P.O No. 17137D-IN-PO-NB610-01

Contractor Project No. 17127D

EPC FOR M PROJECT
Custody Metering System

Plug Valve GA Drawing

☐	1	**REJECTED** Revise and resubmit.
☐	2	**COMMENTS AS NOTED** Work may proceed subject to compliance with and incorporation of comment.
☒	3	**NO COMMENTS** Work may proceed.
☐	4	**INFORMATION ONLY** Accepted for information only.

This approval does not relieve the vendor of his responsibility to meet purchase order conditions relating to duty, specifications, materials, design, construction and delivery requirements.

APPR'D Caley Han | DATE 06.Nov.2019

REV.	DATE	ORIGINATOR	REVIEWED	APPROVED	DESCRIPTION
1	4/11/2019	LK	LK	SR	ISSUED FOR FINAL
D	15/08/2019	LK	LK	SR	RE-ISSUED FOR REVIEW
C	30/06/2019	LK	LK	SR	RE-ISSUED FOR REVIEW
B	28/04/2019	LK	LK	SR	RE-ISSUED FOR REVIEW
A	24/03/2019	LK	LK	SR	ISSUED FOR REVIEW

VENDOR Alderley

CERTIFIED DRAWING

CUSTOMER: ALDERLEY FZE

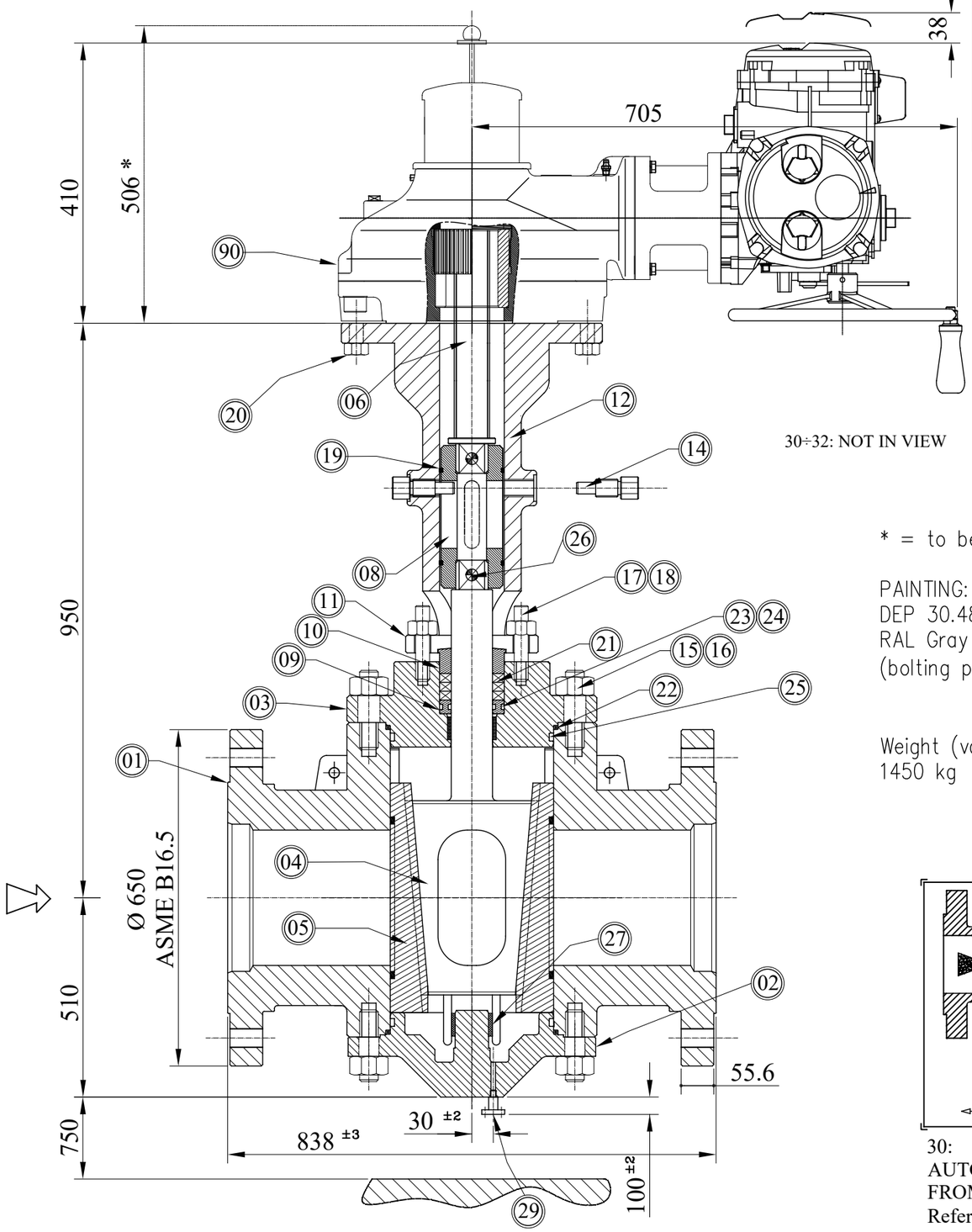
ENQUIRY N°: 012483-27136MJA

PROJECT : ADNOC – M-Project, UAE

G&C ORDER : 23341

Actuator position is to show overall dimensions only.
Refer to Sheet 3 for real orientation

APPLICABLE STANDARDS	
API 6D	Plug valves
API 598	Pressure testing
API 599	Wall thickness
API 6FA	Fire Safe
ASME B16.34	Ratings, materials
ASME B16.5	End Flanges
MESC SPE 77/312 (ISO 15848-2)	Fugitive Emissions
NACE 0175	Sour Service
Data Sheet	24-84-40-8616
Corrosion All.	3 mm

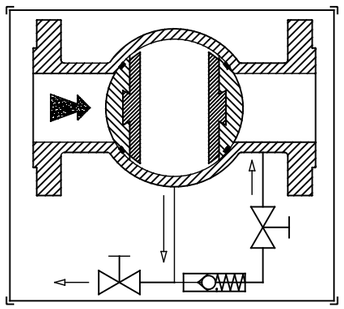


30÷32: NOT IN VIEW

* = to be confirmed

PAINTING:
DEP 30.48.00.31 LC1-N
RAL Gray 7035
(bolting pos. 15÷18 will also be coated)

Weight (valve + actuator):
1450 kg



30:
AUTOMATIC THERMAL RELIEF
FROM BODY CAVITY TO DOWNSTREAM
Refer to Sheet 2 for details

Bill of Components

pos.	Part Name	q.ty	Material
01	body	1	ASTM A216 WCC + Cr
02	lower bonnet	1	ASTM A216 WCC
03	upper bonnet	1	ASTM A216 WCC
04	plug	1	ASTM A216 WCC + ENP
05	slip	2	ASTM A395 60-40-18 + FKM
06	stem	1	ASTM A182 F6a
08	joint	1	AISI 4140
09	lower gland ring	1	ASTM A479 S31600
10	intermediate gland ring	1	ASTM A479 S31600
11	upper gland ring	1	ASTM A29 Gr. 4140
12	yoke	1	ASTM A216 WCC
14	gear controller	2	ASTM A479 S41000
15	body stud	–	ASTM A193 B7M + XYLAN 1070
16	body nut	–	ASTM A194 2HM + XYLAN 1070
17	packing stud	–	ASTM A193 B7M + XYLAN 1070
18	packing nut	–	ASTM A194 2HM + XYLAN 1070
19	scraper	2	thermoplastic polyuthretane elastomer (TPU)
20	operator bolting	–	ASTM A193 B7M + XYLAN 1070
21	stem fire safe packing	1	graphite
22	body gasket	2	graphite
23	inner stem o-ring	1	FKM
24	outer stem o-ring	1	FKM
25	body o-ring	2	FKM
26	pin	2	ASTM A29 Gr. 4140
27	plug bearing	2	ASTM A240 316 + LFC
29	drain connect. NPS 1" 300	1	ASTM A105 / A106
30	body relief circuit	1	ASTM A269 + A479 gr. 316
31	joint grease plug	2	ASTM A479 F316
32	joint grease nipple	2	ASTM A479 F316
90	electrical actuator	1	FREE ISSUE | Limitorque MX-20 V35

Cr	Cr plating on seats only 3 mil = 0.003" = 75 µm
ENP	Electroless Nickel Plating 1 mil = 0.001" = 25 µm
FKM	Fluorocarbon Material
LFC	Low Friction Coating

DIS./DRAFT	DATA/DATE	CONTR./CHK.	DATA/DATE	APPR./APPR.	DATA/DATE	REV.	DESCRIZIONE/DESCRIPTION
F.R.	20/08/19	V.V.	20/08/19	D.P.	20/08/19	06	Updated according to Customer comments 9
F.R.	31/07/19	A.G.	31/07/19	D.P.	31/07/19	05	Updated according to Customer comments 8
F.R.	24/06/19	A.G.	24/06/19	D.P.	24/06/19	04	Updated according to Customer comments 7

GALLI & CASSINA S.P.A.
SOLARO (MI)

CAD DRAWING

DENOMINAZIONE/DENOMINATION
EXPANDING PLUG VALVES (non-lubricated)

OVERALL DIMENSIONS - BILL OF MATERIALS

COMPONENTE/COMPONENT
NPS 16" CLASS 300 RFxRF

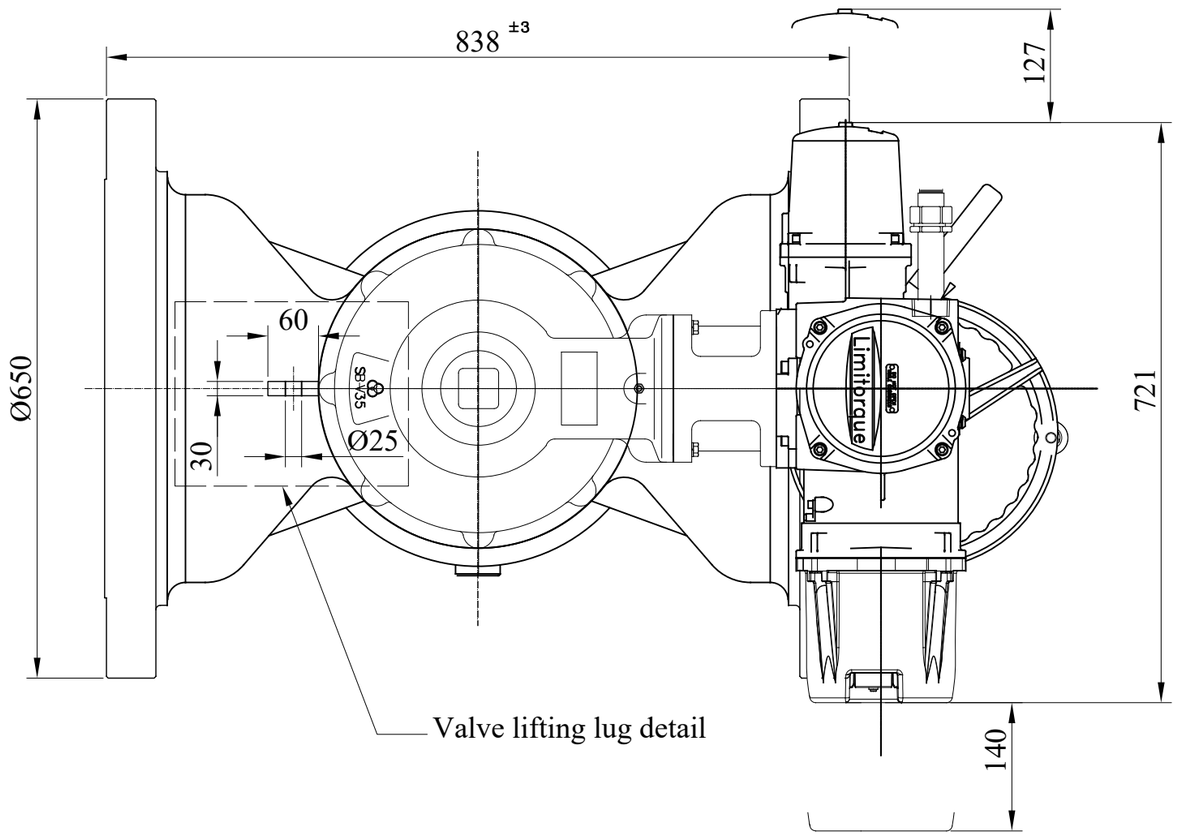
N° DISEGNO/N° DRAWING
400EPCE03R0115-23341 Sheet 1 of 3

CERTIFIED DRAWING

CUSTOMER: ALDERLEY FZE
ENQUIRY N°: 012483-27136MJA
PROJECT : ADNOC – M-Project, UAE
G&C ORDER : 23341

Actuator position is to show overall dimensions only.
Refer to Sheet 3 for real orientation

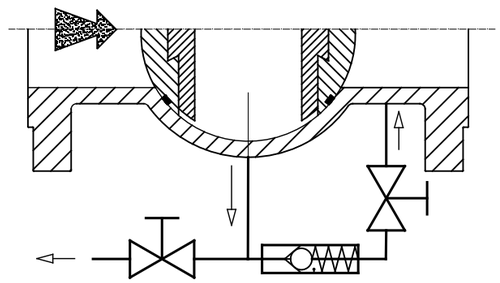
TOP VIEW



BLEEDING CIRCUIT

30:
AUTOMATIC THERMAL RELIEF
FROM BODY CAVITY TO DOWNSTREAM

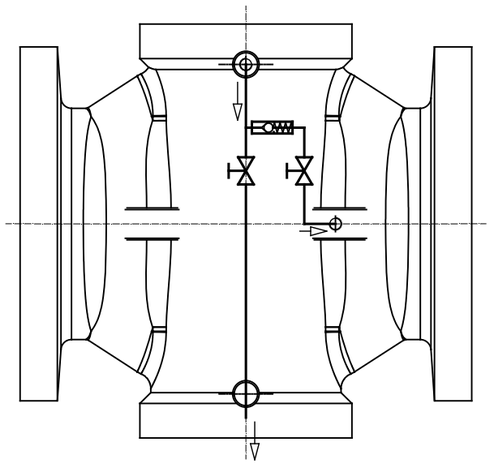
NOTE: positions of components are indicative



Relief valve
Pset = 1÷1.5 bar

ON-OFF manual valve

Bleeding circuit: 1/2" NPT with reducers



DIS./DRAFT	DATA/DATE	CONTR./CHK.	DATA/DATE	APPR./APPR.	DATA/DATE	REV.	DESCRIZIONE/DESCRIPTION
F.R.	20/08/19	V.V.	20/08/19	D.P.	20/08/19	06	Updated according to Customer comments (9)
F.R.	31/07/19	A.G.	31/07/19	D.P.	31/07/19	05	Updated according to Customer comments (8)
F.R.	24/06/19	A.G.	24/06/19	D.P.	24/06/19	04	Updated according to Customer comments (7)

GALLI & CASSINA S.P.A.
SOLARO (MI)

CAD DRAWING

DENOMINAZIONE/DENOMINATION
EXPANDING PLUG VALVES (non-lubricated)

OVERALL DIMENSIONS - BILL OF MATERIALS

COMPONENTE/COMPONENT
NPS 16" CLASS 300 RFxRF

N° DISEGNO/N° DRAWING
400EPCE03R0115-23341 Sheet 2 of 3

CERTIFIED DRAWING

CUSTOMER: ALDERLEY FZE

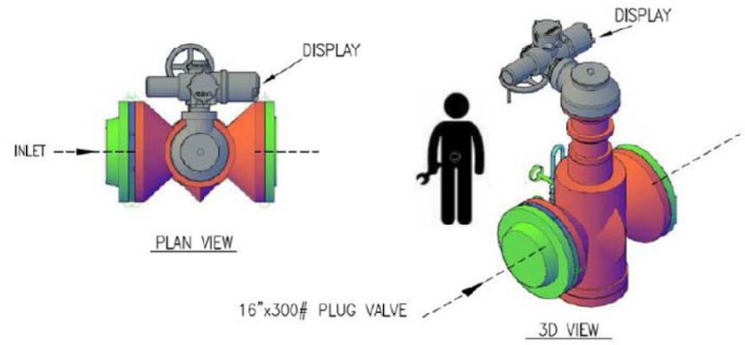
ENQUIRY N°: 012483-27136MJA

PROJECT : ADNOC – M-Project, UAE

G&C ORDER : 23341

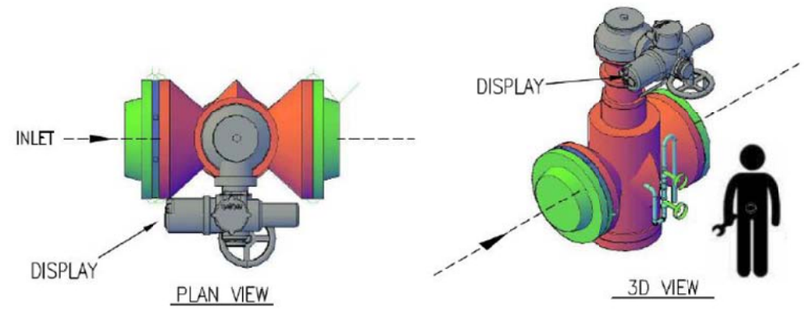
Orientation 1 inlet from the right (display opposite)

handwheel to the bottom



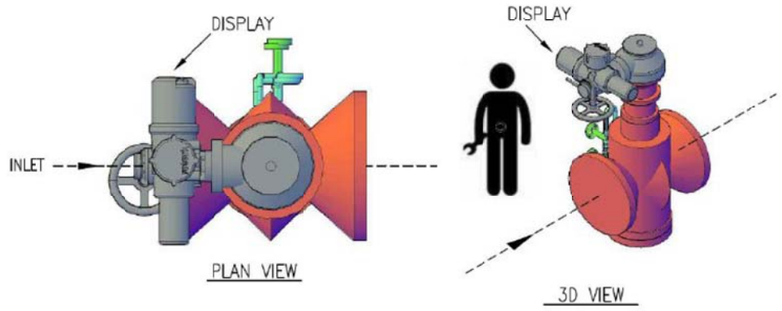
Orientation 2 inlet from the left (display same side)

handwheel to the bottom



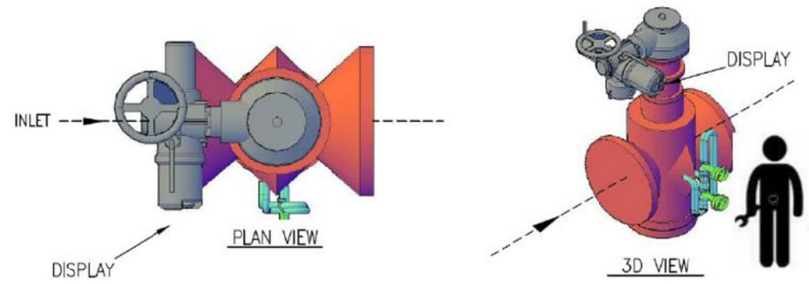
Orientation 3 inlet from the right (display in front)

handwheel to the bottom



Orientation 4 inlet from the left (display in front)

handwheel to the top



Note: the inlet direction is defined by the position of the worker looking at the valve

Valve Tags and Orientations ⑨

MURBAN SKID (24-84-U-1621)

tag	orient.
24-84-MOV-1621-53	3
24-84-MOV-1621-56	4
24-84-MOV-1621-59	3
24-84-MOV-1621-62	4
24-84-MOV-1621-65	3
24-84-MOV-1621-68	4
24-84-MOV-1621-71	3
24-84-MOV-1621-74	4
24-84-MOV-1621-77	3

Valve Tags and Orientations

DAS LOADING SKID (24-84-U-1613)		DAS UN-LOADING SKID (24-84-U-1614)		ZAKUM LOADING SKID (24-84-U-1615)		ZAKUM UN-LOADING SKID (24-84-U-1616)	
tag	orient.	tag	orient.	tag	orient.	tag	orient.
24-84-MOV-1613-52	2	24-84-MOV-1614-52	1	24-84-MOV-1615-52	1	24-84-MOV-1616-52	2
24-84-MOV-1613-53	4	24-84-MOV-1614-53	3	24-84-MOV-1615-53	3	24-84-MOV-1616-53	4
24-84-MOV-1613-55	1	24-84-MOV-1614-55	2	24-84-MOV-1615-55	2	24-84-MOV-1616-55	1
24-84-MOV-1613-56	3	24-84-MOV-1614-56	4	24-84-MOV-1615-56	4	24-84-MOV-1616-56	3
24-84-MOV-1613-58	2	24-84-MOV-1614-58	1	24-84-MOV-1615-58	1	24-84-MOV-1616-58	2
24-84-MOV-1613-59	4	24-84-MOV-1614-59	3	24-84-MOV-1615-59	3	24-84-MOV-1616-59	4
24-84-MOV-1613-61	1	24-84-MOV-1614-61	2	24-84-MOV-1615-60	2	24-84-MOV-1616-61	1
24-84-MOV-1613-62	3	24-84-MOV-1614-62	4	24-84-MOV-1615-61	4	24-84-MOV-1616-62	2
24-84-MOV-1613-64	2	24-84-MOV-1614-64	1	24-84-MOV-1615-64	1	24-84-MOV-1616-64	2
24-84-MOV-1613-65	4	24-84-MOV-1614-65	3	24-84-MOV-1615-65	3	24-84-MOV-1616-65	4
24-84-MOV-1613-67	1	24-84-MOV-1614-67	2	24-84-MOV-1615-67	2	24-84-MOV-1616-67	1
24-84-MOV-1613-68	3	24-84-MOV-1614-68	4	24-84-MOV-1615-68	4	24-84-MOV-1616-68	3
24-84-MOV-1613-70	2	24-84-MOV-1614-70	1	24-84-MOV-1615-70	1	24-84-MOV-1616-70	2
24-84-MOV-1613-71	4	24-84-MOV-1614-71	3	24-84-MOV-1615-71	3	24-84-MOV-1616-71	4
24-84-MOV-1613-73	1	24-84-MOV-1614-73	2	24-84-MOV-1615-73	2	24-84-MOV-1616-73	1
24-84-MOV-1613-74	3	24-84-MOV-1614-74	4	24-84-MOV-1615-74	4	24-84-MOV-1616-74	3
24-84-MOV-1613-76	2	24-84-MOV-1614-76	1	24-84-MOV-1615-76	1	24-84-MOV-1616-76	2
24-84-MOV-1613-77	4	24-84-MOV-1614-77	3	24-84-MOV-1615-77	3	24-84-MOV-1616-77	4

F.R.	20/08/19	V.V.	20/08/19	D.P.	20/08/19	06	Updated according to Customer comments ⑨
F.R.	31/07/19	A.G.	31/07/19	D.P.	31/07/19	05	Updated according to Customer comments ⑧
F.R.	24/06/19	A.G.	24/06/19	D.P.	24/06/19	04	Updated according to Customer comments ⑦
DIS./DRAFT	DATA/DATE	CONTR./CHK.	DATA/DATE	APPR./APPR.	DATA/DATE	REV.	DESCRIZIONE/DESCRIPTION

GALLI & CASSINA S.P.A.
SOLARO (MI)

CAD DRAWING

DENOMINAZIONE/DENOMINATION

EXPANDING PLUG VALVES (non-lubricated)

OVERALL DIMENSIONS - BILL OF MATERIALS

COMPONENTE/COMPONENT

NPS 16" CLASS 300 RFxRF

N° DISEGNO/N° DRAWING

400EPCE03R0115-23341 Sheet 3 of 3

CERTIFIED DRAWING

CUSTOMER: ALDERLEY FZE

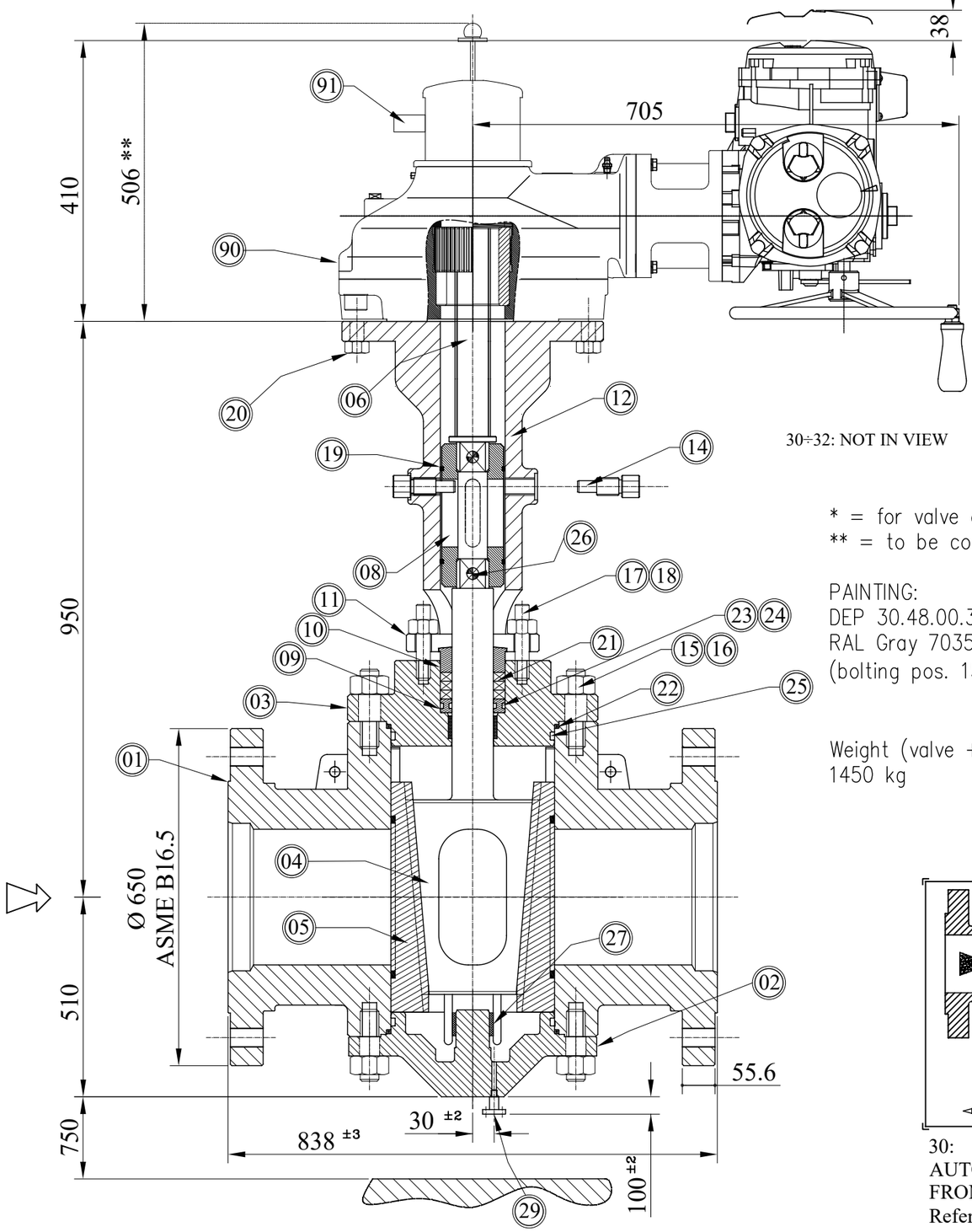
ENQUIRY N°: 012483-27136MJA

PROJECT : ADNOC – M-Project, UAE

G&C ORDER : 23341

Actuator position is to show overall dimensions only.
Refer to Sheet 3 for real orientation

APPLICABLE STANDARDS	
API 6D	Plug valves
API 598	Pressure testing
API 599	Wall thickness
API 6FA	Fire Safe
ASME B16.34	Ratings, materials
ASME B16.5	End Flanges
MESC SPE 77/312 (ISO 15848-2)	Fugitive Emissions
NACE 0175	Sour Service
Data Sheet	24-84-40-8616
Corrosion All.	3 mm

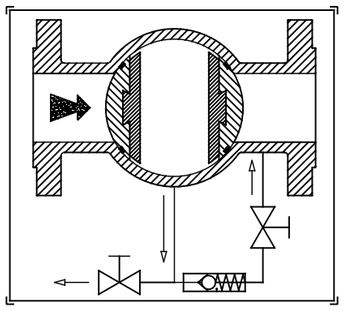


30÷32: NOT IN VIEW

* = for valve opening detection @ 70% (63°)
** = to be confirmed

PAINTING:
DEP 30.48.00.31 LC1-N
RAL Gray 7035
(bolting pos. 15÷18 will also be coated)

Weight (valve + actuator):
1450 kg



30:
AUTOMATIC THERMAL RELIEF
FROM BODY CAVITY TO DOWNSTREAM
Refer to Sheet 2 for details

Bill of Components

pos.	Part Name	q.ty	Material
01	body	1	ASTM A216 WCC + Cr
02	lower bonnet	1	ASTM A216 WCC
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04	plug	1	ASTM A216 WCC + ENP
05	slip	2	ASTM A395 60-40-18 + FKM
06	stem	1	ASTM A182 F6a
08	joint	1	AISI 4140
09	lower gland ring	1	ASTM A479 S31600
10	intermediate gland ring	1	ASTM A479 S31600
11	upper gland ring	1	ASTM A29 Gr. 4140
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15	body stud	–	ASTM A193 B7M + XYLAN 1070
16	body nut	–	ASTM A194 2HM + XYLAN 1070
17	packing stud	–	ASTM A193 B7M + XYLAN 1070
18	packing nut	–	ASTM A194 2HM + XYLAN 1070
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20	operator bolting	–	ASTM A193 B7M + XYLAN 1070
21	stem fire safe packing	1	graphite
22	body gasket	2	graphite
23	inner stem o-ring	1	FKM
24	outer stem o-ring	1	FKM
25	body o-ring	2	FKM
26	pin	2	ASTM A29 Gr. 4140
27	plug bearing	2	ASTM A240 316 + LFC
29	drain connect. NPS 1" 300	1	ASTM A105 / A106
30	body relief circuit	1	ASTM A269 + A479 gr. 316
31	joint grease plug	2	ASTM A479 F316
32	joint grease nipple	2	ASTM A479 F316
90	electrical actuator	1	FREE ISSUE | Limitorque MX-20 V35
91	limit switch *	1	Pepperl+Fuchs NJ5-18GM-N **

Cr	Cr plating on seats only 3 mil = 0.003" = 75 µm
ENP	Electroless Nickel Plating 1 mil = 0.001" = 25 µm
FKM	Fluorocarbon Material
LFC	Low Friction Coating

DIS./DRAFT	DATA/DATE	CONTR./CHK.	DATA/DATE	APPR./APPR.	DATA/DATE	REV.	DESCRIZIONE/DESCRIPTION
F.R.	20/08/19	V.V.	20/08/19	D.P.	20/08/19	06	Updated according to Customer comments 6
F.R.	31/07/19	A.G.	31/07/19	D.P.	31/07/19	05	Updated according to Customer comments 5
F.R.	24/06/19	A.G.	24/06/19	D.P.	24/06/19	04	Updated according to Customer comments 4

GALLI & CASSINA S.P.A.
SOLARO (MI)

CAD DRAWING

DENOMINAZIONE/DENOMINATION
EXPANDING PLUG VALVES (non-lubricated)
OVERALL DIMENSIONS - BILL OF MATERIALS

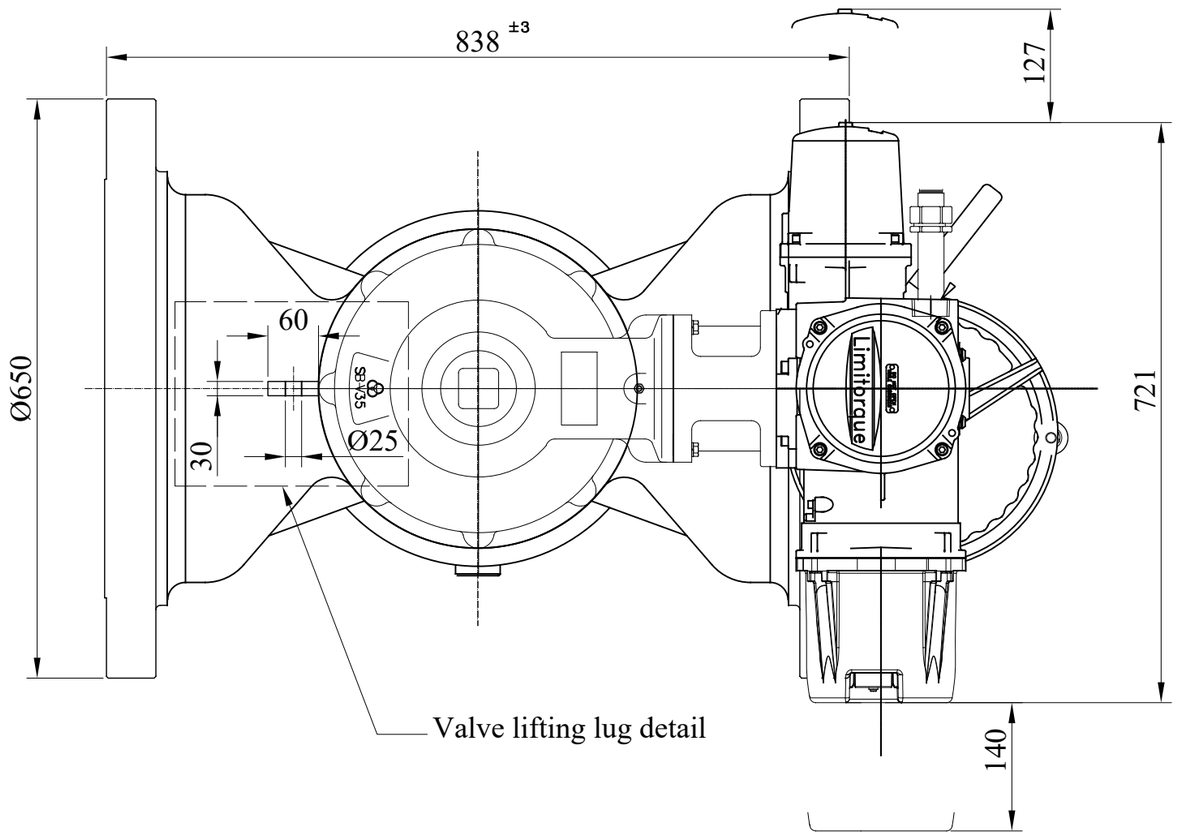
COMPONENTE/COMPONENT
NPS 16" CLASS 300 RFxRF

N° DISEGNO/N° DRAWING
400EPCE03R0115K-23341 Sheet 1 of 3

CERTIFIED DRAWING
CUSTOMER: ALDERLEY FZE
ENQUIRY N°: 012483-27136MJA
PROJECT : ADNOC – M-Project, UAE
G&C ORDER : 23341

Actuator position is to show overall dimensions only.
Refer to Sheet 3 for real orientation

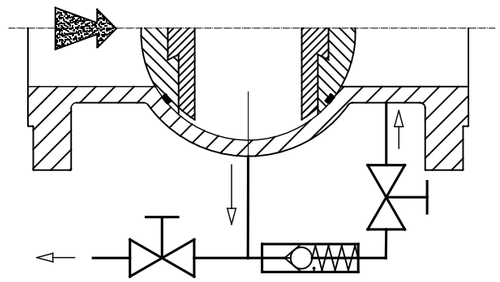
TOP VIEW



BLEEDING CIRCUIT

30:
AUTOMATIC THERMAL RELIEF
FROM BODY CAVITY TO DOWNSTREAM

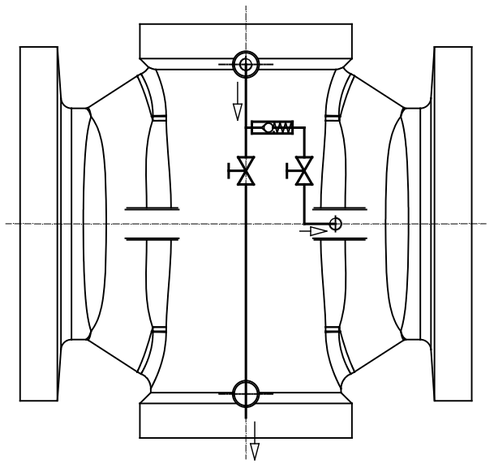
NOTE: positions of components are indicative



Relief valve
Pset = 1÷1.5 bar

ON-OFF manual valve

Bleeding circuit: 1/2" NPT with reducers



DIS./DRAFT	DATA/DATE	CONTR./CHK.	DATA/DATE	APPR./APPR.	DATA/DATE	REV.	DESCRIZIONE/DESCRIPTION
F.R.	20/08/19	V.V.	20/08/19	D.P.	20/08/19	06	Updated according to Customer comments 6
F.R.	31/07/19	A.G.	31/07/19	D.P.	31/07/19	05	Updated according to Customer comments 5
F.R.	24/06/19	A.G.	24/06/19	D.P.	24/06/19	04	Updated according to Customer comments 4

GALLI & CASSINA S.P.A.
SOLARO (MI)

CAD DRAWING

DENOMINAZIONE/DENOMINATION
EXPANDING PLUG VALVES (non-lubricated)

OVERALL DIMENSIONS - BILL OF MATERIALS

COMPONENTE/COMPONENT
NPS 16" CLASS 300 RFxRF

N° DISEGNO/N° DRAWING
400EPCE03R0115K-23341 Sheet 2 of 3

CERTIFIED DRAWING

CUSTOMER: ALDERLEY FZE

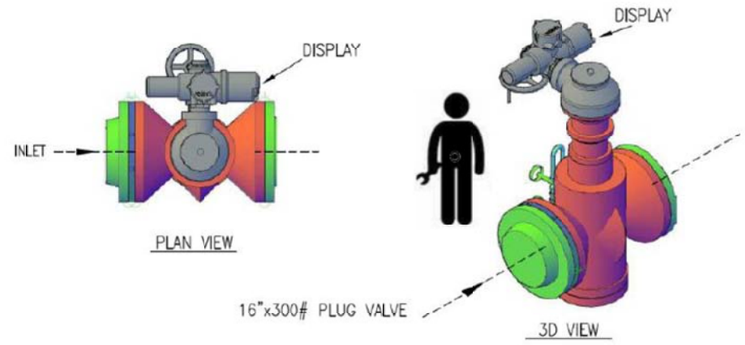
ENQUIRY N°: 012483-27136MJA

PROJECT : ADNOC – M-Project, UAE

G&C ORDER : 23341

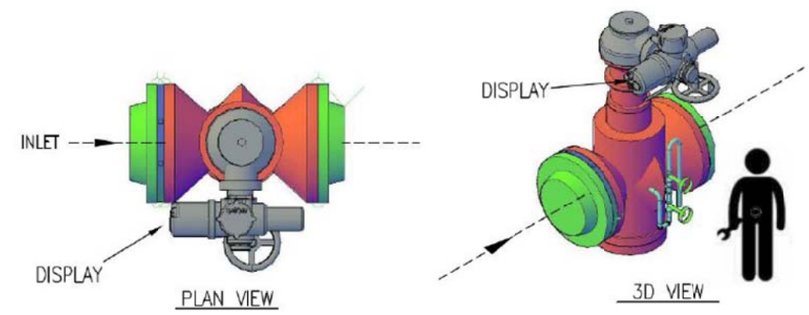
Orientation 1 inlet from the right (display opposite)

handwheel to the bottom



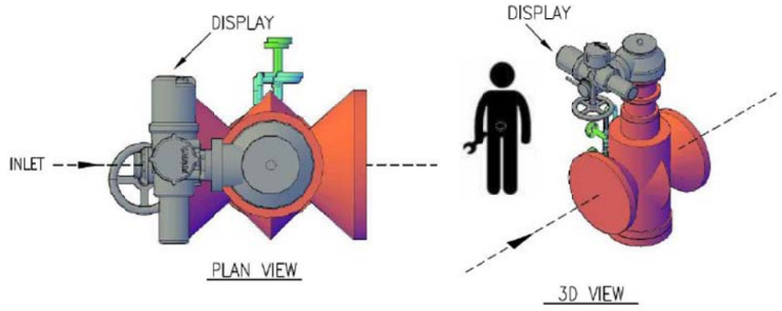
Orientation 2 inlet from the left (display same side)

handwheel to the bottom



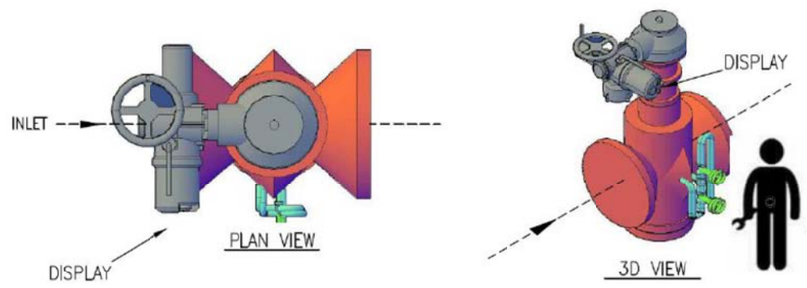
Orientation 3 inlet from the right (display in front)

handwheel to the bottom



Orientation 4 inlet from the left (display in front)

handwheel to the top



Note: the inlet direction is defined by the position of the worker looking at the valve

Valve Tags and Orientations

△6

MURBAN SKID (24-84-U-1621)

tag	orient.
24-84-MOV-1621-52	1
24-84-MOV-1621-55	2
24-84-MOV-1621-58	1
24-84-MOV-1621-61	2
24-84-MOV-1621-64	1
24-84-MOV-1621-67	2
24-84-MOV-1621-70	1
24-84-MOV-1621-73	2
24-84-MOV-1621-76	1

F.R.	20/08/19	V.V.	20/08/19	D.P.	20/08/19	06	Updated according to Customer comments △6
F.R.	31/07/19	A.G.	31/07/19	D.P.	31/07/19	05	Updated according to Customer comments ◇5
F.R.	24/06/19	A.G.	24/06/19	D.P.	24/06/19	04	Updated according to Customer comments △4
DIS./DRAFT	DATA/DATE	CONTR./CHK.	DATA/DATE	APPR./APPR.	DATA/DATE	REV.	DESCRIZIONE/DESCRIPTION

GALLI & CASSINA S.P.A.
SOLARO (MI)

CAD DRAWING

DENOMINAZIONE/DENOMINATION

EXPANDING PLUG VALVES (non-lubricated)

OVERALL DIMENSIONS - BILL OF MATERIALS

COMPONENTE/COMPONENT

NPS 16" CLASS 300 RFxRF

N° DISEGNO/N° DRAWING

400EPCE03R0115K-23341 Sheet 3 of 3

Annexure - A

Solaro, 19th of April, 2019

Alderley FZE
PO Box 17015, Jebel Ali
Dubai UAE

TO WHOM IT MAY CONCERN

Subject: TECHNICAL CLARIFICATION – Cr PLATING

References:
Alderley PO # PO-012483 27136MJAValves
GC Job # 023341

16" 300 Non lubricated plug valves - MOV

Dear Gentlemen,

With reference to the request of Chromium plating all over the flow passage in addition to the seat area, we would like to kindly emphasize that Cr plating is normally included in the hardfacing coatings which are specified in valve design in order to prevent galling, to increase wear resistance and corrosion protection of seating area.

Valve tightening is in fact ensured by slip seals pushed against the seat by the tapered plug. For the aforesaid reason the seat is the only critical area which may affect the valves sealing so it is the one to be protected by Cr plating only.

We draw your attention to the fact the flow passage cannot be machined due to the valve shape so any further Cr plating over that area shall be carried out on as cast surface.

In view of the above further Cr plating on the flow passage won't be uniform first and the granted thickness won't be thicker than 20-30 µm against the required 75 µm.

We also draw your attention to the pipeline material which is carbon steel with no corrosion protection (i.e piping class 031440-X) same as valves flow passage.

We trust in your concurrence in confirming the acceptance of the Cr plating on the seat area only.

Best regards

Daniele PAGANI
(Technical Dept.)

Attachments: //

Office and Workshop:
GALLI & CASSINA S.p.A.
Via Drizza, 30/32
20020 SOLARO (MI) Italy

Phone + 39.02.96799632
Telefax + 39.02.96799699
www.gallicassina.it
valves@gallicassina.it

Sede Legale / *Legal Office:*
Via Mario Pagano,46 - 20145 Milano
Cod.Fisc. e Part. IVA
VAT N. IT 00732880158
R.E.A. MI 69290 Cap.Soc.€ 1.040.000 i.v.
Iscriz.Trib. Milano Reg. Soc. N.13115

Annexure - B

Solaro, May, 6th 2019

Alderley FZE
PO Box 17015, Jebel Ali
Dubai UAE

TO WHOM IT MAY CONCERN

Subject: TECHNICAL CLARIFICATION – CAST IRON GRADE

References:
Alderley PO # PO-012483 27136MJAValves
GC Job # 023341

16” 300 Non lubricated plug valves - MOV

Dear Gentlemen,

With reference to the request of approval of slips made of cast iron grade ASTM A536 60-40-18 instead of ASTM A395 60-40-18, please consider the following technical explanation.

The ASTM A395 60-40-18 is a specific grade of Ductile Iron used for Pressure-Retaining Components for Use at High Temperatures.

The proposed ASTM A536 60-40-18 is the equivalent grade of ASTM A395 60-40-18. This means that the two materials have:

- the same chemical composition;
- the same mechanical properties.

This material is proposed by G&C for the components called “slips” only.

Cast iron guarantees low friction and wearing and it is fully suitable for the project required temperatures, from 0° to 85 °C.

The proposed material is also required by some of the worldwide major oil and gas companies (e.g.: Saudi Aramco and Petrobras).

G&C confirm that the proposed material satisfies the project requirements.

We trust in your concurrence in confirming the acceptance of cast iron grade ASTM A536 60-40-18.

Best regards

Daniele PAGANI
(Technical Dept.)

Attachments: //

Office and Workshop:
GALLI & CASSINA S.p.A.
Via Drizza, 30/32
20020 SOLARO (MI) Italy

Phone + 39.02.96799632
Telefax + 39.02.96799699
www.gallicassina.it
valves@gallicassina.it

Sede Legale / Legal Office:
Via Mario Pagano,46 - 20145 Milano
Cod.Fisc. e Part. IVA
VAT N. IT 00732880158
R.E.A. MI 69290 Cap.Soc.€ 1.040.000 i.v.
Iscriz.Trib. Milano Reg. Soc. N.13115