

# TURNBUCKLES – SAFETY WIRE

## MS CLIP-LOCKING TURNBUCKLE COMPONENTS



Clip-Locking Turnbuckles utilize 2 locking clips instead of lock-wire for safety. The turnbuckle barrel and terminals are slotted lengthwise to accommodate the locking clips. After the proper cable tension is reached the barrel slots are aligned with the terminal slots and the clips are inserted. The curved ends of the locking clips expand and latch in the vertical slot in the center of the barrel. Build up MS turnbuckle assemblies, similar to the AN assemblies listed on the preceding page, by selecting a turnbuckle barrel, 2 end fittings and 2 clips from the components listed in the Table below. The price of the complete assembly is the sum of the prices shown for the components. Example: An MS turnbuckle assembly for 3/32" dia. cable, with fork end and pin eye consists of:

- 1 MS21251-B3S Barrel ..... ---
- 1 MS21252-3LS Fork End..... ---
- 1 MS21254-3RS Pin Eye End..... ---
- 2 MS21256-1 Clips ..... ---/ea.

**Note: MS21256-1 clips are short (1") and MS21256-2 are long (2").**

| Turnbuckle Component               | Part No.              | Cable Dia.  | Thread Size | Min. Breaking Strength | Price Each |
|------------------------------------|-----------------------|-------------|-------------|------------------------|------------|
| Barrel (supersedes AN155)          | MS21251-B2S           | 1/16"       | 6-40        | 800 lbs.               | ---        |
|                                    | -B3S                  | 3/32"       | 10-32       | 1600 lbs.              | ---        |
|                                    | -B5S                  | 5/32"       | 1/4-28      | 3200 lbs.              | ---        |
|                                    | -B5L                  | 5/32"       | 1/4-28      | 3200 lbs.              | ---        |
| Fork End (supersedes AN161)        | MS21252-2RS           | 1/16"       | 6-40        | 800 lbs.               | ---        |
|                                    | -2LS                  |             |             |                        | ---        |
|                                    | -3RS                  | 3/32"       | 10-32       | 1600 lbs.              | ---        |
|                                    | -3LS                  |             |             |                        | ---        |
|                                    | -4LL                  | 1/8"        | 1/4-28      |                        | ---        |
|                                    | -4LS                  |             |             |                        | ---        |
| Pin Eye End (supersedes AN165)     | -5RS                  | 1/8", 5/32" | 1/4-28      | 3200 lbs.              | ---        |
|                                    | -5LS                  |             |             |                        | ---        |
|                                    | MS21254-2RS           | 1/16"       | 6-40        | 800 lbs.               | ---        |
|                                    | -2LS                  |             |             |                        | ---        |
|                                    | -3RS                  | 3/32"       | 10-32       | 1600 lbs.              | ---        |
| Cable Eye (supersedes AN170)       | -3LS                  |             |             |                        | ---        |
|                                    | -5RS                  | 1/8", 5/32" | 1/4-28      | 3200 lbs.              | ---        |
|                                    | -5LS                  |             |             |                        | ---        |
|                                    | MS21255-2RS Stainless | 1/16"       | 6-40        | 800 lbs.               | ---        |
|                                    | -2LS                  |             |             |                        | ---        |
| Cable Swage End (supersedes AN669) | -3RS                  | 3/32"       | 10-32       | 1600 lbs.              | ---        |
|                                    | -C3RS                 | 3/32"       | 10-32       | 1600 lbs.              | ---        |
|                                    | -3LS                  |             |             |                        | ---        |
|                                    | -5RS                  | 1/8", 5/32" | 1/4-28      | 3200 lbs.              | ---        |
|                                    | -5LS                  |             |             |                        | ---        |
|                                    | MS21260-S2RH          | 1/16"       | 6-40        | 480 lbs.               | ---        |
|                                    | -S2LH                 |             |             |                        | ---        |
| Clip*-                             | -S3RH                 | 3/32"       | 10-32       | 920 lbs.               | ---        |
|                                    | -S3LH                 |             |             |                        | ---        |
|                                    | -S4RH                 | 1/8"        | 1/4-28      | 2000 lbs.              | ---        |
|                                    | -S4LH                 |             |             |                        | ---        |
|                                    | -S5RH                 | 5/32"       | 1/4-28      | 2800 lbs.              | ---        |
|                                    | -S5LH                 |             |             |                        | ---        |
|                                    | MS21256-1             | --          | --          | --                     | ---        |
|                                    | MS21256-2             | --          | --          | --                     | ---        |

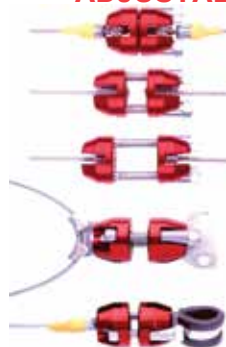


## SAFETY WIRE

Available in Type 302/304 stainless steel (soft temper) per MS20995. Also, in soft annealed brass per specification QQ-W-321, Type A. Stainless steel safety wire furnished in convenient 1 lb. dispensing container. Annealed brass safety wire is furnished in a convenient 1 lb. dispensing container.

| Wire Dia. In. | Wire Type       | Part No. | Price Per Ib. |
|---------------|-----------------|----------|---------------|
| .020          | Stainless Steel | 05-02684 | ---           |
| .025          | Stainless Steel | 05-06831 | ---           |
| .032          | Stainless Steel | 05-02685 | ---           |
| .032          | Brass           | 05-02686 | ---           |
| .041          | Stainless Steel | 05-02687 | ---           |
| .041          | Brass           | 05-06600 | ---           |
| .051          | Stainless Steel | 05-11922 | ---           |

## ADJUSTABLE CABLE CONNECTOR



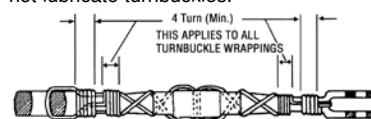
The ACC provides a strong positive connection with tensioning and maximum liner travel in a confined cable installation. Accommodates 3 standard cable terminals, (SA-110 plain ball, MS20664C ball & single shank, and AN111 cable bushing) including combinations of cable-to-cable & cable-to-bracket. It is light & compact without compromising safety. It utilizes an original design of overlapping walls and ridges to enhance the strength of each working surface. The ACC is precision CNC machined 7075 anodized aluminum. Stainless Steel Allen screws work in tandem to provide cable tensioning. 2 stainless tube-nuts provide additional structural security and prevent loosening with interlocking threads. 2

stainless steel pins are locked in place between the adjustment screws and provide an anchor for cable bushings or customized brackets. If necessary, longer adjustment screws can be used to accommodate insufficient cable lengths.

.032, Pin Diameter 1/4" ..... P/N 05-01343 ..... ---

## SAFETY METHODS FOR TURNBUCKLES

Safety all turnbuckles with .041 dia. annealed safety wire using either the double or single wrap as described and illustrated. Do not reuse safety wire. Adjust the turnbuckle to the correct cable tension so that no more than 3 threads are exposed on either side of the turnbuckle barrel. Do not lubricate turnbuckles.



### (A) DOUBLE WRAP (SPIRAL)

Of the methods using safety wire for safety turnbuckles, the method described here is preferred, although either of the other methods described

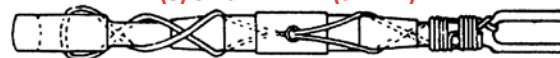
are satisfactory. The method of double wrap safety is shown in figure (A). Use 2 separate lengths of the proper wire. Run one end of the wire through the hole in the barrel of the turnbuckle and bend the end of the wire towards opposite end of the turnbuckle. Then pass the second length of the wire into the hole in the barrel and bend the ends along the barrel on the opposite side first. Spiral the 2 wires in opposite directions around the barrel to cross each other twice between the center hole and the ends. Then pass the wires at the end of the turnbuckle in opposite directions through the holes in the turnbuckle eyes or between the jaws of the turnbuckle fork as applicable, laying one wire along the barrel and wrapping the other at least four times around shank of the turnbuckle and binding the laid wires in place before cutting the wrapped wire off. Wrap the remaining length of safety wire at least 4 turns around the shank and cut it off. Repeat the procedure at the opposite end of the turnbuckle.

### (B) DOUBLE WRAP



Another satisfactory double wrap method is similar to Method A. except that the spiraling of the wires is omitted as shown in figure (B).

### (C) SINGLE WRAP (SPIRAL)



The single wrap methods described and illustrated are acceptable but are not the equal of the double wrap methods.

Pass a single length of wire through the cable eye or fork at either end of the turnbuckle assembly. Spiral each of the wire ends in opposite directions around the first half of the turnbuckle so as to cross each other twice. Thread both wire ends through the hole in the middle of the barrel so that the third crossing of the wire ends is in the hole. Again, spiral the two wire ends in opposite directions around the remaining half of the turnbuckle, crossing them twice. Then, pass one wire end through the cable eye or fork in the manner described above, wrap both wire ends around the shank for at least four turns each, cutting off excess wire.

### (D) SINGLE WRAP



Pass one length of wire through the center hole of the turnbuckle and bend the wire ends toward opposite ends of the turnbuckle. Then pass each wire end through cable eye or fork and wrap each wire end around the shank for at least four times, cutting off excess wire. After safety, no more than 3 threads of the turnbuckle terminal should be exposed.