Safety Manual For Maintenance and Use of CCL Pretensioning Grips

Important! Read Thoroughly Before Use

1) The use and maintenance of CCL grips

General

Remember, large potentially lethal forces are being used. These forces can kill. It is vital that to contain these forces, proper procedures for the use and maintenance of CCL grips are followed.

Before use, the barrel and wedge should be thoroughly cleaned by either degreasing or using cleaning brushes and lubricated with high pressure lubricant (CCL Super Dippy) before every reuse (See Note 1). Both should be fully inspected prior to being placed in service. If the wedges are fitted with 'O' rings/circlips these should be in place to help prevent stepping (one segment not in line with the others).

Safety

- Never fit CCL wedges in other supplier's barrels. Never fit other supplier's wedges in CCL barrels. Never mix CCL wedge segments with those of other suppliers.
- In the general interests of safety, grips holding wires or strands under load should be shrouded with shrouds of adequate strength to prevent injury or damage in the event of wire or strand failure.
- The non-jacking end should be shrouded immediately before stressing. The Jacking end should be shrouded immediately after stressing.
- Double ended joints should be shrouded immediately before stressing and whilst under load stressing should be carried out in a sequence to ensure that the jack operator never stands behind a stressed or un-shrouded wire or strand during stressing.
- Operators should not stand in line with any stressed wires or strands or stand directly behind the jack.
- Never walk on stressed strands.
- Protect open beds with chains or other substantial and suitably constructed guards to protect persons from injury due to sudden wire or strand release.
- Under no circumstances should a direct hammer blow with a metal-headed hammer be made on the barrel. This could cause a burst or split. Any load/elongation remaining in the wire/strand must be removed in a controlled manner prior to cutting or burning the wire/strand to remove the grips. Consult Dayton Superior before attempting any prestressing or load/elongation removal procedure that will or may affect the performance of the grips.

2) Use and maintenance

There are 5 basic types of grip

A) Open Grip

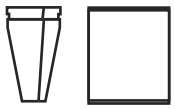
B) Spring Loaded Grip (Screwed Cap)

C) Spring Loaded Grip (Bayonet Cap)

D) Double Ended Joint

E) Double Ended Joint (Reducer)

Terminology



Wedge Barrel

A complete wedge comprises 2/3 segments and a retaining "o" ring.

3) Preparing a grip for use

1) Dismantle the grip
2) Thoroughly clean and degrease all parts paying particular attention to the taper surfaces and the wedge teeth
3) Apply a suitable release agent to the wedge before use (See Note 1). Dayton Superior recommends Super Dippy applied to the wedge and allowed to dry before use.
4) (DEJ's only) Refit safety peg midway along the wedges.
5) Reassemble the grip ensuring that the wedge "o" ring and (where fitted) the spring and spring cap are correctly placed.

Fitting The Grip

General

1. The wire or strand must be cut square and ragged edges removed
2. In the case of strand ensure that the lay is maintained
3. Dirt and rust should be removed from the wire or strand where the grips are to be placed

(4) Type of Grips

Type A Open Grip

Open grips should only be used at the stressing end of the bed with a hydraulic jack incorporating power lock-off. If power lock-off is not available then spring-loaded grips should be used.

1) Thread the barrel over the cleaned end of the wire or strand and push up against the bearing surface.
2) Thread the wedge over the wire or strand and into the rear of the barrel.
3) Tap the wedge lightly into the barrel. A piece of tube is useful for this ensuring the segments do not become stepped.

Type B & C Spring-Loaded Grips (SLA's)

Spring-loaded grips should always be used at the non-stressing end of the bed. They should also be used at stressing end where jacks without power lock-off are being used.

1) Thread the SLA assembly over the cleaned end of the wire or strand and push up against the bearing surface. It is essential that the front face of the barrel sits fully on the bearing surface and that there are no obstructions on the bearing surface preventing this.

Type D & E Double-Ended Joints (DEJ's)

Double-ended joints/joint reducers are used to connect wire or strand together mid span. Where a reducing joint is used, the prestressing force should never exceed 80% of the manufacturers specified minimum breading load for the smallest wire or strand being used.

It is absolutely essential that the double-ended joint is correctly assembled. Ensure that the DEJ screwed barrels are fully threaded onto the center plug. Under no circumstances should a Double Ended Joint be used if either the screwed barrel or center plug threads are damaged and the DEJ can not be correctly assembled. Insert the cleaned end of each wire or strand into the DEJ and push as far as it will go. On strand DEJ's, slight resistance will be felt as the safety peg is pushed through the wedge.

(5) Releasing the Grip After Use

In the unlikely event that the wire or strand cannot be pulled out of the grip, insert a grip release tool into the nose of the grip and squeeze together firmly. If it still proves difficult to release the grip, remove it from the stressing area, and providing there is enough wire or strand projecting from the rear of the grip, place a stressing jack onto the wire or strand and pull it out, complete with the wedge. Do not exceed 80% of the manufacturer's certified minimum breaking load when using a stressing jack for this operation. If there is insufficient wire or strand projecting, cut the wire or strand about 6mm from the nose end of the grip and using a grip release tool and tube, deliver a sharp blow with a hammer to release.

If the hammer blow is still insufficient to release the wedge, a press should be used to push the wedge free of the barrel.

(6) Warning

Under no circumstances should a direct hammer blow with a metal-headed hammer be made on the barrel. This could cause the barrel to burst or split when used again. Release should be by a blow from a soft material such as wood/plastic, or a hide hammer.

(7) Barrel Maintenance

1. The taper bore of the barrel must be clean and free from rust and concrete debris
2. Dayton Superior recommends the use of special tapered cleaning brushes to clean the internal taper. Only brushes supplied by Dayton Superior should be used, as other types may cause damage.
3. Do not release grips by hammering. Under no circumstances should a direct hammer blow with a metal-headed hammer be made on the barrel. This could cause a burst or split when used again. Correct lubrication (CCL Super Dippy) will always enable the release of grips.
4. If the barrel becomes deformed at the back, distortion of the taper bore can occur and prevent correct seating on the wedges.
5. Badly deformed barrels should be discarded. Consult Dayton Superior Technical Services if in any doubt.
6. Barrels have a limited service life and visual inspection should be carried out on a regular basis. It is the end user's responsibility to discard any barrels that are badly worn, indented by hammer blows or damaged in any other way.

(8) Wedge Maintenance

When not in use, wedges should be lubricated to prevent rusting.

Before each use:

1) Clean — Care should be take to clean all rust, dirt and concrete debris from the external taper and the internal teeth. Only if the internal teeth are clear to a maximum depth will good usage and safety be obtained.
2) Brush — Dayton Superior recommends the use of brass (not steel) wire cleaning brushes to clean the wedge teeth.
3) Visually inspect for chipping — Some chipping of the teeth may eventually take place. If more than 20% of the teeth appear chipped, discard that segment.
4) Visually inspect for cracking — Some longitudinal cracking could occur, and will vary in intensity depending on the exact diameter of the strand being used. Discard the segment if the cracking becomes excessive. (See Note 2)

Note 1: A suitable release agent allows the wedge to be removed from the barrel after use using a minimum of force. Under no circumstances should a direct hammer blow with a metal-headed hammer be made on the barrel.

Note 2: Hairline cracks are acceptable but if there is evidence of the crack opening then the wedge must be discarded.