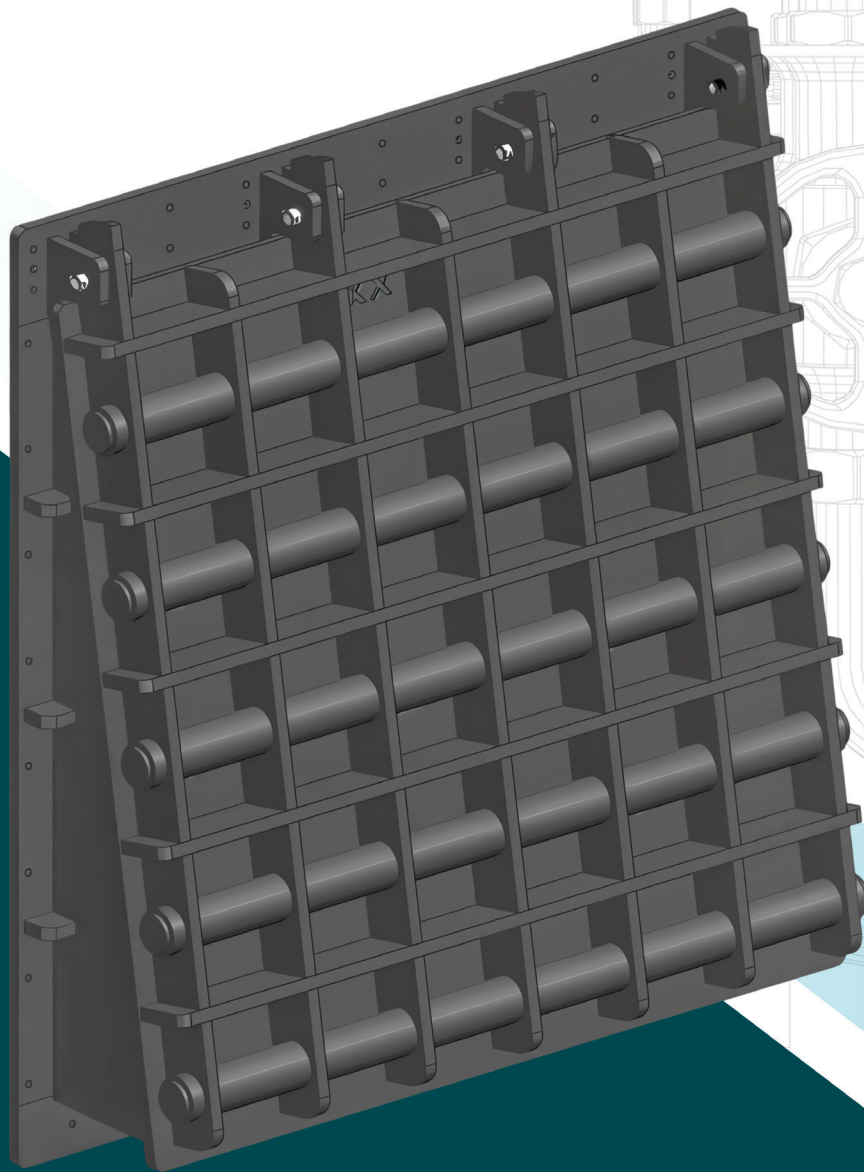




Engineering Life Sustaining Water

X3161

SQUARE/ RECTANGULAR
HDPE FLAP GATE





X3161

HDPE Square/ Rectangular Flap Gate

PRODUCT INTRO

The PKX X3161 Square/Rectangular HDPE Flap Valve is a high-performance, one-way HDPE flap valve designed for surface water drainage systems connected to rivers, estuaries, and seawater outfalls.

Engineered for gravity flow applications, it operates effectively under very low hydraulic heads and within ambient temperature ranges from -65°C to +85°C. The valve features a counter-weighted flap mechanism that allows forward flow and reliably prevents backflow – protecting low-lying areas from stormwater surges or tidal intrusion caused by elevated river or seawater levels.

TECHNICAL SPECIFICATION:

Model	: X3161
Size	: 300mm to 3,000 mm in width 300mm to 3,000 mm in height
Mounting Options:	
Wall Mount	: For outfall walls or culverts.
Pipe Mount	: For installation directly on the end of HDPE, concrete, or metal pipes.
Flanged Mount	: Bolted to a flange connection, typically for manholes or chambers.
Working Pressure	: Seating or unseating head pressure of the total height of the logs
Leakage	: Leakage rate lower than maximum allowable defined by DIN 19569-4 (class 1).
Design Standard	: Manufacturer Standard

MATERIAL:

Gate	: High Density Polyethylene (HDPE)
Body	: High Density Polyethylene (HDPE)
Counter Weight	: High Density Polyethylene (HDPE)
Pin Axis	: Stainless Steel 304 or 316
Seal	: EPDM

APPLICATIONS:

1. STORMWATER OUTFALLS

Installed at the discharge point of stormwater drainage systems to prevent backflow during high tides or flooding events.

2. RIVER AND CANAL DRAINAGE

Prevent river water from entering drainage systems or low-lying land during periods of high water levels.

3. TIDAL AND COASTAL PROTECTION

Protect coastal infrastructure and land from tidal intrusion by closing automatically during high tide.

4. WASTEWATER TREATMENT PLANTS

Control flow in treated or untreated effluent lines, helping to manage direction and prevent contamination or surcharge.

5. FLOOD CONTROL SYSTEMS

Used in flood-prone regions to prevent the reverse flow of floodwaters into protected areas.

6. IRRIGATION CHANNELS

Maintain flow direction in agricultural irrigation systems, especially where gravity-fed systems are used.

7. INDUSTRIAL AND MUNICIPAL DRAINAGE

Control discharge from industrial sites or municipal drainage systems where chemical resistance and reliability are critical.

PRODUCT FEATURES OF HDPE FLAP GATES:

Material	: Made from HDPE, which is corrosion-resistant, lightweight, and UV-stable.
One-way Flow	: Opens with forward flow and automatically closes when flow reverses.
Maintenance-Free	: HDPE is non-corrosive, reducing the need for frequent maintenance.
Chemical & UV Resistance	: Ideal for harsh environmental conditions.
Lightweight	: Easier to install compared to metal gates.

- Not at risk from theft as no inherent scrap value.
- Heavy duty HDPE will withstand being struck by rocks and other debris, present in marine and river environments, which would shatter lighter weight plastic.
- Waterproof qualities all the way through, not reliant on maintaining an added layer.

Customizable Sizes : Available in various diameters for pipe or wall mounting.



HIGH DENSITY POLYETHYLENE (HDPE)

GENERAL PROPERTIES

Density : 0.96 g/cm³

Water Absorption : < 0.01%

MECHANICAL PROPERTIES

Yield Stress : 25 MPa

Elongation at yield stress : 9.5%

Elongation at Break : > 50%

Tensile modulus of elasticity : 800 MPa

Notched impact strength (Charpy) : 10 kJ/m²

Shore hardness : 63 Scale D

THERMAL PROPERTIES

Melting Temperature : above 135°C

Thermal Conductivity : 0.40 W/(m*K)

Thermal Capacity : 1.90 kJ/(kg*K)

Coefficient of linear thermal expansion : 150-230 10⁻⁶ K⁻¹

Service Temperature (Long Term) : -50°C to 85°C

Service Temperature (Short Term - max.) : 100°C

Head defection temperature : 67°C

CHEMICAL RESISTANCE

Organic Acids : Resistant

Inorganic Acids : Resistant

Oxidizing Acids : Partially Resistant

Bases : Resistant

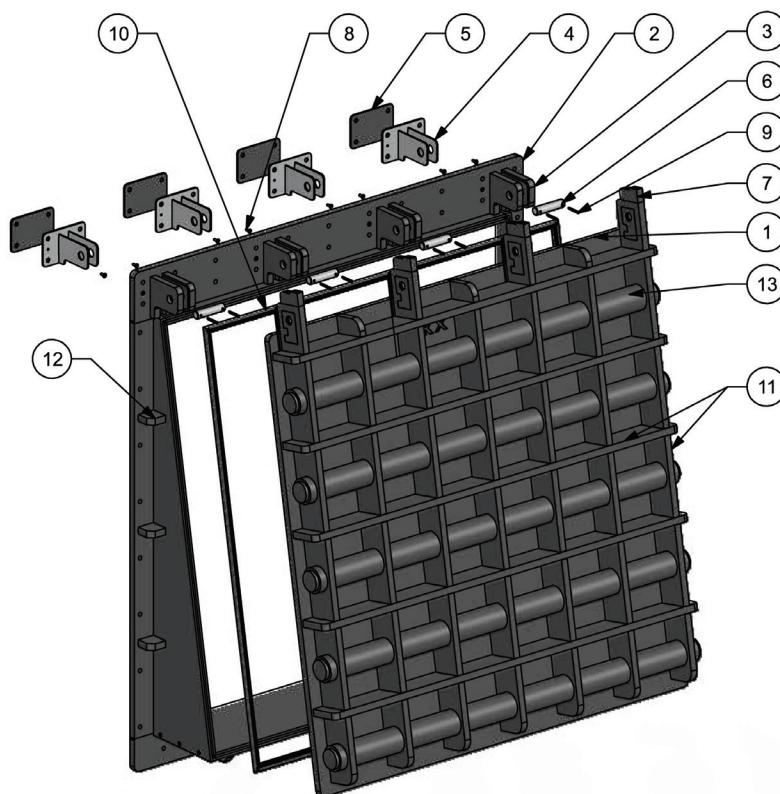
Alcohols : Resistant

Aliphatic Compounds : Resistant

Aromatic Compounds : Partially Resistant

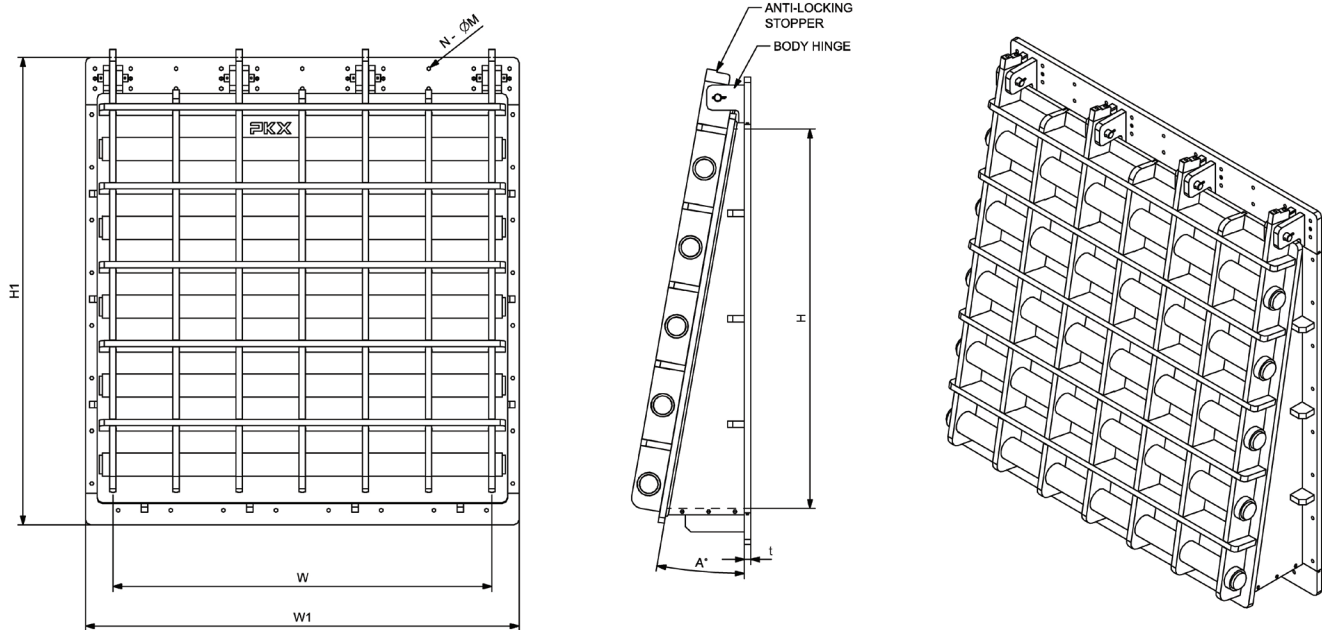
Trichloroethylene : Partially Resistant

CONSTRUCTION OF PRODUCT



No.	PART NAME	SPECIFICATION	QTY
1	GATE	HDPE	1
2	BODY FRAME	HDPE	1
3	HINGE	HDPE	N
4	HINGE REINFORCED PLATE	STAINLESS STEEL 304/316	N
5	HINGE BASE PLATE	HDPE	N
6	HINGE PIN	STAINLESS STEEL 304/316	N
7	ANTI-LOCKING STOPPER	HDPE	N
8	FLAT HEAD SCREW	STAINLESS STEEL 304/316	N
9	COTTER PIN	STAINLESS STEEL 304/316	N
10	RUBBER SEAL	EPDM	1
11	GATE STIFFENER	HDPE	N
12	BODY FRAME STIFFENER	HDPE	N
13	GATE STIFFENER PIPE	HDPE	N

PRODUCT DIMENSION



W	H	W1	H1	ANGLE, A	NO OF HINGE	PLATE THICKNESS, t	ANTI LOCKING STOPPER	NO OF GATE STIFFENER	NO OF GATE STIFFENER PIPE	BOLT HOLES, N- ØM		
MM	MM	MM	MM	°	NOS	MM	NOS	NOS	NOS	TOP	BOTTOM	LATERAL
300	300	500	630	5°/10°	2	25	2	2	2	2 @ Ø12	2 @ Ø12	4 @ Ø12
350	350	550	680	5°/10°	2	25	2	2	2	2 @ Ø12	2 @ Ø12	4 @ Ø12
400	400	600	730	5°/10°	2	25	2	2	2	2 @ Ø12	2 @ Ø12	4 @ Ø12
450	450	650	780	5°/10°	2	25	2	2	2	4 @ Ø12	2 @ Ø12	4 @ Ø12
500	500	700	830	5°/10°	2	25	2	2	2	4 @ Ø12	2 @ Ø12	4 @ Ø12
600	600	800	930	5°/10°	2	25	2	2	2	4 @ Ø12	2 @ Ø12	4 @ Ø12
700	700	900	1030	5°/10°	2	25	2	2	2	4 @ Ø12	2 @ Ø12	4 @ Ø12
800	800	1000	1130	5°/10°	3	25	3	3	3	6 @ Ø14	4 @ Ø14	8 @ Ø14
900	900	1100	1230	5°/10°	3	25	3	3	3	6 @ Ø14	4 @ Ø14	8 @ Ø14
1000	1000	1200	1330	5°/10°	3	30	3	3	3	6 @ Ø14	4 @ Ø14	8 @ Ø14
1200	1200	1400	1530	5°/10°	3	30	3	5	5	12 @ Ø14	4 @ Ø14	10 @ Ø14
1300	1300	1500	1630	5°/10°	3	30	3	5	5	12 @ Ø14	4 @ Ø14	10 @ Ø14
1400	1400	1600	1730	5°/10°	3	30	3	5	5	12 @ Ø14	4 @ Ø14	10 @ Ø14
1500	1500	1700	1830	5°/10°	3	30	3	5	5	12 @ Ø18	6 @ Ø18	12 @ Ø18
1600	1600	1860	1985	5°/10°	4	30	4	5	5	12 @ Ø18	6 @ Ø18	12 @ Ø18
1700	1700	1960	2085	5°/10°	4	30	4	5	5	12 @ Ø18	6 @ Ø18	12 @ Ø18
1800	1800	2060	2185	5°/10°	4	30	4	5	5	12 @ Ø18	8 @ Ø18	14 @ Ø18
1900	1900	2160	2285	5°/10°	4	30	4	5	5	12 @ Ø18	8 @ Ø18	14 @ Ø18



PRODUCT DIMENSION

W	H	W1	H1	ANGLE, A	NO OF HINGE	PLATE THICKNESS, t	ANTI LOCKING STOPPER	NO OF GATE STIFFENER	NO OF GATE STIFFENER PIPE	BOLT HOLES, N- ØM		
MM	MM	MM	MM	°	NOS	MM	NOS	NOS	NOS	TOP	BOTTOM	LATERAL
2000	2000	2260	2385	5°/10°	5	30	5	5	6	12 @ Ø18	8 @ Ø18	14 @ Ø18
2100	2100	2480	2650	5°/10°	5	35	5	5	6	16 @ Ø18	9 @ Ø18	14 @ Ø18
2200	2200	2580	2750	5°/10°	5	35	5	5	6	16 @ Ø18	9 @ Ø18	14 @ Ø18
2300	2300	2680	2850	5°/10°	5	35	5	5	6	16 @ Ø18	9 @ Ø18	14 @ Ø18
2400	2400	2780	2950	5°/10°	5	35	5	5	6	16 @ Ø18	9 @ Ø18	14 @ Ø18
2500	2500	2880	3050	5°/10°	6	35	6	5	6	16 @ Ø18	10 @ Ø18	16 @ Ø18
2600	2600	2980	3150	5°/10°	6	35	6	6	7	16 @ Ø18	10 @ Ø18	16 @ Ø18
2700	2700	3080	3250	5°/10°	6	35	6	6	7	16 @ Ø18	10 @ Ø18	16 @ Ø18
2800	2800	3180	3350	5°/10°	6	35	6	6	7	16 @ Ø18	10 @ Ø18	16 @ Ø18
2900	2900	3280	3450	5°/10°	6	35	6	6	7	16 @ Ø18	12 @ Ø18	18 @ Ø18
3000	3000	3380	3550	5°/10°	6	35	6	6	7	16 @ Ø18	12 @ Ø18	18 @ Ø18



Notes:

[illegible]



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