



ODU DOCK

Connector System for application in
Robot-Docking and Tool-Changing
Systems
for more than 100.000 plugging cycles

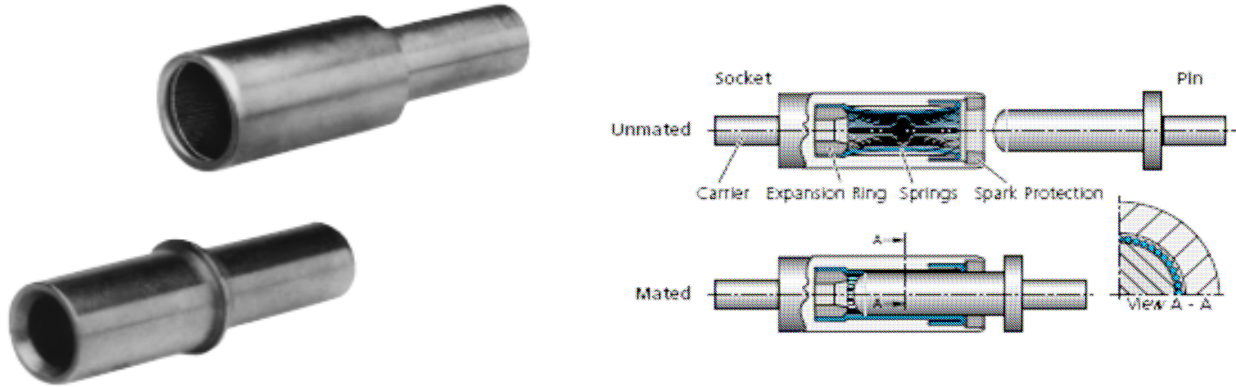






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Contact System and Application



Contact System

ODU contacts are based on the springwire technology especially developed for robotic docking and tool changing systems. Inside a spring wire socket there are preformed spring wires forming a sleeve held in place on one end and free into a socket, the spring wires expand independently and form a resilient cage with a large number of linear contact points along the pin's contact area. A size 22 socket, for example, contains 15 spring wires. As the number of spring wires increases with socket size, the number of contact points over the contact area of the pin increases as well.

Advantages of spring wires contacts over conventional contacts are:

- Very high contact reliability
- > 100.000's of mating cycles
- High current carrying capability
- Low contact resistance
- Low insertion and withdrawal force
- High surge resistance
- Excellent shock and vibration performance

ODU spring wire contacts are testes to: Mil-c-39029 and mil-ste 1344A - Dimensions to DIN 29729 and DIN 29504

ODU Springwire contacts have been proven in use for over forty tears in such areas as:

- Test and Measurement
- Medical Instrumentation
- Aerospace
- Robotics
- Machine Tooling
- Telecommunications
- Heavy Industries
- Defence Systems

Application

The ODU DOCK connector is design to operate in automated production facilities. Application ares include: docking systems for automatic test and measurement equipment, automated assembly lines, tool changing equipment for machining or molding equipment and robotics.

The product line consists of housing in four sizes, various styles of insulator bodies, and contacts which have either crimp or solder cup termination. Crimp contacts can be easily inserted into the insulator body in a matter of seconds. Removal is just as simple. Contacts with solder cup termination are permanently fixed in the insulator and cannot be removed. Because of the critical requirement for a very high number of mating cycles, contact performance is of special importance.

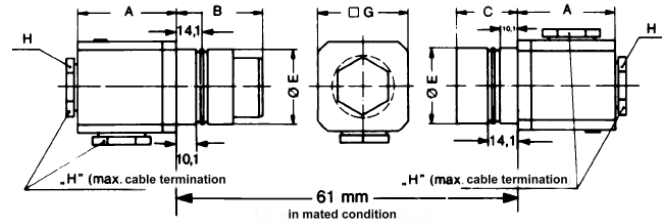
Housing

Precision in the alignment of the two opposing connector halves reduces wear on contacts which has a significant impact on the operation lifetime of the connector. Connector shells of the ODU DOCK are especially designed docking plates in a floating configuration and are prevented from rotation by dimensionally keyed locator pins. The engagement system has a conical lead-in which assures positive mating as the two connector halves come together. Housings and insulators are splash-water protected.



Shells are made of Black anodized aluminium. Four shell sizes are available.

Assembly of the ODU DOCK is simple. The shells are inserted from the rear into the cut-outs in the docking plates. They are then locked into the docking plates from the front with locking rings. The docking plates have locator pins which fit into corresponding holes in the connector flanges. The locator pins are polarized to assure proper orientation and to avoid mismatching of the connector. Straight and right-angle cable adaptors are offered for all four shell sizes. In addition, custom configurations are available to meet special requirements. Cable adaptors accept all standard cable screw termination.

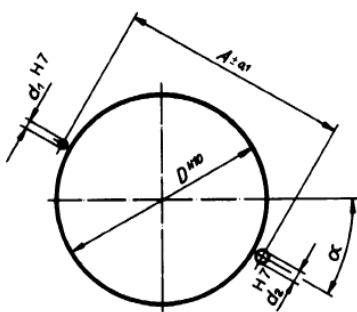


* Datasheet on request

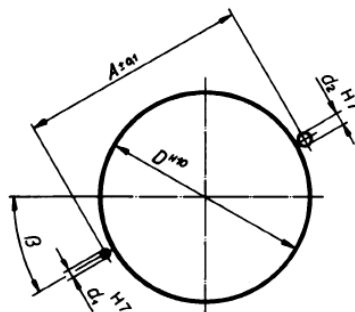
Dimensions in mm (Other dimensions on request possible.)

Part numbers

Size	Dim. A*	Dim. B	Dim. C	Dim. E	Dim. G	Dim. H	Housing socket part	Housing pin part
I	50 ± 0.5	44	31.5	∅ 28 - 0.5	36 ± 0.5	PG 16	656 164 001 000 000	656 164 002 000 000
II	50 ± 0.5	44	31.5	∅ 38 - 0.5	46 ± 0.5	PG 21	656 162 001 000 000	656 162 002 000 000
III	55 ± 0.5	48.5	34	∅ 52 - 0.5	60 ± 0.5	PG 29	656 163 001 000 000	656 163 002 000 000
IV	75 ± 0.5	50	36.5	∅ 74 - 0.5	75 ± 0.5	PG 42	656 190 001 000 000	656 190 002 000 000



Sizes I - III

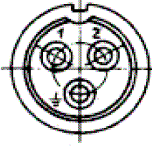
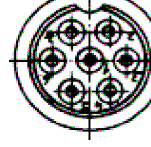



Size IV

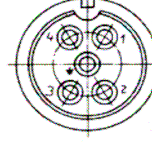
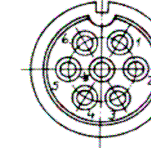
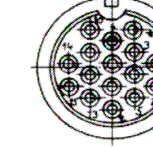
Size	A	D	d ₁	d ₂	α	β
I	34	28	2	3	25°	---
II	46	38	3	4	30°	---
III	60	52	3	4	30°	---
IV	80	74	3	4	---	33°

Mounting hole
Socket, Pin housing
View to connection side

Size I

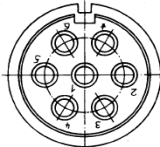
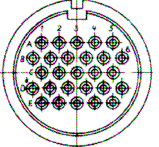
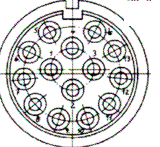
			
Body (Socket)	207 703 004 003 000	207 702 004 007 000	207 742 001 031 000
Body (Pin)	207 803 004 003 000	207 802 004 007 000	207 842 001 031 000
Contact (Socket)	170 382 000 201 000	170 381 000 201 000	170 361 700 207 000 (AWG 22) 170.540.700.207.000 (AWG 24/28)
Contact (Pin)	180 334 000 301 000	180 332 000 301 000	180 381 000 307 000 (AWG 22) 180.570.000.307.000 (AWG 24/28)
Contact (Ground)	180 335 000 301 000	180 333 000 301 000	---
Blank Plug	021 341 136 304 000	021 341 135 924 000	021 341 123 923 000
No. of contacts	2P+E	6P+E	31P
Rated Voltage	250 V	125 V	42 V
Rated Current	26A	18A	5A
Contact Ø	3.0	2.0	0.76
cross section termination	2.5 mm ²	1.5 mm ²	AWG 22, 24/28

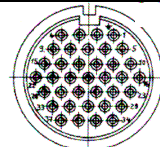
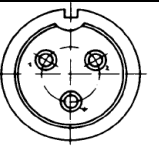
Size II

			
Body (Socket)	208 703 004 005 000	208 703 004 007 000	208 702 004 016 000
Body (Pin)	207 803 004 005 000	208 803 004 007 000	208 802 004 016 000
Contact (Socket)	170 382 100 201 000	170 382 100 201 000	170 381 100 201 000
Contact (Pin)	180 334 000 301 000	180 334 000 301 000	180 332 000 301 000
Contact (Ground)	180 335 000 301 000	180 335 000 301 000	180 333 000 301 000
Blank Plug	021 341 136 304 000	021 341 136 304 000	021 341 135 924 000
No. of contacts	4P+E	6P+E	15P + E
Rated Voltage	320 V	320 V	125 V
Rated Current	26A	26A	18A
Contact Ø	3.0	3.0	2.0
cross section termination	2.5 mm ²	2.5 mm ²	1.5 mm ²

Other contact configurations on request!

Size III

			
Body (Socket)	209 705 004 007 000	209 745 004 027 000	209 703 004 014 000
Body (Pin)	209 805 004 007 000	209 845 004 027 000	209 803 004 014 000
Contact (Socket)	170 633 100 201 000	170 370 000 201 000	172 918 100 201 000
Contact (Pin)	180 633 000 301 000	181 134 000 301 000	181 138 000 301 000
Ground Contact (Pin)	---	181 135 000 301 000	---
Ground Contact (Socket)	170 634 100 201 000	---	172 919 100 201 000
Blank Plug (Socket)	021 341 141 924 000	021 341 131 923 000	021 341 137 300 000
Blank Plug (Pin)	021 341 142 924 000	021 341 132 923 000	021 341 138 300 000
No. of contacts	6P+E	26P+E	13P + E
Rated Voltage	380 V	250 V	300 V
Rated Current	65A	18A	18A
Contact Ø	5.0	1.5	3.0
cross section of termination	10 mm ²	1.5 mm ²	2.5 mm ²

		
Body (Socket)	209 745 004 037 000	209 706 004 003 000
Body (Pin)	209 845 004 037 000	209 806 004 003 000
Contact (Socket)	170 370 000 201 000	172 929 100 201 000
Contact (Pin)	181 134 000 301 000	181 146 000 301 000
Ground Contact (Pin)	181 135 000 301 000	---
Ground Contact (Socket)	---	172 930 100 201 000
Blank Plug (Socket)	021 341 131 923 000	---
Blank Plug (Pin)	021 341 132 923 000	---
No. of contacts	36P+E	2P+E
Rated Voltage	250 V	500 V
Rated Current	18A	83A
Contact Ø	1.5	6.0
cross section of termination	1.5 mm ²	16 mm ²

Crimping tool

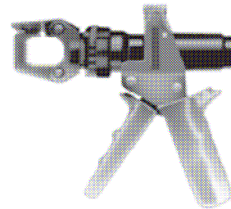
Termination Cross section (mm)	Contact Ø in mm	8-point Crimping tools	6-edge Crimping tools	Crimp dies	Gauge X
AWG 24/28	0.76	080 000 014 000 000			> 0.65 < 0.70
AWG 22	0.76	080 000 014 000 000			> 0.65 < 0.70.
1.5 mm ²	1.5	080 000 014 000 000			> 1.40 < 1.45
1.5 mm ²	2.0	080 000 014 000 000			> 1.40 < 1.45
2.5 mm ²	3.0		080 000 012 000 000		
4.0 mm ²	3.0		080 000 011 000 000		
6.0 mm ²	5.0		080 000 010 000 000		
10.0 mm ²	5.0		080 000 026 000 000	080 000 026 110 000	
16.0 mm ²	6.0		080 000 026 000 000	080 000 026 116 000	



080 000 014 000 000

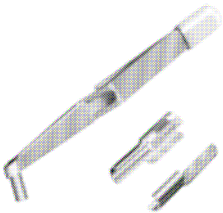


080 000 012 000 000
080 000 011 000 000
080 000 010 000 000



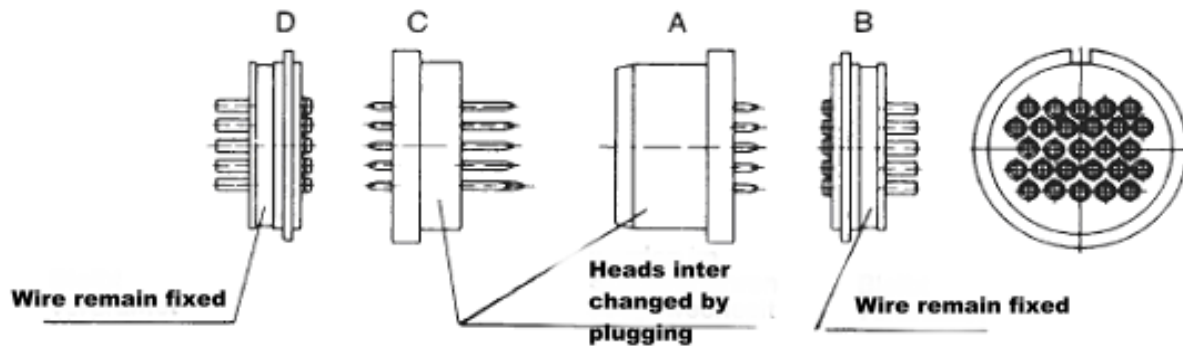
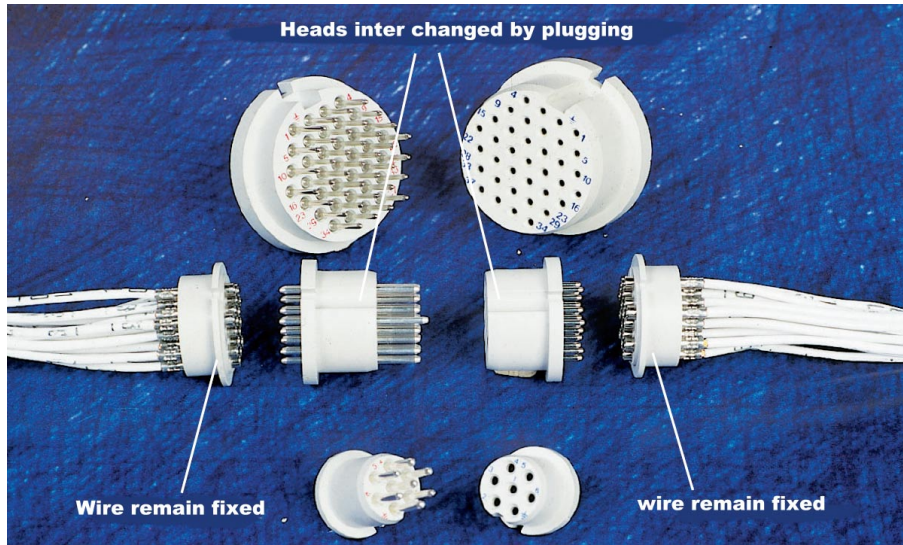
080 000 026 000 000

Disassembly tool



Contact Ø	Part-No.
0.76	087 170 361 000 000
1.5	087 170 137 000 000
2.0	087 170 364 000 000
3.0	087 170 136 000 000
5.0	087 170 391 000 000

Quick-Change-Head



	Size I	Size II	Size II	Size III	Size III
Part A	252 087 001 007 000	252 080 001 007 000	252 080 001 016 000	252 058 002 027 000	252 058 001 037 000
Part B	252 089 001 007 000	252 082 001 107 000	252 082 001 016 000	252 061 002 027 000	252 061 001 037 000
Part C	252 088 001 007 000	252 081 001 007 000	252 081 001 016 000	252 059 002 027 000	252 059 001 037 000
Part D	252 089 002 007 000	252 082 001 107 000	252 082 002 016 000	252 061 003 027 000	252 061 002 037 000
No. of contacts	6P+E	6P+E	15P+E	26P+E	36P+E
Rated voltage	50 V	250 V	40 V	100 V	63 V
Rated current	18A	18A	18A	16A	16A
Contact Ø	2.0 mm	3.0 mm	2.0 mm	1.5 mm	1.5 mm
Term. Cross section	0.5 – 1.5 mm ²	0.5 – 1.5 mm ²	0.5 – 1.5 mm ²	0.5 – 1.5 mm ²	0.5 – 1.5 mm ²

**Quick-Change-Head
Crimping Tools**



080 000 038 000 000



080 000 014 000 000

Termination Cross Section		Crimp Tool		Positioner for 080 000 014 000 000	Stripping length
mm ²	AWG	080 000 038 000 000	080 000 014 000 000		mm
		Position	Adjustment Ø		
0.5	20	4	> 1.05 < 1.10	021 345 161 300 000	6 ^{+0.5}
0.75		5	> 1.10 < 1.15		
1	18				
1.5	14	6	> 1.40 < 1.45		

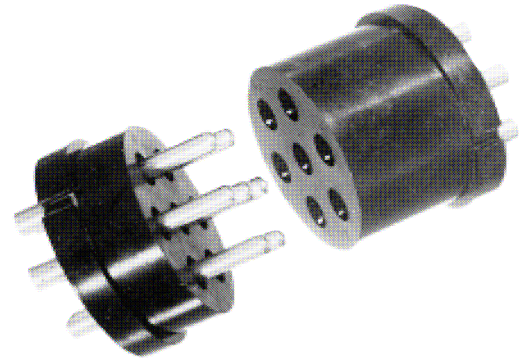


Assembly tool
Part-No.: 085 170 323 000 000

Disassembly tool
Part-No.: 087 170 323 000 000

Contact Inserts with Solder-In Contacts

Number of contacts 2-68
 Rated Current 10 A – 83 A
 Rated Voltage to 500 V/C~
 Contact Carrier: glassfibre reinforced Polyester
 Contacts: Cu-Alloy nickeled resp. silver-plated
 with solder termination



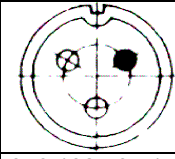
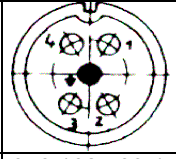
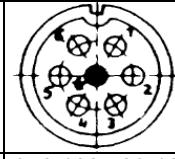
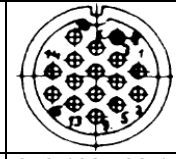
Size I

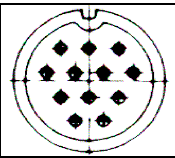
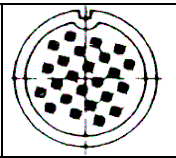
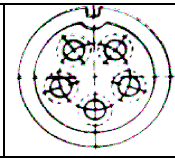
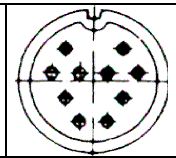
Socket	656 164 703 152 003	656 164 702 150 003	656 164 745 751 002	656 164 745 751 004	656 164 745 751 006
Pin	656 164 803 152 003	656 164 802 150 003	656 164 845 751 002	656 164 845 751 004	656 164 845 751 006
No. of contacts	2P+E	2P+E	2P	4P	6P
Rated Voltage	250 V/C~	250 V/C~	415 V/C~	415 V/C~	380 V/C~
Rated Current	26A	26A	10A	10A	10A
Contact Ø	3.0	2.0	1.5	1.5	1.5
cross section of termination	2.5 mm ²	2.5 mm ²	2.5 mm ²	2.5 mm ²	2.5 mm ²

Socket	656 164 702 150 004	656 164 702 150 005	656 164 702 152 007	656 164 701 150 010
Pin	656 164 802 150 004	656 164 802 150 005	656 164 802 150 007	656 164 801 150 010
No. of contacts	3P+E	4P+E	6P+E	9P+E
Rated Voltage	250 V/C~	250 V/B~	250 V/B~	125 V/C~
Rated Current	26A	18A	18A	10A
Contact Ø	2	2	2	1
cross section of termination	2.5 mm ²	1.5 mm ²	1.5 mm ²	1.0 mm ²

Contact Inserts with Solder-In Contacts

Size II

				
Socket	656 162 705 150 003	656 162 703 152 005	656 162 703 161 007	656 162 702 153 016
Pin	656 162 805 150 003	656 162 803 152 005	656 162 803 161 007	656 162 802 153 016
No. of contacts	2P+E	4P+E	6P+E	15P+E
Rated Voltage	250V/C~	380V/C~	380V/C~	250V/C~
Rated Current	65A	26A	26A	18A
Contact Ø	5.0	3.0	3.0	2.0
cross section of termination	10 mm ²	2.5 mm ²	2.5 mm ²	1.5 mm ²

				
Socket	656 162 745 150 012	656 162 701 150 024	656 162 704 150 005	656 162 745 150 010
Pin	656 162 845 150 012	656 162 801 150 024	656 162 804 150 005	656 162 845 150 010
No. of contacts	11P+E	23P+E	4P+E	9P+E
Rated Voltage	250V/C~	125V/C~	250V/C~	250V/C~
Rated Current	12A	16A	47A	12A
Contact Ø	1.5	1.0	4.0	1.5
cross section of termination	0.75 mm ²	1.5 mm ²	6.0 mm ²	0.75 mm ²

Contact Inserts with Solder-In Contacts

Size III

Socket	656 163 706 152 005	656 163 700 150 006	656 163 700 151 007	656 163 705 150 005	656 163 705 150 007
Pin	656 163 806 150 005	656 163 800 150 006	656 163 800 151 007	656 163 805 150 005	656 163 805 150 007
No. of contacts	4P+E	3P+E+2Pi	3P+E+3Pi	4P+E	6P+E
Rated Voltage	380 V/C~	500 V/C~, 250 V/C~	500 V/C~	380 V/C~	380 V/C~
Rated Current	83A	83 / 18 A	66 A / 18 A	65 A	65A
Contact Ø	6.0	6 / 1.5	5 / 1.5	5	5
cross section termination	16 mm ²	4 x 16 / 2 x 1,5 mm ²	4 x 10 / 3 x 1.5 mm ²	10 mm ²	10 mm ²

Socket	656 163 703 154 014	656 163 746 150 022	656 163 745 150 025	656 163 745 152 037	656 163 745 150 027
Pin	656 163 803 154 014	656 163 846 150 022	656 163 845 150 025	656 163 845 152 037	656 163 845 150 027
No. of contacts	13P+E	21P+E	24P+E	36P+E	26P+E
Rated Voltage	380V/C~	250V/C~	250V/C~	250V/C~	250V/C~
Rated Current	36A	26A	18A	18A	18A
Contact Ø	3	2.3	1.5	1.5	1.5
cross section termination	4.0 mm ²	2.5 mm ²	1.5 mm ²	1.5 mm ²	1.5 mm ²

Socket	656 163 705 150 006
Pin	656 163 805 150 006
No. of contacts	5P+E
Rated Voltage	380V/C~
Rated Current	65A
Contact Ø	5
cross section termination	10 mm ²



For your notes:



ODUs headquarters and factory are located in Mühldorf, at the river Inn, approximately 50 miles east of Munich, at the foothills of the Bavarian Alps



Mühldorf, an idyllic small town with its typical Inn-Salzach architecture.



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