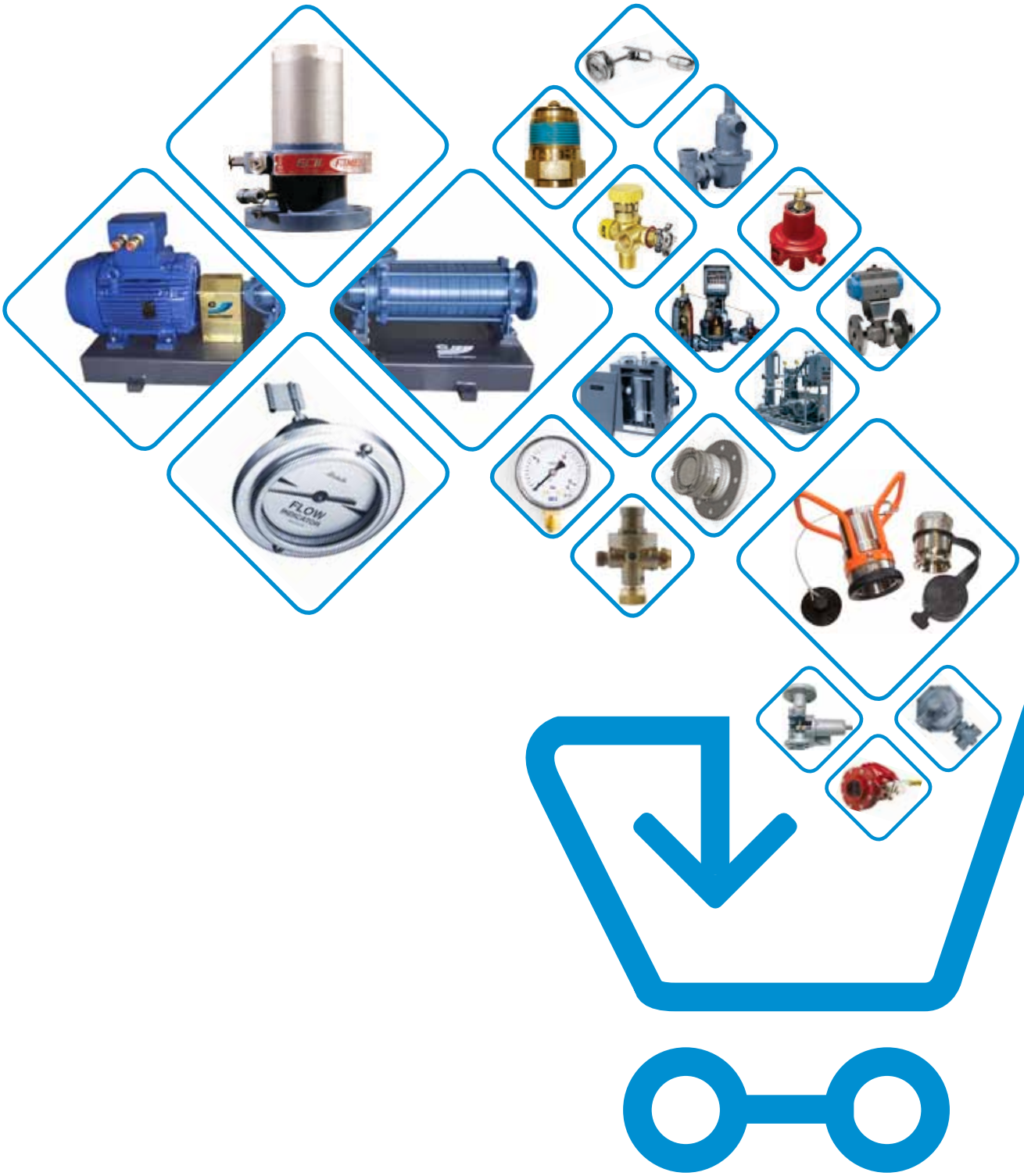
MAKEEN ENERGY

MAKEEN Gas Equipment

The one-stop shop for gas components



GAS COMPONENTS CATALOGUE

Corporate profile

Everything for your LPG business – anywhere in the world

The Kosan Crisplant name is renowned throughout the world of LPG – famous for integrity, reliability, technological excellence and our ability to meet even the most demanding client requirements.

We have committed ourselves to become your preferred supplier of quality products and services for your LPG business. Products, Systems, Contracting & Engineering and On-site Service– we cover the entire spectrum. All you need is just one supplier!

First class worldwide service

To accommodate our clients, in recent years we have strengthened our service organisation through an extensive – and growing –global service network. This network is handled directly by our service centres and service partners around the world. All staff has been trained by Kosan Crisplant to offer our clients the best service in accordance with local requirements and conditions.

Wherever you are, we are ...

The essence is closeness to the client by presence on the market. This way we are able to respond quickly and efficiently to all our clients' inquiries and so be your first choice business partner.

Local service centres

Our unique service concept gives our clients the advantages of face-to-face consultancy, when needed, visit on site and availability of spare parts and single machines in stock– in a Kosan Crisplant service centre near you!

Business Unit for Components and Parts International - CPI

To be sure that we are 100% focusing on your needs, we have created a new Business Unit taking care of supporting our local service centers. Our main goal is no other than to serve those who need to be served.

To constantly improve our service we have made this catalogue containing the most common components and parts.

"Your Needs Are Our Business"

Kosan Crisplant®

Contents

LPG Truck Equipment

Kosan Crisplant is able to offer LPG bulk transport trailers and bobtail delivery trucks as well as all necessary equipment and accessories that are needed for a safe and efficient operation.

In order to build a bobtail truck / trailer or simply make the necessary regular maintenance, several special products are needed. According to different countries or costumer specifications, you may need part of the bellow products:

- Internal valves and accessories
- Automatic internal valves for bobtail delivery trucks, transports and large stationary storage tanks
- Full Internal Pressure Relief Valves for bobtail delivery trucks and transport
- Level gauging bobtail delivery trucks and transports – Manual and Magnetic
- Globe Valves and Angle Valves – See chapter 3
- Ball Valves – See chapter 6
- Pumps for Bobtail delivery trucks and transport
- By Pass valves for bobtail delivery trucks and transports
- Filters – See chapter 3
- Excess Flow Valves – See chapter 2
- Check Lock – See chapter 2
- Hose end Valves
- Meters for bobtail delivery trucks and transports
- Reels
- Hoses – See chapter 3

The range Kosan Crisplant is offering is complete and matches several specifications and different demands from various markets. Nevertheless, if you do not find what you need on the following pages, we kindly ask you to contact us. We will do our best to provide the best solution for your need.

For proper support contact one of the KC offices closest to your location.

Internal Valves and Accessories

Application

Depending on size and capacity, they are installed on LPG bobtail delivery trucks, LPG transport trucks or even large stationary storage tanks, flanged pumps or piping. This kind of valves may close automatically when the flow is higher than a certain value or when the differential pressure of the pump unit drops drastically.

Internal valve operation may be manual, pneumatic or by cable. Pneumatic actuators work with pressurized air or Nitrogen from 3,44 bar to 10,34 bar and they are equipped with a thermal fuse for thermal protection.

The possibility of right or left lever on the 3" size allows easy installation without the need of extra pulley. On the cable application, a remote thermal release may be applied to ensure the closure of the valve in case of high temperature.

3" FLANGED INTERNAL VALVE FOR BOBTAIL DELIVERY TRUCKS, TRANSPORTS AND LARGE STATIONARY STORAGE TANKS

REGO Part Number		Lever position	Inlet connection	Outlet connection	LPG Closing flow (l/min)	Pneumatic actuator
Single flange body	Double flange body					
A3217FR160	A3217DFR160	Right	3" ANSI 300 RF modified flange *	3 " ANSI 300 RF Flange	605	A3217FPA
A3217FL160	A3217DFL160	Left				A3217FLPA
A3217FR210	A3217DFR210	Right			795	A3217FPA
A3217FL210	A3217DFL210	Left				A3217FLPA
A3217FR260	A3217DFR260	Right			984	A3217FPA
A3217FL260	A3217DFL260	Left				A3217FLPA
A3217FR410	A3217DFR410	Right			1551	A3217FPA
A3217FL410	A3217DFL410	Left				A3217FLPA

4" FLANGED INTERNAL VALVE FOR TRANSPORTS AND LARGE STATIONARY STORAGE TANKS

REGO Part Number	Inlet connection	Outlet connection	LPG Closing flow (l/min)	Pneumatic actuator	Remote thermal release
A3219FA400L	4" ANSI 300 RF modified flange **	4" ANSI 300 RF flange	1514	A3219FPA	A3219RT(2)
A3219FA600L			2271		

* *(Modified bore - 4 5/8" diameter with 5 3/4" diameter raised face)*
** *(Modified bore - 5 7/8" diameter with 7" diameter raised face)*

A3217FPA on A3217FR Single Flange Valve

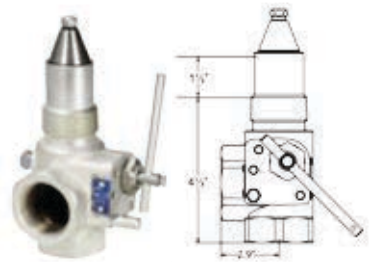
A3217FPA

A3217 FR Series

A

Internal Valves and Accessories

1 ¼" THREADED INTERNAL VALVE FOR SMALL CAPACITY PUMPING SYSTEMS AND BOBTAIL VAPOR EQUALIZATION							
Rego Part Number	**Inlet connection**	**Outlet connection**	**LPG Closing flow (l/min)**	**Propane Vapour Capacity (m3/h)**		**Thermal Latch**	**Pneumatic Actuator**
				@1.72bar	**@6.89bar**		
A3209D050	1 ¼"		189	376	648	A3209TL	A3209PA
A3209D080			302	444	756		A3209PAF
A3209DT050			189	376	648		
A3209DT080			302	444	756		



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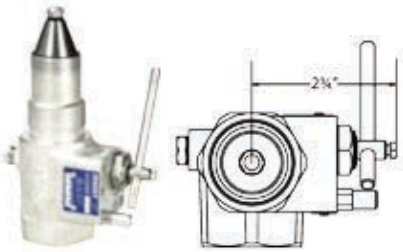


A3209DT

3" THREADED INTERNAL VALVE FOR BOBTAIL DELIVERY TRUCKS, TRANSPORTS AND STATIONARY STORAGE TANKS														
Rego Part Number	**Connections (NPT)**		**Closing flow (l/min)**		**Propane Vapour Capacity (m3/h)**		**Aproximate Dimensions (mm)**						**Accessories**	
	Inlet M	**Outlet F**	**Half coupling**	**Full coupling**	**@1.72bar**	**@6.89bar**	**A**	**B**	**C**	**D**	**E**	**F**	**Thermal Latch**	**Pneumatic Actuator**
A3213R150	3"		567	473	-	-	38	149	108	-	-	181	A3213TL	A3213PA
A3213R200			757	605	1248	2127								
A3213R300			1135	946	1639	2562								
A3213R400			1514	1230	2021	3434								
A3213RT150			567	473	-	-	38	202	108	98	114	89		
A3213RT200			757	605	1248	2127								
A3213RT300			1135	946	1639	2562								
A3213RT400			1514	1230	2021	3434								

2" THREADED INTERNAL VALVE FOR BOBTAIL DELIVERY TRUCKS, TRANSPORTS AND STATIONARY STORAGE TANKS						
Rego Part Number	**Connections (NPT)**		**Closing flow (l/min)**		**Accessories**	
	Inlet M	**Outlet F**	**Half coupling**	**Full coupling**	**Thermal Latch**	**Pneumatic Actuator**
A3212R105	2"		397	246	A3213TL	A3213PA
A3212RT105						
A3212R175			662	378		
A3212RT175						
A3212R250			946	492		
A3212RT250						

A3213R

A3212R

A

Automatic Internal Valves for Bobtail Delivery Trucks, Transports and Large Stationary Storage Tanks

Application

They may be used on bobtail delivery trucks, transports or large stationary tanks.The operation of this kind of valve is fully automatic as the opening or closing is synchronized with pump on/off position using the built-in differential pressure.

In case of excess flow, causing extreme decrease of pump differential pressure, the valve will close. Main advantages of using this kind of valve are: improper sizing of excess flow valve is eliminated, elimination of operator's errors, cable problems never occur, easily built-in filter, no need of cables or air lines checking, etc.

This kind of valve has built-in visual indicator in order to recognize if the valve is open or closed.

A783FK

A

FLOMATIC INTERNAL VALVE FOR BOBTAIL DELIVERY TRUCKS, TRANSPORTS AND LARGE STATIONARY STORAGE TANKS								
Rego Part Number	**Inlet connection**	**Outlet connection**	**Strainer width (mm)**	**Base Width (mm)**	**Height (mm)**	**Height from indicator to base (mm)**	**Included accessories**	
							Filter	**3-way valve**
A7883FK	3"–ANSI 300 *	3" – ANSI 300	120	209	276	122	A7884-201	A7853A
A7884FK	4"–ANSI 300 **	4" –ANSI 300	146	254	285	125		

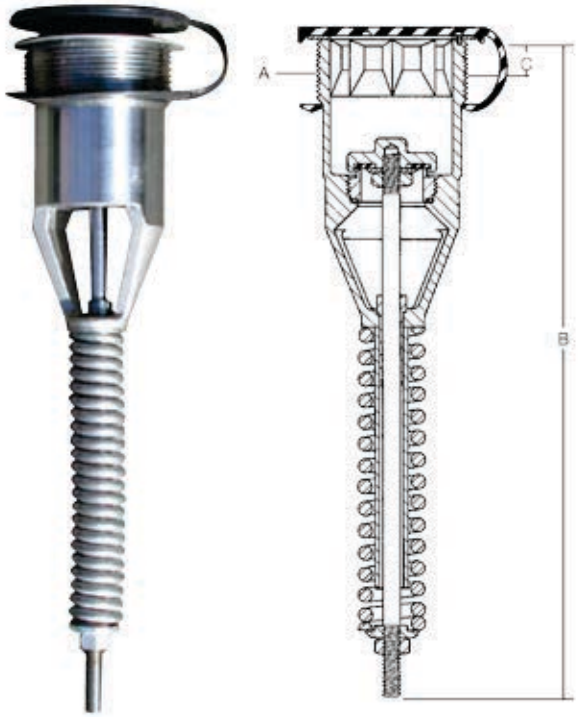
* *(With 4 13/16" diameter bore)*
** *(With 5 13/16" diameter bore)*

Full Internal Relief Valves for Bobtail Delivery Trucks and Transports

Application

They are installed as primary relief valves on bobtails or transport trucks. In this case, relief valves should be fully installed internally to the container (full internal relief valve), this means that all parts of the valve such as spring, guide, etc. are located below the container connection in order to reduce the risk of damage.

The valve can be installed or removed using an octagonal wrenching broach. The main advantage compared to ordinary relief valves is the Pop-Action design that permits the slight opening when there is a moderate pressure increase and a full "pop" opening when there is a pressure increase beyond a predetermined point. Trucks normally use some other small PRV. For other models of pressure valves consult Section C.



A8434-SERIES

Rego Part Number	Start to discharge setting (bar) (Approx.)	Container connection A	Approximate dimensions (mm)		Air flow capacity at 120% of set pressure (m3/h) *		Application up to surface area** (Approx.)	Protective cap Included
			B	C	UL	ASME		
A8434N	18,27	2" M NPT	230	12,70	104	103	16	A8434-11B
A8434G	17,24					97		
A8436N	18,27	3" M NPT	454	19,05	289	271	55	A8436-11B
A8436G	17,24							

* *Other settings under request*
** *According NFPA Pamphlet #58, Appendix D. Surface area is for UL or ASME flow rate – whichever is large*

A

Level Gauging - Manual & Magnetic

Application of Manual Gauging

Assures accurate information about LPG level inside the tank.

They can be installed in end or side mounting position depending on model / tank size with ¾" or 1" male adapter.

During measuring operation, the vent valve must be open and the dip tube should be rotated slowly from the vapor side of the storage tank to the liquid side.

The liquid discharge informs that the liquid was reached by deep tube. At this point, dial indicates the level of liquid.

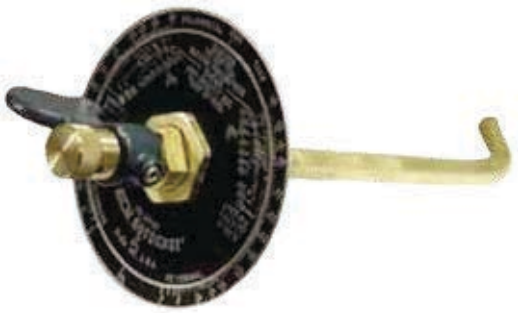
A compensation temperature scale is printed on the dial in order to avoid over filling

Rego Part Number		Inside diameter limits (mm)			Tank connection	Dial
For mobile or stationary tanks	For stationary tanks	Ellipsoidal heads		Hemispherical heads		
		Side mounted	End mounted	Side & End mounted		
9091RM24	-	762-1143	762-1905	762-1143	1"	A9091-18L – All sizes A9001-18LX – Over 4,6m3
9092RM36	-	1168-1549	1930-2743	1168-1549		
9093TSM48*	9093RSM48	1574-2006	2768-3733	1574-2006		
9094TSM60*	9094RSM60	2032-2514	-	2032-2514		
9095TSM72*	9095RSM72	2540-3733	-	2540-3733		
+2070CO		-		1016	¾"	Included
+2070CO				1524		

9090 series – Dip tube must be cut at the length of ½ ID – 146,05mm
2070 series - Dip tube must be cut at the length of ½ ID – 12,70mm when center line mounted
** - Supported design*

A

Rotogage® Assembly



2070 Series

Another way of measuring the level of LPG inside the container is by using the vent valves.

This kind of accessory is normally used in order to realize when the liquid reaches the maximum allowable level by attaching the vent valve to a fixed and predetermined length of dip tube.

When liquid appears (bleed), the filling operation should be stopped immediately.

Rego Part Number	Connection	Warning name plate
3165C	¼" M NPT	2550-40P
3165S		
TSS3169		

3165C

3165S

TSS3169

Level Gauging Bobtail Delivery Trucks and Transports - Manual & Magnetic

Application of Magnetic Gauging

By using a float it is possible to have permanent information about liquid level inside the tank.

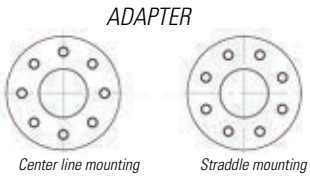
The transmission from the mobile parts to the dial is made by magnetic coupling, this means that there is no mechanical connection between the dial pointer and the parts inside the tank, which makes it possible to exchange a damaged dial by a new one without the need of gas evacuation.

Dial should have compensation scale for temperature and different density of the LPG.

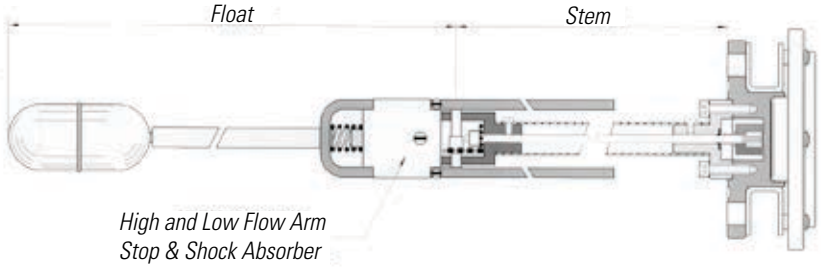
For mobile application, a spring shock absorber is used to eliminate the vibrations. For correct sizing it is necessary to provide: (i) internal and external tank diameter (ii) riser dimension (iii) mounting position (iv) typical pressure and temperature.

Mounting

Information about mounting position is required: In case of straddle mounting order add a suffix "X" to the model number.



Part Number	Mounting	Dial (5 to 95%)	Head	Support center shaft Float arm	Counter balance	Magnet	Gears	Gasket	Applications
M633911	Side, End Angle up to ±45°	100mm	SS	SS	Cadmium plated steel	AlNiCO	SS	Teflon Filles 304 SS Spiral wound	LPG and others
M634211									



High and Low Flow Arm Stop & Shock Absorber

A

Level Gauging Bobtail Delivery Trucks and Transports - Manual & Magnetic

Replacement of Rotogage

A magnetic gauge version is available, too, for substitution of the manual rotary dip tube gauge described earlier. In this case, there is a thread 1" NPT adapter that may be connected to the tank.

The dial is supplied with 100 mm dial. Depending on the application, aluminium and stainless steel constructions are available for stationary tanks up to 2200mm diameter.

Tank diam.	Aplication	Model	Head&Body, Gear Housing	Float bulb	Gasket
300-2000	Stationary	P6293	Aluminium, Plastic	Nitril rubber	Buna-N
2001-2200	Stationary	P6493	Stainless Steel	Stainless Steel	Teflon/St. St
300-1500	Mobile	P6493	Stainless Steel	Stainless Steel	Teflon/St. St.

P6293

A

Pumps for Bobtail Delivery Trucks and Transports

Application

The most well-known pump application on bobtails or transport trucks is the vane type as this is specifically designed to operate on the very demanding conditions such as high differential pressure, pump overspeeding, poor suction conditions and the high loads from PTO systems that, anyway, may be avoided in case of hydraulic motor installation.

Furthermore, depending on each location, specific conditions may occur, such as long distances, big level differences between truck pump and tank as well as important flow restrictions on the filling valves. Appropriate vane pump selection will overcome these restrictive piping arrangements.

Factory adjusted internal pressure relief valve allows to keep capacity at differential pressures, and the setting should not be changed. Easy mechanical seal replacement and long life of auto adjusted vanes make the maintenance simple

Part Number		**Corken Coro-Vane® Z Series Pumps**		
Model		**Z2000**	**Z3200**	**Z4200**
Inlet		**2" NPT**	**3" ANSI 300**	**4" ANSI 300**
Outlet		2"		
		NPT	NPT EII	Dual NPT
Max RPM		800		
Temp.	Min.	-32 °C		
	Max.	107 °C		
Max. Working Pressure		28.6 bar		
Max. Differential Pressure		8.6 bar		
Outlet Flange Option		No	Yes	No
Internal Relief Valve		Yes		
Steel Slip-on flange option				

Pump Speed (RPM)	**Differential Pressure (bar)**	**Approximate flow capacity (l/min)**	**Motor required**	**Pump Torque Required (N.m)**
Z2000				
500	3.45	197	1.4	27.7
500	6.89	174	2.9	55.3
600	3.45	238	1.7	27.7
600	6.89	208	3.5	55.3
650	3.45	261	1.9	27.7
650	6.89	231	3.8	55.3
750	3.45	303	2.2	27.7
750	6.89	265	4.3	55.3
Z3200				
500	6,89	235	4,3	82,6
500	3,45	265	2,8	54,1
600	6,89	288	5,9	87,9
600	3,45	326	3,7	56
650	6,89	318	6,1	89,9
650	3,45	360	3,9	57
750	6,89	3,75	7,4	94
750	3,45	424	4,6	58,9
Z4200				
500	6,89	787	12,4	237,3
500	3,45	893	6,2	118
600	6,89	961	14,8	237,3
600	3,45	1094	7,3	118
650	6,89	1052	16,1	237,3
650	3,45	1196	8	118
750	6,89	1230	18,6	237,3
750	3,45	1397	9,3	118

Z2000

Z3200

Z4200

Approximate flow capacities based on vapor equalizing propane systems without pressure loss in pump suction piping. Restrictions in suction piping such as valves and elbows, missing vapor line (or restriction) or temperatures lower than 21°C will decrease the capacity. The decrease of capacity is related to thermodynamic characteristics of LPG.

A

Bypass Valves

Application

Bypass valves are typically used to protect the pump by returning the LPG to the tank when there is a pressure increase.

Depending on size, flow capacity, setting and application, there are several models that may be applied.

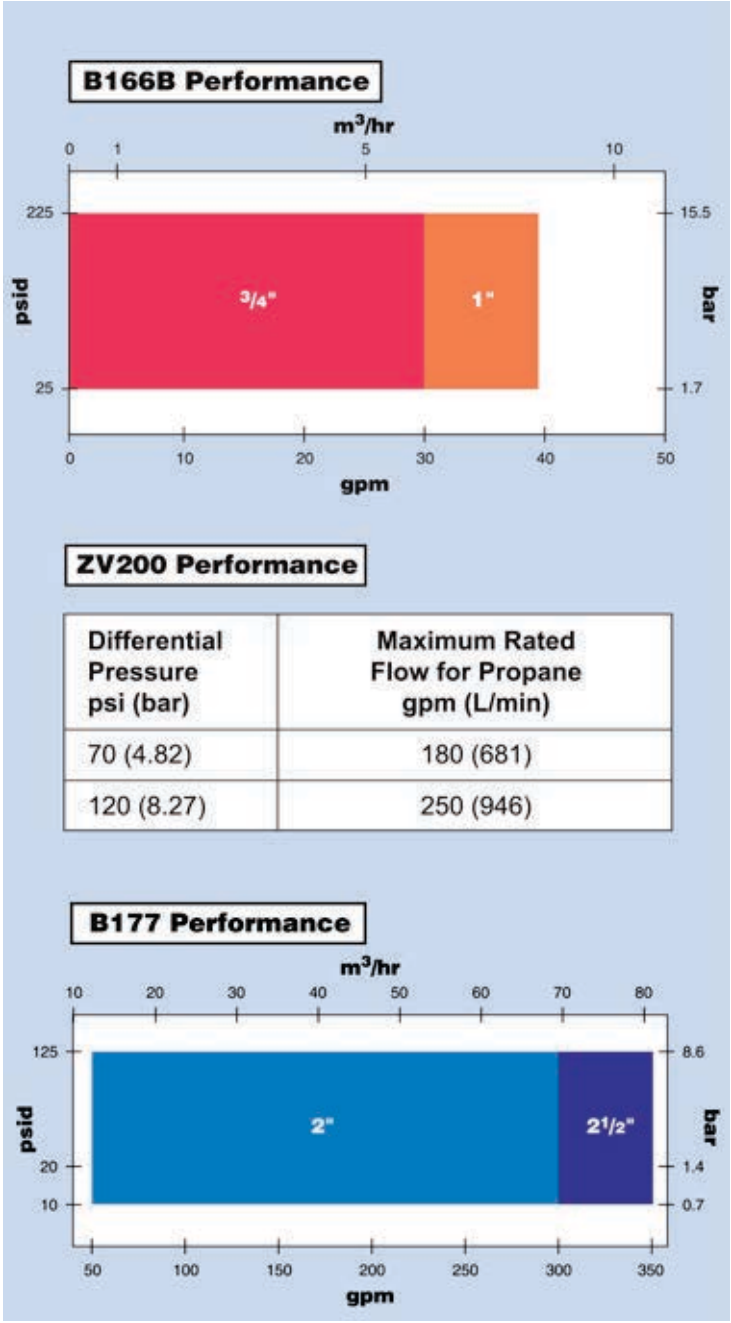
Setting of the pressure should be possible by the adjustment of different springs. Some models may require pressure sensor line.

Corken bypass valve	B166B	T166	ZV200	B177
Inlet	¾"; 1"	1 ¼"	2" (standard)	2", 2 ½"
Outlet		1 ½"		
Slip-on flange option	No	No	Yes	
Differential pressure range (bar)	1.7 – 15.5	1.7 – 15.5	2.8-10.3	0.7-8.6
O-ring options	Buna N (others on request)			

B166B

ZV200

B177



A

Hose end Valves

Application

Hose end valves are installed at the end of the hose to create the connection to the tank filler valve.

Being specially designed to minimize the product loss on each filling operation, they are able to open fully when the handle is flipped and shut off instantaneously the opposite way. 360º rotation handle, lock handle feature and easy grip of the filling connector ensure friendly use and high safety standards.

Rego Part Number	Body	Connections (Female)		Locking Handle	Cv* @ 0.069bar (l/min) Propane	Filling connectors		
		Inlet	Outlet			Extended	Compact	
						Steel	Brass	Steel
A7793A	Angle	¾"	1 ¾"	Yes	60.5	-		
A7797A		1"						
A7707L	Globe	1"			68.1	A7575L4	3175A	A3175A
A7708L	Angle				83.3			

** - To obtain flow rate for pressure drop values other than 0.069, multiply CV by square root of desired pressure drop x 14.5.*

A7708L

A7707L

A

Meters for Bobtail Delivery Trucks and Transports

Application

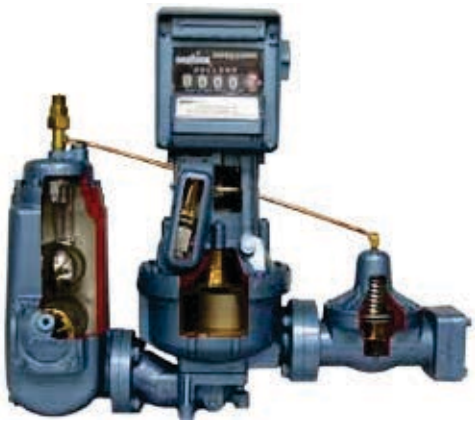
LPG meter systems are necessary to measure the quantity of gas delivered by the bobtail or bulk transport trailers to each location.

Apart from the meter itself, the system is usually completed with filter, air release, differential valve and a register (mechanical or electronic).

In some cases the temperature compensation as well as a printing device may also be added. All meters used for legal metrology or deliveries must be controlled by the local Standards Department.

TECHNICAL DATA	
Specification	2" 4D-MT (LPG meter)
Flow rate	76 to 380 l/min
Working temperature	-23°C to 52°C
Max. working pressure	24 bar
Inlet connection	Inlet check valve 2" NPT
Outlet connection	Companion flange for 11/2" or 2" NPT
Units of measure	Liter, US Gallon or Gallon
Reset wheel capacity	99.999 liter or 9.999,9 gallon
Printing wheel capacity	99.999 liter or 9.999,9 gallon
Totalizer capacity	99.999.999 liter or 99.999.990 gallon
Temperature compensation	Range from -23°C to 52°C compensation to 15°C
Register type	831 & 841* – Mechanical - Register + resettable register 833 & 843* – Same as 831 & 841 + Printer E4000 – Electronic register
Materials	Strainer – Mesh 80 stainless steel Housing – Aluminum Measuring chamber – Bronze Piston – Nituff® Teflon® impregnation coating Dynamic seals – Buna N Static seals – Buna N

83x Series – Gallon
84x Series - Liter



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LPG Tank Equipment

Kosan Crisplant is able to offer the necessary LPG tank accessories and equipment needed for a safe and efficient operation.

In order to manufacture an above ground or underground LPG tank or simply make the necessary regular maintenance, several special products are needed to operate with LPG.

According to different country or customer specifications, you may need part of the products:

- Pressure Relief Valves
- Check Locks
- Back Pressure Check Valves
- Filler Valves
- Vapor Equalizing Valves
- Excess Fflow Valves
- Multivalves
- Magnetic Level Gauging
- Liquid Withdraw Valves
- Combination Valves

The range Kosan Crisplant is offering is complete and matches several specifications and different demands from various markets. Nevertheless, if you do not find what you need on the following pages, we kindly ask you to contact us. We will do our best to provide the best solution for your need.

For proper support contact one of the KC offices closest to your location.

Pressure Relief Valves

Application

There are different types of constructions of relief valves for different uses and according to local regulations or customer specifications. In general, LPG relief valves are used to prevent over-pressure of the tank, piping lines or shut-off valves when there is a possibility of uncontrolled pressure increase.

With regard to construction, versions for internal tank installation or alternatively for external installation are available. The external version requires protection from physical damage as all components are outside the tank. In some cases, pipe-away adapters with break-off groove may be applied in order to prevent any stress on body valve in case of bending.

In order to facilitate the maintenance of LPG tanks with external valves, sets of relief valve plus check devices are available. This kind of solution makes it possible to take out the relief valve for inspection without the need of tank evacuation. (This operation may be carried out by qualified people, only).

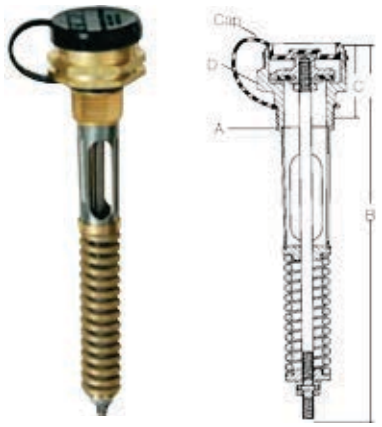
Relief valves manifolds are available for 2, 3 and 4 units. The main advantage is the possibility of replacement / service of any of the valves without the need of tank evacuation or increase of capacity when using more than one valve in service.

All relief valves described below incorporate the Pop-Action design that allows the slight opening when there is a moderate pressure increase and a full "pop" opening when there is a pressure increase beyond a predetermined point.

INTERNAL RELIEF VALVES

Rego Part Number	Start to Discharge Setting Barg ****	Container connection A (M. NPT)	Approximate dimensions (mm)			Air flow capacity at 120% of set pressure (m3/h) *		Application up to surface area (m2) **	Accessories	
			B	C	D (Wrench)	UL	ASME		Protective Cap	Pipeaway Adapter
7583G	17,24	3/4"	208	36	44	3.364	3068	7.43	7583-40X	-
8684G		1"	238	39	48	4.451	4358	10.5	8684-40	
8685G		11/4"	281	43	70	7.450	6855	19.7	7585-40X	
7534B	8.62	2"	511	79	90	10.236	-	29.6	7534-40*	7534-20***
7534G	17.24					19.835	17.707	65.8		

** - Flow rates shown are for bare relief valves. Adapters and pipes-aways will reduce flow capacity.*
*** - According to NFPA Pamphlet #58, Appendix D. Surface area is for UL or ASME flow rate – whichever is larger. Flow rates shown are for bare relief valves. Adapters and pipe-aways will reduce flow rates*
**** - 3" F.NPT outlet connection*



7583

7534

Pressure Relief Valves

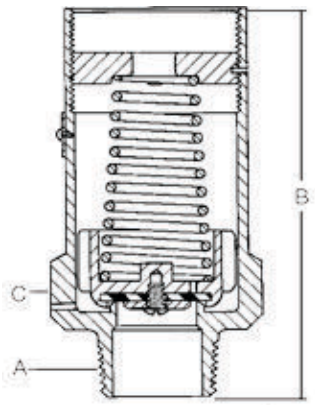
EXTERNAL RELIEF VALVES											
Rego Part Number	**Start to Discharge Setting Barg ++**	**Container connection A (M. NPT)**	**Approximate dimensions (mm)**		**Air flow capacity at 120% of set pressure (m3/h) ***		**Application up to surface area (m2) *** **	**Accessories**			
			B	**C (Wrench)**	**UL**	**ASME**		**Protective Cap**	**Pipeaway Adapter**	**Outlet Size (F.NPT)**	**Weep Hole Deflector**
A3149L050	3.44	2 1/2"	266	104	4.417 **	-	10.49	3149-40	Outlet 3 ½"-8N (F) thread accepts 3"M. NPT pipe thread		Included
A3149L200	13.79				14.900 (C) **	-	46.45				
3131G	17.24	3/4"	87	44	3.499	3.294	7.89	3131-40+	-		
W3132G		1"	153	60	5.674	-	14.31	3132-54+	3132-10	1 1/4"	3133-11
3132G		1 1/4"			7.016	-	18.58		-		
T3132G					6.439	-	16.72		3132-10	1 1/4"	
MV3132G					6.787	-	17.65		-		
3135G			143	68	9.803	-	27.87	3135-54+	3135-10	2"	
3133G		1 1/2"	150	79	10.329	-	29.73	3133-40+	3133-10		
A3149G		2 1/2	266	104	17.652	15.551	56.95	3149-40+	Outlet 3 ½"-8N (F) thread accepts 3"M. NPT pipe thread		Included

+ - Cap supplied with chain
++ - Other settings on request
** - Flow rates shown are for bare relief valves*
*** - Not UL or ASME rated. Rated @ 120 of set pressure by ECII ®*
**** -According NFPA Pamphlet #58, Appendix D. Surface area is for UL or ASME flow rate – whichever is the larger. Flow rates shown are for bare relief valves. Adapters and pipe-aways will reduce flow rates*

3135-10

3135

3135-10



3135-10

AA3135

3132-10

W3132G

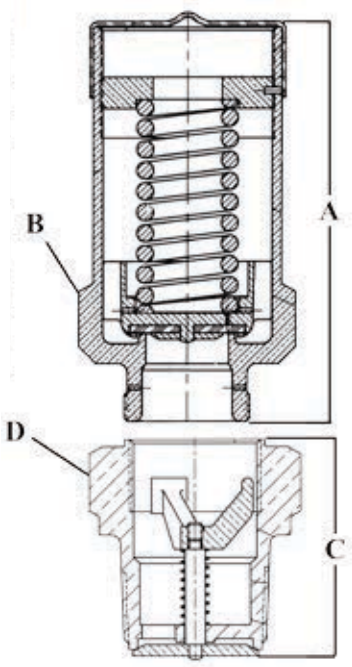
B

Pressure Relief Valves

PRESSURE RELIEF VALVES & CHECK DEVICES						
Rego Part Number	**Start to Discharge Setting Barg *****	**Used on Check Device**	**Relief Valve Inlet Connection**	**Overall Height "A"**	**Wrench Flats "B"**	**Flow Rating w/ Check Device m3/min (air)**
RS3131b15.7	15.7	CD31	3/4" M. NPSM	85 mm	46 mm	48.9*
RS3131b17.2	17.2					51.9*
RS3131b17.65	17.65					53.1*
RS3132b15.7	15.7	CD32	1" M. NPSM	129 mm	60 mm	70.1*
RS3132b17.2	17.2					77.5*
RS3132B17.65	17.65					
RS3135b15.6	15.6	CD35	1 1/4" M. NPSM	141 mm	68 mm	123*
RS3135b17.2	17.2					118*
RS3136b16	16	CD36	M36x2 Metric M.	135 mm	60 mm	69.4**
RS3136b17	17					77.4**
RS3136b18	18					87.0**
RS3145b17	17	CD45	M45x2 Metric M.	139 mm	68 mm	182.7**

** -Rated at 110% of set pressure*
*** - AFNOR rated at 110% of set pressure*

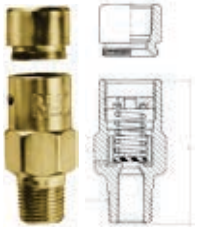
Check Device Part Number	**Connections**		**Approximate dimensions (mm)**	
	Container (M.NPT)	**Inlet (F)**	**C**	**D**
CD31	1 ¼"	¾" NPSM	59	46
CD32		1" NPSM		
CD35	2"	1 ¼" NPSM		62
CD36	1 ¼"	M36x2 Metric	58	52
CD45	2"	M45x2 Metric	59	62



Pressure Relief Valves

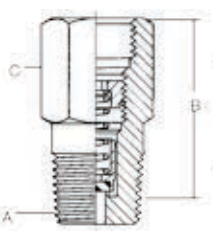
EXTERNAL HYDROSTATIC RELIEF VALVES							
Rego Part Number	**Start to Discharge Setting Barg**	**Body Material**	**Container connection A (M. NPT)**	**Approximate dimensions (mm)**		**Accessories**	
				B	**C (Wrench)**	**Protective Cap**	**Pipeaway**
							Adapter or threads
SS8001G	17.24	Stainless Steel	1/4"	22	17	-	-
SS8002G			1/2"		22		
SS8021G			1/4"	35	17		¼" NPSM Thrds
SS8022G			1/2"		22		3/8" NPT Thrds
3127G		Brass	1/4"	50		7545-40	-
3129G			1/2"	65	28		3129-10*
3127H	18.96		1/4"	50	22		-
3129H			1/2"	65	28		3129-10*
3127P	20.68		1/4"	50	28		-
3129P			1/2"	65	28		3129-10*
SS8022P		Stainless Steel		35	22	-	3/8" NPT Thrds
3127J	24.13	Brass	1/4"	50	22	7545-40	-
3129J			1/2"	65	28		3129-10*
SS8001J		Stainless Steel	1/4"	22	17	-	-
SS8002J			1/2"		22		
SS8021J			1/4"	35	17		¼" NPSM Thrds
SS8022J			1/2"		22		3/8" NPT Thrds
3127K	25.85	Brass	1/4"	50		7545-40	-
3129K			1/2"	65	28		3129-10*
3125L	27.58		1/4"	40	16	Included	-
3127L				50	22	7545-40	
3129L			1/2"	65	28	3129-40P	3129-10*
SS8001L		Stainless Steel	1/4"	22	17	-	-
SS8002L			1/2"		22		
SS8021L			1/4"	35	17		¼" NPSM Thrds
SS8022L			1/2"		22		3/8" NPT Thrds
3127U	31.03	Brass	1/4"	50		7545-40	-
3129U			1/2"	65	28		3129-10*
SS8001U		Stainless Steel	1/4"	22	17	-	-
SS8002U			1/2"		22		
SS8021U			1/4"	25	17		¼" NPSM Thrds
SS8022U			1/2"		22		3/8" NPT Thrds

** - ½" F. NPT outel connections*

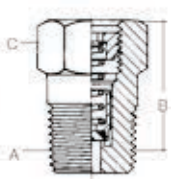


3125 Series (.161 Orifice)
3127 Series (.274 Orifice)
3129 Series (.386)

SS8022G



SS8021, SS8022 Series (.156 Orifice)



SS80001, SS8002 Series (.156 Orifice)

B

Pressure Relief Valves

RELIEF VALVES MANIFOLDS								
Rego Part Number	**Start to Discharge Setting Barg *** **	**Container Flange Connection**	**Relief Valve**				**Air flow capacity at 120% of set pressure (m3/h) ***	
			Qty	**Rego Part Number**	**Inlet Connection M. NPT**	**Accessories** **Pipeaway Adapters**	**UL**	**ASME**
8542G	17.24	2"	2	3135MG	1 1/4"	3135-10+	8.919(1)	NA
A8563G		3"-300#**	3	A3149MG	2 1/2"	Outlet 3 ½"-8N (F) thread accepts 3" M.NPT pipe tread	31.431 (2)	
A8564G			4				47.147(3)	
A8573G		4"-300#	3				31.431 (2)	
A8574G			4				47.147(3)	
A8563AG		3"-300#**	3	A3149G			NA	31.091 (2)
A8564AG			4					46.552 (3)
A8573AG		4"-300#	3					31.091 (2)
A8574AG			4					46.552 (3)

** - Flow rates shown based on number of relief valves indicated in parenthesis and for bare relief valves. Adapters and pipeaways will reduce flow rates*
*** - For use with modified ANSI 300 flange with 4" port*
**** - Other settings on request*
+ - 2" F.NPT Outlet connection

Manifold Series	Flange Size	Flange Drilling	Port Diameter	Flange Gasket
A8560	Modified 3" 300# (4" port diameter)	(8) 7/8" Bolt Holes on a 6 5/8" Bolt Circle Diameter Flat Faced	4"	3" 7564-48
A8570	4" ASA 300#	(8) 7/8" Bolt Holes on a 7 7/8" Bolt Circle Diameter 1/16" Raised Faced	4"	4" 7565-48

B

8542 Series

A8560
A8570

Check Locks

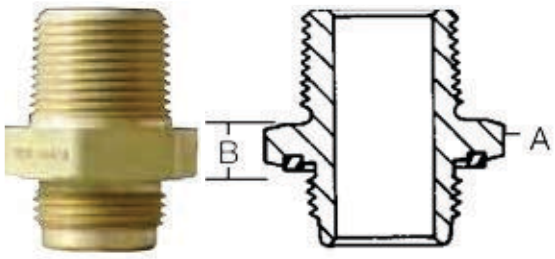
Application

It permits one shut off valve with adapter to be used on several stationary tanks for liquid withdrawing. In order to be correctly operated, appropriate adapters must be used with the transfer shut off valve.

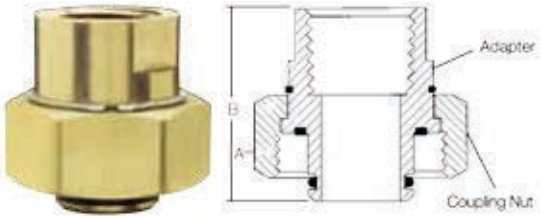
An excess flow valve is integrated as an important operation feature. The opening and closing of check locks must follow specific procedures. For a safe operation, please be sure to use the check locks correctly.

Rego Part Number	Connections		Approximate dimensions (mm)			Approximate Propane closing flow (l/min)*	Adapter				
							Rego Part Number	Connections		Approximate dimensions (mm)	
	Inlet (M.NPT)	Outlet	A	B	C			Inlet	Outlet (NPT)	A	B
7590U	¾"	1 5/8" (UNF)	41	37	33	75	7590U-10	1 5/8" UNF	¾" F	44	46
7591U	1 ¼"		37	43	33	132					
7572FC	¾"	¾" F.NPT	35	41		75	7572C-14A	¾" M.NPT		35	25
7580FC	1 ¼"		44	38		132	7572C-15A		¾ M		6

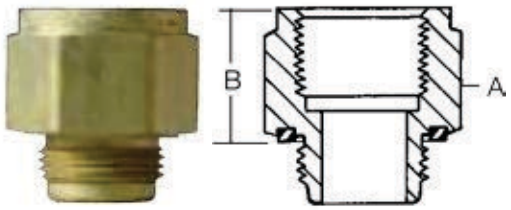
** - Based on horizontal installation of excess flow valve. Flow is higher when installed with outlet up and lower when installed with outlet down. Multiply by 0.94 for liquid Butane flow.*



7572C-15A

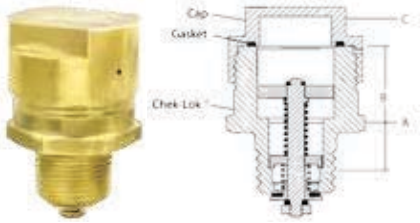


7590U-10



7572C-14Ac

7572Fc
7580FC



7590U

B

Back Pressure Check Valves

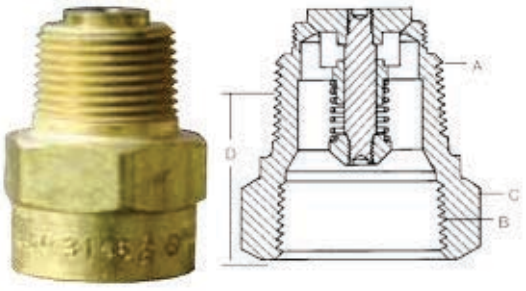
Application

Installed to assure only one direction of flow (normally into the tank). The seat is normally closed by a spring force avoiding the possibility of flow from inside the tank.

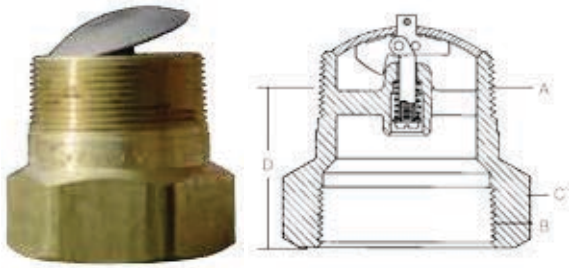
When the flow starts, the force generated by the spring will be lower than the force created by the pressure allowing the opening of the seat. In case of inexistent flow or reverse flow, the seat will move to closed position. Small amounts of leakage on closed position are to be expected as it is a metal to metal seat.

Rego Part Number		Connections (NPT)	Approx. dimensions (mm) **		Approx. Propane liquid capacity (l/min)				Obs.
Brass	Steel	A & B	C	Length D	0,345 Bar	0,689 Bar	1,723 Bar	3,447 Bar	
3146	A3146	¾"	35	49	41	60	94	136	Flat seat
3146S*									
3176	A3176	1 ¼"	50	35	105	151	238	336	
	A3276BC*			63,5	121	170	276	389	
	A3186	2"	73	61,9	469	662	1044	1480	
	A3187S*	2" M 1 ¼" F	60	111,1	227	416	851	1324	
	A3196	3"	100	100	1124	1589	2513	3554	
6586D	A6586D	2"	73	62	1021	1021	1589	2271	Swing away seat
	A3400L4	Male 2"	133	33	844	1196	1892	2675	Flange thread installation, flat seat
	A3400L6	Male 3"	134	40	1604	2271	3591	5079	

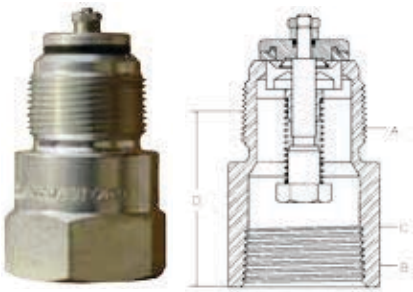
** - Soft seat*
*** - For betane liquid capacity (l/min) multiply by 0,14*



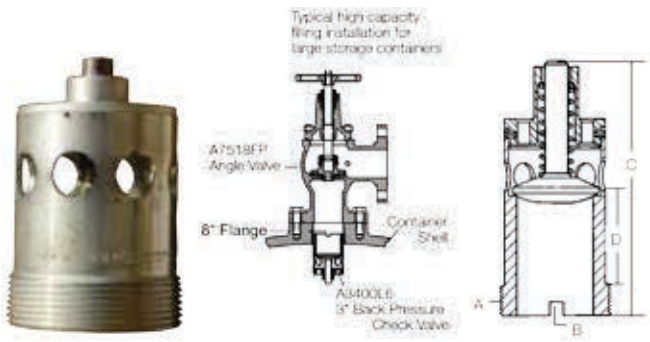
3146 Series, 3176 Series, A3186,A3196_Part2



6586D



A3276BC



A3400L6

Filler Valves

Application

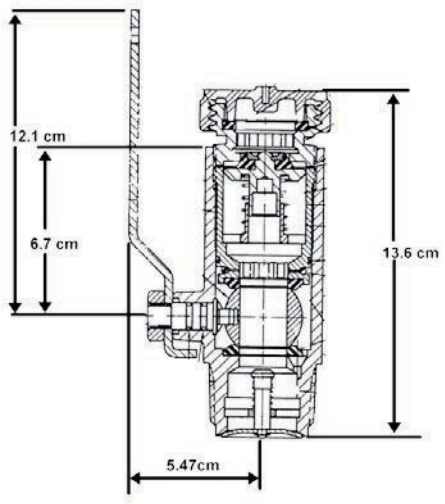
There is a wide range of sizes and capacities that may be installed on different applications such as bobtail delivery trucks, transport trucks or stationary tanks. Two versions are available: the double check type and the single check type.

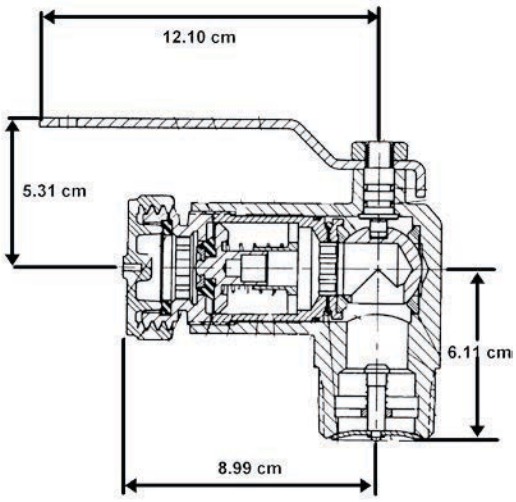
Apart from a soft seal filling valve, the double check version also incorporates a lower metal to metal back pressure valve allowing the emergency maintenance / replacement of upper part of valve without the need of tank evacuation (even with a low leakage). In case of hose rupture, the bottom back valve will prevent tank leakage as well as minimize leakage in case of bad functioning of the upper part.

Models with lower swing away back pressure valve are suitable for high filling rate needs. In case of single check version installation, an independent back pressure valve should be installed in order to assure maximum safety standard.

There are also available double check filler valves with manual shutoff system. In this case, a ¼" turn ball valve is integrated on the body valve between the lower check and upper check (normally designated as the filler valve) increasing the safety of operation.

MANUAL SHUTOFF DOUBLE CHECK FILLER VALVES					
Rego Part Number	**Tank Connection M. NPT**	**Acme Hose Connection**	**Propane Liquid Capacity at 1 bar differential pressure litres /minute**	**Propane Liquid Capacity at 1.7 bar differential pressure litres /minute**	**Propane Liquid Capacity at 3.7 bar differential pressure litres /minute**
	B	**A**			
7501 Straight Through	1-1/4"	1-3/4"	233	344	473
7502 Angle	1-1/4"	1-3/4"	233	344	473



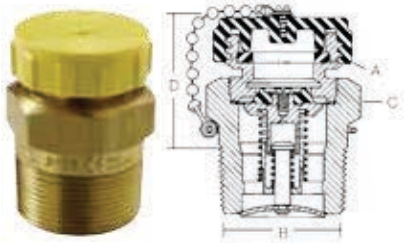


Kosan Crisplant®

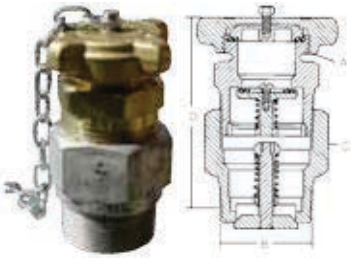
Filler Valves

B

STANDARD FILLER VALVES													
Rego Part Number		**Hose connection ACME**	**Tank connection**	**Wrench hex flats (mm)**	**(Approx.) Effective length**	**Approx. Propane liquid capacity (l/min)**					**Check type**	**Use back check valve**	**Obs.**
With Cap	**With Cap, chain and ring**	**A**	**B**	**C**	**D**	**0,345 Bar**	**0,689 Bar**	**1,723 Bar**	**3,447 Bar**	**5,171 Bar**			
7579	7579C	1 3/4"	1 ¼"	48	-	189	264	420	594	726	Double	-	-
7579P	-					140/	196	310	439	537			Incorporate ¾" F. NPT dip tube connection
6579	6579C					295	416	658	931	1139			Swing away seat
-	7579S		1 ½"	51	68,07	166	234	370	526	643			-
-	6587EC	2 ¼"	2"	73	111	348	492	779	1101	1347			Swing away seat
-	3197C	3 ¼"	3"	102	165,10	560	794	1256	1779	2176			-
3174C	-	1 ¾"	1 ¼"	43	-	87	124	196	280	-	Single	3176	-
	6584C	2 ¼"	2"	57	-	590	832	1317	1862	-		A3186	
	3194C	3 ¼"	3"	87	-	556	787	1245	1760	-		A3196	

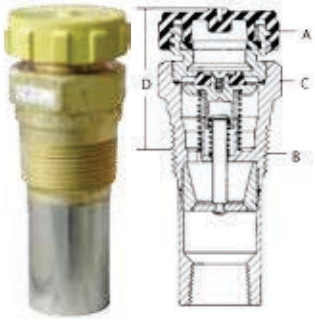


7579S



3197C

3174C



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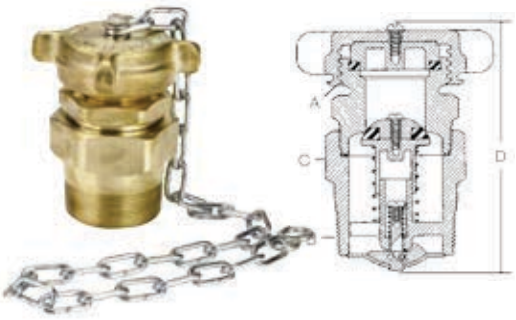
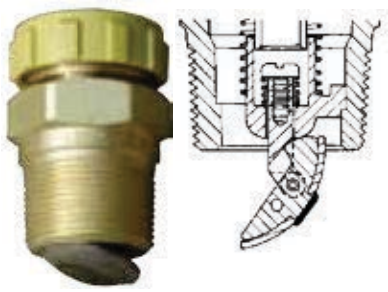


6587EC

3194C



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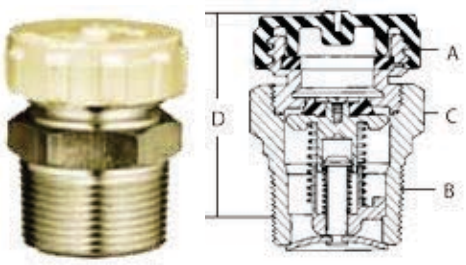


7679

Vapor Equalizing Valves

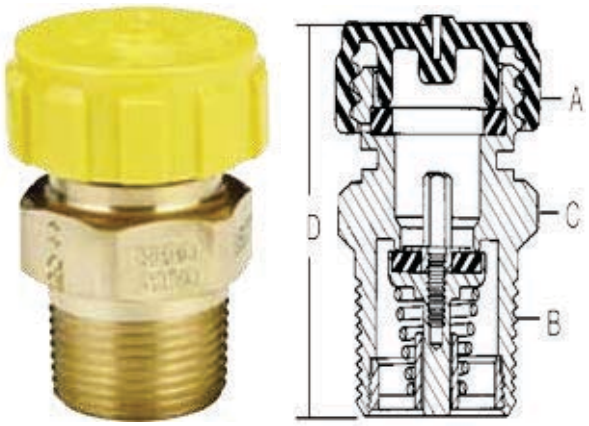
Application

Vapor equalizing valves may be used for transfer of vapor between two tanks (stationary and/or mobile) for filling operations improving the operation time.

Two versions are available: the double check and the single check versions. Apart from the upper check version that opens with the attachment of a vapor coupling allowing the vapor flow in both directions, the double check version also incorporates a lower excess flow valve as safety feature in case of hose rupture.

When the hose coupling is detached, the valve (upper check) automatically closes. In case a single check version is installed, an independent excess flow valve should also be installed in order to assure maximum safety standard.

Rego Part Number		Hose connection ACME (A)	Tank connection (B)	Wrench hex flats (C)	Approx. dimensions (mm) (D)	Approx. Closing low (m3/h) @ 6,9 bar	Check type	Use excess flow valve
With Cap	With Cap and chain							
7573D	7573DC	1 ¼"	¾"	31	52	116	Double	-
-	3183AC	1 ¾"	1 ¼"	50	77	283		
3170	-	1 ¼"	¾"	31	39	215	Single	3272E
-	3180C	1 ¾"	1 ¼"	44"	42	283		3282A



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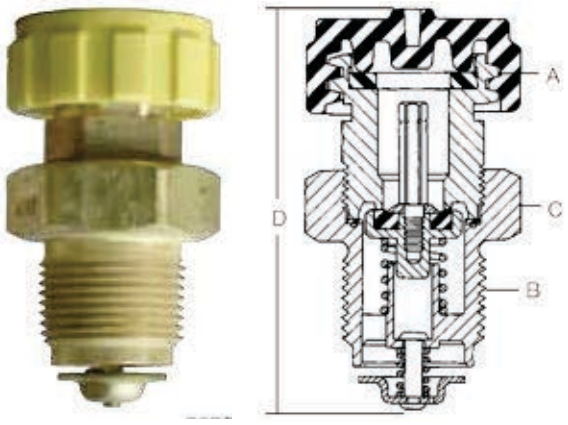


7573

B

Excess Flow Valves

Application

They can be installed on pipe line service and on the container service when it is important to limit the liquid or vapor flow rate. The seat disk is normally opened by a spring force. When the flow rate is high enough to create a pressure drop able to produce a force bigger than the spring load, the seat will close.

The equalizing of the pressure on both sides of the seat disk is possible as there is a bleed hole. This means that the excess flow valve does not shut off completely and there is always a minimum flow.

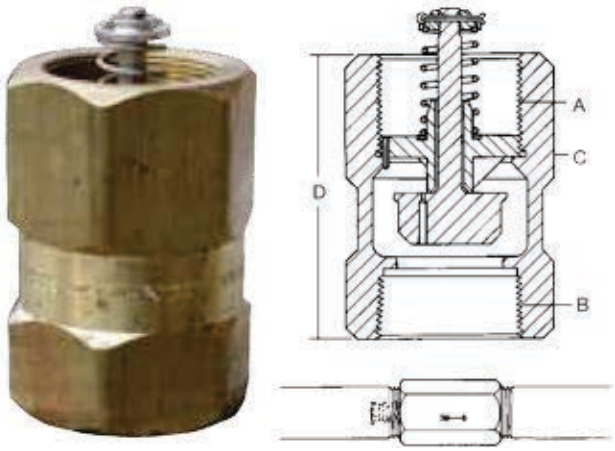
During installation the correct installation direction must be respected (an arrow on the valve body indicates the flow direction) as the feature of the valves only works in one way despite the fact that it allows flow in both directions.

Capacities published by manufacturers refer to the valve itself and not to its installation on different layouts. The excess flow valve is usually sized for +50% of the standard flow.

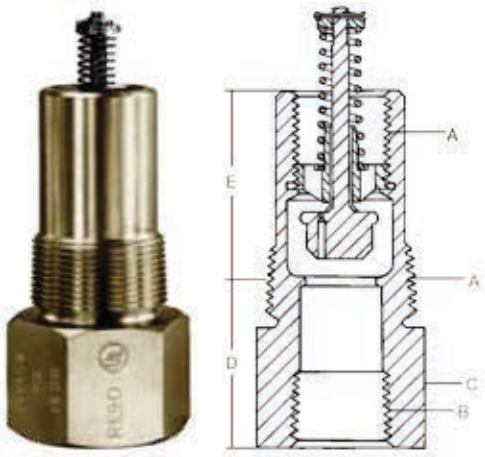
Rego Part Number	Material	Connections (NPT)		Approx. Dimensions (mm)			Approx. closing flow rates Propane **			Typical application
		A Inlet	B Outlet	C	D	E	Liquid (l/min)	Vapor (m3/h)		
								1,723 bar	6,896 bar	
1519C2	Brass	1 ½" Male *	1 "	57,15	52,37	68,24	94	141	249	Top mounting on manhole covers
1519C4		2 " Female	2"	76,2	115,87	-	643	809	1375	Piping
1519A2	Brass	1"	1"	44,45	100	-	94	141	249	Top installation in any position in liquid or vapor lines
A1519A2	Steel					-				
1519A3	Brass	1 ½"	1 ½"	57,15	101,6	-	227	325	571	
1519A4		2"	2"	76,2	115,87	-	378	537	976	
A1519A4	Steel									
1519B4	Brass						503	784	1423	
A1519B4	Steel									
A1519A6		3"	3"	101,6	165,88	-	851	1273	2321	
12472	Brass	3/4"	3/4"	34,92	34,92	-	15	29	48	Vapor or liquid use for filling, withdrawal vapor equalizing in container or line application
3272E						-	37	59	104	
3272F						-	56	79	141	
3272G						-	75	104	195	
A3272G	Steel									
3282A	Brass	1 ¼"	1 ¼"	50,8	49,21	-	113	165	283	
3282B						-	151	215	385	
3282C						-	189	254	461	
A3282C	Steel					-				
7574	Brass	1 ½"	1 ½"	57,15	44,45	-	340	430	795	
7574L						-	264	396	707	
3292A		2"	2"	73,02	47,62	-	283	402	702	
A3292A	Steel					-				
3292B	Brass					-	378	512	925	
A3292B	Steel					-				
A3292C						-	461	625	1064	

** - Female dip pipe connection*
*** - For butane capacity multiply by 0,94*

Excess Flow Valves



1519C4



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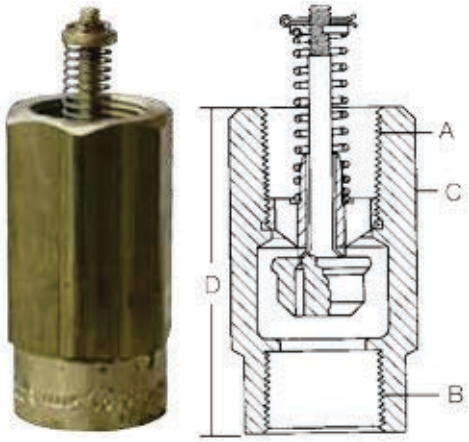

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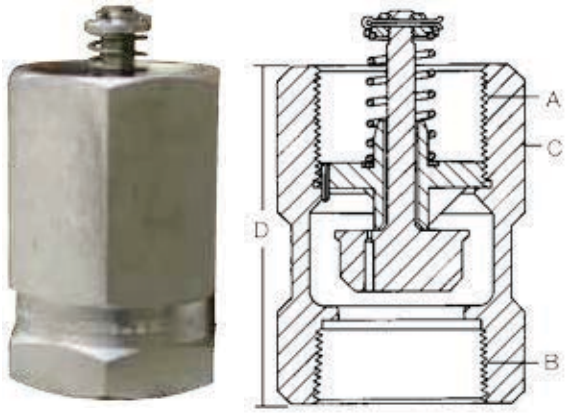
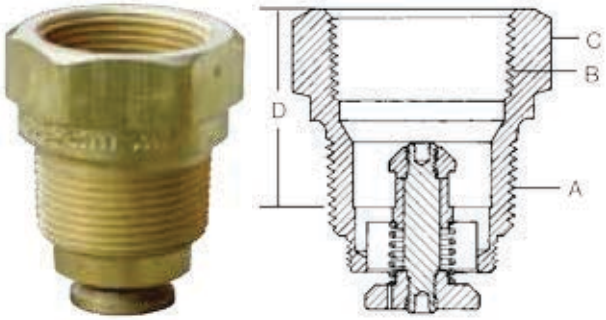
A1519A2, A1519A4, A1519B4



A1519A6



B

Multivalves

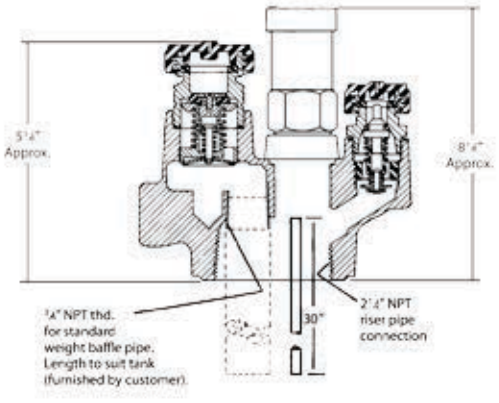
Application

The main feature of a multivalve is the incorporation of several valves (functions) in only one body. The main advantage is cost savings obtained by a simpler tank design with few connections, usage of only one body, which is cheaper than the total cost of independent valves, less need for protective hoods and lower maintenance costs when the Bultibonnet is used, depending on the model.

Multivalves incorporate different functions such as: Filler Valve (FV), Service Valve (SV), Vapor Equalizing Valve (VV), Pressure Relief Valve (PR), Fixed Level Gauge (FL), and Gauge Plug (PG). For some models, a Junior Float Gauge opening is also available.

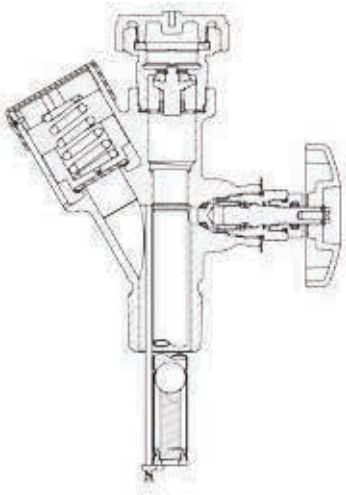
Rego Part Number	Bonnet	Gauge Plug F.NPT	Connections				Vapor Closing Flow	Junior Float Gauge Opening	Dip Tube Length Approx (mm)	Pressure Relief Valve				Application up to surface area (m2)
			Tank	Service	Filling	Vapor				Setting	Rego Part Number	Flow Capacity m3/min air		
												UL	ASME	
G8475RV	Yes	1/8"	F 2 ½"	F. POL (CGA 510)	1 ¾" M.ACME	1 ¼" M.ACME	119 m¾ 6,89 bar	YES	762mm	17,23	M313G	57	54	7.71 above ground
														25,4under ground
G8475RW											MV3132G	113	NA	17.83 above ground
														59.36 under ground
8593AR16.0	Yes	¼"	1 ½" M. NPT		1 ¾" M. ACME			NO	406 mm	-				-
6555R10.6	Yes	-	¾" M NGT		1 ¾" M. ACME	-			269 mm	17,24		22	19	2.32
6555R11.6									294 mm					
6555R12.6									304					
6532A12.0	No		¾" M. NGT											3.99
6532R12.0	Yes													
6542A12.0	No		1" M. NGT											4.92
6542R12.0	Yes													
7556R12.0	Yes	1/8"	¾" M.NGT		-	1 ¼"	119 m¾ @ 6,89 bar							Test port isolated from container When service valve is closed
7556RGT12.0	No	¼"												

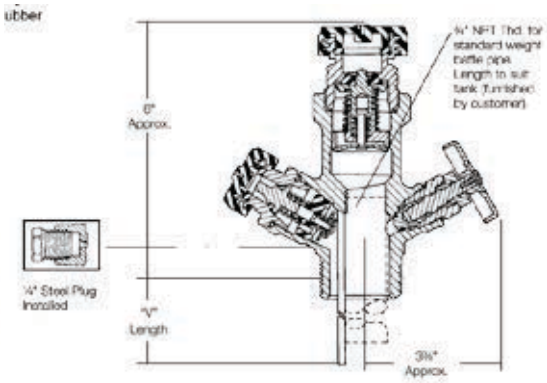
G875R



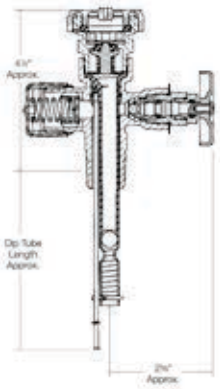
Multivalves

Rego Part Number	Approximate Filling Rate Liquid Flow, L/min			
	Pressure Drop Across Valve			
	0,689 bar	1,723 bar	3,447 bar	6,894 bar
G8475RV	158	272	370	473
G8475RW				
8593AR16.0				
6555R10.6	30	87	128	158
6555R11.6				
6555R12.0				
6532A12.0/6532R12.0	41	60	87	105
6542A12.0/6542R12.0	87	121	174	215
6533A10.5/6533R10.5	41	60	87	105
6533A11.7/6533R11.7				
6543A11.1/6543R11.1	87	121	174	215
6543A11.7/6543R11.7				

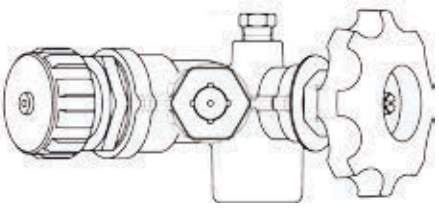




8593AR



G6555R



7556R12

Magnetic Level Gauging

Application

The magnetic liquid level gauge operates by the movement of a float lying on the LPG liquid surface that controls, directly or via a gear box system, a magnet inside the tank. The movement of the outside pointer (dial) is made possible by the magnetic coupling through a solid head.

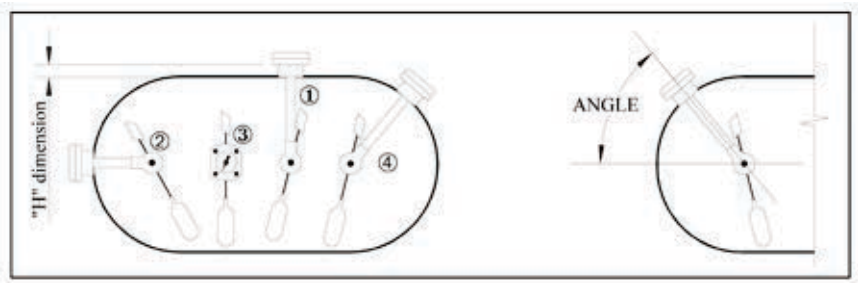
Removal or replacement of dials is possible, assuring quick operations at any time without loss of liquid, pressure, or costly downtime. There are several models of gauges depending on the size of the tank and mounting position as well as different dial sizes for each model.

In some cases, it is possible to connect dials with output signals for remote level information systems. Most typical applications for LPG tanks are the Junior, Senior or Magnetel series.

Necessary information for ordering a LPG tank level gauge:

- External tank diameter
- Internal tank diameter
- Riser size
- Mounting position (tank drawing required for angle mounting or not cylindrical/horizontal tank and shape of dished for end mounting)
- Define centerline or straddle flanged connections

Mounting positions:



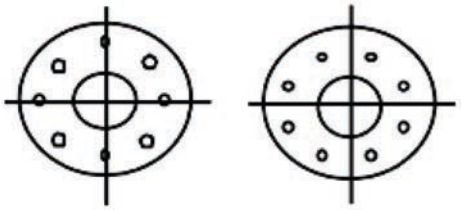
JUNIOR / SENIOR			
Model	**Mounting**	**Type**	**Dial / Obs**
6260	TOP	Senior	Side reading
6280			50mm
6281		Junior	40mm
G6281		Junior (Senior available)	40/50mm. Aluminum and Spring steel construction promoting constant calibration and accuracy
6283	Horizontal or Angle	Senior	50mm
6284		Junior	40mm
6290	TOP	Senior	100mm
6293	Horizontal or Angle		100mm

Magnetic Level Gauging

MAGNETEL		
Model	**Dial / Obs**	**Dial Size (mm)**
6336-Trim n.°	Top	100
6339-Trim n.°	Horizontal or Angle	
6342-Trim n.°		200
6360-Trim n.°	Top	

Trim n.°	Head	Support center shaft Float arm	Counter balance	Magnet	Gears	Gasket
8	Al	SS	Cadmium plated steel	AlNiCO	SS	Buna N
11	SS					Teflon filled 304SS spiral wound

MOUNTING		
Head type	**Stud size**	**Bold diameter (mm)**
SS	½" – 13UNC or M12	89
Al	½" – 13UNC or M12	89
ASA 300Lbs R.F. 3"	M20	168
DIN 80 PN25	M16	160



Centreline Mount *Shadle Mount*

B

Liquid Withdrawl Valves

Multipurpose Valves

Application

Specially applied when a high capacity of liquid withdrawal from the LPG tank is necessary.

As they integrate an integral excess flow valve, the valve should be completely open while in operation, in order to ensure the correct functioning of the excess flow device.

Depending on the model, some other features may be found in this kind of valve such as filling device or differential back pressure check valve (DBPCV) allowing the return to the tank in case the delivery line pressure becomes 0.70 bar to 1.03 bar higher than the tank pressure.

A8017DP

A8020D

Rego Part Number	Connections		Approximate Excess Flow Liquid Close (l/min)	Accessories	
	Inlet (M.NPT)	Outlet (F.NPT)		Hydrostatic Relief Valve	Vent Valve
A8017DH	1 ¼"	1"	185	Not necessary (DBPCV)	TSS3169
A8017DP			208	SS8001J	
A8017DLP		¾"	185		
A8020D		1"	295		

B

Transfer Angle Valves

Application

Specially applied when a liquid withdrawal from the LPG tank is necessary.

In case an excess flow valve is integrated, it should be installed on a forged steel 300 lb half coupling or in a 1 ¼" x ¾" NPT reducing coupling (female thread must be full length-equivalent to a forged steel 3000 lb half coupling.

If the excess flow valve is not integrated, it should be installed on a Check Lock.

7550P

A7550PX

Rego Part Number	Connections					Accessories	
	Inlet	Outlet	Internal Excess Flow	Approximate Excess Flow Liquid Close (l/min)	CV (l/min Propane @ 1.03bar)	Hydrostatic Relief Valve	Vent Valve
7550P	¾"	¾"	No	50	:	3127U	3165
7551P			Yes	-	60		
7550PX		½"	No	33	:		

Combination Valves

Application

These valves are normally installed on bulk LPG tanks combining a pressure gauge and a provision for 1/8" NPT fix level dip tube.

The shut-off valve prevents the gauge from being subject to high constant pressure increasing the working life time.

The valves also incorporate a liquid vent.

A2805C

Rego Part Number	Connections (NPT)		
	Container (M)	Gauge Port (F)	Liquid Vent
A2805C	¾"	¼"	Yes

B

LPG Bulk Storage Equipment

Kosan Crisplant is able to offer LPG bulk storage equipment and accessories that are needed for a safe and efficient operation of the installations and keep the safety on the operator's side from downstream the bulk tank to the LPG cylinder filling carousel.

Range of products:

- Regenerative Turbine Pumps
- Vane Positive Displacement Pumps
- Side Channel Pumps
- Bypass Valves
- Compressors
- Internal Valves
- Globe and Angle valves
- Hydrostatic Relief Valves
- Sight Flow Indicators
- Pull-Away Valves
- Dry Seal Couplings
- Excess Flow Valves - See chapter 2
- Emergency Shut-Off Valves

The range Kosan Crisplant is offering is complete and matches several specifications and different demands from various markets. Nevertheless, if you do not find what you need on the following pages, we kindly ask you to contact us. We will do our best to provide the best solution for your need.

For proper support contact one of the KC offices closest to your location.

Regenerative Turbine Pumps

Application

Regenerative turbine pumps are normally a good choice for low-capacity and high-head pumping demands, where volatile liquid transfer is involved, as cylinder filling applications, vaporizers feed and autogas.

They are the best solution for low power applications where reliability is more important than energy efficiency, while for higher power applications (more than 10 HP), the improved energy efficiency of vane pumps offsets their shorter service life.

Without the noise, vibration and pulsations of the positive displacement gear and sliding vane pumps, the regenerative turbine pumps handles LPG for long lifetime periods.

The only moving part, the impeller, floats on the shaft with no rubbing, grinding or metal-to-metal contact.

MATERIAL SPECIFICATIONS

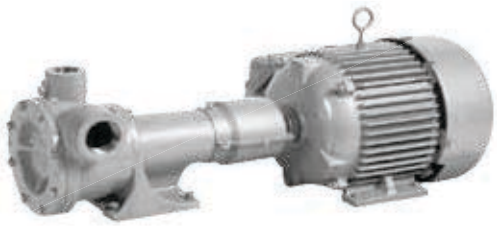
Part	Standard	Optional
CASE/COVER	Ductile Iron ASTM A-536	None
IMPELLER	Bronze	303 Stainless Steel
		Ductile Iron
SHAFT	Stressproof Steel	416 Stainless Steel
O-RINGS	Buna N	Teflon*
		Viton*
		Neoprene* Etylene-Propylene
SEAL SLEEVE	Aluminum	416 Stainless Steel
SEAL SEAT	Cast Iron	304 Stainless Steel
		Ni-Resist
		Ceramic
		Tungsten Carbide
SEAL HOUSING	Steel, Cadmium Plated	416 Stainless Steel

** - Registered trad marks of do-port*

MECHANICAL SPECIFICATIONS

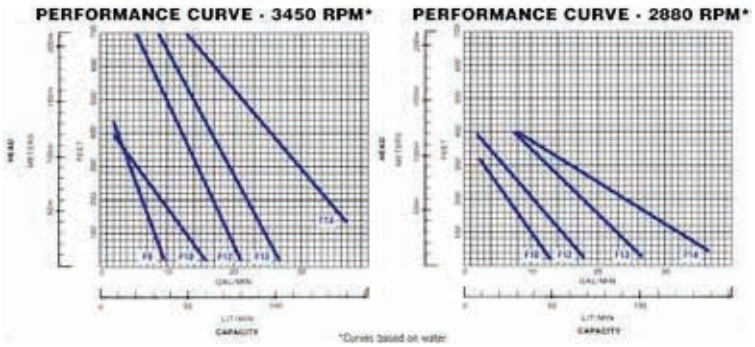
INLET	1-1/4" NPT (Models F9, F10) 1-1/2" NPT (Models F12, F13, F14, F15) 11/2" ANSI 300 LB. (Models FF9-FF15)
OUTLET	1" NPT 1" ANSI 300 LB. (FF9-FF15)
ROTATION	Clockwise only (From driven end)
MAX. RPM	3600
MAX. CASE TEST PRESSURE	172 Bar
MAX WORKING PRESSURE	27.6 Bar
MAX DIFFERENTIAL PRESSURE	10.3 Bar
HORSEPOWER RANGE	1/2 to 10
TEMPERATURE RANGE	-32° to +107°C
MAX. VISCOSITY	400 SSU

Mounting Alternatives



Regenerative Turbine Pumps

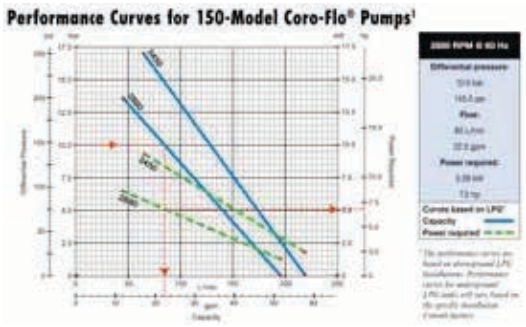
Performance Curves

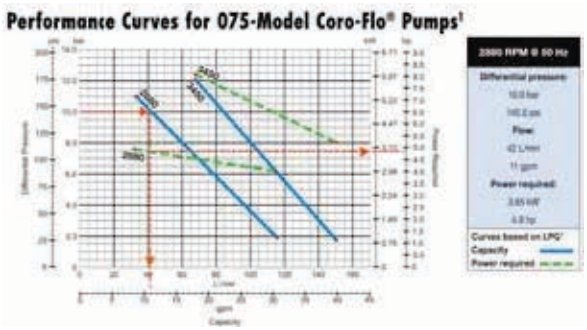


AUTOGAS SERIES SPECIFICATIONS	
Specification	All Coro-Flo® 075 and 150 Models
Inlet	1-1/2" - ANSI 300# R.F. Flange (DIN optional)
Outlet	1" - ANSI 300# R.F. Flange (DIN optional)
RPM	3450 @ 60 Hz or 2.880 @ 50 Hz
Maximum Work Pressure	27.6 bar
Maximum Diferential Pressure	Model 075 – 10,3 bar Model 150 - 17.2 bar
Max/Min Temperature	107ºC/-32ºC
Impeller Material	Bronze (standard)
O-ring material	Buna-N (standard)
Seal Materials	Silicon carbide (standard)
Maximum driver	15 KW
Type of electric motor*	Rigid Base (Frame mount) and C-face (direct mount)

Mounting Alternatives

Performance Curves





C

Vane Positive Displacement Pumps

Application

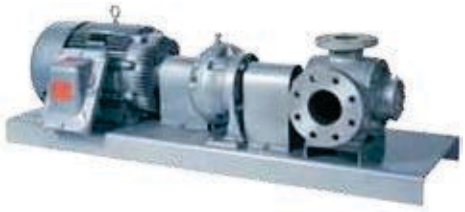
The vane positive displacement pumps are the most popular pumps used on LPG high demand systems combining an interest solution of low cost and easy maintenance and they have a considerable efficiency.

The vanes are self adjusting in order to keep the distance tolerance with the rotor keeping the efficiency for long periods of time and they may be replaced very easily.

Typical utilizations for vane positive displacement pumps are loading and unloading of bulk trucks and transport trucks, carrousel filling and cylinder filling.

Some pumps have integrated relief valve for relieving the pressure from discharge to the suction side. For specific truck (not stationary) vane positive displacement pumps, consult folder A.

Mounting Possibilities



MATERIAL SPECIFICATIONS FOR SERIES 521, 1021 AND F1021

Part	Model	Standard Material	Optional Material
Case, head, flange rotor, seat adapter plate	All	Ductile iron ASTM A536	None
Cam, sideplate, bearing cap	All	Gray iron ASTM A48 Class 30	None
Welding flange	All	Steel	None
Seal seat	All	Gray iron ASTM S48, Class 30	316 SS
Seal metal parts	All	Steel	None
Shaft	521, 1021	"Stressproof" steel	None
Vanes	All	Plastic	None
Relief valve spring	521, 1021	Steel, cadmium plated	None
Relief valve	521, 1021	Steel	None
Bearing	All	Cylinder roller	None
O-rings	All	Buna-N	PTFE, Viton®, Neoprene®1
Retainer rings	All	Steel	None

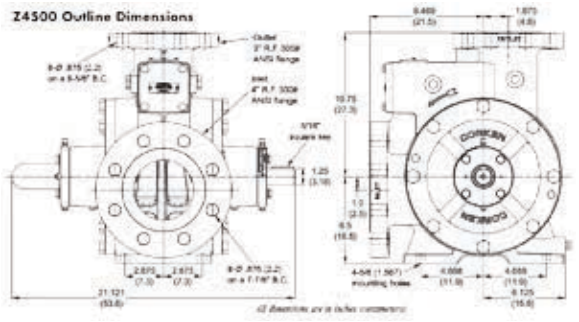
MATERIAL SPECIFICATIONS FOR SERIES 51

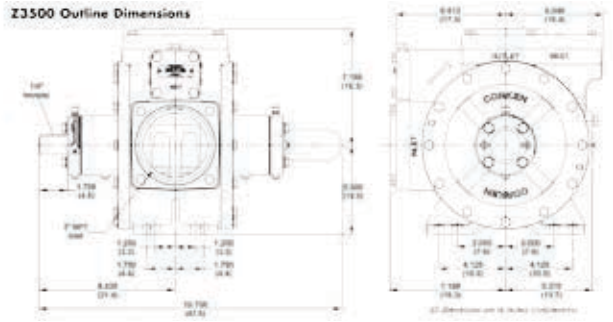
Part	Model	Standard Material	Optional Material
Case, head rotor	All	Ductile iron ASTM A536	None
Sideplate	All	Gray iron ASTM A48, Class 30	None
Seal seat	All	Cast iron	Ni-Resist cast iron, displacement type ceramic, and tungsten carbide
Seal rotor	All	Carbon	None
Seal metal parts	All	Steel	None
Vanes	All	Carbon	None
Relief valve springs	All	Steel, cadmium plated	None
Relief valve	All	Steel	None
Shaft	All	8620 steel	None
Mounting bracket	C51	Gray iron ASTM A48, Class 30	None
Base	F51	Steel	None
O-rings	All	Buna-N	PTFE, Viton®, Neoprene®1
Relief valve adjusting stem seal	All	Buna-N	None
Retainer rings	All	Steel	None
Bearings	All	Cylindrical roller	None

Part	Standard Material	Optional Material
Case, head, rotor, relief-valve cap, bearing cap	Ductile iron ASTM A536	None
Cam	Gray iron ASTM A48 Class 50	None
Sideplate	Gray iron ASTM A48 Class 30	None
Welding flange	Steel	None
Seal seat	Gray iron	316 SS
Seal metal parts	Steel	None
Shaft	8620 steel	None
Vanes and vane drivers	Advanced polymers	None
Relief valve spring	Stainless steel	None
Relief valve	Stainless steel	None
Bearing	Steel	None
Thrust bearing	Steel	None
O-rings	Buna-N	PTFE, Viton®, Neoprene®1
Retainer rings	Steel	

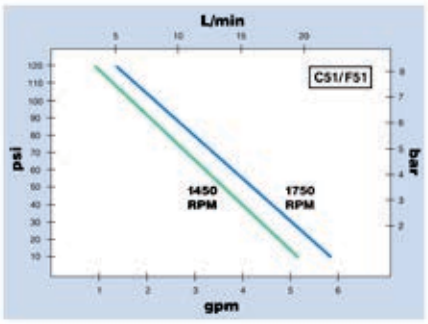
Vane Positive Displacement Pumps

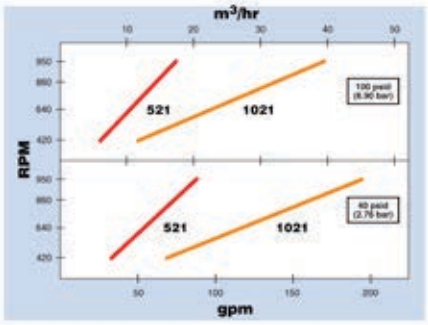
OPERATING SPECIFICATIONS FOR SERIES 521, 1021, F1021, Z3500 AND Z4500					
	Model				
	521	1021	F1021	Z3500	Z4500
RPM range	420–950	420–950	420–950	420–800	420–800
Temperature range	-32°C to 107°C				
Maximum working barg	28.6				
Maximum differential pressure bar d	8.6				
Maximum driver size kW	7.5	15	15	18.6	18.6
Flow range L/min	113.6–321.8	246–738.2	246–738.2	197–746	746 –1,446





OPERATING SPECIFICATIONS FOR SERIES 51 SERIES			
Minimum RPM:	1450	Maximum RPM:	1750
Minimum temperature:	-32°C	Maximum temperature:	107°C
Maximum working pressure:	25.2 bar g	Maximum differential pressure:	8.6 bar d
Maximum driver size:	1.5 kW	Flow range:	4–23 L/min





C

Side Channel Pumps

Application

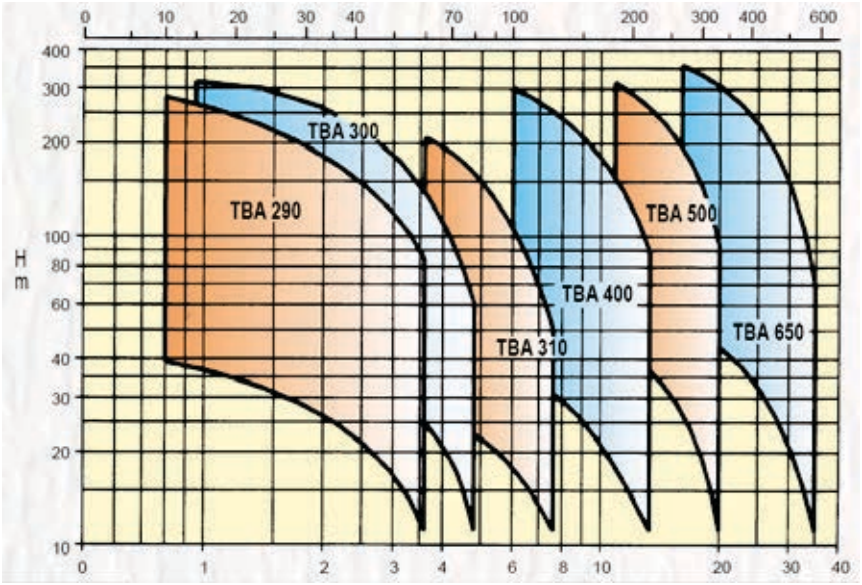
When there is demand for of LPG on high differential pressure or low NPSH conditions and aerated liquids up to 50% gaseous, as for example on underground tanks, LPG cylinder carrousel filling, bulk operations, vaporizers feeding, etc, the side channel multistage pumps are the best solution.

As the pumps are able to create very high differential pressure, there are some delivery truck applications that can be used to fill LPG tanks located on high buildings.

Different sizes are available and for each one it is possible to have a different number of stages which gives a wide range of possible solutions matching each installation demand.

MATERIAL SPECIFICATIONS

Part	Description	GH	RA	A3	B2	GP
106	Suction casing	Ductile iron		Stainless steel	Bronze	Ductile iron
107	Discharge casing					
109	Port plate and diffuser	Cast iron				Cast iron
114						
149						
210	Shaft	AISI 420 Stainless steel	AISI316 Stainless steel		Stainless steel	AISI 420 Stainless steel
230	Impeller	Brass			Bronze	Brass
310	Diffuser bushing	Bronze	Graphite		Bronze	
310.1	Element bushing					
357	Bearing and mechanical seal housing	Cast iron				



Performance charts for 1450 RPM water capacity

Compressors

Application

Compressors may be used for when high capacity of liquid transfer between tanks, vapor residual recovery and tank/cylinder evacuation for maintenance purpose.

In some situations it may be an advantage to build in both a compressor and a pump in a LPG system in order to establish a better NSPH condition for the pump.

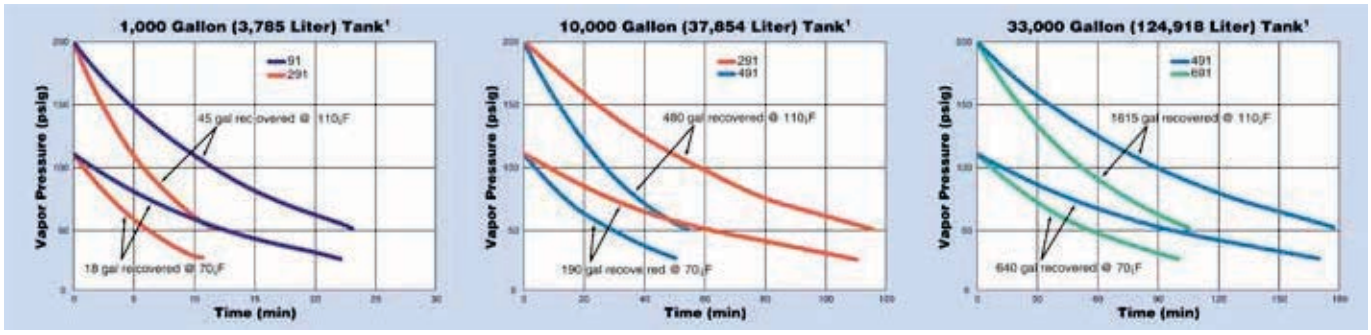
Depending on demand, they may be single or two stage compression.

MATERIAL SPECIFICATIONS

Specifications	Model						
	91	291	491	691	891	HG601BB	HG601AA
Bore of cylinder (mm)	76.2	76.2	101.6	114.3	113	152	203
Stroke: (mm)	63.5	63.5	76.2	101.6	101.6	76.2	76.2
Piston displacement (m3/hr)							
minimum @ 400 RPM	6.8	13.6	29.2	49.6	96.2	130.5	234.5
maximum @ 825 RPM	14.1	28.0	60.3	102.3	192.0	-	-
maximum @ 1,200 RPM	-	-	-	-	-	391.9	703.5
Maximum working pressure: (bar)	24.1	24.1	24.1	24.1	32.1	25.2	21.7
Maximum brake horsepower (kW)	5.6	11	11	26.1	34	55.9	55.9
Maximum rod load (kg)	1,632.9	1,632.9	1,814.4	2,494.8	3,175.2	3,175.2	3,175.2
Maximum outlet temperature (°C)	177						
Bare unit weight (kg)	52.2	72.6	117.9	283.5	387.8	375.6	393.7
Maximum flow-propane (m3/hr)	11.4*	22.9*	48.8*	82.0*	157.6*	296.4*	391.8**
ANSI/DIN flange option	F91	F291	F491	F691	-		

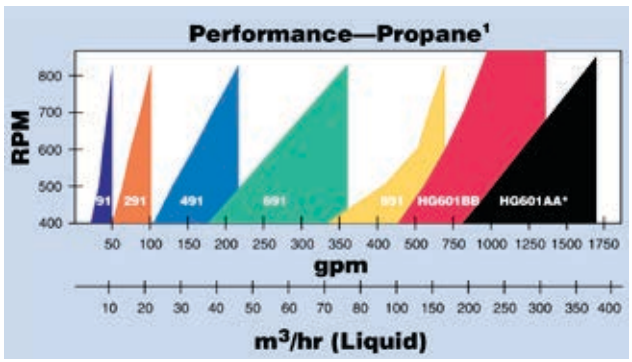
** - Based on 825 RPM or maximum HP, 2,07 bar differential pressure and 37,8°C. Capacity change according with piping, LPG composition and temperature. Detailed compressor analyses may be supply in case of need.*
*** - Based on 845 RPM*

Vapour recovery performance charts



1PSiG = 0,69 Barg
100°F = 37,78°C

Liquid transfer Propane performance charts



C

Globe Valves and Angle Valves

Application

Typically used as isolation valves on the trucks' inlet/outlet connections, hoses or piping. Globe and angle valves construction are positive shut-off valves as the closure of the valve is done by a screwed stem or instant acting system that drives the disk against the seat.

This means that only by rotating the steam wheel or operating the instant acting system is possible to open and close the valve. They can be used in vapor or liquid LPG.

Depending on the valve type, they can be supplied with locking handle (instant acting system) normally used as hose end valves with different extended filling connections.

Rego Part Number		Port diameter	Connections		CV (l/min) @ 0,069bar		Accessories	
Globe	Angle		Inlet	Outlet	Globe	Angle	Hydrostatic relief valve	Vent valve
7704P	7704LP		½" F NPT		27	46	SS8001J or SS8001L	TSS3169
7705P	7706P		¾" F NPT		43	67		
A7505AP	A7506AP	¾"	¾" F NPT		45	67	SS8001U	
A7507AP	A7508AP	1"	1" F NPT		67	83		
A7509BP	A7510BP	1 ¼"	1 ¼" F NPT		138	204		
A7511AP	A7512AP	1 ½"	1 ½" F NPT		162	210		
A7511FP	-		1 ½" FLANGE		174	-		
A7513AP	A7514AP	2"	2" F NPT		283	335		
A7513FP	A7514FP		2" FLANGE		295	503		
A7517AP	A7518AP	3 1/8"	3" F NPT		745	1147		
A7518AP	A7518FP		3" FLANGE					

To obtain flow rate for others pressure drop values then 0,069bar, multiply CV by square root of (14,5x P).

C

External Hydrostatic Relief Valves

Application

Specially designed to protect piping and shut off valves from pressure increase as consequence of liquid vaporization.

They should be installed on the piping between shut off valves or in the body of the valve.

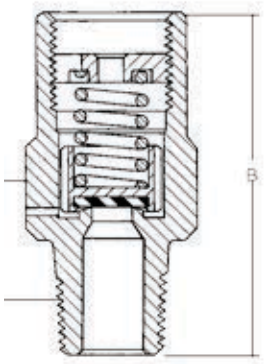
External hydrostatic relief valves incorporate the Pop-Action design which permits a small opening when there is a moderate pressure increase and a fully "pop" opening when there is a pressure increase beyond a predetermined point.

EXTERNAL HYDROSTATIC RELIEF VALVES

Rego Part Number	Start to Discharge Setting Barg	Body Material	Container connection A (M. NPT)	Approximate dimensions (mm)		Accessories	
				B	C (Wrench)	Protective Cap	Pipeaway Adapter or threads
SS8001G	17.24	Stainless Steel	1/4"	22	17	-	-
SS8002G			1/2"		22		
SS8021G			1/4"	35	17		¼" NPSM Thrds
SS8022G			1/2"		22		3/8" NPT Thrds
3127G		Brass	1/4"	50		7545-40	-
3129G			1/2"	65	28		3129-10*
3127H	18.96		1/4"	50	22		-
3129H			1/2"	65	28		3129-10*
3127P	20.68		1/4"	50	28		-
3129P			1/2"	65	28		3129-10*
SS8022P		Stainless Steel		35	22	-	3/8" NPT Thrds
3127J	24.13	Brass	1/4"	50	22	7545-40	-
3129J			1/2"	65	28		3129-10*
SS8001J		Stainless Steel	1/4"	22	17	-	-
SS8002J			1/2"		22		
SS8021J			1/4"	35	17		¼" NPSM Thrds
SS8022J			1/2"		22		3/8" NPT Thrds
3127K	25.85	Brass	1/4"	50		7545-40	-
3129K			1/2"	65	28		3129-10*
3125L	27.58		1/4"	40	16	Included	-
3127L				50	22	7545-40	
3129L			1/2"	65	28	3129-40P	3129-10*
SS8001L		Stainless Steel	1/4"	22	17	-	-
SS8002L			1/2"		22		
SS8021L			1/4"	35	17		¼" NPSM Thrds
SS8022L			1/2"		22		3/8" NPT Thrds
3127U	31.03	Brass	1/4"	50		7545-40	-
3129U			1/2"	65	28		3129-10*
SS8001U		Stainless Steel	1/4"	22	17	-	-
SS8002U			1/2"		22		
SS8021U			1/4"	25	17		¼" NPSM Thrds
SS8022U			1/2"		22		3/8" NPT Thrds

** - ½" F. NPT outel connections*

3125 Series (.161 Orifice)
3127 Series (.274 Orifice)
3129 Series (.386)



C

Sight Flow Indicators

Application

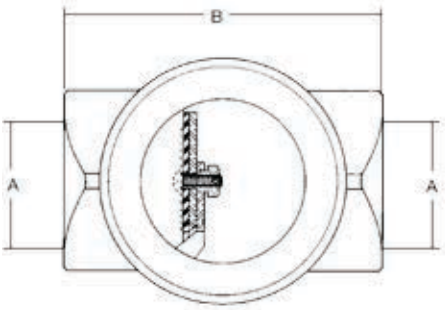
Installing a sight flow indicator allows the operator of the plant (or truck) to clearly understand and observe the conditions of the flow by a two side glass window.

By installing it upstream the pump, it is possible to adjust the pump speed to the maximum before cavitation occurs.

If it is installed downstream the pump, it is possible to observe the pump flow conditions.

Additionally, it incorporates a back check valve to prevent back flow. Another typical application is on compressor liquid lines as it gives the operator the possibility to see when liquid stops flowing and change of vapour recovery operation should take place which minimizes loss of operation time.

Rego Part Number	A (Inlet / Outlet) F.NPT	B (Lenght) mm
A7794	2"	146
A7796	3"	187



A7794

Simple flow indicators that show to the operator the flow direction inside the piping are also available but without any visual flow conditions inspection and back check valve. A "T" on the piping is necessary for installation.

PART NUMBER	DESCRIPTION	NOTE
6286-00325	4" dial, 2" adapter and A = 82 mm	Other A dimensions under request
6286-00475	4" dial, 2" adapter and A = 120 mm	

Pull-Away Valves

Application

Specially developed to provide pull-away protection for LPG transfer operations.

When properly installed, the valve is designed to stop escape flow in both directions in an event of pull away with minimal loss of product. In case of pull away, before the hose tensile rupture, two bodies should separate closing two back pressure valves.

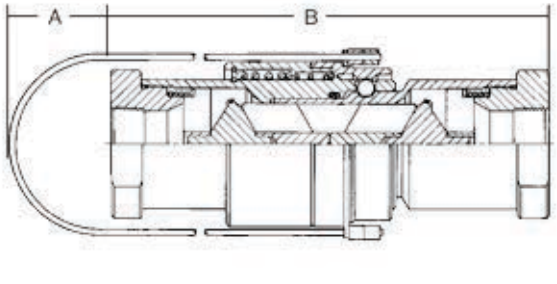
The two parts may be coupled again but the LPG must be safely removed from both hose sides before this is done.

A leakage test should be done after re-assembly. It is very important to lubricate the pieces every six months and carry out regular operational tests with inert gases.

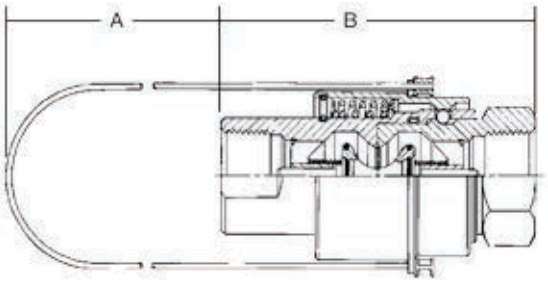
Part Number	Inlet / Outlet (F.NPT)	Disconnect Force - kgf (Aprox.)	Reconnect Force - kgf (Aprox.)	Lenght (mm)	LPG capacity (l/min)			
					0,34 Bar	0,69 Bar	1,72 Bar	3,44 Bar
A2141A6	3/4"	59	36	98	41	60	94	136
A2141A6L		59	36		41	60	94	136
A2141A8	1"	34	22	116	79	113	177	253
A2141A8L		34	22		79	113	177	253
A2141A10	1 ¼"	72	11	143	196	283	454	643
A2141A16	2"	136	22	363	196	1324	2081	2838

A2141A10

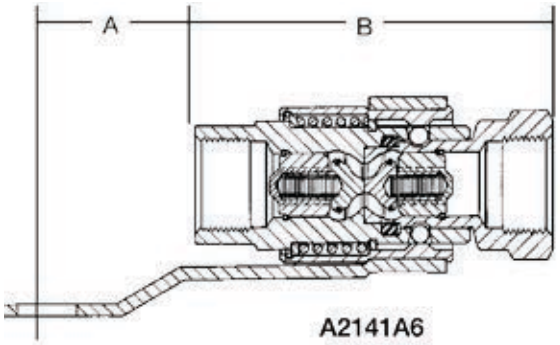
A2141A6



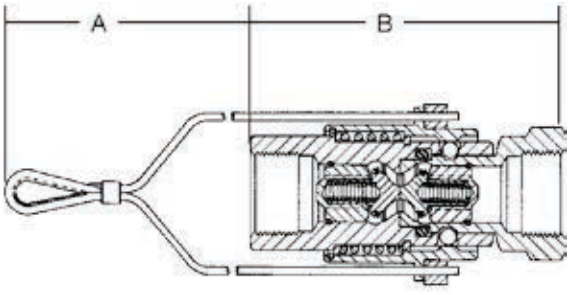
A2141A16



A2141A10



A2141A6
A2141A8



A2141A6L
A2141A8L

C

Dry Seal Couplings

Application

Dry gas coupling promotes a safe and quick connection and disconnection of hoses and loading arms to tank trucks, rail tankers and tank containers.

During connection and after disconnection there will be no spillage.

This increases the safety of loading processes with dangerous goods. The robust design, easy servicing and high level of security ensure safe and frequent use on a long term basis.

This protects the environment and the loading material, reduces the risk of accidents and saves money. A modular design with a lot of optional features makes it possible to find individual solutions for your special application.

The local regulation should be taken into consideration before installation. The bellow products comply with the European Directives PED and ATEX and the international requirements ADR, RID, IMDG and TDT.

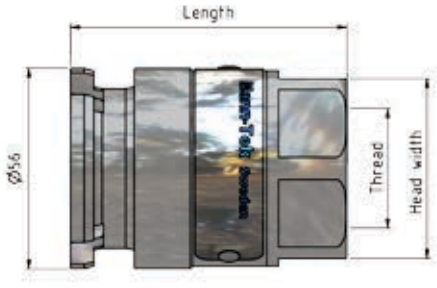
How does it works

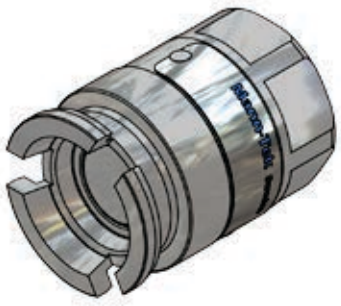
When connecting the dry gas coupling, the hose unit will slide easily over the tank unit. The three rollers engage in the three slots. To allow the hose unit to lock, rotate the hose unit clockwise approximately 100° by gently pushing towards the tank unit. To stop the flow and unlock the units, reverse the procedure.

C

Tank unit with female thread 1" (socket Ø56) With sealing material FPM and NBR90

				Manntek Part Number	
Thread	**Length**	**Head width**	**Weigth**	**FPN**	**NBR90**
3/4 BSP	68,5	50	0,7	L101A4401A	L101A4420A
3/4 NPT	74	50	0,8	L102A4401	L102A4420
1" BSP	70,5	50	0,7	L103A4401A	L103A4420A
1" NPT	77	50	0,8	L104A4401	L104A4420
1 1/4"	70,5	50	0,7	L105A4401A	L105A4420A
1 1/4" NPT	77,5	50	0,8	L106A4401	L106A4420

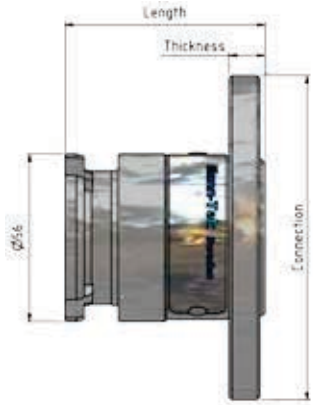


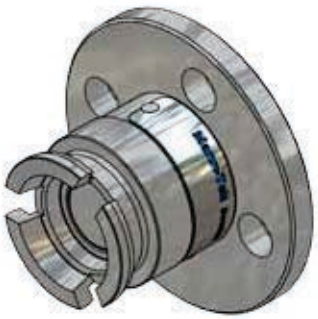


Dry Seal Couplings

Tank unit with flange 1" (socket Ø56)

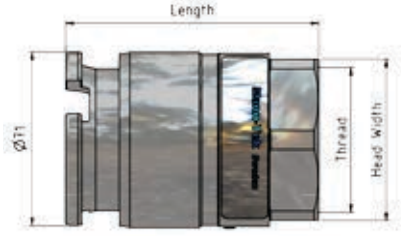
Dimensions				Manntek Part Number	
Connection	Length	Thickness	Weight Kg	Sealing FPM	Sealing NBR90
¾" ASA 300 PSI	70,5	15,9	1,3	L150A4401	L150A4420
DN25 PN25/40	73	18	1,4	L124A4401	L124A4420
1" ASA 300 PSI	72	17,5	1,5	L152A4401	L152A4420
DN32 PN25/40	73	18	1,5	L126A4401	L126A4420
1 ¼" ASA 300 PSI	74	19	1,5	L154A4401	L154A4420

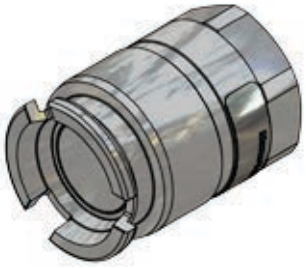




Tank with female thread 2" (Socket Ø71)

Dimensions				Manntek Part Number	
Thread	Length	Head width	Weight Kg	Sealing FPM	Sealing NBR90
1 1/2" BSP	99	65	1,5	L207A4401A	L207A4420A
1 1/2" NPT	102	65	1,6	L208A4401	L208A4420
2" BSP	101	65	1,2	L210A4401A	L210A4420A
2" NPT	102,5	65	1,3	L211A4401	L211A4420





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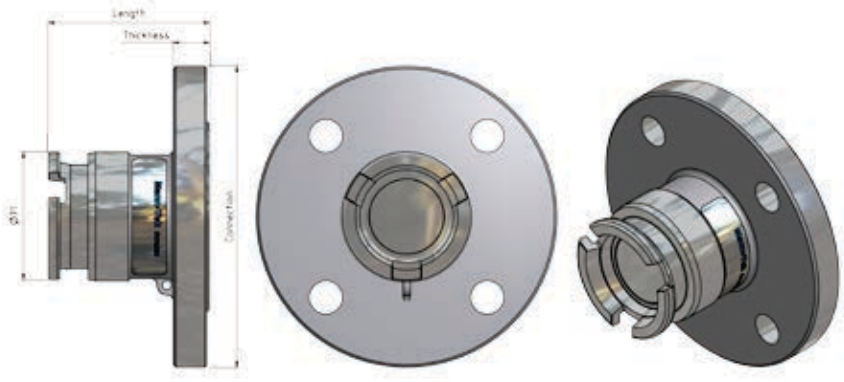
Dry Seal Couplings

Tank unit with flange 2” (socket Ø71)

Dimensions				Manntek Part Number	
Connection	Length	Thickness	Weight	Sealing FPM	Sealing NBR90
DN40 PN25/40	86,5	18	2,8	L228A4401	L228A4420
1 1/2" AS 300 PSI	88,5	20	3,2	L256A4401	L256A4420
DN50 PN25/40	88,5	20	3,5	L231A4401	L231A4420
2" AS 300 PSI	88,5	20	3,5	L258A4401	L258A4420



C

Tank unit with female thread 3” (socket Ø119)

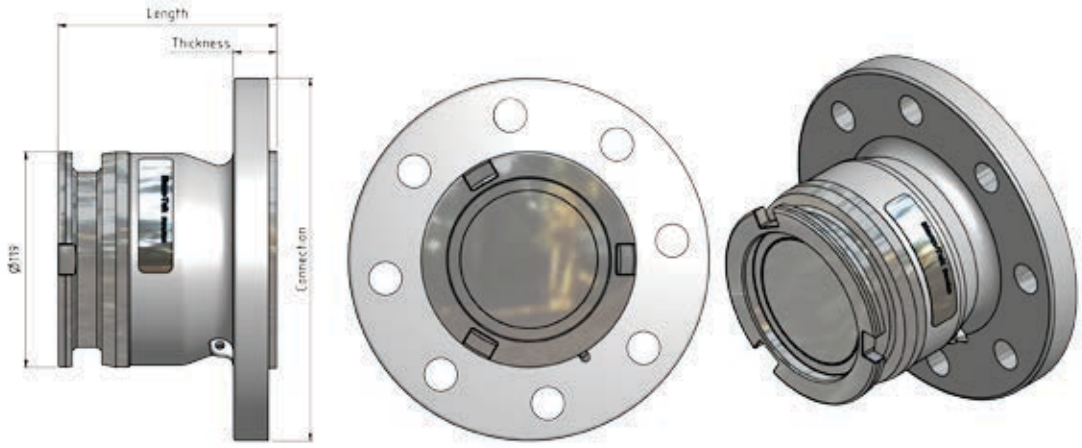
Dimensions				Manntek Part Number	
Thread	Length	Head width	Weight Kg	Sealing FPM	Sealing NBR90
3" BSP	134	100	3,0	L414B4401A	L414B4420A
3" NPT	144	100	3,00	L415B4401	L415B4420

Dry Seal Couplings

Tank unit with flange 3” (socket Ø119)

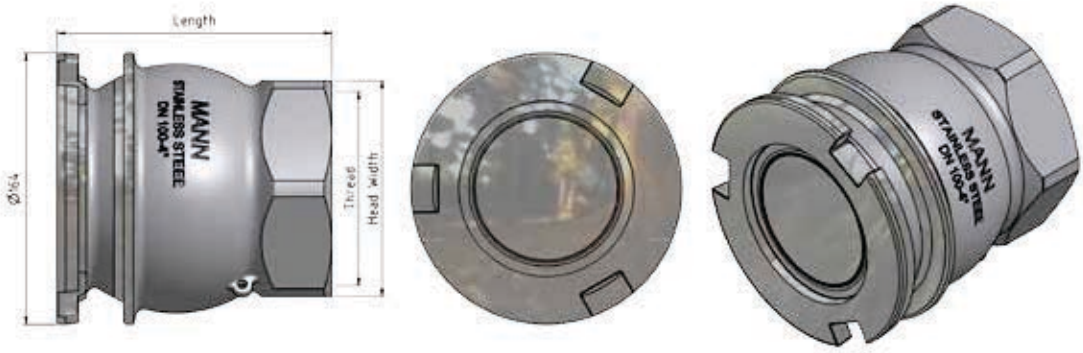
Dimensions				Manntek Part Number	
Connection	Length	Thickness	Weight Kg	Sealing FPM	Sealing NBR90
DN65 PN25/40	112	15 (22)*	5,0	L434B4401	L434B4420
2 1/2" ASA 300 PSI	112	15 (24)*	5,0	L460B4401	L460B4420
DN80 PN25/40	112	15 (24)*	5,5	L437B4401	L437B4420
3" ASA 300 PSI	112	15 (24)*	5,5	L462B4401	L462B4420

** - Values in bracket also available on special request*



Tank unit female thread 4” (socket Ø164)

Dimensions				Manntek Part Number	
Thread	Length	Head width	Weight Kg	Sealing FPM	Sealing NBR90
4" BSP	156	125	6,1	L516B4401A	L516B4420A
4" NPT	166	125	6,3	L517B4401	L517B4420



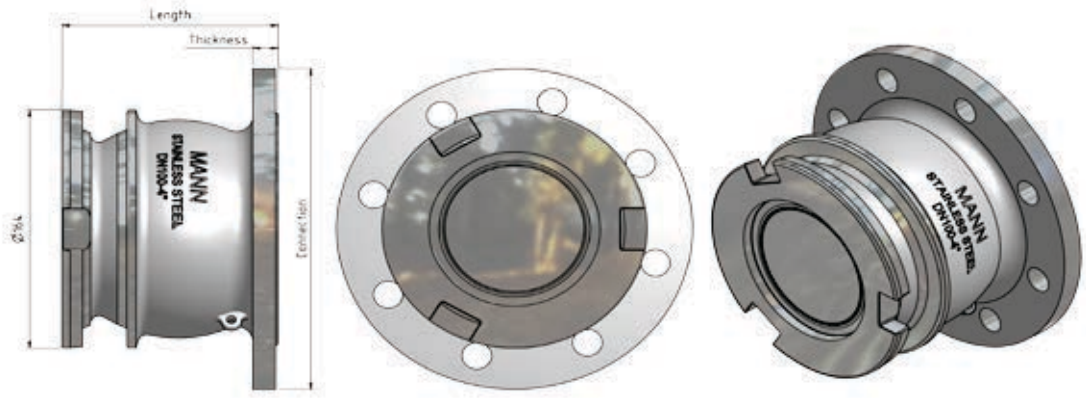
C

Dry Seal Couplings

Tank unit with flange 4” (socket Ø164)

Dimensions				Manntek Part Number	
Connection	Length	Thickness	Weight	Sealing FPM	Sealing NBR90
DN100 PN25/40	134	16 (24)*	9,3	L540B4401	L540B4420
4" ASA 300 PSI	134	16 (24)*	9,3	L564B4401	L564B4420

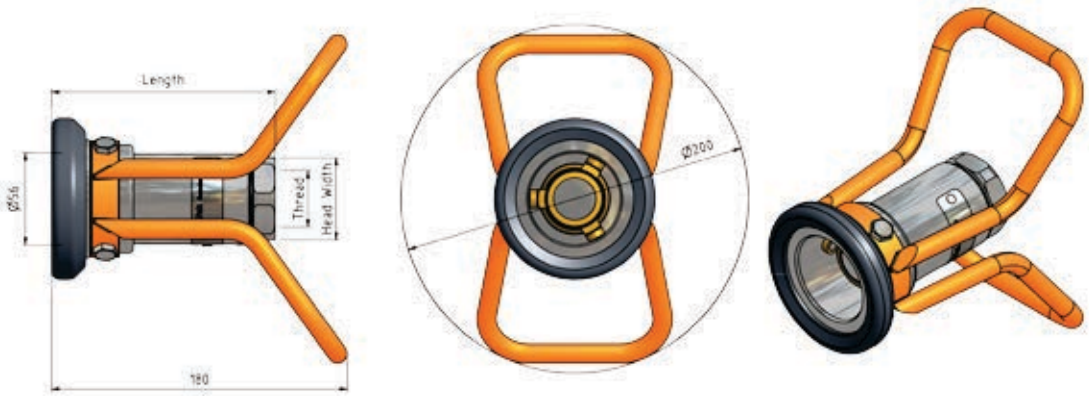
** - Values in bracket also available on special request*



C

Hose unit with female thread 1” (socket Ø56)

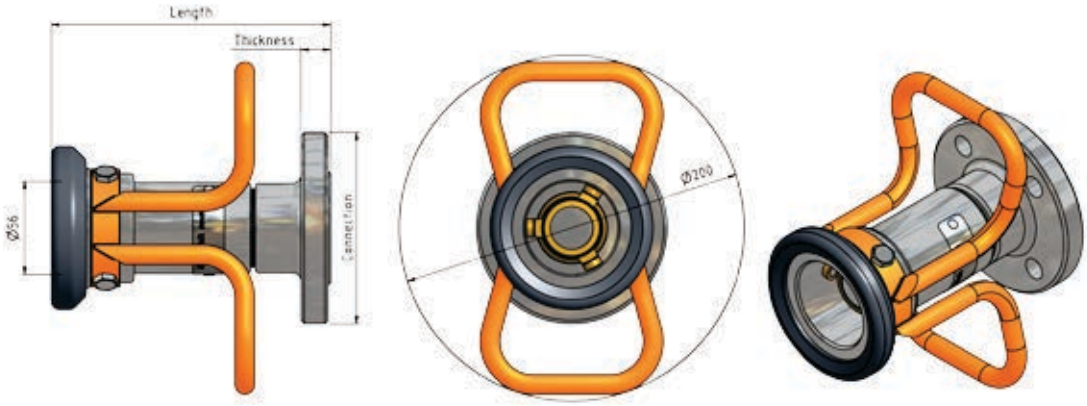
Dimensions				Manntek Part Number	
Thread	Lenght	Head Width	Weight KG	Sealing FPM	Sealing NBR90
3/4 BSD	131	50	1,9	M101A4401A	M101A4420A
3/4 NPT	134,5	50	2,0	M102A4401	M102A4420
1" BSP	133	50	1,9	M103A4401A	M103A4420A
1" NPT	136,5	50	2,0	M104A4401	M104A4420
1 1/4" BSP	139,5	50	1,9	M105A4401A	M105A4420A
1 1/4" NPT	144	50	2,0	M106A4401	M106A4420



Dry Seal Couplings

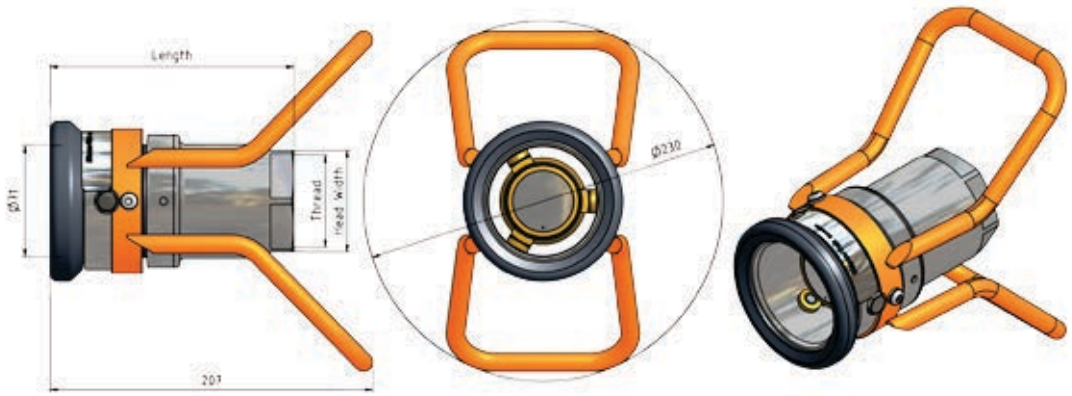
Hose unit with flange 1” (socket Ø56)

Dimensions				Manntek Part Number	
Connection	**Length**	**Thickness**	**Weight Kg**	**Sealing FPM**	**Sealing NBR**
¾” ASA 300 PSI	166,5	15,9	3,2	M150A4401	M150A4420
DN25 PN25/40	168,5	18	3,4	M124A4401	M124A4420
1” ASA 300 PSI	168	17,5	3,4	M152A4401	M152A4420
DN32 PN25/40	168,5	18	3,6	M126A4401	M126A4420
1 ¼” ASA 300 PSI	169,5	19	3,6	M154A4401	M154A4420



Hose unit with female thread 2” (socket Ø71)

Dimensions				Manntek Part Number	
Thread	**Length**	**Head width**	**Weight Kg**	**Sealing FPM**	**Sealing NBR90**
1 ½" BSP	152,5	65	3,1	M207A4401A	M207A4420A
1 ½" NPT	155,5	65	3,2	M208A4401	M208A4420
2" BSP	154,5	65	2,9	M210A4401A	M210A4420A
2" NPT	156	65	3	M211A4401	M211A4420



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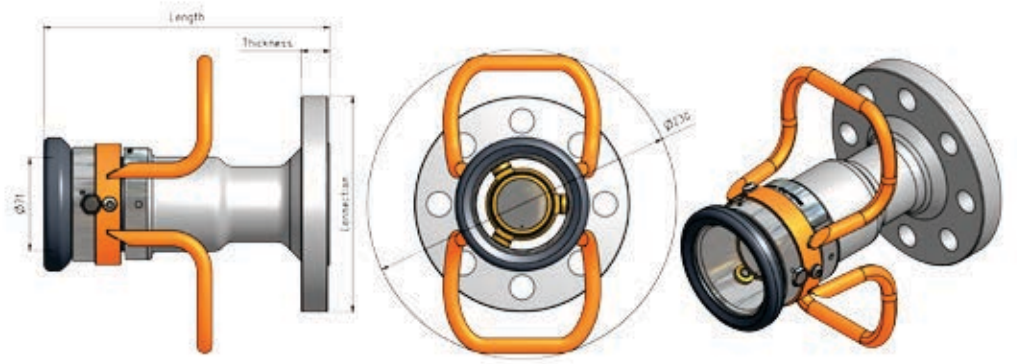
Dry Seal Couplings

Hose unit with flange 2” (socket Ø71)

Dimensions				Manntek Part Number	
Thread	Length	Head width	Weight Kg	Sealing FPM	Sealing NBR90
1 ½" BSP	152,5	65	3,1	M207A4401A	M207A4420A
1 ½" NPT	155,5	65	3,2	M208A4401	M208A4420
2" BSP	154,5	65	2,9	M210A4401A	M210A4420A
2" NPT	156	65	3	M211A4401	M211A4420



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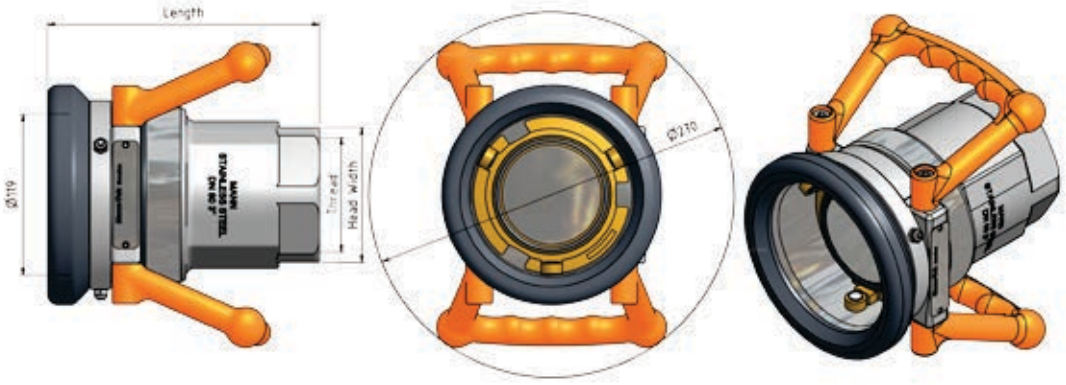
Hose unit with female thread 3” (socket Ø119)

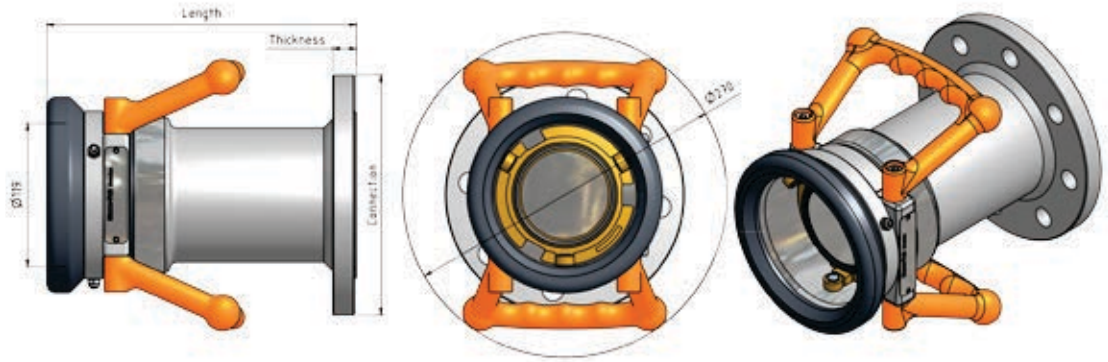
Dimensions				Manntek Part Number	
Thread	Length	Head width	Weight	Sealing FPM	Sealing NBR90
2 ½” BSP	192	100	8,8	M412B4401A	M412B4420A
2 ½” NPT	200	100	9,1	M413B4401	M413B4420
3” BSP	194	100	8,1	M414B4401A	M414B4420A
3” NPT	202	100	8,4	M415B4401	M415B4420



Dry Seal Couplings

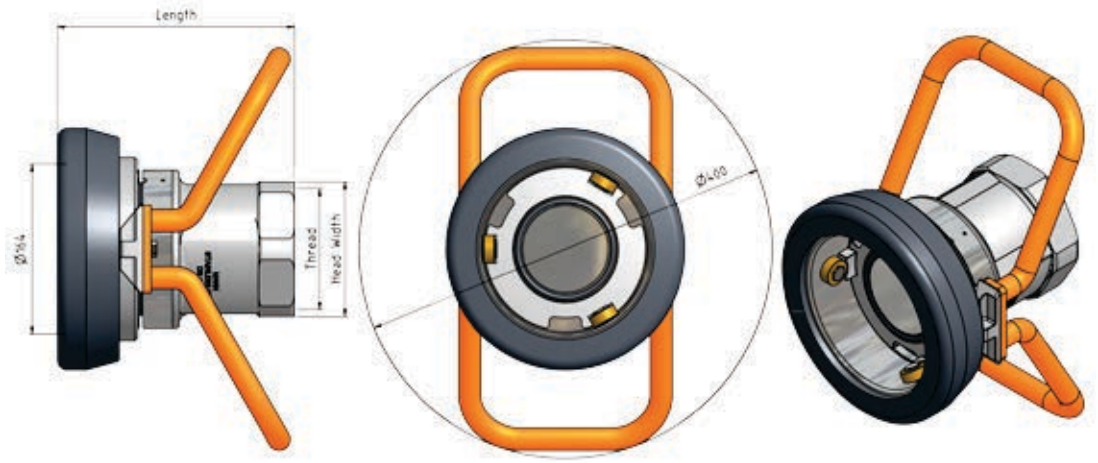
Hose unit with flange 3” (socket Ø119)

Dimensions				Manntek Part Number	
Connection	**Length**	**Thickness**	**Weight Kg**	**Sealing FPM**	**Sealing NBR90**
DN65 PN25/40	260,5	22	12,6	M434B4401	M434B4420
2 ½” ASA 300 PSI	264	25,4	13,3	M460B4401	M460B4420
DN80 PN25/40	267	24	13,2	M437B4401	M437B4420
3” ASA 300 PSI	262,5	28,6	15,1	M462B4401	M462B4420



Hose unit with female thread 4” (socket Ø164)

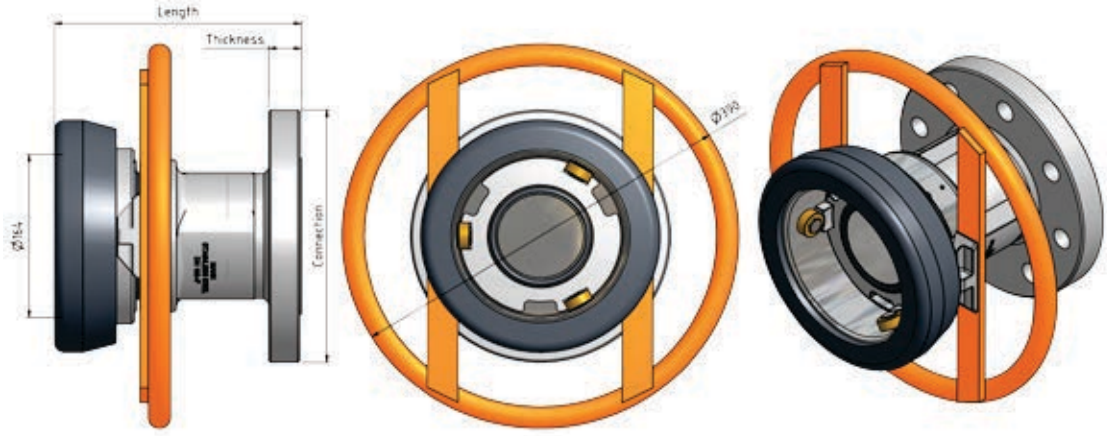
Dimensions				Manntek Part Number	
Thread	**Length**	**Head width**	**Weight**	**Sealing FPM**	**Sealing NBR90**
4” BSP	223	130	15,7	M516B4401A	M516B4420A
4” NPT	232	130	16,0	M517B4401	M517B4420



C

Hose unit with flange 4” (socket Ø164)

Dimensions				Manntek Part Number	
Connection	Length	Thickness	Weight	Sealing FPM	Sealing NBR90
DN100 PN25/40	233	24	20,8	M540B4401M	M540B4420M
4” ASA 300 PSI	241	31,7	24,3	M564B4401M	M564B4420M



C

Emergency Shut-off Valves

Application

Normally installed as safety devices on bulk plants for bobtail or transport filling operations in liquid or vapour phase.

The main feature of this kind of valve is the ability to be actuated in different ways: locally and manually by the driver, manual remote or pneumatic remote system by plant operators and automatically by cable connected to the hose in case of pull away.

Additionally, they incorporate a thermal fuse which in case of temperatures higher than 100°c will melt making the valve turn to close position.

Emergency shut-off valves may be used as operation valves and replace globe or angle valves and they clearly indicate whether they are in open or closed position.

Rego Part Number	Inlet & Outlet Connections	Accessories		Liquid Flow Capacity at 0,68 bar drop (l/min)
		Remote Pneumatic Close	Remote Pneumatic Open/ Close	
6016	2" F-NPT	-	-	2691
6024	3" F-NPT	-	-	5015
6010	1¼" F. NPT	6016-60D	6016-60C	980

6016

6024

C

Instrumentantion and Telemetry

Kosan Crisplant offers a wide range of different types of manometers for LPG installations or industry in general. Furthermore, Kosan Crisplant can also offer reliable telemetry equipment from the simplest to the most innovative solution.

Range of products:

- ABS series
- SSC series
- ASS series
- Telemetry solutions

The range Kosan Crisplant is offering is complete and matches several specifications and different demands from various markets. Nevertheless, if you do not find what you need on the following pages, we kindly ask you to contact us. We will do our best to provide the best solution for your need.

For proper support contact one of the KC offices closest to your location.

ABS Series

Application

ABS series manometers have the external case in Plastic.

This type of manometer represents the simplest construction available and it may be used when accuracy is not so important.

Normally they are installed on liquid or gas networks with fluids that do not attack chemically the alloys of copper, do not present a high stickiness and do not crystallize.

Normally they are installed on liquid or gas networks with fluids which do not attack the alloys of copper chemically nor present a high stickiness and which do not crystallize either.

D

SSC Series

Application

Stainless Steel Case series manometers have the external case in stainless steel.

This type of manometer is resistant to external environment.

The accuracy is 1.6% and they can be filled with glycerin in order to protect the internal mechanism against vibrations

It may be installed on liquid or gas networks with fluids which do not attack the alloys of copper chemically nor present a high stickiness and which do not crystallize either.

-Typical utilization is to check differential pressures on pumps, compressors, etc.

ASC Series

Application

All in Stainless Steel series manometers have the external case and all other parts in stainless steel. This type of manometer is resistant to external environment and to corrosive fluids thus preventing oxidation of all parts.

The accuracy is 1% and they can be filled with glycerin in order to protect the internal mechanism against vibrations.

Typical utilization is to check differential pressures on pumps, compressors, as well as to measure the presence of very corrosive atmosphere or fluids.

D

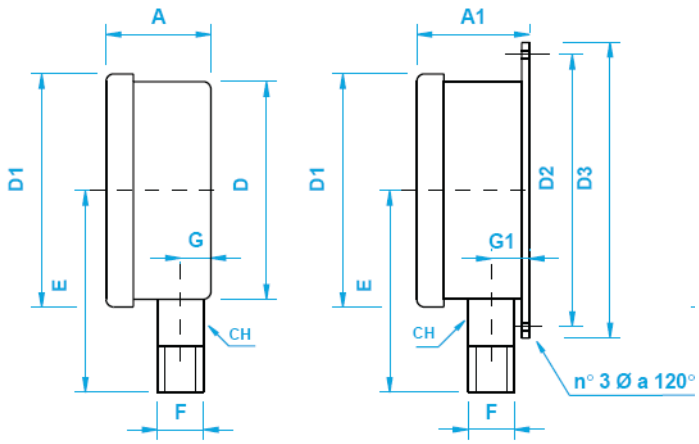
APPROXIMATE DIMENSIONS (mm) and WEIGHTS (Kg)

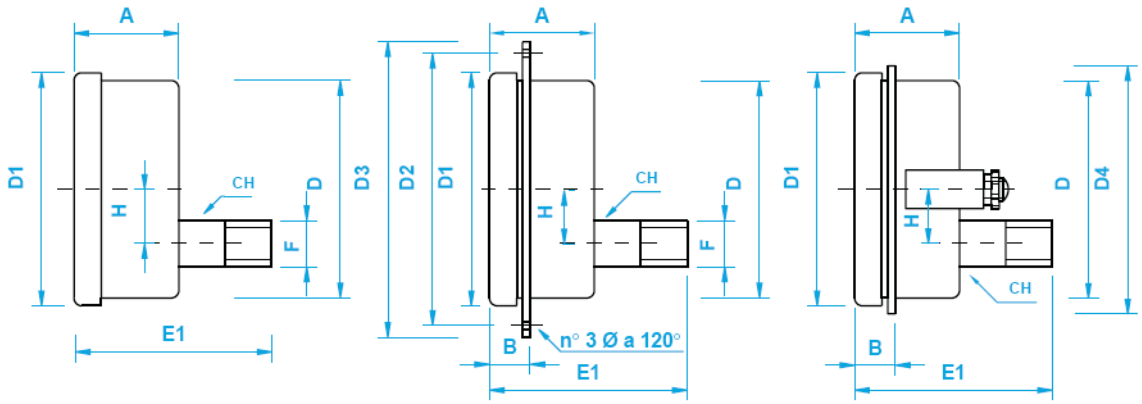
ABS	DN DIAL SIZE	D	D1	Ø	A	CH	E	E1	F	G	H	Ø Panel drilling	With electric contacts Amax	Weight Kg (2)
	40	-	42	-	25	11	27,5	-	1/8"	-	-	-	-	-
	50	-	50	-	28	14	48	-	1/4	-	-	-	-	-
	63	-	63	-	28	14	51	-	1/4	-	-	-	-	-
SSC	63	62	68	4	29	14	57	57	1/4"	10	-	66	-	0,15 - 0,20
	80	79	88	5	40	14	62	65	1/4"	10	20	83	-	0,25 - 0,45
	100	101	114	5	54	22	86	90	1/2"	18	32	105	83	0,75 - 1,0
	150	149	162	6	54	22	110	90	1/2"	18	32	153	83	1,10 - 1,75
ASS	63	62	70	4	34	14	54	59	1/4"	10	18	65	-	0,2 - 0,3
	80	79	88	5	40	14	62	65	1/4"	10	20	83	-	0,3 - 0,5
	100	101	114	5	54	22	86	89	1/2"	18	32	105	83	0,8 - 1,1
	150	149	162	6	54	22	110	89	1/2"	18	50	153	83	1,2 - 1,8
	200	189	208	6	55	22	135	95	1/2"	16	50	194	-	1,5

(2)Variable depending of liquid filling

OPTIONS AND ACCESSORIES
SPECIAL SCALES: Single - Double (bar / psi - bar / Kpa) SPECIAL CONNECTIONS
MAX / MIN / MIN & MAX DRAGGING POINTERS (DS 100 - 150)
SAFETY GLASS
SILICONE OIL FILLING (Tamb. -30 80 C)
SILVER SOLDERING for range ≤40 bar (Process Temp. 120 C for SSC series)
DEGREASING FOR OXYGEN
DIRECT OR REMOTE DIAPHRAGM SEALS
ELECTRIC OR INDUCTIVE CONTACTS (For DN 100 - 150)

DEGREE OF PROTECTION	IP55 or IP65 (liquid filled) according to EN 60529
LIQUID FILLED	Glycerol 90%





RCT Electronic Sensors

The measured data of the sensors is evaluated by the RCT electronic:

- *As visually readable analogue information and/or*
- *Into digitally usable information to be transferred to digital devices.*
- *All sensors are programmed from the factory to fit the respective transmission unit.*

Electronic sensors for float technology – mainly LPG tanks

RCT Standard – junior/senior

- Compatible with all common float gauges manufactured by Rochester Gauges and SRG
- For float gauges type Rochester senior please use the adapter 1000438!

RCT Standard – SRG type 705

- Compatible with SRG float gauges manufactured until 1993
- The position of the Magnet is deviant from the standard by approx. 14 % bottom wise!

RCT Standard – type Livello

- Compatible with float gauges manufactured by Livello
- Scale direction anti-clockwise

RCT Standard – type linear/Cotrako

- Compatible with all common float gauges manufactured by Rochester Gauges, SRG and Cotrako
- Exclusively designed for tanks with linear withdrawal (square tanks)!

Original Rochester junior/senior

- On customer request we supply our equipment with original senior or junior hall-effect sensors manufactured by Rochester Gauges

Original Rochester Magnetel

- On customer request we supply our equipment with original Magnetel 8" and 4" hall-effect sensors manufactured by Rochester Gauges
- Each transmitter is programmed individually to the sensor in order to get maximum precision
- Due to the variety of sensors it is important that the customer specifies the exact sensor type

D

RCT Electronic Sensors

Ultrasonic sensors – Liquids/oil tanks/water tanks

Single sensor – Ø 20 mm

- For indoor use
- Reading is processed by a combined transmitter and receiver capsule
- Measuring range: 40 cm … 400 cm (there's no reading and display of measuring result between 0 and 40 cm)
- Sensor diameter: 20 mm

Double sensor – Ø 40 mm

- For indoor use
- Reading is processed by two different capsules for transmitting and receiving the sound waves
- Measuring range: 10 cm … 400 cm
- Sensor diameter: 40 mm

Ultrasonic sensor

- For indoor and outdoor use
- Measuring range: 15 cm …500 cm (individual adjustment on request)
- Sensor diameter: e.g. 1¼"
- Solid aluminium housing with male thread
- The measuring range of the sensor can be adjusted to the tank shape individually
- Measuring in cm-values

Sensors and respective monitoring solutions

Light sensor

- Monitoring of warning lights on machines and technical installations
- Fault signals are transferred by the radio-transmitter to the corresponding receiver units
- E.g. message forwarding of a machine fault with SMS directly to the mobile phone of the technician

Temperature sensor

- Registration of temperature in the range of –30 °C to +130 °C
- Alarm transmission if temperature exceeds or falls below a predefined set point; alternatively cyclic transmission of measured temperature can be used
- E.g. monitoring of refrigerators, rooms or pipes (room temperature, temperature sensing device)

Switch contact

- Connection to a dry contact of a technical installation
- Optionally available as open contact or make contact
- Fault transmission directly to the responsible technician – without any delays

Interface 4–20 mA

- Input for analogue signal 4–20 mA (industrial standard)
- Connection of almost any common sensor for data evaluation and transmission (pressure, temperature, humidity, …)

Network adapter

- Separate connection unit to monitor a supply voltage of 230 V/DC
- Alarm messaging in case of variation of mains voltage

On customer request, RCT provides transmitter units for use in commercial available standard sensors such as pressure or temperature sensors.

RCT radio-transmitters communicate perfectly with the connected sensors and transfer the data via either:

- *Coded radio-signal*
- *Analogue telephone modem (not shown)*
- *GSM to the receiver devices.*

Battery powered: RF technology – for monitoring of tanks and technical installations up to 1,000 m radio range

Radio transmitter Ex zone 1 – with external antenna and magnetic foot

- Level measuring for underground LPG tanks
- Approval for use in explosive areas – ATEX zone 1

Radio transmitter Ex zone 2 – with internal antenna

- Level measuring for aboveground LPG tanks
- Approval for the use in explosive areas – ATEX zone 2

Radio transmitter – pulse counting

- For the use with pulse counting meter (e.g. gas, water, electricity)
- Steady transfer of meter reading by radio signal – e.g. to LCD receiver or GSM central office (Remote Profi Puls)
- Compatible to all common pulse counting devices (e.g. Elster)
- Pending on pulse counting device the unit can monitor the alarm contact

Radio transmitter with ultrasonic sensor

- Contactless level monitoring with ultrasonic technology
- Suitable for all common tank shapes – adjustment to tank shape with DIP switches (measuring range, round/square tank)
- With internal antenna for aboveground tanks or with external antenna for underground tanks, respectively for the use at unfavourable environment conditions

D

Battery powered:GSM technology – telemetry solutions for technical installations

Radio transmitter "Watchdog"

- Available with various sensors and for almost every field of application
- For example: message forwarding of faults of burners, machines, air conditioners; temperature monitoring of refrigerators; monitoring of warning lights

GSM transmitter Ex zone 2 – with internal antenna

- Level monitoring on aboveground LPG tank installations
- Direct level transmission from the tank to the PC with SMS (SIM card)

GSM transmitter Ex zone 1 – with external antenna

- Level monitoring on underground LPG tank installations
- Direct level transmission from the tank to the PC with SMS (SIM card)

GSM transmitter – with ultrasonic sensor

- Contactless level monitoring
- Suitable for all common tank sizes and shapes
- Input of tank geometry with PC (configuration of measuring range, round/square tanks)

GSM transmitter – with different sensors

- Due to different available sensors a wide range of applications can be covered
- E.g. forwarding of fault messages of burners, machines, refrigerators, light signals of warning lights, …
- Direct data transmission to a central PC with SMS (SIM card)

D

Transmission Solutions

With network support: GSM technology – telemetry solutions for technical installations with GSM technology

GSM transmitter – monitoring of gas meter

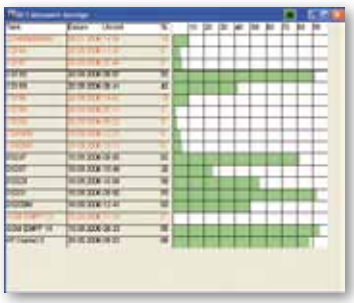
- Connection to a gas meter with pulse counting device (pending on application for gas, water, electricity)
- Regular transmission of the gas meter reading by SMS
- Data receiving with PC GSM modem

GSM transmitter Remote Profi Puls

- Central monitoring unit – particularly suitable for monitoring of bigger objects such as apartment buildings with different tanks, gas meter or technical installations
- Meter tank and object monitoring – combination radio-transmission and GSM

GSM PC modem "Starterkit"

- Receiving of the incoming messages of all installed GSM units and evaluation on PC
- Worldwide transmission of level- and alarm messages of different applications
- Data supply for data processsing with RCT software



IH modem – with switch contact

- Connection to a technical installation to monitor and transfer faults
- Direct data transmission of alarms to a central PC – transmission of all messages by SMS with SIM card

Modem receiver GSM

- Worldwide transmission of liquid level or alarm messages via GSM for registration and evaluation on PC or mobile phone
- Parallel use with other RCT receivers/local data collection e.g. LCD display and simultaneously transmission of the data via GSM to a central office
- GSM card at customer's request

D

Reception/Analysis Alternatives

RF Technology

LCD receiver

- Display of liquid level in volume percent or liter
- LED – shines if level reaches predefined set point < 20 %
- Reception of up to 4 radio transmitters
- Monitoring of battery power, functionality of radio transmitter and regular transmission
- Automatic receipt of radio signal
- Parallel use with other RCT receiver
- Power supply unit 230 V
- Mounting with wall brackets

Relay receiver

- To control different actions of a predefined event, i.e. depending on the liquid level or in case of an alarm, the actions could be to switch pumps or electronic valves
- Reception of up to 2 radio transmitters
- Monitoring of battery power, functionality of radio transmitter and regular transmission (visual warning signal with LED or relay control)
- Automatic receipt of radio signal
- Parallel use with other RCT receiver
- Power supply unit 230 V
- Mounting with wall brackets

Interface receiver

- Connective link between liquid level of tank and industrial controller
- The liquid level or alarm message is transferred to analogue signal of 4 … 20 mA and output to control industrial applications
- Reception of 1 radio transmitter
- Monitoring of battery power, functionality of radio transmitter and regular transmission (visual warning signal with LED or relay control)
- Automatic receipt of radio signal
- Parallel use with other RCT receiver
- Power supply unit 230 V
- Mounting with wall brackets

RS 232 receiver

- Direct transmission of the liquid levels and alarm messages to PC
- Monitoring of up to 4 radio transmitters (optionally unlimited number)
- Connection to PC via RS 232 interface (serial interface) (USB adapter also available)
- Monitoring of battery power, functionality of radio transmitter and regular transmission (visual warning signal with LED or relay control)
- Automatic receipt of radio signal
- Parallel use with other RCT receiver
- Power supply unit 230 V
- Mounting with wall brackets

Reception/Analysis Alternatives

GSM Technology

GSM PC-Modem „Starterkit"

- Reception of the incoming messages of all installed GSM units and evaluation on PC
- Worldwide transmission of level- and alarm messages of different applications
- Data supply for data processing with RCT software (basic software is included in the starterkit free of charge)
- Data reception using SIM card of any provider.
  No telephone line needed.
- Normally only one PC GSM modem per central office needed
- Easy configuration of all GSM units with PC or Notebook
- Re-configuration of GSM units directly from PC software

RCT Service GUI

Data Display

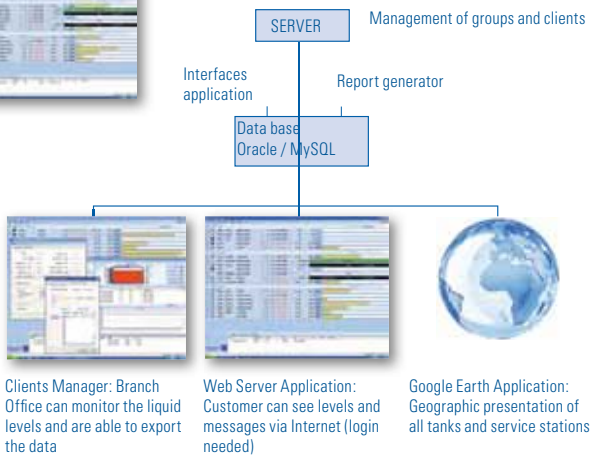
Optional: Message forwarding to mobile phone (software alarm forwarding)

RCT GSM Manager – Single-user version

- This software can manage the complete handling of all GSM units and replaces "RCT Service GUI" and "Data display"
- User friendly design with clearly presentation of all messages
- More options for managing and grouping the tanks and alarm situations
- New tools for data evaluation, graphic presentation and message forwarding
- Better customer tracking system due to database integration
- Compatible with all RCT transmitters
- Reporting options (e.g. listing)
- Acoustic warning in case of alarm messages arbitrary adjustable
- Network capability
- Mail forwarding of cyclic- and alarm messages

RCT GSM Manager – Enterprise version (database technology)

- Server-based – database integration of customer information and further processing
- Basic logic functionality identical to single-user version
- Projection of total demand with liter/volume information
- Projection of filling date
- Deactivation of gas supply or heating systems at the touch of a button (in combination with Remote Profi Puls)
- Collecting data request with Mobile Phone within a few seconds



Clients Manager: Branch Office can monitor the liquid levels and are able to export the data

Web Server Application: Customer can see levels and messages via Internet (login needed)

Google Earth Application: Geographic presentation of all tanks and service stations

D

Pressure Regulators

Kosan Crisplant is able to offer pressure regulators that may be used in different kind of applications for industrial or domestic use.

Pressure regulators are necessary in order to enable the use of the stored or distributed gas for different applications, thereby ensuring the necessary reduction to fit the high pressure for different utilizations.

The information on pressure regulators is organised in the following ranges:

- High Demand First Stage Regulators
- First Stage Regulators
- Industrial and Commercial Second Stage Regulators
- Second Stage Regulators
- Twin Stage Regulators
- Adjustable High Pressure Regulators

Please bear in mind that in order to select the correct regulator size, the following information is necessary:

- Inlet pressure
- Outlet pressure
- Desired flow capacity
- Type of gas

All flow capacities in the tables are based on specific pressure conditions. For information on capacities in different conditions, please contact us.

Incorrect use or failure of pressure regulators may cause dangerous situations such as:

- High pressure than desired downstream from the regulator
- Leaks of gas on the regulator
- Lower pressure than desired downstream from the regulator
- Damage or accident as consequence of the previous situations

The range Kosan Crisplant is offering is complete and matches several specifications and different demands from various markets. Nevertheless, if you do not find what you need on the following pages, we kindly ask you to contact us. We will do our best to provide the best solution for your need.

For proper support contact one of the KC offices closest to your location.

High Demand First Stage Regulators

Application

High demand first stage regulators are installed as the first stage regulator on gas installations as they are able to reduce the pressure from the 1st stage to an intermediate pressure before utilization (2nd stage).

In some cases, this kind of regulators may supply the gas directly to the industrial equipment.

By screwing or unscrewing the adjustment spring, or adding several spring ranges, it is possible to set the outlet pressure of the regulator.

Part Number	Connections (FxF) NPT	Orifice	Outlet pressure Range (bar)*	Pin (Bar)	Vapour capacity Propane** (kg/hr)
627	1"	½"	0.34 to 1.4 (setpoint 1,4 bar)	13,8	1307
				6,9	778
				3,4	485
				2,1	210
046	¾"	3/8"		13,8	434
				6,9	288
				3,4	242
				2,1	148
	1"			13,8	878
				6,9	530
				3,4	275
				2,1	152

** - For standard spring*
*** - Capacities based on outlet pressure of 1.4 bar, for butane capacity multiply by 1.064 for Nm^3/h of NG, multiply by 0,80*

OUTLET PRESSURE REGULATION SPRINGS			
627 Outlet pressure range spring	**Bar**	**046 Outlet pressure range spring**	**Bar**
Yellow	0,34-1,4	Yellow	0,20-0,69
Green	1,0-2,8	Aluminium	0,55-1,38
Blue	2,4-5,5	White	1,03-3,58
Red	4,8-10,3	Green	0,69-6,55
-	-	Tan	3,44-8,61

046

627

First Stage Regulators

Application

These types of regulators are installed as the first stage regulator on LPG installations as they are able to reduce the pressure from the tank or the cylinder (1st stage) to an intermediate pressure before utilization (2nd stage). In some cases, this type of regulators may even supply the gas directly to the industrial equipment which should then be prepared to receive gas flow at high pressure.

Some types of regulators are adjusted from the factory without the possibility of changing the outlet pressure, while other types can be user adjusted by screwing or unscrewing the spring. Depending on the model, regulators may have an internal relief valve or/and pressure tap incorporated.

REGO Part Number	Inlet	Outlet	Factory Outlet Pressure (bar)	Outlet pressure Range (mbar)	Vent position	Integral Relief Included	Vapour capacity Propane* (kg/hr)
LV3403TR	1/4" NPT	1/2" F.NPT	0,69	-	Over Outlet	YES	31
LV3403TRV9					9:00		
LV4403SR4	1/2" NPT	1/2" F.NPT	0,34	0,069 to 0,34	Over Outlet		52
LV4403TR4			0,69	0,34 to 0,69			
LV4403SR9	F.POL		0,34	0,069 to 0,34			
LV4403TR9			0.69	0,34 to 0,69			
LV4403SR96		¾" F.NPT	0,34	0,069 to 0,34			
LV4403TR96			0,69	0,34 to 0,69			

** Capacities based on inlet pressure 1.37 bar higher than setting pressure and outlet pressure 20% lower than setting pressure.*

LV3403

LV4403

E

Industrial and Commercial Second Stage Regulators

Application

The industrial and commercial regulators are installed as the second stage regulator on a LPG installation as they are able to reduce the pressure from an intermediate pressure, downstream from a LPG cylinder or a LPG tank, to a utilization pressure.

Some types of regulators are adjusted from the factory without the possibility of changing the outlet pressure, while other types can be user adjusted by screwing or unscrewing the spring.

Depending on the model, regulators may have an internal relief valve or/ and pressure tap incorporated.

Part Number	Connections (FxF) NPT	Orifice	Internal Relief Valve	Outlet pressure Range (mbar)*	Pin (Bar)	Vapour capacity Propane** (kg/hr)
143-80-2	1"		Yes	30-70 (setpoint xxmbar)	1,38	71
					0,69	48
					0,52	40
					0,34	31
	¾"				1,38	43
					0,69	34
					0,52	30
					0,34	25
243-8-2	1 ½"			70-140 (setpoint xxmbar)	1,70	304
					1,03	230
					0,69	183
					0,34	113
	2"			70-140 (setpoint xxmbar)	1,70	353
					1,03	247
					0,69	190
					0,34	116
HSR	1"	1/4"		31-50 (setpoint 35mbar)	2.75	107
					2,07	95
					1,38	76
					0,69	47

** - For standard spring*
*** - Capacities based on outlet pressure of 1.4 bar, for butane capacity multiply by 1.064 for Nm^3/h of NG, multiply by 0,80*

143

243

OUTLET PRESSURE REGULATION SPRINGS					
143-80-2 Outlet pressure colors spring	**Range (mbar)**	**243-80 Outlet pressure colors spring**	**Range (mbar)**	**HSR Outlet pressure range spring**	**Range (mbar)**
Red	9-16	Green	30-70	Yellow	15-20
Blue	13-21	Orange	69-137	Silver	25-31
Green	15-34	Black	137-293	Gray	31-50
Orange	29-68	Cadmium	206-448*	Pink	50-87
Black&White	34-138	White	410-690*	Light Blue	90-150
Cadmium*	34-206			-	-
Black*	137-413			-	-

** - Hp models only*

HRS

HRS

Second Stage Regulators

Application

These regulators are installed as the second stage regulator on a LPG installation as they are able to reduce the pressure from an intermediate pressure, downstream from a LPG cylinder or a LPG tank, to a utilization pressure.

Some types of regulators are adjusted from the factory without the possibility of changing the outlet pressure, while other types can be user adjusted by screwing or unscrewing the spring. Depending on the model, regulators may have an internal relief valve or/and pressure tap incorporated.

REGO Part Number	Inlet (F NPT)	Outlet (F NPT)	Factory Delivery Pressure @0,69 bar inlet pressure (mbar)	Outlet pressure Range (mbar)	Vent Position	Vapour capacity Propane (kg/hr)	Integral Relief Included	Obs.
LV4403B4	1/2"	2	28	22-33	Inlet	20*	Yes	-
LV4403B46		3/4"						
LV4403B46R								Backmount design
LV4403B66	3/4"							
LV4403B66R								Backmount design
LV4403B66RA						21*	-	
LV4403B66RAB								Mounting bracket included; 90° connections
LV4403H414	1/2"	1/2"	36	31-47	Inlet	14	Yes	-
LV4403H4614		¾"						
LV4403H6614	¾"							
LV5504H414	½"	¾"	34,8	17,4-39,8		35**		
LV5503H614	¾"		39,8					
LV5504620			49,8	27,3-69,7				
LV5503H620V			49,8		Outlet			
LV5503H640			99,7	69,7-209,3	Inlet			
LV5503H640V			99,7		Outlet			
LV5504H814	¾"	1"	34,8	17,4-39,8	Inlet	50**		
LV5503H820			49,8	27,3-69,7				
LV5503H840			99,7	69,7-209,3				
LV5503B4	1/2	3/4"	28	22-33		33*		
LV5503B6	3/4"							
LV5503B8	3/4"	1"				47*		
LV6503B14	1 1/2"			21-35	Inlet	165*		
LV6503B16	2"					200*		

** Capacities based on 0,69 bar inlet pressure and 22 mbar delivery pressure.*
*** Capacities based on 0,69 bar inlet pressure and 20% drop of delivery pressure.*

LV5503B

LV4403B

E

Twin Stage Regulators

Application

Twin Stage Regulators are compact solutions with the availability of reducing the pressure from LPG tanks or cylinders (1st stage) directly to utilization pressure maintaining the advantages of a two stage pressure regulation system.

Internally, they incorporate two different pressure reductions steps instead of only one as normal. Usually, the regulators are user tuned by screwing or unscrewing the spring.

Depending on the model, regulators may have an internal relief valve or/ and pressure tap incorporated.

REGO Part Number	Inlet (F NPT)	Outlet (F NPT)	Factory Delivery Pressure @6,89 bar inlet pressure (mbar)	Outlet pressure Range (mbar)	Bonnet Vent Position 1st Stage	Bonnet Vent Position 2nd Stage	Vapour capacity Propane* (kg/hr)	Accessories		
								1st Stage Vent Pipe-Away	2nd Stage Vinyl Cover	Bracket
LV404B4	¼"	1/2" F. NPT	28	22– 33	Down	Outlet	11	404PE	-	-
LV404B4V9					9:00					
LV404B46		3/4" F. NPT			Down	Outlet				
LV404B46V9					9:00					
LV404B9	F. POL	1/2" F. NPT			Down	Outlet				
LV404B9V9					9:00					
LV404B96		3/4 F. NPT			Down	Outlet				
LV404B96V9					9:00					
LV404B23	¼"	1/2" F. NPT			Rear	Outlet	4,5		2302-55	2302-31
LV404B29	F. POL									
LV404B23V9	¼"				Left	9:00				
LV404B29V9	F. POL									

** Capacities based on 6,89 bar inlet pressure and 22 mbar delivery pressure.*

LV404B23

LV404B29V

LV404B23V9

LV404B9

High Pressure Industrial/Commercial Adjustable Regulators

Application

Adjustable pressure regulators represent the best solution when it is necessary to work with a wide range of settings on the same device.

Regarding the tank or cylinder pressure, this type of regulator is able to adjust the outlet pressure by use of a "Tee" handle. In order for the operator to adjust the pressure, the regulator normally has a pressure tap for manometer installation.

The regulators mentioned below are able to work with liquid or vapor. Downstream or upstream relief valve installation is recommended. Care must be taken to prevent re-liquification of propane at normal temperatures by heat tracing or other effective means.

REGO Part Number	Adjustment Method	Connections (F NPT)	Recommended Delivery Pressure Range (bar)	Approx. dimensions (mm)		Capacity Determined at Set Pressure of bar*	Capacity Kg/hr. Propane**
				Width between connections (mm)	Max. Height (mm)		
597FA	Tee Handle	1/4"	0,07 - 1,03	87	143	0,68	37
597FB			0,7 - 2,07			1,38	63
597FC			1,37 - 3,10			2,07	73,5
597FD			2,8 – 7,0			2,76	93
1584MN		1/2"	0,2 - 2,1	74	124	1,4	145
1584ML			1,7 - 3,5			2,1	155
1584MH			3,1 - 8,6			4,1	165
1586MN		3/4"	0,2 - 2,1	89	178	1,4	227
1586ML			1,7 - 3,5			2,1	248
1586MH			3,1 - 8,6			4,1	289
1588MN		1"	0,2 - 2,1			1,4	227
1588ML			1,7 - 3,5			2,1	248
1588MH			3,1 - 8,6			4,1	289

** Set pressure established with 6,89 bar inlet pressure and 5,28 kg/h for 59X series and 10,57 kh/h for 158X series.*
***Capacity determined at actual delivery pressure 20% less than set pressure with inlet pressure 1,38 bar higher than the set pressure.*

E

Ball Valves and Acessories

Kosan Crisplant can provide all kind of ball valves for LPG and fire fighting water networks plus accessories needed for a safe and efficient operation.

There is an enormous variety of technical and constructive ball valves in the world. Furthermore, local legislation may be different from place to place, thus requiring different types of ball valves. In this catalogue, we focus on making a brief presentation on the items used most frequently on Kosan Crisplant plants:

- Split body PN 16
- Split body ANSI 150
- Split body ANSI 300
- Wafer PN 16
- Wafer ANSI 150
- Wafer ANSI 300
- Namur Solenoid Valve 3/2 – 5/2 ATEX EX II 2 GD EEX d IIC T6 SIL 3
- Position indicator box – Eexia IIC T6 ATEX AVAIABLE

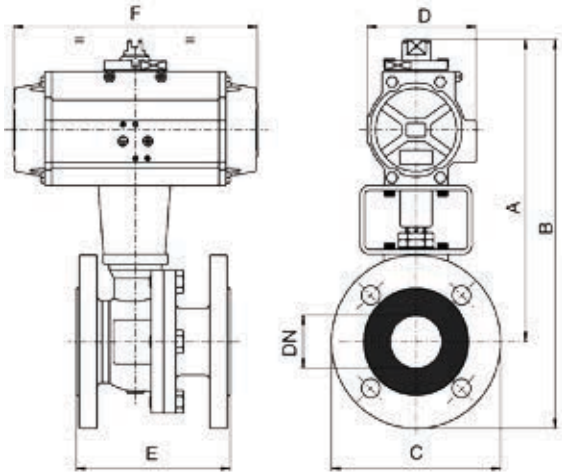
The range Kosan Crisplant is offering is complete and matches several specifications and different demands from various markets. Nevertheless, if you do not find what you need on the following pages, we kindly ask you to contact us. We will do our best to provide the best solution for your need.

For proper support contact one of the KC offices closest to your location.

Split body PN 16

VALVE INFORMATION		
Pos	**PART NAME**	**Material**
1	BODY	1,0619
2	END CONNECTION BRIDE	1,0619
3	BALL	A182 - F304/A351 - Cf8
4	STEM	A182-F316
5	SCREW	CARBON STEEL DN15 CARBON STEEL DN80 DN 150-DN 200
6	NUT	CARBON STEEL DN150 - DN200
7	SPRING WASHER	CARBON STEEL
8	90° STOP	CARBON STEEL
9	PACKING GLAND	A182-F316
10	STEM SEAT	P.T.F.E.
11	HANDLE	CARBON STEEL
12	STEM SEAL	GRAPHOIL
13	O-RING	FKM (VITON®)
14	THRUST WASHER	P.T.F.E.
15	BODY SEAT	GRAPHOIL
16	BODY SEAT	P.T.F.E.
17	BALL SEAT	P.T.F.E.
18	SCREW	STAINLESS STEEL
19	SCREW	STAINLESS STEEL
20	BODY HANDLE DN150-200	EN-GJL 250

8P0119

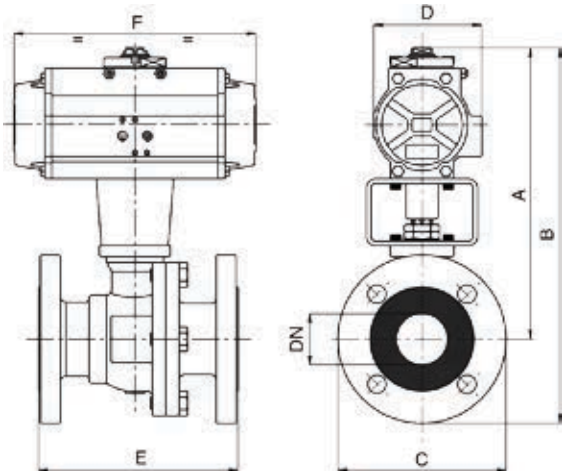


DIMENSIONAL DATA												
DN	15	20	25	32	40	50	65	80	100	125	150	200
PN	40	40	40	40	40	40	16	16	16	16	16	16
A	148	174	195	198	237	261	282	318	344	366	441	507
B	195	227	253	268	312	343	375	418	454	491	583	677
C	95	105	115	140	150	165	185	200	220	250	285	340
D	45	71	71	71	81	95	106	106	123	123	148	164
E	115	120	125	130	140	150	170	180	190	325	350	400
F	110	140	140	140	162	207	238	238	272	272	366	428
ACT.	DA 32	DA 52	DA 52	DA 52	DA 63	DA 75	DA 85	DA 85	DA 100	DA 100	DA 125	DA140
RI	3518	3519	3520	3520	3521	3522	3522	3523	3552	3552	3553	3554

Split body ANSI 150

VALVE INFORMATION		
Pos	**PART NAME**	**Material**
1	BODY	A216-WCB
2	END CONNECTION BRIDE	A216-WCB
3	BALL	A182-F304 / A351-CF8
4	STEM	A182-F04
5	SCREW	CARBON STEEL DN125 CARBON STEEL DN150 - DN200
6	NUT	STAINLESS STEEL DN125 STAINLESS STEEL DN150 - DN200
7	SPRING WASHER	CARBON STEEL
8	90° STOP	CARBON STEEL
9	PACKING GLAND	A182-F316
10	STEM SEAT	P.T.F.E.
11	HANDLE	CARBON STEEL
12	STEM SEAL	GRAPHOIL
13	O-RING	FKM (VITON®)
14	THRUST WASHER	P.T.F.E.
15	BODY SEAT	GRAPHOIL
16	BODY SEAT	P.T.F.E.
17	BALL SEAT	P.T.F.E.
18	SCREW	CARBON STEEL
19	SCREW	CARBON STEEL
20	BODY HANDLE DN150-200	EN-GJL 250

8P0123

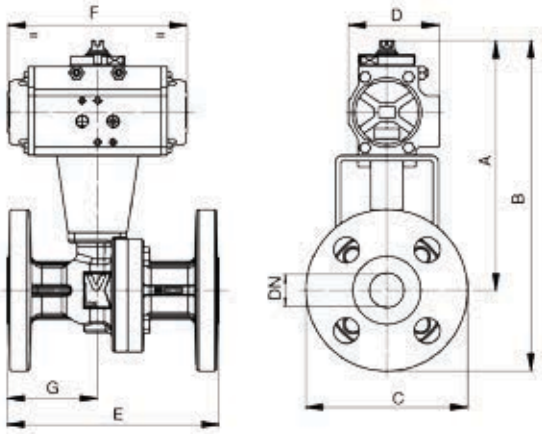


DIMENSIONAL DATA									
DN	15	20	25	40	50	80	100	150	200
PN	20	20	20	20	20	20	20	20	20
A	148	174	195	237	261	318	344	441	507
B	193	224	250	302	336	413	459	583	677
C	90	100	110	130	150	190	230	285	340
D	45	71	71	81	95	106	123	148	164
E	108	117	127	165	178	203	229	394	457
F	110	140	140	162	207	238	272	366	428
ACT.	DA 32	DA 52	DA 52	DA 63	DA 75	DA 85	DA 100	DA 125	DA 140
RI	3518	3519	3520	3521	3522	3523	3552	3553	3554

Split body ANSI 300

VALVE INFORMATION		
Pos	**PART NAME**	**Material**
1	BODY	A216-WCB
2	END CONNECTION	A216-WCB
3	BALL	A182-F304 / A351-CF8
4	STEM	A182-F04
5	SCREW	CARBON STEEL DN15 - DN40 CARBON STEEL DN50 - DN150
6	NUT	CARBON STEEL DN15 - DN100 CARBON STEEL DN150
7	SPRING WASHER	CARBON STEEL
8	90° STOP	CARBON STEEL
9	PACKING GLAND	A182-F316
10	STEM SEAT	P.T.F.E.
11	HANDLE	CARBON STEEL
12	STEM SEAL	GRAPHOIL
13	O-RING	FKM (VITON®)
14	THRUST WASHER	P.T.F.E.
15	BODY SEAT	GRAPHOIL
16	BODY SEAT	P.T.F.E
17	BALL SEAT	P.T.F.E.+ Glass
18	SCREW	CARBON STEEL
19	SCREW	CARBON STEEL
20	BODY HANDLE DN150	EN-GJL 250

8p0215

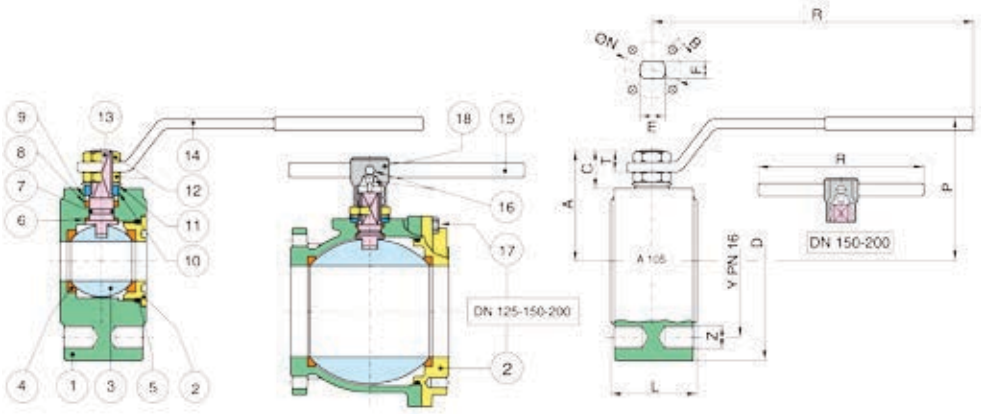


DIMENSIONAL DATA								
DN	15	20	25	40	50	80	100	150
PN	50	50	50	50	50	50	50	50
A	173	188	206	253	272	330	374	475
B	220	247	268	331	355	435	501	635
C	95	118	125	155	165	210	255	320
D	71	81	81	95	106	123	137	187
E	140	152	165	190	216	283	305	403
F	140	162	162	207	238	272	328	522
G	62	61	71	79	86	81	89	172
ACT.	DA 52	DA 63	DA 63	DA 75	DA 85	DA 100	DA 115	DA 160
RI	3519	3829	3563	3526	3522	3552	3565	3554

Wafer PN 16

Valves may be supplyed with actuator

VALVE INFORMATION		
Pos	**PART NAME**	**Material**
1	BODY	ASTM A105 - WCB
2	END CONNECTION	ASTM A105 - WCB
3	BALL	A351-CF8/ A182-F304
4	BALL SEAT	P.T.F.E.
5	O-RING	FKM (VITON®)
6	THRUST WASHER	P.T.F.E.
7	RING	FKM (VITON®)
8	STEM SEAT	P.T.F.E.
9	PACKING GLAND	CARBON STEEL
10	END STOP	INOX AISI 430 (DN15 - DN50) CARBON STEEL DN65 - DN150)
11	SPRING WASHER	CARBON STEEL
12	NUT	CARBON STEEL
13	STEM	A182 - F304
14	HANDLE	CARBON STEEL
15	HANDLE DN 150-200	CARBON STEEL
16	SCREW	CARBON STEEL
17	SCREW	CARBON STEEL
18	BODY HANDLE DN 150-200	EN-GJL-250



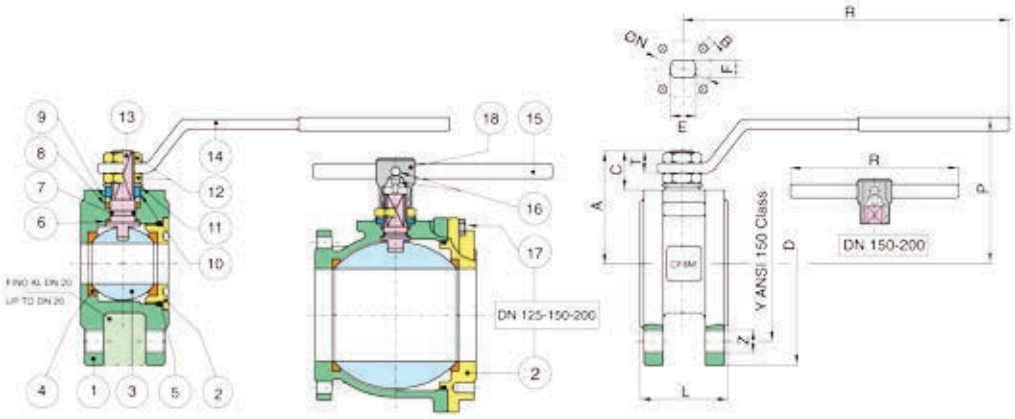
DIMENSIONAL DATA																	
SIZE	**DN**	**D**	**Y**	**Z**	**L**	**R**	**P**	**A**	**C**	**T**	**E**	**F**	**ØN**	**B**	**Kv**	**PN**	**Kg**
1/2"	15	90	65	4 x M12	35	131	65	47	15,5	9	10	7	32	4 X M5	16,3	16	1,30
3/4"	20	100	75	4 x M12	40	131	69	51,5	15,5	9	10	7	32	4 X M5	29,5	16	1,90
1"	25	110	85	4 x M12	46	174	80	61	19,5	11	12	8	42	4 X M5	43	16	2,70
1"1/4	32	130	100	4 x M16	54	174	84	65,5	16,5	11	12	8	42	4 X M5	89	16	4,20
1"1/2	40	140	110	4 x M16	63,5	250	102	78	24,5	13	16	10	50	4 XM6	230	16	5,90
2"	50	150	125	4 X M16	82	250	111	87	25	13	16	10	50	4 XM6	265	16	8,70
2"1/2	65	175	145	4 X M16	103	321	128	104,5	28	18	20	14	70	4 X M8	540	16	15,50
3"	80	190	160	8 X M16	122	321	138	115	28,5	18	20	14	70	4 X M8	873	16	20,50
4"	100	220	180	8 X M16	152	381	156	137	34,5	22	24	18	102	4 X M10	1390	16	34,20
5"	125	250	210	8 X M16	196	381	178	159	34	22	42	30	125	4 X M10	1707	16	52,50
6"	150	300	240	8 X M20	232	700	266	201,5	51,5	30	42	30	125	4 X M12	2024	16	61,80
8"	200	340	295	12 x Ø22	400	700	332	288	68	28	42	30	125	4 X M12	2720	16	104,00

F

Wafer ANSI 150

Valves may be supplied with actuator

VALVE INFORMATION		
POS	**PART NAME**	**Material**
1	BODY	ASTM A105 - WCB
2	END CONNECTION	ASTM A105 - WCB
3	BALL	A351-CF8/ A182-F304
4	BALL SEAT	P.T.F.E.
5	O-RING	FKM (VITON®)
6	THRUST WASHER	P.T.F.E.
7	O-RING	FKM (VITON®)
8	STEM SEAT	P.T.F.E.
9	PACKING GLAND	CARBON STEEL
10	END STOP	INOX AISI 430 (DN15 - DN50) CARBON STEEL DN65 - DN150)
11	SPRING WASHER	CARBON STEEL
12	NUT	CARBON STEEL
13	STEM	A182 - F304
14	HANDLE	CARBON STEEL
15	LEVA DN150-200	CARBON STEEL
16	SCREW	CARBON STEEL
17	SCREW	CARBON STEEL
18	BODY HANDLE DN 150-200	EN-GJL-250

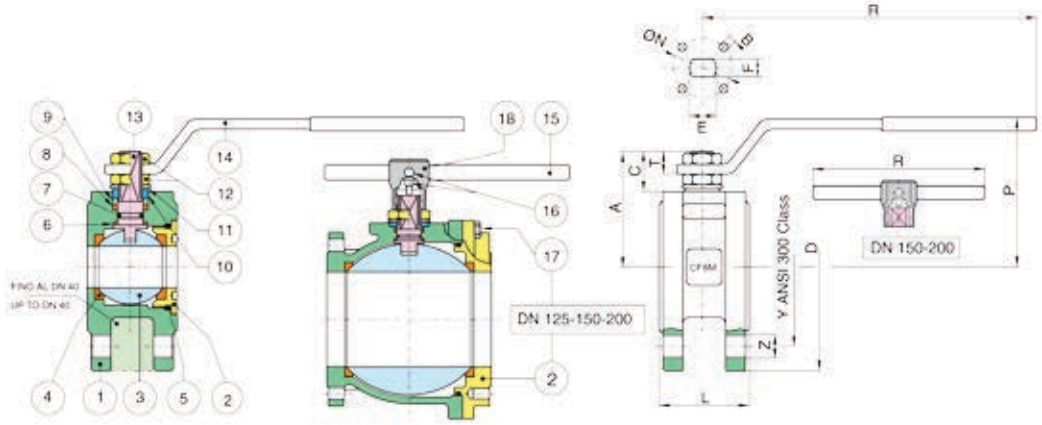


DIMENSIONAL DATA																	
Size	**DN**	**D**	**Y**	**Z**	**L**	**R**	**P**	**A**	**C**	**T**	**E**	**F**	**ØN**	**B**	**Kv**	**PN**	**Kg**
1/2"	15	90	61	4 X M14	35	131	65	47	15,5	9	10	7	32	4 X M5	16,3	20	1,30
3/4"	20	100	70	4 X M14	40	131	69	51,5	15,5	9	10	7	32	4 X M5	29,5	20	1,80
1"	25	110	80	4 X M14	46	174	80	61	17	11	12	8	42	4 X M5	43	20	2,20
1"1/4	32	118	89	4 X M14	54	174	84	64,5	15	11	12	8	42	4 X M5	89	20	3,30
1"1/2	40	127	99	4 X M14	63,5	250	102	78	24,5	13	16	10	50	4 X M6	230	20	3,30
2"	50	150	121	4 X M16	82	250	111	87	25	13	16	10	50	4 X M6	265	20	5,50
2"1/2	65	175	140	4 X M16	103	321	128	104,5	25	18	20	14	70	4 X M8	540	20	9,60
3"	80	190	153	4 X M16	122	321	138	115	28,5	18	20	14	70	4 X M8	873	20	12,80
4"	100	220	191	8 X M16	152	381	156	137	34,5	22	24	18	102	4 X M10	1390	20	21,10
5"	125	250	216	8 X M20	196	381	178	159	34	22	24	18	102	4 X M10	1707	20	37,50
6"	150	280	242	8 X M20	232	700	266	201,5	51,5	30	42	30	125	4 X M12	2024	20	46,10
8"	200	345	298,5	8 X Ø22	457	700	332	288	68	28	42	30	125	4 X M12	2720	20	124,00

Wafer ANSI 300

Valves may be supplied with actuator

VALVE INFORMATION		
Pos	**PART NAME**	**Material**
1	BODY	ASTM A105 - WCB
2	END CONNECTION	ASTM A105 - WCB
3	BALL	A351-CF8/ A182-F304
4	BALL SEAT	P.T.F.E.
5	O-RING	FKM (VITON®)
6	THRUST WASHER	P.T.F.E.
7	O-RING	FKM (VITON®)
8	STEM SEAT	P.T.F.E.
9	PACKING GLANG	CARBON STEEL
10	END STOP	INOX AISI 430 (DN15 - DN50) CARBON STEEL DN65 - DN200)
11	SPRING WASHER	CARBON STEEL
12	NUT	CARBON STEEL
13	STEM	A182 - F304
14	HANDLE	CARBON STEEL
15	HANDLE DN 150-200	CARBON STEEL
16	SCREW	CARBON STEEL
17	SCREW	CARBON STEEL
18	BODY HANDLE DN 150-200	EN-GJL-250



DIMENSIONAL DATA																
Size	**DN**	**D**	**Y**	**Z**	**L**	**R**	**P**	**A**	**C**	**T**	**E**	**F**	**Øn**	**B**	**Kv**	**PN**
1/2"	15	95	66,5	4 x M14	35	131	65	47	11,5	8,5	10	7	32	4 X M5	16,3	50
3/4"	20	120	82,5	4 x M18	40	131	69	51,5	9,5	8,5	10	7	32	4 X M5	29,5	50
1"	25	120	89	4 x M18	46	174	80	61	13	11,5	12	8	42	4 X M5	43	50
1"1/4	32	130	98,5	4 x M18	54	174	84	64,5	16,5	11,5	12	8	42	4 X M5	89	50
1"1/2	40	150	114,5	4 x M20	63,5	250	102	78	20,5	12	16	10	50	4 XM6	230	50
2"	50	165	127	8 X M18	82	250	111	87	16	12	16	10	50	4 XM6	265	50
2"1/2	65	190	149	8 X M20	103	321	128	104,5	18,5	17	20	14	70	4 X M8	540	50
3"	80	210	168,5	8 X M20	122	321	138	115	21	18	20	14	70	4 X M8	873	50
4"	100	254	200	8 X M20	152	381	156	137	23,5	21	24	18	102	4 X M10	1390	50
6"	150	320	270	12 X M20	232	700	266	201,5	51,5	30	42	30	125	4 X M12	2024	50
8"	200	380	330	12 X M24	317	700	310	245	51,5	30	42	30	125	4 X M12	2720	50

NAMUR SOLENOID VALVE 3/2 - 5/2 - ATEX EX II 2 GD EEX d IIC T6 SIL 3

MAIN CHARACTERISTICS			
Body and Caps	Black anodized aluminum	316 SS	Brass
Spool	Hard anodized aluminum PTFE impregnated	303SS	-
Seals	Nitryl		
Namur plate	Nylon 30% glass filled		
Connections	¼"(1); 1/8" (3 and 5)		
Working pressure	3-10 bar		
Flow at 6 bar	675 l/min (N)		
Working temperature	-20°C to +80°C		
Electric connections	M20 x 1.5		
Protection	IP66		

Alternative Voltage:

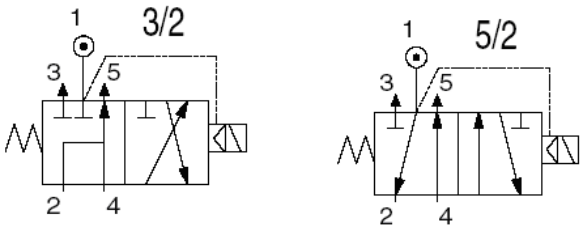
EV3-5/2 NAMUR 24 VDC

EV3-5/2 NAMUR 24 VAC (50/60Hz)

EV3-5/2 NAMUR 110 VAC (50/60Hz)

EV3-5/2 NAMUR 240 VAC (50/60Hz)

Working scheme:



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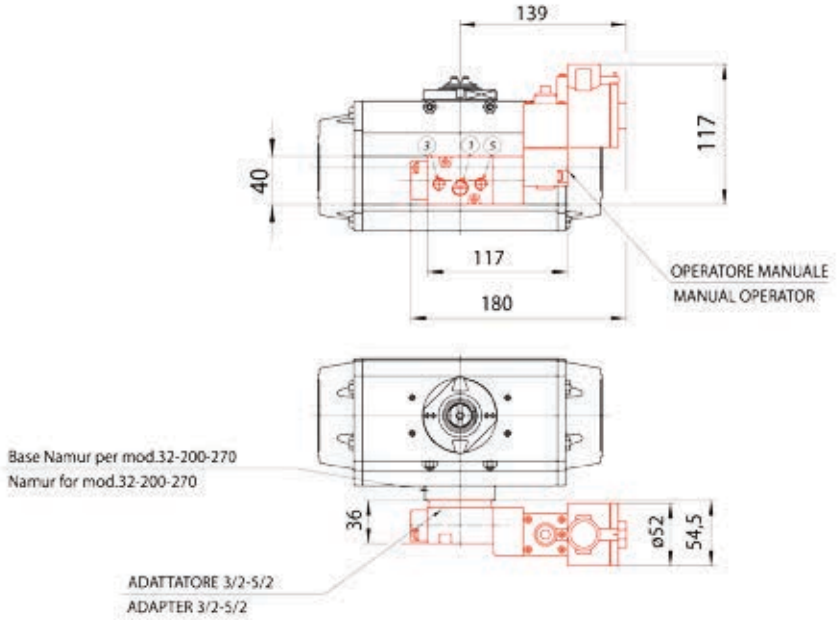
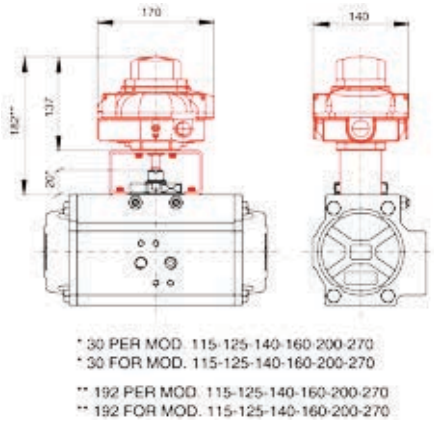


Position Indicator Box

Main Characteristics	
Type	Explosion proof according to EEx d II B T4/T5/T6
Body material	Chromate aluminium, polyester powder coated
Cover material	Chromate aluminium, polyester powder coated
Shaft material	Stainless steel
Protection	N°2 1/2" NPT (M20X1,5 optional) N°1 G3/4" (M25X1,5 optional)
Protection	IP67



F

Gas and Fire Detection

Kosan Crisplant is able to offer the most sophisticated fire and gas detection systems, making your plant an example of safety.

- General Description
- Equipment
  - Detectors
    - Series 47K
    - Series Ultima X
    - Flame guard XI, MI
    - SafEye
- Monitoring systems
- Complete fire & gas detection systems

Kosan Crisplant installs fire and gas detection systems designed and built by MSA, thus being able to offer reliable turn-key solutions for projects of any size.

MSA's long experience in gas and fire detection ensures reliable and secure protection of your personnel and facilities. We offer stand-alone or integrated solutions tailored to your specific safety philosophy and plant requirements. Safety assessment as well as ATEX 94/9 and IEC 61508 requirements will determine your choice of safety philosophy.

You can select the safest and most flexible method for your needs. Either a simple system or one with double or even triple redundancy. No matter what, we will offer you the right solution. It makes no difference whether you chose MSA products or products from another manufacturer that you or we suggest:

Talk to us, so that we can work together to design a safe system solution for your own specific needs.

Series 47K

The MSA Gas Detector Series 47K is designed to continuously monitor the atmosphere for the presence of potentially explosive gases or vapour ranging from 0 to 100% LEL.

It is designed to form an integral part of an MSA fixed gas detection system for the protection of industrial plants and workers.

Typical areas where the MSA Gas Detector Series 47K can be used include:

- LPG Filling Plants
- The chemical and petrochemical industry
- The paint and solvent-processing industry
- The gas-processing industry
- The steel-processing industry
- Municipal areas
- The production, warehousing, distribution, shipping and processing of gases and vapours

The MSA Gas Detector Series 47K consists of the Series 47K catalytic sensor and the junction box that contains the terminal board.

There are two versions of the junction box available:

- Flameproof [Ex d] with ¾" NPT cable gland thread.

GAS DETECTOR (SENSOR + JUNCTION BOX)	
DESCRIPTION MATERIAL THREAD	**PART-NO**
Detector Series 47K-ST St.St. 304 M25 x 1.5	10048830
Detector Series 47K-ST St.St. 316 M25 x 1.5	10048852
Detector Series 47K-PRP St.St. 316 M25 x 1.5	10048853
Detector Series 47K-ST St.St. 304 ¾" NPT	10048857
Detector Series 47K-ST St.St. 316 ¾" NPT	10048858
Detector Series 47K-PRP St.St. 316 ¾" NPT	10048862

SENSOR	
DESCRIPTION MATERIAL THREAD	**PART-NO**
Detector Series 47K-ST St.St. 304 M25 x 1.5	10063114
Detector Series 47K-ST St.St. 316 M25 x 1.5	10048117
Detector Series 47K-PRP St.St. 316 M25 x 1.5	10048118
Detector Series 47K-HT St.St. 316 M25 x 1.5	10048199
Detector Series 47K-ST St.St. 304 ¾" NPT	10063115
Detector Series 47K-ST St.St. 316 ¾" NPT	10048271
Detector Series 47K-PRP St.St. 316 ¾" NPT	10048272
Detector Series 47K-HT St.St. 316 ¾" NPT	10048825

ACCESSORIES	
DESCRIPTION MATERIAL	**PART-NO**
Calibration cap Plastic	10049316
Weather protection cap/hose connection St.St. 316	10051623
Weather protection cap/ 1/8" pipe connection St.St. 316	10051731
Weather protection cap/hose connection St.St. 304	10063145
Weather protection cap/ 1/8" pipe connection St.St. 304	10063146
Flow through adapter St.St. 316	10051625
Flow through adapter Aluminium	10051626
Duct mount flange Aluminium	10051627
Wall mounted bracket, Sensor S47K-HT St.St. 316	10048829
S47K Mounting Strap Ex e-junction box St.St. 316	10054042

ULTIMA X Series Gas Monitors

The ULTIMA X Series Gas Monitors are microprocessor-based point gas detectors/ transmitters, designed for continuous monitoring of combustible and toxic gases as well as oxygen deficiency.

Housed in a rugged, 316 stainless steel, explosion proof enclosure, the ULTIMA XE and XIR (infrared) offer state-of-the-art design. Advanced sensing technologies using catalytic, electrochemical and infrared gas detection methods provide solutions for any need.

The XIR technology, based on dual wavelength heated optics, offers excellent long-term stability, eliminates the need for frequent calibrations and reduces the overall cost of ownership.

The ULTIMA X Series Gas Monitors are suitable for indoor and outdoor applications in virtually any industry including offshore.

They can operate completely standalone or connected to a control system (PLC, DCS etc.) with a standard 4–20 mA output.

Ultima XE

FEATURES & BENEFITS
• 316 stainless steel explosion-proof, multiple-entrymounting enclosure
• Advanced LCD display with detailed scrolling messages, not error codes
• 4 –20 mA Output
• Field-selectable algorithms for a variety of hydrocarbon based gases (XIR only)
• Single-board design for ultimate reliability and easy, no-tool servicing
• Optional "quick-check" LED's for increased product visibility
• Optional field-programmable relays feature three alarm levels and one fault
• "Fail to Safety" Operation (XIR only)
• Interchangeable smart sensors: no reconfiguration required (not XIR sensor)
• Sensor replacement under power without declassifying a hazardous area (not XIR sensor)

Hazards

ULTIMA X Series Gas Monitors can protect against the following hazards:

- Combustible atmosphere
- Oxygen deficiency
- Toxic atmosphere
- Gas leaks

Applications

ULTIMA X Series Gas Monitors are suitable for indoor and outdoor applications in virtually any type of industry including:

- Offshore
- Refineries
- Chemical and petrochemical facilities
- Steel mills
- Water and wastewater plants
- General industry

Ultima XE

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ULTIMA X Series Gas Monitors

DISPLAY
• Large 1/2" high characters
• Highly visible coloured LEDs for "Normal" and "Alert" indication
• During normal operation the LCD alternates between gas reading and gas type. Quick-checkof monitor status from afar
• LEDs indicate monitor status(Green = normal; Blinking red = alarm; Solid red = fault)
• In case of an error, the alert LED is on while the LCD identifies the error in a scrolling text message

ULTIMA X FACTORS
• Sensor disconnect-under-power. MSA's proprietary feature allows for sensor changeout without declassifying a hazardous area (patent pending).
• Interchangeable smart sensors. Pre-calibrated sensor modules are ready for installation out of the box. The sensors can be replaced in the field without the use of tools. The monitor quickly recognises the new sensor type and reconfigures alarm and relay settings to optimise the new sensor.
• State-of-the-art display. The LCD alternates between sensor reading and gas type plus features scrolling messages for ongoing diagnostic checks.
• World class design. Single-board design for ultimate reliability and serviceability. The multiple-entry mounting enclosure has been separated from the electronics and sensor, allowing for problem free installation and servicing.
• Onboard LEDs and relays. Optional quick-check LEDs and four relay outputs allow for better indication of alarm or error. The quick-check LEDs, viewable from afar, indicate normal (green) or alarm (red) status. The field-programmable alarm levels and energised/de-energised, opened/closed and latching/non-latching relay functions offer three levels of alarm and error.

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The ULTIMA Calibrator offers the industry's simplest method of calibration: an easy-to-use 3-button device that allows calibration and address change of the ULTIMA X series Gas Monitor.

Calibrator

The ULTIMA Controller provides complete access to all features through its full function keypad.

Features include:

- Intrinsically safe
- Set/display alarm levels
- Set/display span gas value
- Set/display Ultima range
- Displays last date of calibration
- Displays minimum,maximum and average gas readings

Controller

ULTIMA X Series Gas Monitors

Specifications (for ULTIMA XE and XIR unless otherwise stated)

Gas Types	Combustibles, oxygen and toxics
Temperature Range	: – 40 °C to +60 °C (– 40°F to +140°F)
	(typical – some models may differ)
Drift:	Zero Drift <5% / year, typical
	Span Drift <10% / year, typical
Noise	<1% Full Scale
Accuracy	Repeatability ±1% Full Scale or 2 ppm, typical
	Linearity ±2% Full Scale or 2 ppm (O2, CO)
	±3% Full Scale
	(<50% LEL combustibles)
	±5% Full Scale
	(>50% LEL combustibles)
	±10% Full Scale or 2 ppm
	(non-CO toxics)
Response Times	t20 oxygen and toxics <12 seconds (typically 6 seconds)
	t50 oxygen and toxics <30 seconds (typically 12 seconds)
	t50 combustibles <8 seconds
	t90 combustibles <20 seconds
	t90 XIR <2 seconds (without sensor guard)
Humidity:	15%– 95% RH, non-condensing
Sensor Life	Oxygen and Toxics 2 years typical
	Combustibles 3 years typical
	Replacement warranty 1 year
Power Input:	7– 30 Vdc (oxygen and toxics)
	7– 30 Vdc @ 450 mA maximum
	(combustibles)
	(XIR)

Wiring Requirements:	Combustibles (incl. XIR) 3-wire
	Oxygen and Toxics 2-wire; no LED's or relays
	Oxygen and Toxics 3-wire; LED's and/or relays
Signal Output:	4 –20 mA 2-wire current sink
	4 –20 mA 3-wire current source
Relay Contacts:	Rating 5 amp @ 220 Vac; 5 amp @ 30 Vdc
	Alarm Type normally energised/de-energised, SPDT, upscale/downscale,latching/ non-latching
	Fault Type normally energised, SPDT, non-latching
Conduit Entries:	Four entries, 3/4 inch NPT or 25 mm
Physical:	Weight 4.7 kg
	Dimensions 160.3 W x 99.3 D x 261.1 L mm
	Material 316 Stainless Steel
Approvals:	ULTIMA XE/XIR CE Low Voltage Directive:73/23/EEC
	ULTIMA XE/XIR CE ATEX Directive: 94/9/EC and Remote Sensor CE EMC Directive: 89/336/EEC
	EN 50 270 Type 2 EN 50 081-1
	ULTIMA XE II 2G EEx d IIC T4
	– 40 °C ≤Ta ≤ + 60 °C
	ULTIMA XIR II 2G EEx d IIC T5/T6
	– 40 °C ≤ Ta ≤ + 60 °C T5
	– 40 °C ≤ Ta ≤ + 50 °C T6
	EC-Type Examination
	Certificate: DMT 02 ATEX E 202 X
Warranty:	24 months on all components including IR sensor (does not include catalytic or electrochemical sensor)

The SafEye Xenon 700 Series

Applications

The well proven technology of the SafEye with its excellent operational record in installations ranging from the deserts of Africa and Asia to the hot and humid Far East, the wet and cold North Sea and the dry cold regions of Alaska, has now become even better.

The SafEye is suitable for virtually all applications, including indoor and outdoor installations in:

- Offshore oil & gas exploration and production
- Fence line emission monitoring at industrial sites
- Petrochemical storage areas
- LNG/LPG storage, pumping and filling
- Pipelines
- Paint booths and paint production
- Bus terminals (natural gas powered vehicles)

- Infrared open path system detection
- Continually operating gas warning system monitoring combustible gases and vapours along open paths of up to 140 m in length in industrial installations.
- Can maintain operational integrity in up to 90% obscuration
- Heated optics to eliminate icing, condensation and snow
- Measuring range: 0 –5 LEL•m or 0 –2 LEL•m (IR channel)

FEATURES & BENEFITS
• High sensitivity and fast response to Hydrocarbon gases C1 – C8
• Heated optics to eliminate icing, condensation and snow
• Standard 4 –20 mA output and volt free relay contacts
• RS-485 output Modbus compatible
• Misalignment tolerance of ±1 degree
• Totally immune to solar radiation, hydrocarbon flames and other external IR radiation sources
• Automatic gain control
• No false alarms
• One person commissioning
• No poisoning
• Robust stainless steel tilt mount
• Maintenance Call 3 mA signal
• Can maintain operational integrity in up to 90% obscuration
• 3 year warranty for complete SafEye
• 10 year warranty for Xenon flash lamp

INSTALLATION AND OPERATION
• Both source and detector are mounted on a robust tilt mount with a small installation footprint and easy X and Y adjustments.
• After mounting the source and detector with a clear line of sight, alignment is easily completed using a telescope.
• The intrinsically safe handheld diagnostic unit can be used to check that the installation and alignment has been completed successfully.
• The same handheld unit can be used for maintenance, trouble shooting and configuration. It provides information on the detector status, current gas reading, detector signals and serial number.

ORDERING INFORMATION
on request SafEye Xenon – Model 701
on request SafEye Xenon – Model 702
on request SafEye Xenon – Model 703
ACCESSORIES
10048609 Commissioning kit
10048608 Handheld unit

SafeEye 700 Xenon

Kosan Crisplant®

The SafEye Xenon 700 Series

Technical Data

System:	SafEye Xenon 700 Series Open-Path Detector
Detected gases	Simultaneous C1…C8 flammable gases
Detection response time	t90 max. 3 s
Operating range	Model 701: 4… 20 m
	Model 702: 15… 70 m
	Model 703: 50…140 m
Immunity to false alarms	Unaffected by solar radiation, hydrocarbon flames and other external IR radiation sources
Spectral response	2.0…4.0 µm
Start-up time	< 60 s
Sensitivity ranges	Standard 0…5 LEL•m Optional 0…2 LEL•m
Displacement/ Misalignment tolerance	± 1°
Drift, long term	± 5% FS
Temperature range	Operating –40° to +55 °C
	Storage –40° to +55 °C
Power supply	24 VDC (18…32 VDC)
Power consumption: (peak includes heated optics)	Detector 150 mA @ 24 VDC (300 mA peak)
	Source 100 mA @ 24 VDC (300 mA peak)
Electric input protection	Per MIL-STD 1275
Electrical connection	Standard 2 x M25 x 1.5
	Optional 2 x 3/4_-14 NPT
Heated window	to eliminate icing, condensation and snow on optics
Output, mA	4…20 mA sink (source optional),
	0 mA – fault
	1 mA – zero calibration
	2 mA – beam block/obscuration/misalignment
	3 mA – maintenance call
	4…20 mA – normal operation
Output, relay	alarm, fault and accessory with SPST volt free contacts

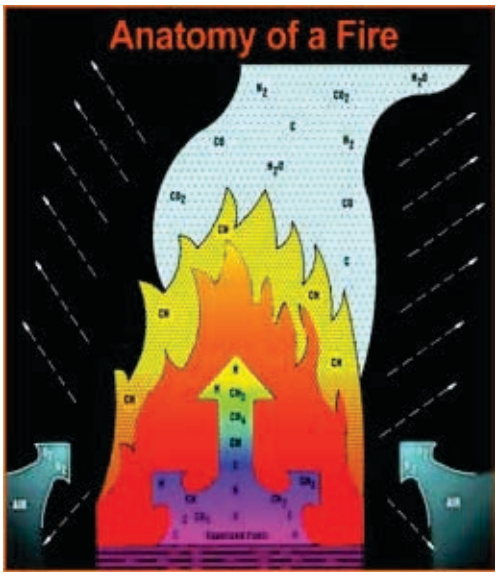
RS-485 Interface	The Modbus compatible RS-485 input/output provides complete data information to a PC and receives control commands from the PC or handheld unit. It also allows networking of up to 247 Detectors
Humidity:	95% RH, non condensing
Approvals	SafEye and ATEX Directive 94/9/EC
	Handheld Unit EMC Directive 89/336/EEC
	SafEye II 2(1) GD EEx d e ia [ia] IIC T5 Ta – 40°C to +55°C
	EN 50270 Type 2, EN 61000-6-3
	Handheld Unit II 1G EEx ia IIC T4 Ta – 20°C to +50°C
	EN 50081-1, EN 50082-2
Ingress protection	IP 66/IP 67
Environmental	meets MIL STD 810C for humidity, salt and fog,
	vibration, mechanical shock, high and low temperature
Detector and Source housing material	stainless steel 316 L
Tilt mount material	stainless steel 316 L
Weight	Detector 4.2 kg, Source 4.6 kg, Tilt mount 1.9 kg
Dimensions	Detector 210 x 145 x 154 mm
	Source 255 x 135 x 175 mm
	Tilt mount 120 x 120 x 140 mm
Accessories	Handheld diagnostic/calibration unit, (intrinsically safe approved) provides detector status, current gas reading, ability to analyse signals, advises detector serial number, model number, address if networked), change set-up and measuring range, and many other diagnostic tools
Alignment kit	including telescope and test filter
Warranty	3 years for SafEye system
	10 years for Xenon Flash lamp

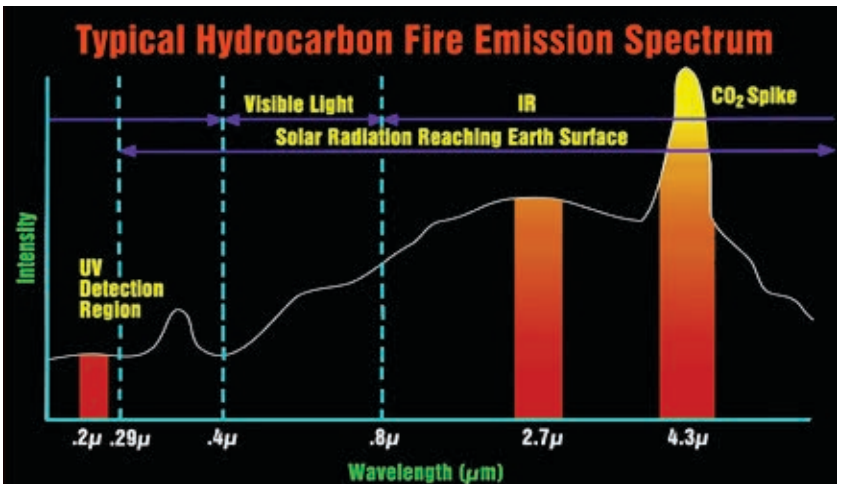
Optical Flame Detection

General method:

•Detecting the unique optical characteristics of flames

•Distinguishing between flame radiation and background radiation





IR3 Technology

Most fire emission is due to hot CO2 and H2O molecules that are the main combustion products. In the IR3, the fire is considered to be an alternating infrared source that emits strongly at the CO2 emission band and weakly at the background emission band.

Most IR sources (considered as IR false alarm stimuli) including the sun, incandescent and halogen lamps, arc discharge, electrical heaters, etc., do not possess this unique spectral feature.

Three spectral wavelength bands have therefore been selected for this flame detection technique:

Within the CO2 spectral emission band

- Outside the CO2 emission band
- Over a background broad band

The relation between each sensor signal allows the IR3 to distinguish between a fire and interfering IR stimuli. Further improvement of this IR analysis technique enables the accurate detection of a hidden smouldering fire where the radiating flames are not visible, but the hot mass of CO2 gases are emitted and hence detected.

This technology has a very high immunity to false alarms without significantly decreasing the sensitivity and has been adopted as “standard requirement for high risk industries” and recommended by fire protection experts world-wide.

Optical Flame Detection

The new MSA XI and MI Flame Detectors incorporate all the features of the IR3 Flame-Gard with its patented triple IR sensor technology.

Together with the XI in an explosion-proof stainless steel enclosure there is also a smaller intrinsically safe low power version, the MI.

The MSA FlameGard is a self contained, triple-spectrum flame detector.

The sensor band pass has been carefully selected to ensure the greatest degree of spectral matching to the radiant energy emissions of fire, and the lowest degree of matching to non-fire stimuli.

The FlameGard IR3 XI is extremely sensitive. It can detect a 0.1 m2 (1 ft.2) gasoline pan fire at 60 m in less than 5 seconds.

The sensitivity is user-programmable, offering 4 ranges of detection.

XI IR3

XI IR3

The IR3 XI incorporates both Automatic and Manual BIT (Built-In-Test).

The outputs of 4 –20 mA and RS-485 interface, as well as the standard alarm, accessory and fault relays, make the FlameGard IR3 the most diverse flame detector available.

The XI Flame Detector incorporates a new explosion-proof stainless steel housing with heated optics to eliminate condensation and icing on the window.

The FlameGard IR3 utilises Milspec. electronic components and materials. The MTBF (Mean Time Between Failure) is calculated to be 100,000 hours (11 + years).

This outstanding performance permits a 3-year warranty on the entire detector, not just the sensors.

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Applications

The FlameGard Triple IR [IR3] Flame Detector has been designed as a general-purpose flame detector with special emphasis on immunity to false alarms. It has applications in a wide range of industrial and commercial facilities, where the threat of accidental fire involves hydrocarbon fuels.

Fires can be detected from gasoline, kerosene, diesel fuel, aviation jet fuels like JP-4, JP-5, JP-8, hydraulic fluids, paints and solvents, monomers and polymers like ethylene and polyethylene, natural gas (LNG), town gas and liquefied petroleum gas (LPG), hydrocarbon gases like methane, ethane, propane, butane, acetylene, propylene, etc.

- LPG filling plants
- Aircraft hangars (Commercial & Military)
- Petrochemical facilities
- Offshore platforms
- Printing industry
- Tank farms

FEATURES & BENEFITS
• Extremely sensitive [flame detection]
• Triple Spectrum Design
• High immunity to false alarms
• Automatic and Manual Built-In-Test
• Heated Optics [XI]
• RS-485 Modbus Compatible
• Sensitivity Selection
• User Programmable Function through a Handheld Unit
• MTBF minimum 100,000 hours
• 3-Year Warranty

TECHNICAL DATA & SPECIFICATION (XI AND MI UNLESS STATED OTHERWISE)	
Spectral response:	Three IR Channels
Detection	(highest sensitivity setting)
Range:	Hydrocarbons
Max. Detection range:	XI MI •0.1 m2 Gasoline fire 60 m 40 m •0.1 m2 n-Heptane fire 60 m 40 m •0.1 m2 Diesel Oil fire 42 m 28 m •0.1 m2 95% Alcohol fire 45 m 30 m •0.1 m2 JP4 fire 45 m 30 m
Response time:	Typical 5 s
Time delay:	Adjustable up to 30 s

SENSITIVITY RANGE:

Four sensitivity ranges for 0.1 m2 (1 sq.ft) gasoline pan fire

Range Detection Distance (metres)

	MI	XI
1	10	15
2	20	30
3	30	45
4	40	60

Monitoring Systems - 9010/9020 LCD

9010 LCD

9020 LCD

ESSENTIAL REQUIREMENTS
• Provide sensor PS
• Handle sensor signals
• Display values
• Provide digital/analog/ serial/ output signals
• Display failure codes
• Display cal error code
• Enable Cal/ Configuration by keyboard
• Provide real time self-diagnosis
ENHANCEMENTS
• 4-digit LCD
• Specific Flags
• SMD throughout
• Reverse output signal
• 20-4 mA
• Choice of reverse full scale 100-50/ 50-0 etc
• Configuration by SW
• relay/optocoupler
• Time-out
• input signal mA/mV
• 2-3 wire (also jumpers)
• autocal 4-20 mA current loop (one man)
• IP 65 wall mounting–accommodating up to five Modules 9020 Module in ABS housing

THE SOPHISTICATED HAZARDOUS GAS WARNING SYSTEM – ATEX 94/9/EC CERTIFIED
Two independent sensors (Dual Channel) per control module offering considerable cost savings, while maintaining high reliability and performance.
Modular design combined with dual channel capability allows for high density packaging in a single 19_ rack (up to 20 points).
A high level of reliability is possible as each Control Module is fitted with an independent AC/DC power supply transformer and logic circuit with software validated according to ATEX Directive 94/9/EC
MSA's new 9010/9020 LCD Control Units are designed to offer maximum flexibility to work in conjunction with a wide variety of remote sensors to provide reliable gas detection in a wide range of industries and applications.
Advanced design using SMD components throughout and innovative features put the 9010/9020 LCD Control Units one step ahead of any conventional gas warning system..

Ordering	
Control Unit 9010 LCD 12 VA	0705.710
Control Unit 9010 LCD 25 VA	0705.711
Control Unit 9010 LCD without transf	0705.712
Control Unit 9020 LCD 12 VA	0705.720
Control Unit 9020 LCD 25 VA	0705.721
Control Unit 9020 LCD without transf	0705.722
Control Unit 9010LCD wall mount	0705.713
Control Unit 9020LCD wall mount	0705.723
Front Panel 9010 LCD	0754.214
Front Panel 9020 LCD	0754.215

9020LCD Wallmount

9010-20 LCD

Monitoring Systems - Gasgard XL

Setting Standards of Excellence in Gas Monitoring

On target gas levels and events, allowing full system diagnosis, supported by individual LEDs per channel, relays and internal buzzer. GasGard XL can easily be configured to accept up to eight remote gas sensors, depending on the number of individual plug-in input cards installed.

With two alarm levels per channel GasGard XL operates in together with MSA's well-proven remote gas sensors (flammable and toxic or Oxygen 4 –20 mA) as well as catalytic gas sensors.

FEATURES AND BENEFITS
• Expandable up to 8 independent channels using plug-in boards
• Robust wall mounted housing made from fire retardant ABS material grade
• Large graphic display with intuitive icons and all channels shown at a glance
• Special keys making all functions accessible from the front panel
• Multi-language display selectable via menu
• Fully configurable by key/laptop via USB or RS485 ModBUS connection
• Event log upload by galvanized isolated RS485 or USB
• Ethernet ModBUS TCP/IP
• Common relay board for first and second Alarm Level, Horn 1 and 2 or Failure
• Internal buzzer 85 dB
• Manual and "one-man" calibration with stored values

MSA's GasGard XL is a Multi-Channel Wall Mounted Controller for monitoring toxic, oxygen and flammable gases in industrial plants.

Due to its inherent versatility and easy use, GasGard XL provides protection from all potential hazardous conditions, in a variety of working environments and for virtually all health and safety applications.

GasGard XL offers reliability in a compact and robust wall mounted housing made from fire retardant ABS material.

The large, easy-to-read, multi-language LCD graphic display send out real time information.

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Monitoring Systems - Gasgard XL

TECHNICAL SPECIFICATIONS	
Power Supply	85 VAC–265 VAC 50/60 Hz
	24 VDC nominal
	[range 18 – 32 VDC]
Sensor Power Supply	constant current 80 mA– 430 mA
	18 – 32 VDC
Connection Modes	2, 3 wires
Terminal Board	Sensor connection for wires up to 2.5 mm2
Input Signals	0 – 200 mV DC, 4 –20 mA
Alarm Thresholds	ALARM 1 [Warning] adjustable from 5 to 100% f.s. [80% LEL for ATEX version]
	ALARM 2 [Alarm] adjustable from 5 to 100% f.s. [80% LEL for ATEX version]
Electronic Speed of Responsive	< 1s to reach 100% f.s.
Span/Zero Drift	< ±0.5% f.s. ±1 digit/month
Accuracy/Repeatability	< ±1% f.s. ±1 digit
Operating Temperature	–10 °C – +50 °C
Storage Temperature	–20 °C – +75 °C
Ambient Humidity	90 % RH non condensing
Ingress Protection	IP56
Approvals	ATEX 94/9/EC, EN 50270 [EMC], EN 50402, EN 61010-1 [Low Voltage Directive], EN 61779-1, EN 61779-4, SIL 2, cCSAus, CCCF [pending]
Dimensions [W x H x D]	515 x 277 x 129 mm
Weight	5 kg
	8 kg [with battery]
Housing Material	ABS plastic high resistant fire retardant grade UL-94V-0
Backup Battery	2.2 Ah [optional]

ORDERING:	
GasGard XL	
[incl.: housing, power supply 100 W, designed for up to four channels common relays, without channel boards]	10090372
GasGard XL	
[incl.: housing, power supply 100 W, designed for up to eight channels common relays, without channel boards]	10083905
Accessories	
Sensor extension board [for channels 5 – 8]	10081676
Channel relay board	10081677
Channel board 4 –20 mA	10081674
Channel board mV [bridge pellistors]	10081675
Back-up battery pack [2.2 Ah] with holder & screws	10081772
EMC filter [to be used with ext. 24 VDC supply]	10081680

Monitoring Systems - SUPREMA

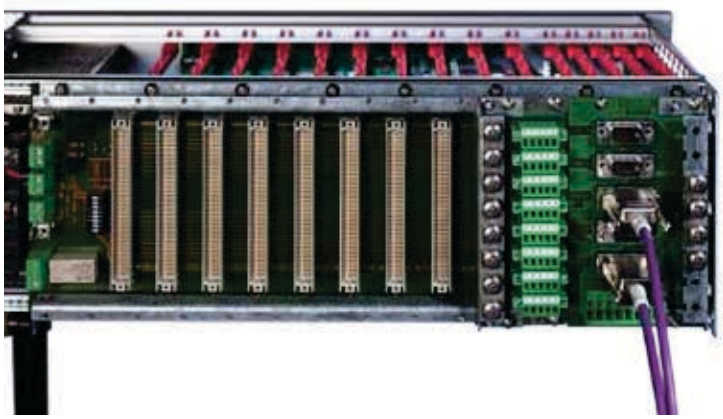
FEATURES
•Maximum 256 inputs and 512 outputs
•Compact: Up to 64 inputs and 80 outputs with one 19" rack
•FLEXIBLE
•Expanded input capability
•4-20 mA sensors/transmitters
•Smoke, heat and flame detectors
•MAC's and switches
•Distributed CAN-Bus design
•Internal power supply (150W)
•Satellite units for minimal wiring
•Optional dual redundant system design
•ATEX approved
•TUV SIL 3 rating
UL approval pending

BENEFITS
•Innovative modular design provides superior flexibility
•Simple to upgrade and add inputs and output modules
•Pricing advantages
•Easy to intergrate
•Profibus DP
•Modbus RTU
•Configuration management
•Set-up of inputs and outputs
•Alarm grouping
•Voting logic
•Complete turn-key systems

MODULAR DESIGN
•Input cards
•Output cards
•4-20 mA
•Relays
•Configuration
•Back mount
•Rail mount
•Redundancy
•Dual
•Triple

Suprema Front

INPUT REQUIREMENTS
•MAI (Module, Analog Input)
•Up-to 8 sensors per card
•MCI (Module, Current Input)
•Daughter board that connects to the MAI
•MAR (Module, Analog Redundancy)
•Daughter board that connects to the MAI
•MAT (Module, Analog Terminals)
•Up-to 8 sensors per module



Suprema Back

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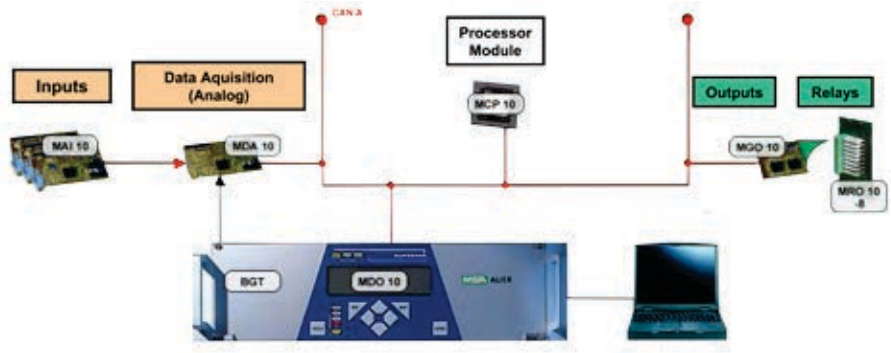
CAN-Bus Architecture

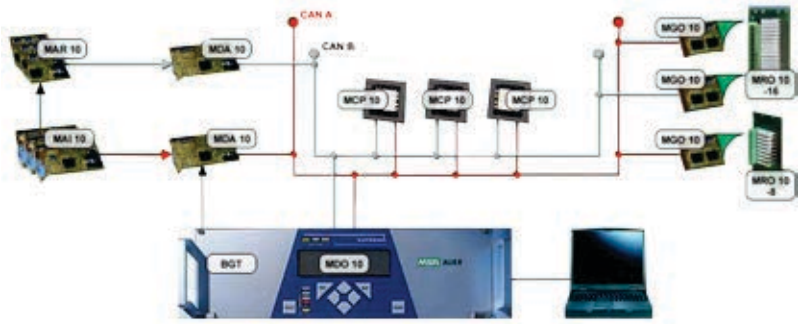
- Communication BackBone
- Used in automotive industry
- Exclusive to Suprema components



Redundancy

Double Redundancy
• Addition of second central processor card and data acquisition card
• Single Failure Safety - a single failure in the system can cause only a loss of one input or has no functional effect (but an error message)
Triple Redundancy
• Addition of third central processor card
• The third MCP compares results of the other two and provides a two out of three judgment in case of discrepancies
• This increases the reliability of the system – not the safety

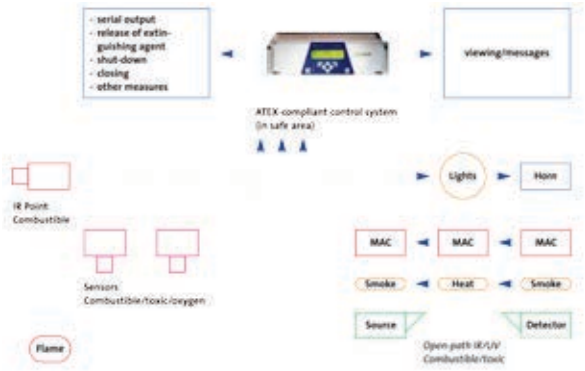
Uses both CAN A and CAN B



Triple redundancy

The central nervous system for 256 sensor.

Whith Suprema, you control everything from one central location.



Domestic and Commercial LPG cylinders instalations

Kosan Crisplant offers a wide range of high quality products for propane and butane domestic and commercial networks, such as: Automatic Switches, Pressure Regulators and Pressure Limiters

These types of products are typically necessary for cylinder installations for domestic / recreational use as well as for commercial use. There is available a range for Butane and other range for Propane.

Please keep in mind that for a correct selection, the composition of LPG mixture and necessary pressures to be delivered should be known. All laws and local standards should always be kept in min before installation.

LPG equipments failures or improper use may cause dangerous situations such as:

- Too high a pressure downstream the regulator
- Regulator gas leak
- Too low a pressure downstream the regulator
- Damage or accident as consequence of previous situations.

The range Kosan Crisplant is offering is complete and matches several specifications and different demands from various markets. Nevertheless, if you do not find what you need on the following pages, we kindly ask you to contact us. We will do our best to provide the best solution for your need.

For proper support contact one of the KC offices closest to your location.

PROPANE RANGE

Automatic Change Over with Indicator and Accessories

Application

The automatic change-over ensures a continuous supply of gas to cylinder installations (more than one) switching automatically from an empty cylinder to a full one.

An indicator shows when this happens. It assure also the first stage pressure reduction.

	Part Number	Flow (Propane)	Pin	Pout	Obs.
Automatic Change Over for Propane	20760+	8 kg/h	Cylinder	1,5 bar	20 x 1,5 ISO (MxMxM)
	8790.34+	20 kg/h		1,5 bar	
	12680.03+			3 bar	
	20770+	50 kg/h		1,5 bar	
Service indicator	12580	Service indicator for Automatic Change Over – 8Kg/h Propane		20 x 1,5 ISO (FxM)	
Manometer for Automatic Change Over	18042	Manometer 0-1,5 bar for Propane Automatic Change Over		Æ 13 Toric joint	
	17795	Manometer 0-3 bar for Propane Automatic Change Over			

20760 & 20770

12580

18042

High and Fix Pressure Regulators

Application

The high and fix pressure regulators are usually installed downstream the cylinders or tank. It ensures the first stage pressure regulation.

	Part Number	Flow (Propane)	Pin	Pout	Obs.
High and Fix Pressure Regulators– 1st stage regulation	8775.34	8 kg/h	Cylinder or tank	1,5 bar	20 x 1,5 ISO (FxM) - H
	21750.1	40 Kg/h			
	18318	100 kg/h			3/4 x 3/4 (MxM) - H
	21740.8	40kg/h			3/4 x 20x1,5 ISO (FxM) - V

8775

21740

21750

PROPANE RANGE

Pressure Limiters

Application

The pressure limiters are safety devices installed downstream the 1st stage regulation. It protects the installation from excessive pressure if the first stage fails.

	Part Number	Flow (Propane)	Pin	Pout	Obs.
Pressure Limiters	8390.01	8 kg/h	Downstream the 1st stage regulation	1,75 bar	20 x 1,5 ISO (FxM)
	21760.01	40 Kg/h			
	18319	100 Kg/h			3/4 x 3/4 (FxM)

8390

21760

Safety Regulators

Application

The safety regulators are normally installed after the 1st stage regulator and immediately before the gas meters or burners.

They have three different functions: valve, pressure reduction, safety device and cutting the gas supply to the network if the pressure becomes lower than normal due a gas leakage.

	Part Number	Flow (Propane)	Pin	Pout	Obs.
Safety Regulators	19020.3	4 kg/h	0,5 to 1,75 bar	39 mbar	20 x 1,5 ISO (MxM)
	-				(20x1,5 ISO) x 7/8 – Floating Flange
	17650.03	5 kg/h		50 mbar	20 x 1,5 ISO (MxM)
	18050.3	8 kg/h		37 mbar	
	12570/07	12 kg/h			3/4 x 3/4 (MxM)

19020

H

PROPANE RANGE

Low and Fix Pressure Regulators

Application

The low and fix pressure regulators should be installed downstream the 1st stage regulation.

They have the function of making the final gas pressure regulation to the appliance conditions.

19045 -34.35.36.37.38.39.40 &19050 - 34.35.36

12600.07 & 18507/07

	Part Number	Flow (Propane)	Pin	Pout	Obs.
Low and fix pressure regulators – 2nd Stage regulation	19045.34	4Kg/h	Downstream 1st stage regulation	37 mbar	20 x 1,5 ISO (MxM)
	14535.01				20 x 1,5 ISO (FxM)
	19045.36			67 mbar	20 x 1,5 ISO (MxM)
	19045.37			100 mbar	
	19045.38			150 mbar	
	19045.40			200 mbar	
	19045.39			500 mbar	
	19050.36	8 Kg/h		67 mbar	
	19050.34			37 mbar	
	19050.35				20 x 1,5 ISO (FxM)
	12600.07	12 kg/h			3/4 x 3/4 (MxM)

High and Adjustable Pressure Regulators with Manometer

Application

The high and adjustable pressure regulator with manometer allows the end user to regulate the pressure from 0 to 3 bars.

An incorporated manometer permanently shows the pressure value setting.

	Part Number	Flow (Propane)	Pin	Pout	Obs.
High and adjustable pressure regulator with manometer	8785.34	8 kg/h	Cylinder or tank	0-3 bar	20 x 1,5 ISO (FxM)
	13260.34	40 Kg/h			

8785/2 & 13260/34

Low and Adjustable Pressure Regulators with Manometer

Application

The low and adjustable pressure regulator with manometer allows the end user to regulate the pressure from 0 to 0,6 bar.

An incorporated manometer permanently shows the pressure value setting.

	Part Number	Flow (Propane)	Pin	Pout	Obs.
Low and adjustable pressure regulator with manometer	14050.01	4 Kg/h	Garrafa ou Reservatório	0-0,3 bar	20 x 1,5 ISO (FxM)
	14585/02			0-0,6 bar	
	12610/07	12 Kg/h		0-0,3 bar	3/4 x 3/4 (MxM)

14050_01

BUTANE RANGE

Automatic Change Over with indicator and Accessories

Application

See the description of automatic change-over to Propane.

The difference is related to the capacity (flow) and regulation pressures.

	Part Number	Flow (Butane)	Pin	Pout	Obs.
Automatic Change Over for Butane	18440.03	2,6 Kg/h	Cylinder	28 mbar	20 x 1,5 ISO (MxMxM)
	12485.03+			500 mbar	
	17790	Manometer for Butane Automatic Change Over		13 Toric joint	

12485.03

17790

Fix Pressure Regulators

Application

See the description of high and fix pressure regulators, safety regulators and low and fix pressure regulators. The difference is related to the capacity (flow) and regulation pressures..

	Part Number		Flow	Pin	Pout	Obs.
Fix pressure regulators	14570/03		2,6 Kg/h	Cylinder Or tank	250 mbar	20 x 1,5 ISO (MxM)
	14380/02				28 mbar	
Safety regulators	14800.03			0,1 to 0,6 bar		20 x 1,5 ISO (MxM)
		-				(20x1,5 ISO) x 7/8 –Floating Flange
		13100.07	6 Kg/h			3/4 x 3/4 (MxM)

14380/02

14570/03

14800.03

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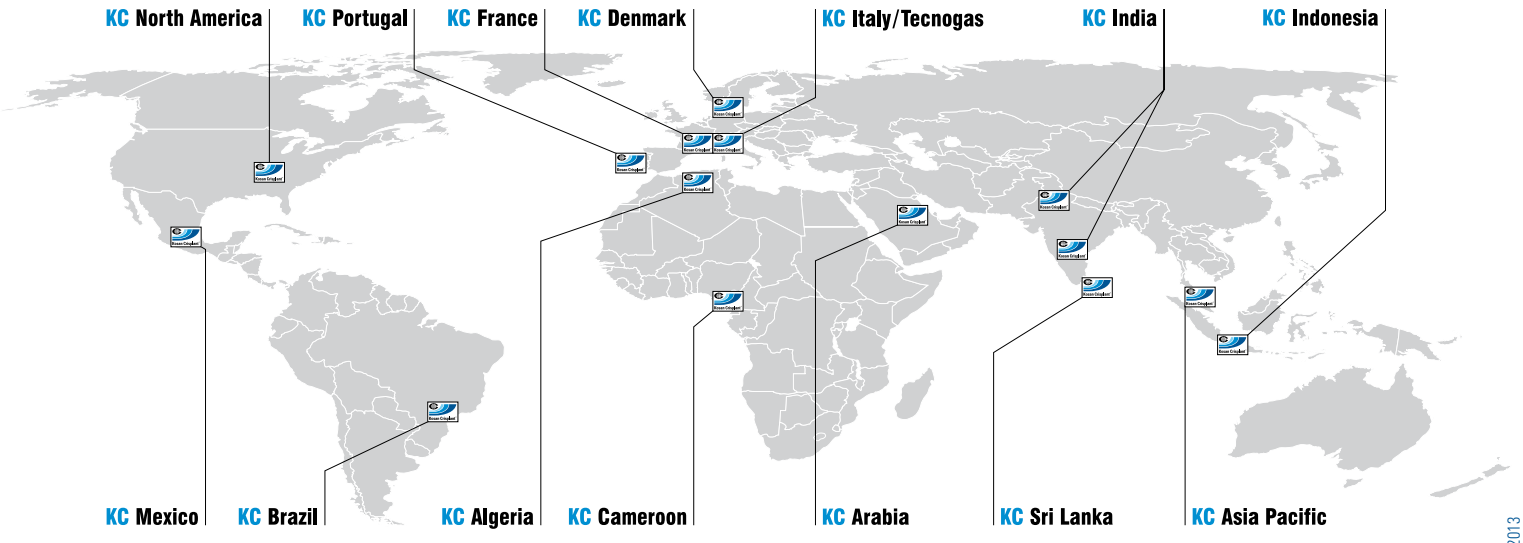

Rev. 0 // March 2013