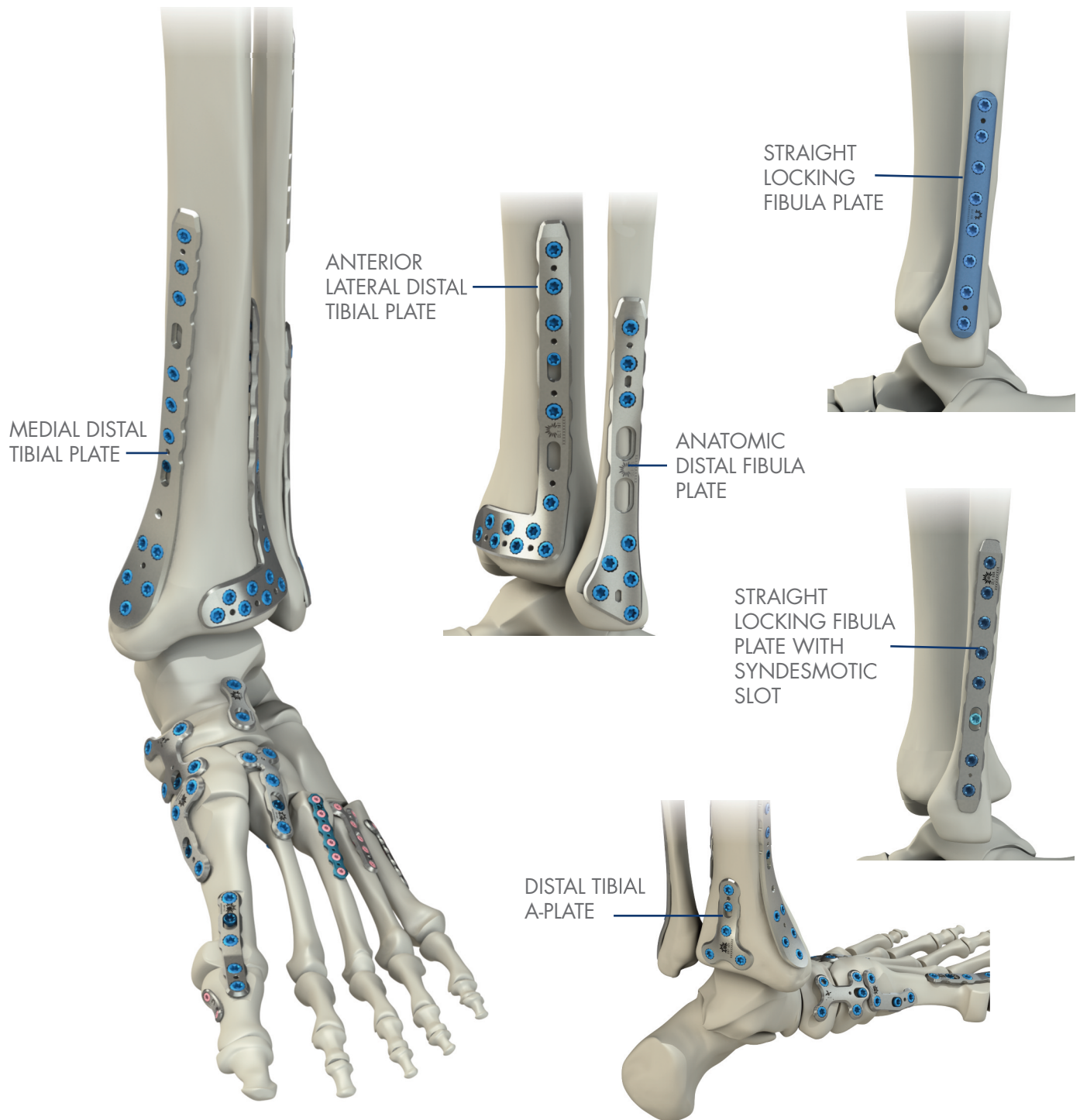


# The Flower Bimalleolar Fracture

PROCEDURE GUIDE

## The Flower Foot & Ankle Application



### INDICATIONS FOR USE:

The Flower Ankle Plating Set is intended for use for fixation of the ankle in adults and adolescents (12-21) in whom the growth plates have fused, and particularly in osteopenic bone. Specifically,

- Distal Medial and Lateral Tibia plates are intended for fixation of osteotomies, fractures, non-unions, and replantations of bones and bone fragments of the diaphyseal and metaphyseal regions of the distal tibia.
- Distal Tibia A-Plates are intended to buttress partial articular fractures and bone fragments of the distal tibia.
- Straight and Distal Lateral Fibula Plates are intended for fixation of osteotomies, fractures, non-unions, mal-unions, and replantations of bones and bone fragments of the diaphyseal and metaphyseal regions on the distal fibula.

The Flower Orthopedics Bone Screw set is intended to be used for the fixation of bone structures, fusion of joints of bone reconstruction.

## The Flower Bimalleolar Fracture – Product Rationale



Flower Orthopedics offers three plates for distal fibula fixation; straight locking plates, straight locking plates with syndesmotic slots and anatomic distal fibula plates.

The Flower Fibula Plates allow for the use of variable angle locking and compression screws that sit flush within the plate.

The slots in the straight and anatomic plates are designed to accommodate variable placement of syndesmotic fixation, when required. The plates are compatible with titanium endo buttons if flexible syndesmotic fixation is desired.

## The Flower Bimalleolar Fracture – Design Features

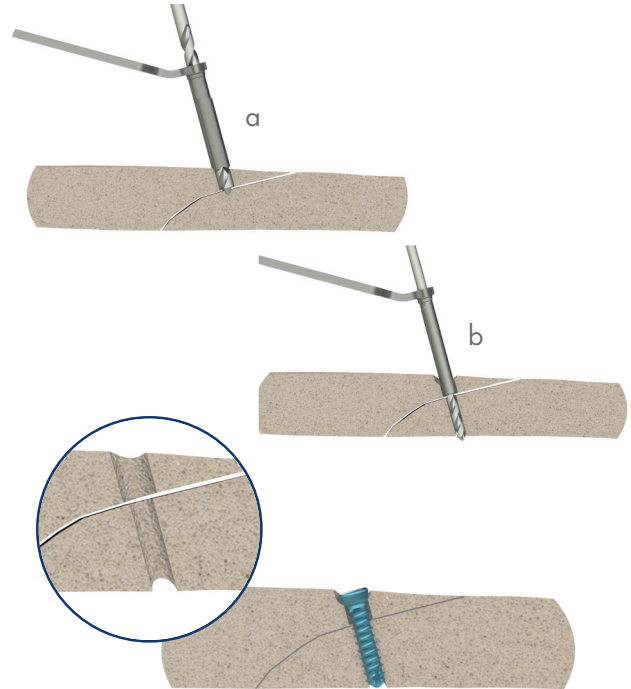
|  | PLATE RATIONALE   | SURGICAL BENEFIT  |
|--|---|---|
|  | Dual syndesmotic slots  | Allows variable placement of the syndesmotic fixation & recess allowing suture buttons to sit flush |
|  | Anatomic curvature  | Ideal anatomic fit distally & along the fibular shaft   |
|  | Patented Flower locking mechanism features variable angle locking screw holes allowing +/- 15° of freedom | Screws sit flush in the locking holes   |
|  | Flower E-Kit™, a multifunctional single-use instrument kit for plating and cannulated screw fixation      | Streamlined and standardized instrumentation for faster case completion                             |

# The Flower Bimalleolar Fracture – Surgical Strategy

**Surgical Strategy shown using the Flower Anatomic Distal Fibula Plate. This same strategy applies to Flower Straight Locking Fibula Plate and Straight Locking Fibula Plate with Syndesmotic Slot.**

## Step 1 – Fracture Reduction using the Flower Lag Technique

- Once the fracture is reduced, use the 3.5mm drill bit (LSK 035) and the 3.5mm end of the drill guide to drill the gliding hole in the near cortex.
- Place the 2.5mm end of the drill guide into the previously drilled gliding hole and use the 2.5mm drill bit (DBK 035) to drill the pilot hole bicortically through the far cortex. Placing the 2.5mm end of the drill guide into the 3.5mm drilled hole will ensure the pilot hole and gliding hole are concentric.
- Screw length can be confirmed using the depth gauge that is part of the Flower E-Kit™ (EWK 200).
- With the hook of the depth gauge engaged behind the far cortex of the pilot hole, confirm the depth gauge is fully seated on the near cortex. The depth of the hole can be read off the distal end of the slider.
- Insert the 3.5mm variable angle compression screw using the screw driver from the Flower E-Kit (EWK 200).



## Step 2 – Plate Selection and Provisional Fixation

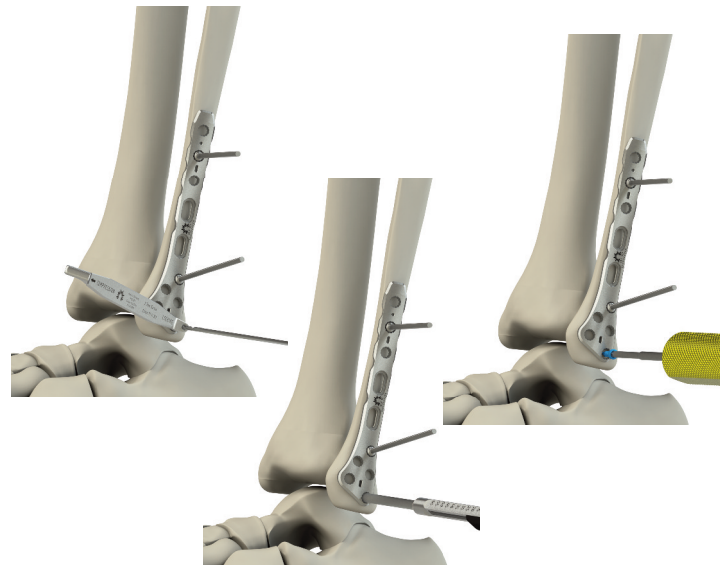
- Three plate types are available depending the anatomy and fracture pattern. If using the Anatomic Distal Fibula Plate, a plate trial FIS 653 is available to determine the appropriate plate before opening the sterile packaged plate.
- The plate trial may also be used as a bending template if bending is required.
- Select plate size so that a minimum of 3 screws are proximal to the fracture and a minimum of 3 screws are distal to the fracture.
- The plate can be temporarily fixed to the bone using olive wires placed through the screw holes.

## Step 3 – Placement of Distal Locking Screws

2.7mm variable angle locking screws are recommended for the distal portion of the construct

- Starting with the distal locking holes and, using a 2.0mm drill bit (DBK 027), the pilot holes are drilled using caution not to violate the opposite cortex in the articular portion of the ankle joint.
- Measure the pilot hole using the Flower Depth Gauge (OWK 200).
- Ensure that the instrument is fully seated into the screw hole before the hook probe is advanced into the pilot hole.
- Pilot hole depth can be read off the distal end of the slider.
- Insert the locking screws into the distal screw holes using the Flower Screw Driver.

**Note:** This is NOT a torque limiting screw driver. Screws are fully inserted once flush with the top of the plate. Do not overtighten.

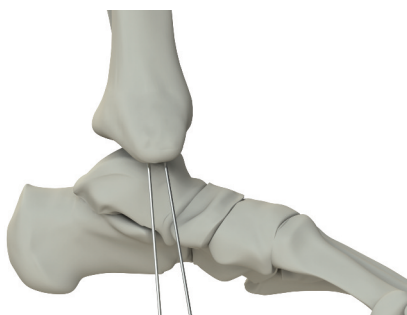
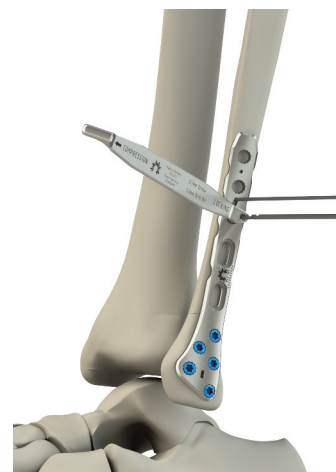


## The Flower Bimalleolar Fracture – Surgical Strategy

### Step 4 – Insert Proximal Screws

- The pilot holes are created and measured in the same manner as described in Step 3.
- Using the “locking end” of the drill guide (DBK 035) pilot holes are drilled for both 3.5mm locking and compression screws in the proximal shaft.

**Note:** To place screws under power, utilize the quick connect medium (T-15) speed driver shaft found in the Flower Large Bone K-Wire Kit (FIM 115). Only insert the screw 90% of the total length with the speed driver. The final screw threads must be inserted with the Screw Driver (EWK 200) to prevent overtightening. Do not overtighten, screws are fully inserted once flush with the top of the plate.

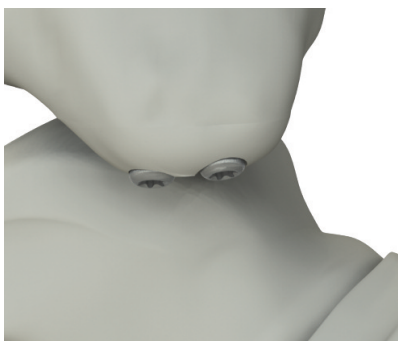
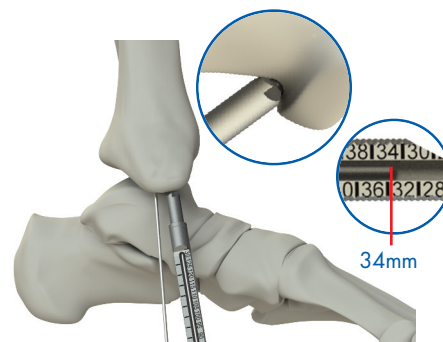


### Step 5 – Tibia Fracture Reduction Using Flower Guide Wires (EWK 200)

- Reduce the medial malleolar fragment(s) and insert Flower Guide Wires (EWK 200) to hold the fragments in place.

### Step 6 – Measure Cannulated Screw and Countersink

- Slide the cannulated depth gauge (EWK 200) over the guide wire and countersink if desired.
- Measure required screw length. If countersinking is not required measure length with tip on bone.



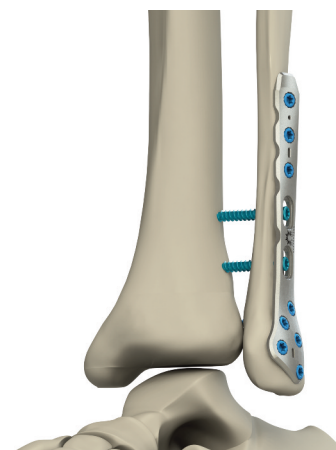
### Step 7 – Insert Cannulated Screw

- Insert the 4.0mm partially threaded cannulated screw over the guide wire and compress the fragments. Repeat for second screw.

### Step 8 – The Final Construct

Anatomically contoured and low profile, the Flower Distal Fibula Plate provides five distal locking holes for robust fixation. The syndesmosis slots aid in proper syndesmosis targeting and allow all forms of fixation to sit with the top of the plate.

Low profile cannulated screws provide robust bone purchase and compression through a limited incision.



## The Flower Bimalleolar Fracture – Implant Selection

### VARIABLE ANGLE LOCKING SCREWS

| Screw Diameters | Product Description                | Lengths   |
|-----------------|------------------------------------|-----------|
| 2.7mm           | 2.7mm Variable Angle Locking Screw | 10mm-20mm |
| 3.5mm           | 3.5mm Variable Angle Locking Screw | 10mm-20mm |

Additional lengths available.



### VARIABLE ANGLE COMPRESSION SCREWS

| Screw Diameters | Product Description                    | Lengths                |
|-----------------|--|------------------------|
| 2.7mm           | 2.7mm Variable Angle Compression Screw | 10mm-18mm              |
| 3.5mm           | 3.5mm Variable Angle Compression Screw | 10mm-30mm              |
| 4.0mm           | 4.0mm Variable Angle Compression Screw | 10mm-20mm<br>40mm-60mm |

Additional lengths available.



### CANNULATED, PARTIALLY THREADED SCREWS

| Screw Diameter | Product Description                 | Lengths   |
|----------------|-------------------------------------|-----------|
| 4.0mm          | Partially Threaded Cannulated Screw | 28mm-60mm |

Additional lengths available.



### ANATOMIC DISTAL FIBULA PLATES

| Part #  | Orientation | Holes |
|---------|-------------|-------|
| DLF 105 | Left        | 5     |
| DLF 205 | Right       | 5     |
| DLF 107 | Left        | 7     |
| DLF 207 | Right       | 7     |



### FLOWER STRAIGHT LOCKING FIBULA PLATE WITH SYNDESMOTIC SLOT

| Part #  | Product Description | Lengths |
|---------|---------------------|---------|
| DLF 006 | 6-Hole Plate        | 86mm    |
| DLF 007 | 7-Hole Plate        | 98mm    |
| DLF 008 | 8-Hole Plate        | 110mm   |



### FLOWER STRAIGHT LOCKING FIBULA PLATE

| Part #  | Product Description | Lengths |
|---------|---------------------|---------|
| DLF 505 | 5-Hole Plate        | 59mm    |
| DLF 506 | 6-Hole Plate        | 71mm    |
| DLF 508 | 8-Hole Plate        | 92mm    |
| DLF 510 | 10-Hole Plate       | 119mm   |





# The Flower Bimalleolar Fracture – Single-Use Instrument Overview

## DISTAL FIBULA PLATE TRIALS

| Part #  | Contents of Kit  |
|---------|--|
| FIS 653 | Anatomic Distal Fibula Plate Trials                        |
| FIS 652 | Straight Locking Fibula Plate with Syndesmotic Slot Trials |
| FIS 657 | Straight Locking Fibula Plate Trials                       |



## DRILL BIT KITS

| Part #  | Contents of Kit                  |
|---------|----------------------------------|
| DBK 027 | 2.0mm Drill Bit with Drill Guide |
| DBK 035 | 2.5mm Drill Bit with Drill Guide |
| DBK 040 | 3.0mm Drill Bit with Drill Guide |



## CANNULATED DRILL BIT KIT

| Part #  | Contents of Kit            |
|---------|----------------------------|
| CDB 040 | 4.0mm Cannulated Drill Bit |



## LAG SCREW KITS

| Part #  | Contents of Kit                            |
|---------|--|
| LSK 027 | 2.7mm Drill Bit with Lag Screw Drill Guide |
| LSK 035 | 3.5mm Drill Bit with Lag Screw Drill Guide |
| LSK 040 | 4.0mm Drill Bit with Lag Screw Drill Guide |



## LARGE BONE K-WIRE KIT

| Part #  | Contents of Kit  |
|---------|--|
| FIM 115 | 1.4mm K-Wires (4)<br>T15 Medium Speed Driver Shaft, QC |



## FLOWER E-KIT

| Part #  | Content of Kit   |
|---------|--|
| EWK 200 | T15 Medium Cannulated Screw Driver<br>Cannulated Depth Gauge and Countersink<br>Plating Depth Gauge<br>1.8mm Olive Wires (2)<br>CoCr Guide Wires (2) |



## PLATE BENDERS

| Part #  | Contents of Kit |
|---------|-----------------|
| FIM 234 | Plate Benders   |





### **Schedule Case Sooner.**

(Ready-for-Surgery™)

- No cleaning and sterilization
- FlowerCube is always ready to complete the case
- No time consuming set drop off



### **Treat Confidently.**

(Sterile & Single-Use)

- Instrument kits are always complete
- Drill bits are always sharp
- Reliable sterility



### **Turn OR Faster.**

(FlowerCube)

- FlowerCube is always ready for the next surgery
- No delay with back to back cases
- Enough sterile inventory for multiple cases