



(11) **EP 2 448 069 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
02.05.2012 Bulletin 2012/18

(51) Int Cl.:
H01R 13/58 (2006.01)

(21) Application number: **11186644.8**

(22) Date of filing: **26.10.2011**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **26.10.2010 ES 201031566**

(71) Applicant: **Tyco Electronics AMP España S.A.**
08021 Barcelona (ES)

(72) Inventor: **Gatnau Navarro, Jordi**
08019 Barcelona (ES)

(74) Representative: **Elzaburu Marquez, Alberto**
Elzaburu S.L.P.
Miguel Angel 21, 2°
28010 Madrid (ES)

(54) **Communication connector housing box**

(57) A housing box (14) for an internal communications connector (13) which is included in a communications connection unit for terminating a data communications cable, in which the housing box (14) includes a re-

lieved section (46) for rupture which comprises a protrusion (47) projecting towards the exterior of the housing box (14) for receiving a rupture force for rupturing the edge joining the relieved section (46) to a recessed zone (45).

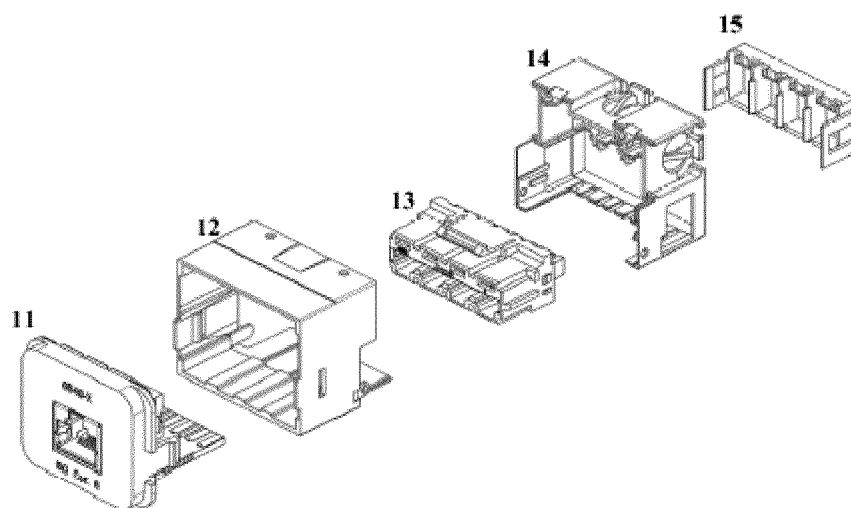


FIG 1

EP 2 448 069 A1

Description

FIELD OF THE INVENTION

[0001] The present invention relates, in general, to a data communications connection unit or kit which includes an internal communications connector housing box for terminating a data communications cable.

BACKGROUND OF THE INVENTION

[0002] The prior art in the form of European patent EP 0 622 868 B1 discloses a communications connection kit (kit for a data communications outlet), which comprises a mounting frame, a communications outlet connector and an outlet cover.

[0003] The communications connection unit or kit includes an internal communications connector, an internal connector housing (outlet connector housing) and a communications connector insert.

[0004] The communications connector serves to receive and make the electrical connection with a communications cable termination for electrical data transmission between the connector and the communications cable termination.

[0005] The internal connector housing comprises a housing box, a housing cover and a mechanical strain relief means for cable retention.

[0006] The housing box for the internal connector is made of injection-moulded plastics such that the housing and the housing box cover are connected by thin breakable webs, and the mechanical strain relief means is moulded by thin webs to the housing cover.

[0007] The mechanical cable retention strain relief means comprises a plurality of mechanical strain relief elements joined to the cover, a strain relief element for a smaller diameter cable and a strain relief element for a larger diameter cable for locking by means of screws.

[0008] The mechanical strain relief elements comprise a cylindrical indent shaped to receive a communications cable.

[0009] The housing box comprises a top wall, an opposing lateral bottom wall and adjacent side walls. The four walls define a front cavity section for receiving the communications connector insert, a rear upper cavity section for receiving the internal connector, and a rear lower cavity section for receiving the communications cable.

[0010] The communications cable is fitted through an indent in the bottom wall of the housing, the cable being held in position with the assistance of the cable retention strain relief means. The retention strain relief means is itself fitted in the cover and the latter is in turn locked with the aid of screws to the rear section of the housing, such that the indent in the bottom wall of the housing substantially locks the indent opening around the communications cable, the end of which is received by the internal communications connector.

[0011] Said communications connection kit suffers from a number of limitations imposed by the high number of elements which form said kit, such as a complex manufacturing process, which impacts on the final overall cost, and the handling and mounting complexity of said kit.

SUMMARY OF THE INVENTION

[0012] The present invention seeks to eliminate or alleviate one or more of the above-mentioned disadvantages by means of an internal communications connector housing box for terminating a data communications cable which forms part of a connection unit for a data communications outlet.

[0013] One embodiment of the housing box comprises a top wall, an opposing bottom lateral wall and adjacent side walls, such that the four walls define a rear section of the housing for receiving the internal communications connector and a front section of the housing for displaying a plurality of contacts included in the internal communications connector.

[0014] The housing box also comprises at least one recessed zone located in one of the walls of the housing box.

[0015] The recessed zone in turn includes a circular relieved section for rupture and a catch in the shape of an inverted L or J projecting from the outer side of the recessed zone and located between the edge formed by the rear side or section of the housing box and the wall which comprises the recessed zone, and the relieved section.

[0016] The catch is shaped as an arc of a cylinder towards the front side or section of the housing box for wedging the data communications cable in place.

[0017] The relieved section includes a protrusion projecting towards the exterior of the housing box for receiving a rupture force.

[0018] The protrusion is frustoconical in shape, to distribute uniformly the rupture force, applied with a hand tool, towards the edge of the relieved section to rupture the thin joint between the relieved section and the recessed zone.

[0019] Once the relieved section has been detached via the edge joining it to the recessed zone, the relieved section may be removed from the housing box and the recessed zone contains a through-hole via which one end of the data communications cable may be introduced so as to be received by the internal communications connector.

[0020] It is an object of the housing box of the internal communications connector for terminating a data communications cable forming part of a communications connection unit that said unit should comprise a reduced number of parts, so simplifying manufacture, handling and mounting, and reducing the overall cost thereof.

[0021] Another purpose of the housing box is to be included in a data communications connection kit which

allows rapid access to all the parts of the internal connector for installation thereof and to increase the shielding properties of the data communications connection kit, so reducing or limiting electromagnetic interference inside the internal communications connector.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] A more detailed explanation of devices and/or methods according to embodiments of the invention will be given in the following description based on the attached drawings, in which:

[0023] Figure 1 is an isometric view of the parts of the data communications connection unit or kit,

[0024] Figure 2 is a perspective view of the data communications connection kit,

[0025] Figure 3 is an alternative perspective view of the data communications connection kit,

[0026] Figure 4 shows a perspective view of a housing box of an internal communications connector,

[0027] Figure 5 is a detailed and perspective view of a recessed zone of the housing box of the internal communications connector, and

[0028] Figure 6 is a perspective view of a relieved section detached from the housing box of the internal communications connector.

DESCRIPTION OF PREFERRED EMBODIMENTS

[0029] Figure 1 shows a data communications connection unit or kit comprising a connector insert 11 with cover and frame, a metal frame casing 12, an internal communications connector 13, a metal housing box 14 for the internal connector and a rear cover 15 for the internal communications connector.

[0030] Referring now to Figures 2 and 3, the internal communications connector 13 is inserted into the housing box 14 via a front section of the latter. The internal connector cover 15 is in turn inserted into the housing box 14 via a rear section thereof. The resultant sub-assembly is also inserted into a rear section of the frame box 12. The insertion connector 11 is inserted into a front section of the frame box 12 via a front section of the frame box 12, such that the communications connection kit is assembled in a wholly closed way to protect and shield the interior of the connection kit from electromagnetic radiation.

[0031] Figure 4 shows the metallic housing box 14 for the internal communications connector 13 for terminating a data communications cable which constitutes part of the data communications connection unit.

[0032] The housing box 14 is made in one piece by a metal die-casting process using metal of the following types: zinc, aluminium, a metal alloy of the zinc alloy type, etc.. The die-cast metal is selected to provide the data communications connection kit with good electromagnetic shielding characteristics.

[0033] The housing box 14 includes a top wall 42, an

opposing lateral bottom wall 49 and adjacent side walls 43, 44, such that the four walls 42, 43, 44, 49 define a rear section of the housing 14 for receiving the internal communications connector cover 15 and a front section of the housing 14 for receiving the rear side of the internal connector 13, such that a plurality of electrical contact holders are accessible from the front side of the internal communications connector 13.

[0034] The housing box 14 comprises a recessed zone 45 located in the top wall 42 and/or in the adjacent side walls 43, 44 which form the housing box 14.

[0035] Referring now to figures 4 and 5, the recessed zone 45 in turn includes a circular relieved section 46 for rupture and a catch 48 in the shape of an inverted L or J projecting from the outer side of the recessed zone 45 and located between the edge formed by the rear section of the housing box and the wall 42, 43, 44 which comprises the recessed zone 45, and the relieved section 36.

[0036] The catch 48 is shaped as an arc of a cylinder towards the front section of the housing box 14 for wedging the data communications cable in place.

[0037] The relieved section 45 includes a protrusion 47 projecting towards the exterior of the housing box 14 for receiving a rupture force applied using a hand tool of the pliers type.

[0038] The protrusion 47 is frustoconical in shape, to distribute uniformly the rupture force applied towards the edge of the relieved section 46 to rupture the thin joint between the relieved section 46 and the recessed zone 45.

[0039] Referring now to Figures 2 and 3, the housing box 14 has certain maximum height and width dimensions which are equal to the maximum height and width dimensions of the connector insert 11, that is to say that neither the catch 48 nor the protrusion 47 exceeds the maximum width and height of the connector insert 11.

[0040] Referring now to Figures 4 to 6, once the relieved section 46 has been detached by way of the edge joining it to the recessed zone 45, the relieved section 46 may be removed from the housing box 14 and the recessed zone 45 has a through-hole 61 for introducing one end of the data communications cable for the purpose of being terminated by means of the internal communications connector.

[0041] The end of the communications cable is pushed to the cable termination position within the internal communications connector 13 and the latter is in turn inserted from the front section of the housing box 14 towards the rear section of the same.

[0042] Once the internal communications connector 13 is located in its final mounting position within the housing box 14, the communications cable is in contact with the catch 48, in particular with the side of the catch 48 which is in the shape of an arc of a cylinder for wedging the cylindrical tube-shaped communications cable so as to facilitate securing thereof to the catch 48 in the final mounting position of the internal communications connector 13.

[0043] The communications cable is secured to the catch 48 by means of a securing band in the form of a resilient plastics flange, a resilient clip etc.. The catch 48 locks the plastics flange surrounding the cable and the catch itself when the flange secures the cable to the catch 48.

Claims

1. A housing box for an internal communications connector (13) which is included in a communications connection unit for terminating a data communications cable; **characterised in that** the housing box (14) includes at least one relieved section (46) for rupture which comprises a protrusion (47) projecting towards the exterior of the housing box (14) for receiving a rupture force for detaching by rupture the edge joining the relieved section (46) to a recessed zone (45). 5
2. A housing box according to claim 1, **characterised in that** the protrusion (47) is frustoconical in shape, to distribute uniformly the rupture force applied towards the edge of the thin joint between the relieved section (46) and the recessed zone (45). 10
3. A housing box according to claim 2, **characterised in that** the housing box (14) includes the recessed zone (45) located in at least one wall (42, 43, 44) forming the housing box (14). 15
4. A housing box according to claim 1, **characterised in that** the housing box (14) includes at least one catch (48) projecting from the rear side of the recessed zone (45). 20
5. A housing box according to claim 4, **characterised in that** the catch (48) is located between an edge of the housing box (14) formed by the rear section of the housing box (14) and a wall (42, 43, 44) which comprises the recessed zone (45), and the relieved section (46). 25
6. A housing box according to claim 4, **characterised in that** the catch (48) takes the form of an inverted L or J towards the rear section of the housing box (14) and the form of an arc of a cylinder towards the front section of the housing box (14) to wedge a data communication cable in place. 30
7. A housing box according to claim 1, **characterised in that** the relieved section (46) is detached to leave a through-hole (61) in the recessed zone (45) for introducing one end of the data communications cable. 35
8. A housing box according to claim 7, **characterised**

in that a securing band secures the communications cable to the catch (48).

9. A housing box according to claim 8, **characterised in that** the securing band takes the form of a resilient plastics flange or a resilient clip. 40
10. A housing box according to claim 1, **characterised in that** the housing box (14) is made in one piece by a metal die-casting process using metal of the following types: zinc, aluminium, a zinc alloy, etc., to reduce electromagnetic radiation inside the communications connection unit. 45
11. A communications connection unit for terminating a data communications cable, **characterised in that** the connection unit comprises an insert connector (11), a frame casing (12), an internal communications connector (13), a housing box (14) for the internal connector according to one of claims 1 to 10 and a rear cover 15 for the internal communications connector. 50
12. A connection unit according to claim 11, **characterised in that** the frame casing (12) is of metal. 55

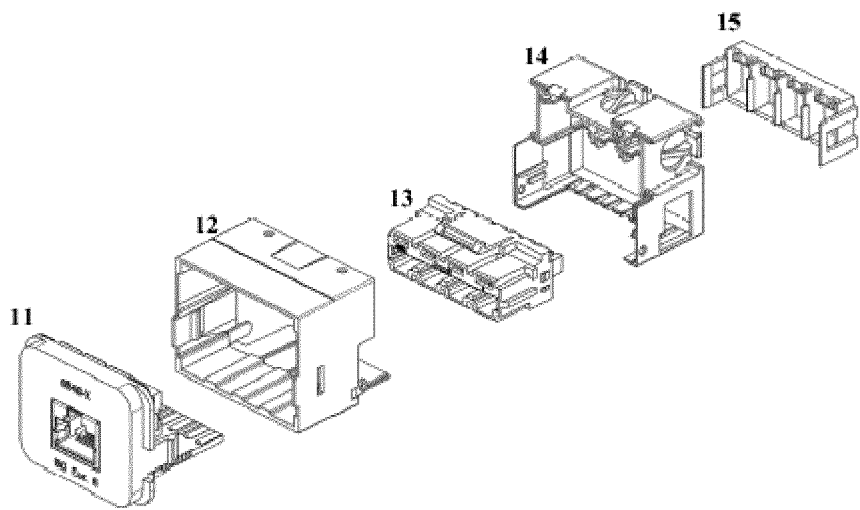


FIG 1

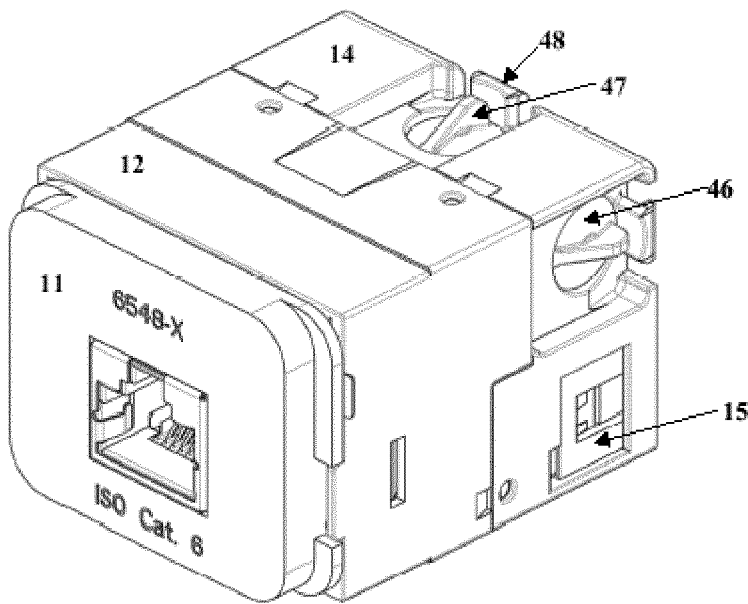


FIG 2

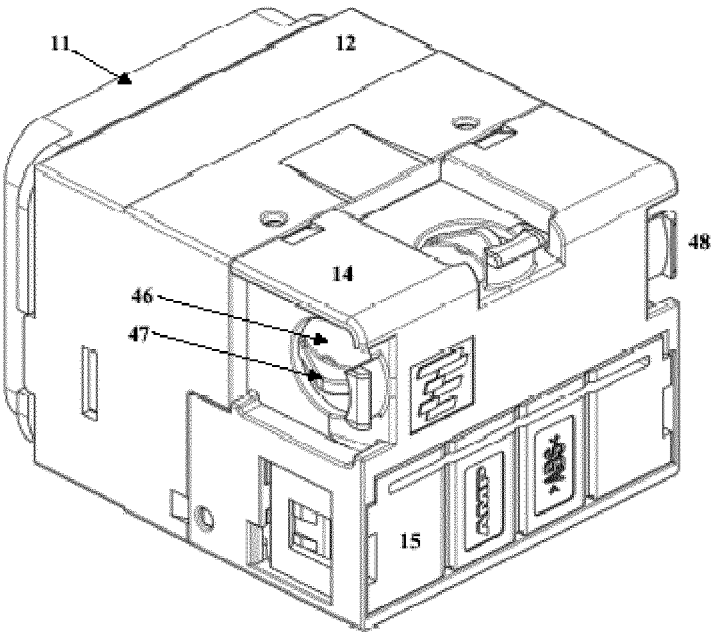


FIG 3

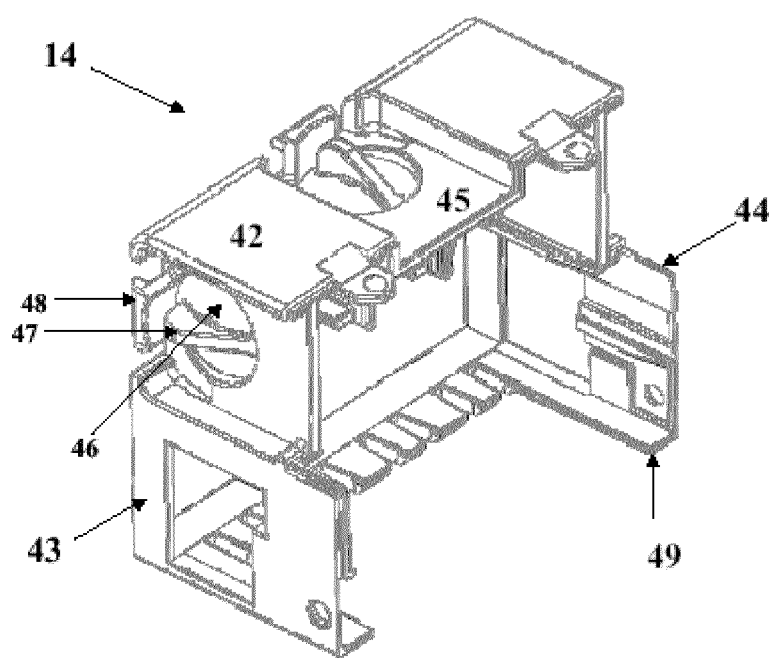


FIG 4

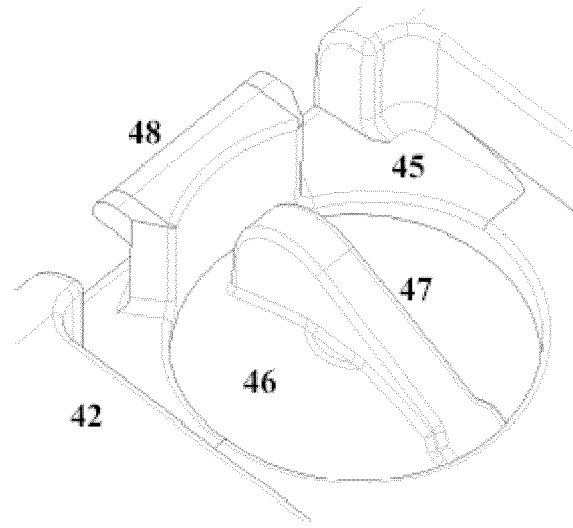


FIG 5

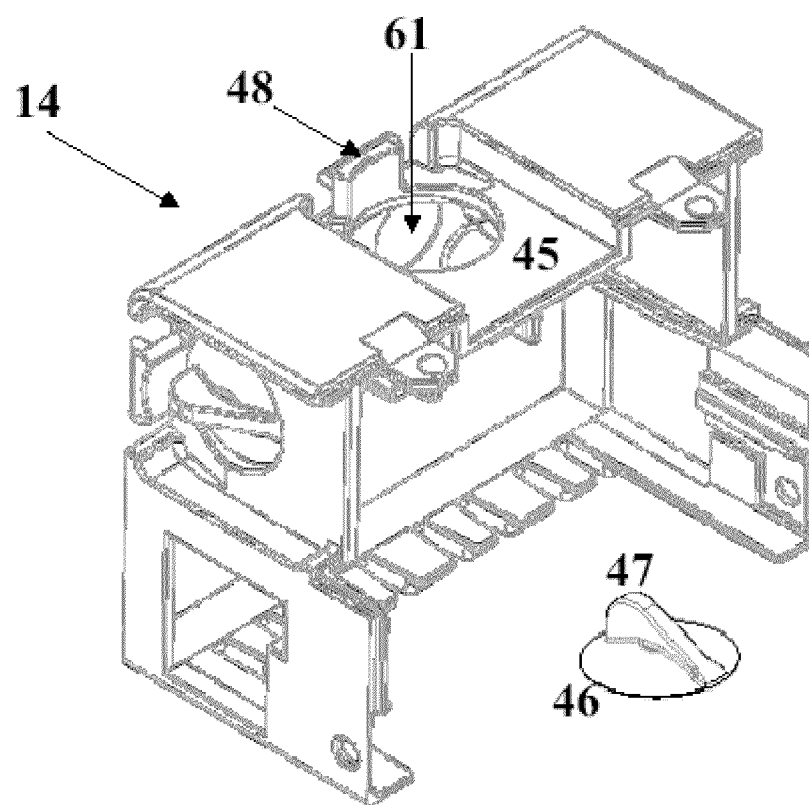


FIG 6



EUROPEAN SEARCH REPORT

Application Number
EP 11 18 6644

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	EP 1 965 471 A2 (AVE SPA [IT]) 3 September 2008 (2008-09-03) * the whole document *	1-12	INV. H01R13/58
Y	EP 0 219 304 A1 (THOMAS & BETTS CORP [US]) 22 April 1987 (1987-04-22) * abstract * * figures 1,2,9a,9b,9c * * page 6, line 22 - page 6, line 34 *	1-12	
A	US 5 211 706 A (POLGAR GARY E [US]) 18 May 1993 (1993-05-18) * the whole document *	1-12	
Y,D	EP 0 622 868 B1 (WHITAKER CORP [US]) 15 March 2000 (2000-03-15) * the whole document *	11,12	
A		1-10	
			TECHNICAL FIELDS SEARCHED (IPC)
			H01R
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		24 January 2012	Pugliese, Sandro
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

1
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 18 6644

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

24-01-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1965471 A2	03-09-2008	EP 1965471 A2	03-09-2008
		IT BS20070012 U1	02-09-2008

EP 0219304 A1	22-04-1987	CA 1269732 A1	29-05-1990
		DE 3686859 D1	05-11-1992
		DE 3686859 T2	22-04-1993
		EP 0219304 A1	22-04-1987
		JP 1920654 C	07-04-1995
		JP 6026151 B	06-04-1994
		JP 62163274 A	20-07-1987
		US 4682836 A	28-07-1987

US 5211706 A	18-05-1993	NONE	

EP 0622868 B1	15-03-2000	CN 1101462 A	12-04-1995
		DE 69423381 D1	20-04-2000
		DE 69423381 T2	21-09-2000
		EP 0622868 A2	02-11-1994
		JP 3446972 B2	16-09-2003
		JP 6314579 A	08-11-1994
		US 5484308 A	16-01-1996

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- EP 0622868 B1 [0002]