

TABULA

**The Absolute Switchboard System for
Maximum Safety and Reliability**

TABULA - A Qualified Partner with a Strong Switchboard Concept, World-Wide



TABULA meets all requirements within low voltage switchboards:

- **Main- and distribution boards**
- **Motor Control Centres**
- **Operation- and Control Switchboards**

Fulfils in the best way all national and interanational standards, incl. Approvals from international bureaus of shipping classifications, and is adaptable to almost any local demand and tradition.

TABULA Covers the Full Range of Low Voltage Switchboards

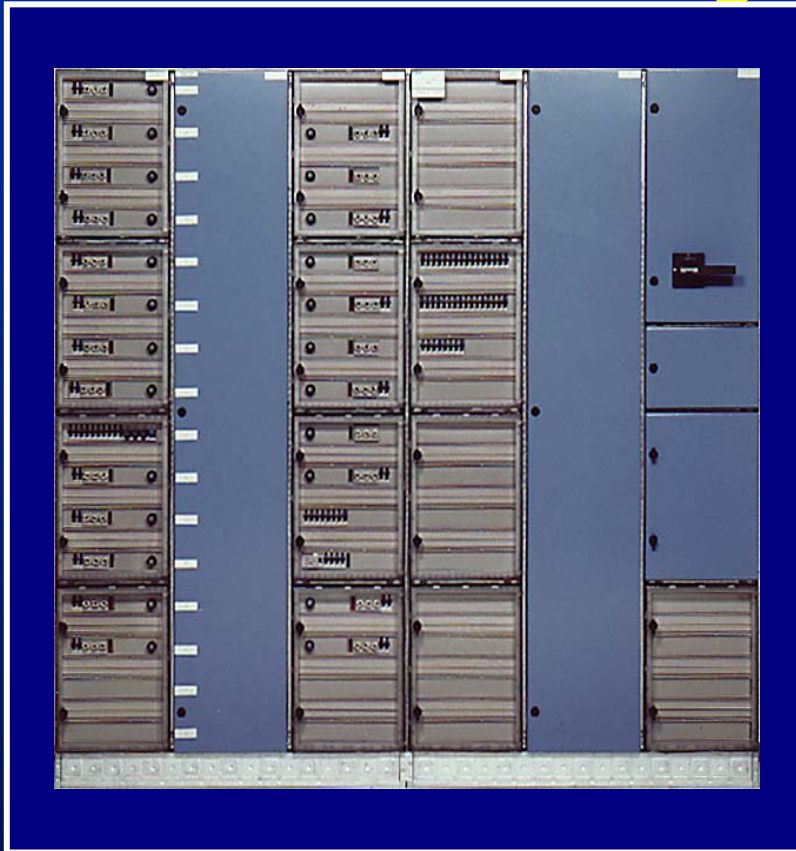


Main Distribution Board



Motor Control Centre, Draw-out

TABULA Covers the Full Range of Low Voltage Switchboards



Distributions Board



Operation- and Control Board

Strong data - without Compromises

Fully documented low voltage switchboard system, acc. to IEC/EN 60439-1 og 3



- Rated insulation voltage: 1000V

Rated current

- Horizontal main busbars 250-7800A
- Vertical distributions busbars 225-1600A

Short Circuit Ratings

- Horizontal main busbars up to 115kA/1s., 253 kA peak
- Vertical distribution busbars up to 91kA/1s., 200 kA peak

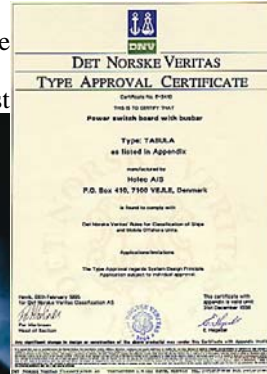
- Degree of protection IP20-IP54
- Forms of separation, form 1-4 a as standard
- Fixed and draw-out execution

Typetestet - Point by Point

Typetests includes:

- | | | |
|----|--|--------|
| a) | Verification of temperature rise-limits | 8.2.1 |
| b) | Verification of dielectric properties | 8.2.2 |
| c) | Verification of short-circuit withstand | 8.2.3 |
| d) | Verification of | 8.2.4 |
| e) | Verification of | 8.2.5 |
| f) | Verification of | 8.2.6 |
| g) | Verification of | 8.2.7 |
| h) | Verification of | 8.2.8 |
| i) | Verification of | 8.2.9 |
| j) | Verification of human | 8.2.10 |
| k) | Verification of resistance of insulation | 1 |
| l) | Verification of resistance of insulation to abnormal heat and to fire due to | 2 |
| m) | Verification of mechanical strength of enclosure. | 4 |

(h, i, j, k, l, m, Only valid for panel outgoing current rating of 125A, and 250A. In accordance to IEC 60439-3)



A natural element in the philosophy behind TABULA

- Typetest includes both IEC/EN 60439-1 as well as 60439-3 (switchboards operated by layman)
- Carried through in international test laboratories, KEMA, ASTA m.fl.
- Typetest certificate from DNV
- The extensive documentation is available for the panelbuilders

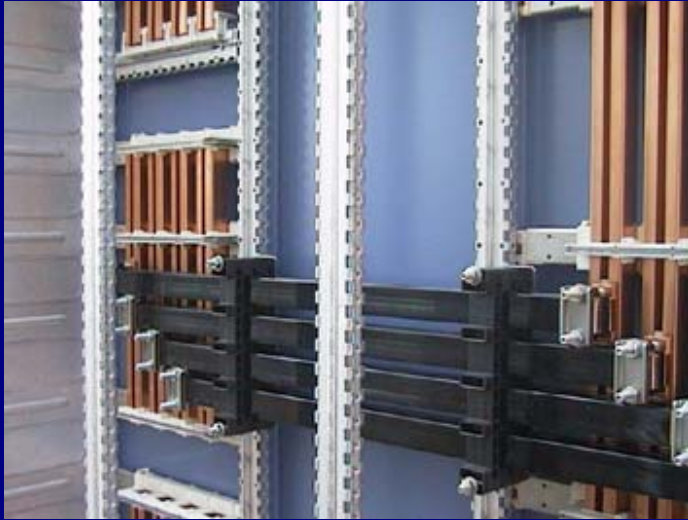
The Realized Idea



Fully modulated with a DIN-standardized basic module of 126mm (DIN-norm 125mm +/- 1mm)

- Optimum dimensions for any switchboard solution
- Is adaptable to any demands regarding switchboard location in the building
- Optimized utilisation of enclosure space
- Ensures easy and standardized extension possibilities

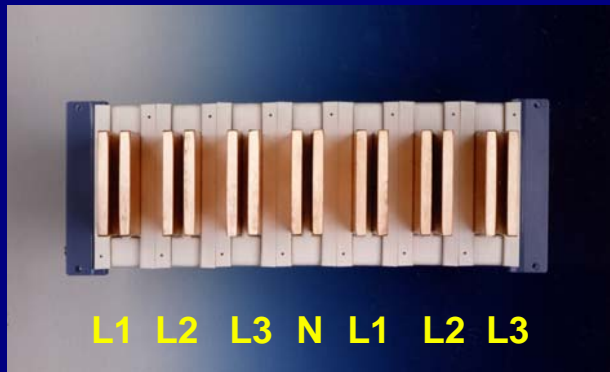
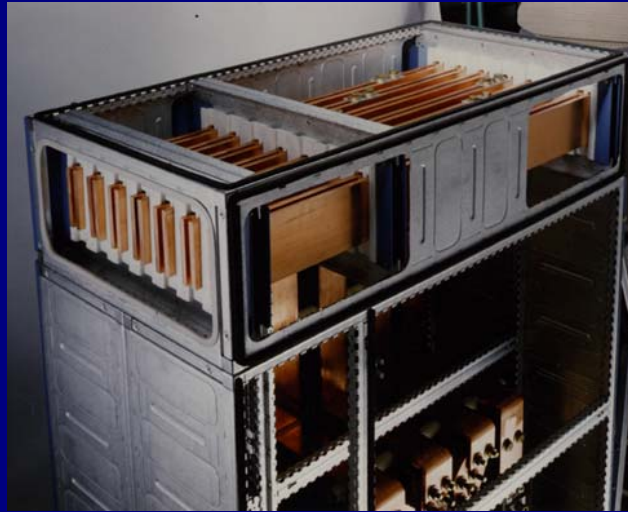
Busbar System



Individual enclosed conductors in main busbar system, rated up to 2500 A

- Screen protected in cable compartment
- Close design
- Prepared for extensions
- Eliminates exposure of electrical arcs

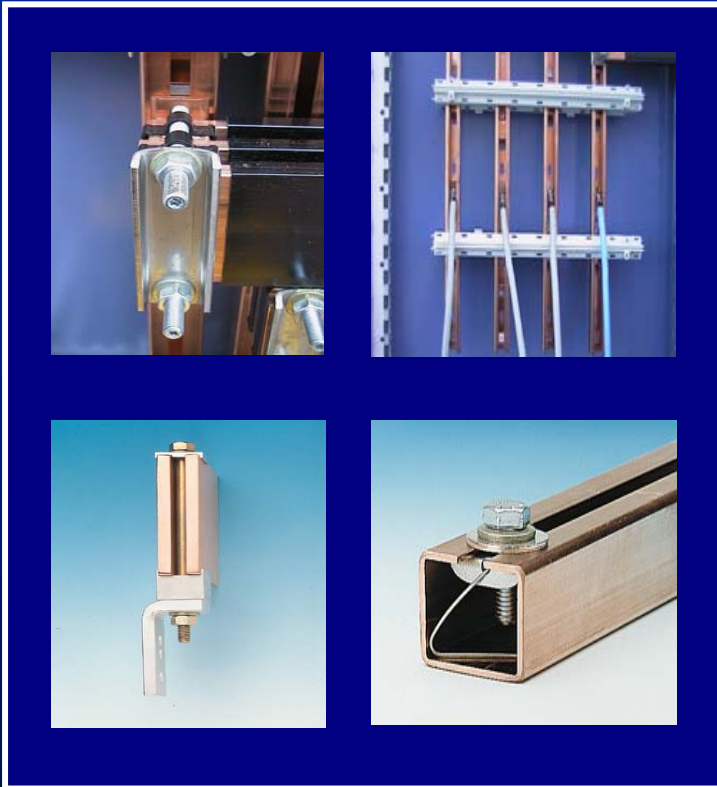
Busbar System



Main Busbars ≥ 3000 A

- Close design, parallel leaved conductors - minimizes magnetic fields
- Prepared for extensions
- Flexible connection by transport sections
- Busbar supports act as barriers to prevent the spread of arcs

Busbar System



Connections

- Easy to connect
- Flexible and easy to extend
- Maintenance free acc. to. DIN 43671
- Flat - quick connections by 225 Amp busbars - 30 years of experience
- No drilling by extensions

Build-In



Typetested Standard Solutions

- ACB's
- MCCB's
- Fuse- and load break switches
- Draw-out
- Semi draw-out
- DIN-rail assemblies

Cable Compartments

Separate cable compartments of any width and any position for optimum cabling

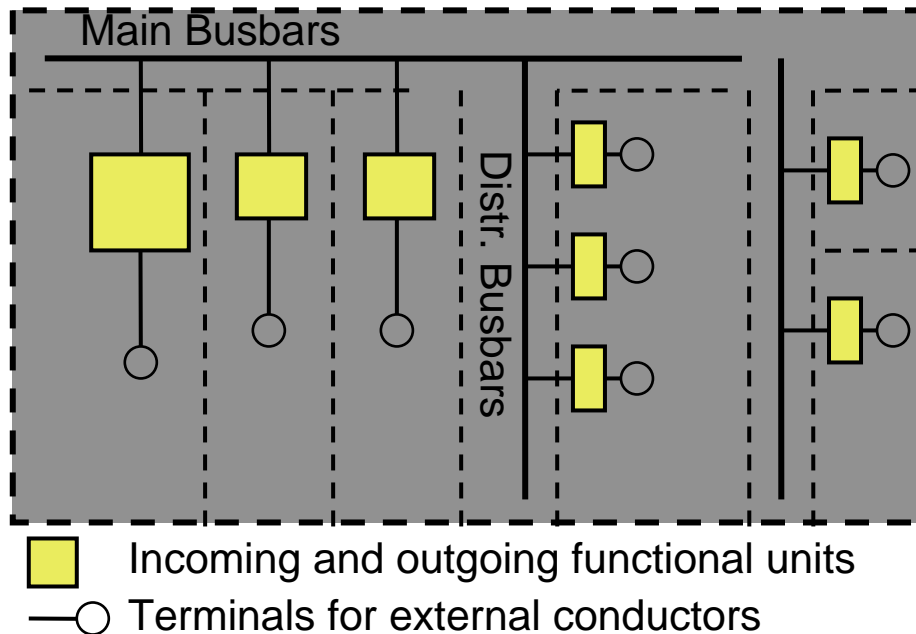


378 mm

504 mm

Internal Forms of Separation

Internal Forms of Separation, Form 4a



Forms of separation are to be agreed upon between the panel-builder and the enduser

- The evaluation will be based upon:
 - service conditions
 - frequency of maintenance
 - know-how
 - requirements for extensions

Draw-Out



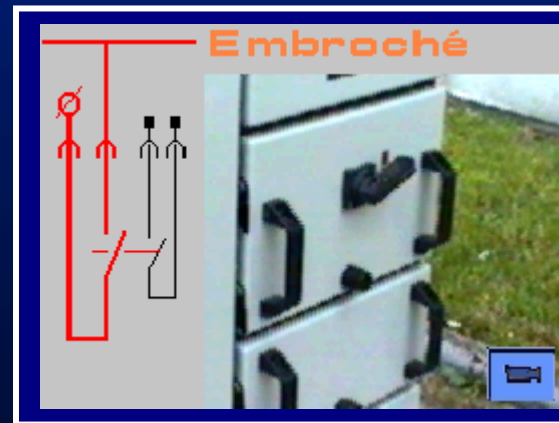
Draw-out, an integrated part of TABULA

- Easy access during service
- Fast exchange of draw-out cassettes
- Service and repair can be executed with live busbars
- Reduces the time of stop in production
- Suitable for preventive maintenance

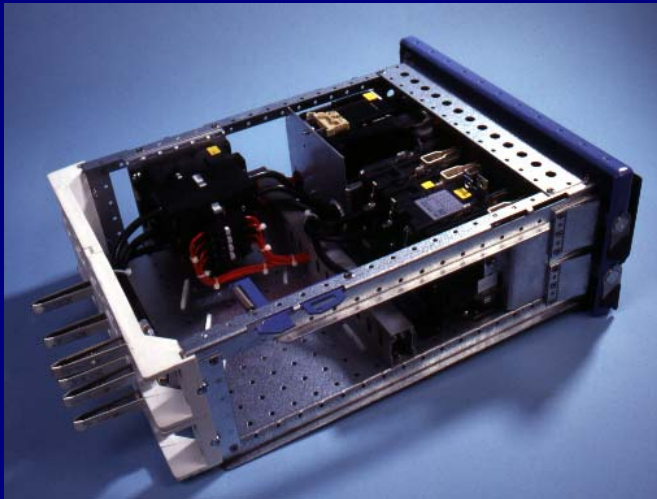
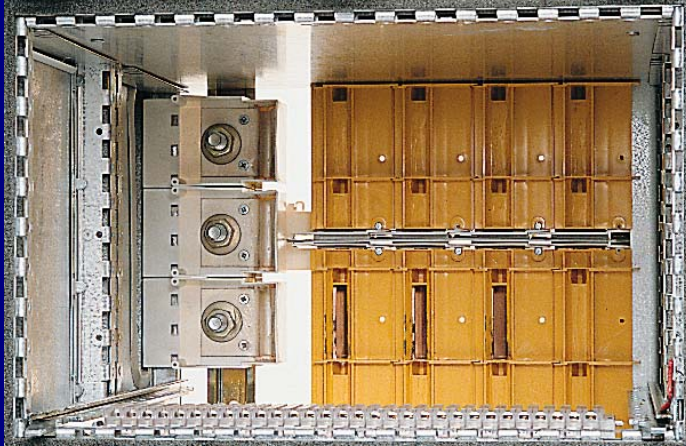
Draw-Out

Major Characteristics

- "Fully Draw-out" - service, test and insulated positions
- Modular
- Main current up to 630A
- 30 aux. contacts 2mA to 16A
- Easy to combine draw-out with fixed assemblies



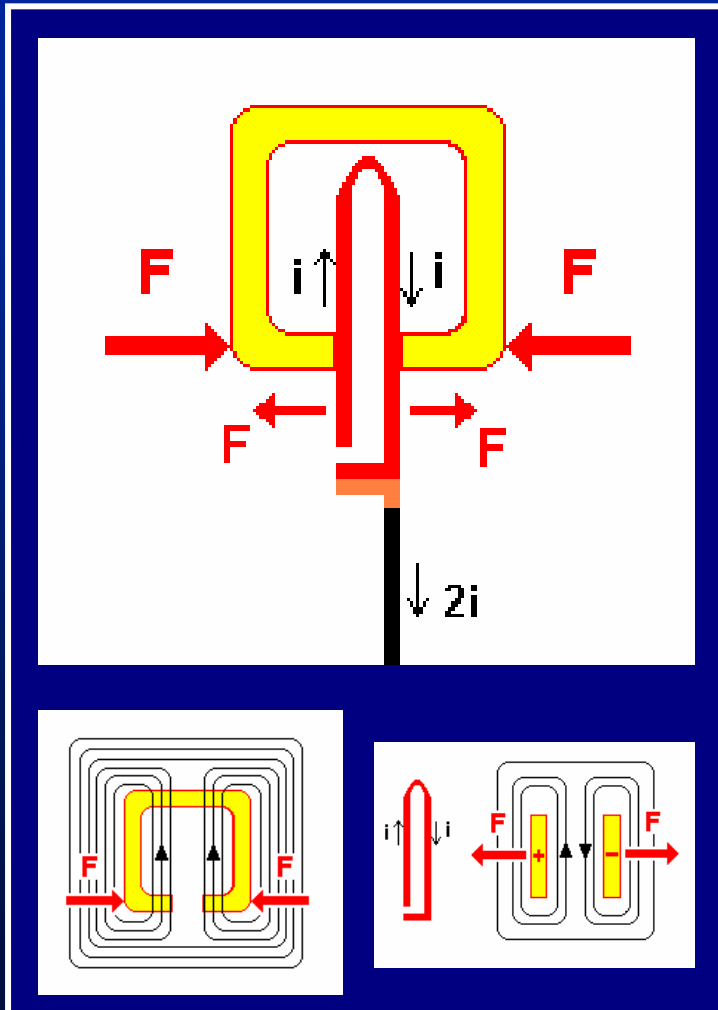
Draw-Out



Main Current

- Patented, silverplated main contacts, 125A
- High contact pressure - ensures high lifetime of contacts
- Takes advantage from the electromagnetic forces - prevents welding of contacts during short circuits
- Easy to connect cables through the cable compartment
- Protected to IP2X when open/empty compartment
- Screening between the conductors - prevents spreading out of electrical arcs

Draw-out



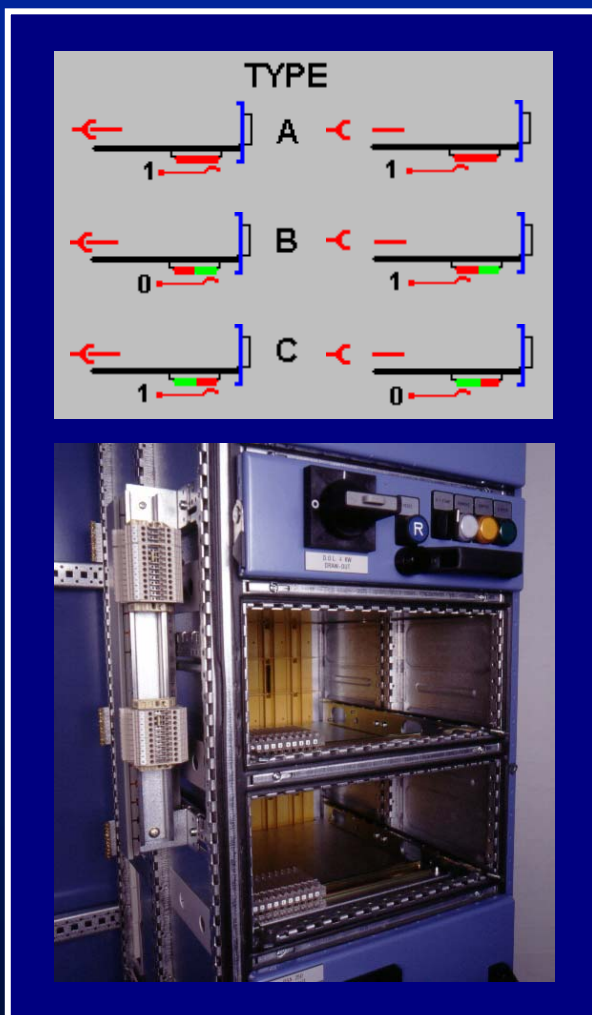
Main Moving Contacts

The shape of the draw-out main contact ensures a high contact pressure into the C-profile.

The current flow in the main contact will - due to the electromagnetic forces - open the main contact, which result in a contact pressure increase, which is proportional with the square of the current load.

- 1 main moving contact
($I_n = 125 \text{ A}$) ; $I_{cw} = 1000 \text{ A} / 22.1 \text{ sec}$
- 3 main moving contacts
($I_n = 400 \text{ A}$) ; $I_{cw} = 3200 \text{ A} / 10.5 \text{ sec}$
- 3 main moving contacts
($I_n = 400 \text{ A}$) ; $I_{cw} = 1500 \text{ A} / 25 \text{ sec}$

Draw-Out



Pilot Current

- Silverplated sliding contacts (goldplated upon request)
- Tested against corrosion in aggressive environments
- More combinations possible:
 - Type A : Service + Test
 - Type B : Test
 - Type C : Service
- Direct cable connections or through terminals mounted in the cable compartment
- Detachable - and easy accessible

Draw-Out



Important Details

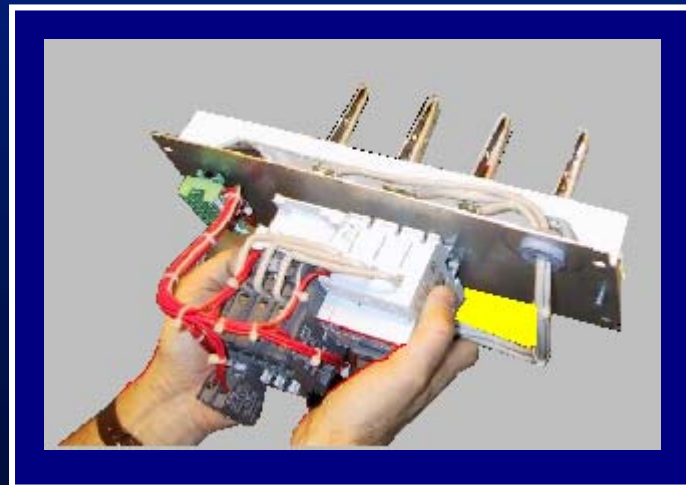
- Door is mounted on the cassette
- Protected to IP2X in test position
- Padlock facilities in test, isolated and removed positions
- Cassette can be coded mechanically
- The open design ensures easy accessibility
- Draw-out and fixed assemblies can be combined in the same column

Semi - Withdrawable



Economical alternative to draw-out

- 4 screws will be untightened and the assembly can be withdrawn
- IP2X by removed functional unit
- Exchanges of units and extensions can be carried out with live busbars



Why TABULA?

Safety and functionality above all



- Fully type-tested and documented
- ISO 9001
- Environmental declaration
- A competent and international organisation is behind
- High level of experience
- A system for the complete project
- Optimum extension possibilities
- Easy to service, designed for modern principles reg. maintenance
- Economically attractive

TABULA

The perfect choice