

شرکت دانش بنیان مهندسی

## ***Fire***

Client:

Subject: Firefighting equipment

**Final Data Book**

Vendor: ▲	Project:  RAVANKAR DARYAEE HORMOZ OIL PRODUCTS TERMINAL	Client:
Project No: IMA-RDH-01	Technical Offer	Page: 1/6
Doc No: IMA-RDH-TO-01		Rev: 02
		Enquiry No: -

# Technical Offer

## For

### Firefighting equipment

02	June. 18/2019	F	For Approval	S.S.	H.H.	H.A.
01	June. 02/2019	F	For Approval	S.S.	H.H.	H.A.
00	May. 25/2019	F	For Approval	S.S.	H.H.	H.A.
Rev.	Date	Stage	Description	PRE'D	CHK'D	APP'D

[illegible]

Item	Description	Qty.
1	<p><b><u>Foam Proportioner Bladder Tank</u></b></p> <ul style="list-style-type: none"> <li>• Model: IMF-BFP2000</li> <li>• Volume: 2000 Lit.</li> <li>• Type: <u>Horizontal</u></li> <li>• Installation: outdoor</li> <li>• Consisting of the Following items in the Assembly;</li> <li>• Foam Vessel (Bladder Tank): Designed and Manufactured as per ASME Sec.VIII Div.1 for Maximum Working Pressure of 18 Bar.</li> <li>• Material of Construction Carbon Steel to SA-516 Gr.70.</li> <li>• External Coating: Corrosion Resistant Coating Shade No. RAL 3020.</li> <li>• Foam Bladder: Material of Construction Nylon Reinforced Nitrile (BUNA-N-NYLON) suitable for storage of AFFF and FFFP foam concentrates.</li> <li>• Piping: Material of Construction Carbon Steel to SA-106 Gr.B, Seamless Schedule 40. Hydrostatic tested to pressure of 18 Kg/sq.cm (261 psi) for 30 min.</li> <li>• Accessories: Liquid Level Indicator, Dial Type, , Pressure Indicator, 1×check valve, Diaphragm control for foam concentrate pipe, 3× Isolating Valve(butterfly valve wafer type)</li> <li>• Manufacturer: Imen Mahan Aria Co. IRAN</li> <li>• UL and FM certified by Surewin Quality certification.</li> </ul>	1



Item	Description	Qty.
2	<p><b><u>Foam Chamber</u></b></p> <ul style="list-style-type: none"> <li>• Model: IMF- FC80</li> <li>• For Fixed Roof Tank</li> <li>• Inlet Connection: 3" Flanged ANSI #150</li> <li>• Outlet Connection: 6" Flanged ANSI #150</li> <li>• Min. Working Pressure: 3 Bar G,</li> <li>• Max. Working Pressure: 15 Bar G,</li> <li>• Design: NFPA 11</li> <li>• Completed with orifice plate and Rupture Disk</li> <li>• Body material: Carbon steel</li> <li>• Orifice material: Stainless steel</li> <li>• <u>Completed with DEFLECTOR</u></li> <li>• Made By Imen Mahan Aria Co. IRAN</li> <li>• ImacoFire co. is UL &amp; FM certified by Surewin Quality certification.</li> </ul>	4
3	<p><b><u>Foam Chamber</u></b></p> <ul style="list-style-type: none"> <li>• Model: IMF- FC50</li> <li>• For Fixed Roof Tank</li> <li>• Inlet Connection: 2.5" Flanged ANSI #150</li> <li>• Outlet Connection: 4" Flanged ANSI #150</li> <li>• Min. Working Pressure: 3 Bar G,</li> <li>• Max. Working Pressure: 15 Bar G,</li> <li>• Design: NFPA 11</li> <li>• Completed with orifice plate and Rupture Disk</li> <li>• Body material: Carbon steel</li> <li>• Orifice material: Stainless steel</li> <li>• <u>Completed with DEFLECTOR</u></li> <li>• Made By Imen Mahan Aria Co. IRAN</li> <li>• ImacoFire co. is UL &amp; FM certified by Surewin Quality certification.</li> </ul>	8

**Notes:**

- Delivery Point: ImacoFire Co Iran- Tehran.
- Delivery Time: 45 working days from the receipt by ImacoFire of the purchase order and other relevant technical documentation.
- Guarantee: 18 months after the delivery and 12 months after commissioning of the goods.
- Final data book is included.

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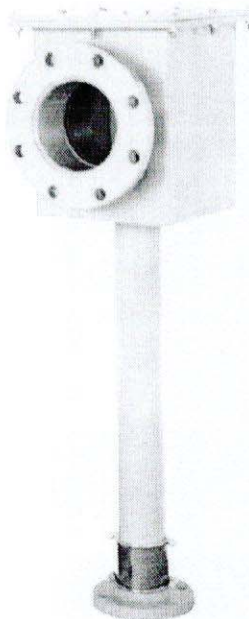
Clarification No. / Rev.:		
Item No.	Clarification Items	Reply
Conclusion		
<b><u>General comments</u></b>		
1.	Foam Bladder Tank type is horizontal in the datasheet whereas its type in the catalog is vertical. By considering maintenance, please clarify which type shall be chosen.	<b>Horizontal type</b> Foam bladder tank would be considered. It is mentioned in technical offer.
2.	Deflector is missed in catalog. Please clarify.	Deflector has been considered and mentioned in technical offer.
3.	Initial Foam to fill the bladder tank for first use shall be considered in the offer.	Initial Foam is considered and included in revised technical offer.
4.	However, the datasheet foam type is AAAF, please consider a separate offer with FP type foam.	Separate FP type foam is proposed optionally in technical and commercial offer.
5.	Before purchase, Technical visit is required.	It's confirmed. Technical visit will be done before purchase.
<b>Final Conclusion:</b>		



# FOAM CHAMBER

## TECHNICAL DATA

MODEL	IMF-FC80 And FC100 IMF-FCS65& 80& 100
BODY MATERIAL	Stainless Steel Carbon Steel
INLET CONNECTION	2", 2.1/2", 3", 4"
WORKING PRESSURE	Min 2 Kg/Cm2 Max 10 Kg/Cm2
FLANGE CONNECTION	ANSI B16.5 Class 150#
VAPOUR SEAL RUPTUR PRESSURE	1.5 Kg/Cm2 Running water/ water foam solution pressure at inlet of Foam Chamber
VAPOUR SEAL	Glass
FINISH	Yellow RAL 3000 polyurethane covered.
APPROVAL	UL , FM , TUV , Knowledge Base, University of TEHRAN
ORDERING, INFORMATION	-Model & Size -Flow & Pressure at inlet of each Foam Chamber -Inlet, outlet flange specification -Type of Deflector -Foam concentrate used



## Description

Foam Chamber is used in one of the most common application to protect vertical fixed roof (cone) liquid storage tanks, with or without internal floating roof with the low expansion foam system. The application of foam is on the basis that the risk comprises the total surface area of the fuel. The foam system design guidelines generally used are in accordance with NFPA-11, standard. The ImacoFire's Foam Chambers are typically used as part of a fixed or a semi-fixed surface application fire protection system on exterior fixed cone roof or on internal floating roof storage tanks.

the foam chamber has a foam deflector mounted on the inside of the tank wall. When the system is activated, the expanded foam mass discharges from the foam chamber and flows against the deflector which diverts the expanded foam back against the inside wall of the tank.

The number of foam chambers required for any fixed or semi-fixed fire protection system is based on the diameter of the storage tank to be protected.

ImacoFire Co.

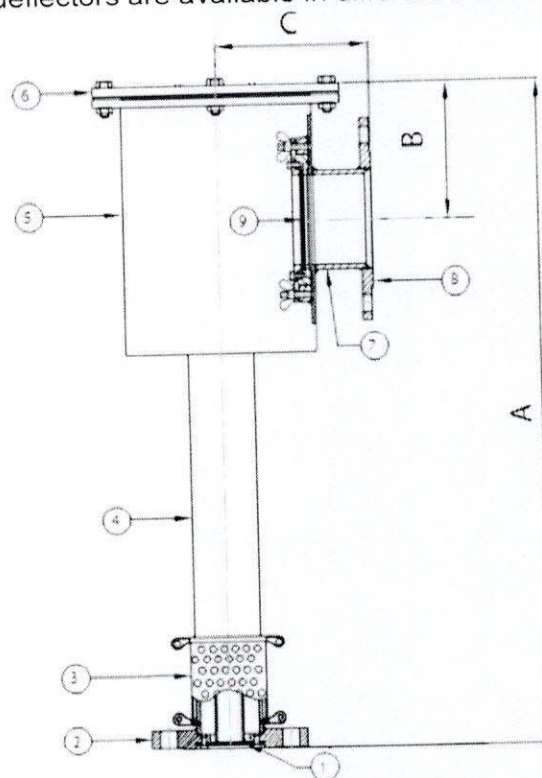
Website: [www.imacofire.com](http://www.imacofire.com) , Email: [info@imacofire.com](mailto:info@imacofire.com),

Tel: (+98)21-88971614-5, Fax: (98)21-88334719, P.O.Box: 1439814448

## SPECIFICATION

Foam Chamber is an air aspirating foam discharge device, covering wide range of flow from 150 to 2400 liters per minute at 2.8 to 7 kg/sq.cm. inlet pressure. The Foam Chamber contains a vapor seal to prevent the entry of vapor, dust, . . . into the foam chamber and the foam solution pipe. Each foam chamber is supplied with an orifice plate, designed for the required flow and inlet pressure. The foam is produced by introducing air into the foam solution stream. The inlet of foam chamber is designed to create venture jet which draws air into the foam solution stream. The air is drawn into the foam solution through the holes located on the foam chamber covered with stainless steel screen to exclude nesting birds and insects. The aerated foam is directed into the deflector for the gentle application of the expanded foam. The deflectors are available in different models.

ELEM. No.	Description
1	ORIFICE
2	INLET FLANGE
3	FILTER MOUNT
4	FOAM CREAMING CHAMBER
5	FOAM CHAMBER
6	INSPECTION COVER
7	DOWNLOAD TUBE
8	OUTPUT FLANGE
9	STEAM SEALING ASSEMBLY



DIMENSION	IMF-FG50	IMF-FG80	IMF-FG100	IMF-FG150
A (mm)	917	1067	1318	1667
B (mm)	117	167	168	217
C (mm)	106	106	106	181
INLET CONNECTION	2"RF Flange ANSI Class150	3"RF Flange ANSI Class150	4"RF Flange ANSI Class150	6"RF Flange ANSI Class150
OUTLET CONNECTION	4"RF Flange ANSI Class150	6"RF Flange ANSI Class150	8"RF Flange ANSI Class150	10"RF Flange ANSI Class150

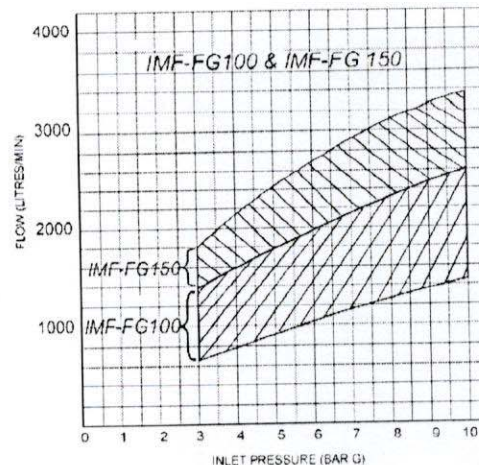
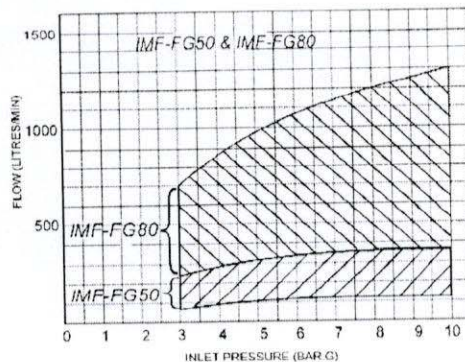


ImacoFire Co.

Website: [www.imacofire.com](http://www.imacofire.com) , Email: [info@imacofire.com](mailto:info@imacofire.com),

Tel: (+98)21-88971614-5, Fax: (98)21-88334719, P.O.Box: 1439814448

#### PERFORMANCE GRAPHS



#### INSTALLATION

The Foam Chamber is normally mounted vertically on the cone roof storage tank wall shell just below the roof joint or approximately between 8" to 12" down from the roof joint to the center point of the foam chamber outlet.

1. When the Foam Chamber is mounted correctly, the internal glass seal of the chamber will be just slightly higher in elevation than the roof joint on the storage tank.

2. If the storage tank is of new construction and the foam deflector can be installed from inside the tank, a solid deflector is normally used. This style deflector can either be bolted or welded to the inside wall of the storage tank so that the deflector covers the foam discharge port from the foam chamber. If bolted, the studs / bolts holding the solid deflector in place can be used for the mounting of the foam chamber onto the outside wall of the tank.

3. PLEASE ensure that after the installation of the foam chamber(s) and before placing in service, that the glass seal inside of the foam chamber is in place. This seal will prevent any vapors from escaping from inside the storage tank down through the foam chamber piping. In the event of an accidental overfill, the glass seal will prevent product from escaping down the foam chamber piping.

4. When there are two or more foam chambers mounted on a storage tank, they are to be equally spaced around the tank periphery and each foam chamber outlet should be sized to deliver foam solution at approximately the same application rate.

5. Each individual foam chamber is to have its own individually valved lateral riser feed pipe that terminates at a safe distance from the tank and outside of any dike area.

6. PLEASE refer to NFPA 11 Latest Edition, Standard for Low Expansion Foam and Combined Agent Systems, for information on pipe work design.

7. At the inlet to the foam chamber, an orifice is sized to be able to pass the necessary required flow rate in gpm at the residual foam solution pressure that is available at the chamber inlet. A minimum of 40 psi to a maximum of 125 psi must be available at the inlet flange into the foam chamber for this discharge device to work correctly.



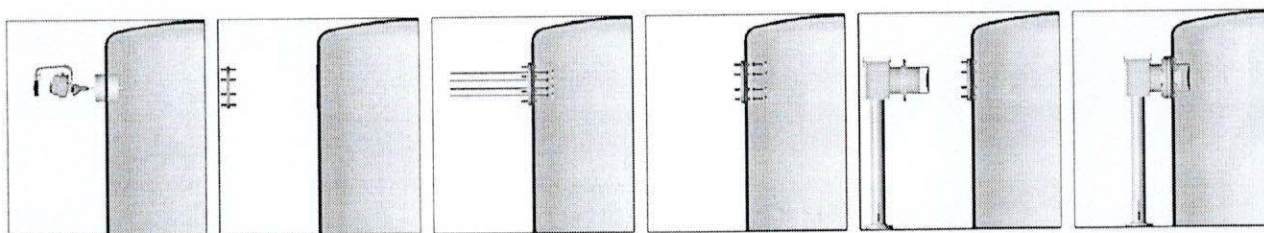
ImacoFire Co.

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Tel: (+98)21-88971614-5, Fax: (98)21-88334719, P.O.Box: 1439814448

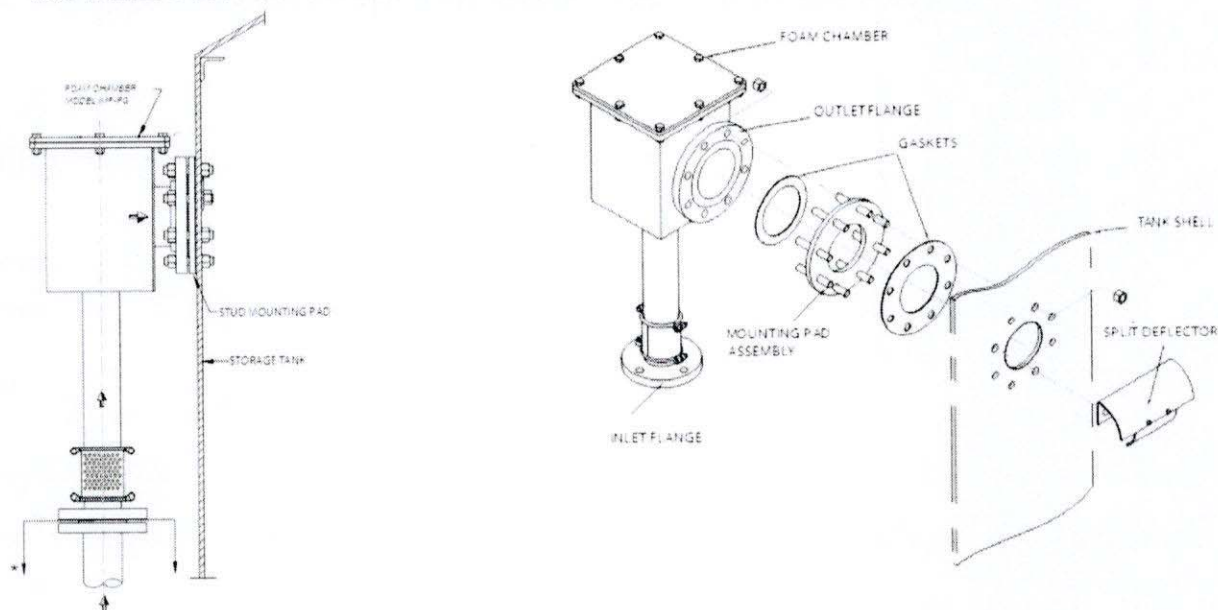
8. REMEMBER in accordance with NFPA 11, supplementary fire protection must also be supplied. This is in addition to any fixed system that is installed on the storage tank(s). The supplementary protection can either be portable monitors, towers or hand hose line devices. When hand line application devices are used, they must have a minimum foam solution flow

Rate of 50 Gpm. The number of hand lines required is dependent on the diameter of the storage tank being protected.



Base	Bolts	Size of Bolts	Minimum Length of Bolts
2-1/2" 150# ANSI Flange	4	5/8"-11 UNC	2-1/2"
3" 150# ANSI Flange	4	5/8"-11 UNC	2-1/2"
4" 150# ANSI Flange	8	5/8"-11 UNC	2-1/2"

## INSTALLATION OF TYPICAL FOAM CHAMBER WITH DEFLECTOR





ImacoFire Co.

Website: [www.imacofire.com](http://www.imacofire.com) , Email: [info@imacofire.com](mailto:info@imacofire.com),

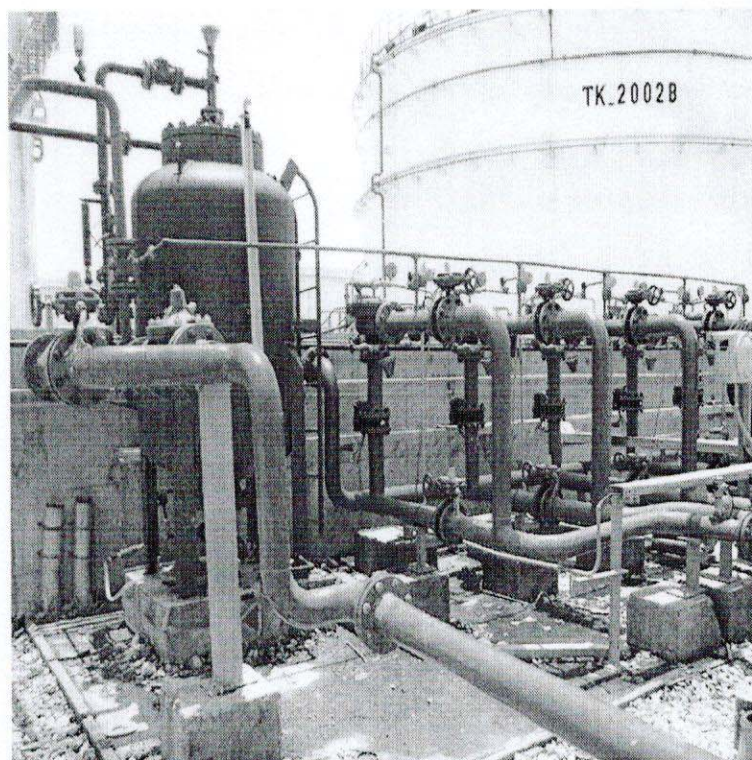
Tel: (+98)21-88971614-5, Fax: (98)21-88334719, P.O.Box: 1439814448

**Important:**

Before installing and operating this equipment, read & study this manual thoroughly. Proper installation is essential to safe operation. In addition, the following points should be adhered to in order to ensure the safety of equipment and personnel:

1. All personnel who may be expected to use this equipment must be thoroughly trained in its safe and proper use.
2. Before flowing water from this device, check that all personnel (fire service and civilian) are out of the stream path. Also, check to make sure stream direction will not cause avoidable property damage.
3. Become thoroughly familiar with the hydraulic characteristics of this equipment, and the pumping system used to supply it. To produce effective fire streams, operating personnel must be properly trained.
4. Open water valve supplying this equipment slowly, so that the piping fills slowly, thus preventing possible water hammer occurrence.
5. After each use, and on a scheduled basis, inspect equipment per instructions in Maintenance & Inspection on this document.

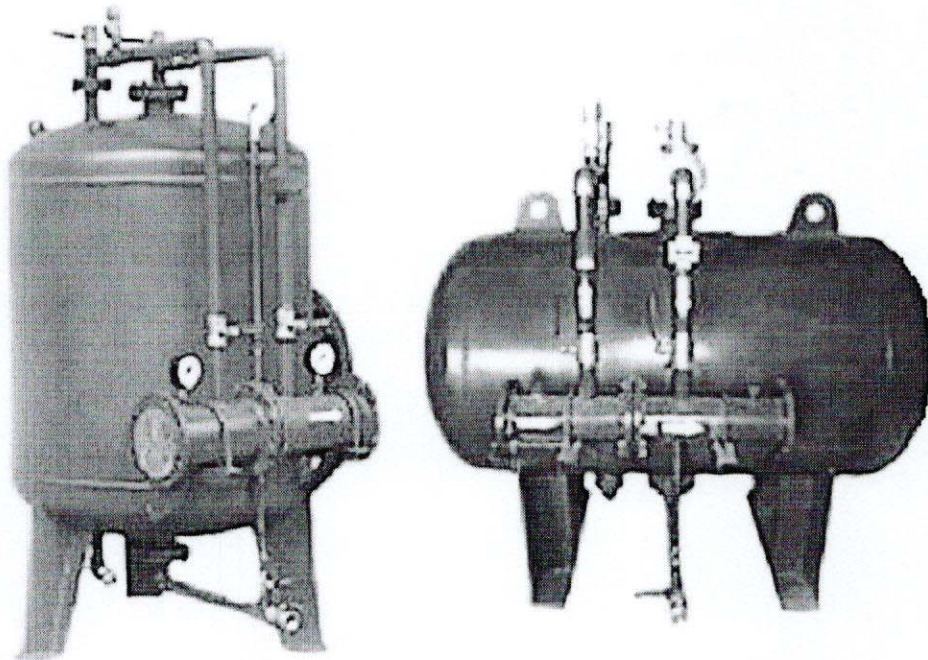
## ***Foam Proportioner Bladder Tank***





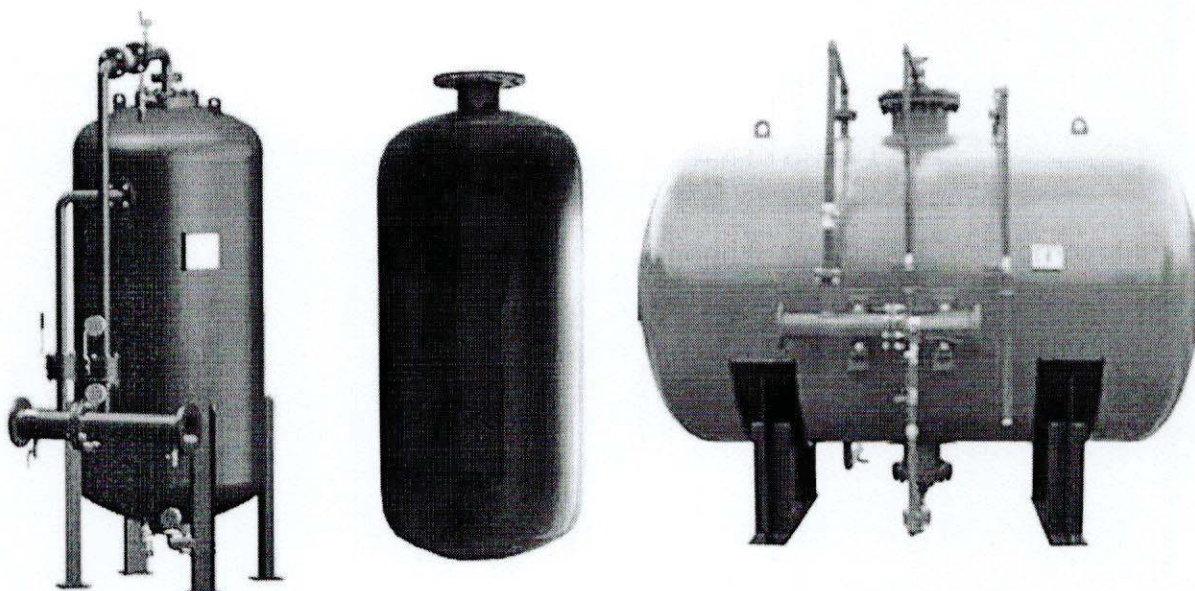
## Foam proportioner bladder tank

The Bladder Tank is a complete balanced pressure proportioning system. This Equipment offers the foam system designer fixed dimensions inclusive of the Proportioner/ratio controller. This takes away some of the uncertainty when sizing the foam equipment room and piping layout. Plus, the installer has the advantage of a prefabricated foam system, eliminating loose components and simplifying the installation. Its operation requires no external power other than a pressurized water system. The bladder tank may be used with any foam agent and with any suitable discharge device.



## Features

1. Most dependable foam proportioning as it does not require any external power except fire-water pressure of minimum 4 kg/cm<sup>2</sup>.
2. Low proportioning losses.
3. Wide flow range without change in proportioning ratio.
4. Provides accurate proportioning as compared to other types of proportioning systems.
5. Nylon reinforced foam bladder provides good foam storage and compatible with all types of foam concentrates.
6. High reliability and design simplicity minimizes chances of system failure.
7. Manual / automatic operation.
8. Low installation cost.





## Technical data sheet

### TECHNICAL DATA

MODEL	IMF-BFP
NOMINAL CAPACITY(litter)	500,1000,1500,2000,3000,5000, 7000,10000,15000
WORKING PRESSURE	UP to 18 Bar
Hydrostatic tested to pressure	18 bar (261psi) for 30 min.
Complete Internal Piping	Stainless Steel 304
FLANGE CONNECTION	Flange drilling matching to ANSI #150 B16.42
Internal Coating	Coal Tar Epoxy
External Coating	Corrosion Resistant coating Shade No. RAL 3000.
Water Piping	Carbon Steel to SA-106 Gr.B, Seamless Schedule 40. Hydrostatic tested to pressure of 18 Kg/sq.cm (261 psi) for 30 min.
Bladder material	Reinforced rubber
APPROVAL	UL and FM certified by SQC, Knowledge Base, University of TEHRAN
ORDERING INFORMATION	Specify 1) capacity 2) Propor oner ow rate 3) foam mixing ra o



### Description

The ImacoFire Bladder Tank Foam Proportioning System utilizes the water pressure to inject foam concentrate into a water supply and automatically proportions foam concentrate over wide range of flow and pressure, with very low pressure drop. This system does not require a foam concentrate supply pump. The Bladder Tank Foam Proportioning Systems are available with vertical bladder tanks. The carbon steel tanks

are designed and constructed in accordance with ASME Code Sec on VIII Div.1 for unfired pressure vessels. The maximum working pressure is 14Bar (175 PSI). The vertical tank assembly is supported by legs welded to tank with provision for anchoring. Tank is provided with lifting lugs. The system is supplied with pressure vessel, bladder, fill and drain valve for water and foam concentrate, ratio controller and vent valve. Ladder and sight gauge assembly are supplied as optional items on request.

### ***STANDARD TECHNICAL CHARACTERISTICS***

- Tank body material: SA 516 Gr.70
- Manhole: DN 450
- Mixer inlet: ANSI 150 RF flanged
- Mixer outlet: ANSI 150 RF flanged
- Mixer material: SA 106 Gr.B - SA 105
- Membrane material: Hypalon neoprene
- Water and foaming nozzles material: stainless steel
- Refilling hand pump: included
- Level indicator by means ball valves (n° 3)
- Flow sense from left to right
- Design pressure: 12 barg
- Test pressure: 18 barg

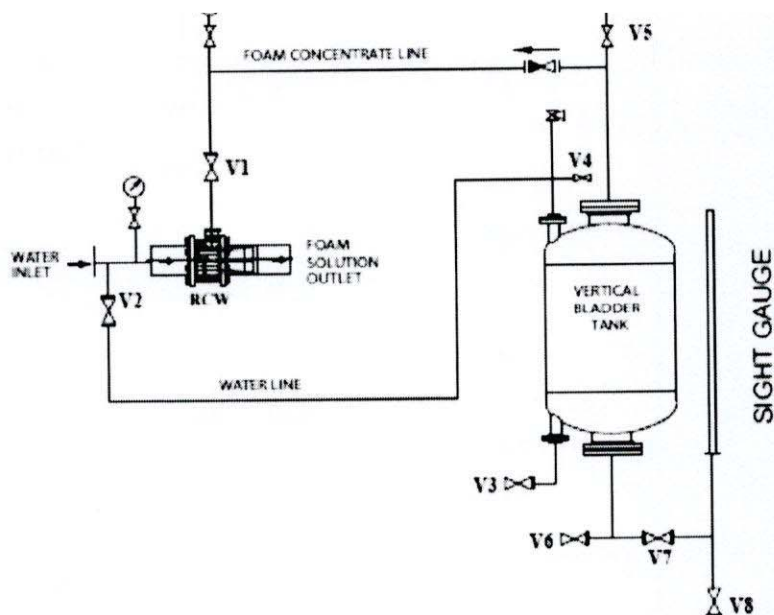
### ***PAINTING CYCLE STD/ 1-FAS***

- Grease removal and brushing
- RAL 3000 red nish
- Total thickness 80 - 120  $\mu$

### ***UPON REQUEST***

- Tank body material: stainless steel
- Special painting cycle for exterior and interior tank
- Different design pressure
- Different flow sense from standard
- Different type flange from standard
- Manhole access scale
- Pre-mixer vent kit on mixer elevation
- In according to: Code ASME VIII div. 1





Valve NO.	Description	Normal position	
		Manual	Auto
V1	FOAM CONCENTRATE SHUT OFF VALVE	CLOSED	-----
V1A	AUTO FOAM CONCENTRATE SHUT OFF VALVE	-----	CLOSED
V2	WATER PRESSURE SHUT OFF VALVE	OPEN	OPEN
V3	TANK WATER DRAIN VALVE	CLOSED	CLOSED
V4	TANK WATER VENT VALVE	CLOSED	CLOSED
V5	CONCENTRATE VENT	CLOSED	CLOSED
V6	CONCENTRATE FILL / DRAIN VALVE	CLOSED	CLOSED
V7	SIGHT GAUGE FILL VALVE	CLOSED	CLOSED
VB	SIGHT GAUGE DRAIN VALVE	CLOSED	CLOSED
B1	MANUAL OVER RIDE VALVE	-----	OPEN
B2	RESTING VALVE	-----	CLOSED

### شرایط گارانتی و خدمات پس از فروش

- خدمات گارانتی فقط برای تعمیر یا سرویس دستگاه می باشد.
- خدمات گارانتی فقط توسط پرسنل معرفی شده این شرکت ارائه می گردد.
- حداکثر مدت زمان ارائه گارانتی ۱۸ ماه از تاریخ تحویل دستگاه می باشد.
- حداکثر ارائه خدمات پس از فروش ده سال شمسی از تاریخ تحویل دستگاه می باشد.
- در زمان گارانتی هزینه تعمیر و یا تعویض قطعه، رایگان می باشد.
- در زمان غیر گارانتی قبل از اعزام کارشناس، می بایست هزینه های مربوطه به حساب واریز گردد.

### ارائه گارانتی در شرایط ذیل قابل اجراء نیست:

- صدمات و ضایعات ناشی از ضربه، سقوط، حمل و نقل بدون هماهنگی وجود مواد خوردنده در آب، آتش یا حرارت زیاد و حوادث طبیعی.
- استفاده غلط از دستگاه یا مواردی خارج از سازگاری و استانداردهای تعیین شده برای دستگاه
- تغییر محل نصب دستگاه بدون هماهنگی با شرکت.
- انجام هر گونه تعمیرات توسط اشخاصی به جز پرسنل این شرکت



Foam proportioner bladder tank						
Serial No.	Activity	Characteristic to be verified	Test frequency	Reference procedure	Acceptance Criteria	QC Dep. Report
IMF-FPB-2019-004	Main body	material	All cases	datasheet	SA-516 Gr. 70	O.K
	Piping	material	All cases	datasheet	C.S A106	O.K
	Flange	material	All cases	datasheet	C.S A216	O.K
	Final Visual & Dimensional Check	Compatible assembly of parts	All cases	data sheet	No part have been damaged	O.K
	Flange Drilling	Dimensions	All cases	data sheet	ANSI B16.5 Class 150	O.K
	Painting	Color	All cases	Data sheet	Fire red RAL 3020	O.K
	Performance	Spec.	All cases	data sheet	Visual	O.K
	Welding	SKID welding	All cases	data sheet	visual	O.K
	Body	18 Bar for 30 min.	All cases	Spec.	visual	O.K
	Hydrostatic Test	available	All cases	Spec.	Review	O.K
	QC Reports	available	All cases	Spec.	Review	O.K
Final Data Book	As Specified In Scope	Each package	Spec.	As Specified In Scope	O.K	
Quantity check	As Specified In Scope	Each package	Spec.	As Specified In Scope	O.K	
Marking	As Specified In Scope	Each package	Spec.	As Specified In Scope	O.K	
Loading Inspection	As Specified In Scope	Each package	Spec.	As Specified In Scope	O.K	

Foam chamber								
No.	Activity	Characteristic to be verified	Test frequency	Reference procedure	Acceptance Criteria	Verifying Document	Involved parties Vendor	TPA
1	Raw material							
1.1	Main body	material	All cases	datasheet	C S	QC Report	H	R/A
1.2	Piping	material	All cases	datasheet	C.S A216	QC Report	H	R/A
1.3	Rapture Disk	material	All cases	datasheet	Glass	QC Report	H	R/A
1.4	Flange	material	All cases	datasheet	C.S A216	QC Report	H	R/A
2	Main inspection							
3.1	Final Visual & Dimensional Check	Compatible assembly of parts	All cases	data sheet	No part have been damaged	QC Report	H	R/A
3.2	Flange Drilling	Dimensions	All cases	data sheet	ANSI B16.5 Class 150	QC Report	H	R/A
3.3	Painting	Color	All cases	Data sheet	Fire red RAL 3020	QC Report	H	R/A
4	Documentation							
4.1	QC Reports	available	All cases	Spec.	Review	QC Report	H	R/A
4.2	Final Data Book	available	All cases	Spec.	Review	QC Report	H	R/A
5	Packing							
5.1	Quantity check	As Specified In Scope	Each package	Spec.	As Specified In Scope	QC Report	H	R/A
5.3	Marking	As Specified In Scope	Each package	Spec.	As Specified In Scope	QC Report	H	R/A
5.3	Loading inspection	As Specified In Scope	Each package	Spec.	As Specified In Scope	QC Report	H	R/A



**Foam proportioner bladder tank**

No.	Activity	Characteristic to be verified	Test frequency	Reference procedure	Acceptance Criteria	Verifying Document	Involved parties	
							Vendor	TPA
1	Raw material							
1.1	Main body	material	All cases	datasheet	SA-516 Gr. 70	QC Report	H	R/A
1.2	Piping	material	All cases	datasheet	C.S A106	QC Report	H	R/A
1.3	Flange	material	All cases	datasheet	C.S A216	QC Report	H	R/A
2	Main inspection							
3.1	Final Visual & Dimensional Check	Compatible assembly of parts	All cases	data sheet	No part have been damaged	QC Report	H	R/A
3.2	Flange Drilling	Dimensions	All cases	data sheet	ANSI B16.5 Class 150	QC Report	H	R/A
3.3	Painting	Color	All cases	Data sheet	Fire red RAL 3020	QC Report	H	R/A
3.4	Performance	Spec.	All cases	data sheet	Visual	QC Report	H	R/A
3.5	Welding	SKID welding	All cases	data sheet	visual	QC Report	H	R/A
3.6	Hydrostatic Test	18 Bar for 30 min.	All cases	Spec.	visual	QC Report	H	R/A
4	Documentation							
4.1	QC Reports	available	All cases	Spec.	Review	QC Report	H	R/A
4.2	Final Data Book	available	All cases	Spec.	Review	QC Report	H	R/A
5	Packing							
5.1	Quantity check	As Specified In Scope	Each package	Spec.	As Specified In Scope	QC Report	H	R/A
5.3	Marking	As Specified In Scope	Each package	Spec.	As Specified In Scope	QC Report	H	R/A
5.3	Loading Inspection	As Specified In Scope	Each package	Spec.	As Specified In Scope	QC Report	H	R/A



**ABBREVIATIONS.**

H: Hold Point=Hold on the packaging till owner performs inspection and supervise the required test

W: Witness Point=Manufacture shall notify client and owner Inspector but there is no hold on the production; Client can waive this inspection based on his discretion and informs TPI Inspector accordingly.

R: Document Review=Review means Review document, which includes of material test certificates, Procedures and etc.

A: Approval

SW: Spot Witness=for items with spot witness manufacture shall notify TPI inspector as full filling them on it oring;

MOM: Minute of Meeting

P.O: Purchase Order

QUALITY CONTROL DEPARTMENT

WPS

## Welding Procedure Specification (WPS)

1	2019	For Approval	R. MORTEZAE	B. ASHTARI	S. ASHTARI
Rev.	Date	Description	Prepared	Checked	Approved
CONTRACTOR : ABINDUSTGROUP		Doc. No.: AB-AR1800-TA			Page :5
Doc. Title.:Welding Procedure Specification		Equipment : Powder tank QUANTITY :1			



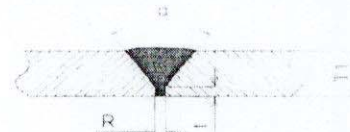


# Welding Procedure Specification ASME SEC IX

WPS No	WPS-KBI-0010	Date	Nov.2019	Welding Process	SMAW+SAW
PQR No.	AB PQR NO:05	Date	N/A	Reference Code	ASME SEC IX
Rev	1	Type	Manual+Semi Auto	Page	1 of 5

## JOINT DESIGN USED (QW-402)

Joint Design Type (Shell to Shell shell to Head) Butt Joint groove weld  
Backing Material YES ☒ No ☐ (BACK WELD)  
Root Opening 1~3mm  
Angle Radius 60°  
Back Gouging Method Grinding



## BASE METAL (QW-403)

Material Specification P1 G2 TO P1 G2  
Thickness Range Min 5mm Max 20mm  
Deposite Weld Metal Thk Basemetal THK+5mm  
Specification Type and Grade ASTM 516 Gr 70 /SA283 GR C TO ASTM 516 Gr 70/SA283 GR C

## POSITION (QW-405)

Position 1G 2G 3G  
Vertical Progression Up ☒ Down ☐  
Uphill for vertical positions

## FILLER METAL/ELECTRODE (QW-404)

AWS Specification A5 1 and A5 17  
AWS Classification E7018 + EM12K  
AWS No. E7018 EM12K  
F No 4 6  
A No 1 1  
Electrode Trade Name AMA-ESAB  
Shielded electrode should be back before using according to supplier recommendation. Other E7018 was rebaked in 300-350 °C at 2hr

## ELECTRIC CHARACTERISTICS (QW-409)

Transfer Mode N/A  
Current DCEP

## SHIELDING GAS

GAS N/A  
Flux POWDER compos N/A  
Electro-Flux (Class) BASIC Gas Cap Size N/A  
Flow rate N/A

## POSTWELD HEAT TREATMENT (QW-407)

Temperature N/A  
Time N/A

## PREHEAT TEMPERATURE (QW-406)

Preheat Temp 25°C TH ≤ 25mm and 120°C TH ≥ 25mm  
Interpass Temp max 200°C

## TUNGSTEN ELECTRODE

Size N/A  
Type N/A

## TECHNIQUE

String or Weave Bead  
Multiple/Single Pass (per side)  
Multiple/Single Electrode  
Electrode Spacing  
Interpass Cleaning

Both  
Multi pass  
Single  
Longitudinal N/A Lateral N/A Angle N/A  
Brushing/Grinding

Weld Layers	Welding Process	Type	Size (mm)	Type Polarity	Amp Min-Max	Volt Min-Max	Travel Speed (mm/min)
Root	SMAW	E7018	2.5	DC EP	90~120	20-22	10~15
1-n	SAW	EM12K	3.2	DC EP	250~350	20-22	15~30
Back Weld	SMAW	E7018	3.2	DC EP	110~120	20-22	10~15

## Managerv(SIS)

Name/Date/Sign

## Vendor QA/QC:

Name/Date/Sign

## Client:

Name/Date/Sign





# Welding Procedure Specification ASME SEC IX

WPS No.	WPS-KBI-0011	Date	Nov.2019	Welding Process	SMAW
PQR No	AB PQR NO:05	Date	N/A	Reference Code	ASME SEC IX
Rev	1	Type	Manual	Page	2 of 5

## JOINT DESIGN USED (QW-402)

Joint Design Type	Pad (lap Joint-Fillet)
Backing Material	YES <input type="checkbox"/> No <input checked="" type="checkbox"/> (BACK WELD)
Root Opening	1~3mm
Angle Radius	45°
Back Gouging Method	N/A



## BASE METAL (QW-403)

Material Specification	P1 G2 TO P1 G2
Thickness Range	Min. 5mm Max. 20mm
Deposite Weld Metal Thk.	Basemetal THK+5mm
Specification Type and Grade	ASTM 516 Gr 70 /SA283 GR C TO ASTM 516 Gr 70/SA283 GR C

## POSITION (QW-405)

Position	All position
Vertical Progression	Up <input checked="" type="checkbox"/> Down <input type="checkbox"/>
	Uphill for vertical positions

## FILLER METAL/ELECTRODE (QW-404)

AWS Specification	A5.1
AWS Classification	E7018
AWS No.	E7018
F No	4
A No	1
Electrode Trade Name	AMA-ESAB

Shielded electrode should be back before using according to supplier recommendation. Other E7018 was rebaked in 300-350 °C at 2hr

## ELECTRIC CHARACTERISTICS (QW-409)

Transfer Mode	N/A
Current	DCEP

## SHIELDING GAS

Flux	N/A	compos	N/A
Electro-Flux (Classs)	BASIC	Gas Cap Size	N/A
		Flow rate	N/A

## POSTWELD HEAT TREATMENT (QW-407)

Temperature	N/A
Time	N/A

## PREHEAT TEMPERATURE (QW-406)

Preheat Temp	25°C TH ≤ 25mm and 120°C TH ≥ 25mm
Interpass Temp	max. 200°C

## TUNGSTEN ELECTRODE

Size	N/A
Type	N/A

## TECHNIQUE

String or Weave Bead	Both
Multiple/Single Pass (per side)	Multi pass
Multiple/Single Electrode	Single
Electrode Spacing	Logitudinal N/A Lateral N/A Angle N/A
Interpass Cleaning	Brushing/Grinding

Weld Layers	Welding Process	Type	Size (mm)	Type Polarity	Amp Min-Max	Volt Min-Max	Travel Speed (cm/min)
1	SMAW	E7018	2.5	DC EP	90~120	20-22	10~15
2	SMAW	E7018	3.2	DC EP	120~150	20-22	10~15
Ather	SMAW	E7018	4	DC EP	120~190	20-22	10~15

Managery(SIS)

Vendor QA/QC

Client:

Name/Date/Sign

Name/Date/Sign

Name/Date/Sign






**KAVOSHGARAN BASER  
INSPECTION CO.**



## Welder Qualification Test Certificate

Welder's Name	Mehrdad Amini		Certificate No.	WPQ/GSA/03
ID Number	0073830984		Employer	Ab Industrial Group
Date of Birth	1355/09/25		Test Date	10/07/2018
Place of Birth	TEHRAN		WPS No.	W1106
Stamp No.	GSA-01		WPQ record No.	KBI/GSA/101
Examining Body	Kavoshgaran Baser Co.		Qualification code	ASME Sec.IX

### Manual / Semiautomatic Variable (QW-350)

Process Variables	Actual Value	Range Qualified																				
Welding Process	SMAW	SMAW-Manual Metal-Arc Welding (E)																				
Product Type	Plate	Plate																				
Joint Type	BW	Butt Weld																				
Welding Position	P No.1	P No.1 to P No.1																				
Fillet metal type	M	E7018																				
Shielding Gas	-	-																				
Auxiliaries	N/A	N/A																				
Test Piece Thickness	10mm	05mm to 20mm																				
Weld details (Gouging/Backing)	Single Side	Single-Side & both sides welding																				
Welding Positions	ASME  Sec.IX	Plates (P)										Tubes (T)										
		Butt Weldes					Fillet Welds					Butt Weldes					Fillet Welds					
		1G	2G	3Gu	3Gd	4G	1F	2 F	3Fu	3Fd	4F	1G	5Gu	5Gd	2G	6G	6GR	1F	2 F	5Fu	5Fd	4F
		✓	✓	-	✓	-	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-



Type of Test	Acceptance Criteria	Result	Report No.
Visual examination	(QW-302.4)	Acceptable	VT/GSA/101
Radiography (ASME Sec.V)	ASME Sec.IX	Acceptable	RT/GSA/101
Magnetic examination			
Penetrant examination	ASME Sec.VIII	Acceptable	PT/GSA/101
Fracture Test		NA	
Bend Test per	QW-462 (a) (a) (b) (b) (c)	NA	
Macro (without polishing)		NA	

Date of Welding: 10/07/2018

Date of issue: 11/07/2018

Validity of  
Approval unit: 10/07/2020

We certify that the statements in this record are correct and that the test coupons were prepared, Welded, and Tested in Accordance with the Requirements of Section IX of the ASME Code.

Prolongation by confirmation of employer according to above-mentioned standard for the following 6 months	Prolongation of Validity according to above-mentioned standard by the surveyor of KBI For the following 2 years
Name: 	Name: D.B. Mohammad
Date: 	Date: 2018/07/11

No.13 Behbahan St.-Mousavi (Forsat) St.-After Ferdosi S

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# LIQUID PENETRANT EXAMINATION REPORT

Project : Powder tank	Equipment : Tank 1800 lit	Date : 98.05.05
Serial No : 98-84	Drawing No : AB-AR1800-TA	Report No : QC-C-04
Material : RST-37-2	Welding Process : SMAW+SAW	Code & Standard : ASME Sec V

## Penetration Set Brand

Remover	Brand: MAGNA FLUX	Type: SOLVENT	Batch No: 141201	Apply Brush: spray: Immerse:	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	Remove Handwipe wash	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Penetrant	Brand: MAGNA FLUX	Type: SOLVENT	Batch No: 141204	Apply Brush: spray: Immerse:	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	Dwell time:  15 min	
Remover	Brand: MAGNA FLUX	Type: SOLVENT	Batch No: 141201	Apply Brush: spray: Immerse:	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	Bleed out  *	
Developer	Brand: MAGNA FLUX	Type: SOLVENT	Batch No: 141206	Apply Brush: spray: Immerse:	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	Dwell time:  5 min	
Black Light	<input checked="" type="checkbox"/> Without <input type="checkbox"/> with	Black Light No: N/A	Intensity: N/A	Water Pressure: Psi		Temp: 25 C	
Header No.		Acc	Step	Interpretation(Length)		Remarks	
Percent of weld test: 10%			3	2500 mm		100%	

NO.	LINE NO.	WELDER NO.	THICKNESS	TYPE OF JOINT	LENGTH (mm)	RESULT			TYPE OF DEFECTS	Remarks
						ACC	REP	REJ		
1	cw1	W1106	8mm	Butt WELD	500	✓				
2	cw2	W1106	8mm	Butt WELD	500		✓		po	ACC = AFTER R
3	cw3	W1106	8mm	Butt WELD	500	✓				
4	lw1	W1106	8mm	Butt WELD	500	✓				
5	lw2	W1106	8mm	Butt WELD	500	✓				

## Legends :

LOF - Lack Of Fusion

PO - Porosity

C - Crack

UC - Undercut

## Sketch :



	XDT Operator	AB Industrial group	imen mahan Group	TPI	Client
NAME:	ASHGHI	ASHGHI			
DATE:					
SIGN:					





# WELD VISUAL INSPECTION REPORT

Project : Powder tank

Equipment : Tank 1800 lit TA

Date: 97.05.10

Serial No.: 98-84

Drawing No: AB-AR1800-TA

Report No: QC-C-02

Material : ST 37-2

Welding Process : SMAW

Reference Code : ASME Sec VIII

NO.	LINE NO.	WELDERS NO.	TYPE OF JOINT	RESULT			Type Of Defects	REMARKS
				ACC.	REP.	REJ.		
1	FW1	W1106	FILET WELD	✓				
2	FW2	W1106	FILET WELD	✓				
3	FW3	W1106	FILET WELD	✓				
4	FW4	W1106	FILET WELD	✓				
5	FW5	W1106	FILET WELD	✓				
6	FW6	W1106	FILET WELD	✓				
7	FW7	W1106	FILET WELD	✓				
8	FW8	W1106	FILET WELD	✓				
9	CW1	W1106	BUTT WELD	✓				
10	CW2	W1106	BUTT WELD	✓				
11	CW3	W1106	BUTT WELD	✓				
12	LW1	W1106	BUTT WELD	✓				
13	LW2	W1106	BUTT WELD	✓				

## Legends :

PO = Porosity

C = Crack

LOF = Lack Of Fusion

U/F = Under Fill

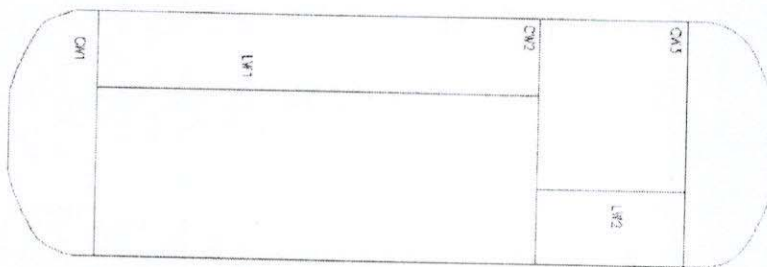
U/C = Undercut

S = Slag

LOP = Lack Of Penetration

U/S = Under Size

## Sketch :



	AB Industrial group	imen mahan	TPI	Client
NAME :	F.MORTEZ			
DATE :				
SIGNATURE:				



# HYDROSTATIC TEST REPORT

Project : Powder tank

Equipment : Tank 1800 lit

Date: 98.05.12

Serial No.: 98-84

Drawing No: AB-ARI800-TA

Report No: QC-C-05

REFERENCE CODE: ASME SEC.8, UG 99

POSITION	PARAMETER	TIME /		REMARK
A - B	PRESSURE INCREASING	5	min	
B - C	1 <sup>st</sup> INSPECTION	30	min	DESIGN PRESSURE 10 bar
C - D	PRESSURE INCREASING	5	min	
D - E	HOLDING TIME	60	min	TEST PRESSURE 13 bar
E - F	PRESSURE DECREASING	5	min	
F - G	MAIN INSPECTION	30	min	
G - H	PRESSURE DECREASING	5	min	

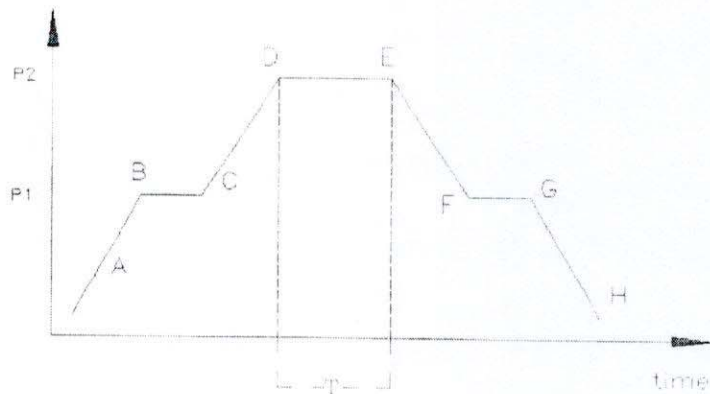
Test Result : ☒ Accepted ☐ Not Accepted (See Remark)

Remark :

P1 = DESIGN PRESSURE

P2 = TEST PRESSURE

T = HOLDING TIME



Calibration Certificate Number Of Pressure Gauge : 1-97B-0417

	AB Industrial group	imen mahan	TPA	Client
NAME:	F.MORT			
DATE:				
SIGNATURE:				





## Welder Qualification Test Certificate

Welder's Name	Mehrdad Amini		Certificate No.	WPQ/GSA/03
ID.Number	0073830984		Employer	Ab Industrial Group
Date of Birth	1355/09/25		Test Date	10/07/2018
Place of Birth	TEHRAN		WPS No.	W1106
Stamp No.	GSA-01		WPQ record No.	KBI/GSA/101
Examining Body	Kavoshgaran Baser Co.		Qualification code	ASME Sec.IX

### Manual / Semiautomatic Variable (QW-350)

Process Variables	Actual Value	Range Qualified																				
Welding Process	SMAW	SMAW-Manual Metal-Arc Welding (E)																				
Product Type	Plate	Plate																				
Joint Type	BW	But Weld																				
Material Groups(QW403)	P No.1	P No.1 to P No.1																				
Filler metal type	M	E7018																				
Shielding Gas	-	-																				
Auxiliaries	N/A	N/A																				
Test Piece Thickness	10mm	05mm to 20mm																				
Weld details (Gouging/Backing)	Single Side	Single-Side & both sides welding																				
Welding Positions	ASME  Sec.IX	Plates (P)										Tubes (T)										
		Butt Weldes					Fillet Welds					Butt Weldes			Fillet Welds							
		1G	2G	3Gu	3Gd	4G	1F	2 F	3Fu	3Fd	4F	1G	5Gu	5Gd	2G	6G	6GR	1F	2 F	5Fu	5Fd	4F
		✓	✓	-	✓	-	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-

Type of Test	Acceptance Criteria	Result	Report No.
Visual examination	(QW-302.4)	Acceptable	VT/GSA/101
Radiography (ASME Sec.V)	ASME Sec.IX	Acceptable	RT/GSA/101
Magnetic examination			
Penetrant examination	ASME Sec.VIII	Acceptable	PT/GSA/101
Fracture Test		NA	
Bend Test per	QW-462.2(a,b),462.3(a)	NA	
Macro (without polishing)		NA	

Date of Welding: 10/07/2018

Date of issue: 11/07/2018

Validity of  
Approval unit: 10/07/2020

We certify that the statements in this record are correct and that the test coupons were prepared, Welded, and Tested in Accordance with the Requirements of Section IX of the ASME Code.

Prolongation by confirmation of employer according to above-mentioned standard for the following 6 months	Prolongation of Validity according to above-mentioned standard by the surveyor of KBI. For the following 2 years
Name:	Name:
Date:	Date: 2018/07/





## Welder Qualification Test Certificate

Welder's Name	Ali Hasan panah khalifeh		Certificate No.	WPQ/GSA/03
ID Number	6309410091		Employer	Ab Industrial Group
Date of Birth	1351/06/01		Test Date	10/07/2018
Place of Birth			WPS No.	W1105
Stamp No.	GSA-02		WPQ record No.	KBI/GSA/100
Examining Body	Kavoshgaran Baser Co.		Qualification code	ASME Sec.IX

### Manual / Semiautomatic Variable (QW-350)

Process Variables	Actual Value	Range Qualified																				
Welding Process	SMAW	SMAW-Manual Metal-Arc Welding (E)																				
Product Type	Plate	Plate																				
Joint Type	BW	But Weld																				
Material Groups(QW403)	P No.1	P No.1 to P No.1																				
Filler metal type	M	E7018																				
Shielding Gas	-	-																				
Auxiliaries	N/A	N/A																				
Test Piece Thickness	10mm	05mm to 20mm																				
Weld details (Gouging/Backing)	Single Side	Single-Side & both sides welding																				
Welding Positions	ASME  Sec.IX	Plates (P)										Tubes (T)										
		Butt Weldes					Fillet Welds					Butt Weldes			Fillet Welds							
		1G	2G	3Gu	3Gd	4G	1F	2 F	3Fu	3Fd	4F	1G	5Gu	5Gd	2G	6G	6GR	1F	2 F	5Fu	5Fd	4F
		✓	✓	-	✓	-	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-

Type of Test	Acceptance Criteria	Result	Report No.
Visual examination	(QW-302.4)	Acceptable	VT/GSA/100
Radiography (ASME Sec.V)	ASME Sec.IX	Acceptable	RT/GSA/100
Magnetic examination			
Penetrant examination	ASME Sec.VIII	Acceptable	PT/GSA/100
Fracture Test		NA	
Bend Test per	QW-462.2(a,b),462.3(a)	NA	
Macro (without polishing)		NA	

Date of Welding: 10/07/2018

Date of issue: 11/07/2018

Validity of  
Approval unit: 10/07/2020

We certify that the statements in this record are correct and that the test coupons were prepared, Welded, and Tested in Accordance with the Requirements of Section IX of the ASME Code.

Prolongation by confirmation of employer according to a	Prolongation of Validity according to above-mentioned standard by the surveyor of KBI For the following 2 years
Name	Name:
Date	D.B.Mohammadi
	Date: 2018/07/1

at) St.-Aftar Ferdosi

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## QUALITY CONTROL CERTIFICATE

### Foam proportioner Bladder Tank

MODEL: IMF-BFP2000

Client:

DESCRIPTION	Spec.	CONFIRMED
VISUAL INSPECTION	Acc to ITP	O.K
BODY MATERIAL	Acc to ITP	O.K
ORIFICE PLATE MATERIAL	Acc to ITP	O.K.
PERFORMANCE	Acc to ITP	O.K.
PAINTING	Acc to ITP	O.K
DIMENSION	Acc To ITP	O.K

We certify that the above commodity has been satisfactorily tested & found compliance with the relevant specifications.

Q.C Department