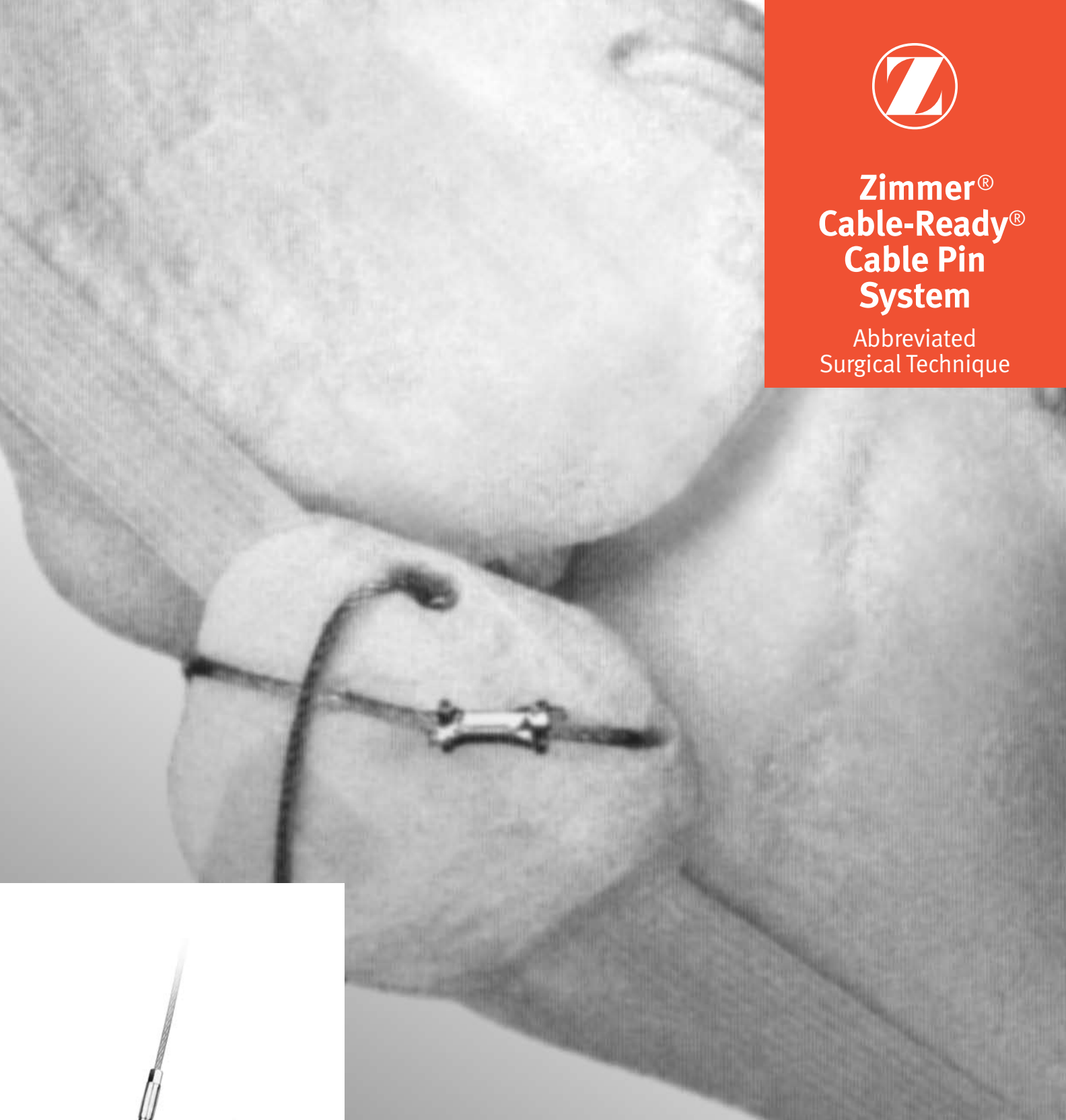


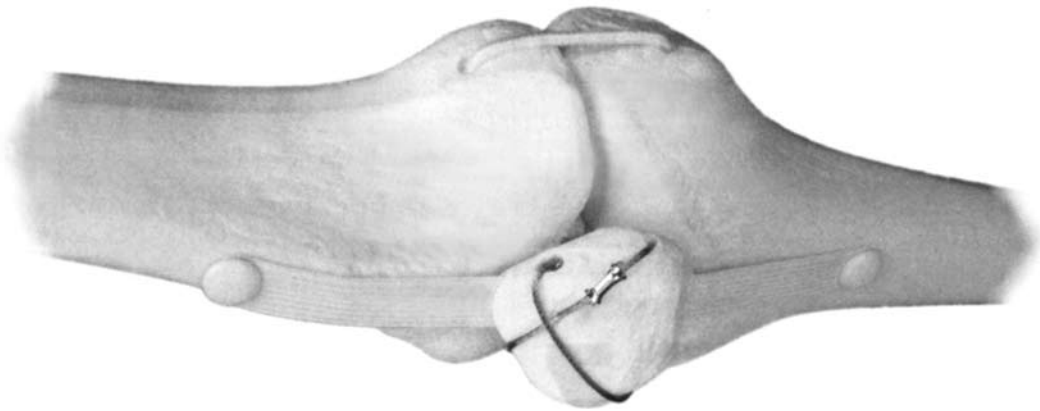


**Zimmer®
Cable-Ready®
Cable Pin
System**

Abbreviated
Surgical Technique



Patella Fixation



Patella Fixation Using the Cable-Ready Cable Grip System

Traditionally, patella fractures have been repaired with a variety of bone screw or wiring techniques. The AO technique emphasized the principle of a tension band over the anterior surface of the patella. Fixation was obtained through a combination of K-wires drilled across the fracture followed by an external tension band to apply compression at the fracture site. Although the principles are sound, there have been three concerns associated with this fixation method.

1. Hardware Irritation - Because the K-wires are smooth, they tend to back out, causing loss of fixation and /or irritation from the pin. The ends of the wires and the twisted knot can be challenging to bury and may irritate soft tissues.
2. Lack of Rigid Fixation - Conventional fixation methods, may also present challenges in obtaining rigid fixation for early range of motion and weight bearing. The wires are relatively more rigid than cables which makes them less easy to pass. Care must be taken during tensioning to avoid stressing or breaking the wire.
3. Hardware Removal - The pins and wires can cause pain, and usually require a second operation for removal.

The Cable Pin available with the *Cable-Ready*® Cable Grip System is intended for fixation of olecranon fractures, greater tuberosity humeral fractures, medial malleolus fractures, patellar fractures, proximal humerus fractures, femur fractures and greater trochanteric reattachment.

Features of the Cable Pin

The concept of a cable pin combines the principles of the AO technique with those of modern materials. A cable has biomechanical properties that make it superior to wire. It is more flexible, which makes it easier to insert and remove. In addition, a cable has superior static strength and much greater fatigue strength than monofilament wire. An appropriately designed cable system has a lower profile and is less irritating to soft tissues.

The Cable Pin system combines a partially threaded 4.0mm cancellous lag screw (pin) with a cable. The cable is attached to the smooth shank end of the pin. The opposite end of the pin contains the threaded cancellous portion. Once the partially threaded pin portion is inserted into the bone, the cables are wrapped around the bone externally, and are tensioned. The cable tension prevents the pin from backing out, and created compression at the fracture site. The cable, by being attached to the pin, is also prevented from migrating. The cable pin technique enables the surgeon to have simultaneous, interconnected internal and external fixation of the bone.

Surgical Technique for Patella

Reduce the fractured patella components and apply a reduction clamp. Predrill across the fracture site with a 2.5mm drill bit. While predrilling is often unnecessary for other indications, the patella typically has dense bone and predrilling is necessary.

1 Drill Hole

Using a drill guide to protect the patellar ligament, pass a 2.5mm drill bit vertically through the patella in a superior direction. Direct the drill bit parallel to the articular surface, angling it slightly posterior or neutral (Fig. 1). Drill a second 2.5mm hole parallel to the first. Generally, patellar fractures are in the middle to distal one-third of the patella and the Cable Pin is directed superiorly. If the patellar fracture is in the proximal one-third of the patella, the Cable Pin can be reversed and directed inferiorly.

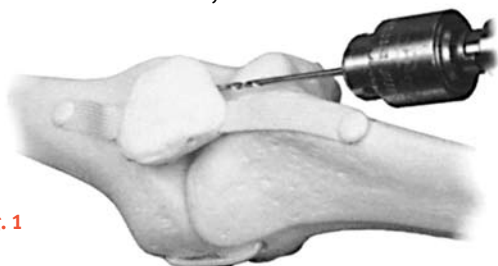


Fig. 1

2 Insert Pin

Thread the cable through the cannulated Cable Pin Tubular Driver until the hex of the pin at the cable-pin junction is locked into the driver tip (Fig. 2). Then load the Cable Pin/driver assembly into a cannulated trauma drill.

Drill the threaded portion of the pin across the fracture site from inferior to superior until the tip is slightly countersunk into the bone



Fig. 2

(Fig. 3). This will prevent protusion of the pin into the soft tissues. Disconnect the driver from the Cable Pin by pulling it away from the cable.



Fig. 3

Insert a second Cable Pin through the second hole in a similar manner.

Note: Care must be taken to ensure spinning cable does not catch on items, such as clothing or drapes.

3 Create “Figure Eight”

Create a horizontally directed drill hole anterior to the pins in the superior pole of the patella (Fig. 4). Cross the two cables in a figure eight over the anterior surface of the patella. Pass the leader of one cable through the horizontal drill hole in the patella and pull it through (Fig. 5).

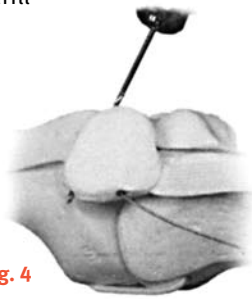


Fig. 4

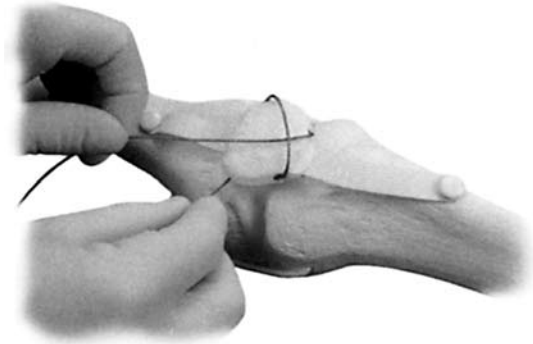


Fig. 5

4 Load Crimper & Cables

Load an oval crimp into the jaws of the Cable Pin Crimper (Fig. 6). Squeeze the crimper handle until the ratchet clicks once to secure the crimp. Then pull out the disposable crimp passer. Pass the free ends of the



Fig. 6

Pass the cables into the spools at the end of one of the handles of the crimper (Fig. 7). The hole in the spool must line up with the line on top of the spool to insert the cable. Pull the cables evenly to remove slack. The spools are self-locking and self-loosening when tension is applied or released on the cable.

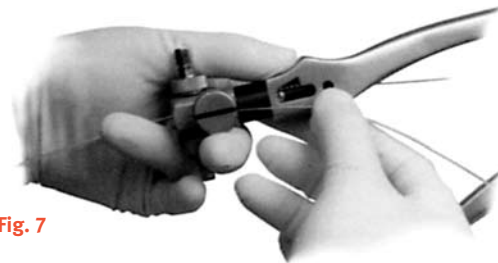


Fig. 7

5 Tension & Crimp

Insert the Crimper Tensioning Handle, which is keyed into a hex on the Cable Pin Crimper. Tension the cable by turning the handle (Fig. 8&9). A scale on the crimper handle indicated the tension. Adjust the tension, depending on the type and quality of bone. Carefully observe the effects of tensioning at the fracture site. Generally, with good quality bone the cables can be tensioned to the upper line.



Fig. 8



Fig. 9

6 Crimp

When the appropriate tension has been achieved, squeeze the handles of the crimper until a click is heard and the handles automatically open (Fig. 10). This is a safety mechanism to help assure that the crimp is fully crimped before the jaws open. The crimper jaws are tapered and low profile to enable the surgeon to position the crimp in a low profile location. If possible, do not locate the crimp over a bony prominence with only subcutaneous coverage. It is best to bury the crimp before crimping, if necessary.

Turn the crimper tensioning handle to release the tension. Remove the Cable Pin Crimper.

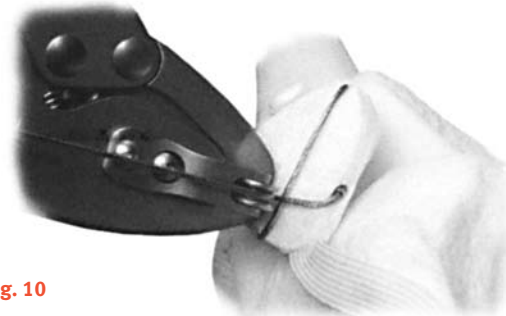


Fig. 10

7 Cut Cables

Pull each cable back, and use the Cable Cutter to cut the excess cable flush at the crimp (Fig. 11).

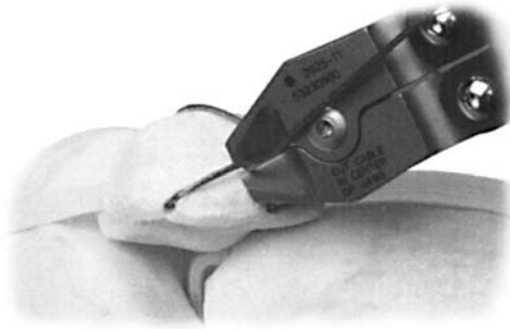


Fig. 11



Finished Assembly

8 Cable Pin Removal

To remove the cable pin, cut the cable on each side of the crimp, and remove the crimp. Carefully dissect the two ends of the cable down to the base of the pin. Keep the cables intact to use as a guide to the location of the internal pins.

Load the Cable Pin Tubular Driver into a trauma drill which is set on reverse. Insert the free end of the cable into the bit. Slide the bit down the cable until it engages with the hex of the pin. Once engaged, use the drill to back out the pin. Alternatively, use the T-handle/ Long Hex Driver to remove the pin.

If this technique is not possible, use an easy out pin remover to back out the pin.

- 00-2232-050-08 Crimper Tensioning Handle
- 00-2232-050-18 Cable Pin Implant Set*, 35mm

Ordering Information

Catalog No.	Description
00-2232-050-05	Cable Pin Tubular Driver
00-2232-050-07	Cable Pin Crimper Assembly
00-2232-050-08	Crimper Tensioning Handle
00-2232-050-17	T-Handle/Long Hex Driver Assembly
00-2232-050-18	Cable Pin Implant Set*, 35mm
00-2232-050-19	Cable Pin Implant Set*, 40mm
00-2232-050-20	Cable Pin Implant Set*, 45mm
00-2232-050-21	Cable Pin Implant Set*, 65mm
00-2232-095-00	Cable Pin Instrument Case

* Each implant set contains two Cable Pin/Cable Assemblies and two Crimp/Crimp Passer assemblies.

Contact your Zimmer representative or visit us at www.zimmer.com