

# M8 / M12 Header Vertical Code A, B, D, X

Application Specification

# 114-94781

09 SEP 2022 REV. A



## NOTE

All numerical values are in metric units. Dimensions are in millimeters. Unless otherwise specified, dimensions follow the specification shown with the product drawing. Figures and illustrations are for identification only and are not drawn to scale. As an abstract, the appendix shows specifications which are ready for a download in higher resolution.



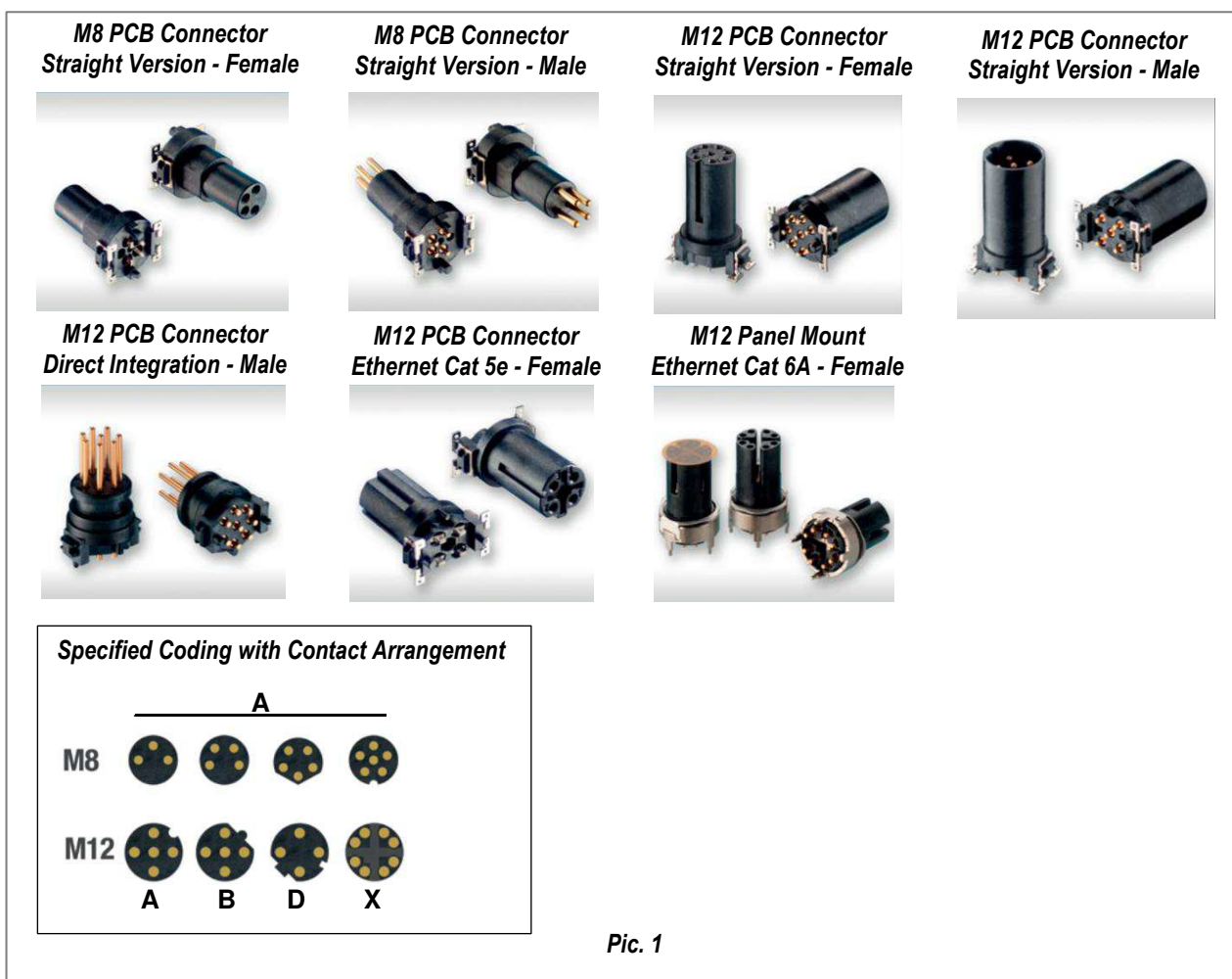
## DANGER

To avoid injury, do not plug or unplug these connectors from the counterpart while they are under electrical load.

## 1. INTRODUCTION

This specification covers the requirements for application M8 / M12 header assemblies for printed circuit boards (PCB) used with a front panel integration. All headers are designed for use with connector cable assemblies in industrial equipment and control, signal, and electrical appliances. The application plugged cable assembly and headers on a PCB have an ingress protection rating of IP67 so far equipped with seals according to this specification. Usually that application requires a front panel as part of the protection. For several headers placed adjacent within the same application keep the minimum distance according to details in Pos. 6 et seq.

Headers → **Pic. 1** are designed for a PCB mounting, available in solder type versions for through-hole-reflow (THR) for surface-mounted-technology (SMT). The connectors consist of a female (receptacle) or a male (plug) and are



Pic. 1

available in unshielded or shielded and straight or angled style. Connector M8 A-code: 3, 4, 5, 6 and 8 Pos. and M12 A, B, D individually: 4, 5, 8, 12, 17 Pos. and M12 X-Code: 8 Pos., depending on the male or female type.

For the design and installation of the connectors, please refer to **chapter 7 ff.** to take into account the necessary installation conditions around the product in sufficient detail.

When corresponding with personnel, use the terminology provided in this specification to facilitate inquiries for information.

## 2. REFERENCE MATERIAL

### 2.1. Revision Summary

Initial release of application specification

### 2.2. Customer Assistance



Use of these numbers will identify the product line and help you to obtain product and tooling information. Such information can be obtained through a local representative, by visiting our website at [www.te.com](http://www.te.com), or by calling *PRODUCT INFORMATION CENTER* (PIC) or the *TOOLING ASSISTANCE CENTER* (TAC) as mentioned at the bottom of TE-homepage [www.te.com](http://www.te.com) in Germany +49 6151 607 1999.

### 2.3. Drawings

Customer Drawings for product part numbers are available from the service network. If there is a conflict between the information contained in the Customer Drawings and this specification or with any other technical documentation supplied, the information contained in the Customer Drawings takes priority.

### 2.4. Specifications

Following product specifications provide product performance and test requirements for detailed info of the technical limits:

108-94886	M12 Header 8 Pos. vertical, X-code
108-94887	M8/ M12 Header 3 - 17 Pos. vertical, A, B, D - code
114-94793	M12 Vertical Header Direct Integration
114-94794	M12 Vertical Header General Integration
114-94798	M8 Vertical Header General Integration
114-94800	M8/ M12 Accessory Selection Table

### 2.5. Applicable Documents/ Standards

Standards and publications developed by the International Electrotechnical Commission (IEC) provide industry test and performance requirements. The following mentioned documents are part of this specification. If there is a conflict between the information contained in the documents and this specification or with any other technical documentation supplied, the last valid customer drawings take preference. Standards available that pertain to this product are:

All customer drawings	M8/ M12 Circular Connectors in vertical version, provided by TE where this application specification is related to.
IEC 61076-2-012: 2010	Connectors for electrical and electronic equipment – Product Requirements – Part 2-012: Circular connectors – Detail specification for connectors with inner push-pull locking based on M12 connector interfaces according to IEC 61076-2-101, IEC 61076-2-109, IEC 61076-2-111 and IEC 61076-2-113,
IEC 61076-2-101: 2013	Connectors for electronic equipment – Product requirements – Part 2-101: Circular connectors – Detail specification for M12 connectors with screw-locking
IEC 61076-2-104: 2014	Connectors for electronic equipment - Product requirements - Part 2-104: Circular connectors - Detail specification for circular.
IEC 61076-2-109: 2015	Connectors for electronic equipment - Product requirements - Part 2-109: Circular connectors - Detail specification for connectors with M 12 x 1 screw-locking, for data transmission frequencies up to 500 MHz

IEC 61076-2-111: 2017	Connectors for electrical and electronic equipment - Product requirements – Part 2-111: Circular connectors - Detail specification for power connectors with M12 screw-locking
IEC 61076-2-113:2017	Connectors for electronic equipment - Product requirements - Part 2-113: Circular Connectors - Detail specification for connectors with data and power contacts with M12 screw-locking
IEC 61076-2-114: 2020	Connectors for electrical and electronic equipment - Product requirements – Part 2-114: Circular connectors - Detail specification for connectors with M8 screw-locking with power contacts and signal contacts for data transmission up to 100 MHz
IPC/JEDEC J-STD-020C	Moisture/Reflow Sensitivity Classification for non-hermetic solid state. Surface Mount Devices; issued Jan 2004
IPC-2221B	Generic Standard on Printed Board Design
IPC A-610, H - 2020-09	Acceptability of Electronic Assemblies
EIA/IPC/JEDEC J-STD-002E	Solderability Tests for Component Leads, Terminations, Lugs, Terminals and Wires
IPC-J-STD-001, G	Requirements for Soldered Electrical and Electronic Assemblies.
JEDEC Pub.95-4.10D-2002	Generic Shipping & Handling Matrix Tray

## 2.6. Manuals



Manual [402-40](#) can be used as a guide to soldering. This manual provides information on various flux types of storage contamination that could adversely affect performance and characteristics with the commercial designation, flux removal procedures, and a guide for information on soldering problems.

## 3. REQUIREMENTS

### 3.1. Storage

#### A. Consumption in the Field

The products should be used on a “first in, first out” process to avoid storage contamination, see latest valid customer drawings, too.

#### B. Ultraviolet Light

Prolonged exposure to ultraviolet light may deteriorate the chemical composition used in the product material.

#### C. Shelf Life

The product should remain in the shipping containers until ready for use to prevent deformation to components. The product should be used on a first in, first out basis to avoid storage contamination that could adversely affect performance.

#### D. Chemical Exposure

Do not store product near any chemical listed below as they may cause stress corrosion cracking in the material, valid as well for cable assembly mated to that connector.

Alkalies	Ammonia	Citrates	Phosphates	Citrates	Sulfur Compounds
Amines	Carbonates	Nitrites	Sulfur	Nitrites	Tartrates

### 3.2. Operating Temperature

The connectors as well as cable assemblies applied here with them must be used in the operating temperature as specified on the customer drawing respectively product specification.

## 4. Packaging

### 4.1 Bulk Packed



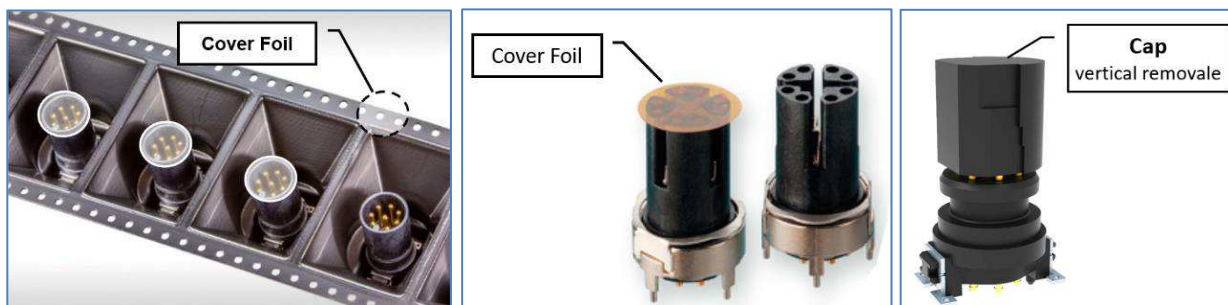
Despite a certain risk associated with loose packed products, TE offers small packaging quantities for special products to support a small batch production. As far as bulk packed products are offered, the limited number of parts per package is indicated on the corresponding drawing. Please check the products for deformation before use and handle them carefully to avoid damage.

### 4.2 Packed on Reel

For mass production and a preferred automatic pick+place process the headers can be bought belt-packed covered and protected with a self-gluing tape which overlaps on the belt at both ends according to **IEC 60286-3** with sufficiently specified leading tape and trailer tape. For details, please review the related product drawing.

All vertical male and female headers are covered either with a removable round Cover Foil → **Pic.2** below in the center) or plastic cap (pic. below right) to support a vacuum pick+place process and protect the pins of the male header assembly. The round foil and the cap are stable to run through the PB-free soldering process and must be removed afterwards from all headers.

The offered quantities per reel are defined on the respective drawing.



**Pic. 2** Vertical Header with Cover Foil for a vacuum Pick+Place -Process

### 4.3 Packed in Tray

A tray packaging is available and specified for some products shown on the related drawing. The tray design is based on the JEDEC Publication 95 -4.10D. The related packaging unit is shown on the drawing. Headers are equipped with supporting elements like caps and round Cover Foils for a pick+place process.

## 5 Mounting / Soldering of Headers

### 5.1 General Requirements

The circular pin header can be used with all PCBs which are suitable for a reflow or wave soldering process. The PCB may have a thickness between 1.6 up to 3.2mm. The limits are depending on the required stiffness of the entire application. The headers can be placed either by hand or by an automatic pick+place process. Please consider the impact on the dispensing of the solder material.



Compliance with the storage conditions according to **DIN EN 60721-3-1** to prevent damage to the product before soldering is required for all types of solderable connectors up to 6 months after the date of manufacture indicated on the packaging label. Otherwise, it may lead to insufficient connection of the solder joints.

### 5.2 Orientation of the vertical Header

The axial alignment of the vertical male or female header must already be taken into account precisely when designing the soldering area on the PCB. For this purpose, the housings are designed either with an additional integrated polarization pin or the minimum two positioning pins with different diameters. The PCB layout must consider the required hole diameters and distance according to the proposal shown on the associated drawing to ensure an one-to-one alignment of the soldered header and the mated connector assembly. Deviations from the specified design are the responsibility of the user.

### 5.3 Solder Layout (THR/ SMT valid for all Numbers of Positions)

Different layouts for M8 / M12 Header exist related to the types of connection form of each header to the PCB (e.g.: Contact turned or stamped for THR or designed for SMT technology). For maintaining the good overview of the individually required layout, all layout types are shown on the associated drawing for the product.

### 5.4 Solder Preparation



TE requires that the products be used only by trained personnel. Otherwise, the general rule is that all components must be free from paint, insulation residues or traces of oxidation. Proper soldering should produce a durable and good conductive contact at the solder joints, for this cleanliness is very important. For help and important guidance, refer to the IPC standards mentioned with Chapter 2.5 .

### 5.5 Type of Solder Profile

#### 5.5.1 General Instruction

Please investigate in advance by soldering tests with your final application if a fine adjustment of the soldering profile is necessary. This may usually differ from the suggested soldering scheme. A valid reason for an adjustment can be the property of the soldering material, the type of soldering fixture and even the heat absorption or heat reflection of adjacent components. Please refer to the detailed description and recommendation you received with your soldering apparatus and associated soldering material.

#### 5.5.2 Wave Soldering

After placing the product on the appropriate solder layout, please follow the instruction acc. to **IPC-610 Class 2**. For achieving a filling rate of up to 75% around the solder pin in THR technology.

#### 5.5.3 Reflow Soldering

The product specified herewith has passed the qualification test with the reflow soldering profile shown in → **Appendix / Chapter A**. Therefore, this soldering profile is recommended to be used. The soldering process has been successfully performed with approval tests based on a lead-free soldering profile up to 3 times.



So far, a gasket for sealing has been pre-assembled on the header by TE, that status is approved for the proposed soldering process as described before and specified with the related product specification **108-94886** and **108-94887**.

If a header without gasket for sealing performance was chosen, the required gasket can be ordered separately in different packaging sizes for a post-mounting after soldering.

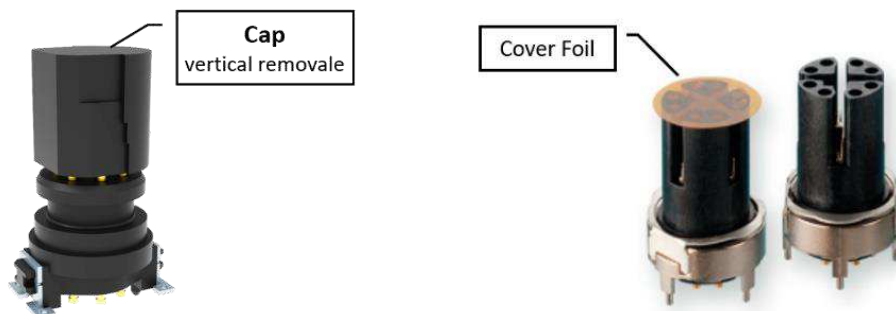
The required components for sealing aspects are described within → **Appendix / Chap. E** resp. **114-94800**.

Please contact your TE-representative or TE according to Pos. 2.2 in case of further support is needed.

### 5.6 Post-Treatment after Soldering

Review the electrical connections between header to the PCB carefully for any unexpected damage of the header housing. The root cause can usually be a solder profile that has been run too extremely and exceeded the recommended limits of temperature or time unexpectedly and without being detected upfront.

Remove the round cover foil (Pad) from the top of all the vertical headers. So far, a Cap → **Pic. 3** was mounted by TE on the header instead of a glued cover foil, even that can easily be removed against the mating direction by lifting it up manually.

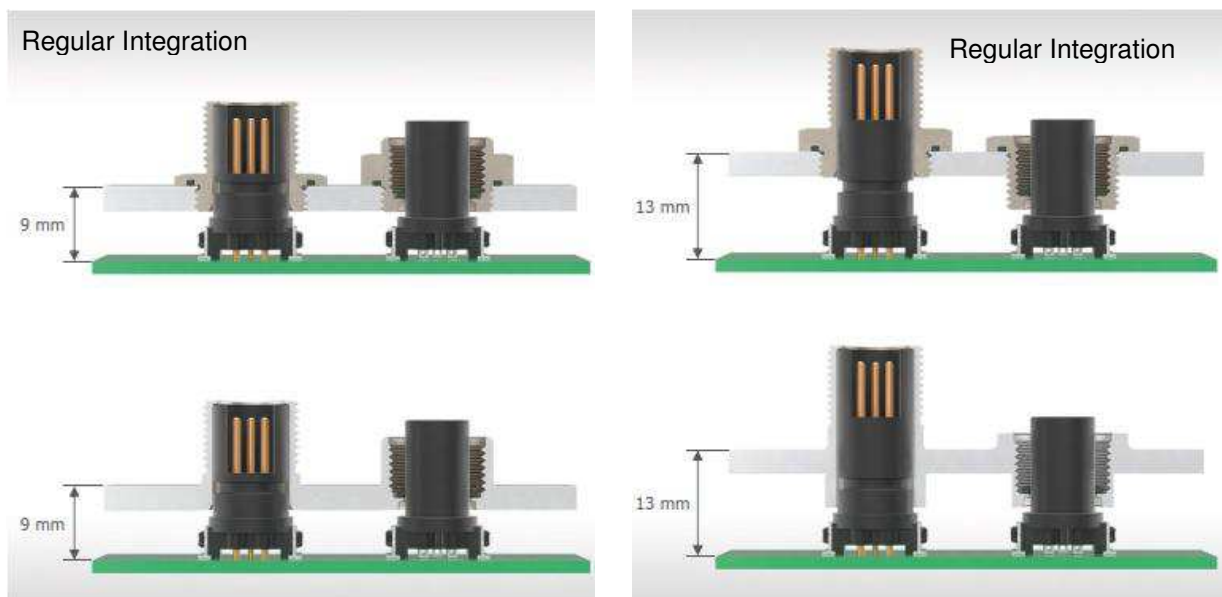


**Pic. 3:** Protection of Pin Contacts with Cap and Cover Foil as support for a vacuum Pick+Place process

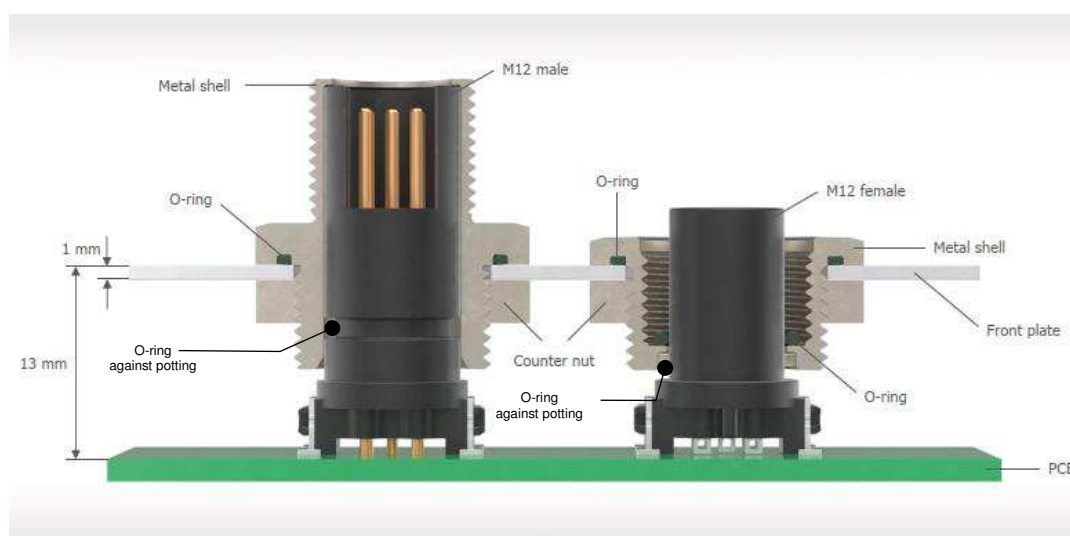
## 6 Different Types of Headers

### 6.1 General Integration

As far as final applications require a mixture application of several M8/ M12 connectors on one PCB, different heights of 9 and 13 mm → **Pic. 4** are selectable for combination. In case of the fact, consider the necessary clearance around the connector to enable it to be screwed-in and the cable position to be sealed. If different connector heights are deliberately used in an unique application, the front panel which is usually used must be adapted to the height at the appropriate positions to ensure best fitting for retention and sealing with the plugged connector. In this case, the required clearance around the connector must be taken into account, so that it can be screwed-in and the cable position sealed.



**Pic. 4:** Definition of possible constellations for use in different environment with M8/ M12 headers. The front panel is equipped with threads in the lower picture



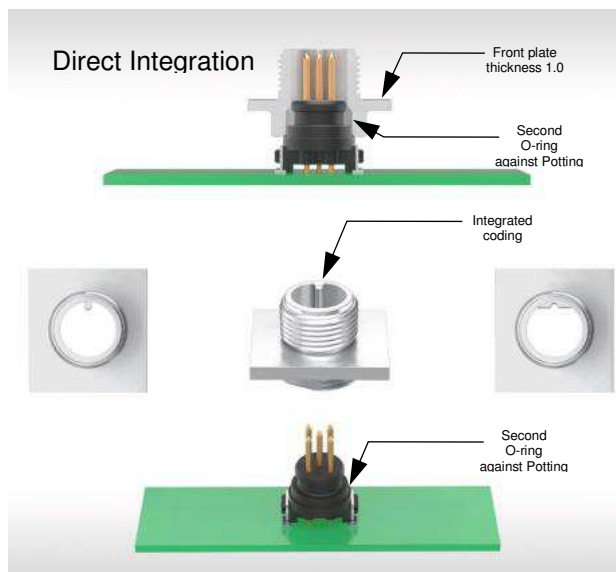
**Pic. 5:** Definition of necessary components for a sealed application.

## 6.2 Direct Integration

This way of mounting a connector can be advantageous, if an uniform connector design is to be mounted for cost reasons and the coding will be added with a threaded insert or an additional plastic housing, which can also become an integral part of a front panel as shown with → [Appendix / Chap. C resp. 114-94793](#) or with → [Appendix / Chap. D resp. 114-94798](#).



**Please make sure that direct integrated connectors are only mounted into non-conductive housing!**



**Pic. 6**

The coding is integral part of the Front Panel within a Direct Integration

### 6.2.1 Mating with Front Panel

Complete the M8/ M12 connection after soldering by mounting the O-rings and threaded inserts where needed. If the gasket was not already pre-mounted on the header, it can be selected and ordered according to [Chap. E resp. 114-94800](#) and now mounted at the defined position of the header. For directly mounted headers, an inner O-ring and a second O-ring to the threaded accessory must be considered when a potting from the rear side of the front panel is intended → [Pic. 5+6](#).



Apply a **torque of 1.0-1.2 Nm** to the *Metal Shell* resp. *Counter Nut*. That torque is not required for a Direct Integration.

### 6.2.2 Distance between adjacent Connectors

The distance between two adjacent connectors is determined by the largest external dimensions of the fully mated connection. Screwing the cable connector can be done by hand or with a tool → [Pic. 8](#). For the mounting of the threaded inserts on the front panel, there are various auxiliary tools on the market. That might influence the required distance. In general, based on the connector type used, the distance dimension can be determined according to the table below → [Pic. 7](#) in relationship with the IEC acc. to Pos. 2.5 . This requires a few more space which must be considered when designing the front panel.

Connector Style		
Parameter Symbol from IEC	Description	Y <sub>min.</sub> [mm]
JM	<b>Male Connector</b> rewireable, straight Version, with Locking Nut	21 + 1 = <b>22</b>
KM	<b>Male Connector</b> rewireable, rectangular Version, with Locking Nut	21 + 1 = <b>22</b>
LM	<b>Male Connector</b> non-rewireable, straight version, with Locking Nut	16 + 1 = <b>17</b>
MM	<b>Male Connector</b> non-rewireable, rectangular Version, with Locking Nut	16 + 1 = <b>17</b>
NM	<b>Male Connector - higher Version</b> non-rewireable, rectangular Version, with Locking Nut	16 + 1 = <b>17</b>
JF	<b>Female Connector</b> rewireable, straight Version, with Locking Nut	21 + 1 = <b>22</b>
KF	<b>Female Connector</b> rewireable, rectangular Version, with Locking Nut	21 + 1 = <b>22</b>
LF	<b>Female Connector</b> non-rewireable, straight Version, with Locking Nut	16 + 1 = <b>17</b>
MF	<b>Female Connector</b> non-rewireable, rectangular Version, with Locking Nut	16 + 1 = <b>17</b>

**Pic. 7:** Distance between connector Y<sub>min</sub> = max. Dia. +1.0



**Pic. 8:** Auxiliary tools for M8/M12 mounting

### 7.1 Front Panel Thickness and Cutout - General Integration



If an additional nut from the rear side of the metal front panel is used acc. a *General Integration*, for the front panel **thickness of 1.0mm nominal** is recommended. This ensures sufficient stability of the bond between the threaded insert and the clamped front plate. The O-ring must be clean, when applying a **torque of 1.0 - 1.2 Nm**. Around the hole for the connector, please design-in the front panel a **chamfer of 0.2 – 0.4x 45°**. The required cutout diameter is specified in specification → [Appendix / Chap. E](#) resp. [114-94800](#).

### 7.2 Front Panel Thickness - Direct Integration

A direct integration offers the highest stability for the plugged cable assembly and the header. So far, potting will be applied, only that application requires an O-ring between the rear side of the front panel → [Fig.6](#) and header. Otherwise, no O-ring is needed on the header side. The front panel requires a **thickness of 3.0mm nominal** for ensuring sufficient stability with the header. Around the hole for the connector, please design in the front panel a chamfer. A cutout for the threaded insert is not required since that is an integral part of the front panel.

### 7.3 Accessories



Please use the table shown with specification → [Appendix / Chap. E](#) resp. [114-94800](#) for ordering the appropriate component according to the applied header. In case an external supplier source beside to TE will be used, please follow the design specification as shown with → [114-94793](#) / [114-94794](#) / [114-94798](#)  
**Please be aware, that TE cannot accept any warranty for the function, in particular the water tightness, of externally sourced components as a precise fitting of the application is required.**

## 8 Replacement and Repair

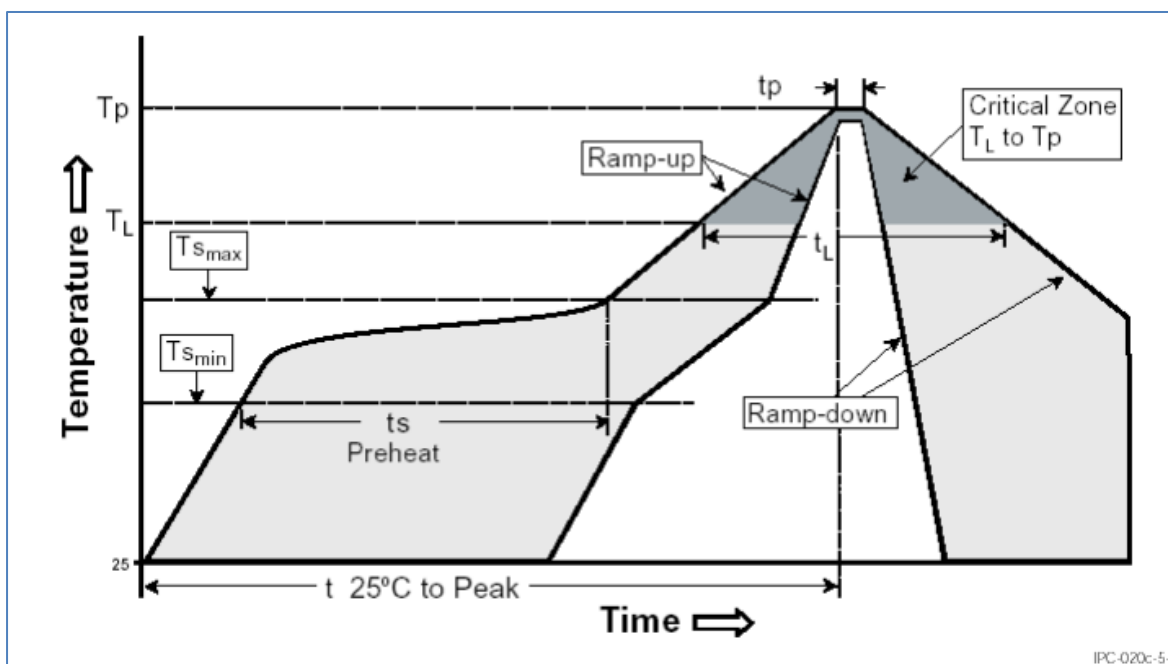
These headers respectively pluggable assemblies are not repairable. Damaged or defective components must not be used. Fitting and servicing should only be performed by qualified personnel in accordance with all guidelines and standards.

## 9 Qualification

M8 / M12 headers are recognized by Underwriters Laboratories Incorporation (UL)

### Reflow profile to verify solder ability

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate ( $T_{smax}$ to $T_p$ )	3 °C/ s max.
Pre-Heat <ul style="list-style-type: none"> <li>– Temperature Min (<math>T_{smin}</math>)</li> <li>– Temperature Max (<math>T_{smax}</math>)</li> <li>– Time (<math>t_{smin}</math> to <math>t_{smax}</math>)</li> </ul>	150 ± 5 °C 180 ± 5 °C 60-120 s
Time maintained above: <ul style="list-style-type: none"> <li>– Temperature (<math>T_L</math>)</li> <li>– Time (<math>t_L</math>)</li> </ul>	Reflow profile to verify solder ability 225 °C 20 ± 5 s
Peak/Classification Temperature ( $T_p$ )	235 (+0/-5) °C
Time within 5 °C of actual Peak Temperature ( $t_p$ )	10 s
Ramp-Down Rate	6 °C/s max



For a higher resolution download spec. **114-94793** for a higher resolution download **114-94793**.

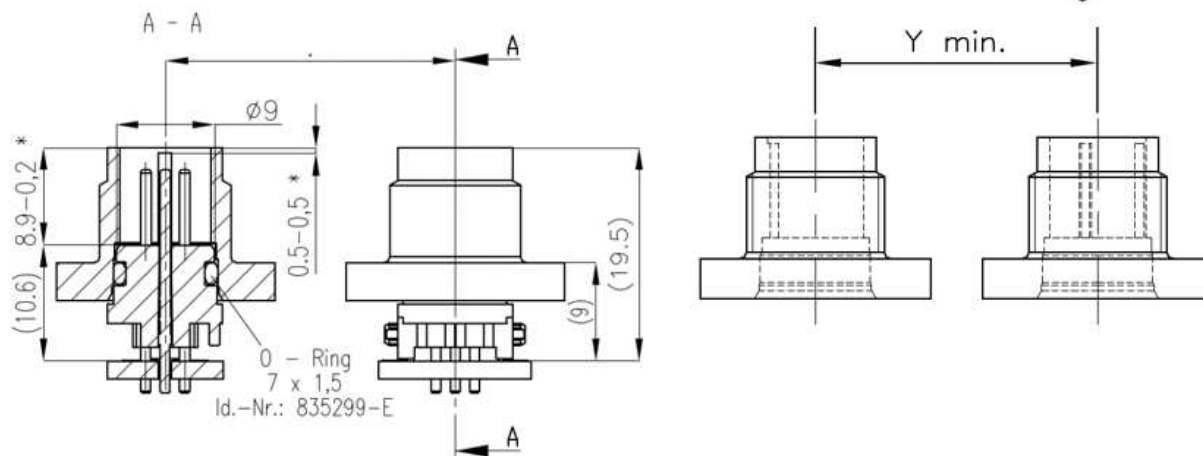
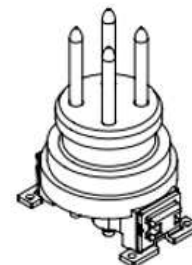
### Integration into non-conductive housing only



#### NOTE

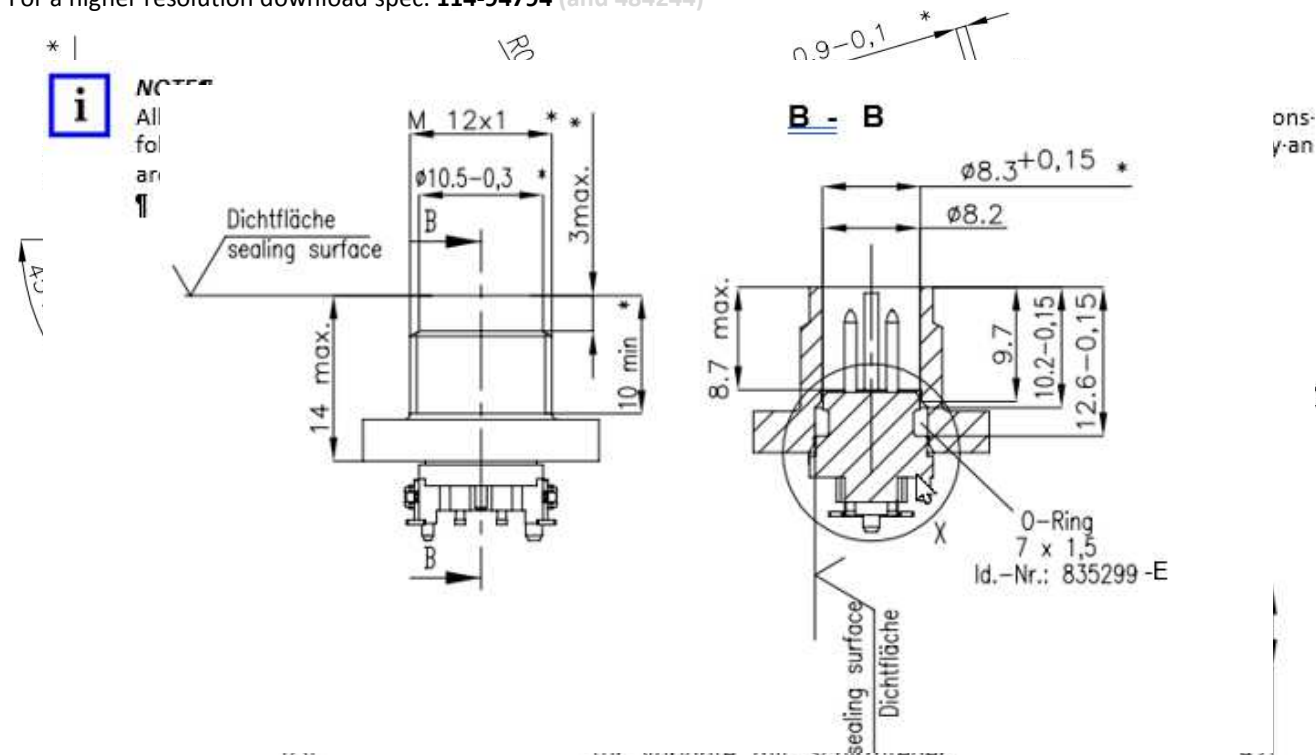
All numerical values are in metric units. Dimensions are in millimeters. Unless otherwise specified, dimensions follow the specification shown with the product drawing. Figures and illustrations are for identification only and are not drawn to scale. All dimensions with \* are derived from the IEC 61076-2-101.

Derived from IEC:  $Y_{min.} = [\text{max. Conn. Dimension}] + 1.0\text{mm}$   
see: IEC 61076-2-101/-109 and 114-94781, Pos. 6.2.2

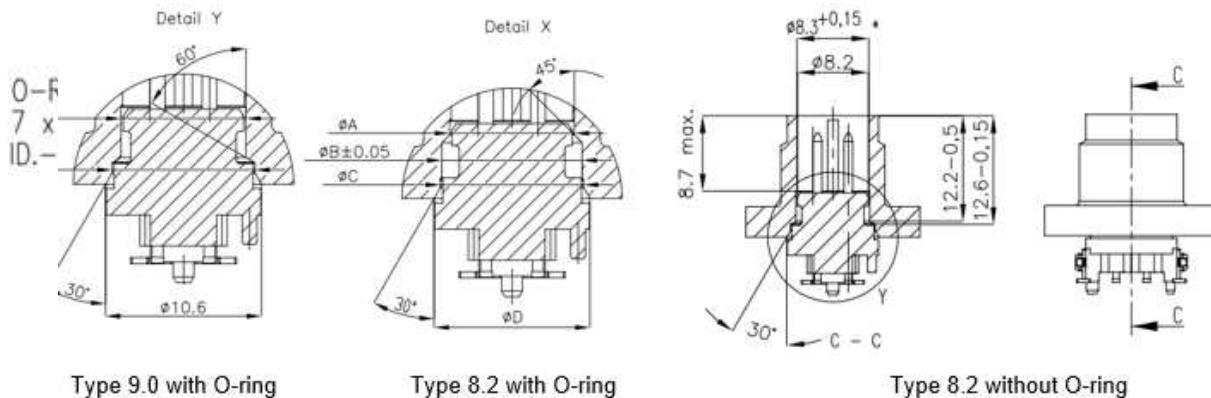


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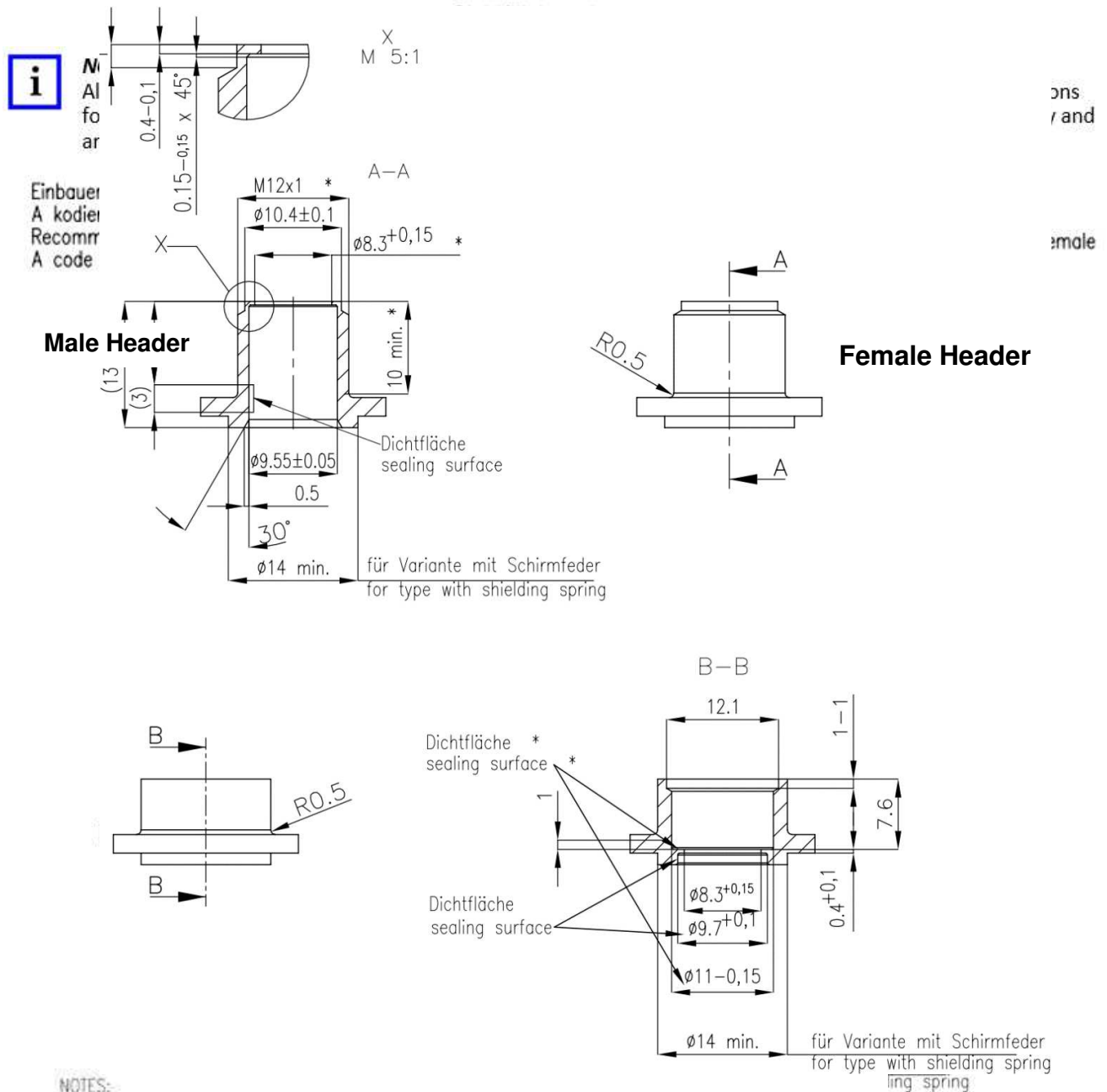
For a higher resolution download spec. **114-94794** (and 484244)



	Detail X	Detail X	Detail Y
$\phi A$	9,3	8,5	8,5
$\phi B$	9,55	9,55	—
$\phi C$	9,75	9,75	9,75
$\phi D$	10,6	10,6	10,6
	Typ 9 mm	Typ 8,2 mm	Typ 8,2 mm ohne O-Ring



For a



**NOTES:**

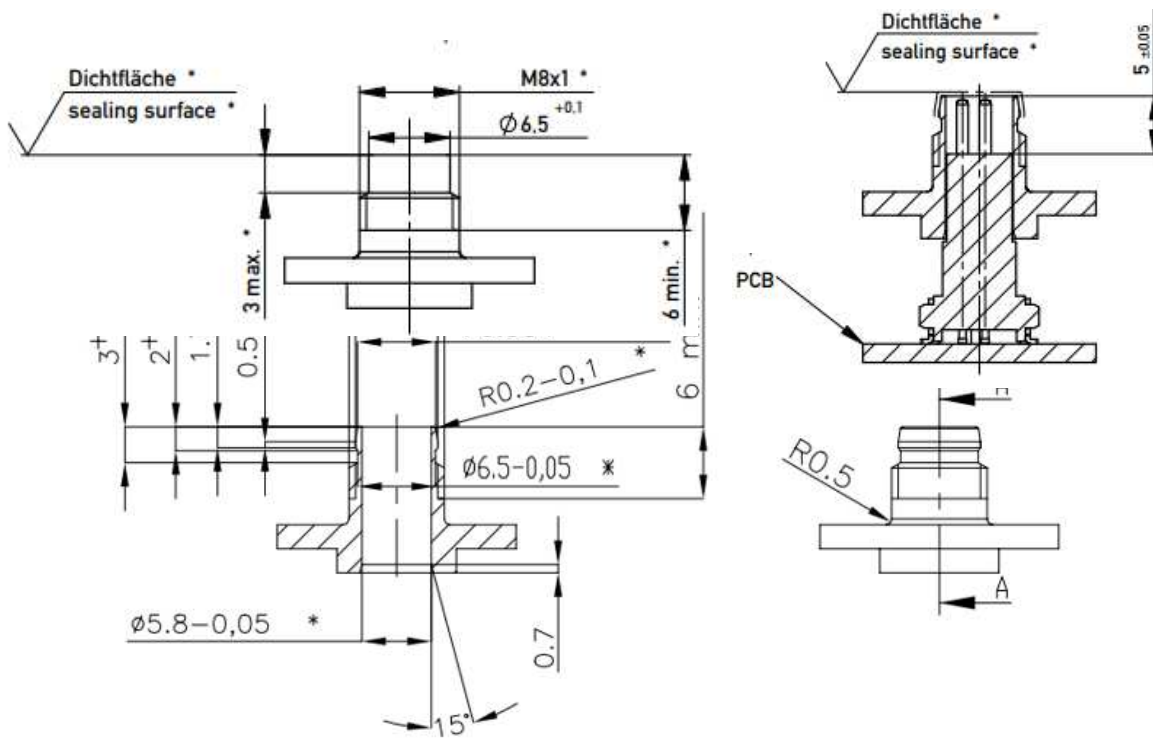
für Zeichnungsmaße mit \* siehe zusätzlich DIN EN 61076-2-101 / 109  
 all dimension marked with \* see DIN EN 61076-2-101 / 109

Bei Einbau von abgewinkelten Kabelstecker muss der Kabelabgang unter 45° am Gehäuse vorbeigeführt werden  
 (Ausführung über Steckerkodierung)  
 When using right angle cable connectors, direction of cable should always be under 45° from mating face  
 (achievement over connector coding)

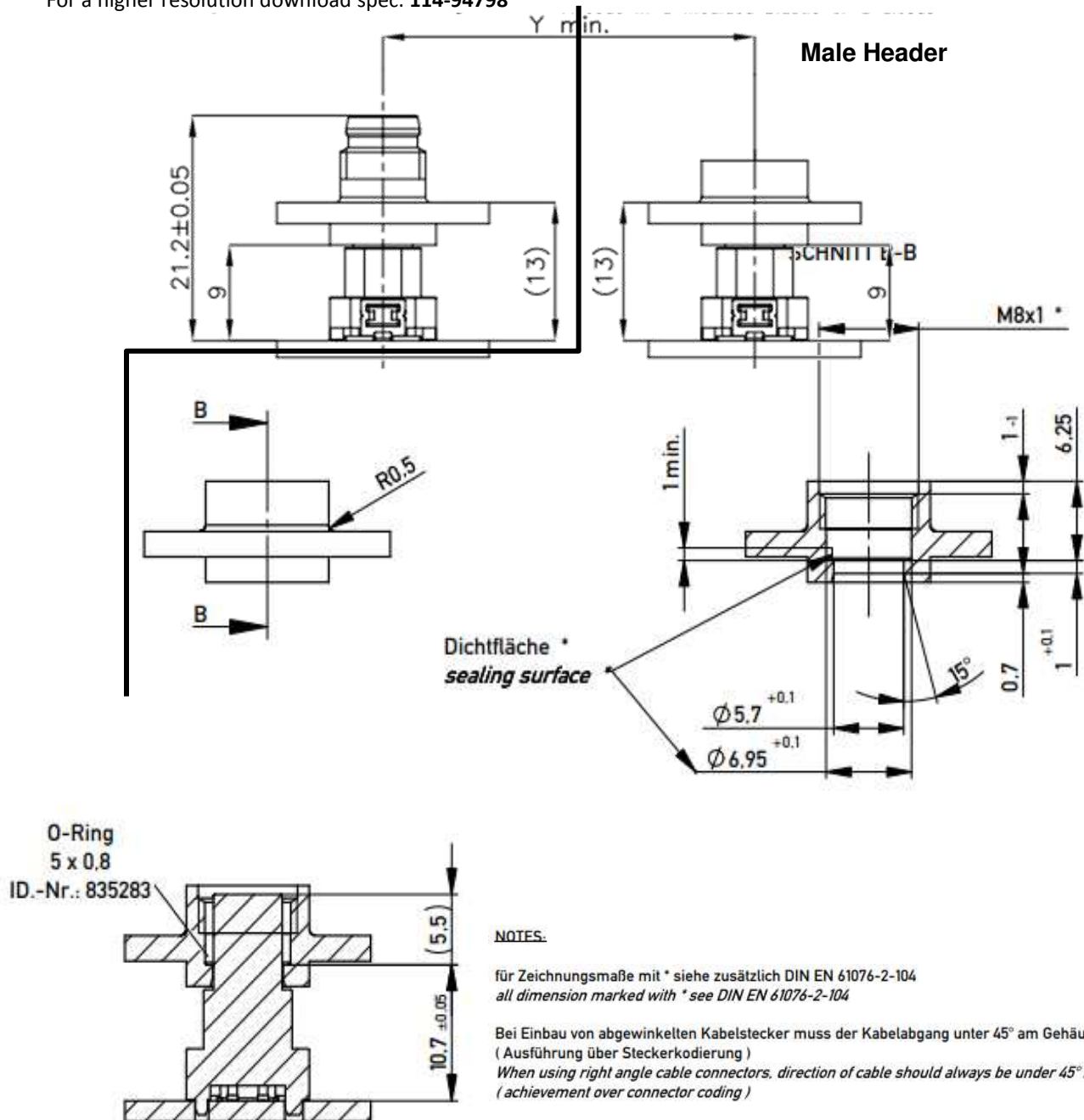
Für minimal Maß Y bitte Kabelstecker Dimensionen beachten  
 for min Dimension Y refer to circular connector dimension

Für die Stecker Variante mit Schirmfeder ist das Gehäusematerial entsprechend zu wählen  
 for connector type with shielding spring use proper housing material

For a higher resolution download spec. **114-94794**For a higher resolution download spec. **114-94794**For a higher resolution download spec. **114-94798**



For a higher resolution download spec. **114-94798**



#### NOTES:

für Zeichnungsmaße mit \* siehe zusätzlich DIN EN 61076-2-104  
all dimension marked with \* see DIN EN 61076-2-104

Bei Einbau von abgewinkelten Kabelstecker muss der Kabelabgang unter 45° am Gehäuse vorbeigeführt werden  
( Ausführung über Steckerkodierung )  
When using right angle cable connectors, direction of cable should always be under 45° from mating face  
( achievement over connector coding )

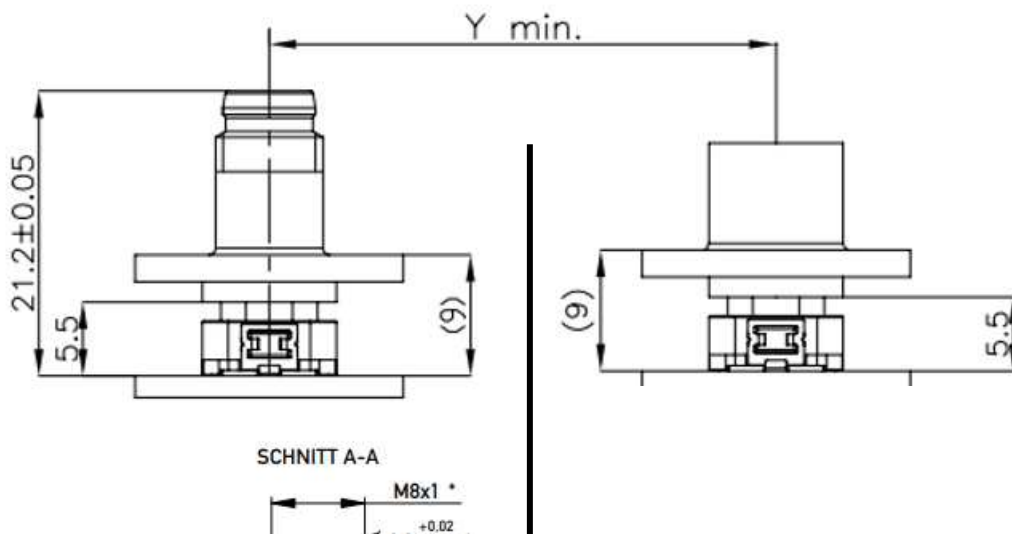
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for connector type with shielding spring use proper housing material

For a higher resolution download spec. **114-94798**

Einbauempfehlung für eine M 8 180° Messerleiste  
A kodiert in ein Spritzguß- oder Druckgußgehäuse  
Recommended Design for integration of M 8 180° male  
A code in a moulded plastic or a diecast housing

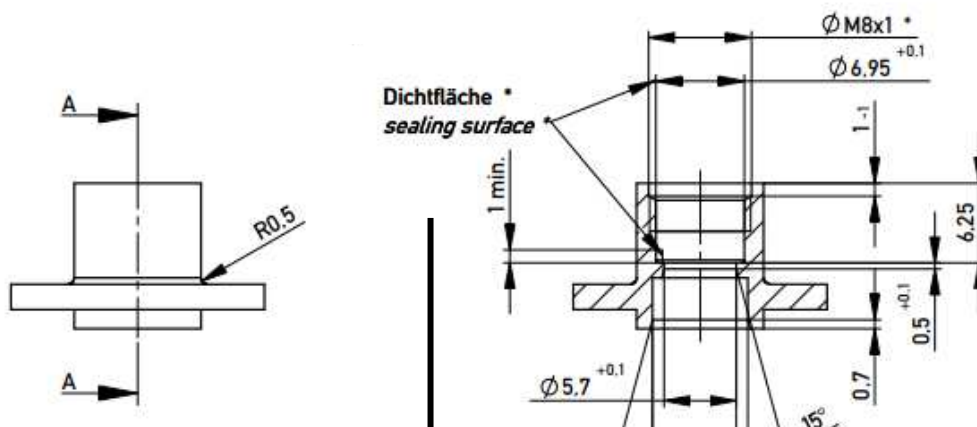
Einbauempfehlung für eine M 8 180° Buchsenleiste  
A kodiert in ein Spritzguß- oder Druckgußgehäuse  
Recommended Design for integration of M 8 180° Female  
A code in a moulded plastic or a diecast housing



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#### NOTES

für Zeichnungsmaße mit \* siehe zusätzlich DIN EN 61076-2-104  
all dimension marked with \* see DIN EN 61076-2-104

Bei Einbau von abgewinkelten Kabelstecker muss der Kabelabgang unter 45° am Gehäuse vorbeigeführt werden  
(Ausführung über Steckerkodierung)  
When using right angle cable connectors, direction of cable should always be under 45° from mating face  
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Für minimal Maß Y bitte Kabelstecker Dimensionen beachten  
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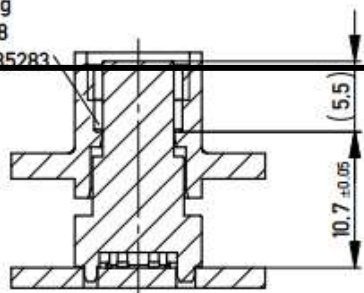
Für die Stecker Variante mit Schirmfeder ist das Gehäusematerial entsprechend zu wählen  
for connector type with shielding spring use proper housing material

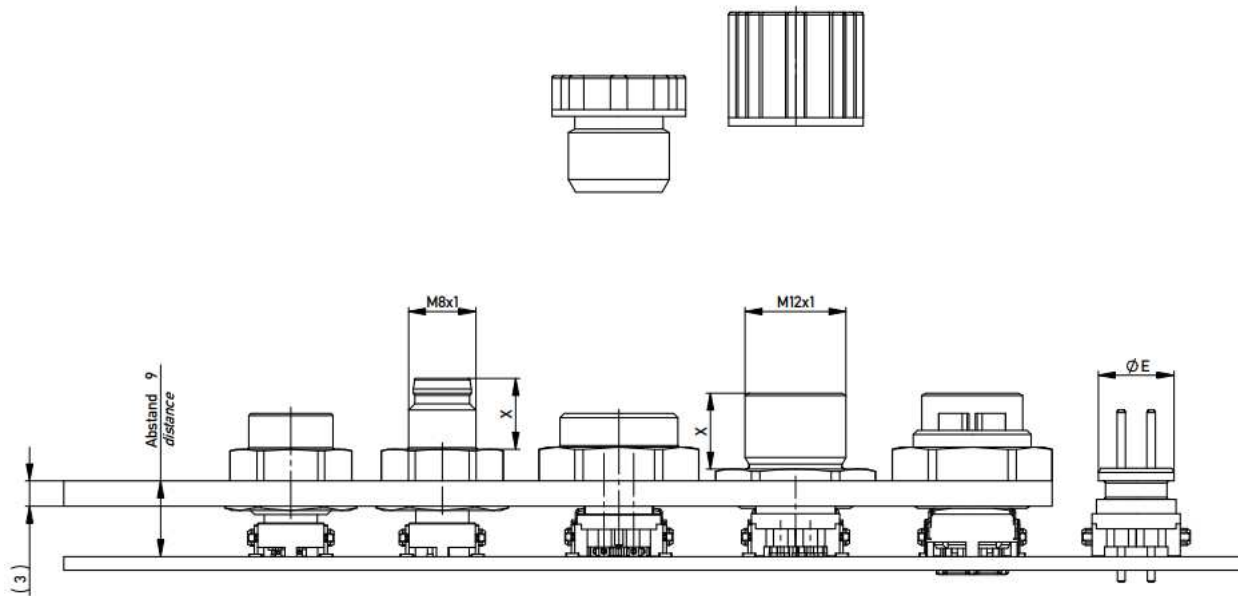
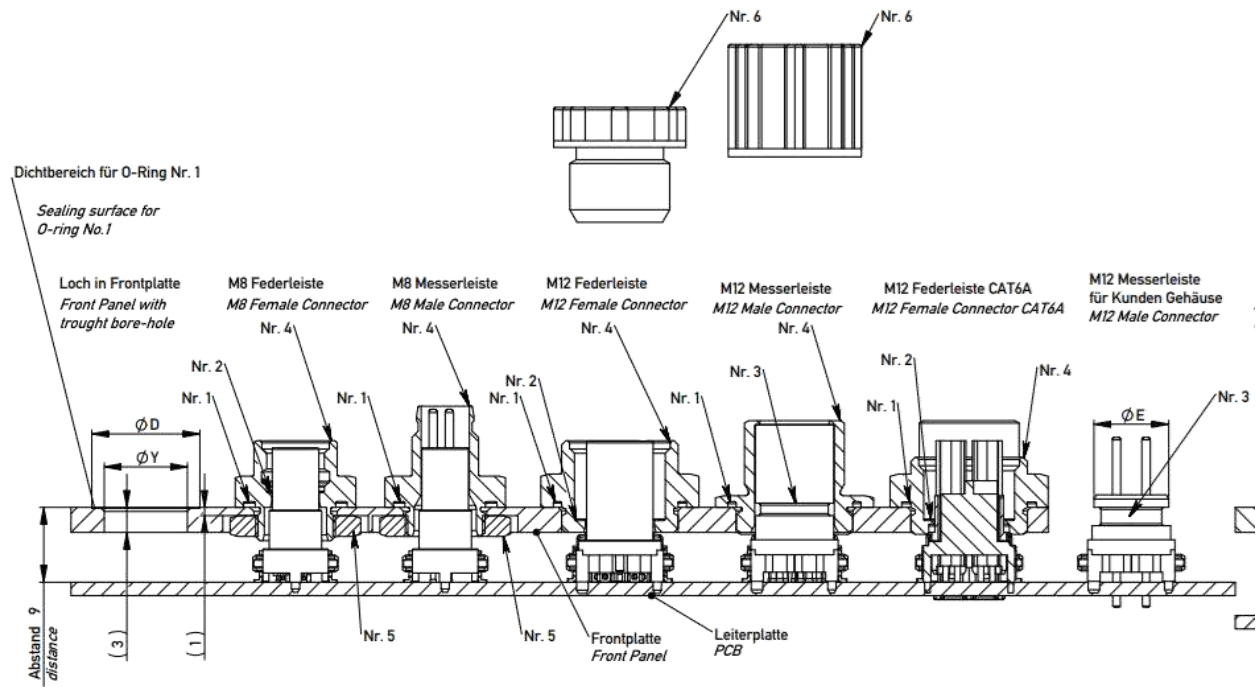
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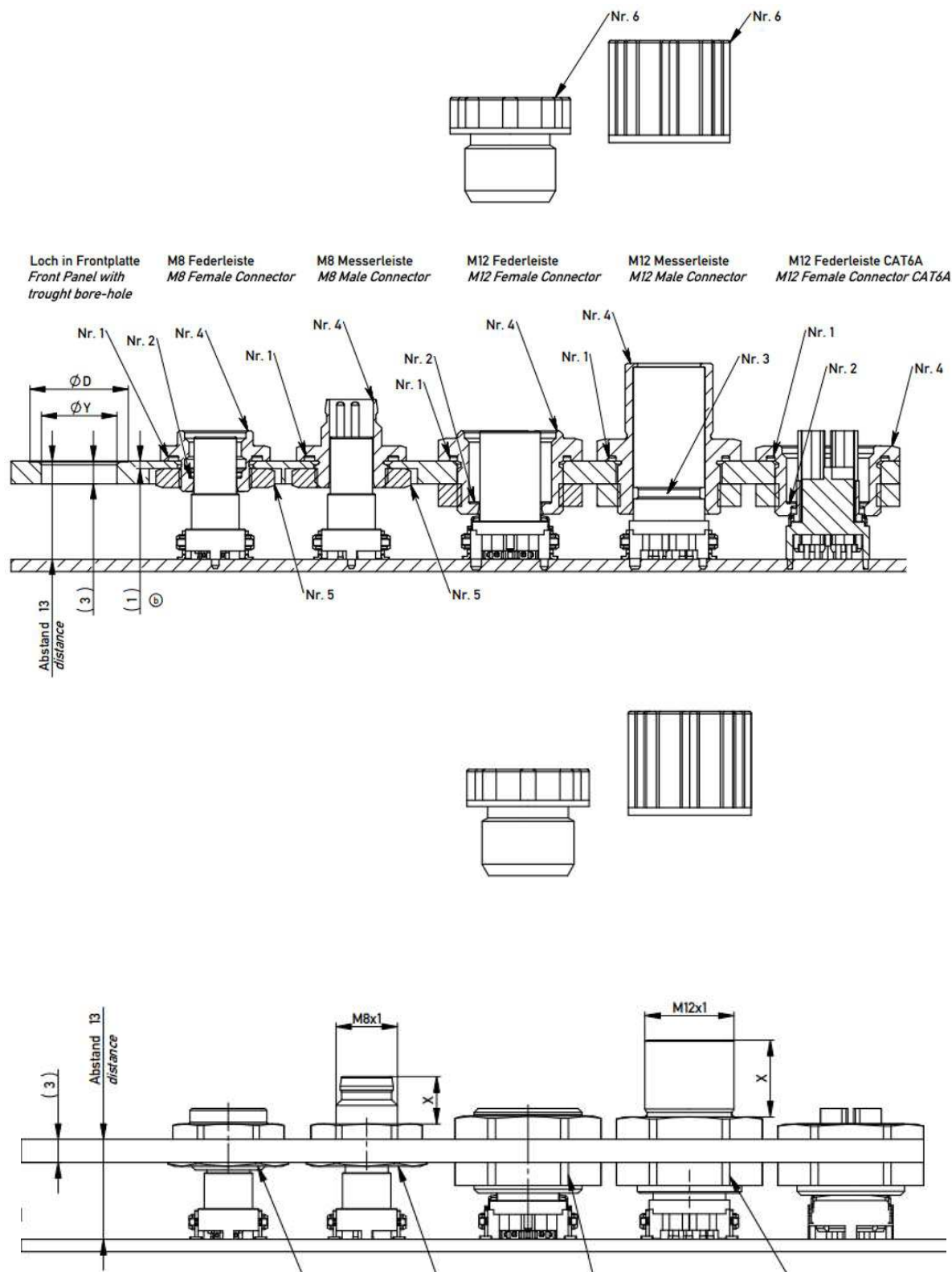
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# Chapter E M8/ M12 Accessory Selection Table – For a higher resolution download Spec. 114-94800 and 224948



# Chapter E M8/ M12 Accessory Selection Table – For a higher resolution download Spec. 114-94800 and 224948

M8 Female Header														
No. of Conta cts	Part Number	Distance	O-Ring as shown in pic. XX			Metal Shell for threaded Front Panel				Metal Shell for Panel with through hole				Protective Cap
			Front Panel	Connect or	Connect or	Metal Shell	Dimension			Metal Shell	Nut	Dimension		No. 6
			No. 1	No. 2	No. 3	No. 4	X	Y through hole min.	D Seal surface	No. 4	No. 5	Y through hole min.	D Seal surface	
3	224150-E 464431-E	9	834898-E	835283-E		254154-E		M10x1	13	254154-E	394905-E	9.7	13.5	
	234233-E	13				284067-E		4) M10x1		284067-E				
	224150-E 464431-E													
	234233-E													
4	224151-E 464432-E	9	834898-E	835283-E		254154-E		M10x1	13	254154-E	394905-E	9.7	13.5	
	234234-E	13				284067-E		4) M10x1		284067-E				
	474231-E													
	224151-E 464432-E													
	234234-E													
	474231-E													
6	464561-E	9	834898-E	835283-E		254154-E		M10x1	13	254154-E	394905-E	9.7	13.5	
	464561-E	13				284067-E		4) M10x1		284067-E				

M8 Male Header														
4	224152-E	9	834898-E			284403-E	6	M10x1	13	284403-E	394905-E	9.7	13.5	
	234235-E	13				284074-E				284074-E				
	224152-E													
	234235-E													

464272-E can be replaced by 254737-E, not permitted for new designs. Shielding spring use only 464272-E.

All dimensions within the table in [mm]

1) Deviation from dimension specified with IEC 61076

2) Not applicable in new designs

3) For front panel thickness: 1.0mm

4) Special bore-hole diameter: 9.10 (Note for "Y")

# Chapter E M8/ M12 Accessory Selection Table – For a higher resolution download Spec. 114-94800 and 224948

M12 Male Header (Distance 9.0)																													
No. of Contacts	Part Number	Distance	O-Ring as shown in pic. XX			Metal Shell for threaded Front Panel				Metal Shell for Panel with through hole				Protective Cap	Protect Cap														
			Front Panel	Connector	Connector Housing	Metal Shell	Dimension			Metal Shell	Nut	Dimension																	
			No. 1	No. 2	No. 3	No. 4	X	Y through hole min.	D Seal surface	No. 4	No. 5	Y through hole min.	D Seal surface	No. 6	E														
2 A	464559-E	9	834899-E		835284-E	464272-E	1) 9	M14x1	17					374342-E															
3 A	454267-E	9	834899-E		835284-E	464272-E	1) 9	M14x1	17					374342-E															
4 A	284784-E	9	834899-E		835284-E	464272-E	1) 9	M14x1	17					374342-E															
	284809-E/484790-E																												
	364781-E																	9											
	384402-E																												
	384554-E	9	834899-E			835284-E	464272-E	1) 9	M14x1						17														
	384812-E																				9								
	394632-E																												
	474329-E																												
	394339-E																					8,2/ 9,0							
2) 254859-E	9	834899-E			254739-E	1) 9	M14x1	17																					
5 A	2) 244934-E	9	834899-E			254739-E	1) 9	M14x1	17	not possible				374342-E															
	284740-E																												
	484924-E				835284-E	464272-E																							
	354132-E																												
	464912-E				835299-E	464272-E																							
	2) 364040-E					254739-E																							
	484719-E																												
	364779-E				835299-E																								9
	384401-E																											9	
	384814-E				364785-E mounted																						9		
	394633-E																										9		
	394337-E				835299-E																						8,2		
474331-E										8,2																			
8 A	254317-E	9	834899-E		835284-E	464272-E	1) 9	M14x1	17	not possible																			
	284810-E																												
	464676-E																												
	454464-E																												
	364777-E					835299-E	not possible													9									
	384400-E																			9									
	384494-E	9	834899-E				464272-E	1) 9	M14x1						17														
464800-E	9			835284-E	464272-E	1) 9	M14x1	17																					
12 A	454643-E	9	834899-E		835284-E	464272-E	1) 9	M14x1	17	not possible																			
17 A	454645-E	9	834899-E		835284-E	464272-E	1) 9	M14x1	17	not possible																			
	484786-E																												
5 B	254319-E	9	834899-E			464272-E	1) 9	M14x1	17	not possible																			
354130-E																													
4 T	474580-E	9	834899-E		835284-E	464272-E	1) 9	M14x1	17	not possible																			
4 S	474582-E	9	834899-E		835284-E	464272-E	1) 9	M14x1	17	not possible																			

464272-E can be replaced by 254737-E, not permitted for new designs. Shielding spring use only 464272-E.

All dimensions within the table in [mm]

1) Deviation from dimension specified with IEC 61076

2) Not applicable in new designs

3) For front panel thickness: 1.0mm

4) Special bore-hole diameter: 9.10 (Note for "Y")

# Chapter E M8/ M12 Accessory Selection Table – For a higher resolution download Spec. 114-94800 and 224948

M12 Male Header (Distance 13.0)															
No. of Contacts	Part Number	Distance	O-Ring as shown in pic. XX			Metal Shell for threaded Front Panel			Metal Shell for Panel with through hole				Protective Cap		
			Front Panel	Connector	Connector Housing	Metal Shell	Dimension			Metal Shell	Nut	Dimension			
			No. 1	No. 2	No. 3	No. 4	X	Y through hole min.	D Seal surface	No. 4	No. 5	Y through hole min.	D Seal surface	No. 6	E
4 A	2) 254188-E	13	834899-E			284363-E	10	M14x1	17	354217-E	354003-E	13,7	17		
	354217-E														
5 A	2) 244790-E		834899-E		835284-E	284363-E	10	M14x1	17	354217-E	354003-E	13,7	17		
	354217-E														
	2) 454828-E					284377-E				394863-E					
	364767-E					394863-E									
	484967-E				284363-E	354217-E									
	2) 374352-E				354217-E										
	464834-E				284377-E	394863-E									
	2) 484118-E				394863-E										
8 A	394331-E		834899-E		835284-E	284377-E	10	M14x1	17	394863-E	354003-E	13,7	17		
	484968-E					394863-E									
	484156-E														
5 B	374947-E		834899-E		835284-E	284377-E	10	M14x1	17	394863-E	354003-E	13,7	17		
	474235-E					394863-E									
4 D	2) 244798-E		834899-E			284363-E	10	M14x1	17	354217-E	354003-E	13,7	17		
					354217-E										

All dimensions within the table in [mm]

1) Deviation from dimension specified with IEC 61076

2) Not applicable in new designs

3) For front panel thickness: 1.0mm

4) Special bore-hole diameter: 9.10 (Note for "Y")

# Chapter E M8/ M12 Accessory Selection Table – For a higher resolution download Spec. 114-94800 and 224948

M12 Female Header (Distance 9.0)																								
No. of Contacts/ Code	Part Number	Distance	O-Ring as shown in pic. XX			Metal Shell for threaded Front Panel				Metal Shell for Panel with through hole				Protective Cap										
			Front Panel	Connector	Connector Housing	Metal Shell	Dimension			Metal Shell	Nut	Dimension												
			No. 1	No. 2	No. 3	No. 4	X	Y through hole min.	D Seal surface	No. 4	No. 5	Y through hole min.	D Seal surface	No. 6										
4 A	454003-E 474053-E 284322-E (254236-E)	9	834899-E	835284-E		394828-E		M14x1	17	not possible				374343-E Yellow  or 225507-E Black										
	5 A		194781-E (174355-E) 224064-E (354098-E) 354702-E 484896-E 454950-E 394861-E	834899-E		835284-E		394828-E	M14x1						17									
			8 A	254310-E 354131-E 394305-E 454465-E 474680-E 474681-E		834899-E		835284-E	394828-E						M14x1	17								
12 A				484069-E 484074-E		834899-E		835284-E	394828-E						M14x1	17								
				17 A		484071-E 484076-E		834899-E	835284-E						394828-E	M14x1	17							
5 B						254205-E 254206-E 454951-E 384891-E 474233-E		834899-E	835284-E						394828-E	M14x1	17							
				4 D		234040-E (223270-E) 234041-E 454949-E 484574-E 364175-E 474665-E 454466-E 474522-E		834899-E	835284-E						394828-E	M14x1	17							
	8 X					394811-E 474771-E		9	834899-E						835284-E	835284-E	394828-E	-	M14x1	17	not possible	-	-	-
			13			394847-E		-	354003-E						13,7	17	374343-E							

All dimensions within the table in [mm]

1) Deviation from dimension specified with IEC 61076

2) Not applicable in new designs

3) For front panel thickness: 1.0mm

4) Special bore-hole diameter: 9.10 (Note for "Y")

# Chapter E M8/ M12 Accessory Selection Table – For a higher resolution download Spec. 114-94800 and 224948

M12 Female Header (Distance 13.0)																
No. of Contacts/ Code	Part Number	Distance	O-Ring as shown in pic. XX			Metal Shell for threaded Front Panel				Metal Shell for Panel with through hole				Protective Cap		
			Front Panel	Connector	Connector Housing	Metal Shell	Dimension			Metal Shell	Nut	Dimension				
			No. 1	No. 2	No. 3	No. 4	X	Y through hole min.	D Seal surface	No. 4	No. 5	Y through hole min.	D Seal surface	No. 6		
4 A	454003-E 474053-E 284322-E (254236-E)	13	834899-E	835284-E		394847-E		M14x1	17		22. Mrz	13,7	17	374343-E Yellow  or 225507-E Black		
	5 A		194781-E (174355-E) 224064-E (354098-E) 354702-E 484896-E 454950-E 394861-E	834899-E	835284-E		394847-E		M14x1	17		354003-E	13,7		17	
8 A			254310-E 354131-E 454952-E 394305-E 454465-E 474680-E 474681-E	834899-E	835284-E		394847-E		M14x1	17		354003-E	13,7		17	
			12 A	484069-E 484074-E	834899-E	835284-E		394847-E		M14x1	17		354003-E		13,7	17
				17 A	484071-E 484076-E	834899-E	835284-E		394847-E		M14x1	17			354003-E	13,7
			5 B		254205-E 254206-E 454951-E 384891-E 474233-E	834899-E	835284-E		394847-E		M14x1	17			354003-E	13,7
				4 D	234040-E (223270-E) 234041-E 454949-E 484574-E 364175-E 474665-E 454466-E 474522-E	834899-E	835284-E		394847-E		M14x1	17			354003-E	13,7

464272-E can be replaced by 254737-E, not permitted for new designs. Shielding spring use only 464272-E.

All dimensions within the table in [mm]

1) Deviation from dimension specified with IEC 61076

2) Not applicable in new designs

3) For front panel thickness: 1.0mm

4) Special bore-hole diameter: 9.10 (Note for "Y")

Revision	Remarks	Name	Date
A	Specification released	MSZ	09.09.2022