



DESIGNED FOR REFLECTED  
BLAST PRESSURE **28 bar**



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



DOOR THICKNESS: **500 mm**  
STEEL CONCRETE SLAB THICKNESS: **300 mm**



MASSIVE HINGES:  
**HEAVY DUTY BEARINGS**



# BT 3

## BLAST PROOF DOOR

data sheet

# BT 3

## double leaf

### BLAST PROOF DOOR

#### DATA SHEET

##### Blast Proof Door type BT3, double leaf

###### Blast Effects

The door is designed for blast pressure on door surface up to **28 bar (2,8 MPa; 406 psi)**; up to 9 bar blast overpressure is tested with prototype door BT1-2424 at **German Army Test Laboratory WTD 52** (certificate-no: WTD52GF210-04/2018-Z); blast pressure up to 28 bar (406 psi) is calculated by **FEM Analysis**.

###### 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; sided hinged; swinging type; the door can be operated from inside and outside, manual operation of the door for opening and closing;  
door thickness: **500 mm**  
concrete slab thickness: **300 mm**  
with 3 side bolt work and wheel handle – inside and outside; opening from inside as well as outside

###### Description of latching

Door locked with round pin (dia 80 mm) and central bolt work, locking 50 mm; each leaf is hinged with 2 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.

###### 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 500 mm by 500 mm L-shaped 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:

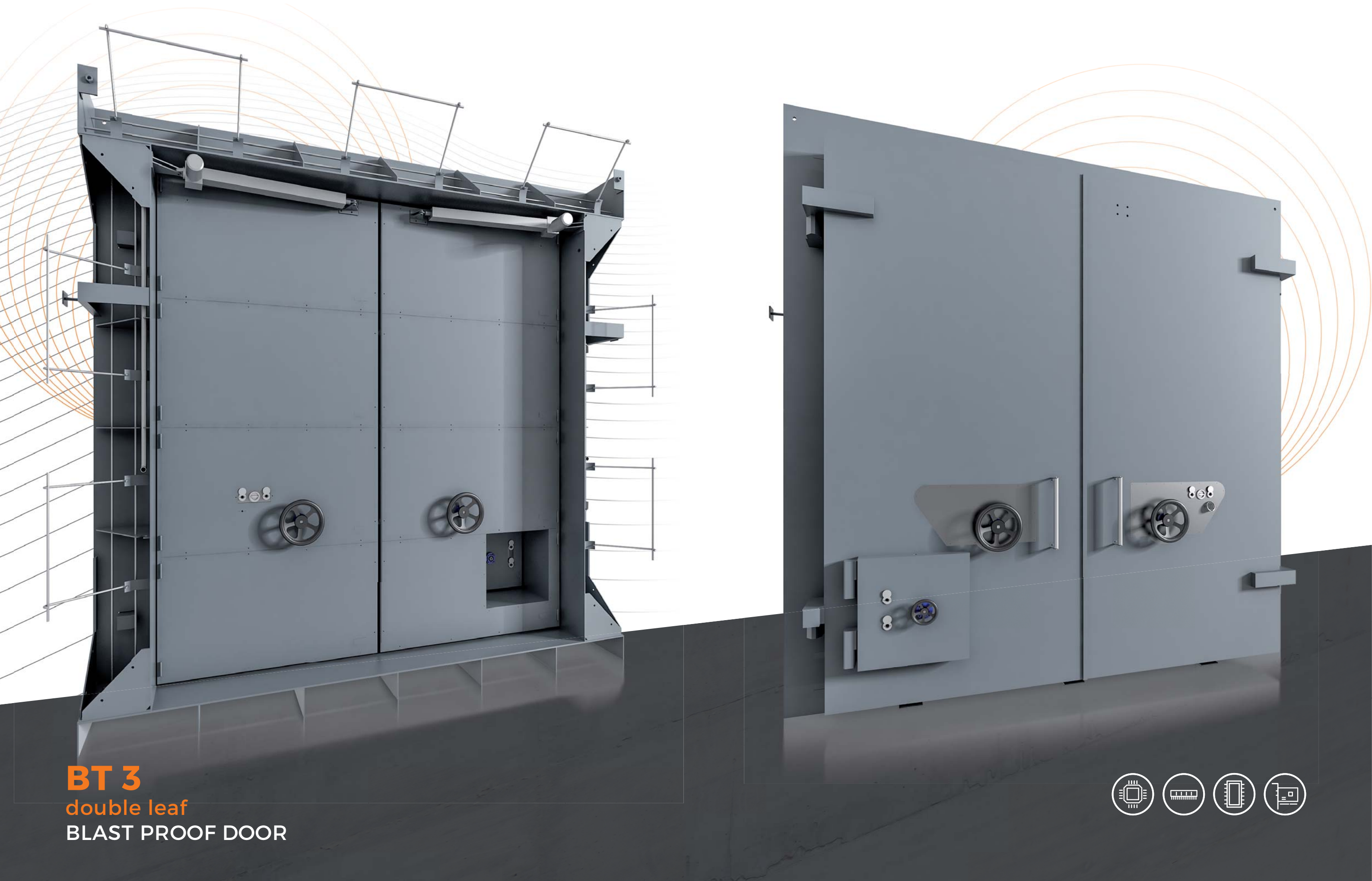
- EN 10025-2/2004,
- EN 10029 A/N
- EN 10163-2 A/1
- AD-2000 W1
- quality: S235JR+M
- minimum static yield strength 300 N/mm<sup>2</sup> (Mpa)
- maximum static yield strength 412 N/mm<sup>2</sup> (Mpa)
- minimum tensile strength 410 N/mm<sup>2</sup> (Mpa)
- minimum tensile strength 566 N/mm<sup>2</sup> (Mpa)
- elongation at rupture: 27% - 37%
- concrete C45/55:
- minimum static yield strength 60 N/mm<sup>2</sup> (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 (BT3-3439, BT3-4545)) 100 % function of door (BT3-3439, BT3-4545) after blast with 5 bar.

| Model<br>art. no. | Outer dimensions |            | Clear opening |            | Weight<br>with concrete (kg) | Weight<br>steel only (kg) | Door thickness<br>(mm) |
|-------------------|------------------|------------|---------------|------------|------------------------------|---------------------------|------------------------|
|                   | height (mm)      | width (mm) | height (mm)   | width (mm) |                              |                           |                        |
| BT3-2330          | 3000             | 4000       | 2300          | 3000       | 9700                         | 5500                      | 500                    |
| BT3-2439          | 3100             | 4900       | 2400          | 3900       | 12650                        | 7500                      | 500                    |
| BT3-3325          | 4000             | 3500       | 3300          | 2500       | 11400                        | 6600                      | 500                    |
| BT3-3942          | 4500             | 5000       | 3900          | 4200       | 19700                        | 12600                     | 500                    |
| BT3-4040          | 4600             | 4800       | 4000          | 4000       | 19700                        | 12400                     | 500                    |
| BT3-4045          | 4650             | 5300       | 4000          | 4500       | 22000                        | 13800                     | 500                    |
| BT3-4240          | 5000             | 5000       | 4200          | 4000       | 22200                        | 13100                     | 500                    |
| BT3-4250          | 5000             | 6000       | 4200          | 5000       | 26800                        | 16200                     | 500                    |
| BT3-4945          | 5650             | 5500       | 4900          | 4500       | 26000                        | 16800                     | 500                    |
| BT3-4950          | 5650             | 6000       | 4900          | 5000       | 28500                        | 18500                     | 500                    |
| BT3-6565          | 7250             | 7500       | 6500          | 6500       | 47300                        | 31350                     | 500                    |





**BT 3**  
double leaf  
BLAST PROOF DOOR





# BT 3

double leaf  
BLAST PROOF DOOR



**PAINTING**  
Primer resisting corrosion



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

**HANDLES**  
Black wheel-handle

**OPERATING**  
All the locks are operated from outside and inside

**LEAF**  
Strong gear bolt work  
Very strong hinges



## ADDITIONAL OPTIONS:

### A) ONLY BOLTWORK WITHOUT ANY LOCKING



outside



inside

### B) LOCKING FROM OUTSIDE BY PADLOCK



outside



inside

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



outside



inside

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



outside



inside

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



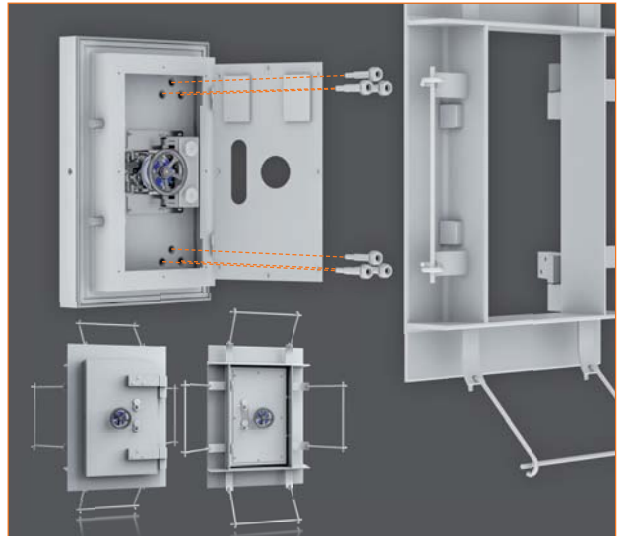
outside



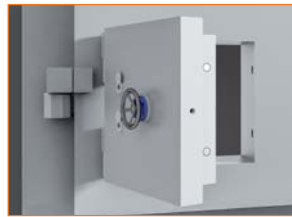
inside

### F) ONE SIDE LOCKING

### G) DETACHABLE HINGES



### H) HATCH DOOR FOR MAIN DOOR



outside



inside

### I) ELECTRICAL DOOR OPERATION



inside

### J) FIRE SECURITY



**FIRE SECURITY**  
(according EI<sub>2</sub>-120)  
**EN 1634-1**  
**EN 1363-1**

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