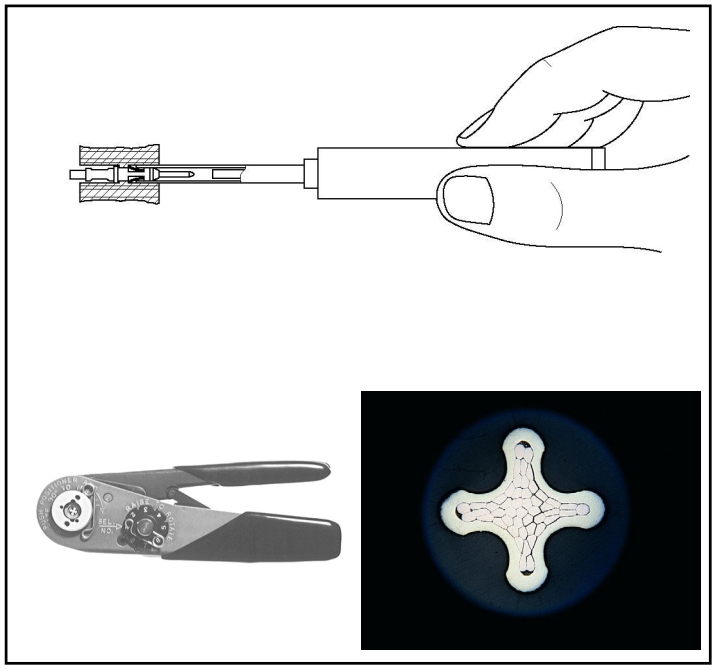
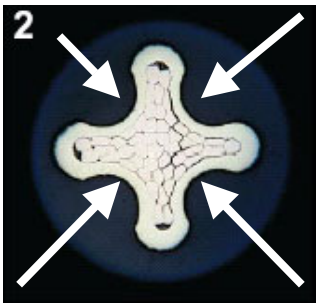
REFERENCE GUIDE

LEMO'S CONTACT CRIMPING GUIDE



INTRODUCTION



This guide describes LEMO crimp contacts and the appropriate methods and tools for crimping insertions into a LEMO connector.

Several LEMO connectors come with the option of crimp contacts. LEMO crimp contacts are high-quality screw-machine crimp contacts with an annealed crimp zone. The crimp is a Mil-C-22520 four-intent crimp.

Advantages of Crimp Contacts:

- A crimp contact allows for field repair without a soldering iron, if you have the crimping tools available.
- Possible usage at temperatures above soldering temperatures.
- No heating of the insulator (insert) required.

The MIL-C-22520 four-indent crimp is one of the strongest crimps, if done properly. On small wire gauges, the wire will typically break before the crimp will fail. However, the performance of the crimp is directly proportional to the quality of the workmanship of the crimp.

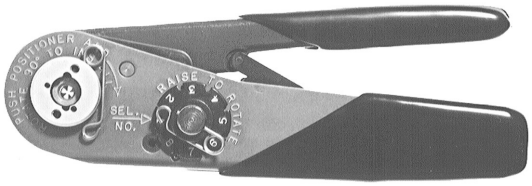
Requirements for LEMO Crimp Contacts:

- Crimping tool and selected positioner to match the desired contact and wire size
- The wire gauge needs to be within the range of the specific contact, for example the standard 0.7 mm crimp contact can handle a range of stranded wire from 26 to 22 AWG [Refer to Table 1].
- The chosen connector needs to be available with the correct crimp contacts. For example, in the B Series, only the two smallest size connectors, size-00 and size-0B, are approved for the 0.5mm crimp contact.

Crimping Tools

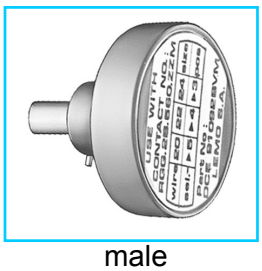
Manual Crimping Tool

This crimping tool handles contact pin sizes 0.5mm, 0.7 mm, 0.9 mm and 1.3 mm.

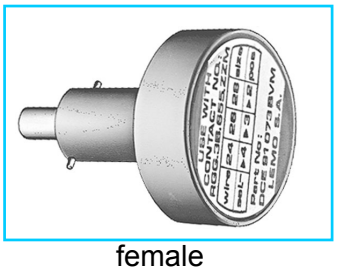


Positioners

These insert into the manual crimp tool. They lock into place with a twist.



male

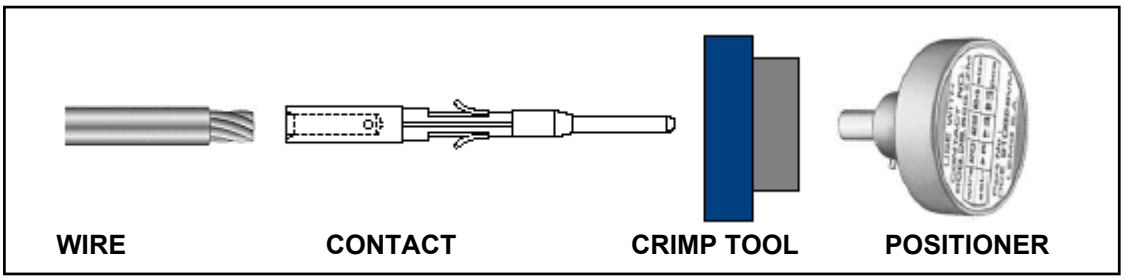


female

PROCEDURE

Crimping the Contact

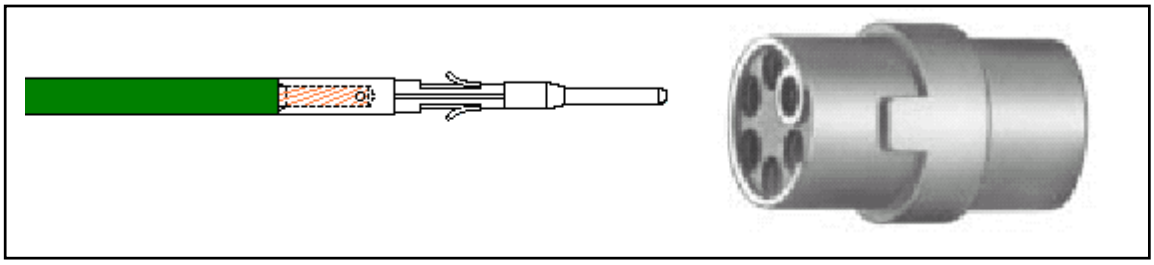
1. Dress the wire to specification (strip the wire insulation).
2. Insert the wire into the crimp contact pin. Use the inspection hole in the contact to verify the wire is fully seated.
3. Insert the correct positioner in the crimp tool and lock in place (twist to lock) [Refer to Table 1 for positioner selections].
4. Insure the 'positioner', in the crimp tool, is set to the proper selector position for the wire size [Refer to Table 1 for selector settings].
5. Insert contact (with inserted wire) into the tool until it bottoms at the back of the contact hole, and firmly squeeze the handles of the crimp tool to create the crimp.



(not to scale)

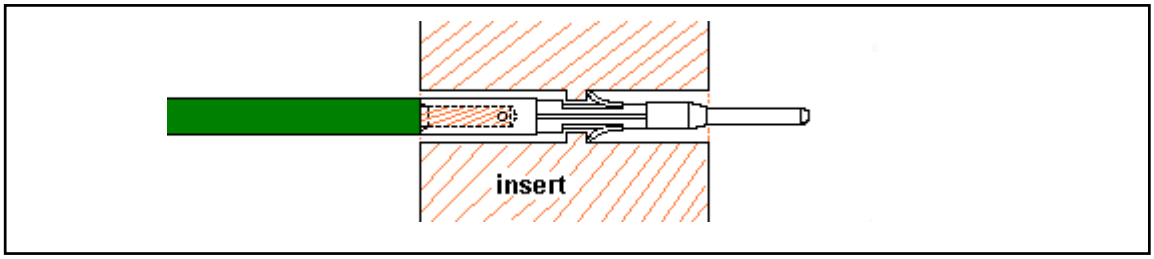
Placing the Crimp Contact into the Connector Insert

After each wire has the contact crimped on it, insert the crimped contact and wire into the correct hole of the insert insulator. Inspect for proper hole assignment.

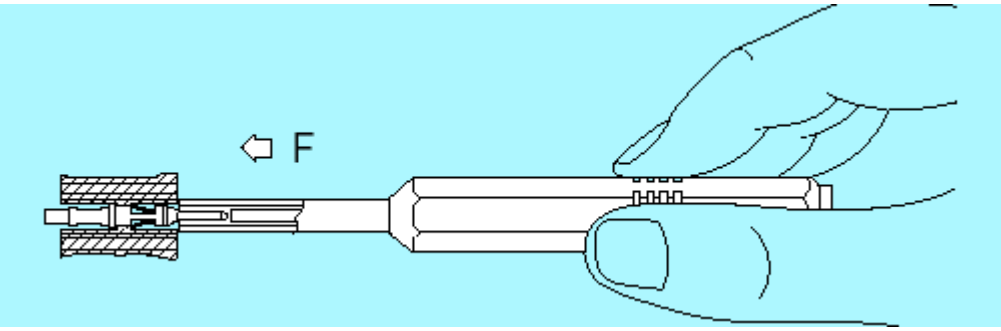


Contact Retention (Contact Insert)

Note that he barbs of the contact secure the contact into the proper position. On the larger contacts, 1.6 mm, 2.0 mm, 3.0 mm and 4.0 mm, there is a definite feel and click when the contact is seated into the insulator/insert.



Smaller contacts may not have as clear an indication that the contact is seated. For these contacts, LEMO has a contact-retention tool. The tool provides a set insertion force, specified according the size of the contact, as shown in the following table.



Contact Diameter	Test Force (N)	For Male Contact	For Female Contact
0.5 mm	8	DCK.91.050.8LRC	DCK.91.050.8LRM
0.7 mm	14	DCK.91.071.4LRC	DCK.91.071.4LRM
0.9 mm	14	DCK.91.091.4LRC	DCK.91.091.4LRM
1.3 mm	25	DCK.91.132.5LRC	DCK.91.132.5LRM

Crimp Tensile Strength (Wire to Contact)

Typical Tensile Strength with a good quality crimp and stranded copper wire.

Contact Size	Wire Gauge	Stranding	Force (N)	Force (lbf)
0.5mm	28 AWG	7 x 36	13	3
0.7mm	22 AWG	7 x 30	50	12
0.9mm	20 AWG	7 x 28	88	20
1.3mm	18 AWG	7 x 26	133	30

Procedure review

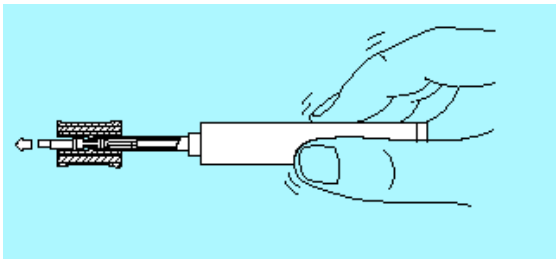
Crimping wire onto contacts will provide excellent results if the correct tools are used and if these questions can be assured:

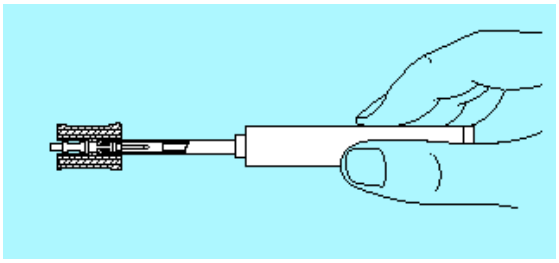
- Is the wire gauge correct for the specific contact?
- Is the wire dressed properly and the wire seated fully into the contact?
- Is the selector setting on the crimp tool correct for the contact and wire gauge?
- Was the contact fully seated into the positioner during the crimping?

Crimp Contact Removal

Occasionally contact pins need to be removed from the connector. For example, if during assembly a contact is inadvertently inserted into the wrong hole of the insert insulator. Crimp contact removal tools are available. Repair of a contact assembly is also possible if there is sufficient excess wire length and lead dress available for the damaged contact.

There are two crimp contact extraction tools available. An automatic model and a thumb operated model.





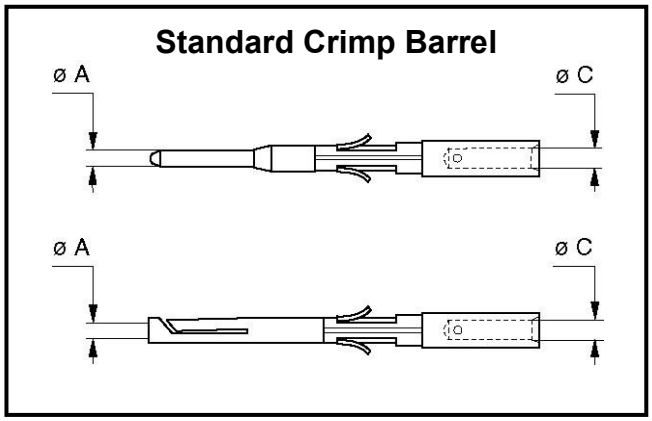
Using High count stranded wire or Solid wire

The selector settings shown for the crimp tool are for the standard stranded wires in the American Wire Gauge tables. There are some high strand count stranded wire sizes that are not part of the standard American Wire Gauge tables. Since crimping is a metal displacement technology, a higher strand count of finer wires will affect the crimping. In these cases the selector setting on the crimp tool should be increased for optimum crimp performance. You may also want to consider using “reduced crimp barrel” contacts when using high-strand count wire.

Solid wire does not displace in the same manner as stranded wire in a crimp contact. Typically a lower selector setting is necessary for a solid wire. Excessive crimp force (higher selector settings) with solid wire will cause a weakened crimp. Therefore with solid wire, select a lower setting.

Reduced Crimp Barrel Contacts

In addition to the standard crimp contacts, indicated in the LEMO catalogs, there are other contacts designed for high strand count wire. These reduced crimp barrel contacts are available as an option for smaller stranded wire sizes. These contacts have a thinner wall in the cramp area of the contact.



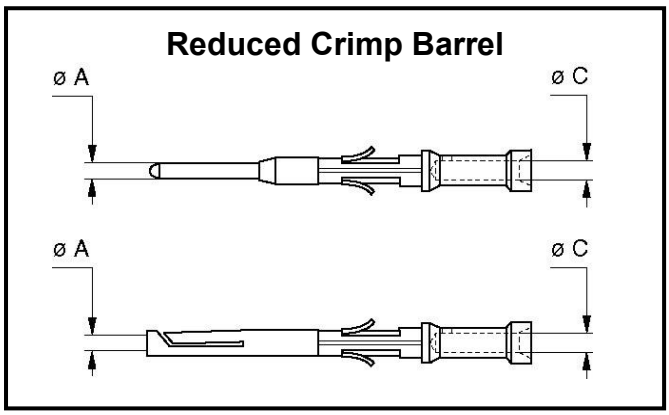


Table 1

Connector Size	No. Contacts Conn. ID	Contact dia (mm)	Wire Gauge (AWG)	Male Positioner	Female Positioner	Selector Setting
0B	302/303	0.9	20-22-24	DCE.91.090.BVC	DCE.91.090.BVM	6-5-4
0B	304/305	0.7	22-24-26	DCE.91.070.BVC	DCE.91.070.BVM	6-5-5
1B	302/303	1.3	18-20-22	DCE.91.131.BVC	DCE.91.131.BVM	8-7-7
1B	304/305	0.9	20-22-24	DCE.91.091.BVC	DCE.91.091.BVM	6-5-4
1B	306/307/308	0.7	22-24-26	DCE.91.071.BVC	DCE.91.071.BVM	6-5-5
2B	304/305	1.3	18-20-22	DCE.91.132.BVC	DCE.91.132.BVM	8-7-7
2B	306/307	1.3	18-20-22	DCE.91.132.BVC	DCE.91.132.BVM	8-7-7
2B	308/310	0.9	20-22-24	DCE.91.092.BVC	DCE.91.092.BVM	6-5-4
2B	312/314	0.7	22-24-26	DCE.91.072.BVC	DCE.91.072.BVM	6-5-5
2B	316/318	0.7	22-24-26	DCE.91.072.BVC	DCE.91.072.BVM	6-5-5
2B	319	0.7	22-24-26	DCE.91.072.BVC	DCE.91.072.BVM	6-5-5
3B	308	1.3	18-20-22	DCE.91.133.BVC	DCE.91.133.BVM	8-7-7
3B	309*	1.3	18-20-22	DCE.91.133.BVC	DCE.91.133.BVM	8-7-7
3B	310	1.3	18-20-22	DCE.91.133.BVC	DCE.91.133.BVM	8-7-7
3B	312/314	0.9	20-22-24	DCE.91.093.BVC	DCE.91.093.BVM	6-5-4
3B	316/318	0.9	20-22-24	DCE.91.093.BVC	DCE.91.093.BVM	6-5-4
3B	320/322	0.7	22-24-26	DCE.91.073.BVC	DCE.91.073.BVM	6-5-5
3B	324/326	0.7	22-24-26	DCE.91.073.BVC	DCE.91.073.BVM	6-5-5
3B	330	0.7	22-24-26	DCE.91.073.BVC	DCE.91.073.BVM	6-5-5
4B	312	1.3	18-20-22	DCE.91.134.BVC	DCE.91.134.BVM	8-7-7
4B	316/320	0.9	20-22-24	DCE.91.094.BVC	DCE.91.094.BVM	6-5-4
4B	324/330	0.9	20-22-24	DCE.91.094.BVC	DCE.91.094.BVM	6-5-4
4B	340	0.7	22-24-26	DCE.91.074.BVC	DCE.91.074.BVM	6-5-5
5B	330/340	1.3	18-20-22	DCE.91.135.BVC	DCE.91.135.BVM	8-7-7
5B	348	1.3	18-20-22	DCE.91.135.BVC	DCE.91.135.BVM	8-7-7
5B	350	0.9	20-22-24	DCE.91.095.BVC	DCE.91.095.BVM	6-5-4
5B	354/364	0.9	20-22-24	DCE.91.095.BVC	DCE.91.095.BVM	6-5-4

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