TREBLE R FABRICATIONS

UNIT 42 – CROSSGATE ROAD – PARK FARM INDUSTRIAL ESTATE – REDDITCH – WORCS – B987SN

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HEAVY DUTY RECTANGULAR/SQUARE FLAP VALVES

STEEL FRAME AND STEEL DOOR

The primary application of flap valves is for surface water drainage associated with rivers, estuaries and sea water outfalls to prevent reverse flow conditions. Flap valves can be utilised on final effluent outfalls for sewage treatment plant to prevent flood damage within the works.

The flap valves should be positioned on the outfall structure to avoid the build-up of debris around the invert area which could prevent the valve operating correctly. Sufficient 'fall away' should be provided between the invert of the flap valve and the base of the outfall structure.

Flap valve application on sea water outfalls should be given careful consideration due to turbulence of flow across the flap, particularly when severe wave action is involved, resulting in dislocation of the flap relative to the seats. Wherever possible the flap valve should be located in a shielded position to minimise the effects of severe wave action.

In many cases the end user preference is a heavy duty door with a mechanical hinge to give maximum flow. The steel frame and steel door therefore satisfies this requirement giving a reasonable cracking head and low head loss through the flap itself, during operation. Subject to the clients needs and environmental conditions the selection of material can be mixed. The material available for this design is galvanised mild steel, painted mild steel and 304 / 316 grade stainless steel

HEAVY DUTY RECTANGULAR FLAP

Heavy Duty
Rectangular/Square Flap Valves
Steel Frame & Steel Door

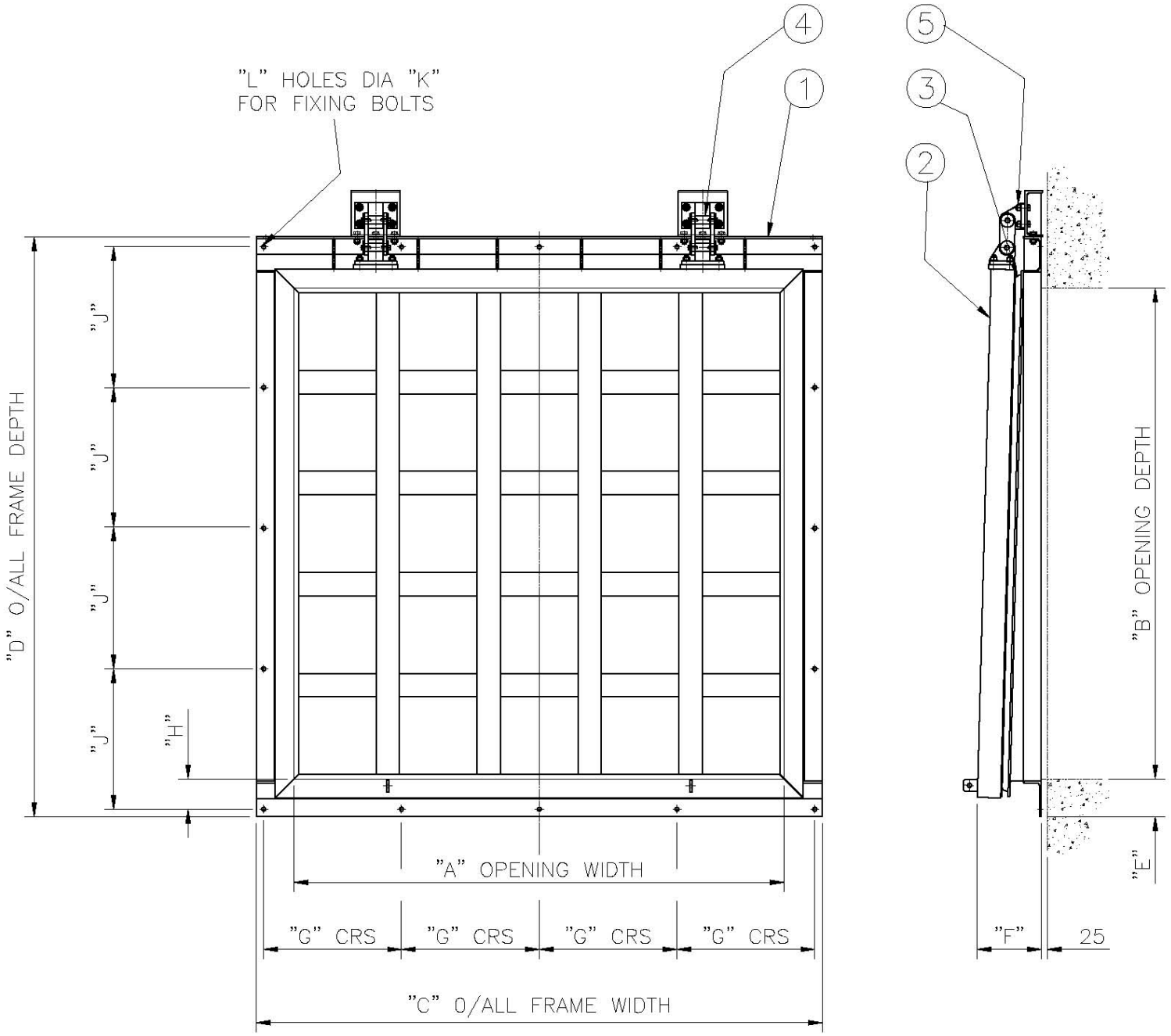
Operating Duty	
Application:	Prevents reverse flow
Type of Mounting:	Wall
Type of Media:	Water and Sewage
Operating Head:	10 Metres on-seating

Options	
Design Heads:	Higher head designs available
Size Range:	Any size from 2000mm to 3500mm in square or rectangular format
Extra's	Counter balanced doors

Construction Materials

ITEM	DESCRIPTION	MATERIAL
1	Frame	Mild Steel, BS 4360 Gr 43A Stainless Steel, BS 970 Gr 304 Stainless Steel, BS 970 Gr 316
2	Door	Mild Steel, BS 4360 Gr 43A Stainless Steel, BS 970 Gr 304 Stainless Steel, BS 970 Gr 316
3	Seals	Neoprene
4	Hinge Pins	Stainless Steel, BS 970 Gr 316
5	Fasteners	Stainless Steel, BS 6105, Gr A4

Rectangular/Square Flap Valves
Steel Frame & Steel Door
Heavy Duty



Heavy Duty
Rectangular/Square Flap Valves
Steel Frame & Steel Door

Dimensions : See Dimensional Drawing

Range	XL100	XL120
A	Width	Width
B	Depth	Depth
C	A + 324	A + 324
D	B + 383	B + 383
E	162	162
F	275	345
G/J	SUBJECT TO SIZE SELECTION	
H	132	132
K	17	22
L	SUBJECT TO SIZE SELECTION	

LOSS OF HEAD THROUGH FLAP GATES

Test conducted on flap gates show that the loss of head due to the flap riding on the water is very small compared with other losses in the hydraulic structure. Of course the entrance loss is usually considerably more critical than loss at the flap gate on the outlet end of conduit.

The hydraulic laboratory of the State University of Iowa conducted a series of test some years ago to determine the amount of head lost by water discharging through rectangular Flap Gates (Model 10C). The gates 16, 24 and 30 inches in diameter were supplied from commercial stock.

The following passage is excepted from the report of Professor Floyd A. Nagler, associate professor of Mechanics and Hydraulics, who supervised the investigation.

Based on these experiments the following empirical formula was derived to express the loss in head through rectangular gates of varying sizes and with different velocities of flow.

L - Loss of head in feet
V - Velocity of flow through gate in feet per second
D - Diameter of outlet in feet

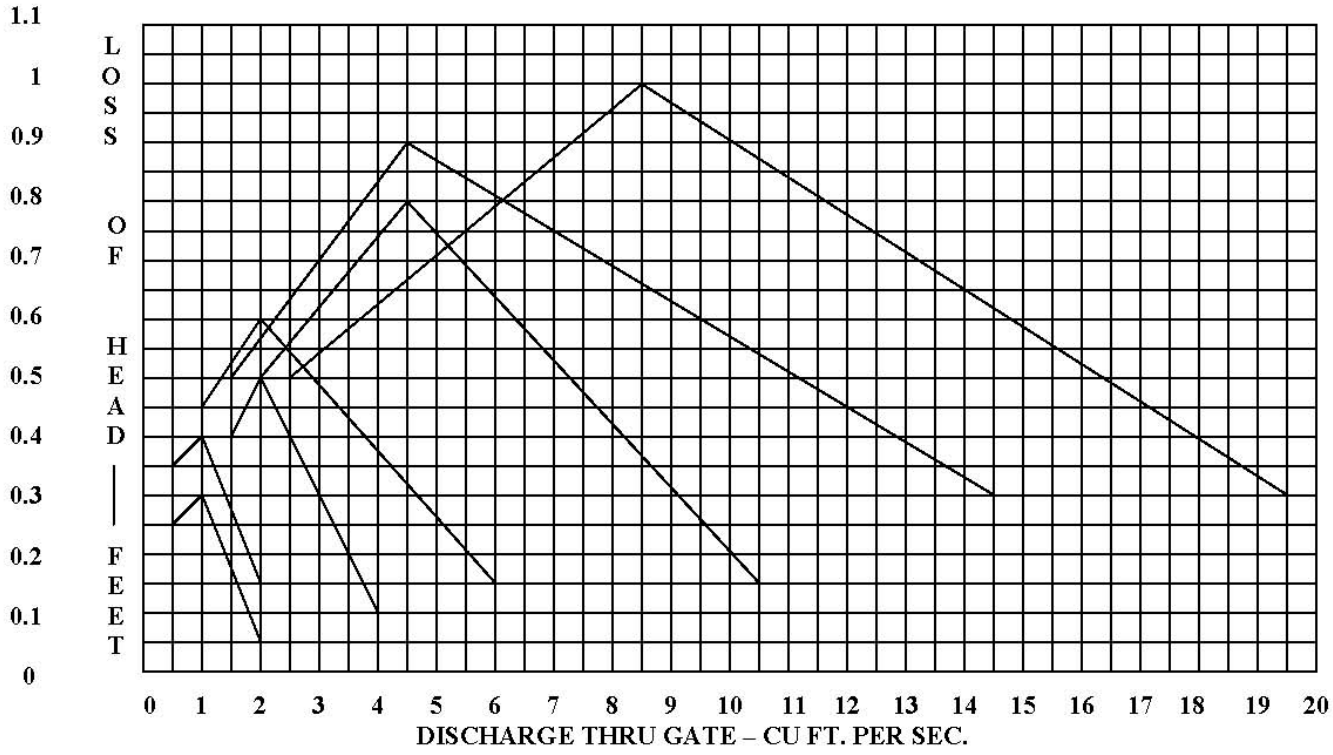
E - Base of natural logarithms.(2.7183)

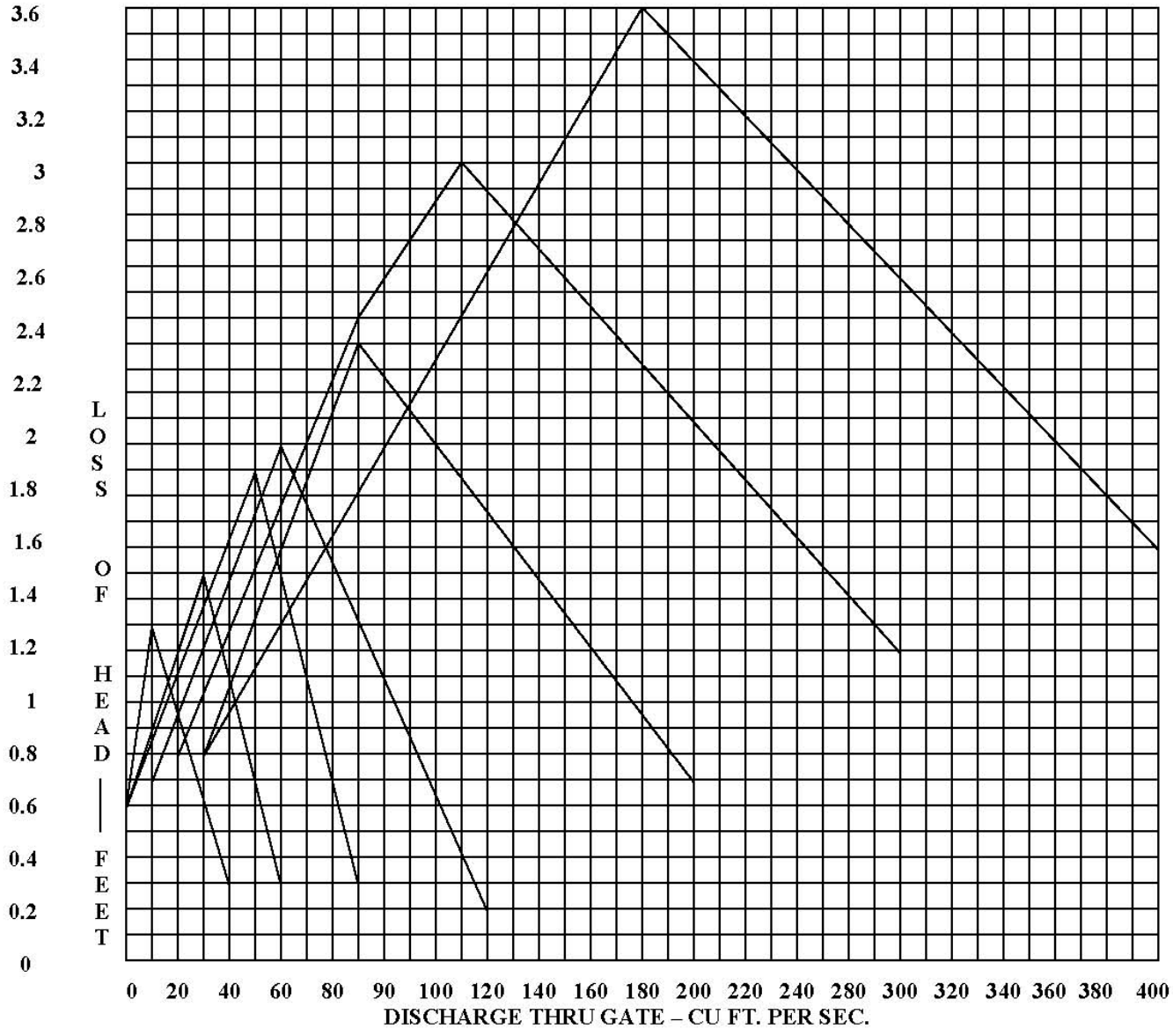
$$L = \frac{4V^2}{G} \times E^{\left(\frac{-1.15V}{\oplus D}\right)}$$

It may be concluded from these experiments that the rectangular gate in its hydraulic characteristics is all that the manufacturers have claimed for it. The small loss in head obtained through these gates demonstrates that their installation has but little effect on the discharged capacity of drainage outlets.

Medium and heavy duty flap gates have heavier flaps or covers than the gate model tested. As a result, head losses through these gates may be slightly more than those indicated by the test.

LOSS OF HEAD THROUGH FLAP GATES

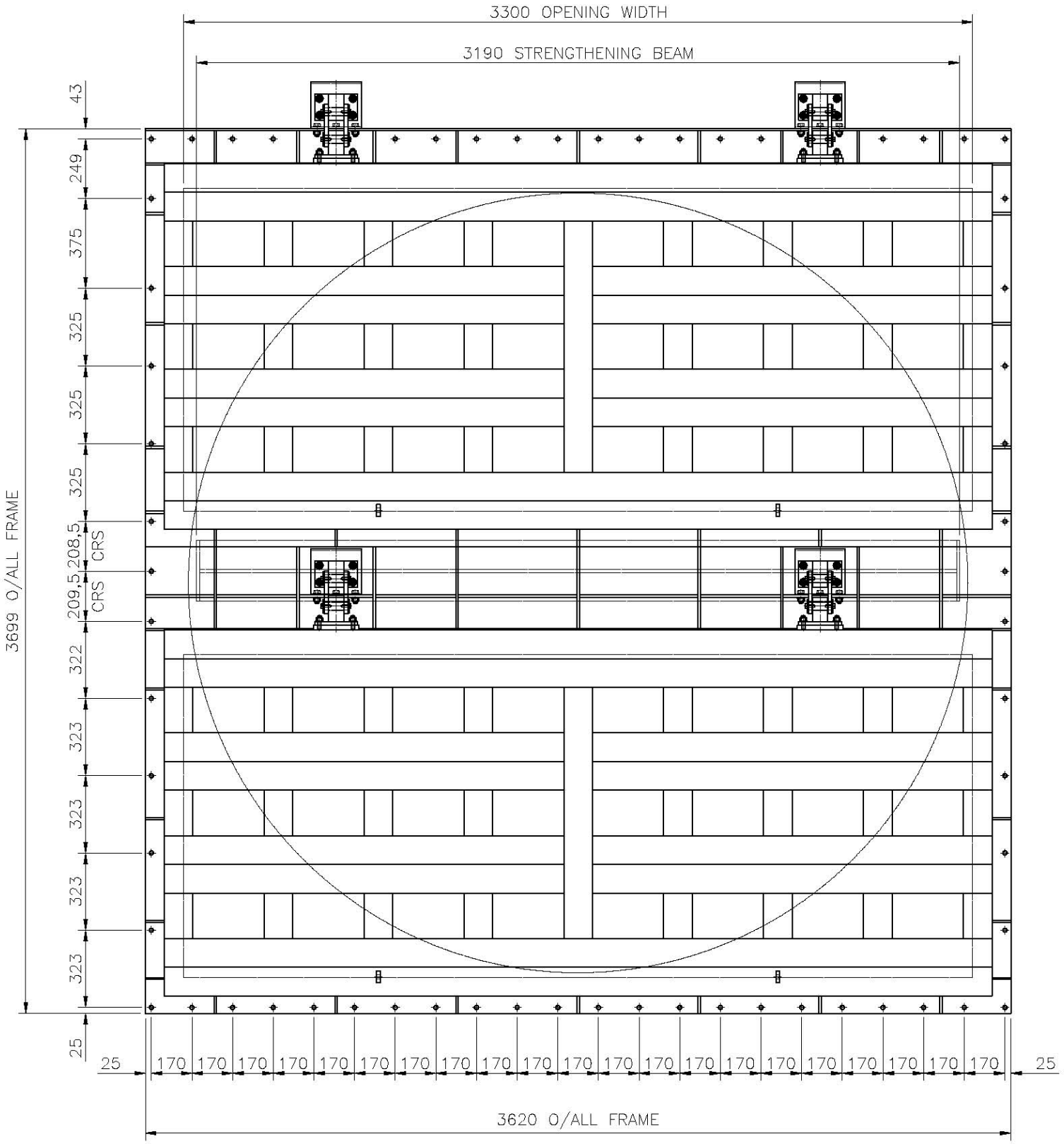




Heavy Duty
Rectangular/Square Flap Valves
Steel Frame & Steel Door

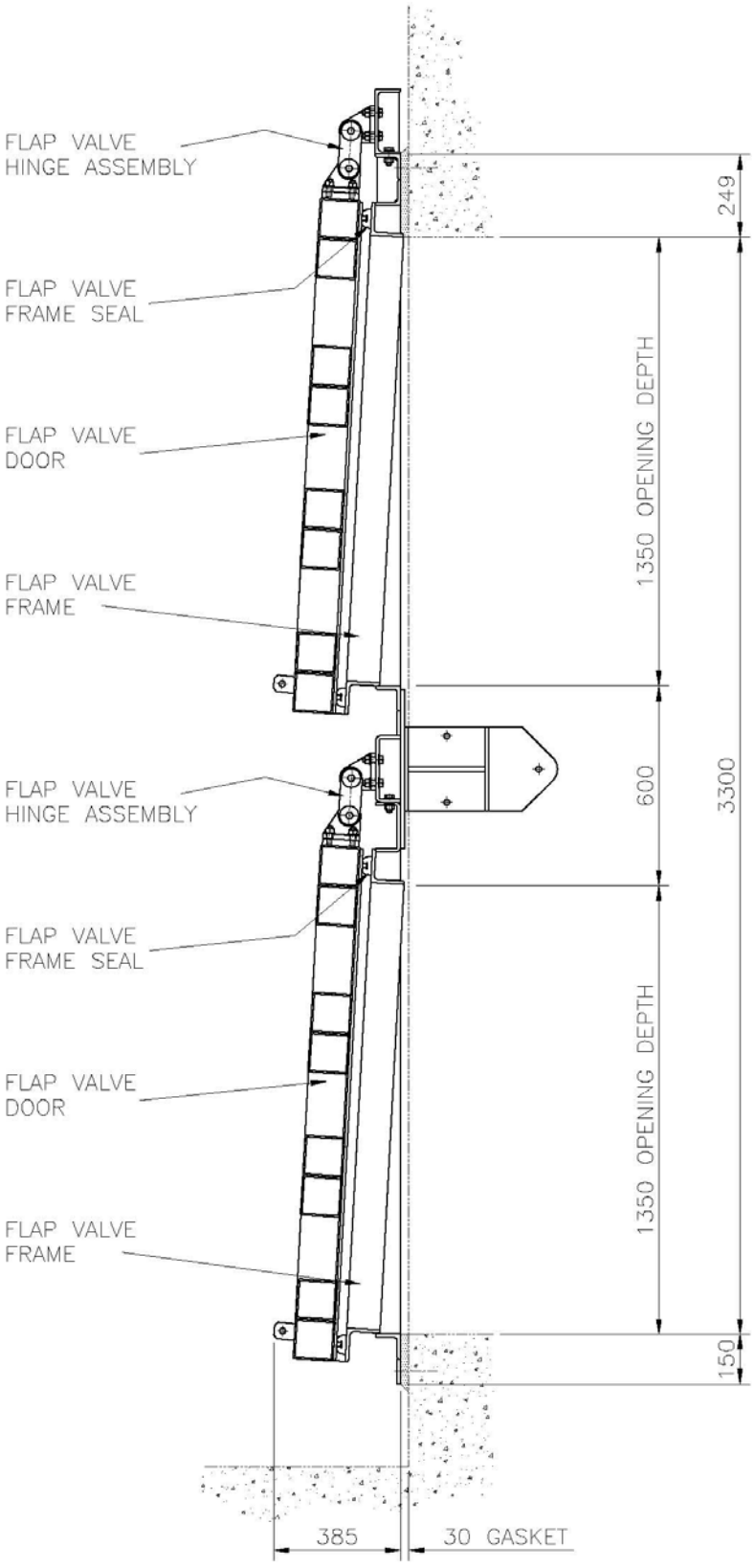
WIDTH	DEPTH	CRACKING HEAD(mm)	HEAD LOSS(mm)
2000	2000	150	213
2100	2100	152	215
2200	2200	154	218
2300	2300	156	220
2400	2400	158	222
2500	2500	160	224
2600	2600	162	226
2700	2700	164	228
2800	2800	166	230
2900	2900	168	232
3000	3000	170	234
3100	3100	172	236
3200	3200	174	238
3300	3300	176	240
3400	3400	178	242
3500	3500	180	244

HEAVY DUTY
RECTANGULAR FLAP VALVE
STEEL FRAME AND STEEL DOOR



Typical Drawing only of a Rectangular
Fabricated Flap Valve Double Door Type.
Heavy duty
Size 3300 x 3300

HEAVY DUTY
RECTANGULAR FLAP VALVE
STEEL FRAME AND STEEL DOOR



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