



KURTTEKİN®



**SAFETY DEVICES AND ACCESSORIES
FOR USE ON TANKS**



STORING

EVAPORATIVE AND FLAMMABLE LIQUIDS

Kurttekin Ltd. Şti.

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ACCESORIES FOR TANKS STORING EVAPORATIVE & FLAMMABLE LIQUIDS

In accordance with the requirements of NFPA-30 (Code for storage of flammable liquids), in order to avoid concentration of flammable vapor-air mixture on top of a tank, atmospheric and low pressure storage tank must be isolated from atmosphere beyond the necessary contact conditions such as inbreathing and pressure relief, sampling and level measurement by dipping. All accesories on the roof have to be ex-proof, spark-proof, vapor-tight and normally closed.

Due to daily thermal changes, filling and emptying cycles, air must be inbreathed to avoid overvacuum that may cause buckling in the shell. Also air-vapor mixture must be released to avoid overpressure that may cause rupture on the roof to shell joint. To satisfy these requirements Pressure Vacuum Vents and vaportight Gauge Hatch Covers should be used.

In case of fire outside the tank, the flammable vapor-air mixture escaping or released from the tank may catch fire and the flash back of the flame through the relief vent may cause serious results. To avoid this possibility Flame Arrestors should be used. In case of highly evaporative flammable liquids, Flame Arrestors should be located between the Pressure Vacuum Vent and the air discharge pipes of the tank. In case of liquids of low rate of evaporation, where completely open vent pipes are used, Flame Arrestors should be mounted in between the open vent pipe and atmosphere.

Pressure Vacuum Vents manufactured by our Company have the pressure and vacuum ports in a side by side configuration arranged on the same body. In standard design, body, vacuum cover, valves and pressure hood are made of Aluminum, seats are made of Bronze, studs and nuts on pressure side and vacuum side are stainless steel. Valve rods are made of Brass or Aluminum according to the pressure settings. Diaphragms used on valves are made of Neoprene. Valve set pressures can be adjusted from 20 mm w.c. to 500 mm w.c. by addition of weight discs. Connection flanges are normally rated to ANSI Class 150 # R.F., but can also be machined according to DIN norms. For optional materials of manufacture please consult our engineers. Our standard sizes under manufacture are 2", 3", 4", 6", 8", 10" & 12".

Gauge Hatch Covers are manufactured in sizes 4", 6", 8", 10", 12", 14" & 16". In standard design, body, paddle and valve are of Cast Aluminum, the diaphragm being made of Neoprene. By adjustment of set pressure slightly above that of the pressure setting of Pressure Vacuum Vent, the device also serves as a secondary pressure relief system. Upon request the Gauge Hatch Covers can be equipped with a locking mechanism. The units which are normally vaportight closed can be opened by pressing the paddle down by foot, upon releasing the paddle the device is automatically closed. Connection flanges are normally rated to ANSI Class 150 # R.F., but can also be machined according to DIN norms.

Emergency Vents are manufactured in sizes 12", 16", 18", 20" & 24". In standard design body and valve are Aluminum, the diaphragm is PTFE and all fasteners are stainless steel. If requested by the customer, units can be manufactured using different material. Opening set pressure can be adjusted in accordance with the requirement of the customer. Connection flanges are normally rated to ANSI Class 150 # R.F., but can also be machined according to DIN norms.

Flame Arrestors are manufactured for two different application purposes. For applications where the device is to be placed on openings to the atmosphere or right under the Pressure Vacuum Vent or under a very short piping End Of Line types are used. These are manufactured either both ends flanged or one end flanged. In case of applications, where a considerable length of piping (over two meters) exists after the Flame Arrestor, some other factors such as the flame speed must be taken in account. Once flame enters to a pipe, it continuously gains speed and the type of flow changes from laminar to turbulent flow. Due to the high flame speed encountered, besides the problem of quenching the flame, the problem of eliminating the shock wave created by high velocity have to be compensated. In order to eliminate the shock wave before it reaches the arrestor element Detonation-proof structure must be introduced. This requires the In Line type ex-proof and detonation-proof arrestors. There are three types of these arrestors. In D type inlet and outlet are perpendicular, in C type inlet and outlet are on the same axis and in E type inlet and outlet are on the same plane but eccentric.

In End of Line type Flame Arrestors, in standard design, body and element casing are made of Cast Aluminum, studs, spacers and nuts are made of Brass, packing is Kemterm, element bolt and nut are s.s.304. Other materials may be considered upon request. In In Line type of Flame Arrestors body, cover and shock breaker are made of Cast Iron or Cast Steel. All bolts and connection devices are made of stainless steel. In all types of Flame Arrestors the arrestor element is of "Crimped Ribbon" type and made of stainless steel sheets of proper thickness to enable the total free passage area to be 1.5 times greater than the area on the nominal diameter of the device, to create the maximum heat absorption area and the width of strip is greater than the requirement of the maximum arrestor element length.

Keeping in mind that different flammable vapors have different flame speed and thus different Quenching Diameter, it is recommended to give the information below for choice of proper Flame Arrestor with proper Quenching Diameter, type of construction and materials to be used.

Application : A brief description of planned location of Flame Arrestor on a sketch

Flammable Vapor : Name of and all available information on the flammable to be handled

Flow Capacity : The expected maximum flow through the arrestor

Pressure drop requirements (If any) : Maximum allowable pressure drop

Any further requirements (If any) : Please make a list of any further requirements.

Please note that safety devices may be required for only once during their complete period of presence on a plant, so maximum care should be shown for proper selection, inspection and maintenance of such devices.

For any unclear points or points of uncertainty PLEASE do not hesitate to contact us or any available authorities experimented in this field.

Another item covered by our Company is the Ex-proof filtered suction valve which is a check valve for use on end of suction hose submerged in fuel in underground storage tanks. These may be manufactured flanged or threaded on connection with the suction hose. Body, cover and valve are made of Aluminum, Seat is of PTFE, guide is of bronze, outer cover, mesh wire and bolts are made of stainless steel. Connection flanges are normally rated to ANSI Class 150 # R.F., but can also be machined according to DIN norms, or manufactured for threaded connection.

Sampling Pipe is a stainless steel pipe with holes on it, connected to a Gauge Hatch Cover by means of a flange on the upper end of the pipe. It is delivered as a complete set together with all the stainless steel bolts, nuts and washers. While ordering please specify the nominal diameter, flange rating and length of pipe.

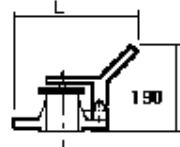
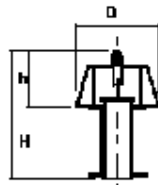
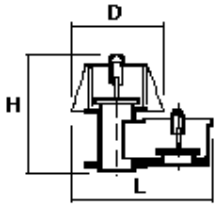
Cable Guided Float Type Level Indicators are used on liquid storage tanks of reasonable height for visual observation of the level of the liquid within the tank, from outside the tank by means of a Gauge Board located vertically on the shell of the tank. Within the tank there are two float guide cables attached to the floor of the tank, on one end by means of a stainless steel section bolted to the bottom of the tank, and the other end attached to the roof by means of sprung tensioning devices. The stainless steel float guided by the guiding cables is connected to a counterweight (Pb) guided to the Gauge Board carrying rails by means of another stainless steel cable. On the tank top stainless steel piping and cable guide rolls made of Polyamide are provided. In standard models two rolls are used, but in vapor tight applications three rolls with piping in form of a U tube manometer, sufficient in length to prevent vapor loss, filled with liquid, is used. The Gauge Board is made of Aluminum sheet marked in dm increments. The Gauge Board carrying rails and plates for connection to the shell are made of St.37 plain material. While inquiring, please attach a brief outline of tank sketch together with the type and maximum height of liquid to be measured. Please also advise if the application requires vapor tightness.

Besides the standard model we can offer remote reading electronic digital models. We can also custom design models suitable to your specific application.

Pressure Vacuum Vent

Rim Vent

Gauge Hatch Cover



Pressure Vacuum Vent dimensions

| <u>D.N.</u> | <u>D</u> | <u>H</u> | <u>L</u> |
|-------------|----------|----------|----------|
| 2" | 240 | 202 | 360 |
| 3" | 300 | 270 | 440 |
| 4" | 320 | 284 | 500 |
| 6" | 470 | 440 | 690 |
| 8" | 600 | 630 | 850 |
| 10" | 600 | 665 | 920 |
| 12" | 600 | 720 | 1025 |

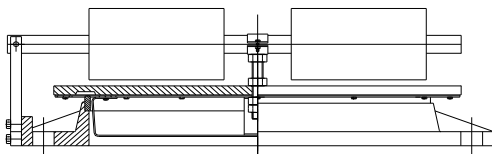
Rim Vent dimensions

| <u>D.N.</u> | <u>D</u> | <u>h</u> | <u>H</u> |
|-------------|----------|----------|----------|
| 2" | 240 | 95 | 170 |
| 3" | 300 | 125 | 190 |
| 4" | 320 | 130 | 230 |
| 5" | 320 | 130 | 310 |
| 6" | 470 | 215 | 500 |
| 8" | 600 | 290 | 575 |
| 10" | 600 | 290 | 575 |

Gauge Hatch Cover dimensions

| <u>D.N.</u> | <u>L</u> |
|-------------|----------|
| 4" | 275 |
| 6" | 310 |
| 8" | 370 |
| 10" | 420 |
| 12" | 510 |
| 14" | 565 |
| 16" | 630 |

Emergency Vents



Emergency Vent dimensions

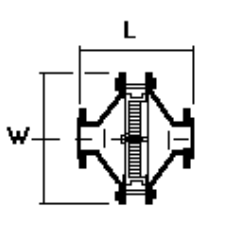
| <u>D.N.</u> | <u>Do</u> | <u>H</u> |
|-------------|-----------|----------|
| 16" | 597 | 106 |
| 18" | 635 | 110 |
| 20" | 698 | 113 |
| 24" | 852 | 118 |

SAMPLING PIPES

Sampling Pipe is a stainless steel pipe with holes on it, connected to a Gauge Hatch Cover by means of a flange on the upper end of the pipe. It is delivered as a complete set together with all the stainless steel bolts, nuts and washers. While ordering please specify the nominal diameter, flange rating and length of pipe.

Standard sizes are 4", 6" and 8".

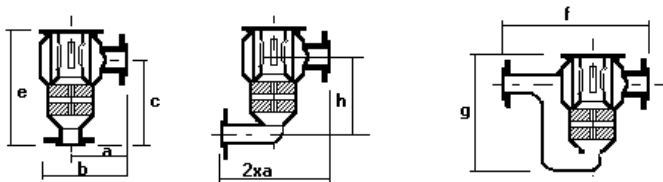
ATMOSPHERIC FLAME ARRESTORS



DIMENSIONS

| <u>N.D.</u> | <u>L</u> | <u>W</u> |
|-------------|----------|----------|
| 2" | 200 | 210 |
| 3" | 243 | 250 |
| 4" | 400 | 290 |
| 6" | 560 | 400 |
| 8" | 730 | 474 |
| 10" | 800 | 565 |

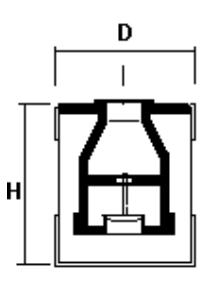
IN LINE DETONATION PROOF FLAME ARRESTORS



DIMENSIONS

| <u>N.D.</u> | <u>a</u> | <u>b</u> | <u>c</u> | <u>e</u> | <u>f</u> | <u>g</u> | <u>h</u> |
|-------------|----------|----------|----------|----------|----------|----------|----------|
| 1" | 100 | 160 | 175 | 125 | 200 | 165 | 85 |
| 1.1/4" | 125 | 195 | 205 | 150 | 250 | 175 | 90 |
| 1.1/2" | 140 | 228 | 230 | 160 | 280 | 190 | 90 |
| 2" | 150 | 238 | 240 | 165 | 300 | 210 | 95 |
| 2.1/2" | 160 | 268 | 270 | 185 | 330 | 230 | 100 |
| 3" | 185 | 305 | 295 | 195 | 400 | 285 | 110 |
| 4" | 250 | 400 | 365 | 250 | 500 | 345 | 200 |
| 5" | 275 | 445 | 430 | 275 | 550 | 405 | 225 |
| 6" | 300 | 533 | 465 | 300 | 640 | 500 | 250 |
| 8" | 350 | 630 | 560 | 350 | 765 | 695 | 310 |

EXPROOF FILTERED SUCTION VALVE



Ex-proof filtered suction valve which is a check valve for use on end of suction hose submerged in fuel in underground storage tanks. These may be manufactured flanged or threaded on connection with the suction hose. Body, cover and valve are made of Aluminum, Seat is of PTFE, guide is of bronze, outer cover, mesh wire and bolts are made of stainless steel. Connection flanges are normally rated to ANSI Class 150 # R.F., but can also be machined according to DIN norms, or manufactured for threaded connection.

DIMENSIONS

NOMINAL DIAMETER

| | <u>1"</u> | <u>1.1/4"</u> | <u>1.1/2"</u> | <u>2"</u> | <u>2.1/2"</u> | <u>3"</u> | <u>4"</u> | <u>5"</u> | <u>6"</u> | <u>8"</u> | <u>10"</u> |
|---|-----------|---------------|---------------|-----------|---------------|-----------|-----------|-----------|-----------|-----------|------------|
| D | 145 | 145 | 170 | 170 | 190 | 205 | 240 | 300 | 350 | 465 | 535 |
| H | 125 | 125 | 135 | 135 | 150 | 165 | 200 | 235 | 260 | 320 | 380 |

CABLE GUIDED FLOAT TYPE LEVEL INDICATOR

