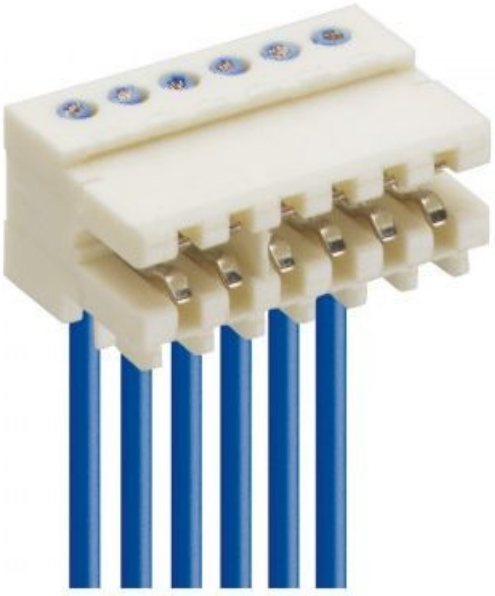
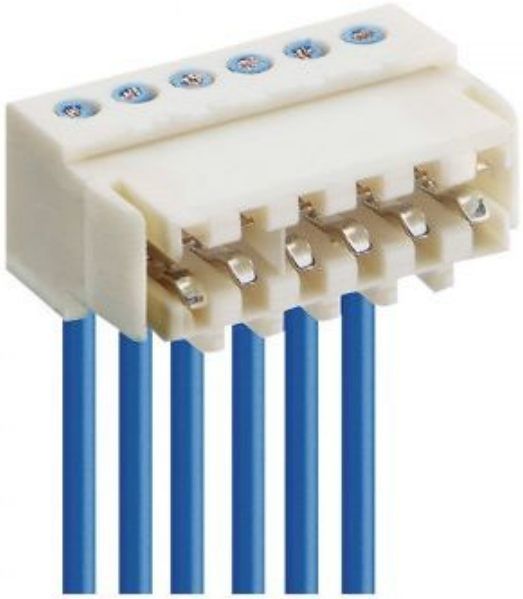
3510 / 3511

(not illustrated)



3512 / 3513

(not illustrated)



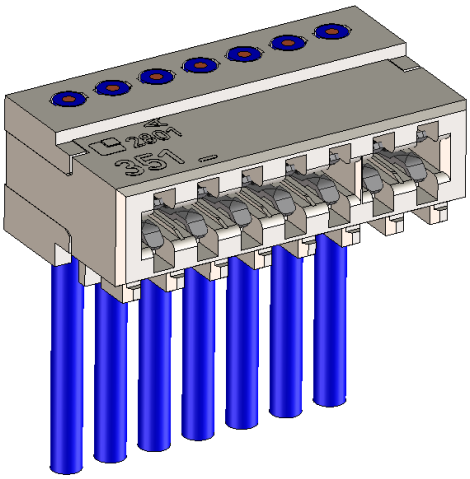
3515 / 3516

(not illustrated)

3517 / 3518

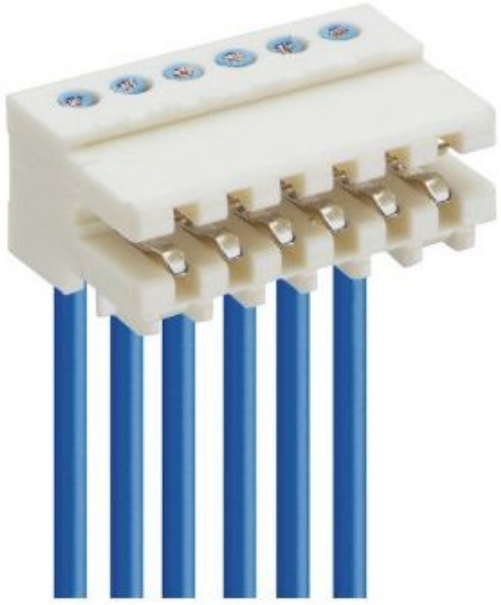
(not illustrated)

3510-6



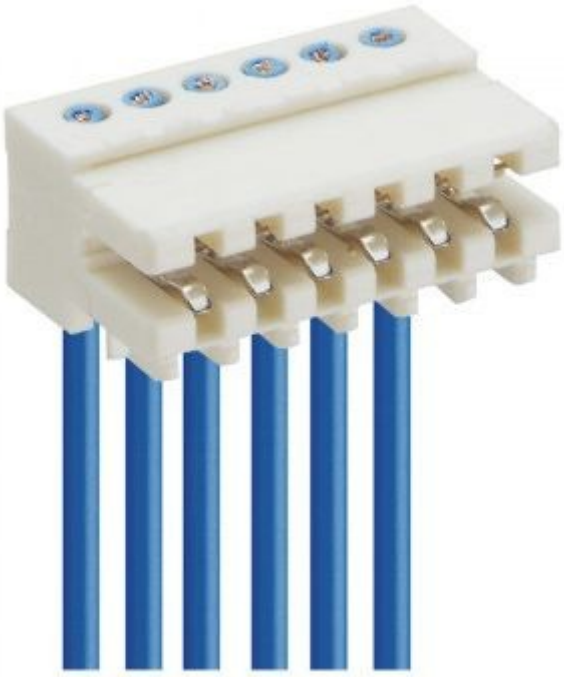
3520 / 3522

(not illustrated)



3521 / 3523

(not illustrated)



Alteration Description

Edition	Alteration carried out
1	5.3 and 7.6: 11-0,15 was 11,5-0,15
2	Change of name and inspection note added.
3	Product types 3512/3513 added, Information: "For each number of poles a special die is required" added by type 3517/3518. Processing Instruction with new layout.
4	Added illustration of mechanism for the pull-out force; Added in section 7.10 Electrical testing and information for separating the connecting of links, with image. Modified dimension for the wire end position: from 0.3 mm to 0.6 mm.
5	Processing Instruction with new layout, Direct connector 3510-6 added.

Contents

1. Product description

Direct or indirect connectors in insulation displacement technology (IDT) acc. to RAST 2.5

Material of the connector: PBT
PA

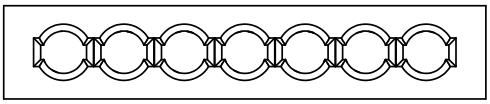
Connectable wire in insulation displacement area

for 4 A
2....20-pole

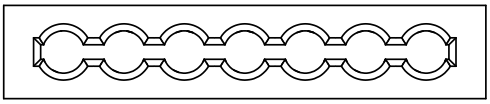
351x (-1,-2)	cross section for connection 0,22 mm²....0,38 mm²
351x (-1,-2) S01	cross section for connection 0,34 mm²
351x (-1,-2) S02	cross section for connection 0,14 mm²….0,22 mm²
351x (-1,-2) S03	special application, e.g. varnished wire
352x (-1,-2)	cross section for connection 0,22 mm²....0,38 mm²
352x (-1,-2) S01	cross section for connection 0,34 mm²
352x (-1,-2) S02	cross section for connection 0,14 mm²….0,22 mm²
352x (-1,-2) S03	special application, e.g. varnished wire

V = finishing variant
max. Insulation diameter Ø 1,6 mm

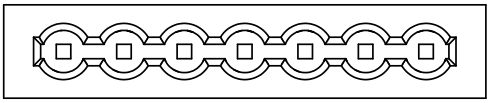
standard design



design -1 for bus capable flat cable



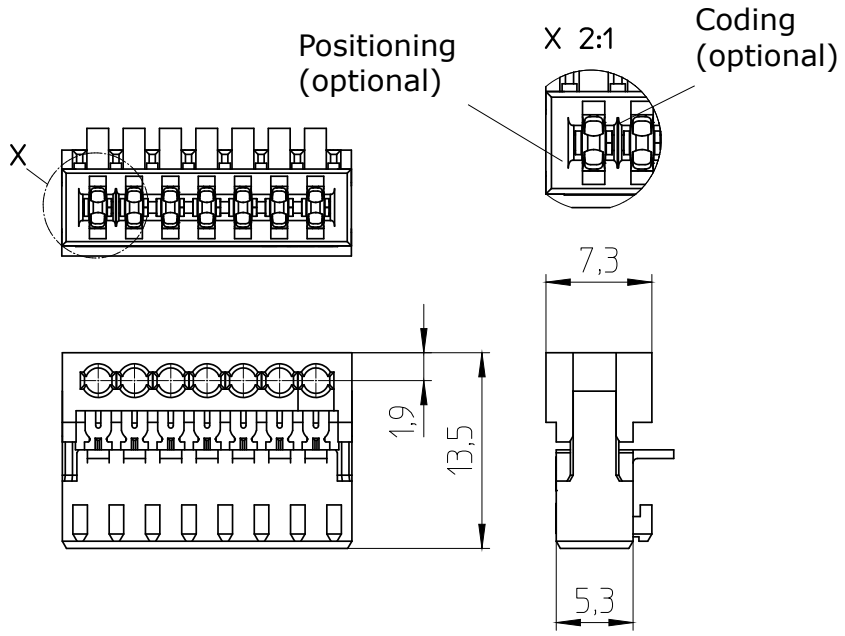
design –2 for flat cable



1.1. Product types

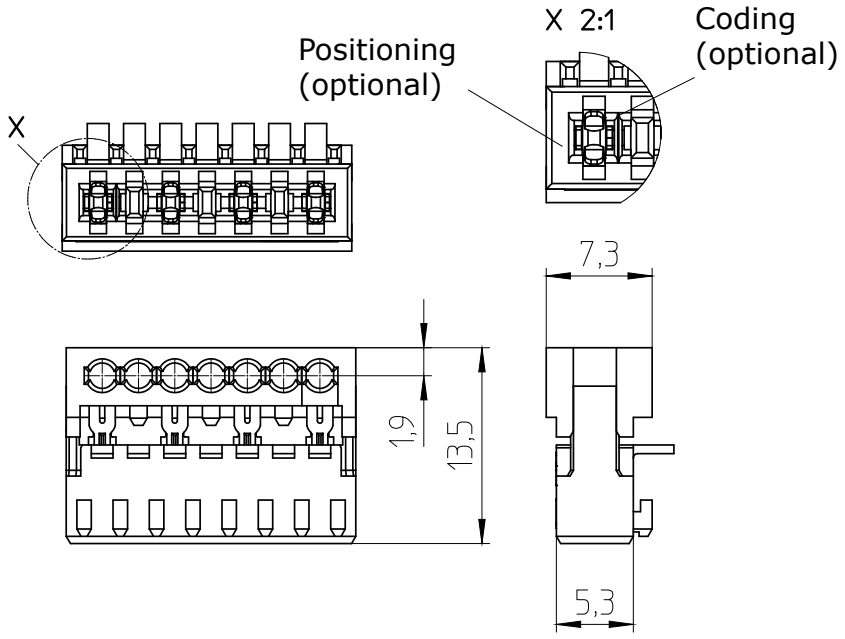
Direct connector 3510

Pitch 2,5 mm
acc. to spec sheet 3510 xx



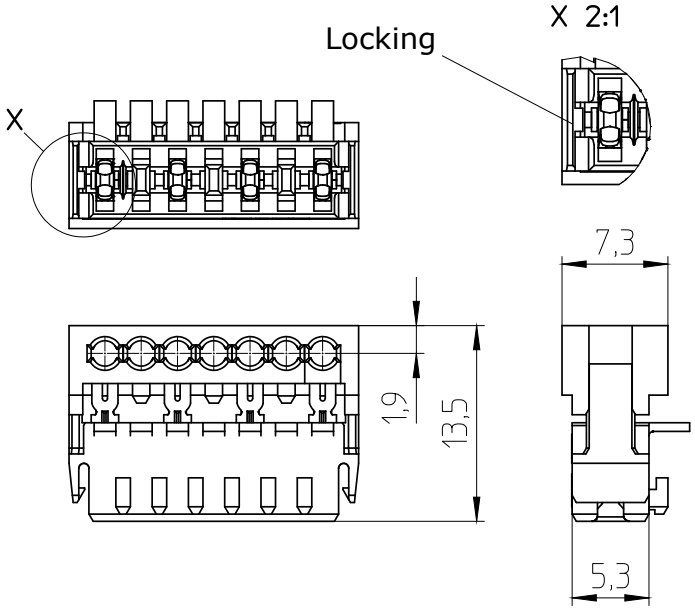
Direct connector 3511

Pitch 5,0 mm
acc. to spec sheet 3511 xx



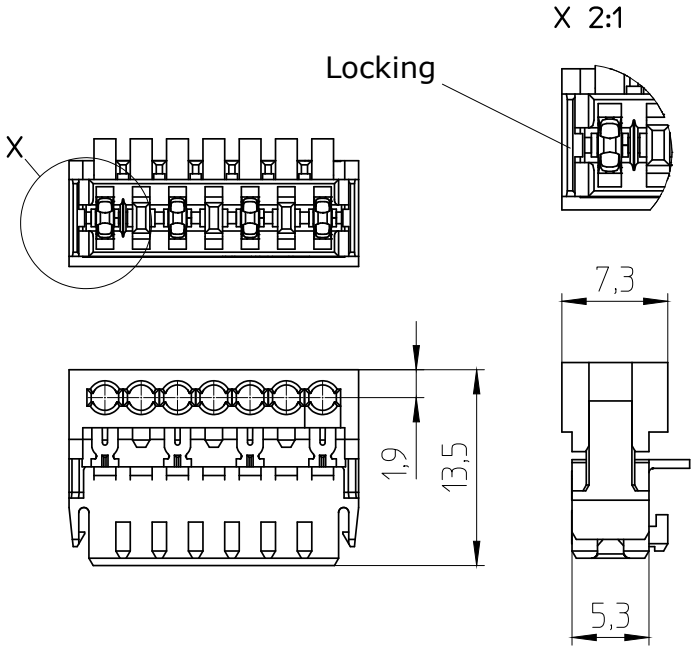
Direct connector 3512

Pitch 2,5 mm
acc. to spec sheet 3512 xx
For each number of poles a special die is required



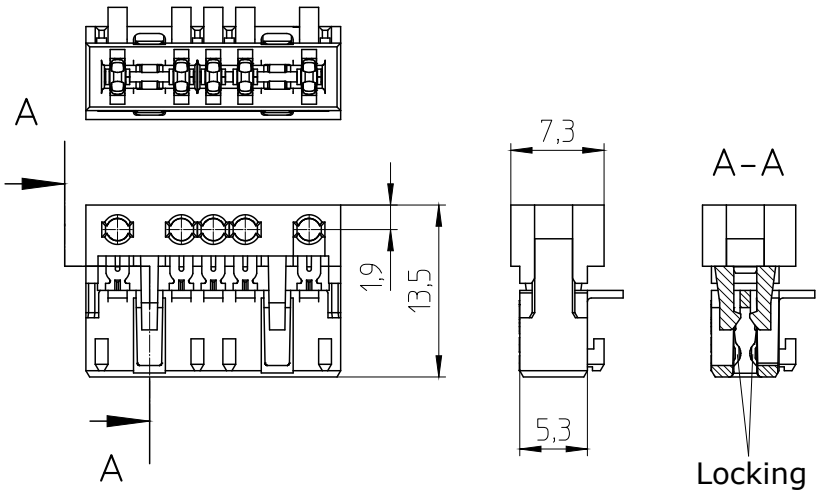
Direct connector 3513

Pitch 5,0 mm
acc. to spec sheet 3513 xx
For each number of poles a special die is required



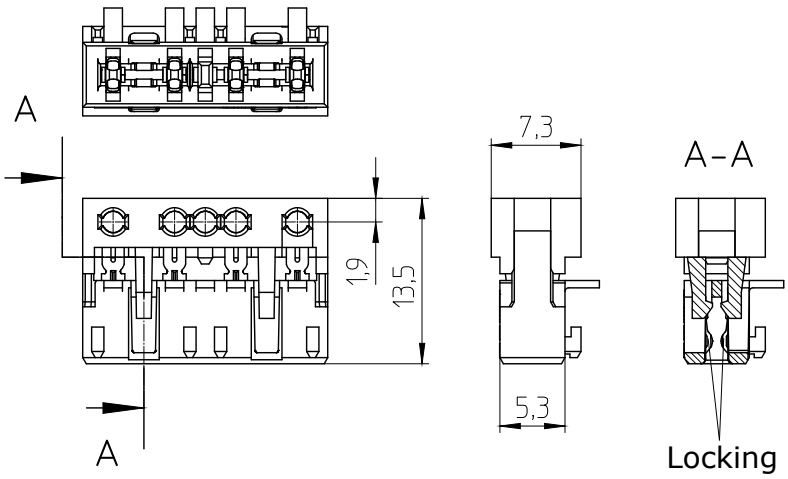
Direct connector 3515

Pitch 2,5 mm
acc. to spec sheet 3515 xx
For each number of poles
a special die is required



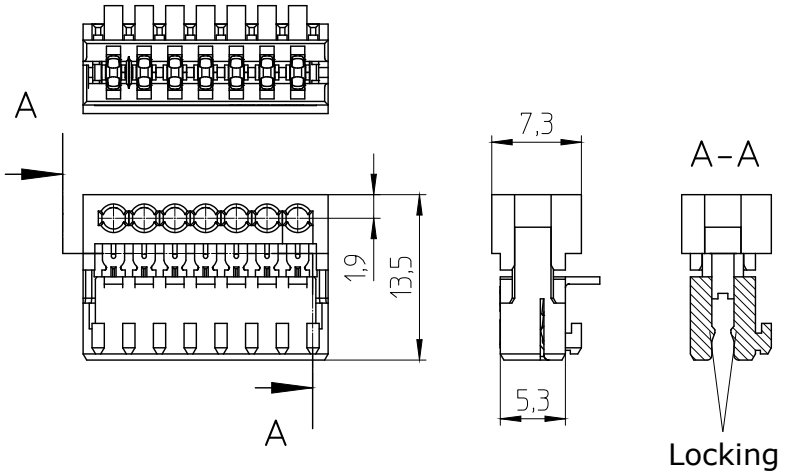
Direct connector 3516

Pitch 5,0 mm
acc. to spec sheet 3516 xx
For each number of poles
a special die is required



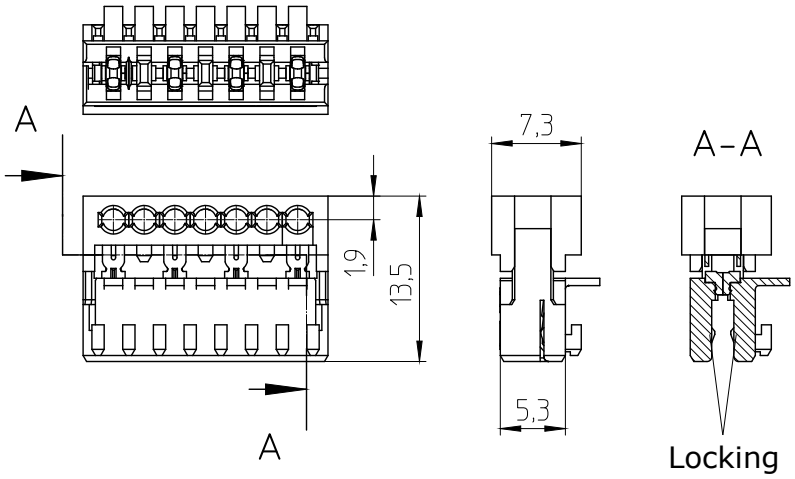
Direct connector 3517

Pitch 2,5 mm
acc. to spec sheet 3517 xx
For each number of poles
a special die is required



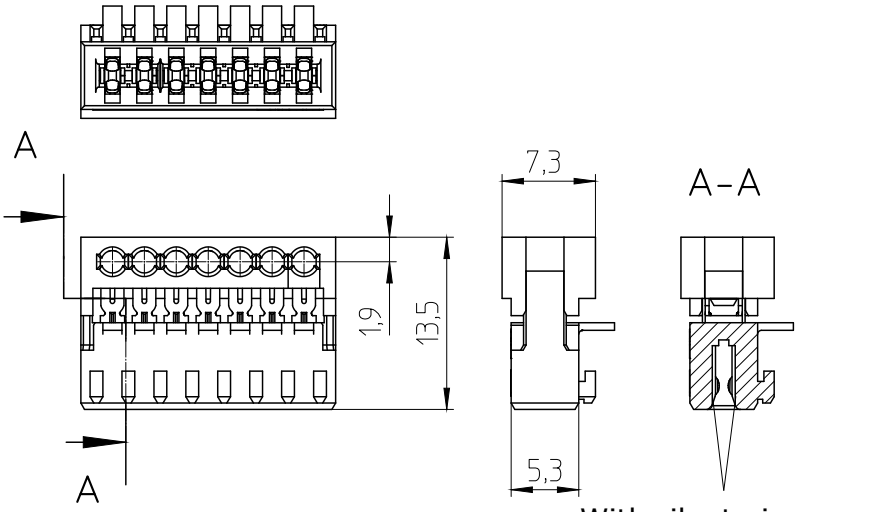
Direct connector 3518

Pitch 5,0 mm
acc. to spec sheet 3518 xx
For each number of poles
a special die is required



Direct connector 3510-6

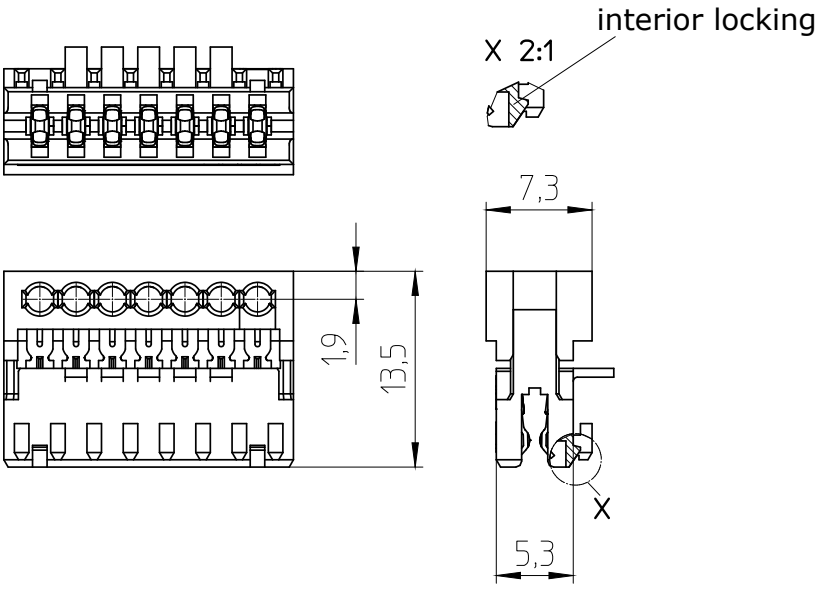
Pitch 2,5 mm
acc. to spec sheet 3510 xx



With ribs to improve the tight fit on the PC-Board

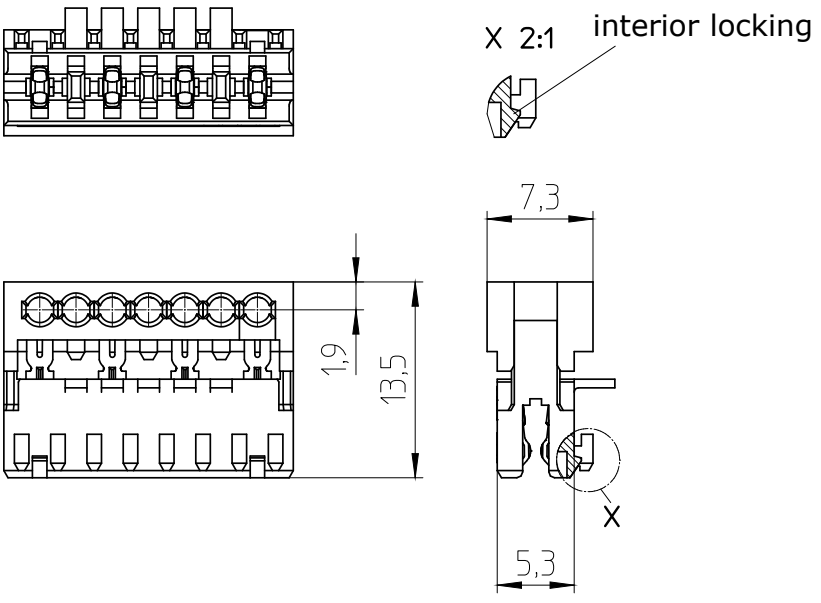
Indirect connector 3520

Pitch 2,5 mm
acc. to spec sheet 3520 xx



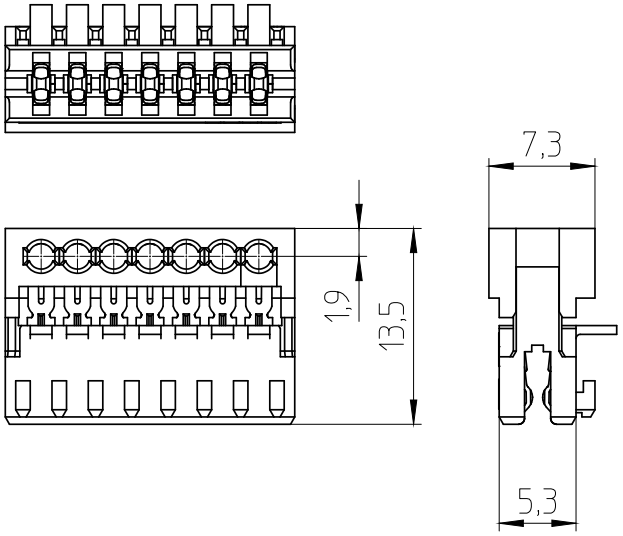
Indirect connector 3522

Pitch 5,0 mm
acc. to spec sheet 3522 xx



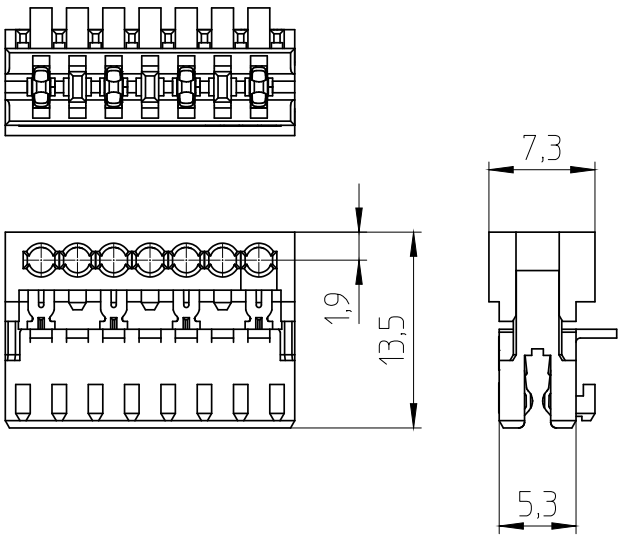
Indirect connector 3521

Pitch 2,5 mm
acc. to spec sheet 3521 xx



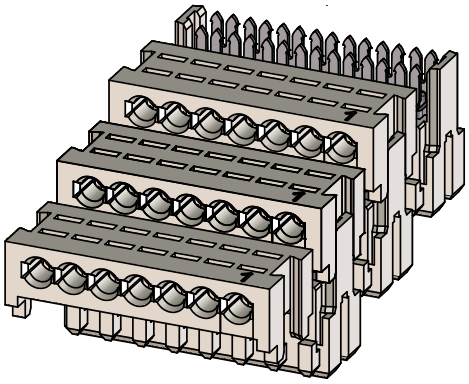
Indirect connector 3523

Pitch 5,0 mm
acc. to spec sheet 3523 xx

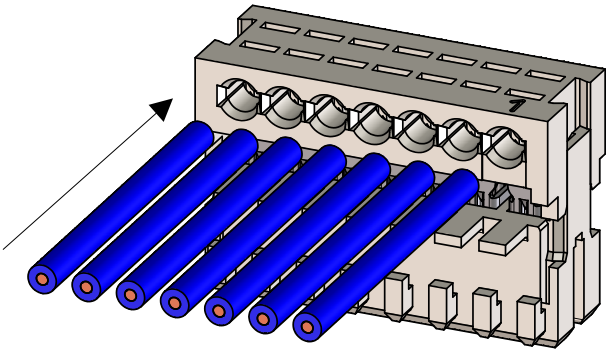


2. System features

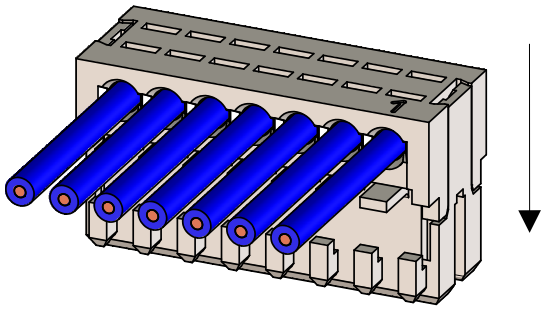
Two-part body
Supplied in following stacks



Wire termination

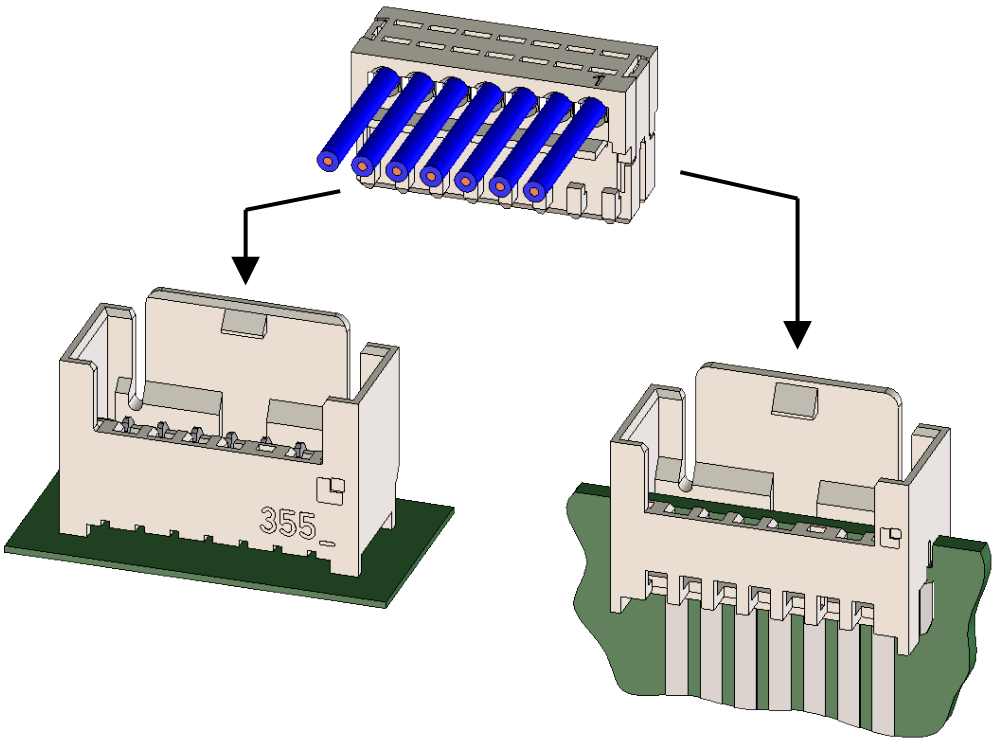


Insulation displacement connection by pressing the top
Wire exit 90°



The connectors are used with pin headers as indirect connectors or with guide frames as indirect connectors (edge connectors).

Connector acc. to RAST 2.5

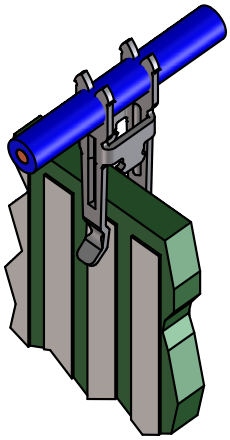


Pin header

Guide frame

3. Contact principle

Contact pin 1,5 mm



PCB 1,5 mm

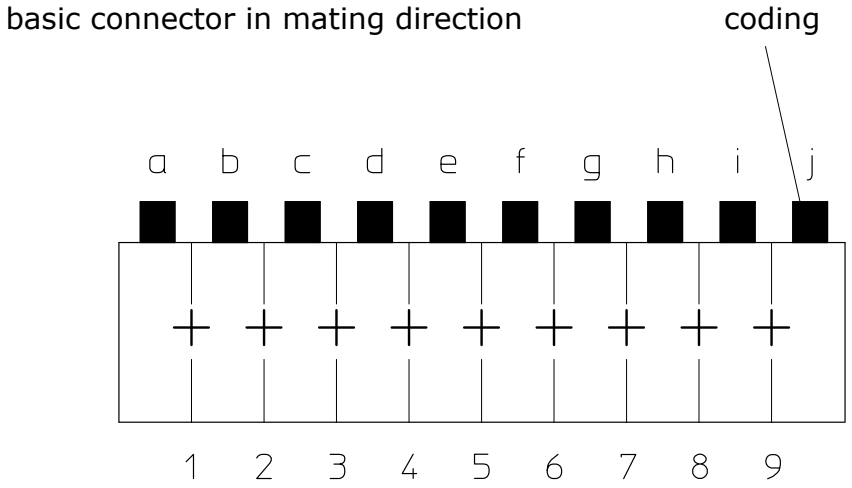
Insulation displacement connection
(test acc. to DIN EN 60352-4 / IEC 60352-4)

4. Cutting-off coding keys

The cutting-off coding keys acc. to RAST 2.5 standard at the termination machine and the allocation of connector, color marking and cutting-off coding keys are the sole responsibility of the customer.

Caution !
Connectors, pin headers and guide frames are always marked in mating direction.

4.1. Coding acc. to RAST 2.5



4.2. Cutting blades

To ensure a correct cutting-off of the coding keys, use only Lumberg cutting blades. A minimal remaining burr is permitted.

5. Application tooling and machines for 3510, 3511, 3512, 3513, 3515, 3516, 3517, 3518, 3520, 3521, 3522 and 3523

The function, safety and quality of the connectors are only guaranteed by using of Lumberg processing equipment. It has to be taken into account that the connectors aren't checked electrically before the processing / assembling. Because of that an electrical test should be carried out after processing / assembling.

The user bears full responsibility if any other processing equipment is used.

In case of using any lubricants or sliding agents in the feed and press areas residues (impurities) must not come into contact with the connectors.

Manual processing tool
For fitting single wires and ribbon cables. For single and small series.

Manual processing device
For fitting single wires and ribbon cables. For small series.

Pneumatic processing device
Pneumatically assisted processing device with manual cable feed and connector feed. For small and middle series.

Semi-automatic processing device
To the economic assembling of automatic connector feed and manual cable feed. For serial production.

Automatic processing device
For optimal assembling of automatic wire feed and connector feed. For industrial mass production.

6. Cable specification

The cable specification must be kept. Any deviation must be discussed and approved by Lumberg.

6.1. Cable specifications cross section for connection 0,20...0,22 mm²

Technical specification sheet 902 01 flat cable	=0,20 mm²
Technical specification sheet 902 03 flat cable	=0,22 mm²
Technical specification sheet 902 04 flat cable	=0,22 mm²

6.2. Cable specifications cross section for connection 0,38 mm²

Technical specification sheet 908 14 PVC-stranded wire	=0,38 mm²

6.3. Cable specifications cross section for connection 0,35 mm²

Technical specification sheet 908 32 FLR-stranded wire	=0,35 mm²

6.4. Cable specifications cross section for connection 0,14 mm²

Technical specification sheet 908…	=0,14 mm²

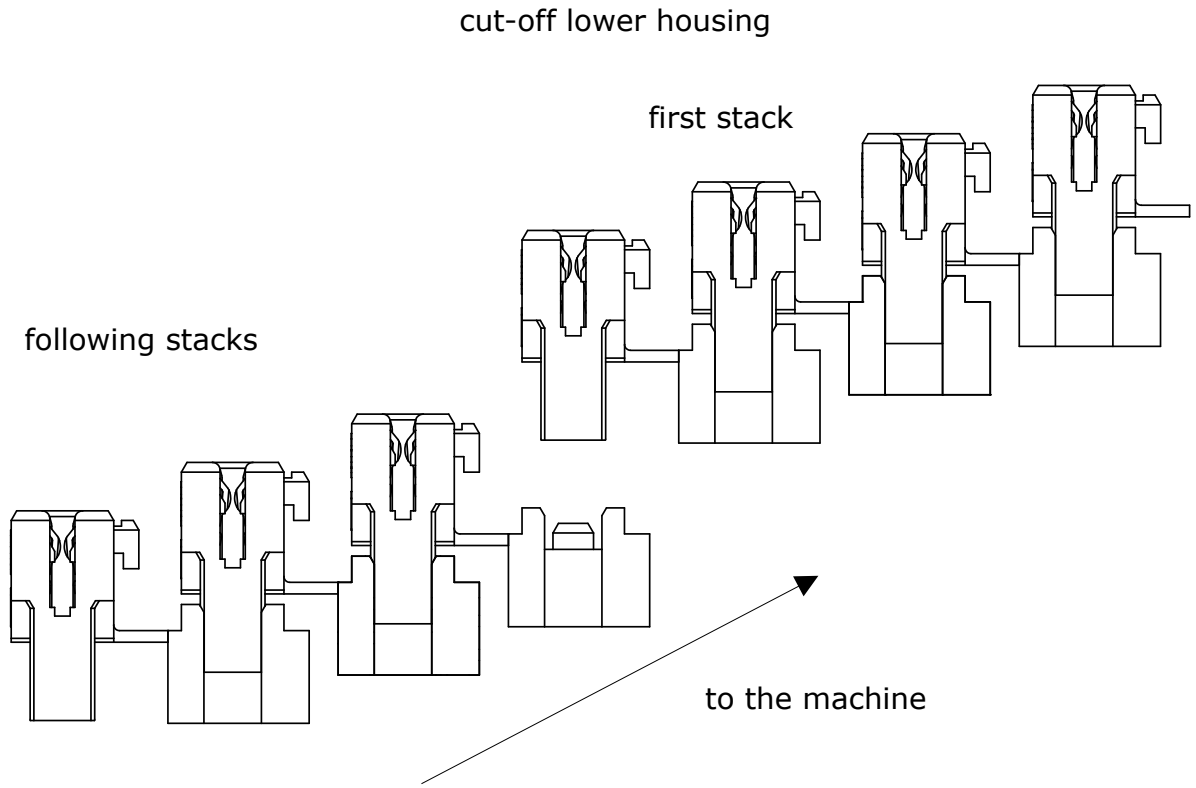
Other approved cable see Lumberg release list in the internet at www.lumberg.com

7. Assembly

Connector and cross section should be adapted with each other acc. Lumberg specification (see technical data sheet).

7.1. Connector feed

The lower housing must be cut off before the first stack of connectors is fed into the termination head. To feed a new stack into the machine the upper housing of the stack in the machine must be placed into the lower housing of the new stack. The cutting-off of the single connector from the stack is done by the machine. The links will remain on the connector. The connection of links typically remain on the connector in this case. These links can be removed if the customer requires it.

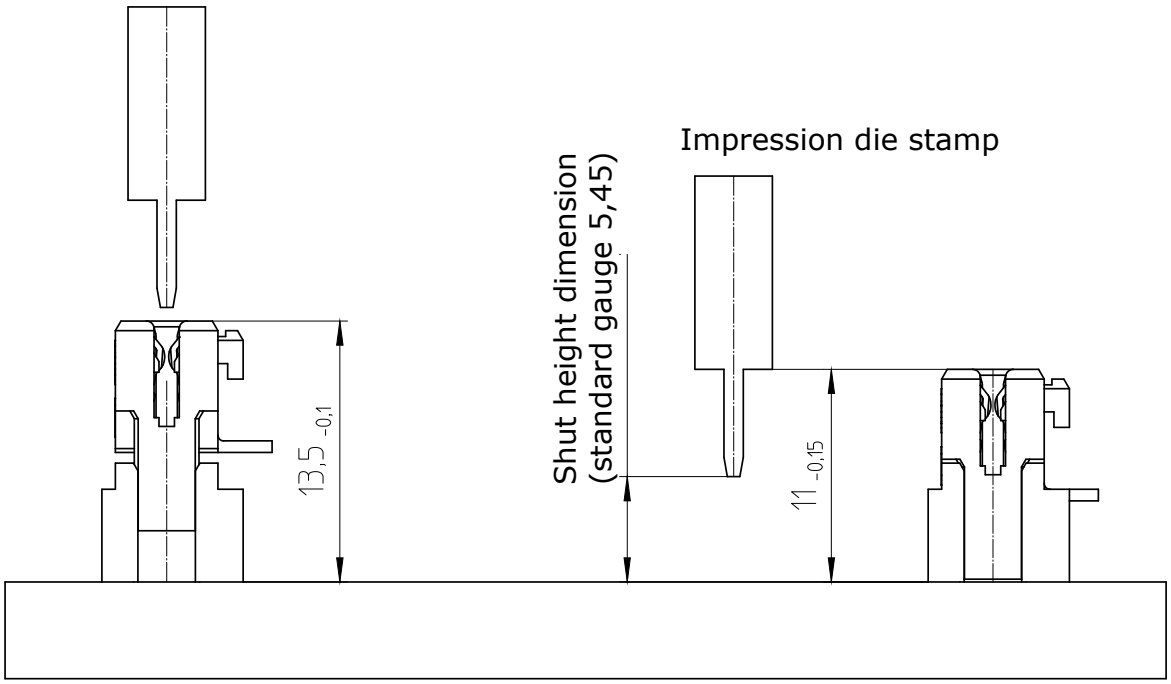


7.2. Impression die stamp

Only use impression die stamps from Lumberg.
Impression die stamps: free of lubricants and sliding agents.

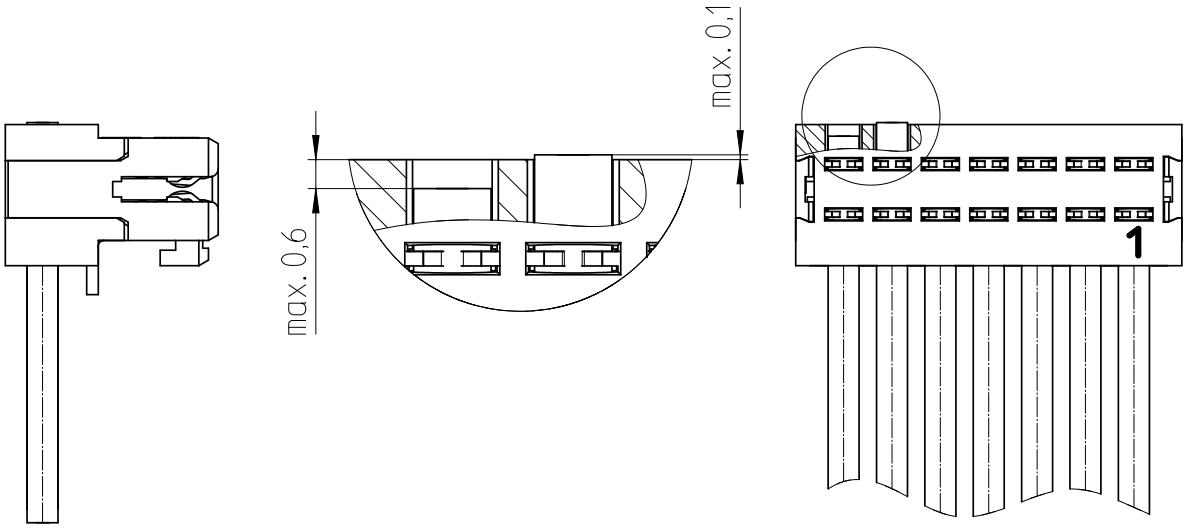
7.3. Shut height dimension of the termination machine

An important feature for the correct function of the connector is the connector height, messed 30 minutes after assembling. It is determined by the shut height dimension of the termination machine. The height adjustment will be determined max. 30 minutes after the pressing process and must be within the specification.



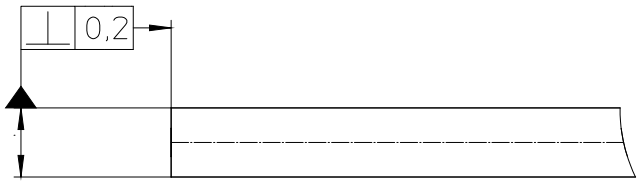
7.4. Wire end position

The correct position of the wire guarantees the mating of both ID slots. After termination no cable protrusion is allowed at the connector in order to ensure a correct mating and dismating of the connection. The correct position of the wire ensures the mating of both ID slots. The wire insulation may only be removed from the area specified.

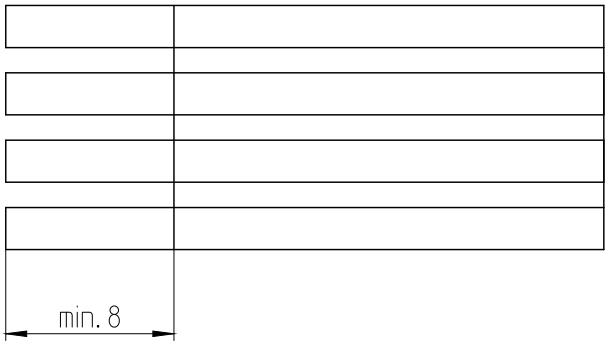


7.5. Wire (stranded wire / flat cable)

No cuts in the insulation are allowed in wire exit direction (visual check). The cables must be cut off without burr and deformity. Insulation cuts are permitted between the ID slots of the contact.

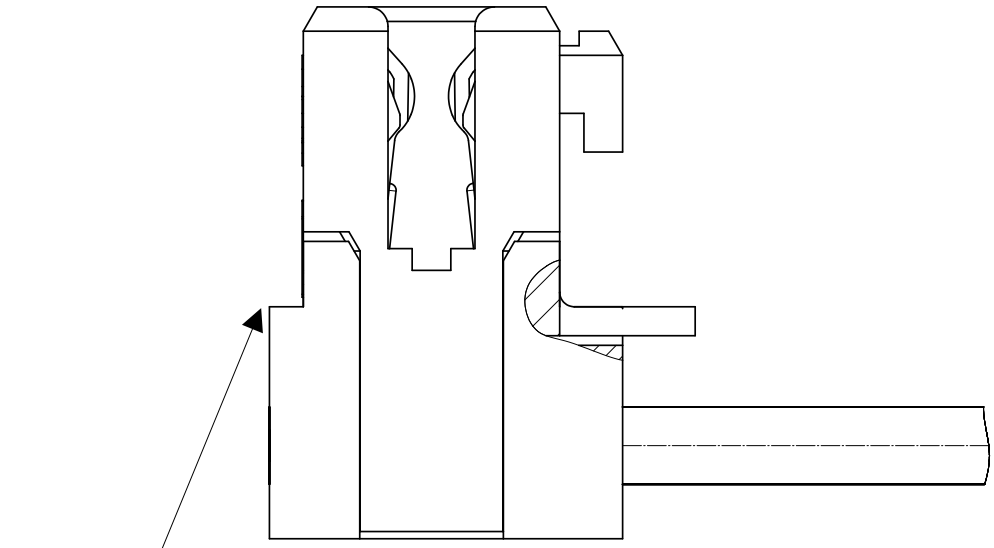


Flat cables must be punched out.



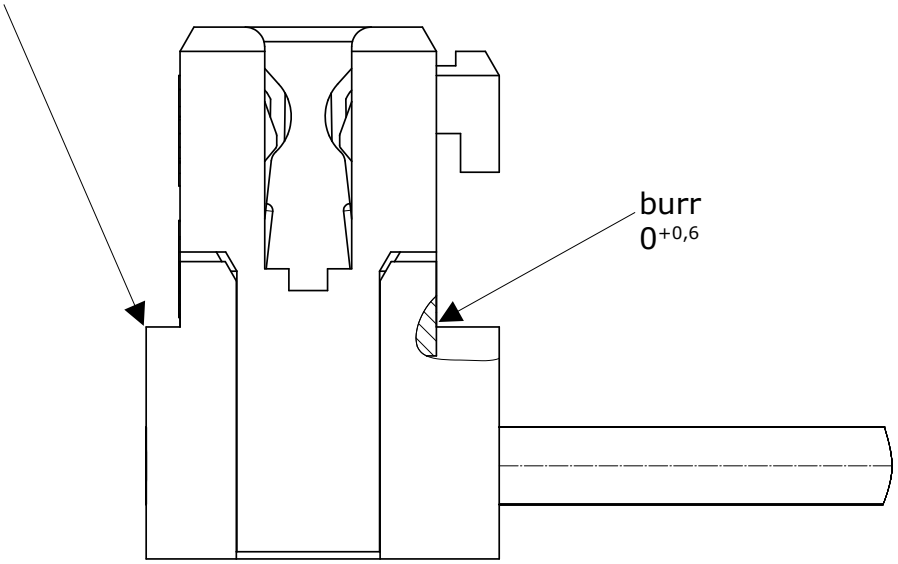
7.6. Housing

After termination no visual damages of the housing are allowed (visual check).
The links must be cut off without burr.
The mating function must be guaranteed (functional test).
The contact must be in correct position in the housing (visual check).



Standard

burr
max. 0,1



Separated
of links

Make sure that the cut-off links are no longer adhering to the component and that they do not remain in the connector after they are cut off.

8. Quality assurance

For all working and processing steps and alterations (e.g. product launch, changes of the cable, changes of the tool or machine …), which may affect the product quality, the responsible departments have to take care for appropriate quality assurance steps.

8.1. Quality features

The following quality features must be taken into consideration:

8.2. Quality features / IDC

- ID slot width
- Symmetry of the ID slot
- Cable quality
- Cable insertion depth
- Cable protrusion
- Electrical testing

8.3. ID slot width

Lumberg guarantees correct ID slot.

8.4. Symmetry of the ID slot

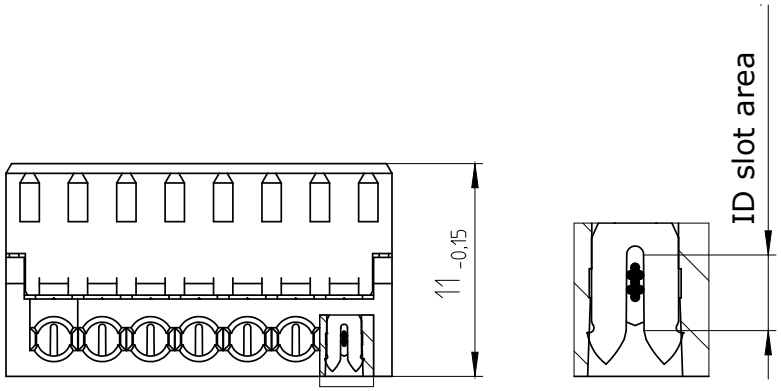
Symmetry of ID slot (cable tolerance ±0,1) is guaranteed by the body.

8.5. Cable quality

The cable must meet Lumberg specification acc. to point 6.
Customized cables, which are listed in the release lists, have to correspond with the available specification sheets.
Only Lumberg released cables are to be used. The customer bears full responsibility for the correct mating when cables are used which are not listed in the release lists.

8.6. Contact insertion depth

The wire insertion depth is determined by the height of the body. All single conductors must be in the ID slot area.



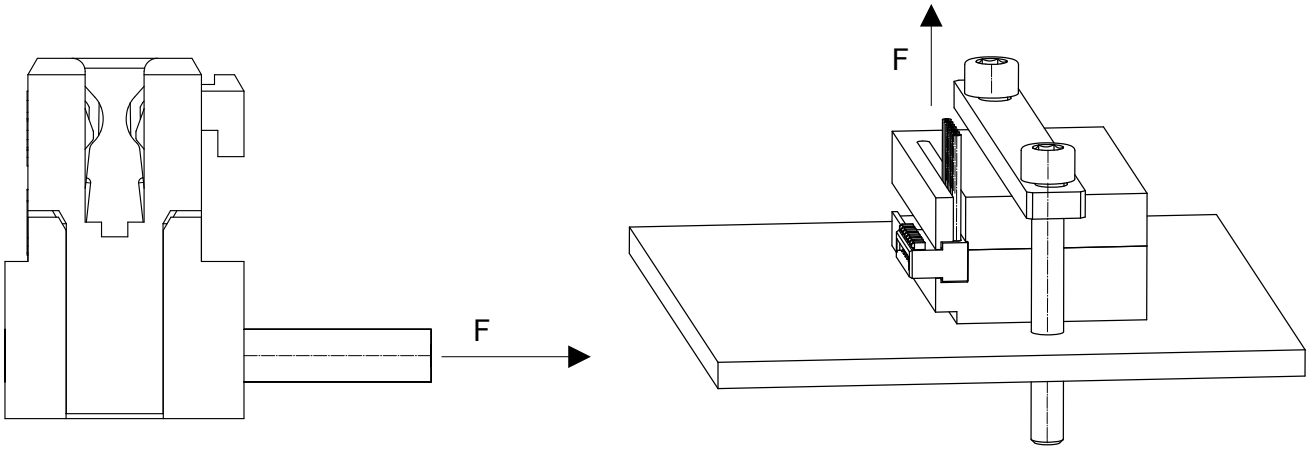
8.7. Cable protrusion

The cable protrusion acc. to point 7.4 must be kept. A protrusion of the cable in the housing leads to an incorrect mating.

8.8. Retention force of the wire

Minimal retention force of the wire from the insulation displacement contact:

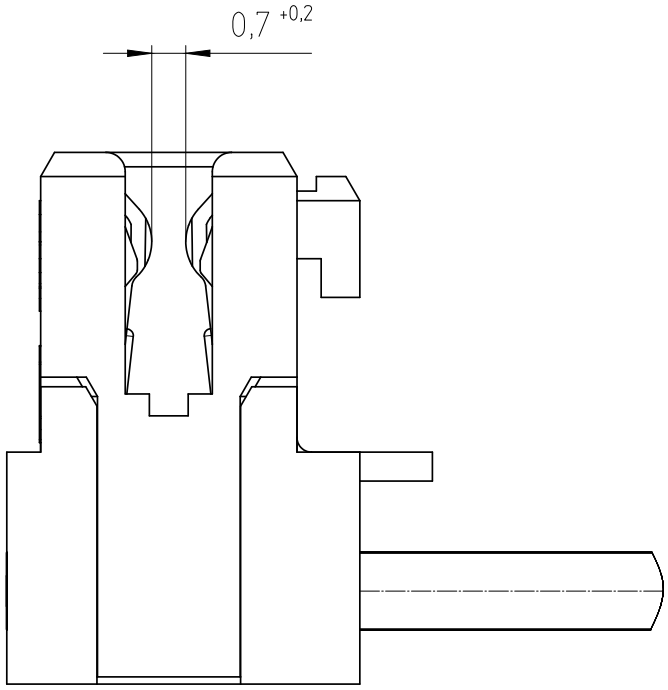
PVC – stranded wire: 0,38 mm² > 50 N



The stated value for the conductor's pull-out force is the typical value established during a test carried out with a standard 0,38mm² line. All values were determined under laboratory conditions and serve as a reference.

8.9. Contact gap

Contact gap after termination.



8.10. Electrical testing

Electrical testing shall be performed in accordance with IPC/WHMA-A-620.
The nature and extent of the electrical tests (short circuit testing, continuity testing, insulation testing, high voltage testing, etc.) should be specified depending on the application and the processing machine.

9. Storage

Tin-plated and silver-plated surfaces can undergo a physical aging process that may negatively affect their ability to be soldered. In Order to maintain the best connection characteristics, make sure that the following instructions are closely followed during additional processing steps:

Storage conditions:
The parts should ideally be stored in the original packaging, at a constant temperature of 21-25°C, with a relative humidity of no more than 55%. the components should not be exposed to direct light. They should also be protected from any extreme ambient conditions (such as air pollution).

The storage time should be kept as short as possible, especially for silver-plated components and for solder connections in general. Our experience is that tin-plated components can be soldered for about a year after delivery when using the proper conventional flux. Silver-plated components, owing to their physical characteristics, should be processed within about six months of delivery.

These specifications are based on experience using components stored under optimal conditions. They do not constitute a binding commitment for the fulfillment of any characteristics.

Ask Lumberg for more information about alternative packaging options for other temperatures and environment conditions.