ASSEMBLY PROCEDURE
MACALLOY 460/S460 ARCHITECTURAL TENSION COMPONENTS

Correct installation of the Macalloy 460 tendons is essential so that they meet the designated design criteria of the system.
It is also essential that any connection plates not designed or supplied by Macalloy meet the recommended design criteria stated in the brochure.
All of the components should be visually inspected for any damage caused due to the transportation of the tendons before installation.
In most applications it is desirable for the forks at either end of the bar to be aligned to help prevent any bending from being induced into the bars. (See diagram 1)

A - FORK ASSEMBLY (see diagram 2)

1. Establish the thread size of the tendon together with its orientation i.e. left hand or right hand. Note all left hand threads on all bars are marked with paint.
2. Screw a lockcover onto the threaded end of the bar with the taper pointing along the bar. Screw the lockcover all the way along the thread length.
3. Screw the fork onto the threaded end of the bar for a distance approximately 1.1/2 times that of the thread diameter for tendons between M10 and M56, and approximately 50mm plus 1 times the thread diameter for M64 to M100 tendons. Note that in order to achieve a full strength connection the bar must be engaged by a minimum of 1 times the thread diameter.
4. Screw the lockcover back up the bar and tighten them against the fork end. The thread of the bar should now be covered by the fork and lockcover.
5. The fork is now ready for the pin assembly - see final assembly.

B - COUPLER ASSEMBLY

1. The coupler is designed to connect the same size diameter bars, all coupling threads are right handed.
2. Establish the bars to be coupled. On the first bar, and if required so, screw a lockcover over the threaded end of bar along the full thread length (as note 2 fork assembly)
3. Screw coupler onto the bar, the amount of bar screwed into the coupler should be half of the overall length of the coupler.
4. On the other bar to be coupled if required screw a lockcover on the thread first, then thread the bar into the coupler until the bars are butting up to each other inside the coupler.
5. Screw the lockcovers on both bars back up the thread and tighten them up against the coupler body.
6. Note in areas where the bars and couplers are cast-in concrete they are not supplied with lockcovers.

C - TURNBUCKLE ASSEMBLY

1. Designed similar to a coupler the turnbuckle connects two bars, the difference being it has a right hand thread at one end and left hand thread at the other, with a chamber to allow the tendon to be adjusted lengthwise.
2. Screw a lockcover onto the threaded end of bar with the taper pointing along the bar. Screw the lockcover all the way along the thread length.
3. Screw the appropriate handed thread of the bar into the turnbuckle for a distance of approximately 25mm plus 1 times the thread diameter for tendons between M10 and M24, and approximately 50mm plus 1 times the thread diameter for M30 to M100 tendons. Note that in order to achieve a full strength connection the bar must be engaged by a minimum of 1 times the thread diameter.
4. The same procedure should then be carried out for the other bar to be attached by the turnbuckle.
5. Tighten the lockcovers up against the turnbuckle body.
6. If the length of the overall tendon needs adjusting, unscrew the lockcovers and turn the turnbuckle (whilst preventing the bars from moving). Ensure that a minimum of 1 times the thread diameter of bar is engaged into the turnbuckle after final length adjustment.
7. Re-tighten the lockcovers upon completion of adjustment.

D - FINAL ASSEMBLY

1. The full tendon should be assembled on the ground with all the necessary forks, turnbuckles and couplers in place. The pins should not be in place at this stage but the length of the overall tendon should be set at the required pin-to-pin dimension.
2. The tendon should then be lifted into place. Note that long tendons will tend to sag under their own self-weight preventing easy connection to the structure, especially if placed horizontally or raking. To ease connection a stiff lifting beam should be used to raise the tendon into position.
3. Once the fork is located over the structural connection plate the pin should be placed through the fork. Detach one round end cap of the pin assembly and push the pin through the fork and gusset plate. Replace the round end cap and secure it by tightening the countersunk screw through the end cap and into the pin body.
4. Once the pins are in-place and secured the tendon is now in a position to be adjusted and tensioned up. If the tendon includes a turnbuckle – see C TURNBUCKLE ASSEMBLY, Note 6. If the tendon does not include a turnbuckle and has a fork at either end of the bar; the overall tendon length may be adjusted by screwing back the lockcovers and rotating the bar whilst preventing the forks from rotating. The lockcovers should then be tightened back up against the fork when the correct tendon length is achieved. Ensure that a minimum of 1 times the thread diameter of bar is engaged into the fork after final adjustment.
5. After the final installation, it is recommended that the lockcovers should be injected with sealant. This prevents corrosion and also stops the lockcover from becoming loose due to any vibrations. Please see our sealant method statement for details.

E - IN SITU ADJUSTMENT

1. Using turnbuckle:
   M10 to M24 inclusive, +/- 25mm.
   M30 to M100 inclusive, +/-50mm.

2. Using left / Right hand forks to the ends of the bar.
Each fork will give the following adjustment:
   M10 to M56 inclusive, +/– ½ thread diameter.
   M64 to M100 inclusive, +/- 25mm.

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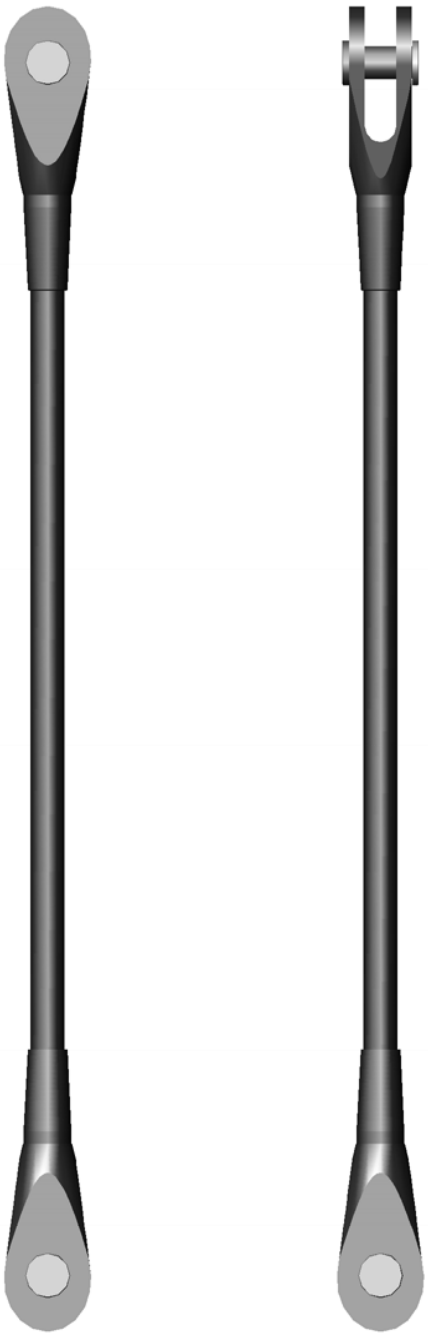
DIAGRAM 1

FORKS
ALIGNED

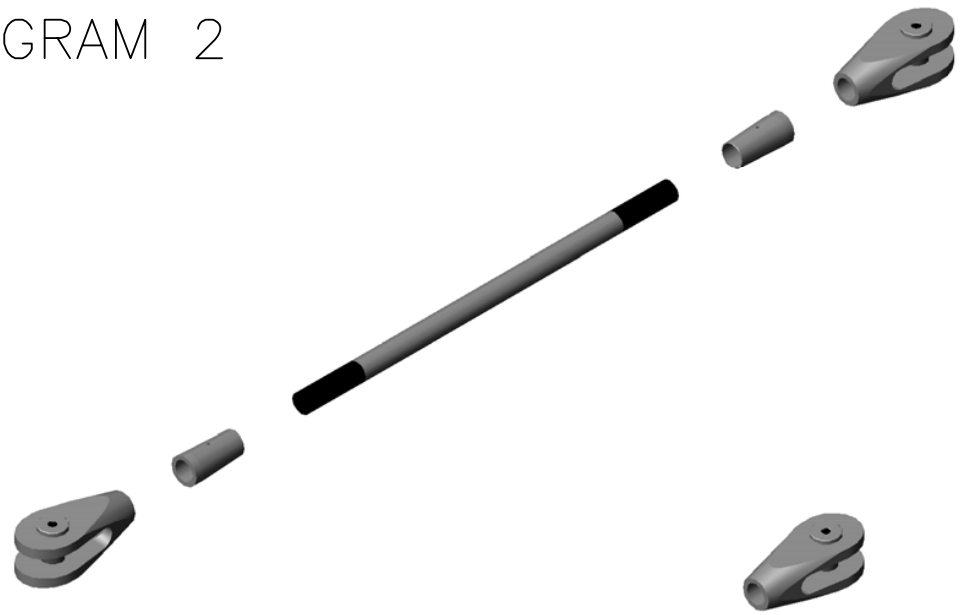


FORKS
MISALIGNED*

* MISALIGNMENT OF FORKS NOT NORMALLY RECOMMENDED UNLESS NO ROTATION OF PIN REQUIRED

DIAGRAM 2

1.



2.

3.

4.