

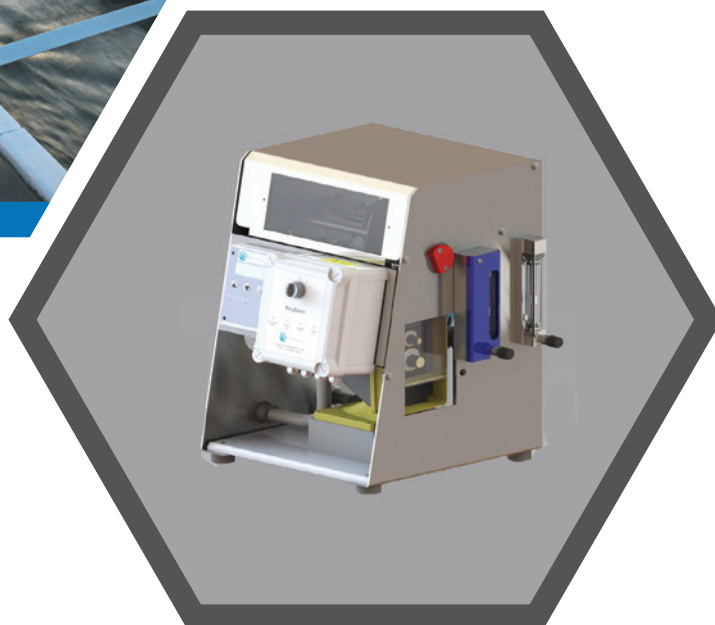
WATER PROCESS SOLUTIONS

Operation & Maintenance Manual

Polyblend® Series 100 / 200

Polymer Mixing System

Manual No. 7000



Water Process Solutions
PolyBlend
Series: LO/100/200
Operation & Maintenance Manual
7000-MANUAL

Contents

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DECLARATION OF CONFORMITY

Name of manufacturer: Water Process Solutions
Address of manufacturer: Unit 10 Mill Hall Business Estate
Aylesford
Kent
ME20 7JZ
England


I hereby declare that the following machinery complies with all the Essential Health and Safety Requirements of the Machinery Directive 89/392/EEC as amended and the Electromagnetic Compatibility Directive 89/336/EEC as amended.

Machinery Description: Liquid Polymer Dosing/Mixing Equipment
Type: PolyBlend Series "L0,100,200,600.1000, Including. PC Series
Transposed Harmonised European Standards used:
EN 292 parts 1 & 2 : 1991 Safety of Machinery – Basic concepts, general principles for design
EN 60204 part 1 : 1993 Safety of Machinery – Electrical equipment of machines
prEN 953 Safety of Machinery – General requirement for the design and construction of guards (fixed, movable)
EN 50081 part 1 : 1992 Generic Emissions – Residential, commercial and light industrial environment.
EN 50082 part 1 : 1992 Generic Immunity – Residential, commercial and light industrial environment.
Additional Standards used: Not applicable

Name of authorised responsible person: Clive Dean
Position of responsible person: General Manager

DECLARATION

I declare that as the authorised responsible person, the above information in relation to the supply/ manufacture of this product is in conformity with the stated standards and other related documents following the provision of EC Machinery Directive.

Signature of responsible person: 
Date :.....31/07/14.....

Section 1:

WARRANTY

1. Water Process Solutions (WPS) warrants equipment of its manufacture and bearing its identification to be free from defects in workmanship and material. WPS liability under this warranty extends for a period of one year from date of delivery from our factory or authorised distributor. It is limited to repairing or replacing any device or part which is returned, transportation prepaid, to the factory within one year of delivery to the original purchaser, and which is proven defective upon examination.

WPS disclaims all liability for damage during transportation, for consequential damage of whatever nature, for damage due to handling, installation or improper operation, and for determining suitability for the use intended by the purchaser. Replaceable elastomeric parts are expendable and are not covered by any warranty express or implied.

WPS make no warranties, either expressed or implied, other than those stated above. No representative has authority to change or modify this warranty in any respect. The warranty period will commence from the date of delivery of the goods to the purchaser.

Contact Details:

WPS
Unit 10
Mill Hall Business Estate
Aylesford
Kent,
ME20 7JZ

+44 (0) 1622719945

waterprocesssolutions.com

Section 1A:

WARNINGS

Hazardous Chemicals

When dealing with hazardous chemicals it is the responsibility of the equipment user to obtain, and follow, all safety precautions recommended by the material manufacturer or supplier. COSHH sheets should be available in the event of an accident.

It is good general practice to wear protective clothing, gloves and face/eye protection when working with the chemicals, operating the equipment, and carrying out maintenance work on the plant.

Electrical Safety

This equipment uses electrical power at a high enough voltage to endanger life. Before carrying out any plant maintenance or repair work, persons concerned must ensure that the equipment is isolated from the electrical supply and make tests to verify that isolation is complete.

When any of the supplies cannot be disconnected, functional testing, maintenance and repair of the electrical units is to be undertaken only by personnel who are fully aware of the danger and have taken adequate precautions.

Safety Precautions

To avoid possible severe personal injury or equipment damage, observe the following:

This equipment should be installed, operated, and serviced only by trained, qualified personnel who are thoroughly familiar with the plant and the contents of this manual. When dealing with hazardous materials it is the responsibility of the equipment user to obtain and follow all safety precautions recommended by the material manufacturer or supplier. Avoid contacting electrically hot motors, components, or heaters. Consult a WPS representative if the equipment is to be used under conditions other than originally specified, or before any modifications are made to the equipment. Failure to comply with the above will invalidate the warranty and could endanger personnel. Use extreme care to avoid contact with the chemicals. Contact the chemical supplier for instructions in the preparation and handling. Observe all recommended safety precautions.

General Note

Minor part number changes may be incorporated into WPS products that are not immediately reflected in the instruction manual. If such a change has apparently been made in our equipment and does not appear in your instruction book, contact WPS for information.

Section 2:

SERIES MODEL NUMBERS

Within the LO/100/200 Series the model numbers are:

PB	8-1	HMZ
PB	16-1	HMZ
PB	50-1	HMZ
PB	100-1	HMZ
PB	100-2	HMZ
PB	32-1	HMZ
PB	200-1	HMZ
PB	200-2	HMZ

CAPACITIES:

Model	Dilution Water Litres/Hour		Metering Pump Litres/Hour
	Primary	Secondary	
PB 8-1 HMZ	0 - 30	NIL	0.005 - 3.7
PB 16-1 HMZ	4 - 60	NIL	0.005 - 3.7
PB 50-1 HMZ	18 - 150	NIL	0.005 - 3.7
PB 100-1 HMZ	40 - 375	NIL	0.005 - 3.7
PB 100-2 HMZ	40 - 375	NIL	0.005 - 7.5
PB 32-1 HMZ	4 - 60	4 - 60	0.005 - 3.7
PB 200-1 HMZ	40 - 375	40 - 500	0.005 - 3.7
PB 200-2 HMZ	40 - 375	40 - 500	0.005 - 7.5

Section 3:

SYSTEM SCHEMATICS AND GENERAL ARRANGEMENT DRAWING

- 3.1 System Schematics**
 - Drawing: SK392
 - Drawing: SK393
 - Item Description Sheet
- 3.2 Functional Description**
- 3.3 General Arrangement Drawings**

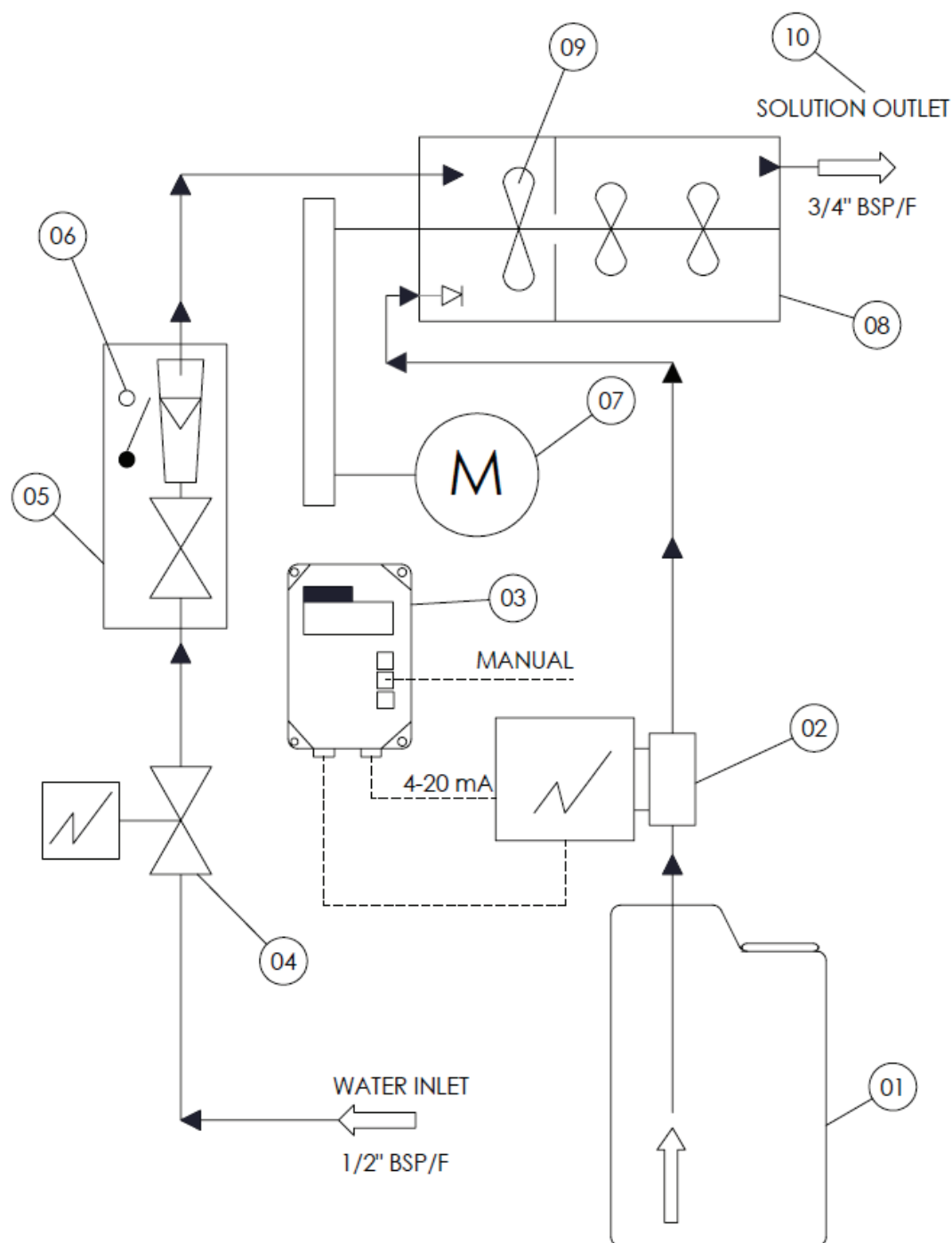
Section 3.1:

SYSTEM SCHEMATICS

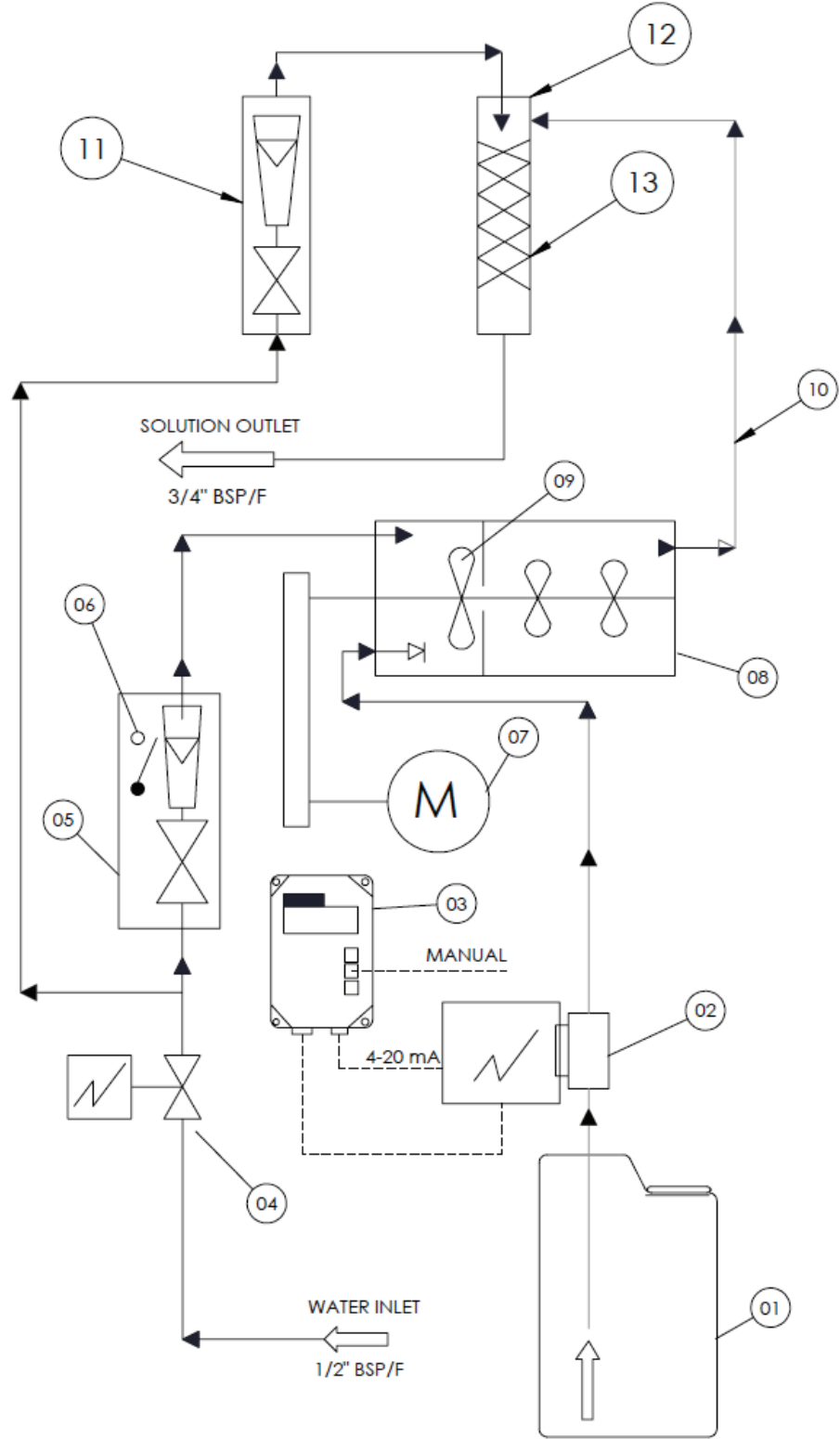
The simplified process schematic for models PB 8-1 HMZ, PB 16-1 HMZ, PB 50-1 HMZ, PB 100-1 HMZ and PB 100-2 HMZ is as Drawing: SK392.

The simplified process schematic for models PB 32-1 HMZ, PB 200-1 HMZ and PB 200-2 HMZ is as Drawing: SK393.

DRAWING SK392. ISS: 01



DRAWING SK393. ISS: 01



Revision 15. Mar 2016

ITEM DESCRIPTION SHEET – REFER TO DRAWINGS SK392 AND SK393

Item No:	Description
1.	Neat Polymer Storage (Cost option)
2.	Metering Pump
3.	REM-1D Unit – Metering Pump Output Controller
4.	Water Supply on/off Solenoid Valve and Water Inlet
5.	Primary Dilution Water Flow Indicator and Control Valve
6.	Low Water Flow Switch
7.	Activation Chamber Drive Motor
8.	Activation Chamber
9.	Impeller
10.	Active Solution Outlet Port
11.	Secondary Dilution Water Indicator and Control Valve
12.	Secondary Dilution Water and Polymer Confluence
13.	Static Mixer
14.	Final Dilute, Active Solution to Point of Use

Section 3.2:

FUNCTIONAL DESCRIPTION

The compact, low power, highly efficient PolyBlend unit performs three basic functions. Metering of precise amounts of liquid polyelectrolyte as supplied by manufacturer together with flow regulated dilution water, correct energy profile for the blending of the two streams to uniform dilution and activation and feeding of the activated polymer to the point of use.

The motive force to feed the active solution to the point of use is the dilution water supply pressure itself.

As shown on drawings SK392 and SK393, emulsion or dispersion polyelectrolyte is drawn from a neat polymer storage tank (1) by an adjustable metering pump (2). The output of the pump is controlled by the WPS REM-1E controller (3) either by manual control or 4-20 mA. (4.20 mA lead supplied as option)

At the same time the inflow of dilution water from a supply source is regulated through solenoid valve (4) and the rate adjusting valve on flowmeter (5). The flowmeter (5) is equipped with a variable low flow magnetic switch (6) integral in the flowmeter (5).

The polymer and the water are injected separately at the right hand end of the blending activation chamber (8). The impeller (9) blends polymer and water in a high energy, low shear, completely backmixed environment to ensure complete polymer activation. The blended and activated polymer then exits at the end of the activation chamber through the discharge port (10) and is piped to the point of use.

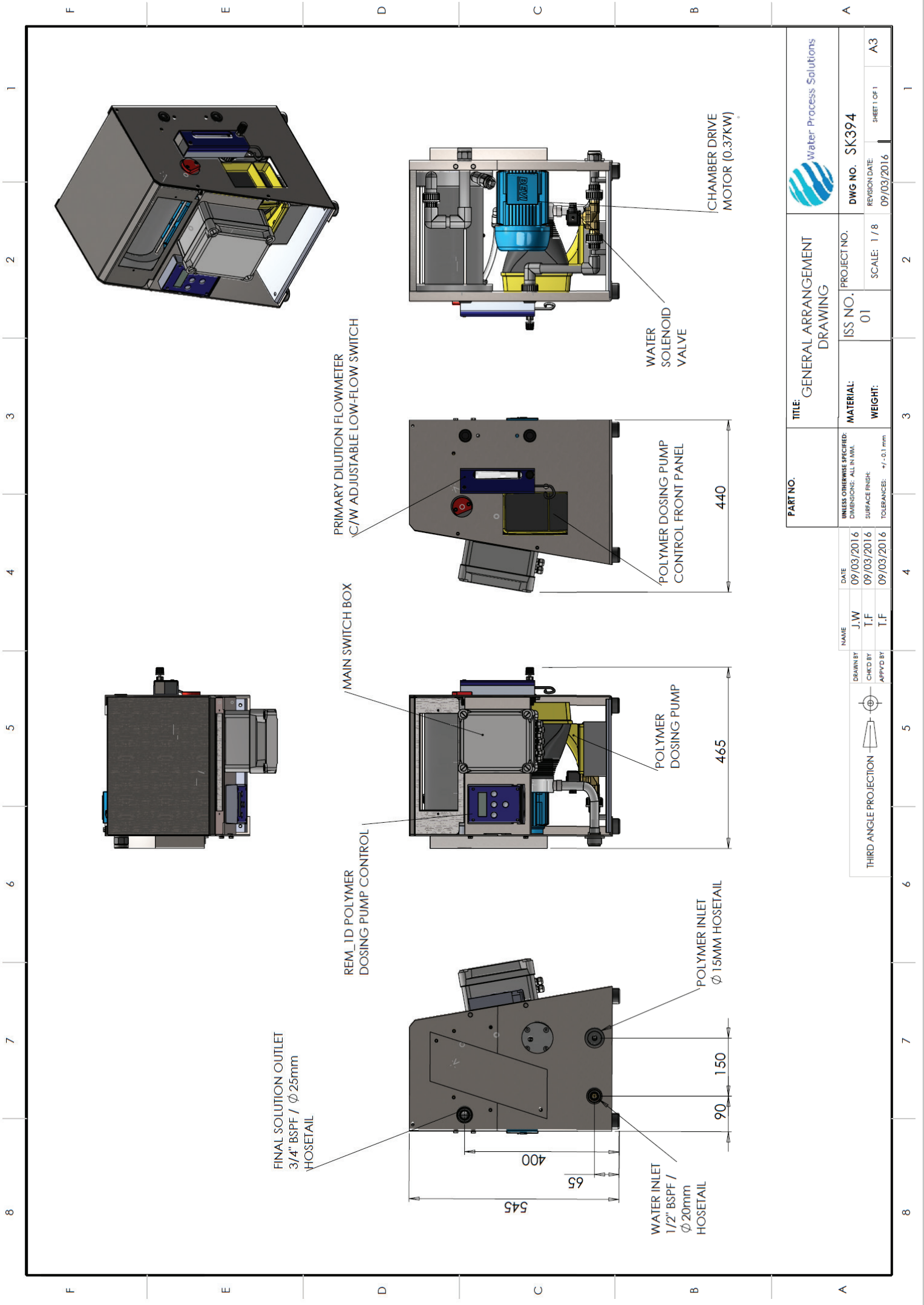
For models with post dilution (PB 32-1 HMZ, PB 200-2 HMZ, PB 200-2 HMZ) the solution leaving the activation chamber (10) meets the secondary dilution water from flowmeter (11) at the confluence assembly (12) then through static mixer (13) then to the point of use.

Section 3.3:

GENERAL ARRANGEMENT DRAWING

TITLE: GENERAL ARRANGEMENT OF POLYBLEND

DRAWING NO: SK394 (LO/100 SERIES)
SK384 (32/200 SERIES)

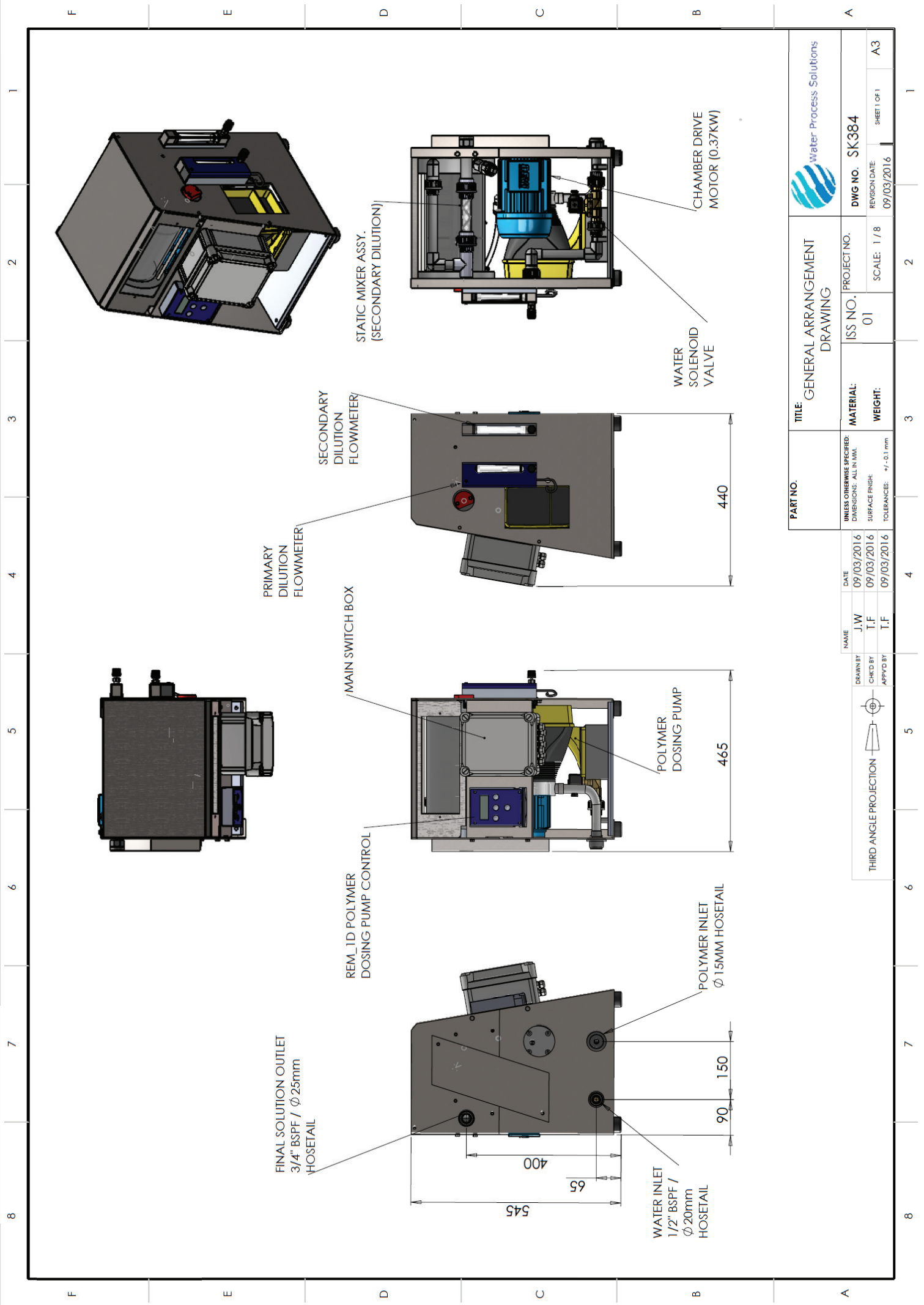


PART NO.		TITLE: GENERAL ARRANGEMENT DRAWING			
UNLESS OTHERWISE SPECIFIED: DIMENSIONS: ALL IN MM. SURFACE FINISH: TOLERANCES: ± 0.1 mm		ISS NO.	PROJECT NO.	DWG NO. SK394	
		01		SCALE: 1 / 8	REVISION DATE: 09/03/2016
		WEIGHT:			SHEET 1 OF 1
					A3

NAME	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
J.W	09/03/2016	J.W	09/03/2016	J.W	09/03/2016	J.W	09/03/2016	J.W	09/03/2016
T.F	09/03/2016	T.F	09/03/2016	T.F	09/03/2016	T.F	09/03/2016	T.F	09/03/2016
T.F	09/03/2016	T.F	09/03/2016	T.F	09/03/2016	T.F	09/03/2016	T.F	09/03/2016



THIRD ANGLE PROJECTION



PART NO.	TITLE: GENERAL ARRANGEMENT DRAWING		
	UNLESS OTHERWISE SPECIFIED: DIMENSIONS: ALL IN MM. SURFACE FINISH: TOLERANCES: ± 0.1 mm	MATERIAL:	WEIGHT:
	ISS NO. 01	PROJECT NO.	

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09/03/2016	J.W	09/03/2016	T.F
09/03/2016	T.F	09/03/2016	T.F

THIRD ANGLE PROJECTION	DATE	NAME	DATE	NAME
	09/03/2016	J.W	09/03/2016	T.F
	09/03/2016	T.F	09/03/2016	T.F

Section 4:

INSTALLATION

4.1	Unpacking the System
4.2	Location
4.3	Terminal Points
4.4	Supply Water
4.5	Neat Polymer Supply
4.6	Electrical Supply

Section 4.1:

UNPACKING THE SYSTEM

Note Due to weight of PolyBlend unit, handling is a two person operation. Always lift PolyBlend from under main frame and not any ancillary switch boxes, connections, flow meters, etc.

The PolyBlend unit is shipped intact and will have been tested at the WPS factory. In the shipment box you should have found:

- i) The PolyBlend unit with 3 metres of three core electrical fly-lead for connection to an isolated, fused, supply.
- ii) This manual.
- iii) Series AA7 metering pump instruction booklet.
- iv) A plastic bag containing:
 - Priming syringe
 - Syringe tubing
 - Water inlet hose tail
 - Solution out hose tail
 - Polymer inlet hose tail
 - Pipe clips
 - Suction hose for neat polymer to polymer inlet

Section 4.2:

LOCATION

When selecting the best location for the installation of the PolyBlend unit, consider the following requirements:

- availability of line voltage through a standard earth-grounded outlet.
- availability of fresh water supply.
- pipe or reinforced flexible hose route for the active solution to the point of use.
- suitability for easy handling and storage of the neat polymer supply.
- Dry weight of unit is 46Kg

Do not install the unit in unprotected outdoor locations. The unit should be protected from the elements and freezing.

Place the PolyBlend on a suitable bench, shelf or framework such that the suction tube can be run from the polymer inlet suction fitting to the bottom of the polymer drum. The location should provide easy access by operating personnel to all controls.

Section 4.3:

TERMINAL POINTS

Water IN	-	½" BSPF or hose adapter diameter 20mm O.D.
Neat Polymer IN	-	Diameter 16mm hose tail fitting.
Active Solution OUT	-	¾" BSPF or hose adapter diameter 25mm O.D. on PB 16-1 HMZ, PB 50-1 HMZ, PB 100-1 HMZ, PB 100-2 HMZ
	-	¾" BSPF or hose adapter diameter 25mm O.D. on PB 32-1 HMZ, PB 200-1 HMZ, PB 200-2 HMZ
Electricity	-	A 3 metre, 3-core fly-lead is provided for connection to isolator

Section 4.4:

SUPPLY WATER

If the water supply to the PolyBlend unit is potable water, a backflow preventer or break-tank must be provided according to local regulations.

When connecting or installing the pipe and fittings to the PolyBlend, always use Teflon tape and, to prevent damage, do not over-tighten.

The water supply pressure should be between 3 and 5 Bar g. and of sufficient size to meet the water flowrate capacity of the particular model. The pressure within the PolyBlend system should not exceed 5 Bar g.

An isolating valve should be fitted in the water supply line before the PolyBlend water inlet connection.

Section 4.5:

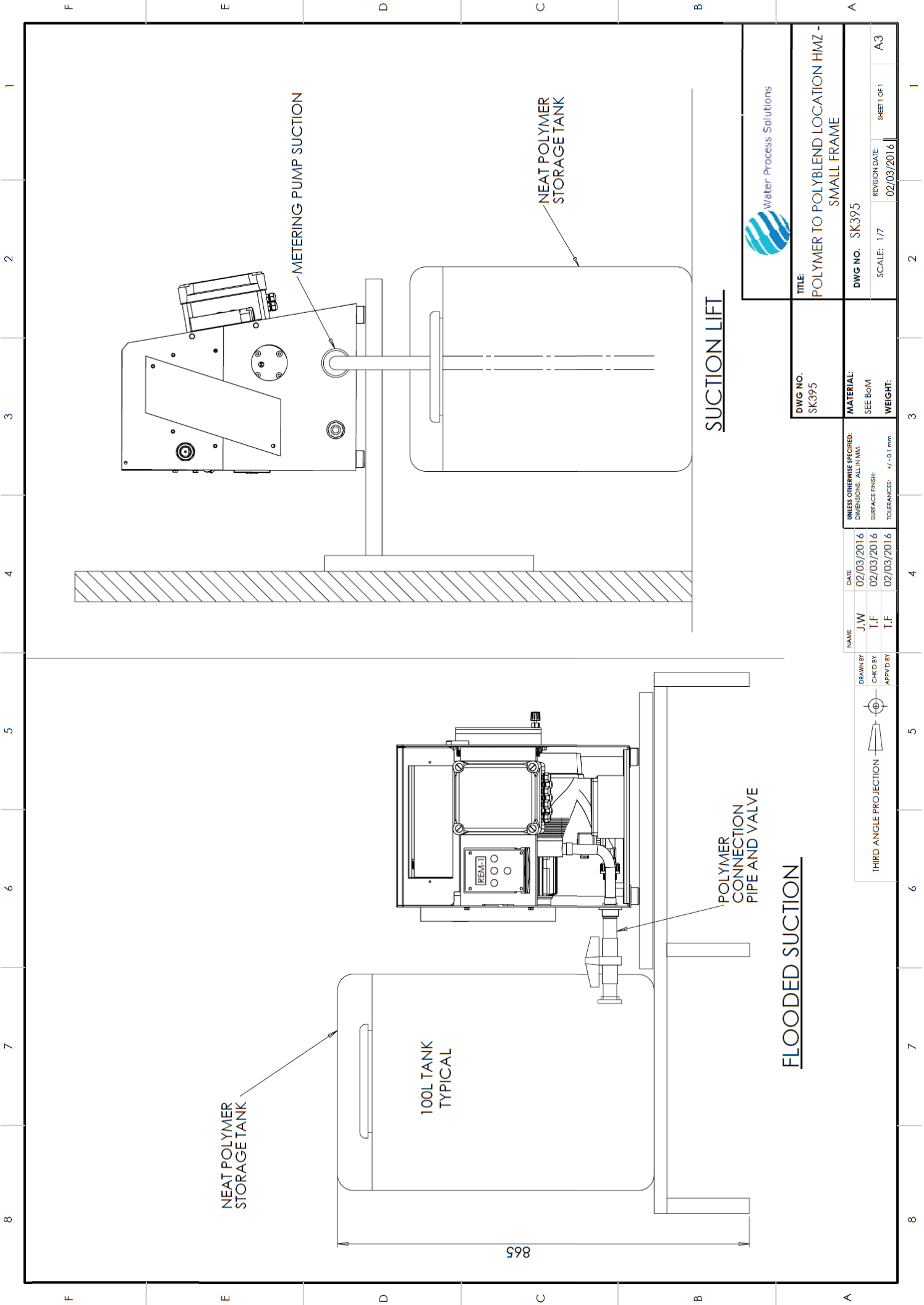
NEAT POLYMER SUPPLY

To obtain the best work value of the neat liquid polymer and PolyBlend combination, the chemical should always be kept dry and clean.

For aspects of chemical handling and safety, consult the polymer manufacturer's product data sheets.

The metering pump within the PolyBlend can operate with either a flooded suction or a suction lift from the polymer storage vessel. Flooded suction is the preferred setup.

See sketch SK395.



DWG NO. SK395		TITLE: POLYMER TO POLYBLEND LOCATION HMZ - SMALL FRAME	
MATERIAL: SEE BoM		DWG NO. SK395	
WEIGHT:		SCALE: 1/7	
		REVISION DATE: 02/03/2016	
		SHEET 1 OF 1	
		A3	

UNLESS OTHERWISE SPECIFIED: DIMENSIONS: ALL IN MM.		DATE	NAME
SURFACE FINISH:		02/03/2016	J.W
TOLERANCES: ± 0.1 mm		02/03/2016	T.F
		02/03/2016	T.F

DRAWN BY	CHK'D BY	APPR'D BY
J.W	T.F	T.F



THIRD ANGLE PROJECTION

FLOODED SUCTION

POLYMER CONNECTION PIPE AND VALVE

100L TANK TYPICAL

METERING PUMP SUCTION

NEAT POLYMER STORAGE TANK

SUCTION LIFT

865

598

Section 4.6:

ELECTRICAL SUPPLY

The PolyBlend has a 3 metre, 3-core electrical fly-lead for connection to a mains supply via an isolator and requires 13 amp fused protection.

Your PolyBlend will be equipped for either 110v/1/50 Hz or 220/240v/1/50 Hz, depending upon the order specification.

After commissioning, stopping and starting of the PolyBlend should be done by switching the power off or on at the PolyBlend control box.

Refer to Section 7 for wiring diagram.

Section 5:

OPERATION

- | | |
|-----|------------------------------|
| 5.1 | Start-Up |
| 5.2 | Priming Metering Pump |
| 5.3 | Setting of Flows |
| 5.4 | Flowmeter Cleaning Procedure |
| 5.5 | Calibration of Pump |

Section 5.1:

START-UP

Ensure that:

- The water supply is connected and the line is free of debris, there is a maximum pressure of 5 Bar gauge and the isolation valve in the feed line to the PolyBlend is closed.
- The final solution outlet is connected to process or a suitable drain for commissioning. There are no closed valves or restrictions in the line.
- The electrical supply is connected to a suitable voltage, earth-grounded supply with an isolator and fused protection (13 amp).
- The PolyBlend metering pump suction is connected to a source of neat liquid polymer (see Section 4.5), and the pump head has been primed (see Section 5.2)
- The REM-1E control unit is in the “off” position.
- The speed control knob in the dosing pump is turned anti-clockwise and clicked to the “EXT” position.
- Check that water flow control valves on the flow meter are closed

Slowly open the water supply line isolating valve and check for leaks at the PolyBlend.

Switch on the electrical supply to the PolyBlend.

Switch on the PolyBlend switch box.

Open the primary dilution flow meter by turning the integral valve knob at the base of this flow meter so that the float is just below the low flow switch line.

Water will start to flow through the flow meter and into the activation chamber. Allow chamber to fill completely before increasing to flow past low-flow switch.

Note: Do not allow chamber drive motor to operate until chamber is flooded completely as this could damage the shaft seal.

When the activation chamber is full and the water is flowing to the point of use, check the whole unit for leaks.

Increase water flow until primary dilution flow meter float passes low-flow switch and drive motor starts. Check for smooth rotation of the activator impellers and OFF appears in the LCD window of the REM unit.

The PolyBlend is now ready to meter in the neat liquid polymer.

Section 5.2:

PRIMING METERING PUMP

Check that the polymer suction line is:

- securely pipe-clipped to the polymer inlet suction hose tail.
- clean and dry.
- located into the polymer storage in the correct manner (see Section 4.5).

Connect the priming tube (supplied) onto the priming valve outlet fitting on the pump head and the other end onto the syringe outlet with the syringe closed.

Open the priming valve.

Open the syringe slowly.

When syringe is full of air, close priming valve, disconnect from tube, expel air and reconnect to tube, open priming valve and repeat this syringe operation until the suction tube pump head contains neat liquid polymer. Close the priming valve. If polymer enters the syringe then wash clean and dry after priming.

The pump is now ready to meter into the PolyBlend activation chamber.

Section 5.3:

SETTING OF FLOWS

5.3.1 WATER

On Models PB 8, PB 16, PB 50, PB 100

Adjust the flow control knob at the base of the flowmeter to a value about 200 times the anticipated flow of neat polymer.

e.g. Anticipated neat polymer use on say PB 100-1 HMZ of 1 litre per hour, set the flowmeter at 200 litres per hour.

On Models PB 32, PB 200

Adjust the flow control knob at the base of the flowmeter to a value of about 120 times the anticipated flow of neat polymer.

Then set the flow of the post-dilution flowmeter at say 100 times the anticipated flow of neat polymer.

During commissioning and optimisation, these flow values can be adjusted up or down to suit the polymer and the process conditions and results to achieve best performance.

5.3.2 NEAT POLYMER FLOW

On the electronic control panel of the metering pump, check that the frequency control knob is clicked EXT or off in the anti-clockwise direction. Speed control of the pump will now be via the REM-1E unit.

Set the pump stroke control knob to say 50% of maximum.

Press the mode button on the REM-1E. The SPM and internal light will come on and the pump will start stroking. If you pass this setting, press the mode until it appears.

The pump will now begin to stroke and meter polymer into the chamber.

The arrow up and arrow down pads control the frequency at which the pump strokes. There will be a reading of 0 to 100 in the LCD display. Set this according to the output required.

Note: After setting the flowrate for the primary flowmeter set the low flow alarm switch to a point just below the operational flow.

e.g. 1 litre/hour required of neat polymer:

Stroke volume is set at 50%

Pump capacity on PB 8-1HMZ, PB 16-1 HMZ, PB 32-1 HMZ, PB 50-1 HMZ, PB 100-1 HMZ and PB 200-1 HMZ is 3.7 litres/hour.

Therefore, the speed needs to be at:

$$\text{Speed setting} = \frac{\text{Desired Pump Output}}{\text{Pump Capacity} \times \% \text{ Volume Setting}} \times 100 \text{ spm}$$

$$= \frac{1\text{l/hour}}{3.7 \text{ l/hr} \times 50/100} \times 100 \text{ spm}$$

$$\text{Speed} = 54 \text{ spm (strokes per minute)}$$

Section 5.4:

FLOWMETER CLEANING/DISMANTLING PROCEDURE

Use drawing SK 712 in conjunction with this text.

The following procedure applies to all small frame PolyBlend flowmeters.

Note: **The PolyBlend flowmeter is a precision instrument; some of the components are small and delicate. The flowmeter tube is made from glass, so take safety precautions when handling. Drain mixing chamber before starting.**

1. Switch off PolyBlend and isolate main power and water supply.
2. Remove cover retaining screw and slide cover upwards and then outwards at the top (Fig 1).
3. Pull black retaining clip forward to remove (Fig. 2).
4. Hold the glass tube gently and raise the top seal assembly clear of the tube end (Fig 3).
5. Carefully tip the tube top forward and ease off the bottom seals. Take care that the float and guide assembly do not fall out (Fig. 4).
6. Remove float and guide assembly.
7. The tube is now ready for cleaning or replacement. We suggest the use of Hypochlorite (bleach) to remove any microbiological build-up in the flowmeter.
8. Reassembly is the reverse of this procedure – ensure that white mark is at float top (Fig 5) on the switched flowmeter or the low flow switch will not operate correctly.

Lightly lubricate O-rings with silicon grease.

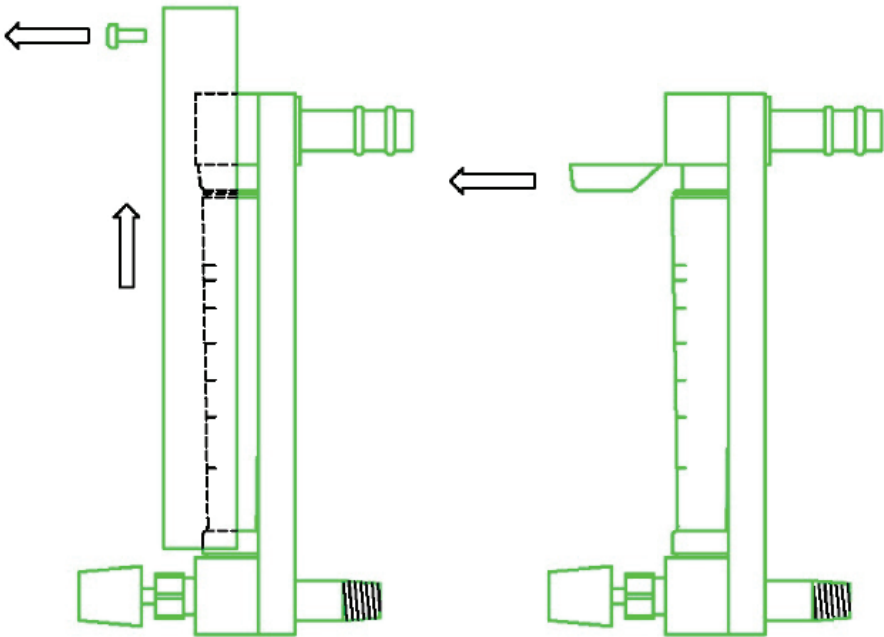


FIG. 1

FIG. 2

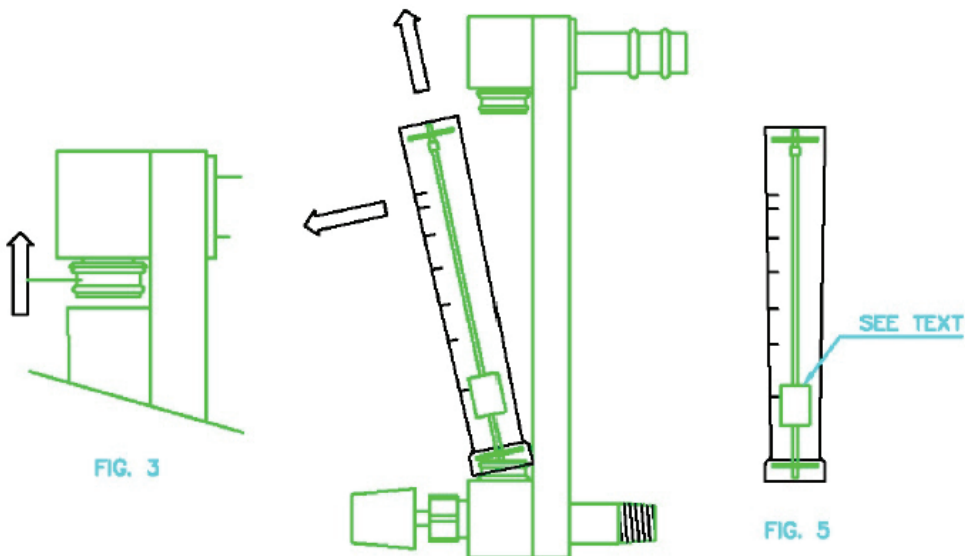


FIG. 3

FIG. 4

FIG. 5

Section 5.5:

CALIBRATION OF PUMP

The REM-1e control unit will control the speed or frequency of the metering pump stroke precisely from 0 – 100 spm (strokes per minute) or 1 – 100 sph (strokes per hour).

The output curve may differ depending upon the characteristics of the neat polymer itself.

To check the pump curve, connect the pump suction tube to a calibrated cylinder into which liquid polymer is placed. Time the loss in volume of the neat polymer for different speed settings at 100% stroke volume, then construct a throughput curve for the pump with that particular polymer.

Section 6:

PARTS LIST AND EXPLODED DRAWINGS

6.1 This section includes all the general arrangement views of the PolyBlend Model Numbers:

PB 8-1 HMZ

PB 16-1 HMZ

PB 50-1 HMZ

PB 100-1 HMZ

PB 100-2 HMZ

PB 32-1 HMZ

PB 200-1 HMZ

PB 200-2 HMZ

6.2 Flowmeter Assembly and Parts List

6.3 Solenoid Valve Assembly Diagram (Exp. 104)

6.4 Metering Pump Head Assembly (Exp. 1501)

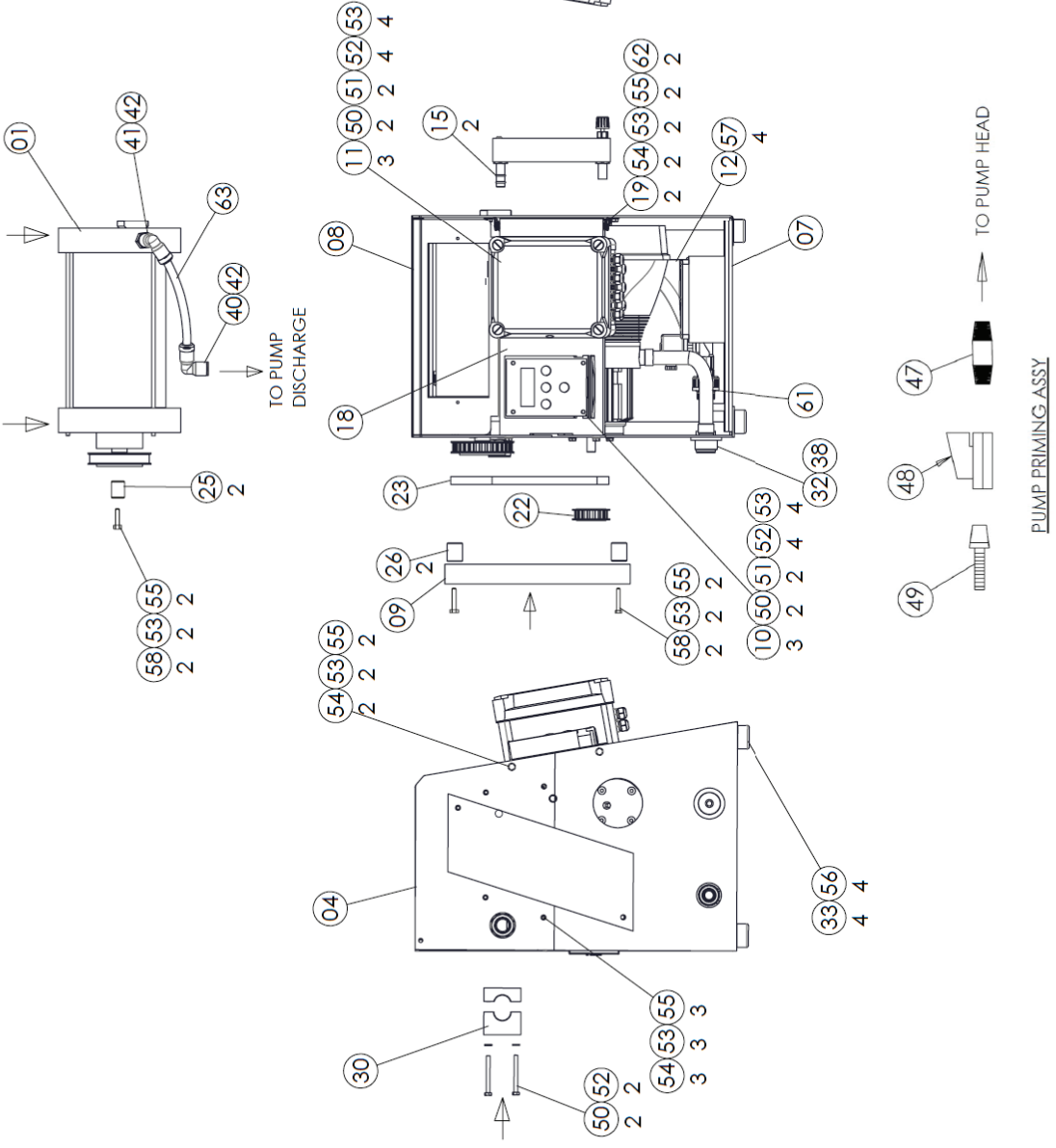
6.5 Recommended Spares List


6.6 PolyBlend Tank and Stand Assemblies

All parts are identified by number and described

Section 6.1:

POLYBLEND GENERAL ARRANGEMENT DRAWINGS AND PARTS LISTS



PART NO. 8212 - BSP	TITLE: POLYBLEND GENERAL ARRANGEMENT DRAWINGS & PARTS LIST		DWG NO.	30134	REVISION DATE: 09/03/2016	SHEET 1 OF 1	A3
UNLESS OTHERWISE SPECIFIED: DIMENSIONS: ALL IN MM. SURFACE FINISH: TOLERANCES: +/- 0.1 mm		MATERIAL: SEE SEPARATE BILL OF MATERIALS WEIGHT:		ISS NO. 01		PROJECT NO. SCALE: 1 / 1.4	

NAME	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
J.W	09/03/2016	09/03/2016	09/03/2016	09/03/2016	09/03/2016	09/03/2016	09/03/2016	09/03/2016	09/03/2016
DRN BY	CHKD BY	APPV BY	APPV BY	APPV BY	APPV BY	APPV BY	APPV BY	APPV BY	APPV BY
T.F	T.F	T.F	T.F	T.F	T.F	T.F	T.F	T.F	T.F

THIRD ANGLE PROJECTION		TO PUMP HEAD		TO PUMP DISCHARGE		TO PUMP HEAD		TO PUMP DISCHARGE	

PARTS LIST

GENERAL ARRANGEMENT OF POLYBLEND HMZ MODELS PB 8 HMZ, PB 16 HMZ, PB 50 HMZ AND PB 100 HMZ

Dwg No: 30134/1

Pl. No: 00134

Item No.	Part No.	Description	Qty
1	7000-CHMBR	Chamber Assembly – HMZ – small frame	1
2	9524-A	Inlet Pipe Assembly (PB 8,16,50,100)	1
3	9525-A	Outlet Pipe Assembly (PB 8,16,50,100)	1
4	8736	L/H End Frame Panel	1
5	8735	R/H End Frame Panel	1
7	8734	Base Plate	1
8	8746	Inspection Cover	1
8	8759	Inspection Cover Window	1
9	8737	Belt Guard	1
10	8054	REM-1 Controller	1
11	8749	Switch Box	1
12	8056	Polymer Pump AA758-86PB, 110v	1
12	8057	Polymer Pump AA755-86PB, 240v	1
12	8058	Polymer Pump AA768-66PB, 110v	1
12	8059	Polymer Pump AP765-66PB, 240v	1
13	8096-S	Flowmeter 0 – 60 lph, low-flow switch	1
13	8097-S	Flowmeter 0 – 160 lph, low-flow switch	1
13	8099-S	Flowmeter 0 – 500 lph, low-flow switch	1
14	8096	Flowmeter 0 – 60 lph	1
14	8097	Flowmeter 0 – 160 lph	1
14	8099	Flowmeter 0 – 600 lph	1
15	8139	O-Ring – Outlet	2
16	8750	0.37 Kw Motor, 220/240V	1
16	8751	0.37 Kw Motor, 110v	1
17	8064	Solenoid Valve ½"	1
18	8738	Mount Plate – Switch Box	1
19	8747	Hinge Swivel	2
22	8232	Drive Pulley Taper Lock	1
23	8730	Drive Belt	1
25	8742	Spacer – Chamber End	2
26	8741	Spacer – Belt Guard	2
28	8055	REM-1 Connect Cable	1
30	8740	Clamp Set – Outlet	1
31	8739	Motor Spacer Ring	1
32	8743	Bulkhead Connector	1

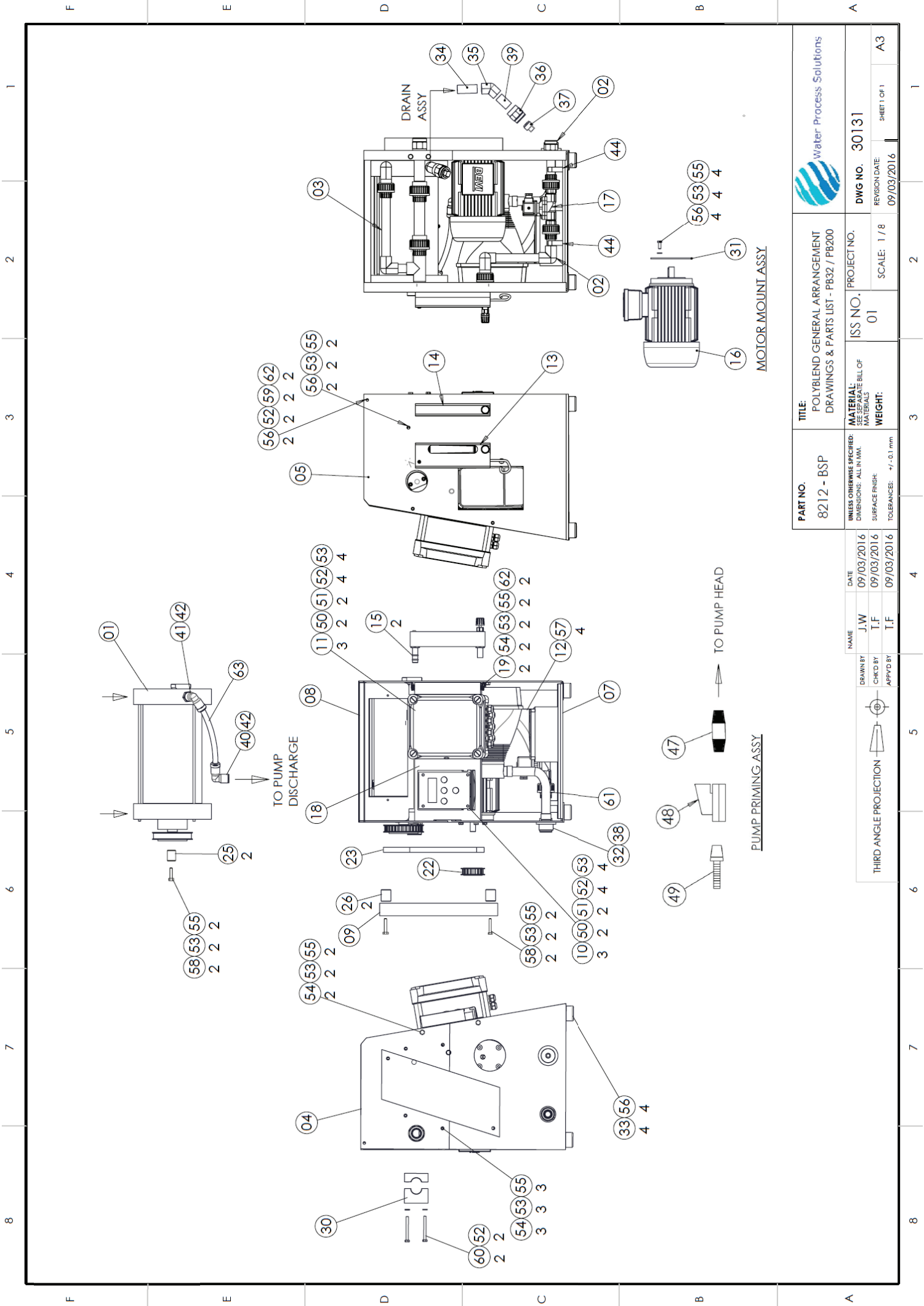
PARTS LIST

GENERAL ARRANGEMENT OF POLYBLEND HMZ (cont'd) MODELS PB 8 HMZ, PB 16 HMZ, PB 50 HMZ AND PB 100 HMZ

Dwg No: 30134/1

Pl. No: 00134

Item No.	Part No.	Description	Qty
33	8073	Rubber Foot	4
34	9503	1/2" Plain/Threaded Nipple	1
35	9502	1/2" x 45o Plain Elbow	1
36	9504	1/2" Plain/Threaded Socket	1
37	9514	1/2" BSP Plug	1
38	9518	1" BSP Backnut – ABS	1
40	8689	1/2" 90o Elbow	1
41	8688	1/2" Swivel Elbow	1
42	8690	1/2" Collet Cover	2
44	8494	1/2" Maclow Clip	2
45	8664	Cable Gland	1
47	8001	1/4" Nipple	1
48	8145	1/4" BSP F/F Ball Valve	1
49	8034	1/4" x 7 Hose Tail	1
50	-	M6 x 16 Pan Head Screw stainless steel	8
51	-	M6 Hex. Nut	8
52	-	M6 C Washer stainless steel	8
53	-	M6 Shakeproof Washer stainless steel	27
54	-	M6 x 12 Hex. Head Screw stainless steel	7
55	-	OBA Washer stainless steel	18
56	-	M6 x 20 Hex. Head Screw stainless steel	8
57	-	M5 x 16 Pan Head Screw stainless steel	4
58	-	M6 x 40 Hex. Head Screw stainless steel	4
59	-	M6 Nyloc Nut stainless steel	2
60	-	M6 x 60 Hex. Head Screw stainless steel	2
61	-	Dia. 16 I.D. Reinforced PVC Tube	1
62	-	Grommet	4
63	8094	Pump Discharge Pipe	1



PART NO. 8212 - BSP	TITLE: POLYBLEND GENERAL ARRANGEMENT DRAWINGS & PARTS LIST - PB32 / PB200	PROJECT NO. 01	ISS NO. 01	SCALE: 1 / 8	REVISION DATE: 09/03/2016	SHEET 1 OF 1 A3

UNLESS OTHERWISE SPECIFIED: DIMENSIONS: ALL IN MM. SURFACE FINISH: TOLERANCES: ± 0.1 mm	
--	--

NAME	DATE
J.W	09/03/2016
T.F	09/03/2016
T.F	09/03/2016

THIRD ANGLE PROJECTION	
------------------------	--

PARTS LIST

GENERAL ARRANGEMENT OF POLYBLEND HMZ MODELS PB 32 HMZ AND PB 200 HMZ

Dwg. No. 30131/1

Pl. No. 00131

Item No.	Part No.	Description	Qty
1	7000-CHMBR	Chamber Assembly – HMZ – small frame	1
2	9520-A	Inlet Pipe Assembly	1
3	9519-A	Outlet Pipe Assembly	1
4	8736	L/H End Frame Panel	1
5	8735	R/H End Frame Panel	1
7	8734	Base Plate	1
8	8746	Inspection Cover	1
8	8759	Inspection Cover Window	1
9	8737	Belt Guard	1
10	8054	REM-1 Controller	1
11	8749	Switch Box	1
12	8056	Polymer Pump AP51-86PB, 110 v	1
12	8057	Polymer Pump AP55-86PB, 240v	1
12	8058	Polymer Pump AP61-66PB, 110v	1
12	8059	Polymer Pump AP65-66PB, 240v	1
13	8096-S	Flowmeter 0 – 60 lph, low-flow switch	1
13	8097-S	Flowmeter 0 – 160 lph, low-flow switch	1
13	8098-S	Flowmeter 0 – 375 lph, low-flow switch	1
13	8099-S	Flowmeter 0 – 500 lph, low-flow switch	1
14	8096	Flowmeter 0 - 60 lph	1
14	8097	Flowmeter 0 – 160 lph	1
14	8099	Flowmeter 0 – 500 lph	1
15	8139	O-Ring – Outlet	4
16	8750	0.37 Kw Motor, 220/240v	1
16	8751	0.37 Kw Motor, 110v	1
17	8064	Solenoid Valve ½"	1
18	8738	Mount Plate – Switch Box	1
19	8747	Hinge Swivel	2
21	8392	Taper Lock Bush 14mm	1
22	8232	Drive Pulley Taper Lock	1
23	8730	Drive Belt	1
25	8742	Spacer – Chamber End	2
26	8741	Spacer – Belt Guard	2
28	8055	REM-1 Connect Cable	1
30	8740	Clamp Set – Outlet	1
31	8739	Motor Spacer Ring	1
32	8743	Bulkhead Connector	1

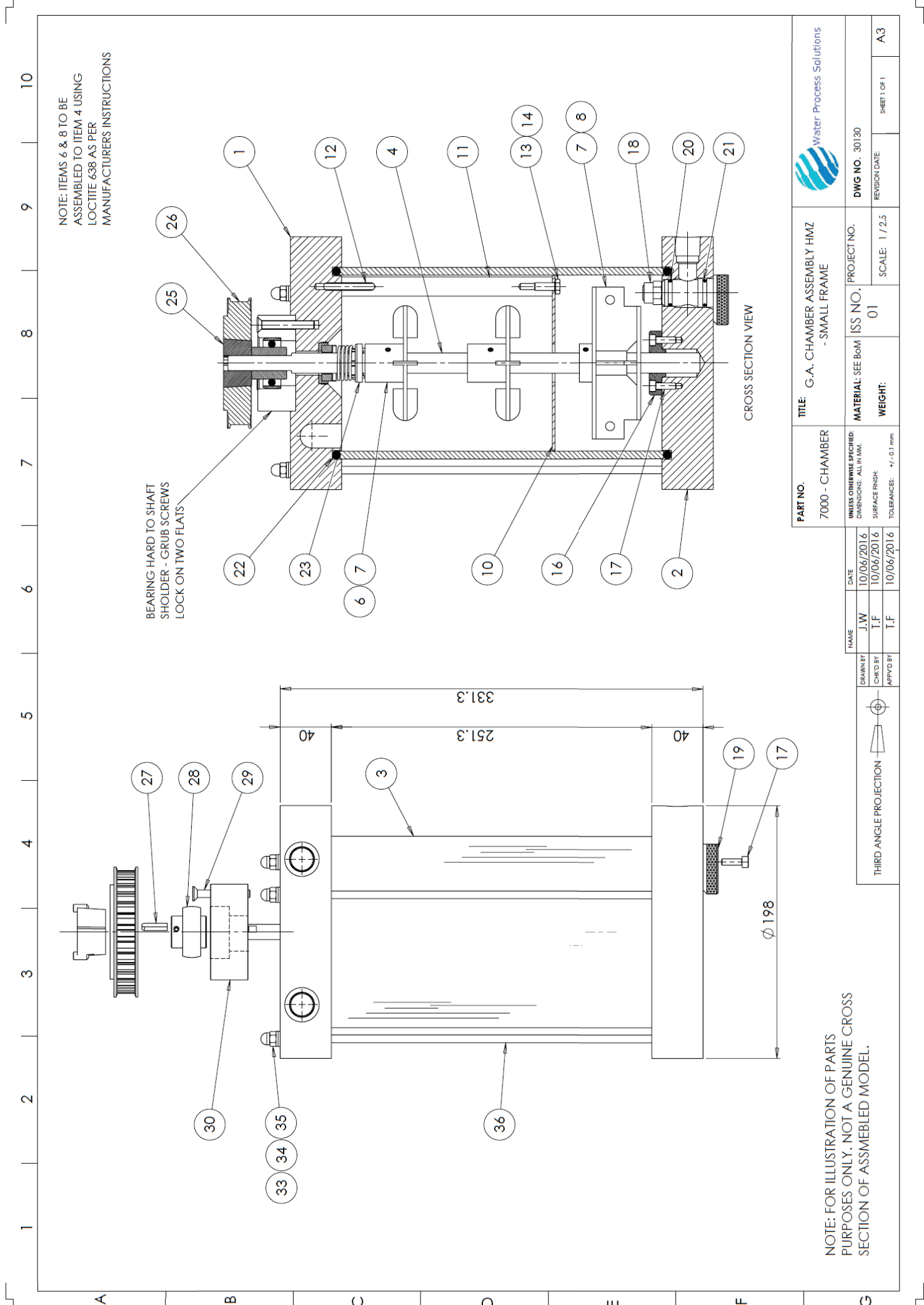
PARTS LIST

GENERAL ARRANGEMENT OF POLYBLEND HMZ (cont'd) MODELS PB 32 HMZ AND PB 200 HMZ


Dwg. No. 30131/1

Pl. No. 00131

Item No.	Part No.	Description	Qty
33	8073	Rubber Foot	4
34	9503	1/2" Plain/Threaded Nipple	1
35	9502	1/2" x 45o Plain Elbow	1
36	9504	1/2" Plain/Threaded Socket	1
37	9514	1/2" BSP Plug	1
38	9518	1" BSP Backnut – ABS	1
40	8689	1/2" 90o Elbow	1
41	8688	1/2" Swivel Elbow	1
42	8690	1/2" Collet Cover	2
44	8494	1/2" Maclow Clip	2
45	8664	Cable Gland	1
47	8001	1/4" Nipple	1
48	8145	1/4" BSP F/F Ball Valve	1
49	8034	1/4" x 7 Hose Tail	1
50	-	M6 x 16 Pan Head Screw stainless steel	8
51	-	M6 Hex. Nut	8
52	-	M6 C Washer stainless steel	8
53	-	M6 Shakeproof Washer stainless steel	27
54	-	M6 x 12 Hex. Head Screw stainless steel	7
55	-	OBA Washer stainless steel	18
56	-	M6 x 20 Hex. Head Screw stainless steel	8
57	-	M5 x 16 Pan Head Screw stainless steel	4
58	-	M6 x 40 Hex. Head Screw stainless steel	4
59	-	M6 Nyloc Nut stainless steel	2
60	-	M6 x 60 Hex. Head Screw stainless steel	2
61	-	Dia. 16 I.D. Reinforced PVC Tube	1
62	-	Grommet	4
63	8094	Pump Discharge Pipe	1



NOTE: FOR ILLUSTRATION OF PARTS PURPOSES ONLY. NOT A GENUINE CROSS SECTION OF ASSEMBLED MODEL.

PART NO. 7000 - CHAMBER		TITLE: G.A. CHAMBER ASSEMBLY HMZ - SMALL FRAME		 Water Process Solutions			
UNLESS OTHERWISE SPECIFIED: DIMENSIONS: ALL IN MM. SURFACE FINISH: TOLERANCES: ± 0.1 mm		MATERIAL: SEE BOM		PROJECT NO. 01		DWG NO. 30130	
WEIGHT:		SCALE: 1 / 2.5		REVISION DATE:		SHEET 1 OF 1	
A3							

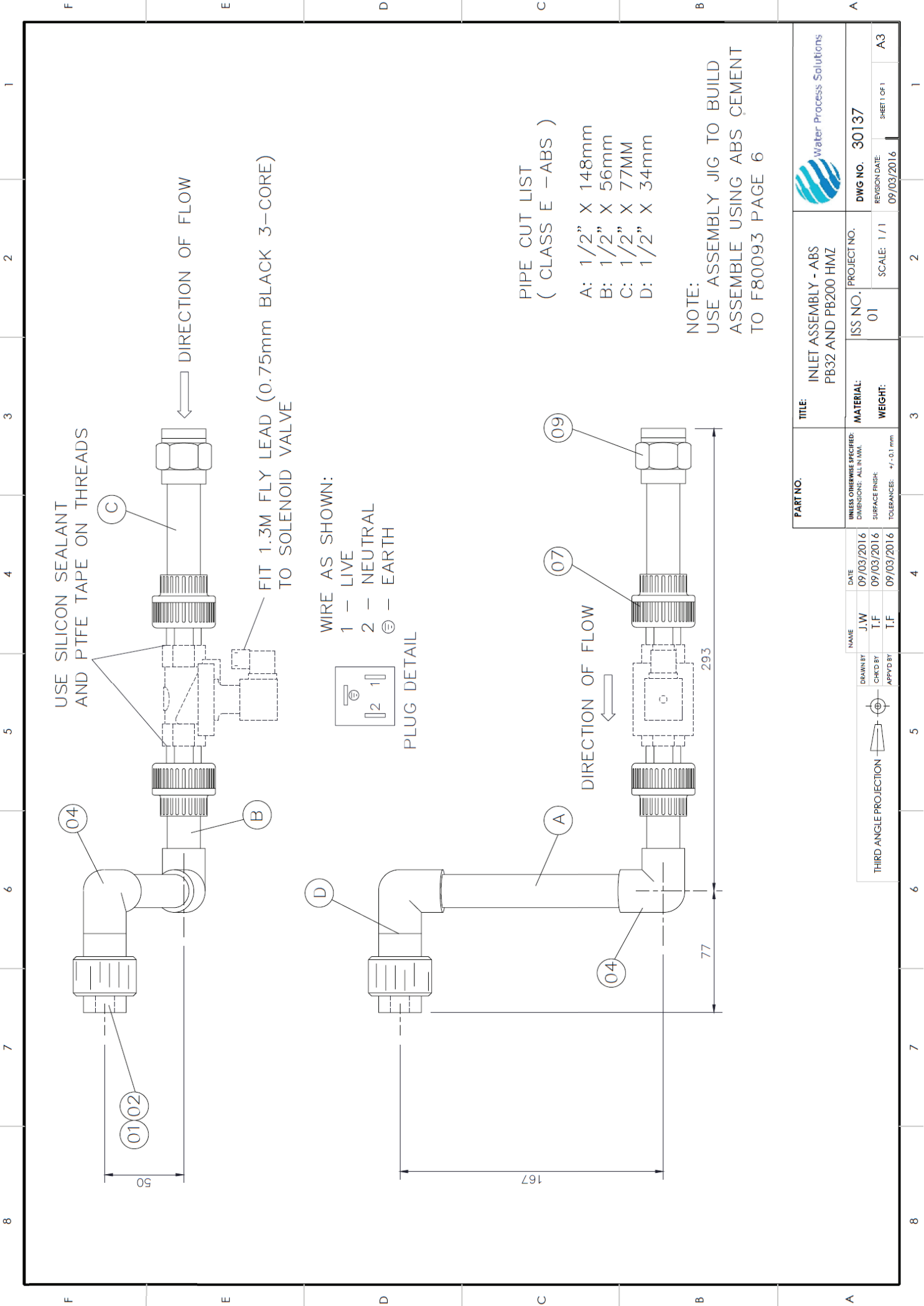
PARTS LIST

CHAMBER ASSEMBLY HMZ – SMALL FRAME

Dwg. No. 30131/1

Pl. No. 00131

Item No.	Part No.	Description	Qty
1	8725	Chamber Cap – Drive End	1
2	8726	Chamber Cap – Inlet End	1
3	8041	Acrylic Barrel S/F	1
4	8733	Impeller Shaft	1
6	8754	Impeller Assembly – 2nd Zone	2
7	-	Spiral Pin – stainless steel	3
8	8753	Impeller Assembly – 1st Zone	1
10	8744	Baffle Plate – stainless steel	1
11	8745	Spacer Rods – stainless steel	2
12	8194	M6 x 40 stainless steel Stud	2
13	-	M6 x 16 Hex. Head Screw stainless steel	2
14	-	M6 Shakeproof Washer stainless steel	2
16	8728	Shaft End Bearing	1
17	-	M5 x 16 socket Cap Screw stainless steel	4
18	8047	Injector Nozzle	1
19	8296	Injector Plug	1
20	8140	O-Ring	1
21	8327	O-Ring	1
22	8143	O-Ring – Chamber	2
23	8255	Mechanical Seal	1
25	8732	T/Lock Bush	1
26	8729	Driven Pulley	1
27	8111	4mm x 20 Key	1
28	8731	Bearing	1
29	-	M6 x 45 Socket Head C/Sunk	3
30	8727	Bearing Carrier	1
33	-	M6 Dome Nut stainless steel	3
34	-	M6 Plain 'C' Washer stainless steel	3
35	-	OBA Plain Washer stainless steel	3
36	8039	Securing Rod S/F	3



PARTS LIST

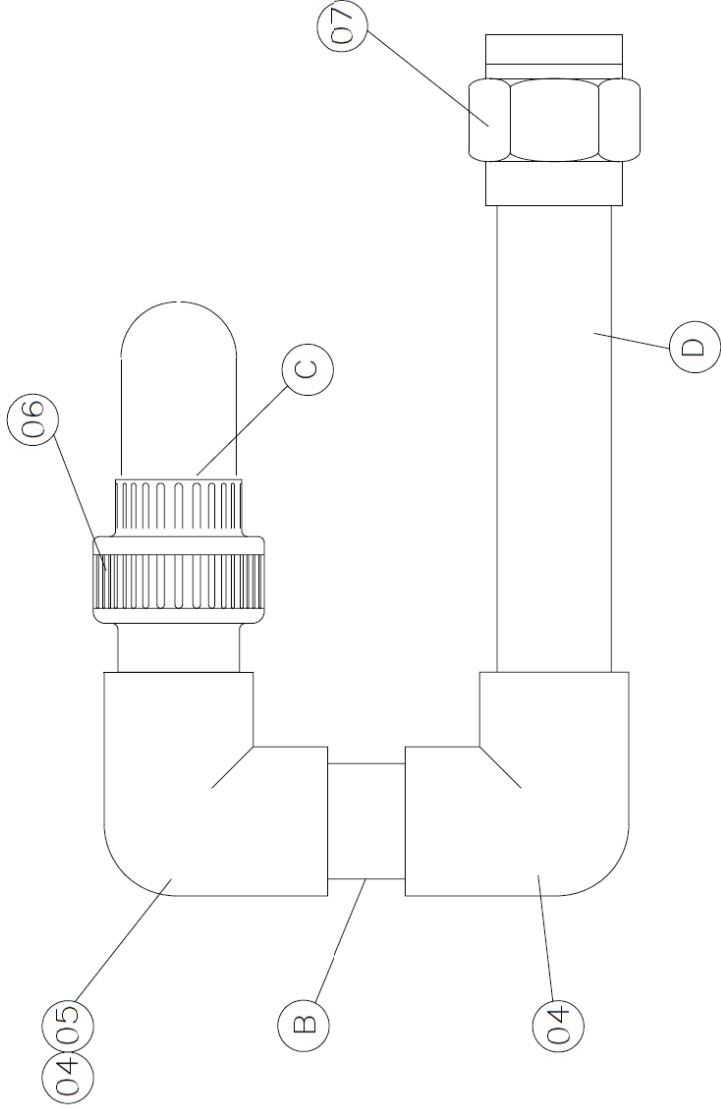
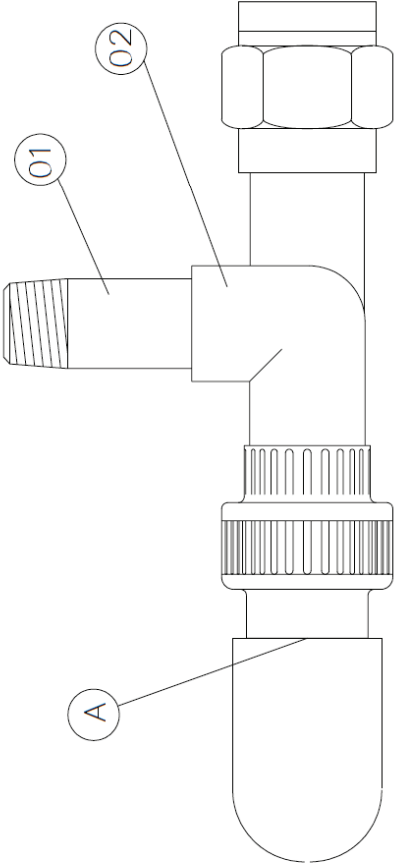
INLET ASSEMBLY – ABS – PB 100 HMZ

Dwg. No. 30137/1

Part No: 9524-A

Pl. No.00137


Item No.	Part No.	Description	Qty
1	9500	½" Plain socket Union	1
2	9510	½" x ¼" Plain/Threaded Reducing Bush	1
4	9501	½" x 90o Plain Elbow	2
7	9506	½" ABS/Brass Composite Union	2
9	9504	½" Plain/Threaded Socket	1



PIPE CUT LIST
(CLASS E ABS)

A: 1/2" X 34mm
B: 3/4" x 54mm
C: 1/2" X 34mm
D: 3/4" X 161mm

NOTE:
USE ASSEMBLY JIG TO BUILD
ASSEMBLY USING ABS CEMENT
TO F80093 PAGE 6

<div>PART NO. 9525 - A</div>	<div>TITLE: OUTLET ASSEMBLY PB100 - HMZ</div>	<div> Water Process Solutions</div>		
		PROJECT NO.		DWG NO. 30138
		ISS NO. 01		REVISION DATE: 09/03/2016
		SCALE: 1 / 1.4		SHEET 1 OF 1
		A3		
<div>UNLESS OTHERWISE SPECIFIED: DIMENSIONS: ALL IN MM</div>				
<div>SURFACE FINISH:</div>				
<div>WEIGHT:</div>				
<div>TOLERANCES: +/- 0.1 mm</div>				

NAME	DATE
J.W.	09/03/2016
T.F.	09/03/2016
T.F.	09/03/2016



THIRD ANGLE PROJECTION

PARTS LIST

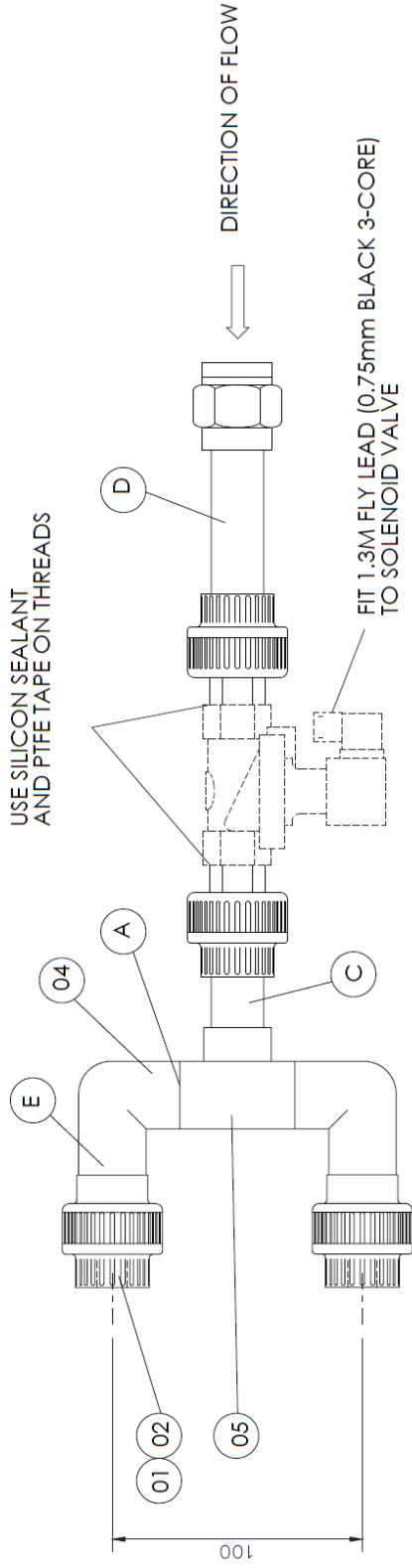
OUTLET ASSEMBLY – ABS – PB 100 HMZ

Dwg. No. 30138/1

Part No: 9525-A

Pl. No. 00138

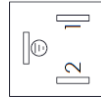
Item No.	Part No.	Description	Qty
1	9515	½" x 62mm P/T Nipple	1
2	9501	½" x 90o Plain Elbow	1
4	9517	¾" x 90o Plain Elbow	2
5	9516	¾" – ½" Plain Reducing Bush	1
6	9500	½" Plain Socket Union	1
7	9511	¾" Plain/Threaded Socket	1



USE SILICON SEALANT
AND PTFE TAPE ON THREADS

FIT 1.3M FLY LEAD (0.75mm BLACK 3-CORE)
TO SOLENOID VALVE

WIRE AS SHOWN:
1 - LIVE
2 - NEUTRAL
⊖ - EARTH



PLUG DETAIL

PIPE CUT LIST (CLASS E - ABS)

- A: 1/2" X 24mm -2off
- B: 1/2" X 138mm
- C: 1/2" X 56mm
- D: 1/2" X 77mm
- E: 1/2" X 34mm -2off

NOTE:
USE ASSEMBLY JIG TO BUILD
ASSEMBLY USING ABS
CEMENT TO F80093 PAGE 6



Part No. 9520 - A		TITLE: INLET ASSEMBLY - ABS PB32 AND PB200 HMZ	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS: ALL IN MM. SURFACE FINISH: TOLERANCES: ± 0.5 mm		DWG NO. 30136	
NAME J.W	DATE 23/11/2015	REVISION DATE 23/11/2015	SHEET 1 OF 1
DRAWN BY C.D	CHKD BY C.D	SCALE: 1:2	A4
APPLYD BY C.D			
ANGLE OF PROJECTION		WEIGHT:	

PARTS LIST

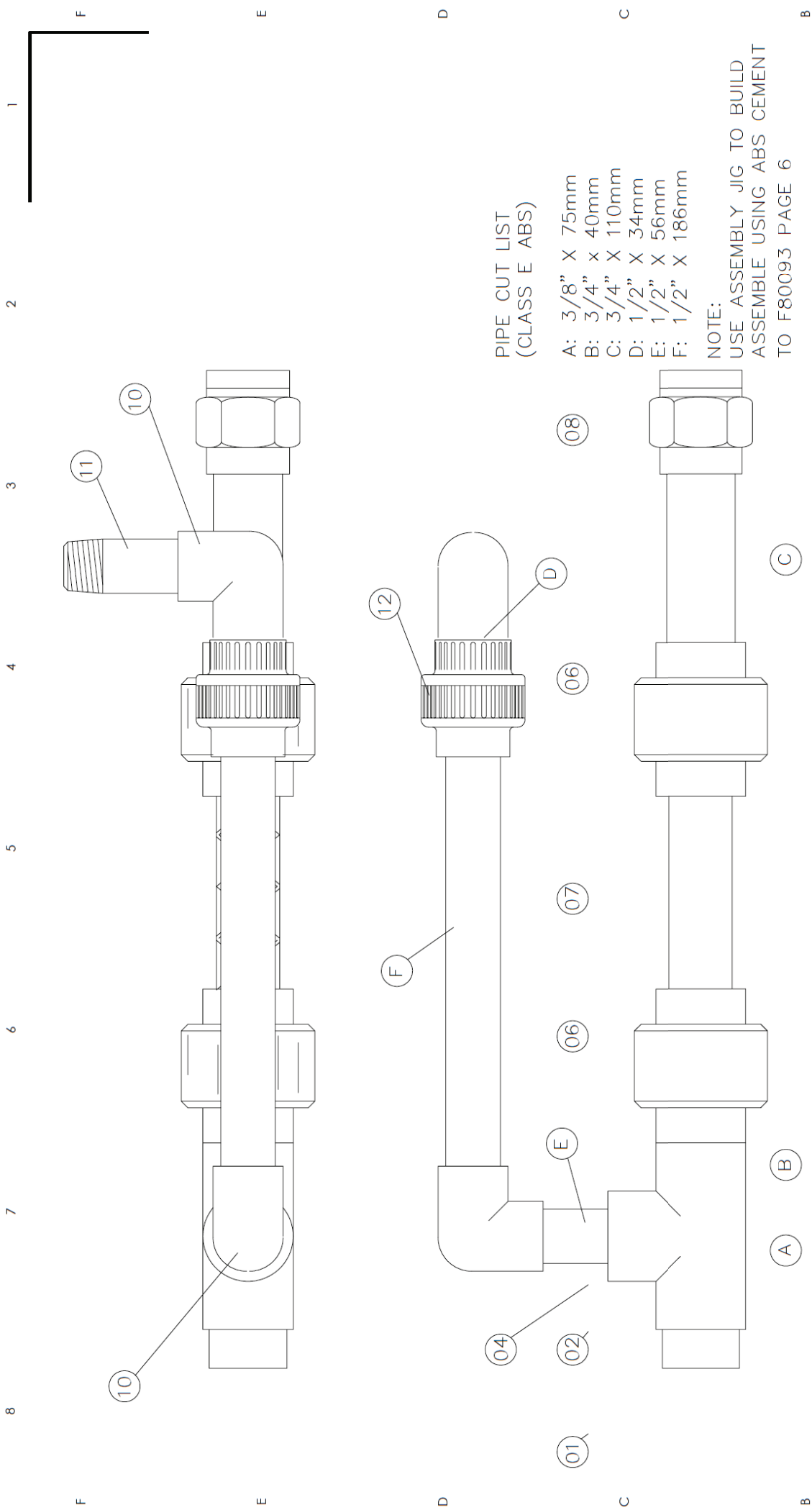
INLET ASSEMBLY – ABS – PB 200 HMZ

Dwg. No. 30136/1

Part No: 9520-A

Pl. No. 00136

Item No.	Part No.	Description	Qty
1	9500	½" Plain Socket Union	2
2	9510	½" x ¼" Plain/Threaded Reducing Bush	2
4	9501	½" x 90o Plain Elbow	3
5	9523	½" Plain Tee – Modified	1
7	9506	½" ABS/Brass Composite Union	2
9	9504	½" Plain/Threaded Socket	1



A	PART NO.		TITLE		Water Process Solutions	
	OUTLET ASSEMBLY PB32 AND PB200 - HMZ		ISS NO. PROJECT NO.		DWG NO. 30135	
A	DATE		MATERIAL		REVISION DATE	
	09/03/2016		01		09/03/2016	
A	UNLESS OTHERWISE SPECIFIED:		WEIGHT:		SCALE: 1/1.4	
	DIMENSIONS: ALL IN MM		+/- 0.1 mm		SHEET 1 OF 1	
A	THIRD ANGLE PROJECTION		DATE		09/03/2016	
	DRAWN BY J.W		09/03/2016		09/03/2016	
A	CHECKED BY T.F		T.F		T.F	
	APPROVED BY		APPROVED BY		APPROVED BY	

PARTS LIST

OUTLET ASSEMBLY – ABS – PB 200 HMZ

Dwg. No. 30135/1

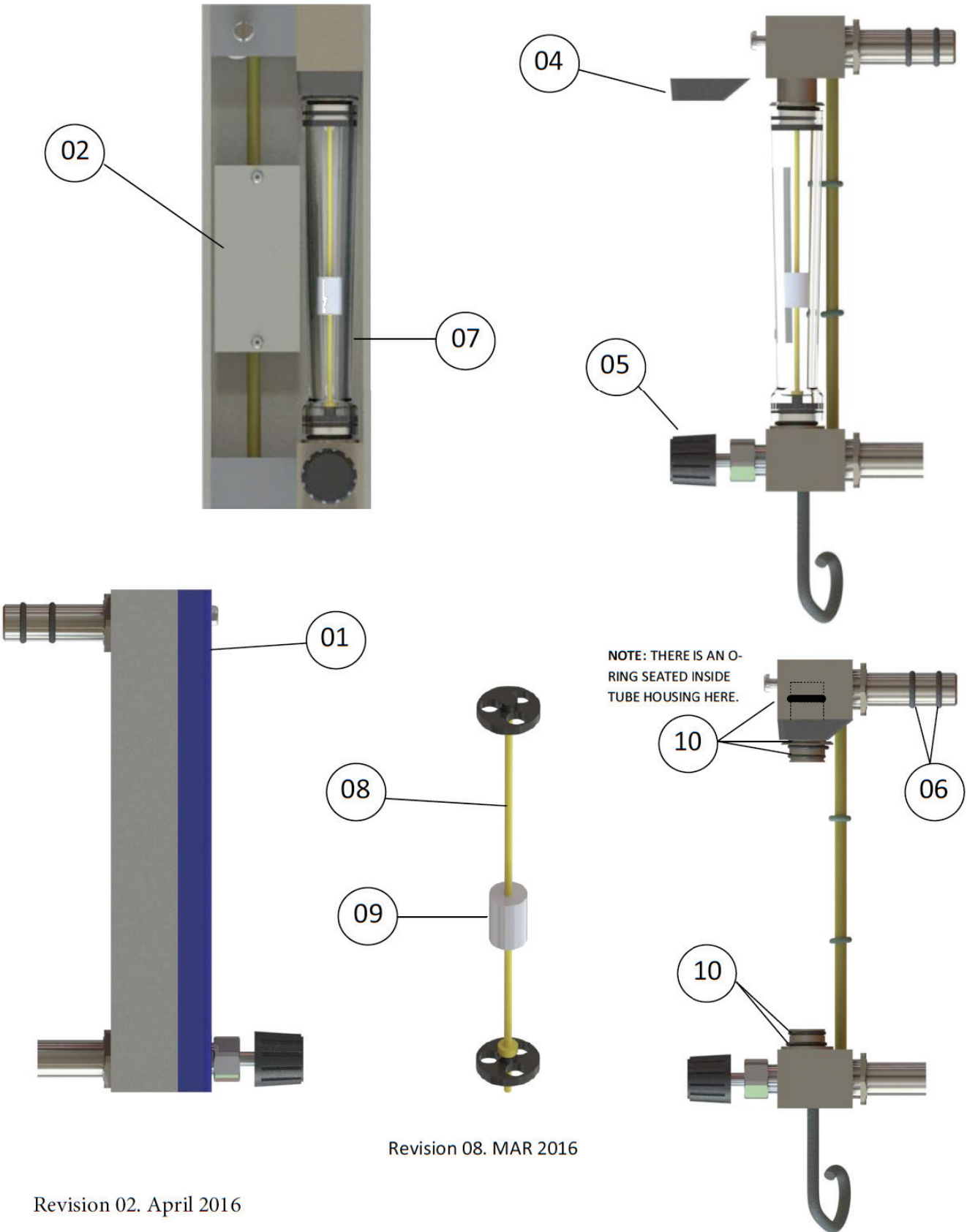
Part No: 9519-A

Pl. No. 00135

Item No.	Part No.	Description	Qty
1	8748	Confluence Bush	1
2	9512	¾" Plain Tee	1
4	9516	¾" – ½" Plain Reducing Bush	1
6	9513	¾" Adapter socket Union – PVC – ABS	2
7	8648	¾" Static Mixer	1
8	9511	¾" Plain/Threaded Socket	1
10	9501	½" 90o Elbow	2
11	9515	½" x 62mm P/T Nipple	1
12	9500	½" Plain Socket Union	1

SECTION 6.2

FLOWMETER ASSEMBLY & PARTS LIST



Revision 08. MAR 2016

Revision 02. April 2016

PARTS LIST

FLOWMETER ASSEMBLY

Dwg. No. SK707

Pl. No. 707A

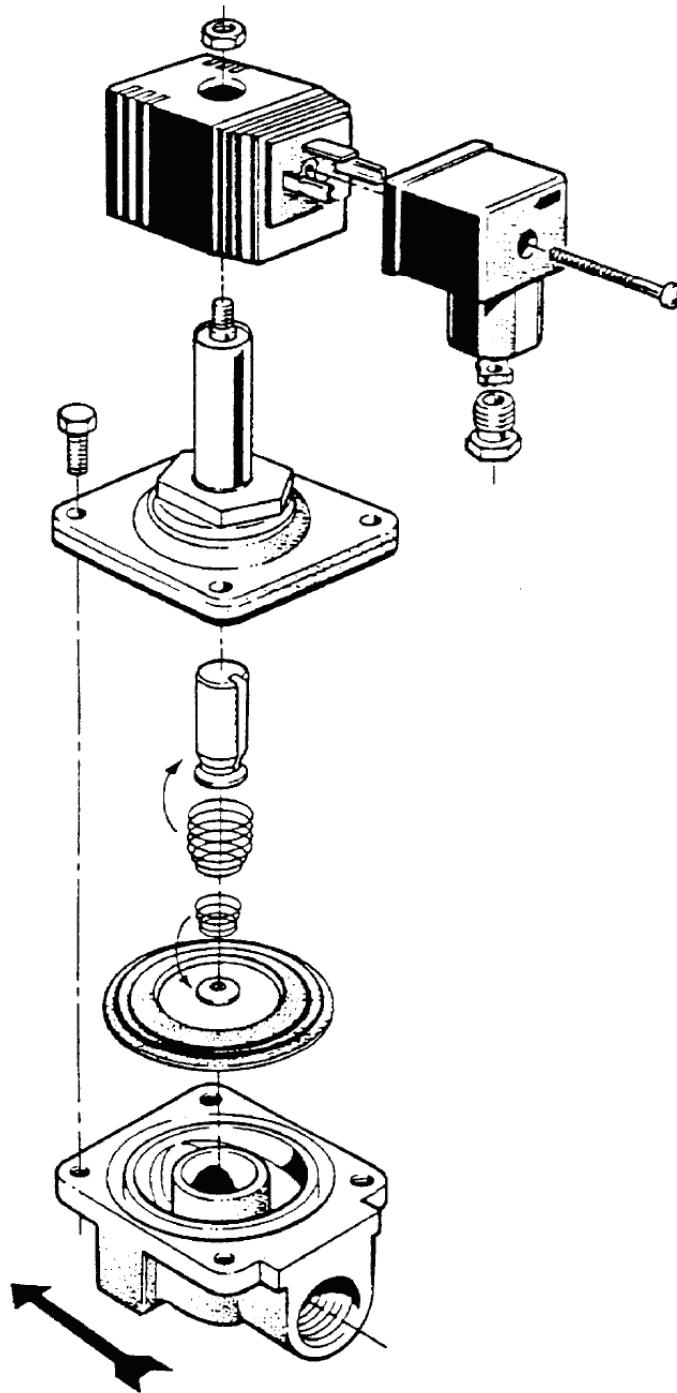
For Small Frame Polyblends

Item No.	Part No.	Description	Qty
1	8098-COV	Cover (Switched)	1
1	8098-UNCOV	Cover (Unswitched)	1
2	8088	Low Flow Switch	1
4	8098-C	Tube Retaining Clip	1
5	8098-K	Control Knob	1
7	8119-T	0-30 LPH Tube	1
7	8096-T	0-60 LPH Tube	1
7	8097-T	0-160 LPH Tube	1
7	8098-T	0-375 LPH Tube	1
7	8099-T	0-500 LPH Tube	1
8	8098-G	0-30/0-60/160/375 Guide & Stops	1
8	8099-G	0-500 Guide & Stops	1
9	8098-F	Magnetic Float	1
10	8098-ORS	O-Ring Set (all S/F F/Meters)	1

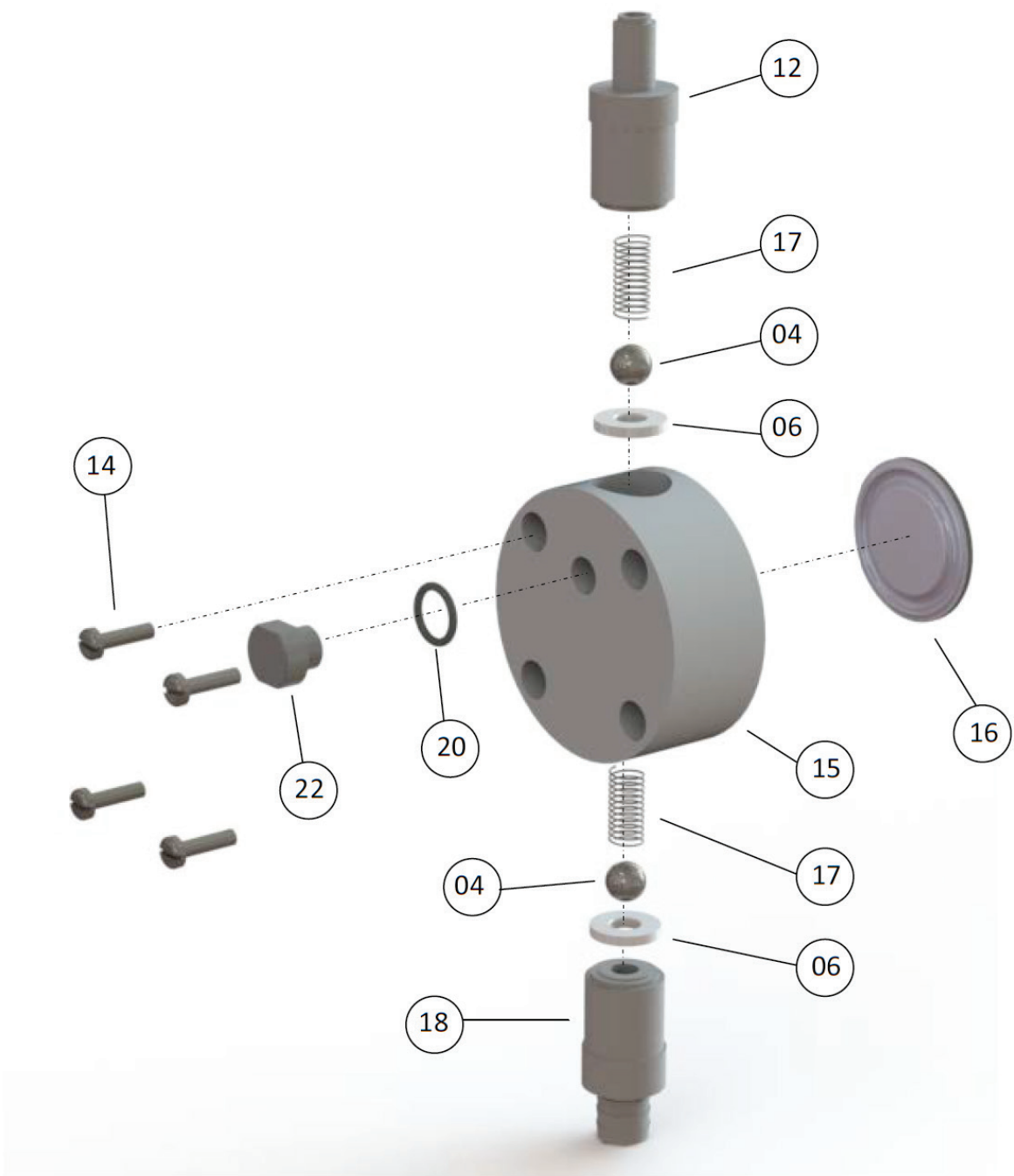
Note: **Parts not listed above are unavailable**

SECTION 6.3

SOLENOID VALVE ASSEMBLY DIAGRAM EXP104



METERING PUMP HEAD ASSEMBLY EXP1501



Revision 08. Mar 2016

PARTS LIST

EMULSION POLYMER PUMP

Dwg. No. EXP1501

Pl. No. 1501

MODEL LE 86 PB (3.78 Litres/Hour)

Item No.	Part No.	Description	Qty
4	ABE5824	Ball, stainless steel	2
6	25128	Seal, Teflon	2
10	27962	Head Assembly	1
12	25554-M	Valve Housing	1
14	10340	Screw 10-24 x 3/4", stainless steel	4
15	25550-1	High Viscosity Head, 0.9, acrylic	1
16	30917	Liquifram 0.9, teflon	1
17	25558	Spring, stainless steel	2
18	25649	Valve Seat, Barbed, polypropylene	1
19	256510-35	Tubing, 0.938", vinyl	1
22	26558	Plug, PVC	1

MODEL LE 76 PB (7.57 & 17 Litres/Hour)

4	ABE5824	Ball, stainless steel	2
6	25128	Seal, teflon	2
10	27943	Head Assembly	1
12	25554-M	Valve Housing	1
14	10340	Screw 10-24 x 3/4", stainless steel	4
15	25540-1	High Viscosity Head, 1.8, acrylic	1
16	31420	Liquifram, 1.8, teflon	1
17	25558	Spring, stainless steel	2
18	25649	Valve Seat, Barbed, polypropylene	1
19	256510-35	Tubing, 0.938", vinyl	1
22	26558	Plug, PVC	1

MODEL LE 20 PB (30 Litres/Hour)

4	ABE5824	Ball, stainless steel	2
6	25128	Seal, teflon	2
10	26763	Head Assembly	1
12	25554-M	Valve Housing	1
14	10340	Screw 10-24 x 3/4", stainless steel	4
15	10524-4	High Viscosity Head, 3.0, acrylic	1
16	31419	Liquifram, 3.0, teflon	1
17	25558	Spring, stainless steel	2
18	25649	Valve Seat, Barbed, polypropylene	1
19	256510-35	Tubing, 0.938", vinyl	1
22	26558	Plug, PVC	1

SECTION 6.5

RECOMMENDED SPARES

POLYBLEND RECOMMENDED SPARES (LO/100/200 HMZ SERIES)

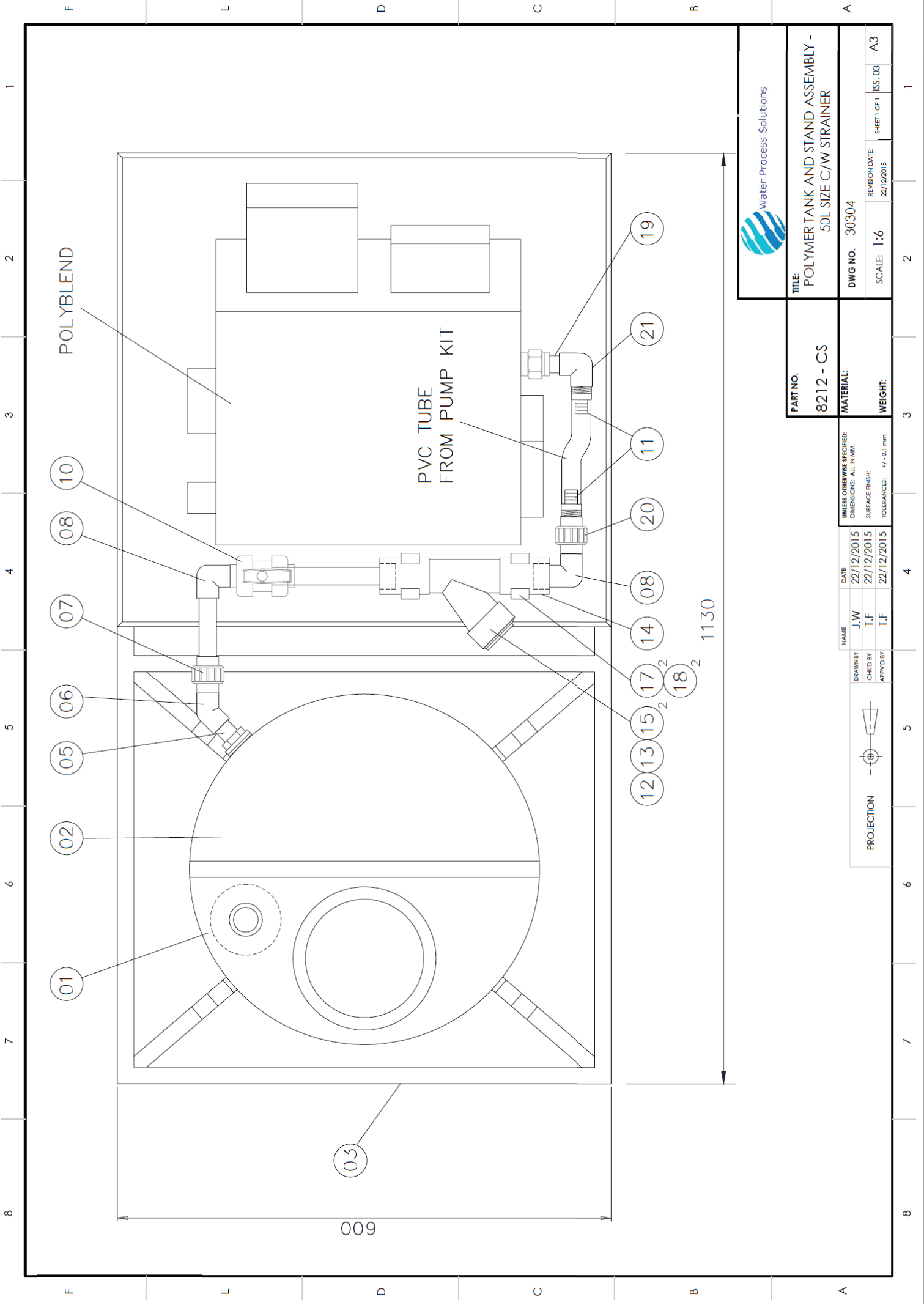
Dwg. No. EXP 1501

Pl. No. 1501

MODEL LE 86 PB (3.78 Litres/Hour)

Item No.	Dwg. No.	Part No.	Description	Qty
23	30131/4	8730	Drive Belt	1
23	30130	8255	Mechanical Seal	1
18	30130	8047	Injector	1
28	30130	8731	Race Bearing	1
16	30130	8728	Shaft End Bearing ¹	1
20	30130	8139	O-Ring	1
21	30130	8327	O-Ring	1
10	EXP.1501	27962	Head Assembly (LE 86 PB)	1
10	EXP.1501	27943	Head Assembly (LE 79 PB)	1
16	EXP.1501	30917	Liquifram (0.9)	1
16	EXP.1501	31420	Liquifram (1.8)	1
7	30131/4	8119-T	0-30 Flow meter LPH Tube	1
7	30131/4	8096-T	0-60 Flow meter LPH Tube	1
7	30131/4	8097-T	0-160 Flow meter LPH Tube	1
7	30131/4	8098-T	0-375 Flow meter LPH Tube	1
7	30131/4	8099-T	0-500 Flow meter LPH Tube	1

Note: Select the correct size flow meter tubes and pump parts for your PolyBlend



PART NO.		TITLE:	
8212 - CS		POLYMER TANK AND STAND ASSEMBLY - 50L SIZE C/W STRAINER	
MATERIAL:		DWG NO. 30304	
WEIGHT:		SCALE: 1:6	REVISION DATE: 22/12/2015 SHEET 1 OF 1 ISS. 03 A3

UNLESS OTHERWISE SPECIFIED:		DATE	22/12/2015
DIMENSIONS: ALL IN MM.		NAME	J.W
SURFACE FINISH:		DRAWN BY	T.F
TOLERANCES: ± 0.1 mm		CHKD BY	T.F
		APPRD BY	T.F



PROJECTION

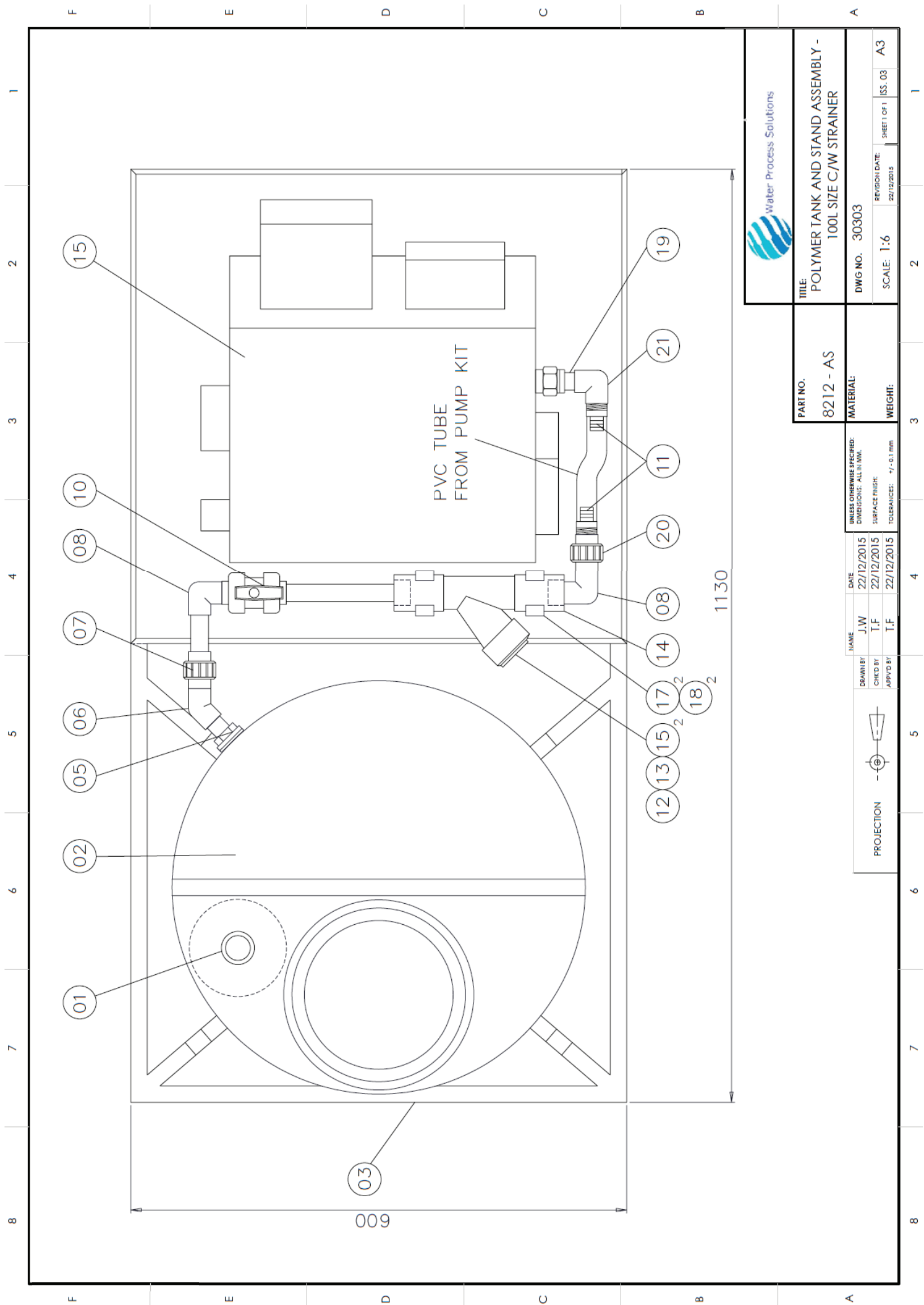
PARTS LIST

POLYBLEND TANK, STAND ASSEMBLY 50L TANK AND STRAINER

Dwg. No. 30304

PART NO: 8212-CS

Item No.	Part No.	Description	Qty
1	2049	50L Agitator	1
2	2050	50L Day Tank	1
3	8212	Stand – Polyblend and Tank	1
5	3218	½” Tank Connector	1
6	8166	½” Plain 45o Elbow	1
7	2167	½” Plain Union	1
8	8167	½” Plain 90o Elbow	2
10	8310	½” Ball Valve	1
11	25650	½” Connector	2
12	9125	1” Strainer	1
13	9126	Filter Mesh 1.6	1
14	8577	1” x 32mm Adaptor Socket	2
15	2214	1” – ½” Plain Reducing Bush	2
17	8324	1.25” Maclow Clip	2
18	6018-SPACER	Maclow Spacer	2
19	8293	½” Thr/Threaded Nipple	1
20	8177	½” Plain/Threaded Union	1
21	8294	½” Thr/Threaded Elbow	1



PART NO.		TITLE:	
8212 - AS		POLYMER TANK AND STAND ASSEMBLY - 100L SIZE C/W STRAINER	
MATERIAL:		DWG NO. 30303	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS: ALL IN MM. SURFACE FINISH: TOLERANCES: $\pm 1 - 0.1$ mm		SCALE: 1:6	
NAME		REVISION DATE:	
J.W.		22/12/2015	
T.F.		22/12/2015	
T.F.		22/12/2015	
PROJECTION		SHEET 1 OF 1	
ISS. 03		A3	

PART NO.		TITLE:	
8212 - AS		POLYMER TANK AND STAND ASSEMBLY - 100L SIZE C/W STRAINER	
MATERIAL:		DWG NO. 30303	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS: ALL IN MM. SURFACE FINISH: TOLERANCES: $\pm 1 - 0.1$ mm		SCALE: 1:6	
NAME		REVISION DATE:	
J.W.		22/12/2015	
T.F.		22/12/2015	
T.F.		22/12/2015	
PROJECTION		SHEET 1 OF 1	
ISS. 03		A3	

PARTS LIST

POLYBLEND TANK, STAND ASSEMBLY 100L TANK AND STRAINER

Dwg. No. 30303

PART NO: 8212-AS

Item No.	Part No.	Description	Qty
1	2040	100L Agitator	1
2	2051	100L Day Tank	1
3	8212	Stand - Polyblend and Tank	1
5	3218	½" Tank Connector	1
6	8166	½" Plain 45o Elbow	1
7	2167	½" Plain Union	1
8	8167	½" Plain 90o Elbow	2
10	8310	½" Ball Valve	1
11	25650	½" Connector	2
12	9125	1" Strainer	1
13	9126	Filter - 1.6 Mesh	1
14	8577	1" x 32mm Adaptor Socket	2
15	2214	1" - ½" Plain Reducing Bush	2
17	8324	1.25" Maclow Clip	2
18	6018-SPACER	Maclow Spacer	2
19	8293	½" Thr/Threaded Nipple	1
20	8177	½ " Plain/Threaded Union	1
21	8294	½" Thr/Threaded Elbow	1

PARTS LIST

POLYBLEND TANK, STAND ASSEMBLY 200L TANK AND STRAINER

Dwg. No. 30305

PART NO: 8212-BS

Item No.	Part No.	Description	Qty
1	2041	200L Agitator	1
2	2052	200L Day Tank	1
3	8212-200	Stand – Polyblend and Tank	1
5	3218	½” Tank Connector	1
6	8166	½” Plain 45o Elbow	1
7	2167	½” Plain Union	1
8	8167	½” Plain 90o Elbow	2
10	8310	½” Ball Valve	1
11	25650	½” Connector	2
12	9125	1” Strainer	1
13	9126	Filter Mesh 1.6	1
14	8577	1” x 32mm Adaptor Socket	2
15	2214	1” – ½” Plain Reducing Bush	2
17	8324	1.25” Maclow Clip	2
18	6018-SPACER	Maclow Spacer	2
19	8293	½” Thr/Threaded Nipple	1
20	8177	½” Plain/Threaded Union	1
21	8294	½” Thr/Threaded Elbow	1

SECTION 7

ELECTRICAL

- 7.1 Supply Voltage
- 7.2 Wiring Diagrams
- 7.3 Motor Power Figures and Full Load Currents
- 7.4 Power Factors
- 7.5 REM-1E Control Unit

SECTION 7.1

SUPPLY VOLTAGE

When your PolyBlend was manufactured it would have been for a supply voltage of either:

115v/1 phase/50 Hz

or

220/240v/1 phase/50 Hz

Check the label on the electrical switch box to verify supply voltage

SECTION 7.2

WIRING DIAGRAMS/PICTORIAL/PARTS LISTS

Refer to attached Drawing No. SK515A

‘HMZ Switch Box’ (pictorial)

and

Drawing No. SK888 rev. 01

‘PolyBlend Switch Box’

and

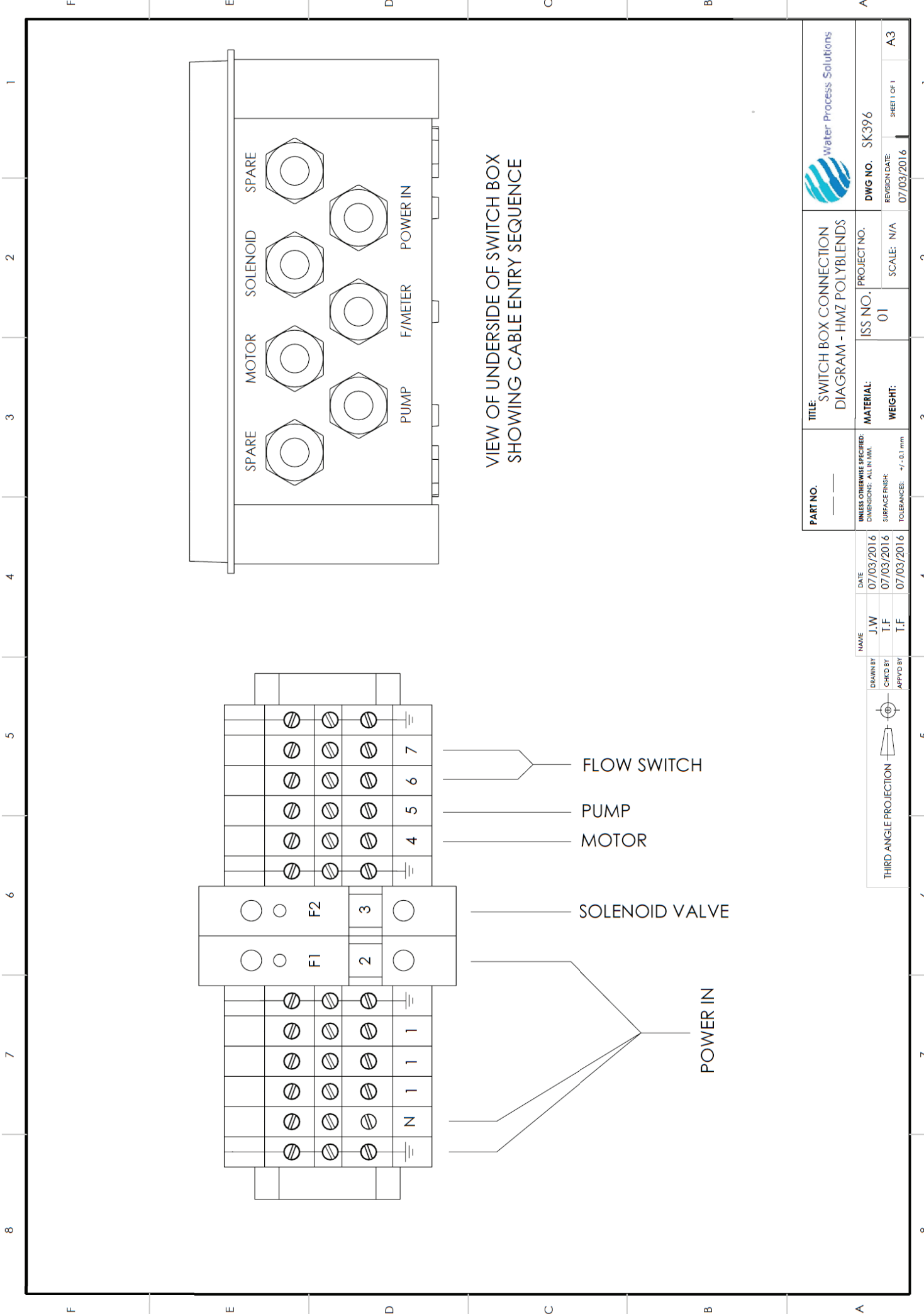
Drawing No. SK396

‘Switch Box Connection Diagram HMZ’

and

Drawing No. SK538

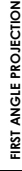
‘Connection to Optional Volt-Free Contact Box’



VIEW OF UNDERSIDE OF SWITCH BOX
SHOWING CABLE ENTRY SEQUENCE

PART NO.	TITLE: SWITCH BOX CONNECTION DIAGRAM - HMZ POLYBLEND			Water Process Solutions	
	UNLESS OTHERWISE SPECIFIED: DIMENSIONS: ALL IN MM	PROJECT NO.	DWG NO. SK396	REVISION DATE:	SHEET 1 OF 1
DATE	07/03/2016	ISS NO. 01	SCALE: N/A	07/03/2016	A3
NAME	J.W	MATERIAL:	WEIGHT:		
DRAWN BY	T.F				
CHKD BY	T.F				
APPRD BY	T.F				
THIRD ANGLE PROJECTION					

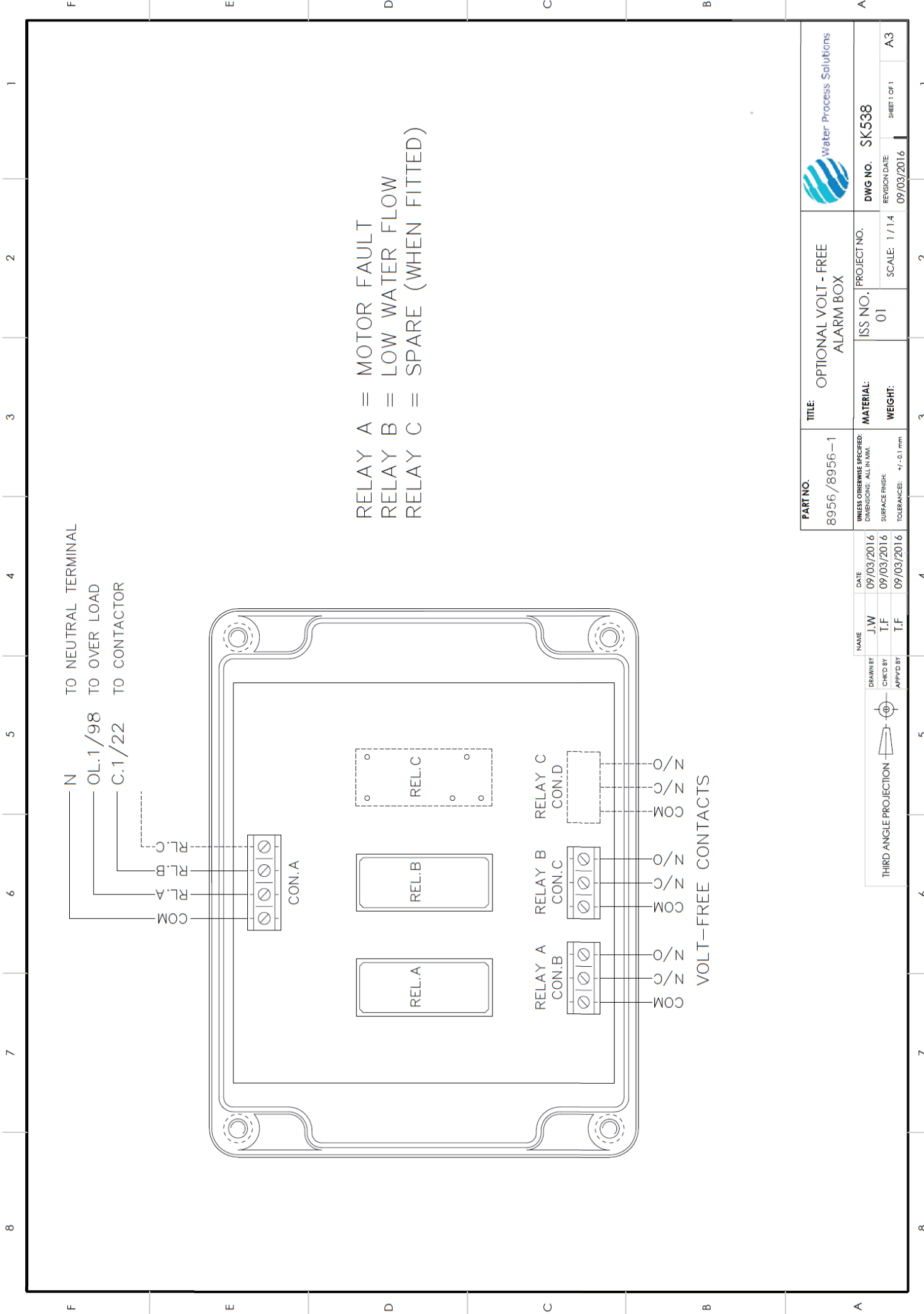
DATE	07/03/2016
NAME	J.W
DRAWN BY	T.F
CHKD BY	T.F
APPRD BY	T.F
THIRD ANGLE PROJECTION	



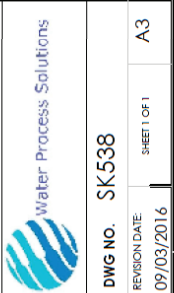
PROJECT:

SCALE:	N/A	MASTER SIZE:	A1
SHEET	1 OF 1	REVISION:	

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PART NO.	TITLE:	PROJECT NO.	ISS NO.	MATERIAL:	WEIGHT:
8956/8956-1	OPTIONAL VOLT - FREE ALARM BOX		01		
UNLESS OTHERWISE SPECIFIED: DIMENSIONS: ALL IN MM. SURFACE FINISH: TOLERANCES: ± 0.1 mm					
DATE			REVISION DATE:		
09/03/2016			09/03/2016		
NAME			DWG NO.		
J.W			SK538		
DRAWN BY			SHEET OF 1		
T.F			A3		
CHKD BY					
T.F					
APPRD BY					



SECTION 7.3

MOTOR POWER FIGURES AND FULL LOAD CURRENTS

7.3.1 220/240V/1 phase/50 Hz Systems

PolyBlend Model	Activator Motor Amps	Metering Pump Amps	Solenoid Valve Amps	Full Load Current Amps
PB 16-1 HMZ	2.8	0.5	0.15	3.45
PB 50-1 HMZ	2.8	0.5	0.15	3.45
PB 100-1 HMZ	2.8	0.5	0.15	3.45
PB 32-1 HMZ	2.8	0.5	0.15	3.45
PB 200-1 HMZ	2.8	0.5	0.15	3.45
PB 100-2 HMZ	2.8	0.5	0.15	3.45
PB 200-2 HMZ	2.8	0.5	0.15	3.45

7.3.2 110V/1 PHASE/50 Hz Systems

PolyBlend Model	Activator Motor Amps	Metering Pump Amps	Solenoid Valve Amps	Full Load Current Amps
PB 16-1 HMZ	5.6	1.0	0.3	6.9
PB 50-1 HMZ	5.6	1.0	0.3	6.9
PB 100-1 HMZ	5.6	1.0	0.3	6.9
PB 32-1 HMZ	5.6	1.0	0.3	6.9
PB 200-1 HMZ	5.6	1.0	0.3	6.9
PB 100-2 HMZ	5.6	1.0	0.3	6.9
PB 200-2 HMZ	5.6	1.0	0.3	6.9

SECTION 7.4

POWER FACTORS

7.4.1 220/240V/1 phase/50 Hz and 110v/1 phase/50 Hz Systems

PolyBlend Model	Activator Model	Metering Pump	Solenoid Valve	Total Full Power VA Rating
PB 16-1 HMZ	VA600	VA150	VA60	VA810
PB 50-1 HMZ	VA600	VA150	VA60	VA810
PB 100-1 HMZ	VA600	VA150	VA60	VA810
PB 32-1 HMZ	VA600	VA150	VA60	VA810
PB 200-1 HMZ	VA600	VA150	VA60	VA810
PB 100-2 HMZ	VA600	VA150	VA60	VA810
PB 200-2 HMZ	VA600	VA150	VA60	VA810

SECTION 7.5

REM-1E CONTROL UNIT

General Discription

The WPS REM-1E digital display pump controller serves as either a pump remote control station or proportional pump controller (4-20 mA input) or both.

The REM-1E can be used to vary the output of any Liquid Metronics Incorporated (LMI) series AA7, B7 or D7 metering pump (pump must be in external mode). Simply connect either end of the four conductor cable (four conductor cable and connectors are standard) to the external input jack of the LMI pump and the other end of the four conductor cable to the bottom of the controller.

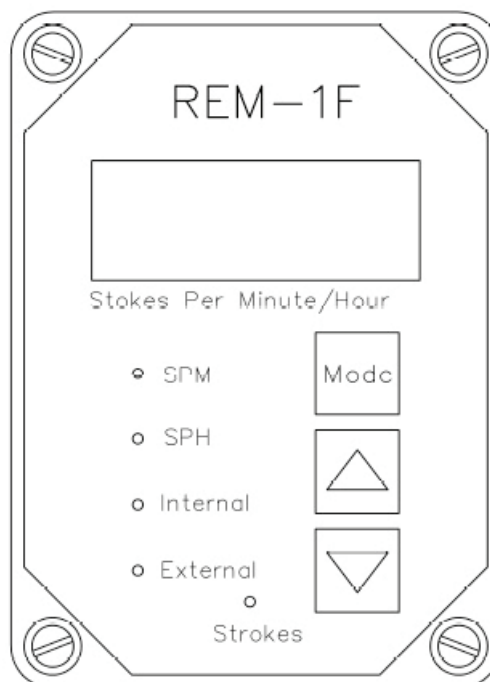
Power is supplied by the 15 VDC source from the LMI pump through the four conductor cable.

Controller output in the form of contact closures of 80ms duration triggers the LMI pump. In the internal mode, output is 0-100 strokes per hour (SPH) or 0-100 strokes per minute (SPM). Up and down, pressure sensitive membrane keys vary the output shown on an LCD digital display.

In the external mode, output is from 0-100 SPH or 0-100 SPM directly proportional to the 4-20 mA analogue input signal. Ten feet, three conductor cable and connectors are optional for 4-20 mA connection. Controller impedance is 220 ohms. Zero and span adjustments may be done through outside keys.

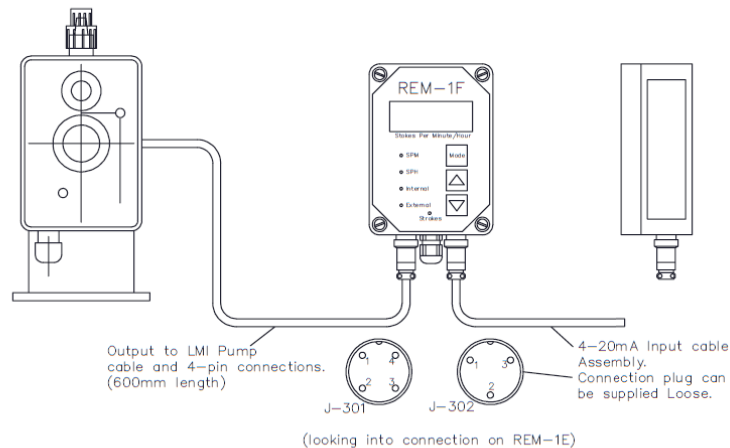
In the 'OFF' position, the 15 VDC power source will be present but the controller output will be zero. The display will read 'OFF.'

The polycarbonate plastic Nema 4X/IP55 enclosure may be easily wall-mounted near to or remote to the associated pump using standard cable/connector sets available from WPS.

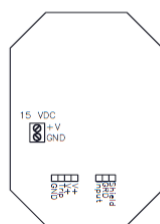


DWG NO. SK969.

REM-1F



Stranco Part Nos.
REM-1E Cable Assembly: 8055
4-Pin Connector only: 8079
4-Pin Connector & Cable: 8079-A



Connections
Inside REM-1E

+V	WHITE
GND	BLACK
TRIG	GREEN
+V	RED
OUT	BLACK
SHIELD	GREEN
4-20 IN	RED

J-301, J-302
Connections

J-301, Pin # 1
J-301, Pin # 3
J-301, Pin # 2
J-301, Pin # 4
J-302, Pin # 2
J-302, Pin # 1
J-302 Pin, # 3

Cable
Connections

RED	Future Use	4-Pin Connector, J-301
WHITE	Power - (Common)	
GREEN	Pump Trigger (+15VDC)	
BLACK	Power + (+15VDC)	3-Pin Connector, J-302 External Control 4-20mADC 220ohm Input Impedance
BLACK	Signal Common	
WHITE	Shield (mech. ground)	
RED	4-20mA Signal	

ZERO and Span Adjustments

- 1: Press Mode key to enter the off mode.
- 2: Pump output will stop. With OFF shown in the display, press and hold the MODE button until the display shows "SPn".
- 3: After three seconds, the upper span limit will be displayed. The default is 100 SPM, (and the maximum allowed if connected to an LMI metering pump).
- 4: Increase or decrease the upper limit by using the arrow keys.
- 5: Press MODE to accept the new value and advance to the minimum span limit adjustment.
- 6: The minimum span limit and default is 0. Use the arrow keys to change the lower span limit.
- 7: Then press MODE to continue to the CAL section and follow instructions right, starting at 3, or press MODE twice to return to the OFF mode.

CALIBRATION

- 1: From the OFF mode press and hold the MODE button until the display changes to "SPn", then to the upper span limit.
- 2: Press MODE twice until the display shows CAL.
- 3: Press one of the arrow keys, up or down, (pressing MODE will skip the CAL sequence).
- 4: Display shows C4, (Calibration - 4mA).
- 5: Adjust input to a stable 4.00mA signal for at least 10 seconds, then push both arrow buttons. "ERR" means input is not near 4mA.
- 6: Display will change to C20.
- 7: Adjust input to 20.00mA signal for at least 10 seconds, then press both arrow buttons.
- 8: After the calibration sequence is completed, (or skipped), the display on the REM-1E will return to OFF.

Revision Date: 09 MAR 2016

Revision 02. April 2016

SECTION 8

TROUBLESHOOTING

Safety Notes:

Always isolate PolyBlend before carrying out any maintenance work on unit.

The switch on the PolyBlend switchbox is not an isolator, therefore the unit should be connected into an isolated and fused supply.

SYMPTOM	POSSIBLE CAUSE/ACTION
Switchbox Indicators: Low water flow light on:	External water supply stopped. Flowmeter valve shut off. Flowmeter low-flow switch set too low. Flow out of PolyBlend shut off or blocked. Solenoid valve not working (see solenoid valve).
Motor fault light on (overload tripped): Overload is sited inside switchbox. Isolate PolyBlend unit and remove switchbox lid. Reset overload and replace lid (check seal) before switching power back on.	Chamber bearing failure – mechanical seal leaking. Concentration of polymer in chamber too high. Internal chamber mechanical failure. Unclean mains power supply or low voltage. Internal motor fault.
Solenoid Valve No water flow – valve not operating: Voltage to valve but still not working:	Check power supply to solenoid coil. Check fuses in switchbox. Check connections and wires secure. Actuation coil burnt out – replace coil. Internal fault – replace complete solenoid valve.
Polymer Metering Pump: Pump not pulsing: Pump only pulses in ‘internal’ mode: Pump still fails to run after checking above: Pump running but not injecting polymer:	Check fuses in switchbox Check connections. Check REM-1 (D) settings and cable connections. Internal electronic fault – consult WPS engineer. Has pump lost prime? – Re-prime pump. Check all tubing connections for leaks. Check for blockages or water in injection line. Clean injector assembly. Dismantle pump head assembly and clean ensuring all parts dry and correctly re-assembled. If pump still not injecting consult WPS engineer.

SYMPTOM	POSSIBLE CAUSE/ACTION
<p>Polymer Metering Pump:</p> <p>Pump not pulsing:</p> <p>Pump only pulses in 'internal' mode:</p> <p>Pump still fails to run after checking above:</p> <p>Pump running but not injecting polymer:</p>	<p>Check fuses in switchbox</p> <p>Check connections.</p> <p>Check REM-1 (D) settings and cable connections.</p> <p>Internal electronic fault – consult WPS engineer.</p> <p>Has pump lost prime? – Re-prime pump.</p> <p>Check all tubing connections for leaks.</p> <p>Check for blockages or water in injection line.</p> <p>Clean injector assembly.</p> <p>Dismantle pump head assembly and clean ensuring all parts dry and correctly re-assembled.</p> <p>If pump still not injecting consult WPS engineer.</p>
<p>Mechanical Noises</p> <p>Vibration:</p> <p>Metallic sounds:</p>	<p>Is PolyBlend mounted on secure surface?</p> <p>Check chamber drive belt. If this is slack isolate unit, remove belt guard, slacken off motor bolts (in 4 places), press downwards on motor, hold down and tighten bolts. Replace belt guard before restarting unit.</p> <p>Check bearings. If worn replace and check mechanical seal not leaking.</p> <p>Check chamber impellers are secure in shaft. If not, strip down unit and repair or call service engineer.</p>

REM - 1F Controller

The REM-1 F Digital Display Controller serves as either a pump remote control station or a proportional pump controller (4-20 mA input) or both. The REM-1 F controller can be used to vary the output of any solenoid metering pump with external stroke triggering. This is truly a “plug-n-play” accessory. A simple connection of 4 conductor cables from the REM-1 F controller to the external input jack of an LMI® pump is all that is required for start-up. Similar connections can be made to other solenoid pumps. Power is supplied by a 15 VDC source from the LMI® pump through the 4-conductor cable. For other pump brands, an external 9-15 VDC power supply is needed.

The controller output, in the form of a solid state contact closure, triggers the electronic metering pump. The output is adjustable to 0-360 strokes-per-minute (spm) or 0-360 strokes-per-hour (sph). In internal mode, a touch of the pressure-sensitive arrow keys varies the output, which is displayed on large, easy to read LCD digits. Pumping rate can be displayed in Strokes, Litres or Gallons, per minute or per hour. In the external mode, output is from 0-360 spm or 0-360 sph directly proportional to the 4-20 mA analog input signal. Three metres (10 feet) of 3-conductor cable and connectors are supplied as standard for the 4-20 mA applications.

Zero and span limits and calibrations may be made through the keys of the controller. All configuration changes and calibrations are saved in nonvolatile memory. In the “OFF” position, the 9-15 VDC power source will be present, but the controller output feed rate will be zero. The display will then read OFF. The rugged, polycarbonate NEMA®4X enclosure is easily wall-mounted near the associated pump, or can be remotely located, using standard cable/connector sets available from Water Process Solutions Ltd.

Config and Cal MENU: Press and hold MODE 5 Seconds when in OFF Mode to enter Config Menus. Pressing MODE Enters the menu displayed. To exit menus, press ▲ or ▼ until display shows dOnE, then press MODE.		
Pressing ▲ Loops around to the dOnE menu	dISP	Display Units Selection
Press ▲ or ▼ to scroll between menus	SPAn	Input Span and Limits
	CAL	Calibration
	drdn	Drawdown Calibration
	MLPS	mL per Stroke Calibration adjustment
	CtL	Control (Internal or External)
	FAcT	Factory Defaults Reset
	vEr	Version of Embedded Software
Pressing ▼ Loops around to the dISP menu	dOnE	Done configuring, back to the OFF Mode





REM-1 F Controller Continued..

Inputs

Operating Voltage: 9-15 VDC
Nominal Current usage: 25 mA
1- External Control Input: 4-20 mA
(50 ohms nominal impedance)
Input Range Adjustable with Span Limits

Outputs

1- Solid State Contact closure
50mA maximum current
24VDC maximum voltage
Adjustable Span Limits on Pulses Per Minute or Per Hour

Ratings

NEMA® 4X (IP 66)
CE, CSA® and CSAus pending

Enclosure

Overall dimensions:
130.0 x 94.0 mm
(5.12 X 3.70 in)
Mounting hole spacing:
115.0 x 79.0 mm
(4.53 X 3.11 in)
Non-Corrosive UL® Listed Polycarbonate
Water tight cord grip fitting for external power supply cable

Connections

Power and Output, 4 pin Mobile connector Remote Control
Input, 3 pin Mobile connector Optional Terminal Strip Adaptor
for wiring Power, Input and Output connections.

User Interface

4- digit, 7-segment LCD display
0.75 inch high characters
3 Push Buttons for output changes and configuration
8 Status and Output LEDs

Options

0-100 Strokes Per Minute (default)
0-360 Strokes Per Minute
(Via internal jumper change)
Display Shows Strokes Per Minute (default)
Display Shows Strokes Per Hour
or Liters Per Minute
or Liters Per Hour
or Gallons Per Minute
or Gallons Per Hour
LMI® Pump Power supplied (default)

External 9-15VDC Power Supply
(For Water Process Solutions Ltd. Premia® Solenoid Metering Pump and other solenoid-type
metering pumps)

REM-1 F Controller Continued..

(OFF Mode)

Access to the Menus is only available from the OFF mode

(MENU TREE)

LCD Shows dISP (the top of the menu tree) the Display Menu entry point (to change feed rate units of measure)

Pressing the down arrow chooses the next menu item

Span (Minimum and Maximum Stroke Rate and 4-20mA Input range Adjustment)

4-20 mA Input Calibration

Automatic Drawdown Sequence submenu to determine the milliliters per pulse volume

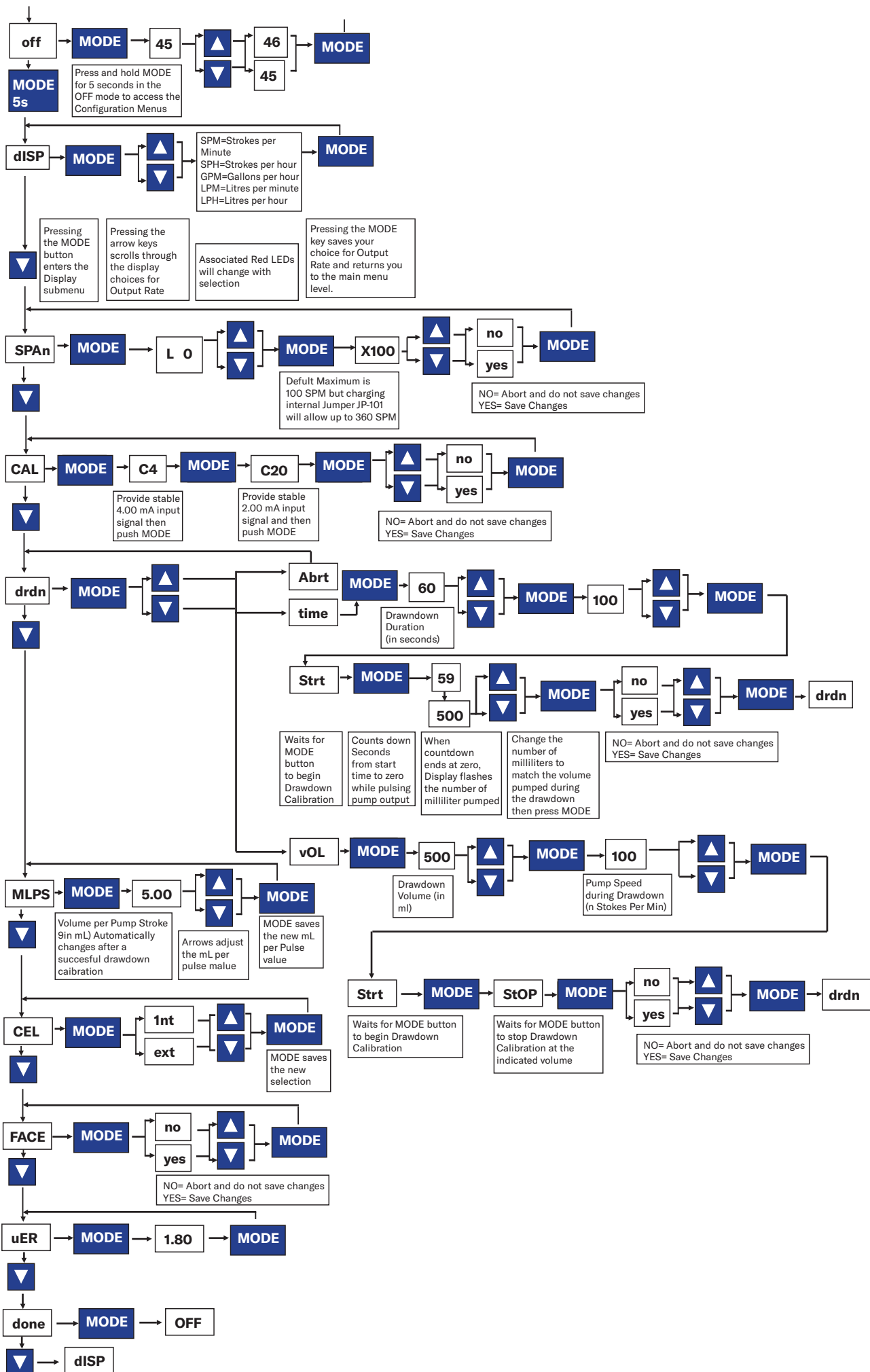
Milliliters Per Pulse Display and manual input submenu

Changes from internal (local) speed control to External (Remote 4-20mA) control

Factory defaults Selecting YES returns all programming and calibrations to factory settings


Embedded software Version Number. As of 5-9-07 the current Version is 1.80


Exits Proramming menu back to the OFF mode





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WATER PROCESS
 **SOLUTIONS**

Literature No. WPS Gen Flyer UK 001.V1