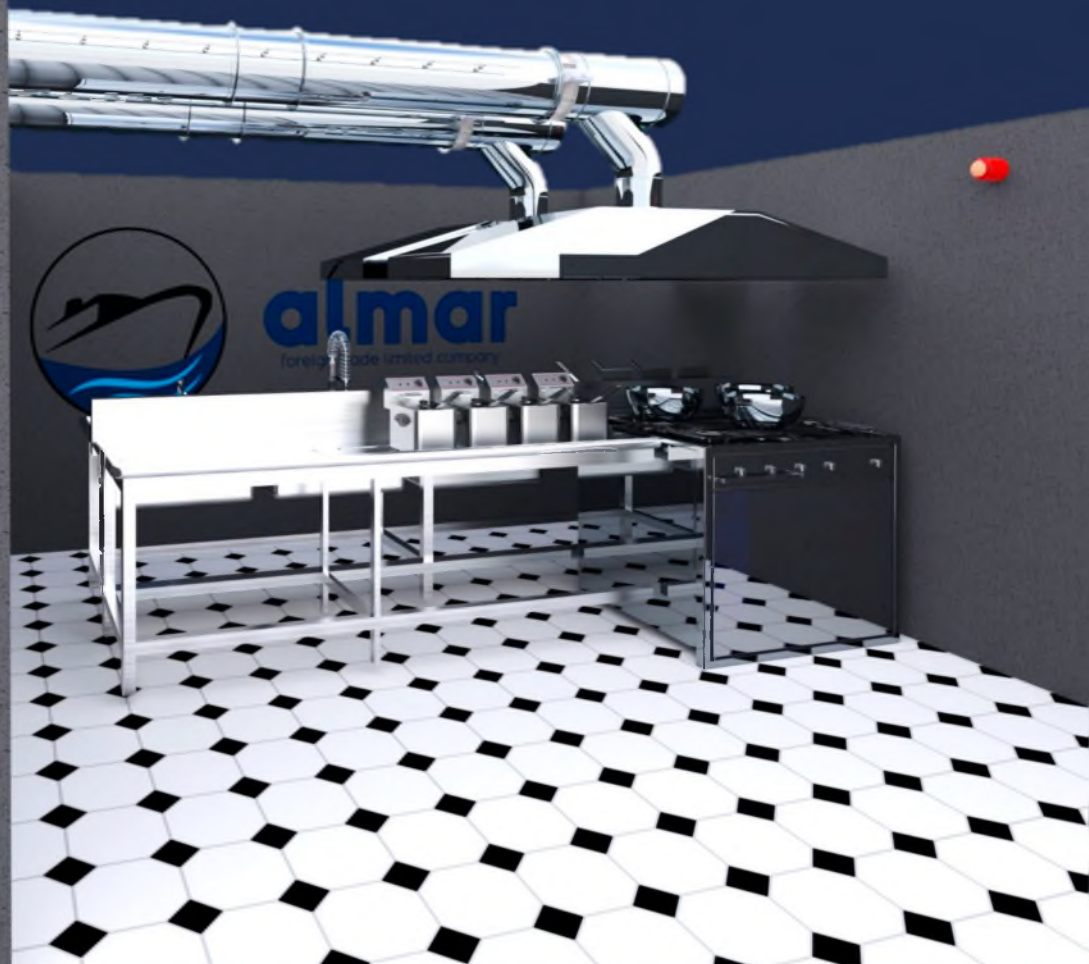




almar
foreign trade limited company

ALMAR CO₂ EXTINGUISHING FIRE FIGHTING SYSTEM
FOR GALLEY DUCT / AL20-GD5000
USER'S MANUAL



*LEADING
CREATIVE
INNOVATIVE*

ALMAR is efficient and solution focused business and manufacturing company that with modern methods, high standards and synergy effect creates values.



WELCOME

Since 2000 ALMAR Foreign Trade Limited Company has become one of the leading companies with decades of experience and service quality. Fixed fire suppression and detection systems in the marine industry, we have accomplished many projects with quick and quality solutions to problems presented.

Our company combines experienced team with quality materials and disciplined work. As well as being a pioneer with the highest quality in service sector, our company is still single and the best in marine industry.

Our goal is to serve you with noticeable quality of the best solutions to your needs.





WARNING!

- ❖ BEFORE BEGIN THE INSTALLATION THIS PROCEDURE MUST BE READ CAREFULLY!
- ❖ KEEP THE RELEASE STATION SECURE AND LOCKED. THE YARD IS RESPONSIBLE FOR WARNING ALL PERSONNEL THAT THE CO2 SYSTEM IS BEING COMMISSIONED.



AL20-GD5000 IS DESIGN FOR MAX. VOLUME OF 1.45M³
FOR MORE VOLUME PLEASE CONTACT THE ALMAR DESIGN TEAM.



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GENERAL INFORMATION

1. GENERAL

CO₂ flooding system is one of the common fixed fire fighting system installed on most of the ships. It releases carbon dioxide (CO₂) in bulk quantity to a protected space (such as galley duck under fire.) Smothering action of CO₂ extinguishes the fire thereby preventing spreading of fire to other parts of the ship. It consist of several CO₂ cylinders located in a release station. These bottles contain CO₂ in liquid state. When the fire in a protected space goes out of control or in a situation when the fire is not able to extinguish by local fire fighting media, CO₂ flooding system comes into picture. Due to safety reasons, the CO₂ flooding system is manually released from a release cabinet where located proper space.

Carbon dioxide is the fire extinguishing medium used in CO₂ flooding system. It is an effective fire suppression agent applicable to a wide range of fire hazards. It has a high rate of expansion which allows it to work fast. When applied to a fire, CO₂ provides a heavy blanket of gas that reduces the oxygen level to a point where combustion cannot occur. Since carbon dioxide is a gas, there is no clean up associated with a system discharge. CO₂, a compound of carbon and oxygen, is a colorless gas which cause coughing to occur when inhaled. At higher concentrations it is acutely toxic.

There are several advantages for the CO₂ as a fire fighting medium. They are:

- Density is 1.5 times higher than air. So CO₂ settles down and displaces air.
- It can be easily liquefied and bottled.
- CO₂ concentration extinguishes fire by smothering
- Non-corrosive
- Non- conductor of electricity
- No residues left after application
- No deterioration with age

Similarly there are some disadvantages also, such as:

- CO₂ is highly asphyxiating. 9% concentration causes unconsciousness within minutes
- Very little cooling effect. So there is danger of re-ignition.
- When discharged, solid CO₂ particles present and generate sufficient static electricity to produce spark



2. DESIGN

The system is designed to supply CO₂ concentration sufficient to achieve extinguishment only and in accordance with the authorities having jurisdiction. The release station located at the proper area.

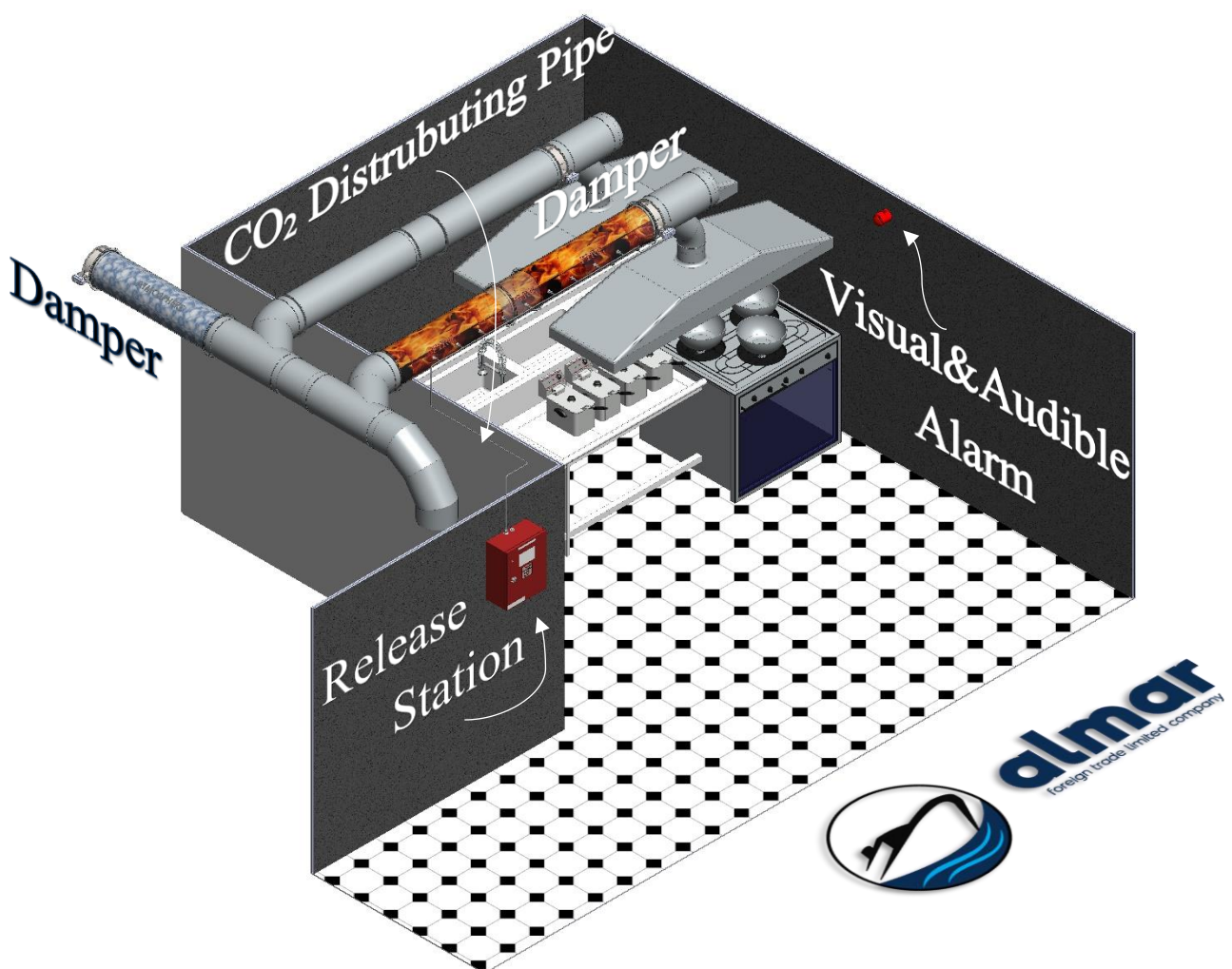
The CO₂ system one of the total flooding type protecting one single area on board.

The CO₂ cylinders are located inside a CO₂ release station

The CO₂ gas is distributed to the protected area by a piping system.

A number of pipes are located inside the protected area. The pipes are evenly distributed throughout the area. System combines the CO₂ gas between two dampers in air duct.

Audible and Visual alarm is installed inside the protected area for Warning the personnel to evacuate upon activation of the system.





System distributes CO₂ gas inside to ventilation air duct. Air duct has a damper for cut the air flow which normally open as Fig.1.2. Before begin to the process be sure that all air dampers are closed as Fig 1.3, in that way with opening of CO₂ valve, CO₂ in the system will down the fire also for compression of CO₂ from the system air damper on the end air duct must be closed.

The AL20-GD5000 is design for max. Volume of 1.45m³ for more volume please contact the ALMAR design team.



Fig.1.2 Air Duct Damper Open

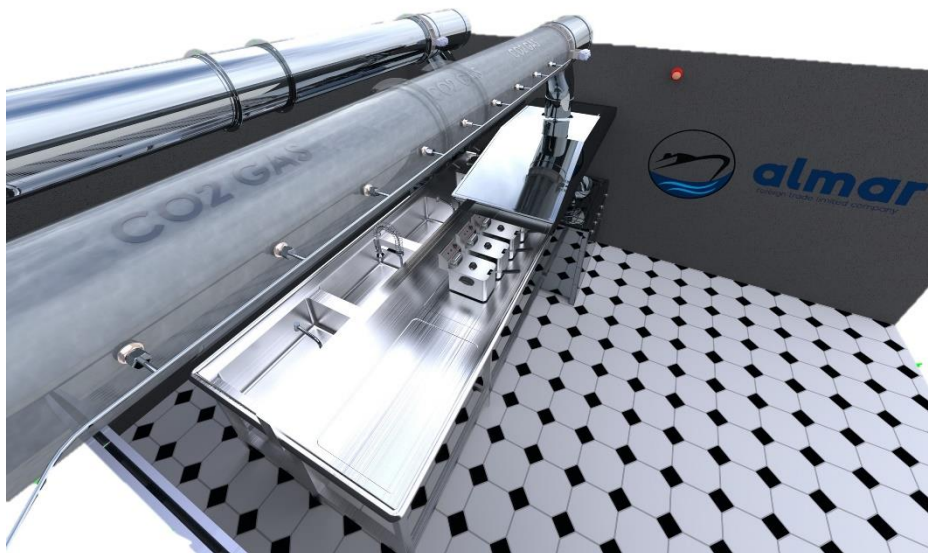


Fig.1.3 System Active Damper Closed CO₂ Released



Distributed gas in ventilation duct will down the fire. All Dampers that belong to the ventilation duct must be closed and air flow must be stopped before begin the extinguishing process.



Fig. 1.4. Opened Air Damper To The Amosphere



2.1.1. CO₂ CYLINDERS

The cylinder's supplied for high pressure carbon dioxide systems are manufactured in accordance with European Standards. Pressure testing from factory is 250 barn, and all cylinder's are supplied with a third party verification certificate. The following standard sizes are available:

- 2,00 liter with 1.30 kg CO₂ gas. 10 liter with 6.7 kg CO₂ gas.

Cylinders are delivered in gray (RAL7037) but red and black are available upon request.

Cylinders for storage of fire extinguishing mediums and associated pressure components shall be designed in accordance with pressure codes of practice to the satisfaction of authorities having jurisdiction. The filling ratio of CO₂ cylinders shall not exceed 0.67kg/l, the CO₂ cylinders shall be stored in an effectively ventilated. Means shall be available for the personnel to safely check the quantity of medium in the cylinders.



Fig.2.1 CO₂ CYLINDERS

All the CO₂ cylinders are of equal flying and pressurization, app.55 Bar at 21 °C.

2.1.2. RELEASE STATION

The release station consist of one manual valve(Valve that on the CO₂ cylinder), one release valve (for distribute the CO₂), one limit switch(for the signal that going to activate alarms and deactivate ventilation).

The Release station(Figure 2.2) must be locked in normal circumstances, the key is in behind the glass on the panel.

In emergency you must break glass on release station and open station with key on it, when you open the station, limit switch going to activate alarms and deactivate ventilation for equal distribution of CO₂ gas.



Fig.2.2 RELEASE STATION



2.2.1. INSTALLATION OF RELEASE STATION

The AL20-40001 release station must be located in accordance with the general arrangement drawings.

The panel must be supported to the bulkhead using the 4 holes drilled on the back plate of panel(Figure 3.4). Use M8 bolt's, nut's and washer's.

While installation please attention to the out of panel for any damage.

The release station has glass panel on it for break in emergency, except emergency please be sure that glass panel is solid and has a key in it.



Fig.2.3 RELEASE STATION INSTALLATION

2.1.3. VISUAL AND AUDIBLE WARNINGS

In any emergency situation when system activated, audible and visual alarm(fig2.4) gets activated for warning, if you hear or see that audible and visual alarm sound or flash please be sure that you are in safety place.



Fig.2.4 Visual&Audible Warning



3. MAINTANANCE INSTRUCTION

3.1. PRECAUTIONS & PERIODICAL CONTROLS

Procedures laid down in this manual should be followed strictly.

Make sure that all personnel are informed that the CO₂ system shall be tested, and the none are left in protected space as an accidental release of CO₂ will be life threatening to the personee in the flooded area. Check that the ventilation is running.

Periodical control of CO₂ system,

The CO₂ system shall be tested and certified by the manufacturer or representative.

Authorized by authorized as follows,

EVERY YEAR for passenger ships or onshore installations.

ONCE IN EVERY TWO YEARS commercial ships.

RECOMENDED EVERY MONTH BUT AT LEAST ONCE A YEAR OBLIGATORY for military vessels.

3.2. CO₂ GAS CONTENT

Liquid level on the cylinders can be checked by using a liquid level indicator, if available on board. If liquid level is below required level according to bar chart, the cylinder must be weighed.

Please note that level varies with temperature.

If a liquid level indicator is not available the cylinders has to be weighed. The total weight shall be as stamped on the cylinders. The total content of CO₂ gas in the system shall be within a limit of +/-10% if the weight is low, the cylinder must be recharge. Cylinders must be weighed between app.5kg. (4.5kg-5kg)

3.3. INSTRUCTION SIGNS AND OPERATING INSTRUCTIONS

Check all instruction signs and operating instructions that they are in a good condition and properly located.

3.4. MONTHLY CHECK

The CO₂ system should be checked once a month as follows.

- ✓ All type of pipes, connections and hoses(in the release station) must be in a good condition and tight.
- ✓ Cylinder valves
- ✓ Piping lines
- ✓ Alarms and ventilation deactivation/activation.
- ✓ Improper function / Damaged items
- ✓ System test.



3.5. CYLINDERS

If the fixed CO₂ cylinders are found to be in a very good condition at the 10 year interval, then the MCA will accept the hydrostatic test requirements specified in MSC/Circular 1318 paragraph 6.1.2, provided.

If any CO₂ cylinders are found to be in a poor condition, (rusty, damaged, etc.), at the 10 year interval, then the MCA would insist that Annual inspections (MSC/Circular 1318 paragraph 5) it is recommended that this is performed by persons specially trained in the maintenance of such systems, e.g. manufacturer or recognised service company.

Full maintenance (Circular 1318 paragraph 6) - should be performed by persons specially trained in the maintenance of such systems, e.g. manufacturer or recognised service company.

For more detail please see datasheet AL20-40009Rev00/ AL20-40010Rev00/ AL20-40011Rev00/ AL20-40012Rev00.

3.6. RELEASE STATION

The panel must be in a good condition (no scratches, squashed, rusty e.g.) and painted well. Cylinders must be in a good condition (no scratches, squashed, rusty e.g.) and painted well.

Before first run cylinders must weighted and must approve that cylinders are in a good condition.

Before first run pipes must approve that are in a good condition. In case of emergency situation, station has switch for activate alarm/siren and deactivate ventilation, switch must be in a working condition.

3.6.1. RELEASE STATION HOSE

If release station hose is found to be in a poor condition, (rusty, damaged, etc.), please contact manufacturer or recognised service company.

Annual inspections it is recommended that this is performed by persons specially trained in the maintenance of such systems, e.g. manufacturer or recognised service company.

3.6.2. MANUAL VALVE

If manual valve is found to be in a poor condition, (rusty, damaged, etc.), please contact manufacturer or recognised service company.

Annual inspections it is recommended that this is performed by persons specially trained in the maintenance of such systems, e.g. manufacturer or recognised service company.

3.6.3. RELEASE STATION PRESSURE GAUGE

Pressure gauge comes assambled on release station, For any other possible situations please read below. Be sure the pressure gauge is not damaged.

End user is responsible for applying all safety precautions.

Shall be mounted as upright, if otherwise not specified.

Do not tighten by hand. Never spin by holding casing.

Use a spanner while mounting/dismounting.

Please see fig.3.1 for sample of assembled pressure gauge.

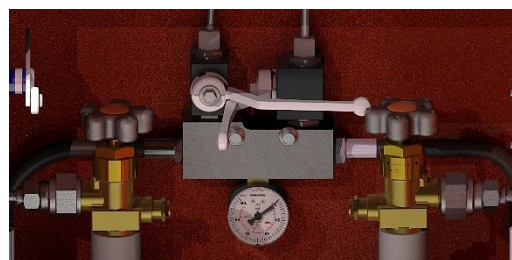


Fig.3.1 RELEASE STATION



4. SYSTEM TESTING

KEEP THE CO2 MASTER VALVES SECURED AND RELEASE STATION LOCKED.

THE YARD IS RESPONSIBLE FOR WARNING ALL PERSONNEL THAT THE CO2 SYSTEM IS BEING COMMISSIONED.

4.1. OPERATION-READY TEST

- ✓ Release circuit connections must be checked and approved that release circuit connection to the release station is same as required based project drawings.
- ✓ One attendant must be near the release station.
- ✓ The attendant near the release station must,
 - Open the release station first. When open the release station first hear the alarm and sirens and see air damper is closed.
 - Open manual valves in the release station (see Fig.4.1).
 - Open pilot valve that gonna distribute CO2 to the piping line (see fig 4.1).

THIS PROCEDURE IS WRITTEN FOR START-UP IF YOU WANT TO TEST A SYSTEM THAT HAVE BEEN ALREADY START-UP, DO NOT FORGET TAKE OFF HOSES BETWEEN

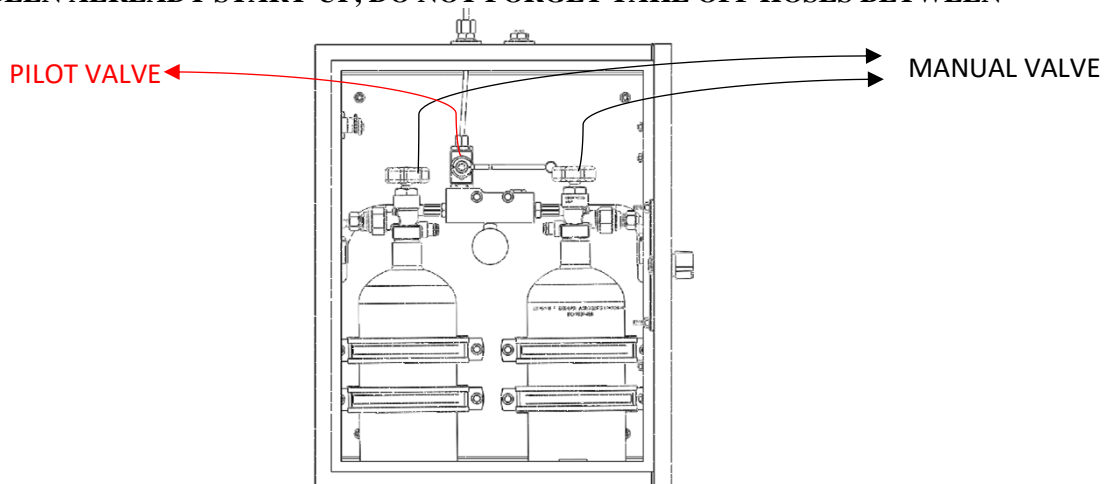


Fig.4.1 SAFETY VALVE

MANIFOLD AND CYLINDERS. BE SURE THAT OUTLETS ARE TIGHTLY BLINDED MANIFOLD AND HOSE.



4.2. TEST OF AUDIBLE AND/OR AUDIBLE AND VISUAL ALARMS

The audible and/or audible and visual alarms will activate by activation one of mentioned systems below.

Activation by the CO₂ release cabinet,

- ✓ When release cabinet door opens. Check that the alarms are sounding.

NOTE:

ALL THE ALARM'S SHOULD BE TEST DURING THE SEA TRIAL TO VERIFY THAT THE SOUND LEVEL IS ACCEPTABLE IN THE AREAS WHERE THEY ARE INSTALLED, WHEN ALL MACHINERY IS NORMAL OPERATION.

4.3. FINAL CHECK BEFORE LEAVE READY SYSTEM FOR NORMAL OPERATION

Before normal operation, following steps must execute.

- ✓ Read operating instructions,
- ✓ All release stations are equipped with engrabed instruction signs.
- ✓ Pilot cylinders in the release station are connected.
- ✓ Release station door are closed and secured.
- ✓ The key for the CO₂ release locker are handed over to the officer in charge.
- ✓ CO₂ valves are unsecured and in closed position.



5. WARNINGS

5.1. WARNING FOR THE IN CASE OF FIRE IN GALLEY DUCT

THIS WARNING COMES AS STICKER, PLEASE BE SURE THAT WARNING IS STICKED AT RELEASE BOX

<p style="text-align: center;">IN CASE OF FIRE IN GALLEY DUCT INSTRUCTION FOR CO₂ BOX</p>
<ol style="list-style-type: none">1. BE SURE THAT ALL PEOPLE HAVE LEFT THE AREA2. TAKE THE KEY FROM THE KEY BOX3. OPEN THE CO₂ BOX B USING KEY, CO₂ ALARMS WILL BE ACTIVATED AND VENTILATION SHUT DOWN AUTOMATICALLY4. OPEN THE CO₂ CYLINDER VALVE5. OPEN THE “CO₂ VALVE” THE AREA THAT NEEDS TO BE REALSED

Fig.5.1 PROTECTED ROOM WARNING



6. MECHANICAL PROPERTIES & TECHNICAL DESCRIPTION

6.1. GAUGES

6.1.1. RELEASE STATION PRESSURE GAUGE

Used for measuring liquid and gases which are suitable to copper alloys where no high accuracy is needed. Pressure gauges are not and can not be used as safety equipment. Necessary technical details are given at table below.

AL20-40054 PRESSURE GAUGE	
OPERATING PRESSURE	MUST NOT EXCEED %75 OF FULL SCALE
TYPE	40[mm] / 100 bar
PROTECTION RATE	IP41
OVER PRESSURE LIMIT	≤ 40 bar PN x 125
SCALE UNIT	bar / psi
HOSE SIZE	1/8"

Table 6.1 AL20-40054 PRESSURE GAUGE

6.2. ALARMS

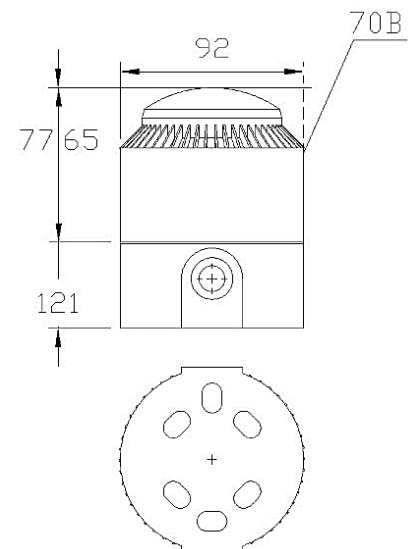
6.2.1. AUDIBLE ALARM

In any emergency situation when system activated, audible alarm gets activated for warning, if you hear that audible alarm sound please be sure that you are in safety place.

For technical detail please see table 5.3 below.

AL20-40056 AUDIBLE and visual ALARM	
SOUND OUTPUT	12V dc: 103dB(A) 24Vdc: 101dB(a)
VOLUME CONTROL	10db(A)
ALARM TONES	32
SOUNDER CURRENT	12VDC: 110mA 24Vdc68mA
LIGHT OUTPUT	0.7J Xenon bulb
FLASH RATE	1 Hz
IP RATING	Ip54 (shallow) IP65(deep)
UNIT WEIGHT	0.33kg
TEMPERATURE RANGE	-10° C to +55° C
IP RATING	Ip54 (shallow) IP65(deep base)
BODY METERIAL	ABS, Polycarbonate lens
VOLTAGE	9-15Vdc (12Vdc version)
UNIT COLOR	RED/WHITE

Table 6.2 audible and visual alar





6.3. VALVE

6.3.1. MANUAL VALVE

Please see Table 7.8 below for thread specifications

Table 6.3 manual valve specifications
25EW 21.8 DIN477- 1/6 THREADS SPECIFICATIONS

25EW 21.8 DIN477- 1/6 THREADS SPECIFICATIONS	
GAS INLET	25E
GAS OUTLET	W21.8X1/6
MEDIUM	CO ₂

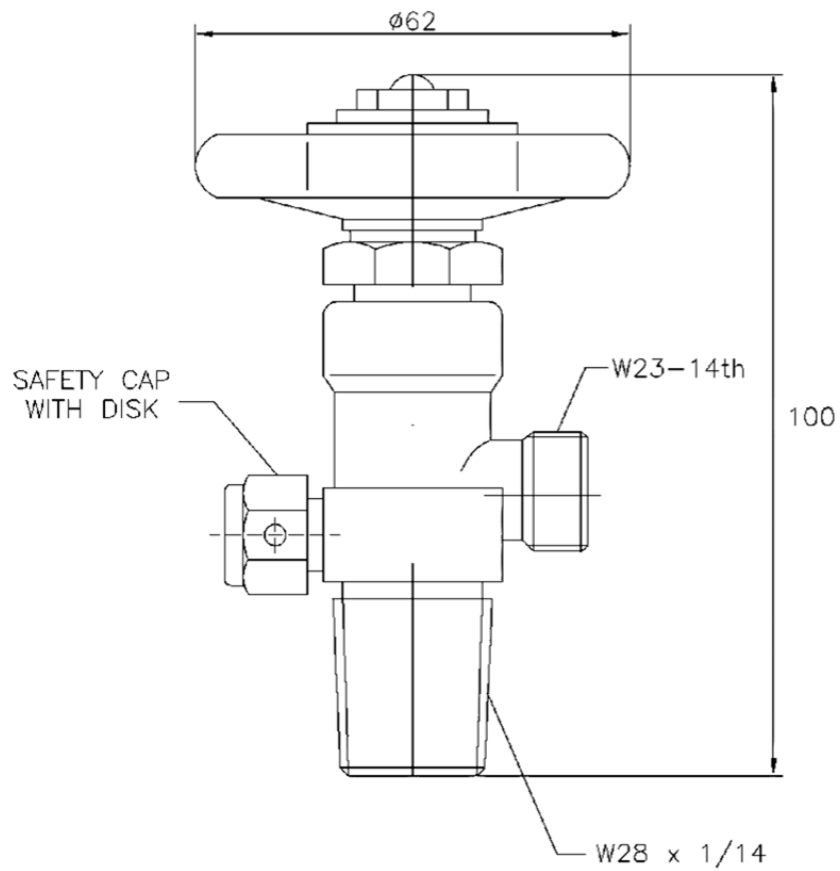


Fig.7.5 CO₂ MANUAL VALVE



6.4. CYLINDERS

Inlets and outlets are Female 1/4". For other mechanical details please see table 4.6 below.

AL20-40009 2L CYLINDERS	
BRAND	ALMAR
TYPE	2 ltr ; Ø 115 mm
CYLINDERS MEET THE REQUIREMENTS OF	ADR:2019; ISO 9809-1 i Dyrektywy 2010/35/EU
TEST PRESSURE	250 [bar]
TARE	~3.7[kg]
MATERIAL	34CrMo4
GAS	CO ₂
MIN. CYLINDRICAL WALL THICKNESS	2,7 [mm]
UTMOST WEIGHT OF FILLING	1,3 [kg]
HEAT TREATMENT	H380-890 O570-630 [°C]
Specified mechanical properties	Re min 755 [N/mm ²]; Rm 890-1099 [N/mm ²]; As 14 [%]
Thread test	25E PN EN ISO 11363-1
Hydraulic Test	300 [bar]
Hardness test	255-335 [HB]
Pneumatic test	... [bar]

Table 6.4 2L CYLINDER



6.5. LIMIT SWITCH

6.5.1. 121

A limit switch is an electromechanical device that consists of an actuator mechanically linked to a set of contacts. When an object comes into contact with the actuator, the device operates the contacts to make or break an electrical connection.

Two limit switches are located on the pneumatic piston, because of in emergency situations, rod extends forward, that activates limit switches.

One of the switches activates visual and audible warning devices, the other deactivates ventilation for the best result and safety.

LIMIT SWITCH 121 TECHNICAL INFORMATION	
CONTACT	1NO + 1NC
INDICTION CURRENT (I_c)	3 A (240V AC)
OPERATING TEMPURATURE	-25 to +80 °C
ISOLATION RESISTANCE	10 M Ω (500 V DC)
CONTACT MOVEMENT	IMPULSE
U_i	300 V
U_{imp}	2.5 kV
PROTECTION RATE	IP 65

Table 6.5 switch



ATTACHMENTS

1. Material List
2. Datasheets



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CONTENTS OF HP CO2 SYSTEM MATERIAL LIST

HULL NO:	
PROJECT NO:	
CUSTOMER:	
OUR REF:	
DATE :	
REVISION :	

QUANTITY	PROUDUCT	PROUDUCT NO.	POSITION NO.
*	RELEASE STATION SUB ELEMENTS		
2	CURTAIN	AL20-40068	5_4
2	RELEASE STATION HOSE	AL20-40024	5_6
2	CYLINDER 2L	AL20-40009	1A
4 SET	CO2 CYLINDER CLAMP	AL20-40072	5_5
1	2 WAY BALL VALVE DN4	AL20-40018	52A
2	MANUAL VALVE	AL20-40069	10
1	RELEASE STATION PRESSURE GAUGE	AL20-40054	5_3
1	LIMIT SWITCH 122	AL20-40030	5_2
1	MANIFOLD 2-2-1	AL20-40008	5_1
1	RELEASE BOX-DKP	AL20-40006	6B
*	DEVICES		
1	PLUG 3/8	AL20-40086	4_1
*	ALARMS		
1	AUDIBLE AND VISUAL ALARM	AL20-40057	70B
*	WARNINGS		
1 SET	SET LABELS	AL20-40045	45



1. APPLICATION

The AL.20.400X Release Station designed for manual control of the system in case of fire.

The AL.20.400X release station must be located in accordance with the general arrangement drawings and the CO2 room arrangement drawing.

It has to be connected to the CO2 cylinders and to the master valve which using 6 x 1 [mm] instrument tube.

For activate, take the key from the keybox.

By using the key open CO2 release station, CO2 alarm will be activated and ventilation will be shut down automatically.

Open the pilot cylinder valve.

Open the CO2 valve.

Open the CO2 cylinder.

If system is activated, everyone **MUST LEAVE** the room.

The AL.20.400X has four different version.For more detail please see technical drawings.

2. INSTALLATION

The AL.20.4000 release station must be located in accordance with the general arrangement drawings and the CO2 room arrangement drawing..

The panel must be supported to the bulkhead using the 4 holes drilled on the back plate of panel.

Use M8 bolt's, nut's and washer's.

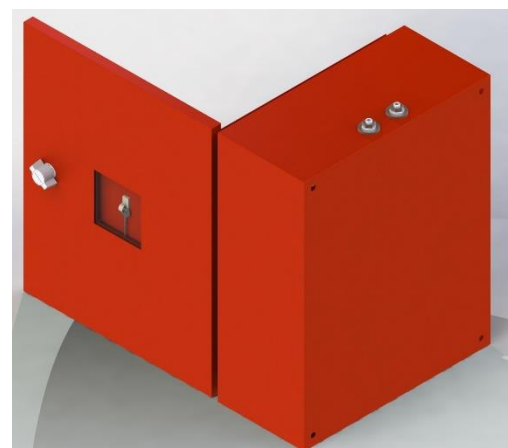
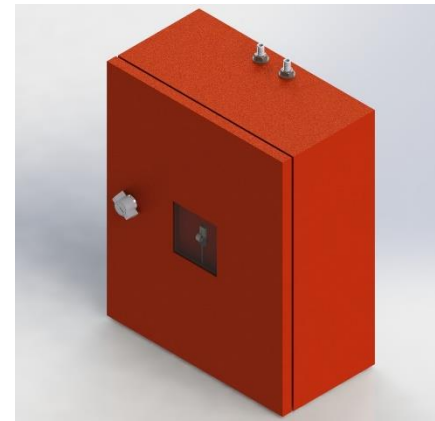


Figure 2.1



3. MAINTANANCE

The panel must be in a good condition (no scratches, squashed, rusty e.g.) and painted well.

Cylinders must be in a good condition (no scratches, squashed, rusty e.g.) and painted well.

Before first run cylinders must weighted and must approve that cylinders are in a good condition.

Before first run pilot hose's and pipes must approve that are in a good condition.

In case of emergency situation, station has switch for activate alarm/siren and deactivate ventilation, switch must be in a working condition.

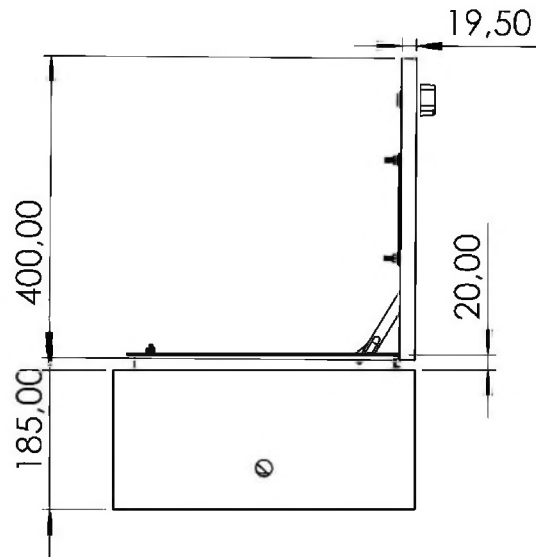
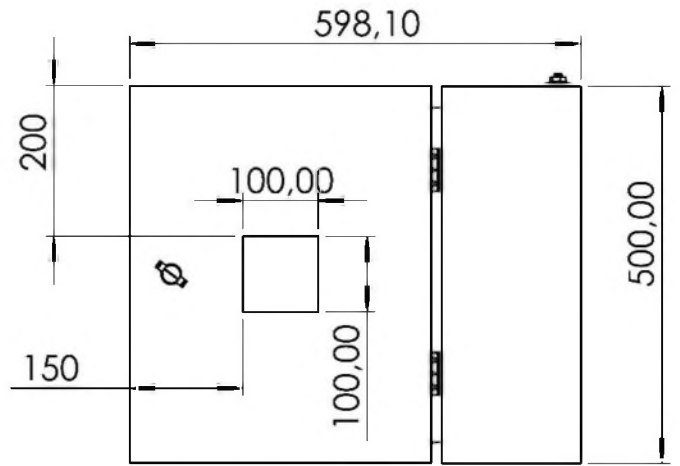
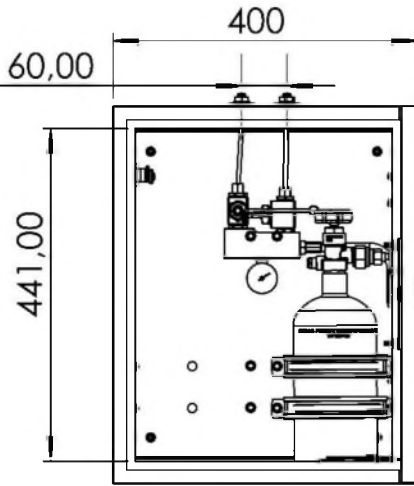
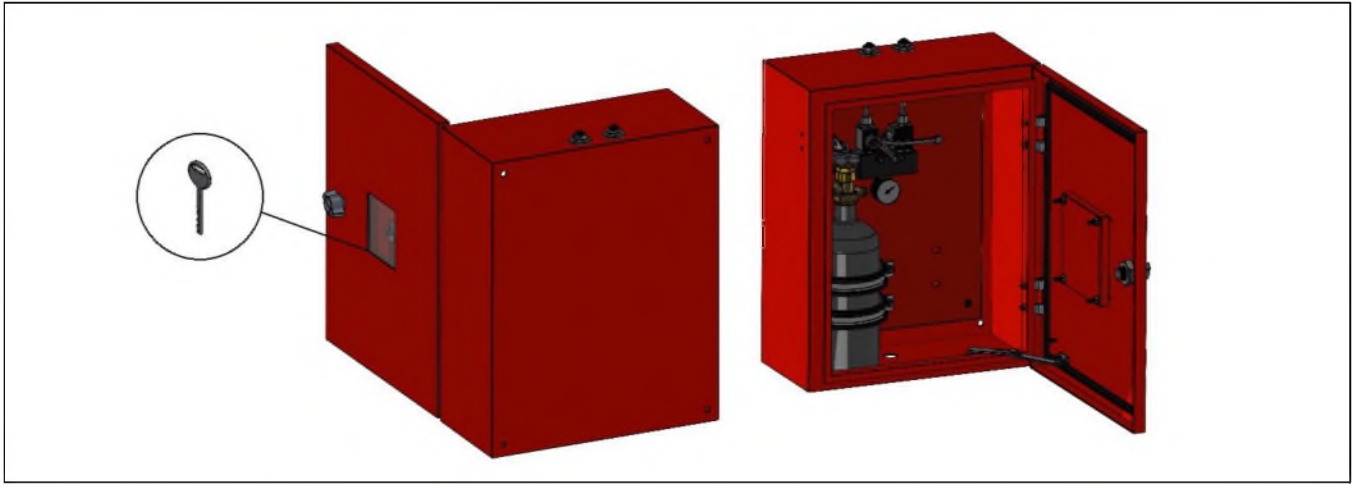
The key of station must be near to the panel, in a case which has breakable glass panel on it.

For cylinders please see "THE CYLINDER MANUAL INSTRUCTION OF USAGE AND EXPLOITATION" on cylinder's datasheet.

4. TECHNICAL DRAWINGS

Please see following pages for detailed technical drawings.

RELEASE BOX AL20-40000



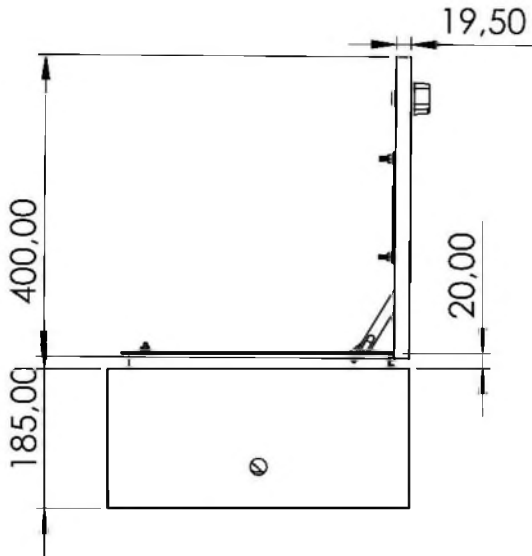
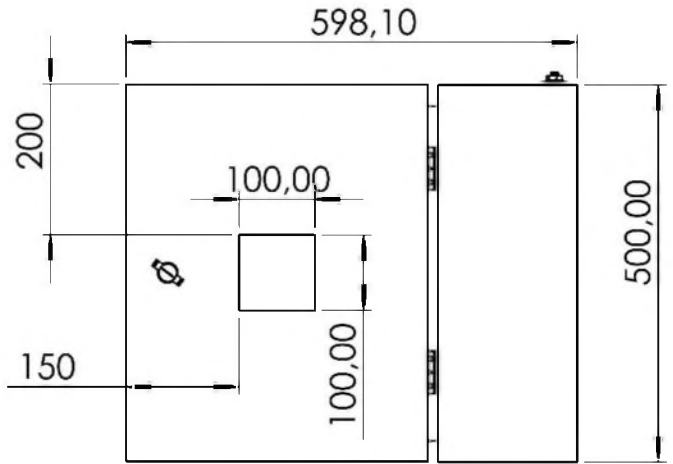
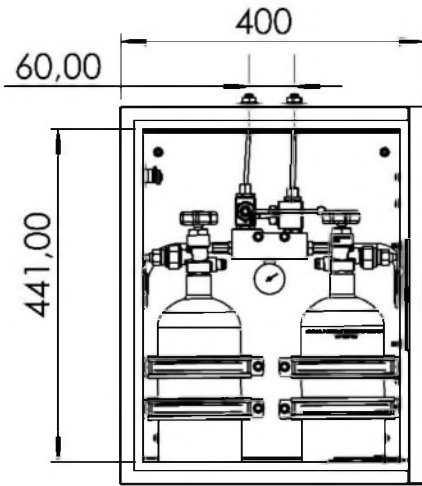
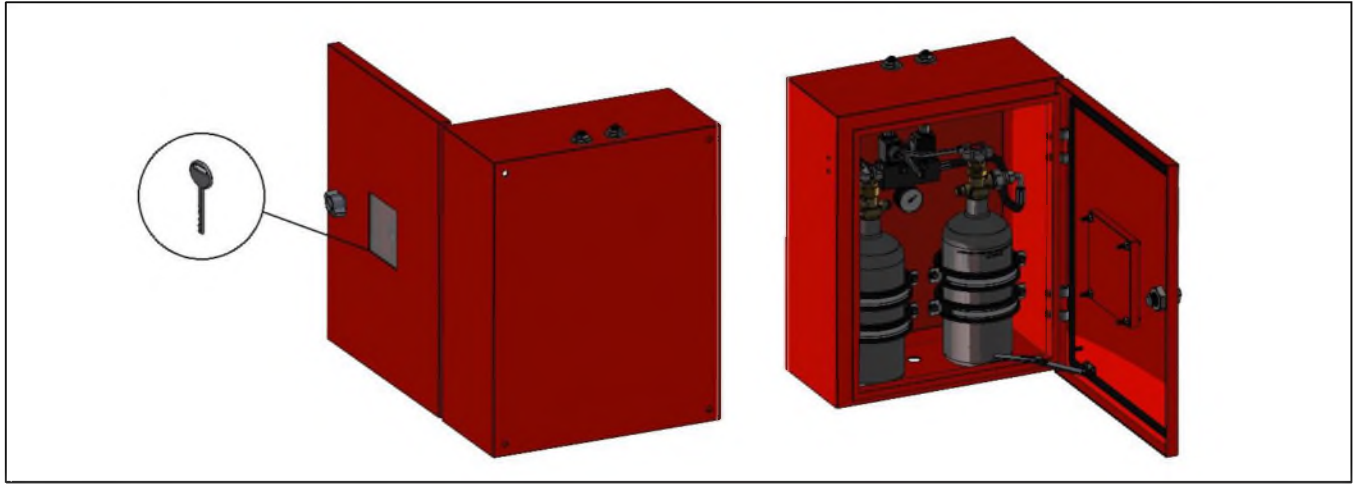
AL20-40003 COMPANENST'S		
PROUDUCT NO	PROUDUCT	QUANTITY
AL20-40009	CYLINDER 2L	1
AL20-40030	SWITCH 122	1
AL20-40008	2/2-1 COLLECTOR BLOCK	1
AL20-40054	PRESSURE GAUGE	1
AL40-40069	MANUAL VALVE	1
AL20-40024	PILOT HOSE	1
-	CHROME PIPE Ø 6X1 [mm]	1
-	1/2"-2/3" NIPPLE	1
-	6" NIPPLE	1
AL20-40018	DN4 VALVE	1
-	CYLINDER CLAMP 4" 2pcs.	2
-	CURTAIN TRANSITION NIPPLE	1
-	KEY BOX	1
AL20-40005	RELEASE BOX (CHROME)	1

In emergency please read the instructions on the box.

AL20-4001 (BOX)	
Thickness	1.5 mm
Color code	RAL 3001

DRAWING NO.	POS. NO 5C	PROUDUCT NO. AL20-40000	QUANTITY:	PAGE A4
DESIGNED BY: ALİ ARMAĞAN	CHEKED BY: ÇAĞLAR LATİFOĞLU	APPROVED BY: ÇAĞLAR LATİFOĞLU	DATE: 08/09/2020	SCALE:
		PROJECT / PROUDUCT: RELEASE BOX		
		WEIGHT: -	METARIAL: CHROME	REVISION: rev00

RELEASE BOX AL20-40001



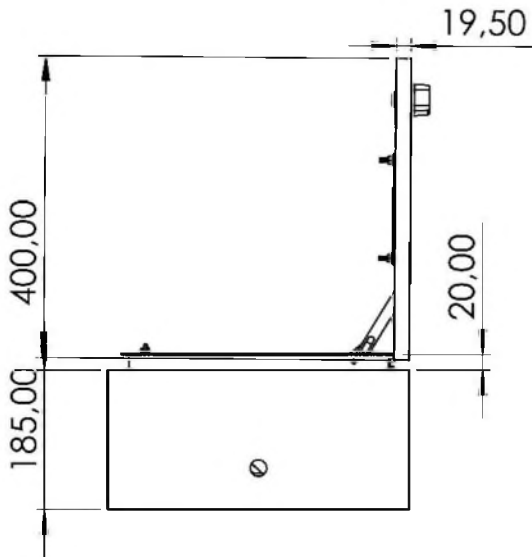
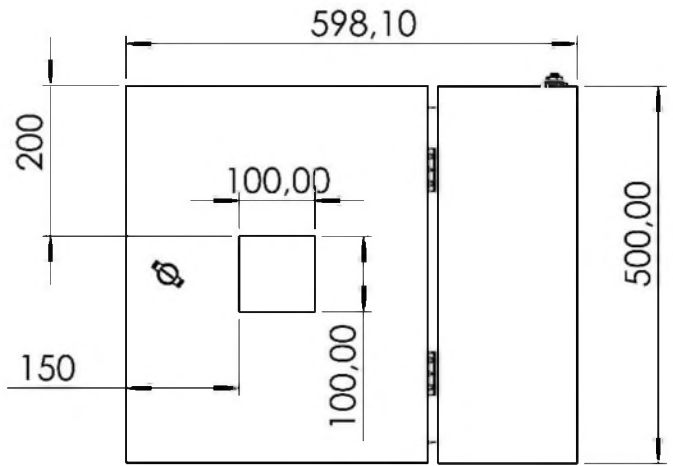
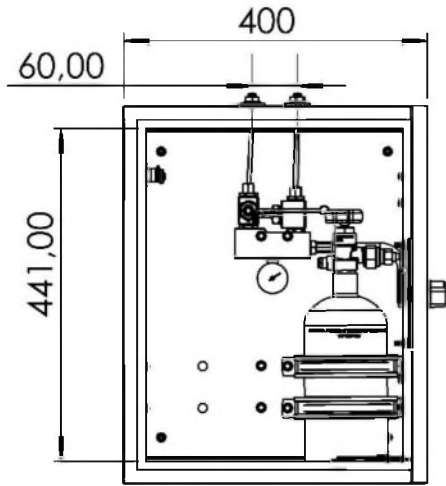
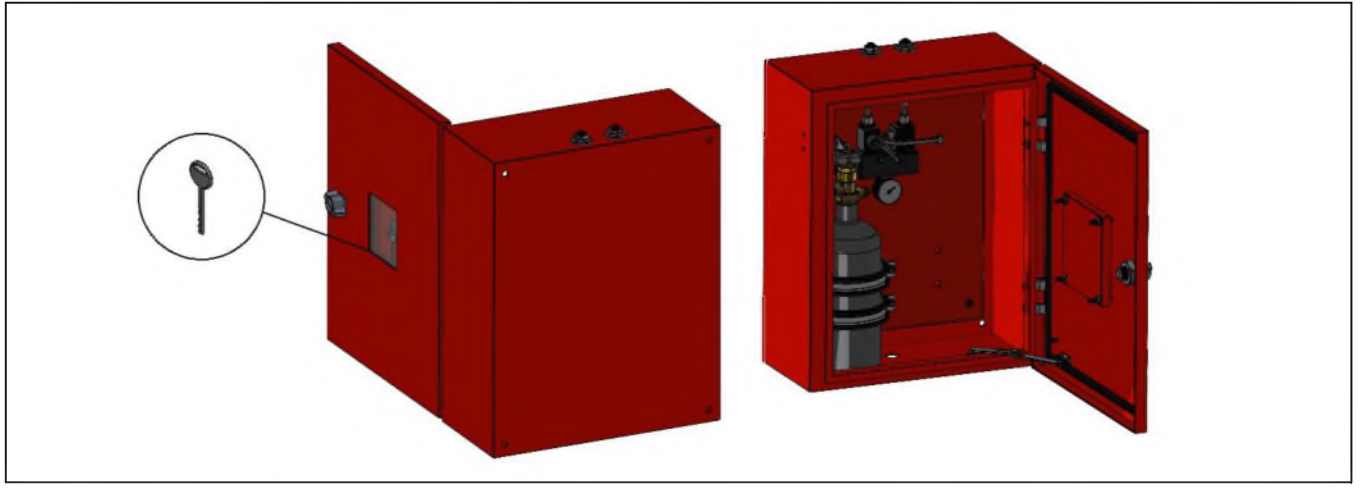
In emergency please read the instructions on the box.

AL20-4001 (BOX)	
Thickness	1.5 mm
Color code	RAL 3001

AL20-40003 COMPANENST'S		
PROUDUCT NO	PROUDUCT	QUANTITY
AL20-40009	CYLINDER 2L	2
AL20-40030	SWITCH 122	1
AL20-40008	2/2-1 COLLECTOR BLOCK	1
AL20-40054	PRESSURE GAUGE	1
AL40-40069	MANUAL VALVE	2
AL20-40024	PILOT HOSE	2
-	CHROME PIPE Ø 6X1 [mm]	2
-	1/2"-2/3" NIPPLE	2
-	6" NIPPLE	2
AL20-40018	DN4 VALVE	2
-	CYLINDER CLAMP 4" 2pcs.	2
-	CURTAIN TRANSITION NIPPLE	2
-	KEY BOX	1
AL20-40005	RELEASE BOX (CHROME)	1

DRAWING NO.	POS. NO 5B	PROUDUCT NO. AL20-40001	QUANTITY:	PAGE A4
DESIGNED BY: ALI ARMAĞAN	CHEKED BY: ÇAĞLAR LATİFOĞLU	APPROVED BY: ÇAĞLAR LATİFOĞLU	DATE: 08/09/2020	SCALE:
		PROJECT / PROUDUCT: RELEASE BOX		
WEIGHT: -	METARIAL: -	RCVISION: rev00	SHEET 1	

RELEASE BOX AL20-40002



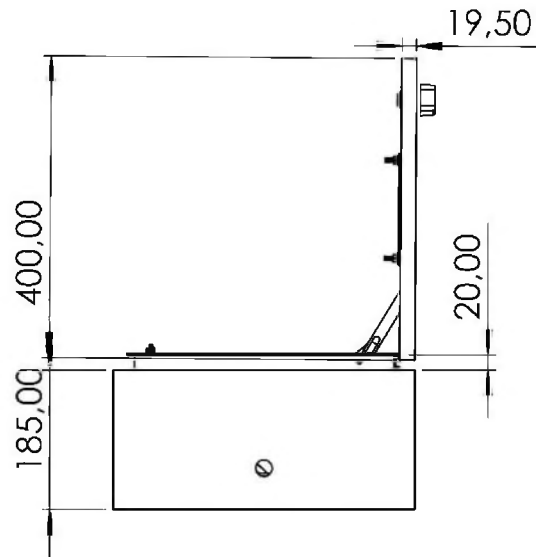
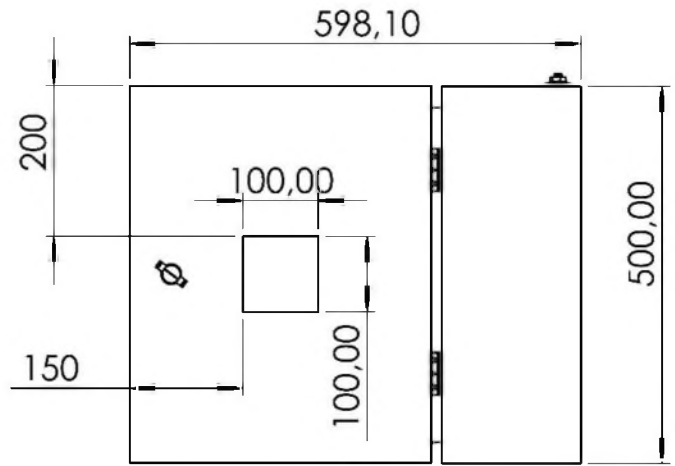
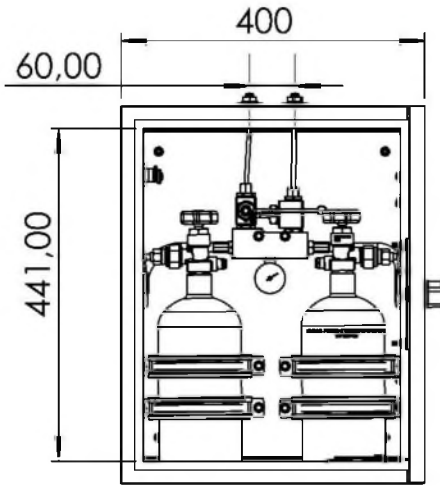
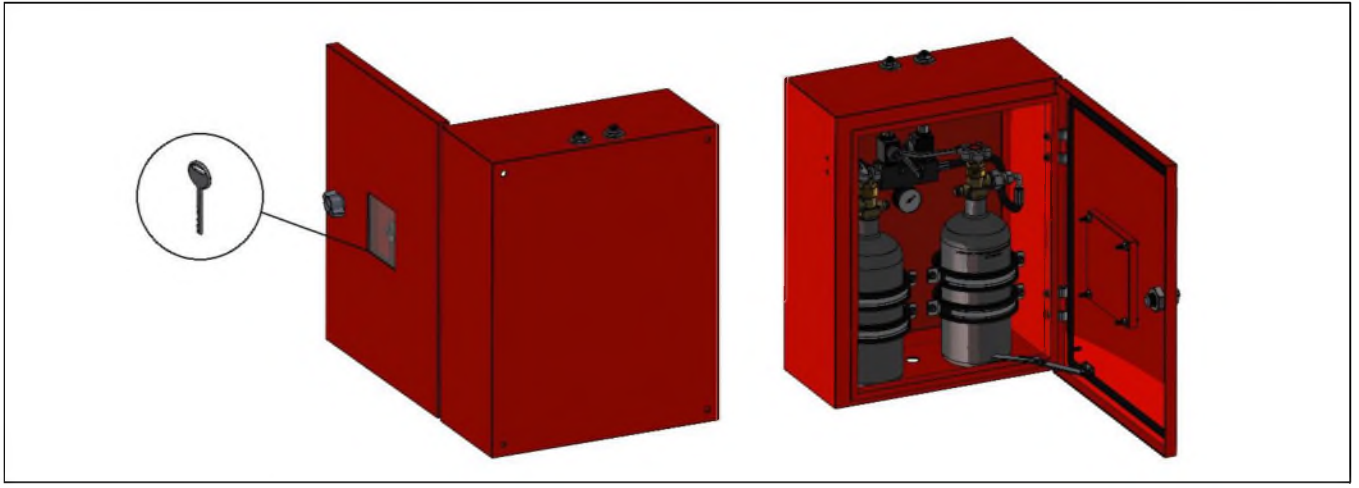
AL20-40003 COMPANENST'S		
PROUDUCT NO	PROUDUCT	QUANTITY
AL20-40009	CYLINDER 2L	1
AL20-40030	SWITCH 122	1
AL20-40008	2/2-1 COLLECTOR BLOCK	1
AL20-40054	PRESSURE GAUGE	1
AL40-40069	MANUAL VALVE	1
AL20-40024	PILOT HOSE	1
-	CHROME PIPE Ø 6X1 [mm]	1
-	1/2"-2/3" NIPPLE	1
-	6" NIPPLE	1
AL20-40018	DN4 VALVE	1
-	CYLINDER CLAMP 4" 2pcs.	2
-	CURTAIN TRANSITION NIPPLE	1
-	KEY BOX	1
AL20-40005	RELEASE BOX (DKP)	1

In emergency please read the instructions on the box.

AL20-4001 (BOX)	
Thickness	1.5 mm
Color code	RAL 3001

DRAWING NO.	POS. NO 5C	PROUDUCT NO. AL20-40002	QUANTITY:	PAGE A4
DESIGNED BY: ALI ARMAGAN	CHEKED BY: ÇAĞLAR LATİFOĞLU	APPROVED BY: ÇAĞLAR LATİFOĞLU	DATE: 08/09/2020	SCALE:
		PROJECT / PROUDUCT: RELEASE BOX		
		WTIGHT: -	METARIAL: CHROME	REVISION: rev00

RELEASE BOX AL20-40003



In emergency please read the instructions on the box.

AL20-4001 (BOX)	
Thickness	1.5 mm
Color code	RAL 3001

AL20-40003 COMPANENST'S		
PROUDUCT NO	PROUDUCT	QUANTITY
AL20-40009	CYLINDER 2L	2
AL20-40030	SWITCH 122	1
AL20-40008	2/2-1 COLLECTOR BLOCK	1
AL20-40054	PRESSURE GAUGE	1
AL40-40069	MANUAL VALVE	2
AL20-40024	PILOT HOSE	2
-	CHROME PIPE Ø 6X1 [mm]	2
-	1/2"-2/3" NIPPLE	2
-	6" NIPPLE	2
AL20-40018	DN4 VALVE	2
-	CYLINDER CLAMP 4" 2pcs.	2
-	CURTAIN TRANSITION NIPPLE	2
-	KEY BOX	1
AL20-40005	RELEASE BOX (DKP)	1

DRAWING NO.	POS. NO 5D	PROUDUCT NO. AL20-40003	QUANTITY:	PAGE A4
DESIGNED BY: ALİ ARMAĞAN	CHEKED BY: ÇAĞLAR LATİFOĞLU	APPROVED BY: ÇAĞLAR LATİFOĞLU	DATE: 08/09/2020	SCALE:
 almar <small>foreign trade limited company</small>		PROJECT / PROUDUCT: RELEASE BOX		
		WEIGHT: -	METARIAL: -	REVISION: rev00



1. APPLICATION

Used for measuring liquid and gases which are suitable to copper alloys where no high accuracy is needed.

Pressure gauges (picture 1.1) are not and can not be used as safety equipment.

The check valve used for connection between manifold and CO2 cylinders.

For more detail please see table 1.1 General Information.



Figure 1.1

GENERAL INFORMATION	
OPERATING PRESSURE	Must not exceed %75 of full scale
TYPE	40 [mm] / 100 bar
PROTECTION RATE	IP 41
OVER PRESSURE LIMIT	≤ 40 bar PN x 125
SCALE UNIT	bar / psi
HOSE SIZE	1/8"

Table 1.1 general information of 0-100 bar Pressure gauge

2. INSTALLATION

During installation pressure gauge must fastening as seen as project drawing which given by ALMAR

Be sure the pressure gauge is not damaged.

End user is responsible for applying all safety precautions.

Shall be mounted as upright, if otherwise not specified.

Do not tighten by hand. Never spin by holding casing.

Use a spanner while mounting/dismounting.

Please see fig.2.1 for sample of assembled pressure gauge.



Figure 2.1



3. MAINTANANCE

If pressure gauge is found to be in a poor condition, (rusty, damaged, etc.), please contact manufacturer or recognised service company.

Annual inspections it is recommended that this is performed by persons specially trained in the maintenance of such systems, e.g. manufacturer or recognised service company.

Full maintenance should be performed by persons specially trained in the maintenance of such systems, e.g. manufacturer or recognised service company.

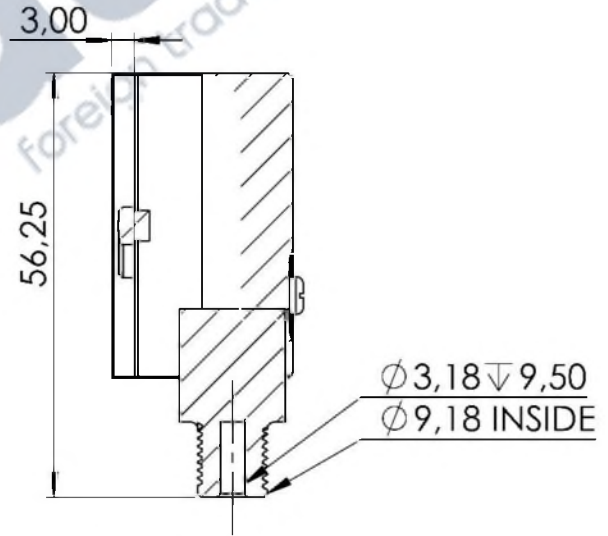
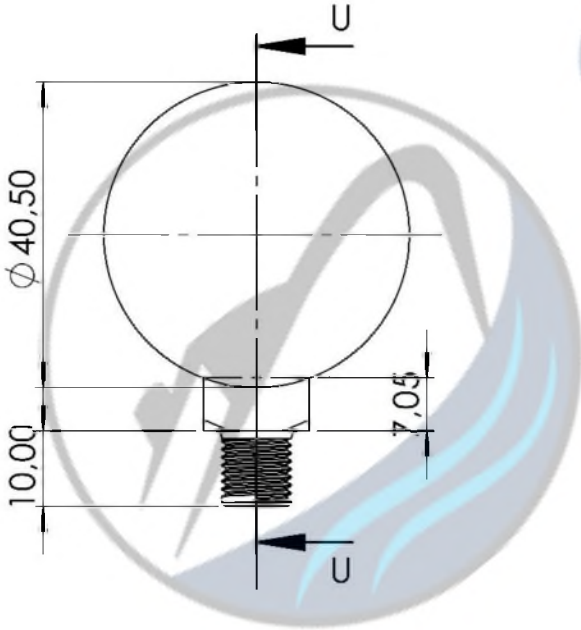
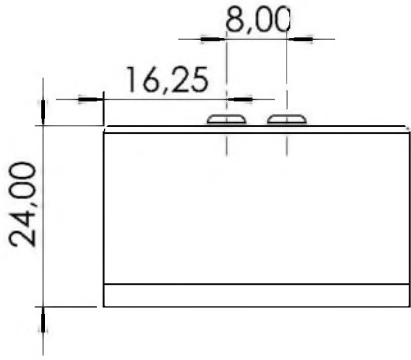
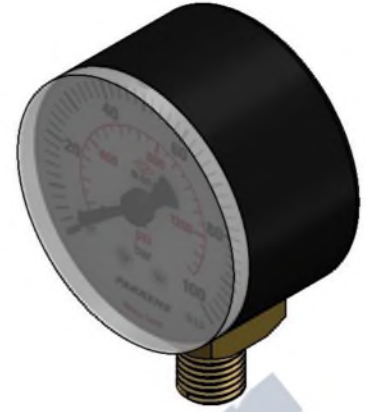
5. DIMENSIONS & TECHNICAL DRAWINGS

Please see following page for detailed technical drawings.



almar
foreign trade limited company

PRESSURE GAUGE (0-100 BAR)



SECTION U-U

NOTE: ALL DIMENSIONS ARE GIVEN AS MILLIMETERS

DRAWING NO:	POS. NO. 5_3	PRODUCT NO: AL20-40054	DATASHEET: AL20-40054 Rev00	PAGE A4
DESIGNED BY: ALİ ARMAĞAN	CHEKED BY: ÇAĞLAR LATİFOĞLU	APPROVED BY: ERDİNÇ LATİFOĞLU	DATE: 16/09/2020	SCALE: 1:1
		PROJECT / PRODUKT: CHECK VALVE		
		WEIGHT: -	METARIAL: -	REVISION: Sept20-Rev00



1. GENERAL & APPLICATION

Use in applications of steel cylinders (containers, trailers, bundles) production according to ISO 9809-1, ISO 9809-2 and AD 2000.

The cylinder's supplied for high pressure carbon dioxide systems are manufactured in accordance with European standards.

The cylinders comes with a standard color coded RAL 737 painted, upon request also cylinders can be delivered with different color codes painted.

Detailed information has given in this documentation.



GENERAL INFORMATION	
BRAND	ALMAR
TYPE	2 ltr ; Ø 115 mm
CYLINDERS MEET THE REQUIREMENTS OF	ADR:2019; ISO 9809-1 i Dyrektywy 2010/35/EU
TEST PRESSURE	250 [bar]
TARE	~3.7[kg]
MATERIAL	34CrMo4
GAS	CO ₂
MIN. CYLINDRICAL WALL THICKNESS	2,7 [mm]
UTMOST WEIGHT OF FILLING	1,3 [kg]
HEAT TREATMENT	H380-890 O570-630 [°C]

Table 1.1 GENERAL INFORMATION OF 2L CO₂ CYLINDER

2. INSTALLATION

During installation cylinders must fastening as seen as project drawing which given by ALMAR.

3. MECHANICAL PROPERTIES

Inlets and outlets are Female 1/4". For other mechanical details please see table 4.1 below.

MECHANICAL PROPERTIES	
Specified mechanical properties	Re min 755 [N/mm ²]; Rm 890-1099 [N/mm ²]; As 14 [%]
Thread test	25E PN EN ISO 11363-1
Hydraulic Test	300 [bar]
Hardness test	255-335 [HB]
Pneumatic test	... [bar]

Table 3.1 MECHANICAL PROPERTIES OF 2L CO₂ CYLINDER

NOTE. The cylinders were stamped with the mark of conformity π.



4. MAINTANANCE

If the fixed CO2 cylinders are found to be in a very good condition at the 10 year interval, then the MCA will accept the hydrostatic test requirements specified in MSC/Circular 1318 paragraph 6.1.2, provided.

If any CO2 cylinders are found to be in a poor condition, (rusty, damaged, etc.), at the 10 year interval, then the MCA would insist that

Annual inspections (MSC/Circular 1318 paragraph 5) it is recommended that this is performed by persons specially trained in the maintenance of such systems, e.g. manufacturer or recognised service company.

Full maintenance (Circular 1318 paragraph 6) - should be performed by persons specially trained in the maintenance of such systems, e.g. manufacturer or recognised service company.

5. CERTIFICATION

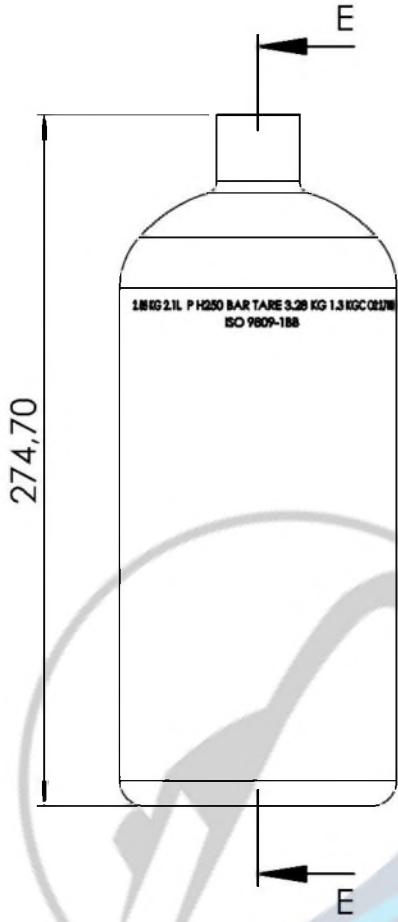
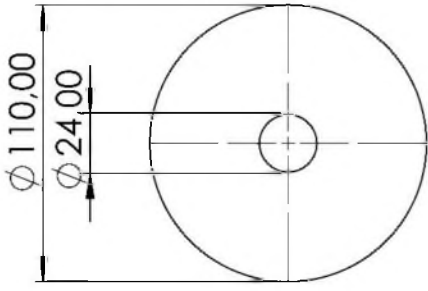
When it's necessary the following certificates can be issued :

- a. TYPE APPROVAL CERTIFICATE
- b. TÜV
- c. II CERTIFICATE
- d. INSPECTION CERTIFICATE'S (RUSSIAN MARITIME REGISTER of SHIPPING, BUREAU VERITAS, LLOYD'S REGISTER, etc.)

6. DIMENSIONS & TECHNICAL DRAWINGS

For detailed technical drawings please see following page.

2L CYLINDER



SECTION E-E

COMMENT: CO2 Cylinder comes fastened with related valve and filled. Please see Datasheet AL20-40009Rev01 for more detail.

NOTE: ALL DIMENSIONS ARE GIVEN AS MILLIMETERS

DRAWING NO:	POS. NO. 1A	PRODUCT NO: AL20-40009	DATASHEET: AL20-40009Rev00	PAGE A4
DESIGNED BY: ALI ARMAĞAN	CHEKED BY: ÇAĞLAR LATİFOĞLU	APPROVED BY: ERDİNÇ LATİFOĞLU	DATE: 09/09/2020	SCALE: 1:3
		PROJECT / PROUDUCT: 2L CO2 CYLINDER		
		WEIGHT: 3,7KG	METARIAL: 34crmo4	REVISION: Rev00

THE CYLINDER MANUAL INSTRUCTION OF USAGE AND EXPLOITATION

Seamless steel gas refillable cylinders are the pressure vessels designed and manufactured for a storage of compressed and liquefied under pressure gasses.

GENERAL RECOMENDATIONS

- I. It is necessary to know this manual instruction and to keep its requirements.
- II. Devices, which are mentioned in this manual instruction should be used according to their destination.
- III. The producer is not responsible for damages caused by faulty exploitation, usage, storage and maintenance of gas cylinders.
- IV. The usage, filling, maintenance, service and the repair of cylinders for compressed gasses should be made by qualified and the competent personnel only. The personnel should be properly trained and should be authorized in accordance with regulations valid in the country of usage.
- V. In case when cylinders are serviced or repaired by people who have no proper knowledge or authorization corresponding to regulations valid in the country of usage or if cylinders are use in the way, which is against the rules of application, the responsibility for the proper functioning will carry over to the user
- VI. Any changes in the cylinder design should be made only after receiving a written permission from a cylinder producer.
- VII. In the case when any fault or damage of a new product is found, then this product should be put away, preserved and the producer should be informed immediately.

USAGE

- I. The producer recommends the adaption of ADR European Agreement, which is related to the international transport of dangerous goods
- II. Containers, hampers, pallets or similar methods of cylinder transportation, which ensure avoiding of unacceptable damage and contamination should be used for transportation of cylinders.
- III. Valves protection devices (for example protection caps) should be obligatory used during the cylinder transportation
- IV. Dropping cylinders, uplifting cylinders with using valve, rolling it in a horizontal position is unacceptable during the transportation operations.
- V. Filling cylinders with a gas should be made only by companies or people who have proper authorizations issued according to regulations, rules and standards valid in the country of usage..

- VI. Cylinders should be equipped with, valve and connections with a recommended test pressure. Elements, connections and valve should have necessary approvals made according to regulations, rules and standards valid in the country of usage.
- VII. Valves should be fitted according to regulations, rules and standards valid in the country of usage.
- VIII. Sealing materials according to EN ISO 11114-2 Standard, should be used in order to seal a valve in cylinder neck. If it is necessary a producer recommends a usage of PTFE teflon tape with a min. thickness 0.1mm.

PRESERVATION AND STORAGE

- I. The storage of pressure cylinders, both filled or empty, is permitted under the roof only - cylinders should be protected against a direct exposure of harmful weather conditions (rain, snow, solar radiation etc.)
- II. Keep cylinders far from the open fire, protect them against a direct exposure of the aggressive environment and chemicals
- III. During the storage, cylinders should be protected against mechanical damage, falls and mechanical contamination.
- IV. Cylinders should not be kept in underground chambers, on stairs or close to stairs, in corridors, crossings and garages.

SERVICE

- I. To detect eventual outside damage, the producer recommends to carry out of a visual inspection during each cylinder filling.
- II. Cylinders should be submitted to systematic periodical inspections according to regulations, rules and standards valid in the country of their usage. Inspections should be carried out by authorities which supervise pressure devices in the country of usage according to rules and law regulations of particular country.

NOTES DEFINITLY IT IS FORBIDDEN TO USE CYLINDERS,

- I. IN OTHER PURPOSE THAN IT IS DETERMINED IN A VALID APPROVAL
- II. WHEN CYLINDERS HAVE EXCEED THE DATE OF THE NEXT INSPECTION
- III. WHEN CYLINDERS HAVE EXCEED THE DATE OF THE NEXT INSPECTION
- IV. WHICH HAVE VISIBLE FAULT, DAMAGE OF CYLINDER BODY, DAMAGE OF VALVES, CONNECTIONS AND OTHER DAMAGE
- V. WHICH HAVE DAMAGED OR LEAKING EQUIPMENT
- VI. TO MAKE OILING AND GREAINING OF VALVES AND OTHER PARTS OF CYLINDERS.



1. APPLICATION

In emergency, system activates audible and visual alarm.

2. INSTALLATION

The AL.20.405 audible and visual alarm must be located in accordance with the general arrangement drawings and the CO2 room arrangement drawing.

Please see your drawings and install device properly.



3. TECHNICAL PROPERTIES

For technical details please see table 3.1.

SOUND OUTPUT	12V dc: 103dB(A) 24Vdc: 101dB(a)
VOLUME CONTROL	10db(A)
ALARM TONES	32
SOUNDER CURRENT	12VDC: 110mA 24Vdc68mA
LIGHT OUTPUT	0.7J Xenon bulb
FLASH RATE	1 Hz
IP RATING	Ip54 (shallow) IP65(deep)
UNIT WEIGHT	0.33kg
TEMPERATURE RANGE	-10° C to +55° C
IP RATING	Ip54 (shallow) IP65(deep base)
BODY METARIAL	ABS, Polycarbonate lens
VOLTAGE	9-15Vdc (12Vdc version)
UNIT COLOR	RED/WHITE

Table 3.1, technical properties

4. MAINTANANCE

If any Audible alarm is found to be in a poor condition, (damaged, etc.), please contact manufacturer.

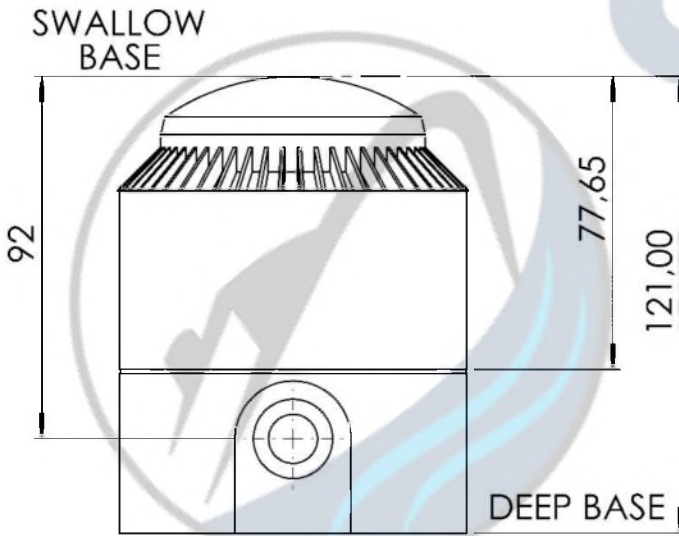
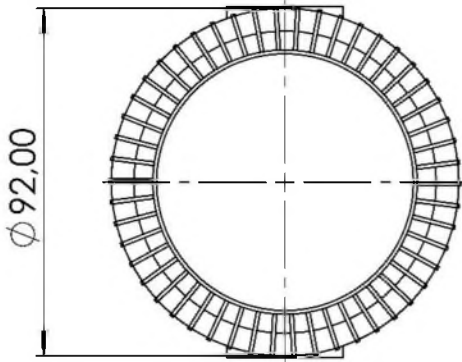
Annual inspections, it is recommended that this is performed by persons specially trained in the maintenance of such systems, e.g. manufacturer or recognised service company.

Full maintenance should be performed by persons specially trained in the maintenance of such systems, e.g. manufacturer or recognised service company.


5. DIMENSIONS & TECHNICAL DRAWINGS

Please see following pages for detaile dimensions and technical drawings.

AUDIBLE AND VISUAL ALARM



NOTE: ALL DIMENSIONS ARE GIVEN AS MILLIMETERS

DRAWING NO:	POS. NO. 70B	PROUDUCT NO: AL20-40057	DATASHEET: AL20-40057 Rev00	PAGE A4
DESIGNED BY: ALİ ARMAĞAN	CHEKED BY: ÇAĞLAR LATİFOĞLU	APPROVED BY: ERDİNÇ	DATE:020	SCALE: 1:2
		PROJECT / PROUDUCT: AUDIBLE AND VISUAL ALARM		
		WEIGHT: -	METARIAL: -	REVISION: Sapt20-Rev00



1. APPLICATION

A limit switch (fig 1.1) is a switch operated by the motion of a machine part or presence of an object.

Used for controlling machinery as part of a control system, as a safety interlocks.

A limit switch is an electromechanical device that consists of an actuator mechanically linked to a set of contacts. When an object comes into contact with the actuator, the device operates the contacts to make or break an electrical connection.



Figure 1.1

One limit switch is located in the release station, for possible emergency situations, when release stations cabinet doors open, switch activates alarms.

2. INSTALLATION

Limit switches comes assembled in release station.

Be sure the limit switch is not damaged.

End user is responsible for applying all safety precautions.

Please see fig2.1 or/and fig2.2 for sample of assembled limit switch.



Figure 2.1



Figure 2.2



3. GENERAL PROPERTIES

All necessary informations are given below at table 3.1.

GENERAL INFORMATION	
Contact	1NO + 1NC
Indiction Current (I_c)	3 A (240V AC)
Operating Tempurature	-25 to +80 °C
Isolation Resistance	10 M Ω (500 V DC)
Contact Movement	Impulse
U_i	500 V
U_{imp}	6 kV
Protection Rate	IP 65

Table 3.1 General information of limit switch 121

4. MAINTANANCE

If limit switch is found to be in a poor condition, (rusty, damaged, etc.), please contact manufacturer or recognised service company.

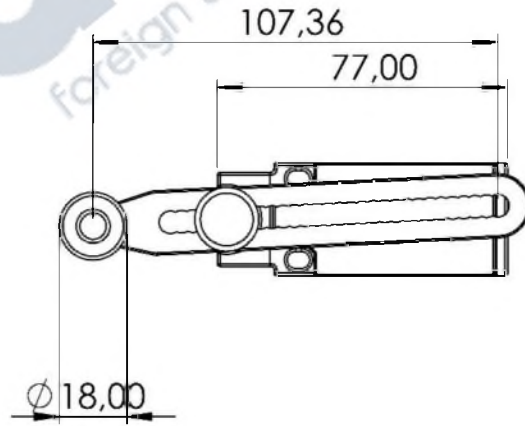
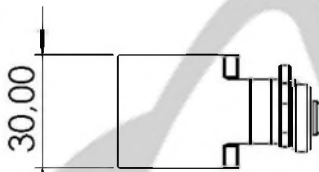
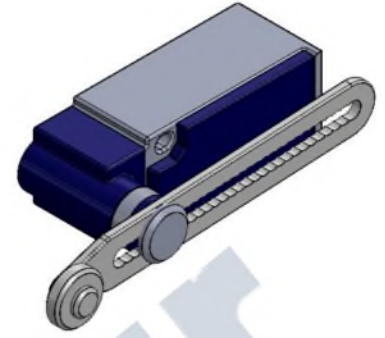
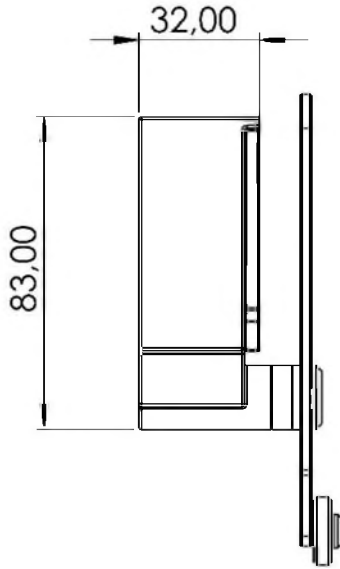
Annual inspections it is recommended that this is performed by persons specially trained in the maintenance of such systems, e.g. manufacturer or recognised service company.

Full maintenance should be performed by persons specially trained in the maintenance of such systems, e.g. manufacturer or recognised service company.

5. DIMENSIONS & TECHNICAL DRAWINGS

Please see following page for detailed technical drawings.

LIMIT SWITCH 122



COMMENT: LIMIT SWITCH 122 USED AT RELEASE STATION
NOTE: ALL DIMENSIONS ARE GIVEN AS MILLIMETERS

DRAWING NO:	POS. NO. 5_2	PROUDUCT NO: AL20-40030	DATASHEET: AL20-40030 Rev00	PAGE: A4
DESIGNED BY: ALİ ARMAĞAN	CHEKED BY: ÇAĞLAR LATİFOĞLU	APPROVED BY: ERDİNÇ LATİFOĞLU	DATE: 11/09/2020	SCALE: 1:2
		PROJECT / PROUDUCT: LIMIT SWITCH 122		
WEIGHT: -		METARIAL: -	REVISION: Sep20-Rev00	SHEET 1



1. APPLICATION

The manual valve (fig 2.1) is a valve that activates system manually by spinning valve on opposite of clockwise and you may off system by spinning onto valve clockwise..

2. INSTALLATION

Manual valve comes assamblend on required cylinders in usually release station however, depends on to the Project maybe use at CO2 room.

Always comes installed.

Be sure that there is not damaged on manual valve.

End user is responsible for applying all safety precautions.

Don not tightem by hand. Never spin by holding casing.

Use a spanner while mounting/dismounting.

See fig 2.2 for installed manual valve.

3. TECHNICAL PROPERTIES

Please see Table 3.1 below for thread specifications;

25EW21.8 DIN 477 -1/6 THREAD SPECIFICATIONS	
GAS INLET	25E
GAS OUTLET	W21.8X1/6
MEDIUM	CO2

Table 3.1 : Thread Specifications

4. MAINTANANCE

If manual valve is found to be in a poor condition, (rusty, damaged, etc.), please contact manufacturer or recognised service company.

Annual inspections it is recommended that this is performed by persons specially trained in the maintenance of such systems, e.g. manufacturer or recognised service company.

Full maintenance should be performed by persons specially trained in the maintenance of such systems, e.g. manufacturer or recognised service company.

5. DIMENSIONS & TECHNICAL DRAWINGS

Please see following page for dimensions and technical drawing



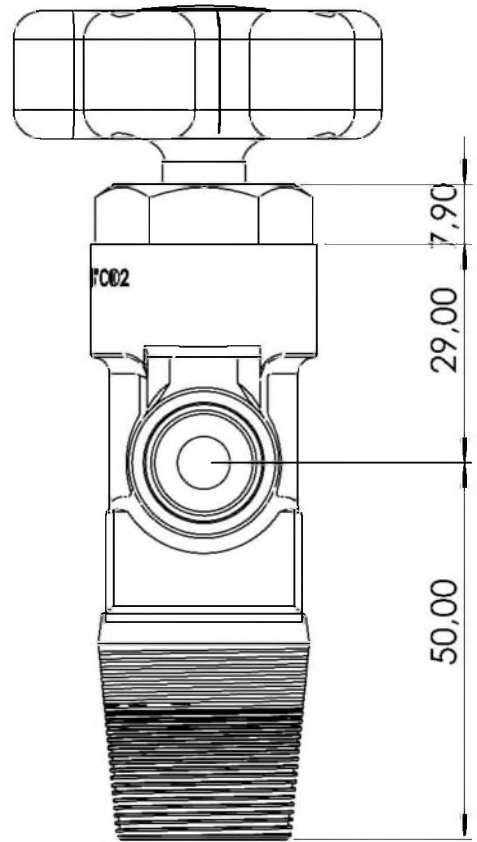
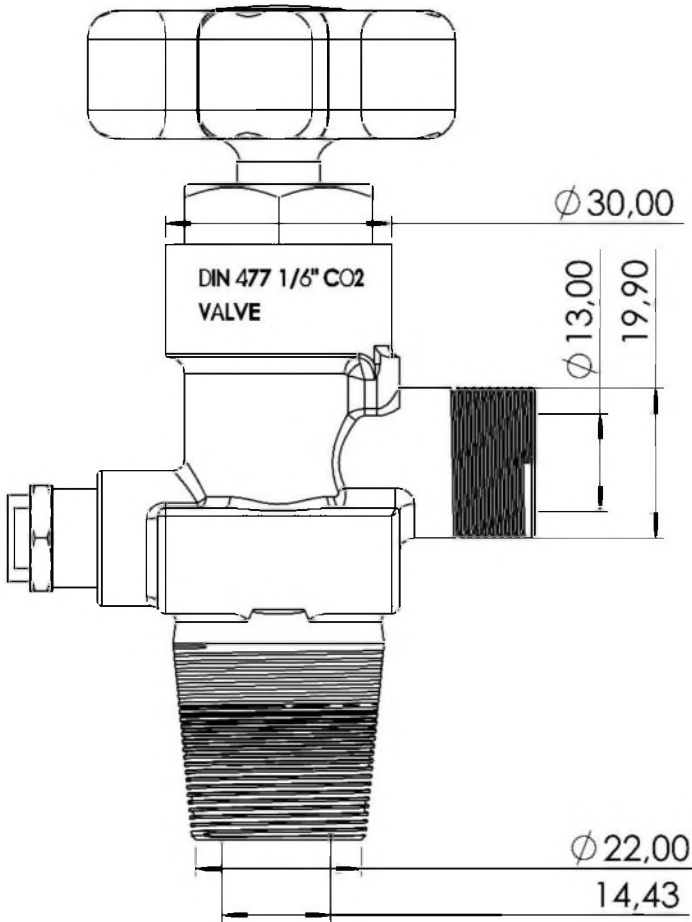
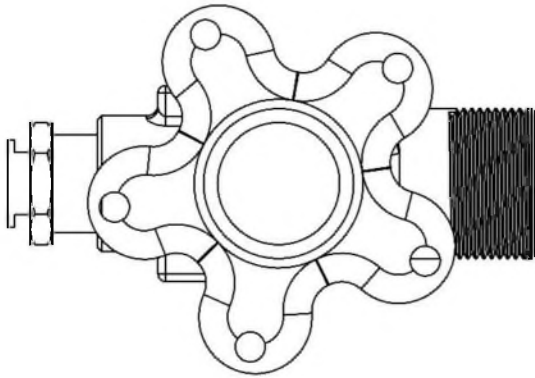
Figure 2.1



Figure 2.2


3/8" VALVE

MANUAL VALVE

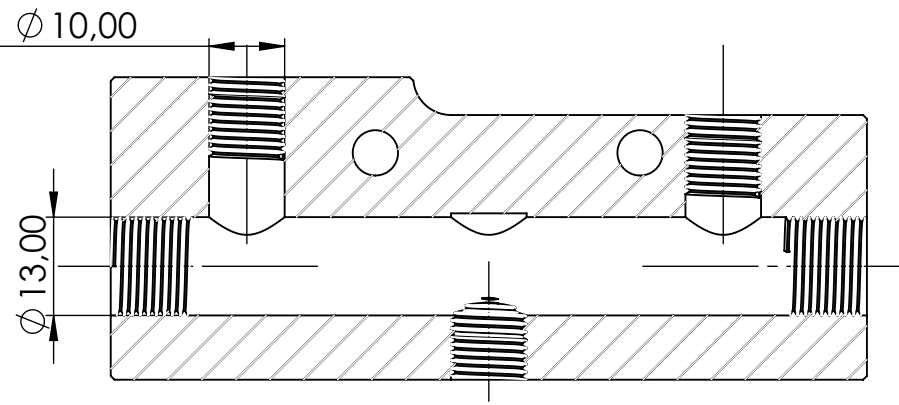
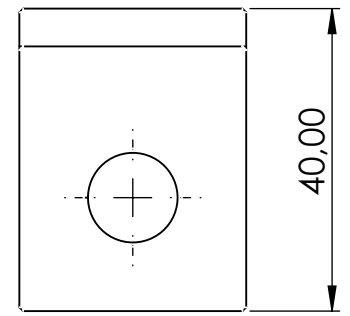
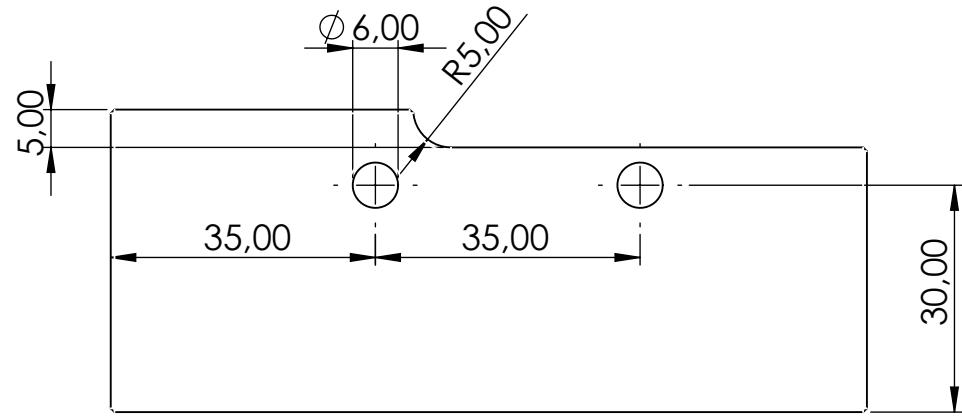
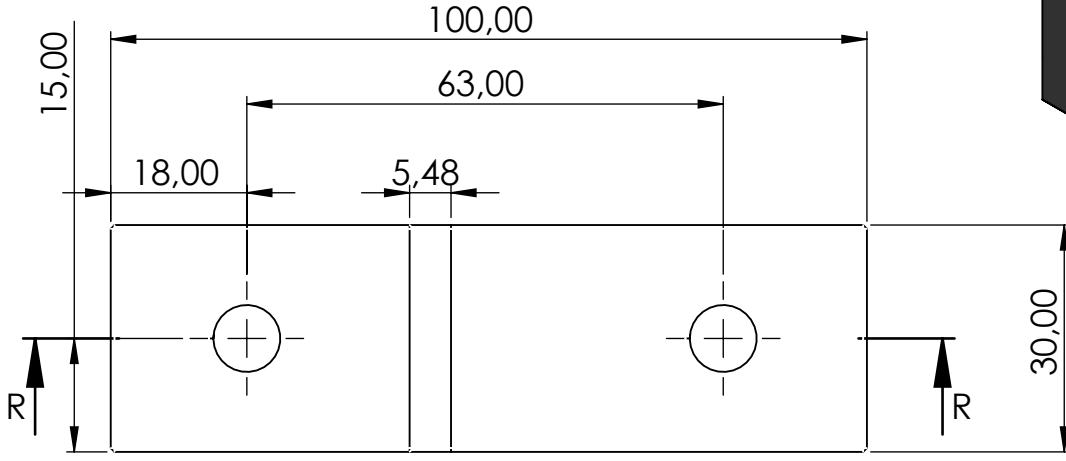
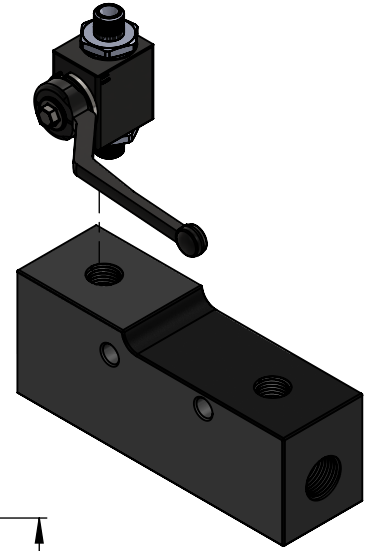


COMMENT: Manual valve comes fastened on related cylinder. Please see Datasheet AL20-40015Rev00 for more detail. BSPT (British Standard Pipe Tapered)

NOTE: ALL DIMENSIONS ARE GIVEN AS MILLIMETERS
25E W21.8 DIN477-1/6 CO2


DRAWING NO:	POS. NO. 5_4	PRODUCT NO: AL20-40069	DATASHEET: AL20-40069Sep20-Rev00	PAGE A4
DESIGNED BY: ALI ARMAĞAN	CHEKED BY: ÇAĞLAR LATİFOĞLU	APPROVED BY: ERDİNÇ LATİFOĞLU	DATE: 09/09/2020	SCALE: 1:1
 almar foreign trade limited company		PROJECT / PRODUCT: MANUAL VALVE		
		WEIGHT: 0,8KG	MATERIAL: BRASS	REVISION: Sep20-Rev00

2/2-1 MANIFOLD

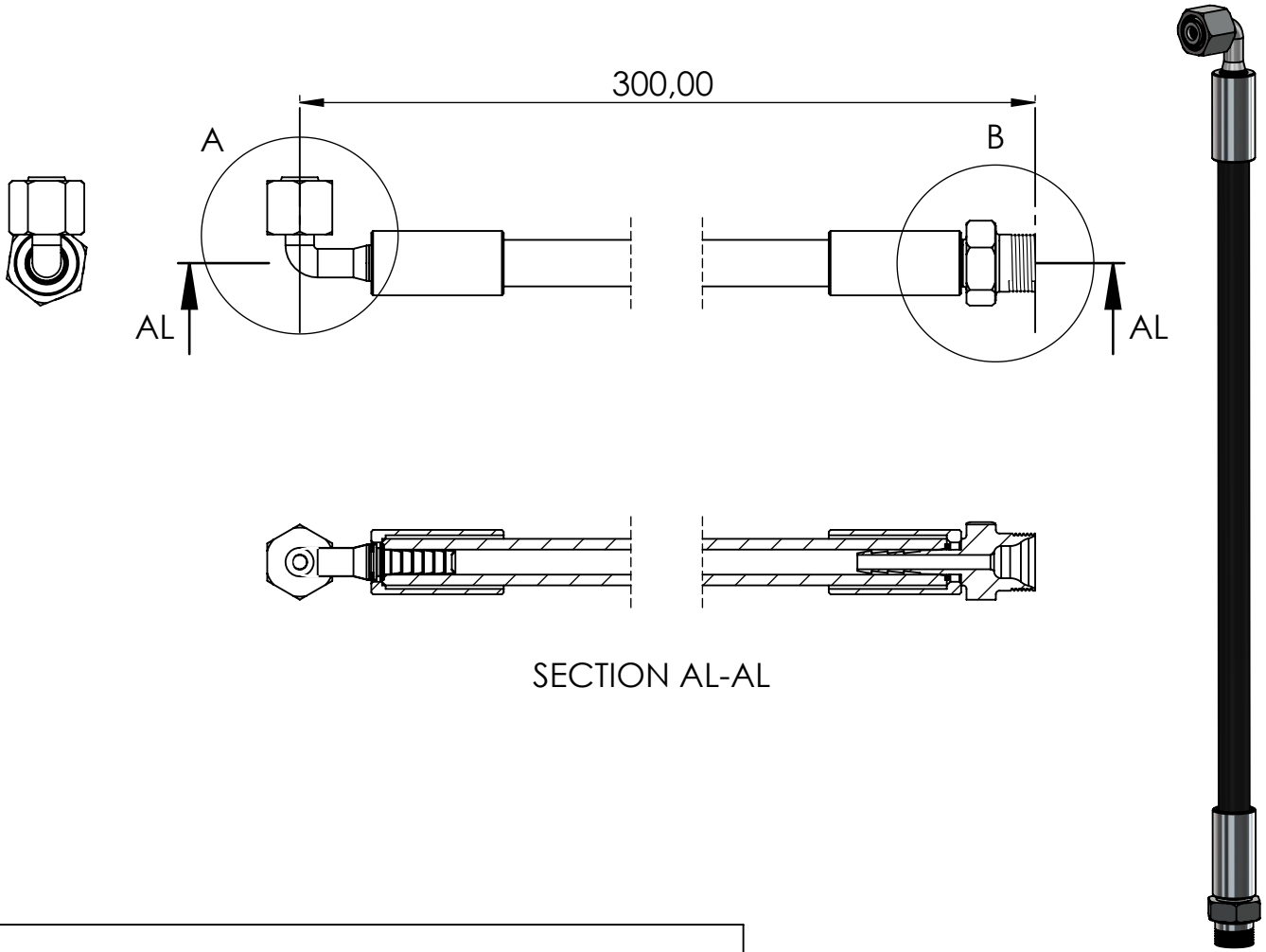


SECTION R-R

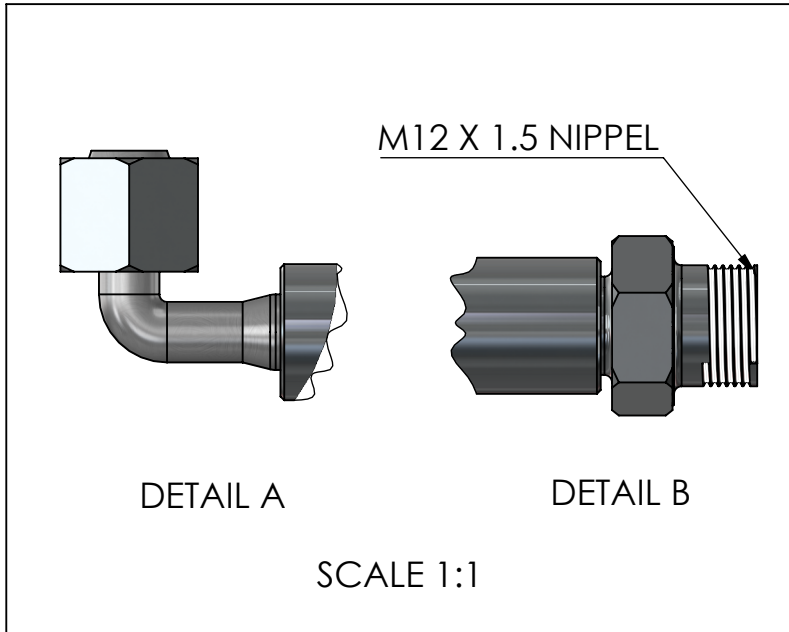
NOTE: ALL DIMENSIONS ARE GIVEN AS MILLIMETERS

DRAWING NO:	POS. NO. 5_1	PROUDUCT NO: AL20-40008	DATASHEET: AL20-40008 Rev00	PAGE A4
DESIGNED BY: ALİ ARMAĞAN	CHEKED BY: ÇAĞLAR LATİFOĞLU	APPROVED BY: ERDİNÇ LATİFOĞLU	DATE: 11/09/2020	SCALE: 1:3
		PROJECT / PROUDUCT: 2/2-1 MANIFOLD		
		WEIGHT: -	METARIAL: -	REVISION: Sept20-Rev00
				SHEET 1

300mm RELEASE STATION HOSE




SECTION AL-AL



AL20-40024 HOSE	
TYPE	1SN EN 853
MAINTANANCE	WITH COUPLINGS
NOMINAL DIAMETER	DN6
HOSE SIZE	1/4"
MAX WORKING PRESSURE	225 BAR
TEST WITH FITTINGS	150 BAR
TEMPURATURE RANGE	-40°C / +100°C

COMMENT: 300mm Flexible hose used at release station, Hose makes connection between cylinder and 2/2-1 MANIFOLD in release station.

NOTE: ALL DIMENSIONS ARE GIVEN AS MILLIMETERS

DRAWING NO:	POS. NO. 26A	PROUDCT NO: AL20-40024	DATASHEET: AL20-40024 Rev00	PAGE A4
DESIGNED BY: ALİ ARMAĞAN	CHEKED BY: ÇAĞLAR LATİFOĞLU	APPROVED BY: ERDİNÇ LATİFOĞLU	DATE: 18/09/2020	SCALE: -
		PROJECT / PROUDCT: 300mm Release Station Hose		
WEIGHT: -		METARIAL: -		REVISION: Sept20-Rev00
				SHEET 1