H01R  ELECTRICALLY-CONDUCTIVE CONNECTIONS; STRUCTURAL ASSOCIATIONS OF A PLURALITY OF MUTUALLY-INSULATED ELECTRICAL CONNECTING ELEMENTS; COUPLING DEVICES; CURRENT COLLECTORS

NOTES

1. This subclass covers:
   • all kinds of contact-making disconnectible and non-disconnectible electric line connectors, coupling devices, lamp or similar holders or current collectors for all kinds of electric lines, cables or apparatus;
   • non-printed means for electric connections to or between printed circuits.
2. This subclass does not cover mounting of connections in or specified apparatus. Such mounting is covered by the relevant subclass for such apparatus, e.g. mounting in junction or distribution boxes is covered by subclass H02B or H02G, high-temperature connections for heating elements is covered by group H05B 3/08. Structural association of one part of a two-part coupling device with specific electric apparatus is classified with the apparatus e.g. association of cap with incandescent lamp is covered by subclass H01K.
3. In this subclass, the following expressions are used with the meaning indicated:
   • "pin" is a rigid or flexible conductor for engagement with an appropriately shaped socket to establish contact therewith;
   • "socket" is a rigid or flexible conductor for receiving an appropriate pin to establish electrical contact therewith;
   • "coupling devices" are devices having two or more parts specially adapted so as to be capable of ready and repeated physical engagement or disengagement, without the use of a tool, for the purpose of establishing or breaking an electrical path. Examples of such devices having more than two parts are:
     a. adapters for linking two coupling parts;
     b. rails or bus-bars provided with a plurality of discrete connecting locations for counterparts.
4. General details are classified in groups H01R 4/00, H01R 9/00, H01R 11/00.
5. { In this subclass, a contact in a coupling device is regarded as an additional earth contact only if this contact is clearly designed for that purpose. }

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

3/00  Electrically-conductive connections not otherwise provided for
   • for making connection to a liquid ((slip rings with liquid contacts H01R 39/30, H01R 39/646))

3/08  Electrically-conductive connections between two or more conductive members in direct contact, i.e. touching one another; Means for effecting or maintaining such contact; Electrically-conductive connections having two or more spaced connecting locations for conductors and using contact members penetrating insulation
  • Connections using shape memory materials, e.g. shape memory metal
  • Soldered or welded connections ((H01R 4/625, H01R 4/723, H01R 12/59 take precedence))

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  • Connections using shape memory materials, e.g. shape memory metal
  • Soldered or welded connections ((H01R 4/625, H01R 4/723, H01R 12/59 take precedence))
  • [between two or more cables or wires]
  • [comprising preapplied solder]
  • [between cables or wires and terminals]
  • [comprising preapplied solder]
  • [with built-in heat generating elements]
  • [comprising means for eliminating an insulative layer prior to soldering or welding]
  • [comprising means for positioning or holding the parts to be soldered or welded]
  • [comprising means for preventing flowing or wicking of solder or flux in parts not desired]
  • [Welded connections (H01R 4/021 - H01R 4/028 take precedence)]
  • using electrically conductive adhesives
  • Riveted connections (by explosion H01R 4/08)
  • effected by an explosion
  • effected solely by twisting, wrapping, bending, crimping, or other permanent deformation
  • by twisting
  • by wrapping
  • by bending
  • by crimping ((H01R 4/01, H01R 4/2495 take precedence; for coaxial cables H01R 9/0518))
  • [using memory material]
  • [for flat conductive elements, e.g. flat cables (H01R 4/01 takes precedence)]
[for cylindrical elongated bodies, e.g. cables having circular cross-section (H01R 4/01 takes precedence)]

[comprising a U-shaped wire-receiving portion]

[combined with a U-shaped insulation-receiving portion]

[using a body comprising a plurality of cable-accommodating recesses or bores]

[combined with soldering or welding]

{using a crimping sleeve (H01R 4/01 takes precedence)}

having an uneven wire-receiving surface to improve the contact

using a crimping sleeve (H01R 4/01 takes precedence)

{with transversal grooves or threads}

End caps, i.e. of insulating or conductive material for covering or maintaining connections between wires entering the cap from the same end

Connections using contact members penetrating or cutting insulation or cable strands

the contact members having teeth, prongs, pins or needles penetrating the insulation

WARNING

Group H01R 4/2404 is impacted by reclassification into groups H01R 4/2406 and H01R 4/2407.

Groups H01R 4/2404, H01R 4/2406 and H01R 4/2407 should be considered in order to perform a complete search.

having needles or pins

WARNING

Group H01R 4/2406 is incomplete pending reclassification of documents from groups H01R 4/2404, H01R 4/2408 and H01R 4/2412.

Groups H01R 4/2404, H01R 4/2406, H01R 4/2408 and H01R 4/2412 should be considered in order to perform a complete search.

having saw-tooth projections

WARNING

Group H01R 4/2407 is incomplete pending reclassification of documents from group H01R 4/2404, H01R 4/2408 and H01R 4/2412.

Groups H01R 4/2404, H01R 4/2407, H01R 4/2408 and H01R 4/2412 should be considered in order to perform a complete search.

actuated by clamping screws

WARNING

Group H01R 4/2408 is impacted by reclassification into groups H01R 4/2406 and H01R 4/2407.

Groups H01R 4/2406, H01R 4/2407 and H01R 4/2408 should be considered in order to perform a complete search.

actuated by insulated cams or wedges

WARNING

Group H01R 4/2412 is impacted by reclassification into groups H01R 4/2406 and H01R 4/2407.

Groups H01R 4/2406, H01R 4/2407 and H01R 4/2412 should be considered in order to perform a complete search.

the contact members having insulation-cutting edges, e.g. of tuning fork type

the contact members being plates having a single slot

Flat plates, e.g. multi-layered flat plates

mounted in an insulating base

one part of the base being movable to push the cable into the slot

Curved plates

tube-shaped

the contact members having additional means acting on the insulation or the wire, e.g. additional insulation penetrating means, strain relief means or wire cutting knives

the additional means having two or more slotted flat portions

WARNING

Group H01R 4/245 is impacted by reclassification into groups H01R 4/2452 and H01R 4/2456.

Groups H01R 4/245, H01R 4/2452 and H01R 4/2456 should be considered in order to perform a complete search.

in serial configuration, e.g. opposing folded slots

WARNING

Group H01R 4/2452 is incomplete pending reclassification of documents from group H01R 4/245.

Groups H01R 4/245 and H01R 4/2452 should be considered in order to perform a complete search.

forming a U-shape with slotted branches

WARNING

Group H01R 4/2454 is impacted by reclassification into group H01R 4/2455.

Groups H01R 4/2454 and H01R 4/2455 should be considered in order to perform a complete search.
4/2456 . . . . . in parallel configuration

**WARNING**

Group H01R 4/2456 is incomplete pending reclassification of documents from group H01R 4/245.

Groups H01R 4/245 and H01R 4/2456 should be considered in order to perform a complete search.

4/247 . . . . . the contact members being in a slotted tubular configuration, e.g. slotted tube-end

4/2462 . . . . . the contact members being in a slotted bent configuration, e.g. slotted bight

4/2466 . . . . . the contact members having a channel-shaped part, the opposite sidewalls of which comprise insulation-cutting means

4/247 . . . . . the contact members penetrating the insulation being actuated by springs

4/2475 . . . . . the contact members penetrating the insulation being actuated by screws, nuts or bolts

4/2479 . . . . . penetrating the area under the screw head

4/2483 . . . . . penetrating the area under the screw tip

4/2487 . . . . . penetrating by means of the screw thread

4/2491 . . . . . the contact members penetrating the insulation being actuated by conductive cams or wedges

4/2495 . . . . . Insulation penetration combined with permanent deformation of the contact member, e.g. crimping

4/26 . . . Connections in which at least one of the connecting parts has projections which bite into or engage the other connecting part in order to improve the contact ((H01R 4/188, H01R 4/203, H01R 4/5075 take precedence); using shape memory materials H01R 4/01)

4/28 . . . Clamped connections, spring connections (made by means of terminals specially adapted for contact with, or insertion into, printed circuits H01R 12/00)

4/30 . . . utilising a screw or nut clamping member (H01R 4/50 takes precedence; utilising a clamping member acted on by screw or nut H01R 4/38: for coaxial cables H01R 9/0521))

4/301 . . . . . [having means for preventing complete unscrewing of screw or nut]

4/302 . . . . . [having means for preventing loosening of screw or nut, e.g. vibration-proof connection]

4/304 . . . . . [having means for improving contact]

4/305 . . . . . [having means for facilitating engagement of conductive member or for holding it in position]

4/307 . . . . . [characterised by the thread of the screw or nut]

4/308 . . . . . [Conductive members located parallel to axis of screw]

4/32 . . . . . Conductive members located in slot or hole in screw

4/34 . . . . . Conductive members located under head of screw

4/36 . . . . . Conductive members located under tip of screw

4/363 . . . . . [with intermediate part between tip and conductive member]

4/366 . . . . . [intermediate part attached to the tip of the screw]

4/38 . . . utilising a clamping member acted on by screw or nut (H01R 4/50 takes precedence)

4/40 . . . . . Pivotal clamping member

4/42 . . . Clamping area to one side of screw only

4/44 . . . Clamping areas on both sides of screw

4/46 . . . Clamping area between two screws placed side by side

4/48 . . . utilising a spring, clip, or other resilient member (H01R 4/52 takes precedence)

4/4809 . . . . . [using a leaf spring]

4/4818 . . . . . [adapted for axial insertion of a wire end]

4/4827 . . . . . . [with an opening in the housing for insertion of a release tool]

4/4836 . . . . . [with integral release means]

4/4845 . . . . . [insertion of a wire only possible by pressing on the spring]

4/4854 . . . . . [using a wire spring]

4/4863 . . . . . . [Coil spring]

4/4872 . . . . . . [axially compressed to retain wire end]

4/4881 . . . . . . [using a louver type spring]

4/489 . . . . . . [spring force increased by screw, cam, wedge, or other fastening means]

4/50 . . . utilising a cam, wedge, cone or ball [also combined with a screw]

4/5008 . . . . . [using rotatable cam]

4/5016 . . . . . [using a cone]

4/5025 . . . . . [combined with a threaded ferrule operating in a direction parallel to the conductor]

4/5033 . . . . . [using wedge or pin penetrating into the end of a wire in axial direction of the wire]

4/5041 . . . . . [using a tapered groove]

4/505 . . . . . [using an eccentric element]

4/5058 . . . . . [using a ball]

4/5066 . . . . . [mounted in an insulating housing having a cover providing clamping force]

4/5075 . . . . . [having an uneven wire receiving surface to improve the contact]

4/5083 . . . . . [using a wedge]

4/5091 . . . . . . [combined with a screw]

4/52 . . . . . which is spring loaded

4/54 . . . . . [Bayonet or keyhole]

4/56 . . . . . one conductor screwing into another

4/58 . . . . . characterised by the form or material of the contacting members (H01R 4/01 takes precedence)

4/60 . . . Connections between or with tubular conductors (H01R 4/56 takes precedence)

4/62 . . . Connections between conductors of different materials; Connections between or with aluminium or steel-core aluminium conductors (H01R 4/68 takes precedence)

4/625 . . . . . [Soldered or welded connections]

4/64 . . . Connections between or with conductive parts having primarily a non-electric function, e.g. frame, casing, rail
9/00 Structural associations of a plurality of mutually-insulated electrical connecting elements, e.g. terminal strips or terminal blocks; Terminals or binding posts mounted upon a base or in a case; Bases therefor

9/03 Connectors arranged to contact a plurality of the conductors of a multiconductor cable, e.g. tapping connections

9/031 . . . [for multiphase cables, e.g. with contact members penetrating insulation of a plurality of conductors (insulation penetrating contact members in general H01R 4/24)]

9/032 . . . [for shielded multiconductor cable (coaxial cables with one conductor surrounded by shield H01R 9/05; flat shielded cables H01R 12/594)]

**WARNING:** Groups H01R 9/032-H01R 9/038 are no longer used for the classification of new documents as from January 1, 2011.

The content of these groups is being reclassified into groups H01R 13/658 – H01R 13/659.

All groups listed in this Warning should be considered in order to perform a complete search.

9/034 . . . [connection of the shield to an additional grounding conductor]

9/035 . . . [twisted pair surrounded by shield]

9/037 . . . [connection to shield by action of a resilient member]

9/038 . . . [each conductor being individually surrounded by shield]

9/05 . . . for coaxial cables

9/0503 . . . [Connection between two cable ends]

9/0506 . . . [Connection between three or more cable ends]

9/0509 . . . [Tapping connections]

9/0512 . . . [Connections to an additional grounding conductor]

9/0515 . . . [Connection to a rigid planar substrate, e.g. printed circuit board]

9/0518 . . . [Connection to outer conductor by crimping or by crimping ferrule]

9/0521 . . . [Connection to outer conductor by action of a nut]

9/0524 . . . [Connection to outer conductor by action of a clamping member, e.g. screw fastening means (H01R 9/0515 takes precedence)]

9/0527 . . . [Connection to outer conductor by action of a resilient member, e.g. spring]

9/053 . . . using contact members penetrating insulation

9/11 . . . End pieces for multiconductor cables supported by the cable and for facilitating connections to other conductive members, e.g. for liquid cooled welding cables

9/15 . . . Connectors for wire wrapping

9/16 . . . Fastening of connecting parts to base or case; Insulating connecting parts from base or case

9/18 . . . Fastening by means of screw or nut

9/20 . . . Fastening by means of rivet or eyelet

9/22 . . . Bases, e.g. strip, block, panel (for printed circuits H01R 12/50)

9/223 . . . [Insulating enclosures for terminals (for switches H01H 9/0264)]

9/226 . . . [comprising a plurality of conductive flat strips providing connection between wires or components (H01R 9/2425 takes precedence)]

9/24 . . . Terminal blocks

9/2408 . . . [Modular blocks (H01R 9/26 takes precedence)]

9/2416 . . . [Means for guiding or retaining wires or cables connected to terminal blocks]

9/2425 . . . [Structural association with built-in components (for coupling parts H01R 13/66)]

9/2433 . . . [with built-in switch]

9/2441 . . . [with built-in overvoltage protection]

9/245 . . . [with built-in fuse]

9/2458 . . . [Electrical interconnections between terminal blocks]

9/2466 . . . [using a planar conductive structure, e.g. printed circuit board]

9/2475 . . . [Means facilitating correct wiring, e.g. marking plates, identification tags]

9/2483 . . . [specially adapted for ground connection]

9/2491 . . . [Terminal blocks structurally associated with plugs or sockets]

9/26 . . . Clip-on terminal blocks for side-by-side rail- or strip-mounting

9/2608 . . . [Fastening means for mounting on support rail or strip (H01R 9/2691 takes precedence; for switch or other electrical device H02B 1/042)]

9/2616 . . . [End clamping members]

9/2625 . . . [with built-in electrical component]

9/2633 . . . [with built-in switch]

9/2641 . . . [with built-in overvoltage protection]

9/265 . . . [with built-in fuse]

9/2658 . . . [with built-in data-bus connection]

9/2666 . . . [with built-in test-points]

9/2675 . . . [Electrical interconnections between two blocks, e.g. by means of busbars]

9/2683 . . . [Marking plates or tabs]

9/2691 . . . [with ground wire connection to the rail]

9/28 . . . Terminal boards
Individual connecting elements providing two or more spaced connecting locations for conductive members which are, or may be, thereby interconnected, e.g. end pieces for wires or cables supported by the wire or cable and having means for facilitating electrical connection to some other wire, terminal, or conductive member, blocks of binding posts

- characterised by the form or arrangement of the conductive interconnection between the connecting locations

End pieces terminating in an eye, hook, or fork

- the hook being adapted for hanging on overhead or other suspended lines, e.g. hot line clamp

End pieces consisting of a ferrule or sleeve

- [for connections to batteries]
- [comprising means for facilitating engagement or disengagement, e.g. quick release terminal]
- [Bolt, screw or threaded ferrule parallel to the battery post]
- [comprising means for preventing corrosion, e.g. covers, enclosures filled with gel]
- [Battery post and cable secured by the same locking means]
- [having means for improving contact between battery post and clamping member, e.g. uneven interior surface]
- [Intermediate parts between battery post and cable end piece]
- [Interconnections between batteries]
- [characterised by the shape or the structure of the battery post]

End pieces held in contact by a magnet

End pieces with two or more terminations

Structural associations of a plurality of mutually-insulated electrical connecting elements, specially adapted for printed circuits, e.g. printed circuit boards [PCBs], flat or ribbon cables, or like generally planar structures, e.g. terminal strips, terminal blocks; Coupling devices specially adapted for printed circuits, flat or ribbon cables, or like generally planar structures; Terminals specially adapted for contact with, or insertion into, printed circuits, flat or ribbon cables, or like generally planar structures (printed connections to, or between, printed circuits H05K 1/11)

- Fixed connections
- for rigid printed circuits or like structures

- Terminal blocks providing connections to wires or cables
- connecting to other rigid printed circuits or like structures

- by interconnection through aligned holes in the boards or multilayer board
- the printed circuits being on the same board (with plated through holes H05K 3/42)
- connecting to cables except for flat or ribbon cables

- characterised by the terminals
- surface mounting terminals
- terminals for insertion into holes
- [Terminals having a press fit or a complaint portion and a shank passing through a hole in the printed circuit board]
- for flexible printed circuits, flat or ribbon cables or like structures
- [connections to contact elements]
- [for shielded flat cable]
- [Connection of the shield to an additional grounding conductor, e.g. drain wire]
- [Each conductor being individually surrounded by shield, e.g. multiple coaxial cables in flat structure]
- connecting to flexible printed circuits, flat or ribbon cables or like structures
- by means of interconnecting elements
- [having contacts penetrating insulation for making contact with conductors, e.g. needle points]
- connecting to rigid printed circuits or like structures
- connecting to another shape cable
- characterised by the terminal
- insulation penetrating terminals
- [with contacts having at least a slotted plate for penetration of cable insulation, e.g. insulation displacement contacts for round conductor flat cables]
- comprising deformable portions
- deformable terminals, e.g. crimping terminals
- Coupling devices
- [Guiding, mounting, polarizing or locking means; Extractors (for printed circuit boards H05K)]
- [Locking or fixing a connector to a PCB]
- [Snap means]
- [integral with the coupling device]
- [not integral with the coupling device]
or like structures
for flexible printed circuits, flat or ribbon cables
for rigid printing circuits or like structures
with switch operated by engagement of PCB
{ Arrangements for power supply }
{ for rigid printing circuits or like structures }
{ containing contact members presenting a
coupling device supported only by cooperation
{ with switch operated by engagement of PCB }
with PCB }
{ Arrangements for power supply }
{ with switch operated by engagement of PCB }
for rigid printing circuits or like structures
{ co-operating with the surface of the printed
circuit or with a coupling device exclusively
provided on the surface of the printed circuit
{ with contacts abutting directly the printed
circuit; Button contacts therefore provided on
the printed circuit }
{ Coupling device provided on the PCB }
{ Contact members provided on the PCB
without an insulating housing (contacts for
abutting H01R 12/714) }
coupling with the edge of the rigid printed
circuits or like structures
{ cooperating directly with the edge of the
rigid printed circuits }  
{ coupling devices mounted on the edge of the
printed circuits }
{ containing contact members forming a
right angle }
{ containing contact members presenting a
contact carrying strip, e.g. edge-like strip }
{ Coupling devices presenting arrays of
contacts }
{ Coupling devices presenting arrays of
contacts }
{ Coupling devices providing an insulating
housing on the edge of the PCB }
{ connecting to other rigid printed circuits or
like structures }
{ Printed circuits being in the same plane }
{ Printed circuits including an angle
between each other }
{ Printed circuits being substantially
perpendicular to each other (for printed
connections H05K 3/366) }
connecting to cables except for flat or ribbon
cables
{ for flexible printed circuits, flat or ribbon cables
or like structures }
{ Details }
{ Strain relieving means }
{ Retainers }
{ Ground or shield arrangements }
{ Coupling parts carrying pins, blades or
analogous contacts (H01R 12/78, H01R 12/79
take precedence) }
{ Coupling parts carrying sockets, clips or
analogous counter-contacts (H01R 12/78,
H01R 12/79 take precedence) }
{ connecting to other flexible printed circuits, flat
or ribbon cables or like structures }
{ connecting to rigid printed circuits or like
structures }
{ connecting to another cable except for flat or
ribbon cable }
connected with low or zero insertion force
connected with pivoting of printed circuits or
like after insertion
contact pressure producing means, contacts
activated after insertion of printed circuits or
like structures
{ Fluid activated }
{ activated by shape memory material }
acting automatically by insertion of rigid
printed or like structures
acting manually by rotating or pivoting
connector housing parts
allowing relative movement between coupling
parts, e.g. floating or self aligning (for coupling
device not specially adapted for printed circuits,
flat or ribbon cables, or like generally planar
structures, H01R 13/6315 takes precedence)
Details of coupling devices of the kinds covered by
groups H01R 12/70 or H01R 24/00 - H01R 33/00
{ Electrical coupling combined with fluidic
coupling }
Contact members
{ formed by the conductors of a cable end }
{ characterised by the material, e.g. plating, or
coating materials }
{ Plated dielectric material }
Pins or blades for co-operation with sockets
Resilient pins or blades (carrying separate
resilient parts H01R 13/15 )
{ co-operating with sockets having a circular
transverse section }  
{ co-operating with sockets having a
rectangular transverse section }  
{ co-operating with sockets having a
square transverse section }  
{ Resiliently-mounted rigid pins or blades }
Sockets for co-operation with pins or blades
Resilient sockets (carrying separate resilient
parts H01R 13/15)
{ co-operating with pins having a circular
transverse section }  
{ forked sockets having two legs }
{ co-operating with pins or blades having a
rectangular transverse section }  
{ co-operating with pins or blades having a
square transverse section }  
U-shaped sockets having inwardly bent legs,
e.g. spade type
Resiliently-mounted rigid sockets
Pins, blades or sockets having separate spring
member for producing or increasing contact
pressure
13/434 . . . . by separate resilient locking means on contact member, e.g. retainer collar or ring around contact member
13/436 . . . . Securing a plurality of contact members by one locking piece [or operation]
13/4361 . . . . [Insertion of locking piece perpendicular to direction of contact insertion]
13/4362 . . . . [comprising a temporary and a final locking position]
13/4364 . . . . Insertion of locking piece from the front
13/4365 . . . . [comprising a temporary and a final locking position]
13/4367 . . . . Insertion of locking piece from the rear
13/4368 . . . . [comprising a temporary and a final locking position]
13/44 . . . . Means for preventing access to live contacts [making use of a switch actuated by engagement of counterpart H01R 13/7036]
13/443 . . . . Dummy plugs
13/447 . . . . Shutter or cover plate
13/453 . . . . Shutter or cover plate opened by engagement of counterpart
13/4532 . . . . [Rotating shutter]
13/4534 . . . . [Laterally sliding shutter]
13/4536 . . . . [Inwardly pivoting shutter]
13/4538 . . . . [Covers sliding or withdrawing in the direction of engagement]
13/46 . . . . Bases; Cases
13/465 . . . . [Identification means, e.g. labels, tags, markings (H01R 9/2475, H01R 9/2683 take precedence)]
13/50 . . . . formed as an integral body (H01R 13/514 takes precedence)
13/501 . . . . [comprising an integral hinge or a frangible part]
13/502 . . . . composed of different pieces (H01R 13/514 takes precedence)
13/5025 . . . . [one or more pieces being of resilient material]
13/504 . . . . different pieces being moulded, cemented, welded, e.g. ultrasonic, or swaged together
13/5045 . . . . [different pieces being assembled by press-fit]
13/506 . . . . assembled by snap action of the parts
13/508 . . . . assembled by a [separate] clip or spring
13/512 . . . . assembled by screw or screws
13/514 . . . . composed as a modular blocks or assembly, i.e. composed of co-operating parts provided with contact members or holding contact members between them
13/516 . . . . Means for holding or embracing insulating body, e.g. casing [hoods]
13/518 . . . . for holding or embracing several coupling parts, e.g. frames
13/52 . . . . Dustproof, splashproof, drip-proof, waterproof, or flameproof cases
13/5202 . . . . [Sealing means between parts of housing or between housing part and a wall, e.g. sealing rings]
13/5205 . . . . [Sealing means between cable and housing, e.g. grommet (H01R 13/5221 takes precedence)]
13/5208 . . . . [having at least two cable receiving openings]
13/521 . . . . [Sealing between contact members and housing, e.g. sealing insert]
of coupling parts or for holding them in engagement

Means for relieving strain on wire connection, e.g. leads at outlet from coupling part

Means for preventing chafing or fracture of flexible cable or wire

Bolts operating in a direction transverse to the threaded ferrule or bolt operating in a direction around cable and connections

{ allowing different orientations of the cable with respect to the coupling direction }

{ the strain relief being achieved by molding parts around cable and connections }

Grip increasing with strain force

Threaded ferrule or bolt operating in a direction parallel to the cable or wire

Bolts operating in a direction transverse to the cable or wire

Means for supporting coupling part when not engaged

Means for facilitating engagement or disengagement of coupling parts or for holding them in engagement

{ Two-part coupling devices held in engagement by a magnet }
13/6315 . . . . (allowing relative movement between coupling parts, e.g. floating connection (for coupling devices specially adapted for printed circuits, flat or ribbon cables, or like generally planar structures, H01R 12/91 takes precedence))

13/633 . . . . for disengagement only {in combination with safety switch H01R 13/7132)

13/6335 . . . . {comprising a handle}

13/6336 . . . . by mechanical pressure, e.g. spring force

13/6337 . . . . by fluid pressure, e.g. explosion

13/6349 . . . . Additional means for holding or locking coupling parts together, after engagement, {e.g. separate keylock, retainer strap}

13/63492 . . . . {for extension cord}

13/6393 . . . . {for wall or panel outlets}

13/6397 . . . . {with means for preventing unauthorised use}

13/64 . Means for preventing incorrect coupling

13/641 . by indicating incorrect coupling; by indicating correct or full engagement

13/642 . by position or shape of contact members

13/645 . by exchangeable elements on case or base

13/6453 . . . . {comprising pin-shaped elements, capable of being orientated in different angular positions around their own longitudinal axes, e.g. pins with hexagonal base}

13/6456 . . . . {comprising keying elements at different positions along the periphery of the connector}

13/646 . specially adapted for high-frequency, e.g. structures providing an impedance match or phase match (non-coaxial protective earth or shield arrangements H01R 13/648 - H01R 13/659; coaxial connectors specifically adapted for high frequency H01R 24/40 - H01R 24/56)

**WARNING**

This group and its subgroups are not complete pending completion of a reclassification, see also H01R 9/035, H01R 13/6658, H01R 24/44, H01R 24/00, H01R 12/00

13/6461 . . . . Means for preventing cross-talk

13/6463 . . . . using twisted pairs of wires

13/6464 . . . . by adding capacitive elements

13/6466 . . . . on substrates, e.g. PCBs [Printed Circuit Boards]

13/6467 . . . . by cross-over of signal conductors

13/6469 . . . . on substrates

13/6471 . . . . by special arrangement of ground and signal conductors, e.g. GSGS [Ground-Signal-Ground-Signal]

13/6473 . . . . Impedance matching

13/6474 . . . . by variation of conductive properties, e.g. by dimension variations

13/6476 . . . . by making an aperture, e.g. a hole

13/6477 . . . . by variation of dielectric properties

13/648 . Protective earth or shield arrangements on coupling devices (coaxially arranged shields H01R 24/38) {e.g. anti-static shielding}

13/6485 . . . . {Electrostatic discharge protection (in general H05F 100, for electric apparatus H05K 9/0067)}

13/652 . . . . with earth pin, blade or socket

13/655 . . . . with earth brace

13/658 . . . . High frequency shielding arrangements, e.g. against EMI [Electro-Magnetic Interference] or EMP [Electro-Magnetic Pulse] (coaxial coupling devices specially adapted for high frequency H01R 24/40; for flat or ribbon cable connectors H01R 12/774; for coaxial cable H01R 9/005)

**WARNING**

Groups H01R 13/658 – H01R 13/659 are incomplete pending reclassification of documents from groups H01R 9/032 – H01R 9/038.

All groups listed in this Warning should be considered in order to perform a complete search.

13/6581 . . . . Shield structure

13/6582 . . . . with resilient means for engaging mating connector

13/6583 . . . . with separate conductive resilient members between mating shield members

13/6584 . . . . formed by conductive elastomeric members, e.g. flat gaskets or O-rings

13/6585 . . . . Shielding material individually surrounding or interposed between mutually spaced contacts

13/6586 . . . . for separating multiple connector modules

13/6587 . . . . for mounting on PCBs

13/6588 . . . . with through openings for individual contacts

13/6589 . . . . with wires separated by conductive housing parts

13/659 . . . . with plural ports for distinct connectors

13/6591 . . . . Specific features or arrangements of connection of shield to conductive members

13/6592 . . . . the conductive member being a shielded cable

13/6593 . . . . the shield being composed of different pieces

13/6594 . . . . the shield being mounted on a PCB and connected to conductive members

13/6595 . . . . with separate members fixing the shield to the PCB

13/6596 . . . . the conductive member being a metal grounding panel

13/6597 . . . . the conductive member being a contact of the connector

13/6598 . . . . Shield material

13/6599 . . . . Dielectric material made conductive, e.g. plastic material coated with metal

13/66 . . Structural association with built-in electrical component (coupling devices having concentrically or coaxially-arranged contacts H01R 24/38 - H01R 24/56)

13/6608 . . . . {with built-in single component (H01R 13/68, H01R 13/70 take precedence)}

13/6616 . . . . {with resistor}

13/6625 . . . . {with capacitive component}

13/6633 . . . . {with inductive component, e.g. transformer}

13/6641 . . . . {with diode (with LED H01R 13/7175)}

13/665 . . . . {with built-in electronic circuit (H01R 13/719, H01R 13/719 take precedence)}
WARNING

This group is no longer used for the classification of new documents as from January 1, 2011. The backlog of this group is being continuously reclassified to H01R 13/6466 and H01R 13/6469

13/666 . . . [with built-in overvoltage protection]
13/667 . . . [with built-in power supply]
13/668 . . . [with built-in sensor]
13/6691 . . . [with built-in signalling means (H01R 13/717 takes precedence)]
13/68 . . . with built-in fuse

WARNING

The subgroups of H01R 13/68 are not complete pending completion of a reclassification, see also this group

13/684 . . . the fuse being removable
13/688 . . . with housing part adapted for accessing the fuse
13/692 . . . . Turnable housing part
13/696 . . . the fuse being integral with the terminal, e.g. pin or socket
13/70 . . . with built-in switch
13/701 . . . [the switch being actuated by an accessory, e.g. cover, locking member]
13/703 . . . operated by engagement or disengagement of coupling parts, [e.g. dual-continuity coupling part] (H01R 13/71 takes precedence)
13/7031 . . . [Shorting, shunting or bussing of different terminals interrupted or effected on engagement of coupling part, e.g. for ESD protection, line continuity]
13/7032 . . . . [making use of a separate bridging element directly cooperating with the terminals]
13/7033 . . . . [making use of elastic extensions of the terminals]
13/7034 . . . . [the terminals being in direct electric contact separated by double sided connecting element (for printed circuit boards H01R 12/7094)]
13/7035 . . . . [comprising a separated limit switch]
13/7036 . . . . [the switch being in series with coupling part, e.g. dead coupling, explosion proof coupling]
13/7037 . . . . [making use of a magnetically operated switch]
13/7038 . . . . [making use of a remote controlled switch, e.g. relais, solid state switch activated by the engagement of the coupling parts]
13/7039 . . . . [the coupling part with coding means activating the switch to establish different circuits]
13/707 . . . interlocked with contact members or counterpart
13/71 . . . Contact members of coupling parts operating as switch [e.g. linear or rotational movement required after mechanical engagement of coupling part to establish electrical connection]
13/713 . . . . . the switch being a safety switch
13/7132 . . . . . [having ejecting mechanisms]
13/7135 . . . . . [with ground fault protector (H01R 13/7132 takes precedence)]
13/7137 . . . . . [with thermal interrupter (H01R 13/7132 takes precedence)]
13/717 . . . with built-in light source
13/7172 . . . . [Conduits for light transmission]
13/7175 . . . . [Light emitting diodes (LEDs)]
13/7177 . . . . [filament or neon bulb]
13/719 . . . . . specially adapted for high frequency, e.g. with filters

WARNING

The subgroups of H01R 13/719 are not complete pending completion of a reclassification, see also H01R 13/6466 and the respective subgroups

13/7193 . . . with ferrite filters
13/7195 . . . with planar filters with openings for contacts
13/7197 . . . with filters integral with or fitted onto contacts, e.g. tubular filters
13/72 . . . Means for accommodating flexible lead within the holder
13/73 . . . Means for mounting coupling parts to apparatus or structures, e.g. to a wall
13/74 . . . Means for mounting coupling parts in openings of a panel
13/741 . . . [using snap fastening means]
13/743 . . . . . [integral with the housing]
13/745 . . . . . [separate from the housing]
13/746 . . . . [using a screw ring]
13/748 . . . . . [using one or more screws (H01R 13/746 takes precedence)]

24/00 Two-part coupling devices, or either of their cooperating parts, characterised by their overall structure

NOTE

In this group, it is desirable to add the indexing codes of groups H01R 2101/00 - H01R 2107/00

24/005 . . . [requiring successive relative motions to complete the coupling, e.g. bayonet type]
24/20 . . . Coupling parts carrying sockets, clips or analogous contacts and secured only to wire or cable
24/22 . . . with additional earth or shield contacts
24/28 . . . Coupling parts carrying pins, blades or analogous contacts and secured only to wire or cable
24/30 . . . with additional earth or shield contacts
24/38 . . . having concentrically or coaxially arranged contacts
24/40 . . . specially adapted for high frequency
24/42 . . . comprising impedance matching means or electrical components, e.g. filters or switches
24/44 . . . . . [comprising impedance matching means
24/46 . . . . . [comprising switches
24/48 . . . . . [comprising protection devices, e.g. overvoltage protection
24/50 . . . . . mounted on a PCB [Printed Circuit Board]
24/52 . . . . . mounted in or to a panel or structure
24/525 . . . . . [Outlets]
24/54 . . . . . Intermediate parts, e.g. adapters, splitters or elbows
24/542 . . . { Adapters }
24/545 . . . { Elbows } 
24/547 . . . { Splitters } 
24/56 . . . specially adapted to a specific shape of cables, e.g. corrugated cables, twisted pair cables, cables with two screens or hollow cables
24/562 . . . { Cables with two screens } 
24/564 . . . { Corrugated cables } 
24/566 . . . { Hollow cables } 
24/568 . . . { Twisted pair cables } 
24/58 . Contacts spaced along longitudinal axis of engagement
24/60 . Contacts spaced along planar side wall transverse to longitudinal axis of engagement
24/62 . Sliding engagements with one side only, e.g. modular jack coupling devices
24/64 . . . for high frequency, e.g. RJ 45
24/66 . with pins, blades or analogous contacts and secured to apparatus or structure, e.g. to a wall
24/68 . . mounted on directly pluggable apparatus
24/70 . . with additional earth or shield contacts
24/76 . with sockets, clips or analogous contacts and secured to apparatus or structure, e.g. to a wall
24/78 . . with additional earth or shield contacts
24/84 . Hermaphroditic coupling devices
24/86 . Parallel contacts arranged about a common axis

25/00 Coupling parts adapted for simultaneous co-operation with two or more identical counterparts, e.g. for distributing energy to two or more circuits (supported only by co-operation with a counterpart 25/00; with a holder adapted for supporting apparatus to which its counterpart is attached 25/03)

25/003 . { the coupling part being secured only to wires or cables }
25/006 . { the coupling part being secured to apparatus or structure, e.g. duplex wall receptacle }
25/14 . Rails or bus-bars constructed so that the counterparts can be connected thereto at any point along their length (supporting elements for lighting devices, displaceable along guiding elements and making electrical contact with conductors running along the guiding elements F21V 21/35)
25/142 . { Their counterparts }
25/145 . { Details, e.g. end pieces or joints (H01R 25/147 takes precedence) }
25/147 . { Low voltage devices, i.e. safe to touch live conductors }
25/16 . Rails or bus-bars provided with a plurality of discrete connecting locations for counterparts
25/161 . { Details }
25/162 . . { Electrical connections between or with rails or bus-bars (rails having primarily a non electrical function H01R 4/64) }
25/164 . . { Connecting locations formed by flush mounted apparatus }
25/165 . . { Connecting locations formed by surface mounted apparatus }
25/167 . . { Connecting locations formed by staggering mounted apparatus }
25/168 . . { the connecting locations being situated away from the rail or bus-bar }

27/00 Coupling parts adapted for co-operation with two or more dissimilar counterparts ( { for dissimilar contact members H01R 13/35; supported only by co-operation with a counterpart H01R 31/00; with a holder adapted for supporting apparatus to which its counterpart is attached H01R 33/90 ) }
27/02 . . for simultaneous co-operation with two or more { dissimilar } counterparts

29/00 Coupling parts for selective co-operation with a counterpart in different ways to establish different circuits, e.g. for voltage selection, for series-parallel selection, (programmable connectors )

31/00 Coupling parts supported only by co-operation with counterpart

31/005 . . { Intermediate parts for distributing signals }
31/02 . Intermediate parts for distributing energy to two or more circuits in parallel, e.g. splitter ( with a holder adapted for supporting apparatus to which its counterpart is attached H01R 33/92 )
31/06 . Intermediate parts for linking two coupling parts, e.g. adapter ( with a holder adapted for supporting apparatus to which its counterpart is attached H01R 33/94 )
31/065 . . . { with built-in electric apparatus }
31/08 . Short-circuiting members for bridging contacts in a counterpart
31/085 . . . { Short circuiting bus-strips }

33/00 Coupling devices specially adapted for supporting apparatus and having one part acting as a holder providing support and electrical connection via a counterpart which is structurally associated with the apparatus, e.g. lamp holders; Separate parts thereof

33/02 . Single-pole devices, e.g. holder for supporting one end of a tubular incandescent or neon lamp
33/05 . Two-pole devices
33/06 . with two current-carrying pins, blades or analogous contacts, having their axes parallel to each other
33/065 . . . { for supporting starter switches }
33/08 . . for supporting tubular fluorescent lamp
33/0809 . . . . { having contacts on one side only }
33/0818 . . . . { for a plurality of lamps }
33/0827 . . . . { characterised by the contacts }
33/0836 . . . . . . . . { characterised by the lamp holding means }
33/0845 . . . . . . . . { with axially resilient member }
33/0854 . . . . . . . . { with lamp rotating means }
33/0863 . . . . . . { characterised by the mounting means }
33/0872 . . . . . . { for mounting in an opening of a structure }
33/0881 . . . . { composed of different pieces }
33/089 . . . . { integral with starter holding structure (H01R 33/065 for starters only) }
33/09 . . for baseless lamp bulb
33/18 . . having only abutting contacts
33/20 . . having concentrically or coaxially arranged contacts
33/205 . . . . { secured to structure or printed circuit board }
33/22 . . . for screw type base, e.g. for lamp
33/225 . . . . { secured to structure or printed circuit board }
33/46 . . . for bayonet type base
33/465 . . . { secured to structure or printed circuit board }
Dustproof, splashproof, drip-proof, waterproof, or holders with built-in electrical component counter-part to a coupling part

Holders formed as intermediate parts for linking a counterparts at least one of which is attached to distributing energy in parallel through two or more holders formed as intermediate parts for dissimilar counterparts adapted for co-operation with two or more identical counterparts for compact fluorescent lamps

Three-pole devices

Flexible or turnable line connectors { i.e. the rotation angle being limited } (rotary current collectors, distributors H01R 39/00)

Flexible line connectors { without frictional contact members }

Having a flexible conductor wound around a rotation axis

Turnable line connectors with limited rotation angle { with frictional contact members }

Rotary current collectors, distributors or interrupters

Details { for dynamo electric machines { for current collectors not particularly for dynamo electric machines H01R 39/60, H01R 39/64 } }

Commutators ( wherein the segments are formed by extensions of dynamo-electric machine winding H02K )

Characterised by the materials used, e.g. ceramics

Insulating materials

Communator ( wherein the segments are formed by means of moulded or cast material applied during or after assembly )

Contacts for co-operation with commutator or slip-ring, e.g. contact brush

Characterised by the material thereof

Incorporating lubricating or polishing ingredient

Laminated contacts; Wire contacts, e.g. metallic brush, carbon fibres

Solid sliding contacts, e.g. carbon brush

End caps on carbon brushes to transmit spring pressure

Roller contacts; Ball contacts

Liquid contacts

Connections of conductor to commutator segment

Connections of conductor to slip-ring

Connections of cable or wire to brush

Brush holders

Characterised by the application of pressure to brush
39/385 \ldots \{\text{Means for mechanical fixation of the brush holder}\}
39/386 \ldots \{\text{Electrically insulated bolts}\}
39/388 \ldots \{\text{characterised by the material of the brush holder}\}
39/39 \ldots \text{wherein the brush is fixedly mounted in the holder}
39/40 \ldots \text{enabling brush movement within holder during current collection}
39/41 \ldots \text{cartridge type}
39/415 \ldots \{\text{with self-recoiling spring}\}
39/42 \ldots \{\text{Devices for lifting brushes}\}
39/44 \ldots \{\text{Devices for shifting brushes}\}
39/46 \ldots \text{Auxiliary means for improving current transfer, or for reducing or preventing sparking or arcing}
39/48 \ldots \text{by air blast; by surrounding collector with non-conducting liquid or gas}
39/50 \ldots \{\text{Barriers placed between brushes}\}
39/52 \ldots \{\text{by use of magnets}\}
39/54 \ldots \{\text{by use of impedance between brushes or segments}\}
39/56 \ldots \{\text{Devices for lubricating or polishing slip-rings or commutators during operation of the collector}\}
39/58 \ldots \text{Means structurally associated with the current collector for indicating condition thereof, e.g. for indicating brush wear}
39/59 \ldots \text{Means structurally associated with the brushes for interrupting current (H01R 39/58 takes precedence)}
39/60 \ldots \{\text{Devices for interrupted current collection, e.g. commutating device, distributor, interrupter (self-interrupters H01H, e.g. H01H 51/34)}\}
39/62 \ldots \{\text{with more than one brush co-operating with the same set of segments}\}
39/64 \ldots \text{Devices for uninterrupted current collection}
39/643 \ldots \{\text{through ball or roller bearing}\}
39/646 \ldots \{\text{through an electrical conductive fluid}\}
41/00 \text{Non-rotary current collectors for maintaining contact between moving and stationary parts of an electric circuit (end pieces terminating in a hook or the like H01R 11/12; current collectors for power supply lines of electrically-propelled vehicles B60L 5/00)}
41/02 \ldots \{\text{Devices for interrupted current collection, e.g. distributor (electrically-operated selector switches H01H 67/00)}\}
43/00 \text{Apparatus or processes specially adapted for manufacturing, assembling, maintaining, or repairing of line connectors or current collectors or for joining electric conductors (of trolley lines B60M 1/28)}
43/002 \ldots \{\text{Maintenance of line connectors, e.g. cleaning}\}
43/005 \ldots \{\text{for making dustproof, splashproof, drip-proof, waterproof, or flameproof connection, coupling, or casing}\}
43/007 \ldots \{\text{for elastomeric connecting elements}\}
43/01 \ldots \text{for connecting unstripped conductors to contact members having insulation cutting edges}
43/015 \ldots \{\text{Hand tools}\}
43/02 \ldots \{\text{for soldered or welded connections}\}
43/0207 \ldots \{\text{Ultrasonic-, H.F.-, cold- or impact welding}\}
43/0214 \ldots \{\text{Resistance welding (H01R 43/0228 takes precedence)}\}
43/021 \ldots \{\text{Laser welding (H01R 43/0228 takes precedence)}\}
43/0228 \ldots \{\text{without preliminary removing of insulation before soldering or welding}\}
43/0235 \ldots \{\text{for applying solder (H01R 43/0228 takes precedence)}\}
43/0242 \ldots \{\text{comprising means for controlling the temperature, e.g. making use of the curie point}\}
43/0249 \ldots \{\text{for simultaneous welding or soldering of a plurality of wires to contact elements}\}
43/0256 \ldots \{\text{for soldering or welding connectors to a printed circuit board}\}
43/0263 \ldots \{\text{for positioning or holding parts during soldering or welding process}\}
43/027 \ldots \{\text{for connecting conductors by clips}\}
43/0275 \ldots \{\text{by using explosive force}\}
43/033 \ldots \{\text{for wrapping or unwrapping wire connections}\}
43/0335 \ldots \{\text{for unwrapping}\}
43/04 \ldots \{\text{for forming connections by deformation, e.g. crimping tool}\}
43/042 \ldots \{\text{Hand tools for crimping}\}
43/0421 \ldots \{\text{combined with other functions, e.g. cutting}\}
43/0422 \ldots \{\text{operated by an explosive force}\}
43/0424 \ldots \{\text{with more than two radially actuated mandrels}\}
43/0425 \ldots \{\text{with mandrels actuated in axial direction to the wire}\}
43/0427 \ldots \{\text{fluid actuated hand crimping tools}\}
43/0428 \ldots \{\text{Power-driven hand crimping tools}\}
43/045 \ldots \{\text{with contact member feeding mechanism}\}
43/048 \ldots \{\text{Crimping apparatus or processes (H01R 43/042 takes precedence)}\}
43/0482 \ldots \{\text{combined with contact member manufacturing mechanism}\}
43/0484 \ldots \{\text{for eyelet contact members}\}
43/0486 \ldots \{\text{with force measuring means}\}
43/0488 \ldots \{\text{with crimp height adjusting means}\}
43/05 \ldots \{\text{with wire-insulation stripping}\}
43/052 \ldots \{\text{with wire-feeding mechanism}\}
43/055 \ldots \{\text{with contact member feeding mechanism}\}
43/058 \ldots \{\text{Crimping mandrels}\}
43/0585 \ldots \{\text{for crimping apparatus with more than two radially actuated mandrels}\}
43/06 \ldots \{\text{Manufacture of commutators}\}
43/08 \ldots \{\text{in which segments are not separated until after assembly}\}
43/10 \ldots \{\text{Manufacture of slip-rings}\}
43/12 \ldots \{\text{Manufacture of brushes}\}
43/14 \ldots \{\text{Maintenance of current collectors, e.g. reshaping of brushes, cleaning of commutators}\}
43/16 \ldots \{\text{for manufacturing contact members, e.g. by punching and by bending}\}
43/18 \ldots \{\text{for manufacturing bases or cases for contact members}\}
43/20 \ldots \{\text{for assembling or disassembling contact members with insulating base, case or sleeve}\}
43/205 \ldots \{\text{with a panel or printed circuit board}\}
43/22 \ldots \{\text{Hand tools}\}
43/24 \ldots \{\text{Assembling by moulding on contact members}\}
43/26 \ldots \{\text{for engaging or disengaging the two parts of a coupling device (structural association with two-part coupling device H01R 13/629)}\}
for wire processing before connecting to contact members, not provided for in groups H01R 43/02 - H01R 43/26

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>2101/00</td>
<td>One pole</td>
</tr>
<tr>
<td>2103/00</td>
<td>Two poles</td>
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<tr>
<td>2105/00</td>
<td>Three poles</td>
</tr>
<tr>
<td>2107/00</td>
<td>Four or more poles</td>
</tr>
<tr>
<td>2201/00</td>
<td>Connectors or connections adapted for particular applications</td>
</tr>
<tr>
<td>2201/02</td>
<td>for antennas</td>
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<tr>
<td>2201/04</td>
<td>for network, e.g. LAN connectors</td>
</tr>
<tr>
<td>2201/06</td>
<td>for computer periphery</td>
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<td>2201/08</td>
<td>for halogen lamps</td>
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<tr>
<td>2201/10</td>
<td>for dynamoelectric machines</td>
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<td>for medicine and surgery</td>
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<td>for television</td>
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<tr>
<td>2201/20</td>
<td>for testing or measuring purposes</td>
</tr>
<tr>
<td>2201/22</td>
<td>for transformers or coils</td>
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<tr>
<td>2201/24</td>
<td>for radio transmission</td>
</tr>
<tr>
<td>2201/26</td>
<td>for vehicles</td>
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</table>