DATE	CHANGE	ZONE	DRAWN	CHECKED	APPROVED	TITLE						
1	29-AUG-12	DRAWING TITLE CHANGED TO BURTON TYPE ONLY	-	AT	MMc	PDW	DRAWING ELECTRICAL WIRING 10&12 WAY HCU BURTON						
2	09-OCT-12	REVISED REFERENCES.	-	MMC	AT	KS							
3	11-DEC-12	NO CHANGES TO THIS SHEET.	-	DH	AT	KS							
4	12-SEPT-13	NO CHANGE TO THIS SHEET	-	AT	KS	PDW	DESIGNED	DRAWN	CHECKED	APPROVED	DATE	DRAWING NO.	REV No.
5	21-JAN-14	NO CHANGE TO THIS SHEET	-	JGC	IMP	IMP	P.D.W.	P.D.W.	A.T.	K.S.	21/08/12	AG2291	6
6	23-JAN-14	NO CHANGE TO THIS SHEET	-	LO	NRC	NRC						SHEET 2 OF 3	

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A3

1 2 3 4 5

A
B
C
D



NOTE: PT100 CARD IS
OPTIONAL AND MAY NOT
BE FITTED

RELEASED FOR MANUFACTURE

REV No	DATE	CHANGE	ZONE	DRAWN	CHECKED	APPROVED	TITLE						
1	29-AUG-12	DRAWING TITLE CHANGED TO BURTON TYPE ONLY	-	AT	MMc	PDW	DRAWING ELECTRICAL WIRING 10&12 WAY HCU BURTON						
2	09-OCT-12	NO CHANGES TO THIS SHEET.	-	MMC	AT	KS							
3	11-DEC-12	WIRE IDENT CHANGED AS REQUEST. REF ECN29347	-	DH	AT	KS							
4	12-SEPT-13	ADDED AD8251 LEGEND DETAIL	B5	AT	KS	PDW	DESIGNED	DRAWN	CHECKED	APPROVED	DATE	DRAWING NO.	REV No.
5	21-JAN-14	ADDED NOTE TO PT100 CARD	-	JGC	IMP	IMP	P.D.W.	P.D.W.	A.T.	K.S.	21/08/12	AG2291	6
6	23-JAN-14	(IF FITTED) TEXT ADDED	C2/C4	LO	NRC	NRC						SHEET 3 OF 3	

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