



DESIGNED FOR REFLECTED
BLAST PRESSURE **28 bar**



HEAVY STEEL DOOR FRAME
CONSTRUCTED WITH **80 mm BOLTS**



DOOR THICKNESS: **400 mm**
STEEL CONCRETE SLAB THICKNESS: **200 mm**



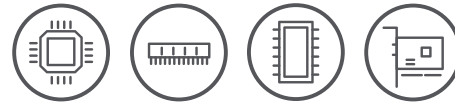
MASSIVE HINGES:
HEAVY DUTY BEARINGS



BT 2

BLAST PROOF DOOR

data sheet



BT 2

double leaf

BLAST PROOF DOOR

DATA SHEET

Blast Proof Door type BT2, double leaf

Blast Effects

The door is designed for reflected blast pressure on door surface up to **28 bar** (2.8 MPa; 406 psi); blast resistant calculated by FEM Analysis for reflected blast pressure up to **28 bar** (406psi).

Pressure-Impulse-Diagram calculated by **Fraunhofer Institute for High-Speed Dynamics, Ernst-Mach-Institute, EMI**, for different kinds of blast loads and description of the corresponding failure mode. Report I-11/15

Overpressure direction:

The overpressure wave direction is tested direct to the front.

Product Data

Blast resistant door in a high efficient construction of steel and reinforced concrete. The mounting combines surface mounting and in wall mounting; side hinged; swinging type; the door can be operated from inside and outside, manual operation of the door for opening and closing; door thickness: 400 mm, concrete slab thickness: 200 mm with 3 side bolt work and wheel handle - inside and outside; integrated hatch door available

Description of latching

Door is locked with round pins (dia 80 mm) and central bolt work, locking way 50 mm; each leaf is hinged with strong hinges in vault style, which allows door opening 180°, hinge pins are machined and polished from 80 mm diameter steel, rotating in sinter bushing, pins are hardened in a range of 38 to 40 HRC

Blast door operation

Force required to set the door in motion from the 90-degree open position app. 120 N, optional opening from inside and outside by electronic lifting cylinder is available

Door frame

The heavy steel frame is constructed from 400 mm by 400 mm bended angle and prepared with anchoring studs.

Gasket seals are provided as recommended for reinforced concrete doors; the seals are typically used for reinforced concrete doors to improve the weather seal

and provide door silencer; sealed doors have full door perimeter and all door penetrations sealed; perimeter seals are rubber gasket type; gaskets are removable, capable of sealing the mating surfaces and resistant to the atmospheric environment; the gaskets cushion the impact of the door against the frame so that steel to steel contact is not made during closing.

Door finish: door painted with primer resisting corrosion

Static material strength: steel plate according:

- EN 10025-2/2004,
- EN 10029 A/N
- EN 10163-2 A/1
- AD-2000 W1
- quality: S235JR+M
- minimum static yield strength 300 N/mm² (Mpa)
- maximum static yield strength 412 N/mm² (Mpa)
- minimum tensile strength 410 N/mm² (Mpa)
- minimum tensile strength 566 N/mm² (Mpa)
- elongation at rupture: 27% - 37%
- concrete C45/55:
- minimum static yield strength 60 N/mm² (Mpa)
- break load min.: 1500 kN test acc. DIN EN 12390

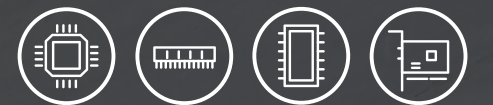
Dynamic analysis and deformation

Dynamic finite element analysis by calculation software LS-dyna Version 970-3535 maximum deformation in door leaf = 2.1mm (BT2-5060) 100 % function of door (BT2-5060) after blast with 28 bar.

Model art. no.	Outer dimensions		Clear opening		Weight with concrete (kg)	Weight steel only (kg)	Door thickness (mm)
	height (mm)	width (mm)	height (mm)	width (mm)			
BT2-4040	4600	4800	4000	4000	16400	8000	400
BT2-4050	4600	5800	4000	5000	19500	9400	400
BT2-4545	5300	5300	4500	4500	18150	9200	400
BT2-5050	5600	5800	5000	5000	23500	11150	400
BT2-5055	5600	6300	5000	5500	25700	11700	400
BT2-5550	6100	5800	5500	5000	25000	11700	400
BT2-5060	5600	6800	5000	6000	27900	12360	400
BT2-5555	6100	6300	5500	5500	29000	14500	400
BT2-5560	6100	6800	5500	6000	30200	15600	400
BT2-6050	6600	5800	6000	5000	28400	13250	400

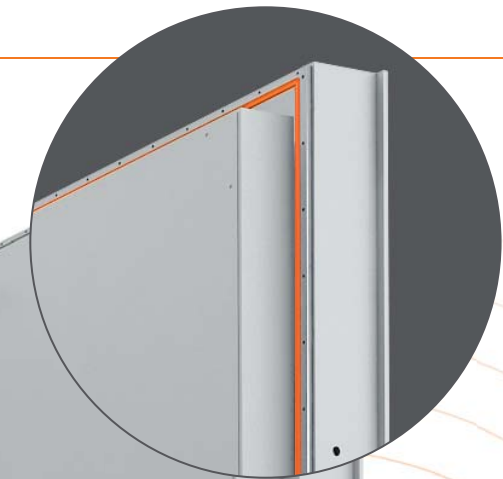


BT 2
double leaf
BLAST PROOF DOOR





PAINING
Primer resisting
corrosion

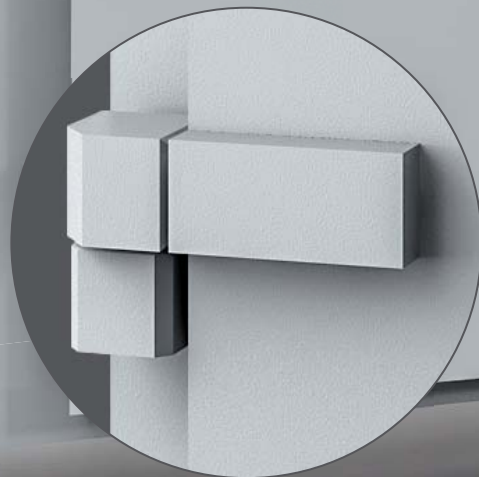
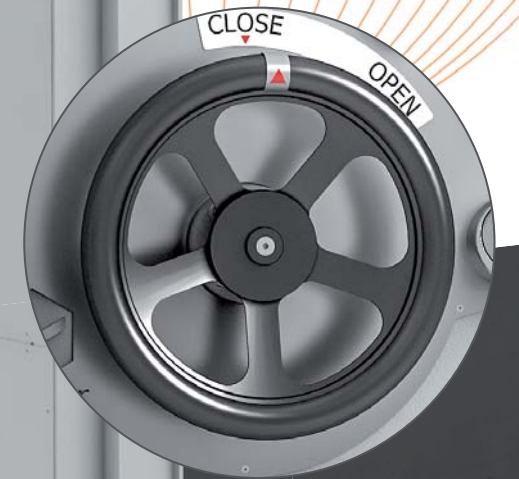


GASKETS
Gaskets of rubber type
at full door perimeter
Gasket seals are
resistant to atmospheric
environment



OPERATING
All the locks are
operated from
outside and inside

HANDLES
Black wheel-handle



LEAF
Strong gear bolt work
Very strong hinges



BT 2
double leaf
BLAST PROOF DOOR

ADDITIONAL OPTIONS:

A) ONLY BOLTWORK WITHOUT ANY LOCKING



B) LOCKING FROM OUTSIDE BY PADLOCK



C) LOCKING WITH 2 CYLINDER LOCKS (STANDARD HATCH DOOR)



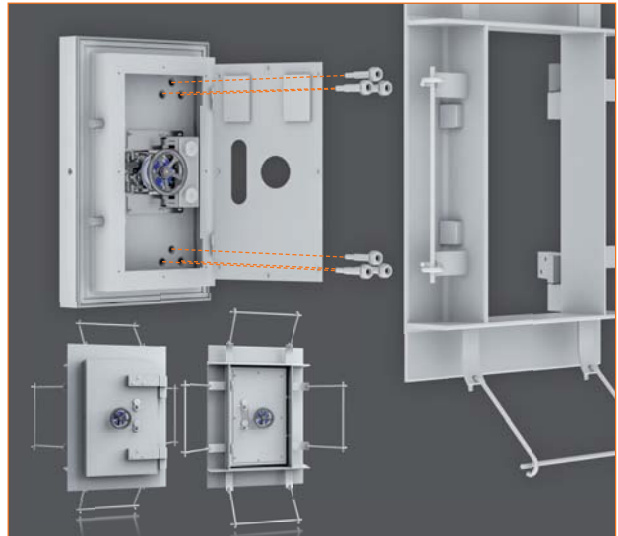
D) LOCKING WITH ELECTRONIC LOCK, OPERATING FROM INSIDE AND OUTSIDE



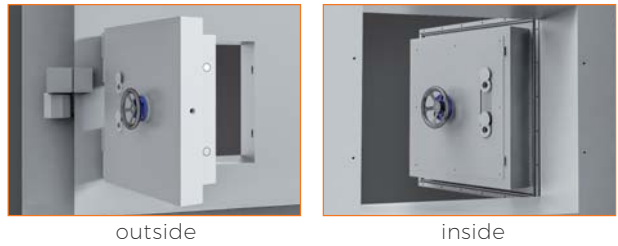
E) SAME AS D) BUT ADDITIONAL MANUAL OVERRIDE BY 2 CYLINDER LOCKS WITH 2 LONG SPECIAL KEYS (STANDARD FOR WIDTH ≥ 900 MM)



**F) ONE SIDE LOCKING
G) DETACHABLE HINGES**



H) HATCH DOOR FOR MAIN DOOR



I) ELECTRICAL DOOR OPERATION



J) FIRE SECURITY



FIRE SECURITY
(according EN 1634-1
EN 1634-1
EN 1363-1)

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