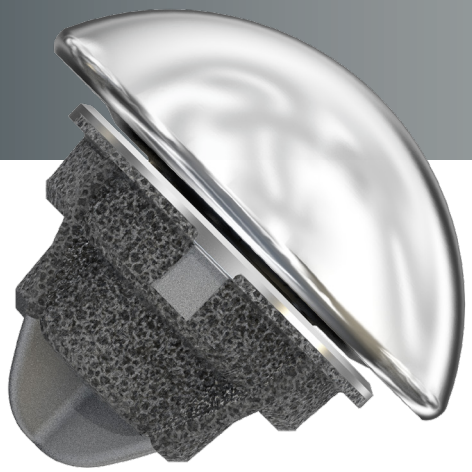
stryker

Tornier Perform®

Humeral System Stemless



Operative technique

This publication sets forth detailed recommended procedures for using Stryker devices and instruments. It offers guidance that you should heed, but, as with any such technical guide, each surgeon must consider the particular needs of each patient and make appropriate adjustments when and as required.

Important

- The patient should be advised that the device cannot and does not replicate a normal healthy bone, that the device can break or become damaged as a result of strenuous activity or trauma and that the device has a finite expected service life.
- Removal or revision of the device may be required sometime in the future.
- Cleaning and sterilization information is provided in the applicable instructions for use.
- Non-sterile devices, including implants and instruments, must be cleaned and sterilized prior to use, in accordance with validated methods.
- Devices that are able to be disassembled should be disassembled prior to point-of-use processing. Additionally, devices with movable components that do not facilitate disassembly should be manually articulated during the point-of-use processing step in order to evacuate additional soils.
- Please remember that the compatibility of different product systems has not been tested unless specified otherwise in the product labeling.
- Consult Instructions for Use (https://ifu.stryker.com) for a complete list of potential adverse effects and adverse events, contraindications, warnings and precautions.
- The surgeon must advise patients of surgical risks, and make them aware of adverse effects and alternative treatments.
- An implant whose packaging is open or damaged or whose expiration date has passed must not be used. Every precaution must be taken to ensure sterility when opening the packaging of the implant and during implantation.

Tornier Perform
Humeral System – Stemless

Contents

Overview

The Tornier Perform Humeral System– Stemless is intended for use in anatomic total shoulder arthroplasty.

The Tornier Perform Humeral System– Stemless consists of a nucleus and modular humeral heads.

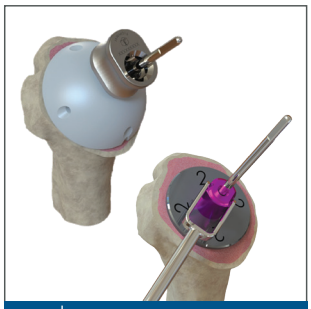
Nuclei are available in four collar diameters: 32 mm, 34 mm, 38 mm and 42 mm. The nuclei are made of titanium with Adaptis technology, manufactured using direct metal laser sintering. The porous structure mimics cancellous bone to achieve biological fixation.

Humeral heads are modular, allowing for centered, low and high offset options utilizing a coupler. The humeral heads are available in cobalt chrome and titanium.

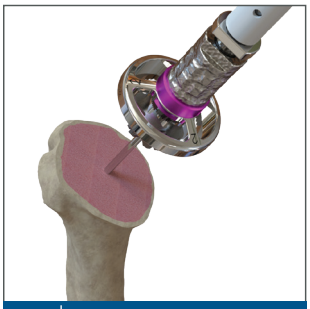
Operative technique steps

1 Resect

2 Protect



3 Size and place pin



4 Ream

5 Blaze

6 Plane

7 Trial

8 Implant nucleus

9 Head impaction

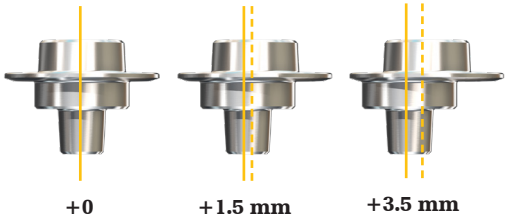
Implant sizing

Tornier Perform nucleus

Reference	Description	Collar diameter	Length
DWM001A	Size 1 nucleus – US anatomic	32 mm	21 mm
DWM002A	Size 2 nucleus – US anatomic	34 mm	23 mm
DWM003A	Size 3 nucleus – US anatomic	38 mm	25 mm
DWM004A	Size 4 nucleus – US anatomic	42 mm	27 mm

Tornier Perform humeral head coupler

Reference	Description	Offset	
DWT100	Centered humeral head coupler Ti	Centered	0 mm
DWT110	Low offset humeral head coupler Ti	Low	1.5 mm
DWT120	High offset humeral head coupler Ti	High	3.5 mm

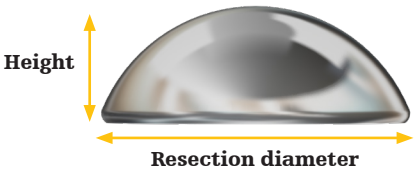


Implant sizing

Tornier Perform cobalt chrome (CoCr) humeral heads

Reference	Description	Resection diameter	Height
*DWN3713	CoCr humeral head	37 mm	13.5 mm
DWN3914	CoCr humeral head	39 mm	14 mm
DWN4115	CoCr humeral head	41 mm	15 mm
DWN4314	CoCr humeral head	43 mm	14 mm
DWN4316	CoCr humeral head	43 mm	16 mm
DWN4615	CoCr humeral head	46 mm	15 mm
DWN4617	CoCr humeral head	46 mm	17 mm
DWN4619	CoCr humeral head	46 mm	19 mm
DWN4816	CoCr humeral head	48 mm	16 mm
DWN4818	CoCr humeral head	48 mm	18 mm
DWN4820	CoCr humeral head	48 mm	20 mm
DWN5016	CoCr humeral head	50 mm	16 mm
DWN5019	CoCr humeral head	50 mm	19 mm
DWN5022	CoCr humeral head	50 mm	22 mm
DWN5219	CoCr humeral head	52 mm	19 mm
DWN5223	CoCr humeral head	52 mm	23 mm
DWN5420	CoCr humeral head	54 mm	20 mm
DWN5424	CoCr humeral head	54 mm	24 mm
*DWN5622	CoCr humeral head	56 mm	22 mm

*Available by special request only.



Indications and contraindications

Intended use

The Tornier Perform Humeral System – Stemless is intended for anatomic total arthroplasty of the shoulder.

Indications for use

The nucleus, humeral head coupler and humeral head are used in conjunction with a glenoid implant as a total replacement.

The Tornier Perform Humeral System – Stemless is to be used only in patients with an intact or reconstructable rotator cuff, where it is intended to provide mobility, stability, and to relieve pain. The Tornier Perform Humeral System – Stemless is indicated for use as a replacement of shoulder joints disabled by:

- Non-inflammatory degenerative joint disease (i.e. osteoarthritis) and avascular necrosis
- Post-traumatic arthritis

Titanium humeral heads are intended for patients with suspected cobalt alloy material sensitivity. The wear properties of titanium and titanium alloys are inferior to that of cobalt alloy. A titanium humeral head is not recommended for patients without a suspected material sensitivity to cobalt alloy.

All components are single use and intended for cementless use.

The Tornier Perform Humeral System – Stemless is intended to be used with cemented polyethylene glenoid components, in an anatomic total shoulder arthroplasty.

Contraindications

Absolute contraindications for shoulder arthroplasty:

- Active local or systemic infection, sepsis and osteomyelitis
- Inadequate bone stock in the proximal humerus or glenoid fossa for supporting the components
- Poor bone quality, where there could be considerable migration of the prosthesis and/or a chance of fracture of the humerus or glenoid
- Use of this implant is contraindicated in the presence of significant injury to the upper brachial plexus.
- Neuromuscular disease (e.g. joint neuropathy)
- Known allergy to one of the materials
- Patient pregnancy
- Acute humeral fracture

Relative contraindications for shoulder arthroplasty:

- Distant foci of infection from genitourinary, pulmonary, skin and other sites, dental focus infection which may cause hematogenous spread to the implant site. The foci of infection should be treated prior to, during and after implantation.
- Rapid joint destruction, marked bone loss or bone resorption apparent on radiograph
- Uncooperative patient or patient with neurologic disorders who are not capable of following directions
- Osteoporosis
- Metabolic disorders which may impair bone formation
- Osteomalacia
- Revision of a previous failed shoulder arthroplasty

Operative technique

Pre-operative planning

Pre-operative planning is performed utilizing radiographic templates on the AP, axillary and lateral views.

Appropriate implant size and positioning is determined.

The use of a CT scan or MRI is recommended to better determine the orientation of the glenoid, the quality of glenoid bone stock and to confirm the integrity of the rotator cuff.

Humeral head resection

Once the humerus has been exposed, select freehand or guided resection.

Guided resection

To complete the humeral resection, two guide options are provided: extramedullary or intramedullary.

Extramedullary cut guide (EM)

Each side of the cut guide is marked L or R for left or right.

Assembly

Select the 135° cut guide that matches the operative side of the patient (left or right). (Figure 1)

Thread the retroversion rod into the version hole on the cut guide that lines up best with the patient's native retroversion. The extramedullary cut guide has measurements of 10°, 20° and 30° retroversion to allow for alignment relative to variations in patient anatomy.

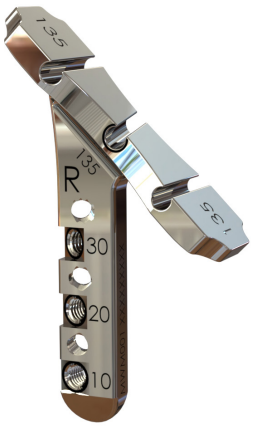


Figure 1

Operative technique

Use of the extramedullary cut guide

After the osteophytes have been removed, the shaft of the extramedullary cut guide can be aligned with the humeral diaphysis. (Figure 2)

With the extramedullary cut guide appropriately positioned, use the pin driver to place two single use 3x75 mm guide pins through the extramedullary cut guide and into the humerus to secure the construct. (Figure 3)

Note:
If additional stability is needed, insert a guide pin into the oblique pin hole between the two parallel guide pins.

Note:
A tissue probe can be used to visualize the cut and check rotator cuff insertion. (Figure 4)

If adjustments are necessary, remove the guide pins and reposition the extramedullary cut guide.

With the extramedullary cut guide aligned on the humerus, place the oscillating saw along the top flat portion of the extramedullary cut guide and complete the humeral head resection. (Figure 5)

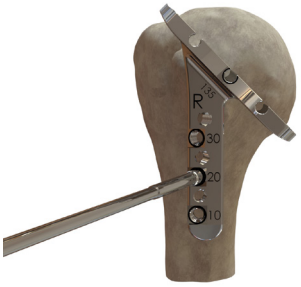


Figure 2

Figure 3

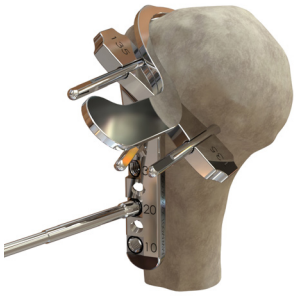


Figure 4

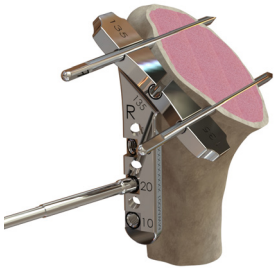


Figure 5

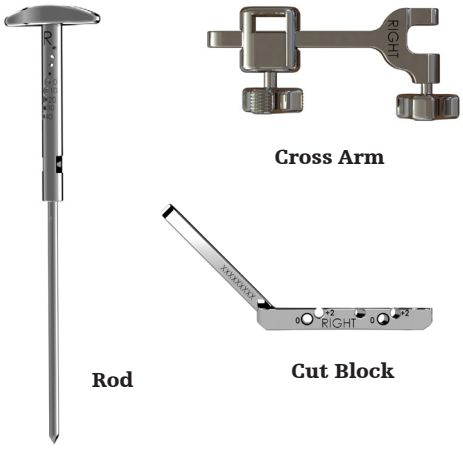
Operative technique

Intramedullary cut guide (IM)

The cut guide is comprised of three components: rod, cross arm and cut block. The cut block is offered in 135°.

Assembly

1. Position the rod so that the side that is visible matches the operative side of the patient (left or right). (Figure 6)
2. Position the cross arm so that the side that is visible matches the operative side of the patient (left or right). (Figure 7)
3. Slide the cross arm onto the rod via the flats distal to the retroversion holes and secure with the non-etched thumb screw. (Figure 8)



Cross Arm

Rod

Cut Block

Figure 6

Figure 7

Figure 8

Operative technique

4. Select the 135° cut block.
5. Position the cut block so that the side that is visible matches the operative side of the patient (left or right). (Figure 9)
6. Insert the cut block into the outer slot of the cross arm and secure with the etched thumb screw. (Figures 10 and 11)

Note:
Ensure that the etched thumb screw on the cross arm coupling is fully loosened before inserting the cut block into the coupling. If desired, a 2.5 mm hex driver can be used to tighten or loosen the thumb screws.

Figure 9

Figure 10

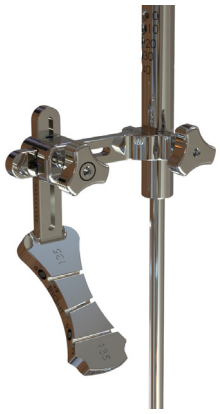


Figure 11

Operative technique

Use of the intramedullary cut guide

Use the sharp, distal tip of the rod to gain access to the humeral canal. Be sure to insert the distal tip just medial to the supraspinatus insertion point and centered in the anterior-posterior (AP) plane.

Once access to the humeral canal is achieved, advance the assembled intramedullary cut guide into the humeral canal until it rests on the humeral head. (Figure 12)

To adjust the height and location in the AP plane of the cut block, loosen the etched thumb screw on the cross arm coupling. Once the desired location of the cut block is achieved, tighten the etched thumb screw on the cross arm coupling.

Note:
Care should be taken until the etched thumb screw is tightened when adjusting the cut block, as the slide is not captured on the cross arm.

The rod has version holes at 0°, 10°, 20°, 30° and 40°. Place the retroversion rod into the appropriate version hole on the proximal portion of the rod and align the retroversion rod with the patient's forearm flexed at 90 degrees.

Figure 12

Operative technique

Once the desired height and retroversion are achieved, secure the cut block to the proximal humerus using two single use 3x75 mm guide pins. Using the pin driver, insert the guide pins into the holes labeled +0. (Figure 13)

A tissue probe can be used to visualize the cut and check rotator cuff insertion. (Figure 14)

After the cut block is secured to the humerus and the cut is checked, fully loosen the etched thumb screw on the cross arm and remove the rod and cross arm. (Figure 15)

Figure 13

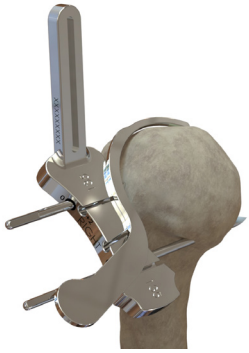


Figure 14

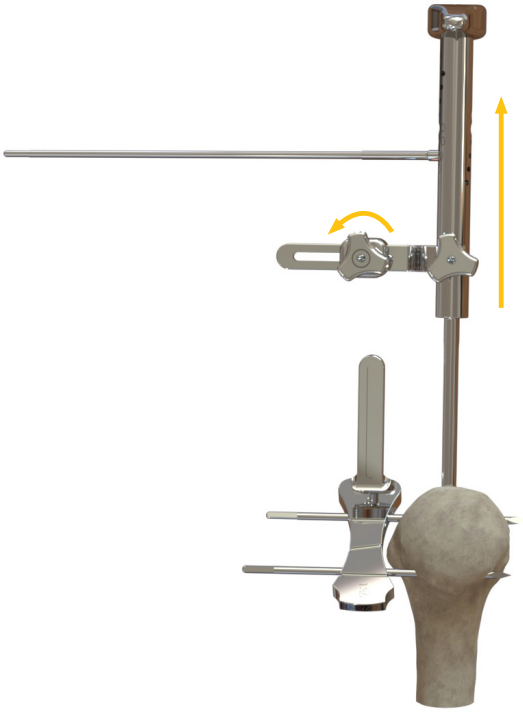


Figure 15

Operative technique

Using an oscillating saw, complete the humeral head resection.

Note:
If additional resection is needed, slide the cut block off of the pins and reposition utilizing the +2 pin holes. This will resect an additional 2 mm of bone. (Figures 16 and 17)

Remove guide pins with the pin pullers and remove the cut block. (Figure 18)

Figure 16

Figure 17

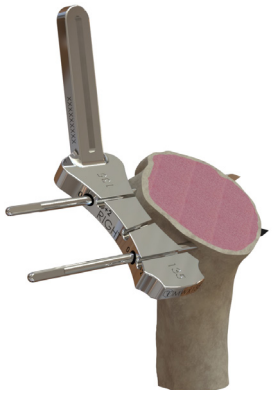


Figure 18

Operative technique

Protect

Humeral cut protectors are provided to protect the resection from the retractors while preparing the glenoid. The cut protectors have been designed with three spikes on the bottom side. They are available in four diameters that match the implant collar diameter: 32 mm, 34 mm, 38 mm and 42 mm. (Figure 19)

To place the cut protector, select the size that best covers the resection surface. Position the cut protector and with slight pressure, press the cut protector until it is flush on the resected surface of the humerus. (Figure 20)

The glenoid can now be prepared.

Once the glenoid has been implanted, the cut protector can be removed and preparation of the humerus can begin.

Note:
The cut protector has been designed with removal holes that can be used with pin pullers to lift the cut protector off the resected surface of the humerus. This can also be done by hand or using an osteotome. (Figure 21)

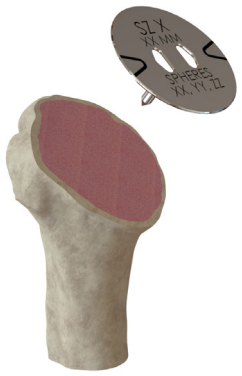


Figure 19

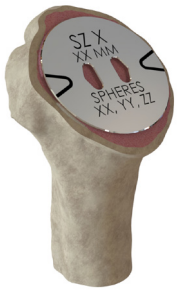


Figure 20

Figure 21

Operative technique

Size and place pin

Note:
If osteophytes were not removed before humeral head resection, it is recommended that they be removed prior to sizing.

There are two different options for placing the pin, either utilize a sizer disc or a humeral head trial.

Option #1: sizer disc

To size for the humeral implant using a sizer disc, attach one of the four sizer discs to the sizer handle. Place the sizer onto the resected surface of the humerus. (Figure 22)

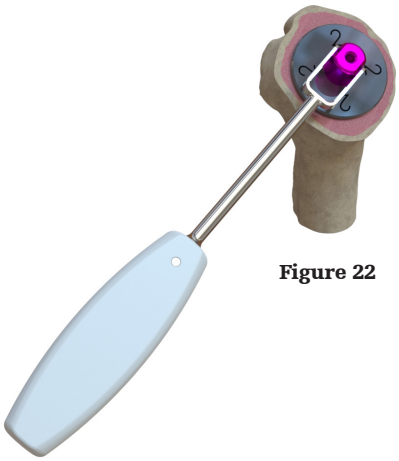


Figure 22

Select the sizer disc that remains within the cancellous bone surface of the humerus. (Figures 23 and 24)

The diameter of the sizer disc matches the diameter of the final nucleus collar. (Figures 25 and 26)

Note:
The color of the center of the sizer disc will assist in size identification in subsequent steps. (Table A)

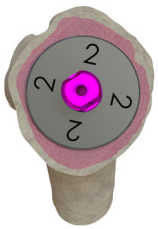


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Figure 23

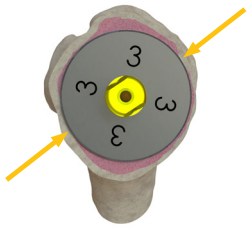

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Figure 24

Figure 25

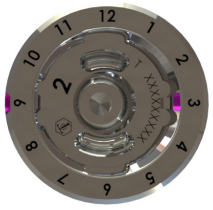

Figure 26

Size	Collar diameter	Color
1	32 mm	Gray
2	34 mm	Magenta
3	38 mm	Gold
4	42 mm	Aqua

Table A

Operative technique

Center the sizer disc on the resected surface of the humerus.

Note:
Any excess medial bone can be removed with rongeurs once the definitive implant is placed.

With the sizer disc centered and flat on the resected surface of the humerus, attach the pin driver to power and advance the single use 3x100 mm guide pin until it engages the lateral cortex. (Figure 27)

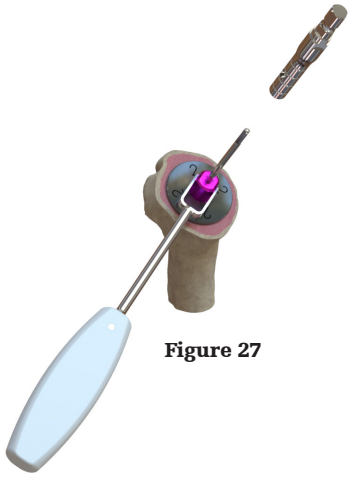

Figure 27

Remove the sizer disc and visually assess the position, orientation and stability of the pin. The pin should be centered anterior to posterior and just slightly superior, perpendicular to the resection plane. (Figures 28 and 29)

If the pin is not in the correct orientation, remove the pin, reposition the sizer disc and reinsert the pin in the correct orientation.

If the pin is not stable, place the sizer disc over the pin and advance the pin to ensure that it has engaged the lateral cortex.

If the pin is still not stable, due to poor patient bone quality, it may be advisable to switch to Tornier Perform Stem.

Note:
It is important that the pin remains perpendicular to the resection throughout the humeral bone preparation steps. If the pin is damaged or bent during preparation, replace with a new pin.

Figure 28

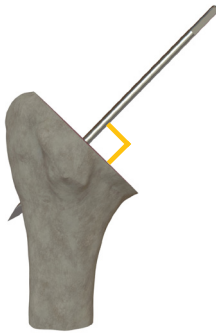

Figure 29

Operative technique

Option #2: humeral head trial pin placement

To size and place the guide pin for the humeral implant using the humeral head trial, select the humeral head trial that best matches the native humerus. (Figures 30 and 31)

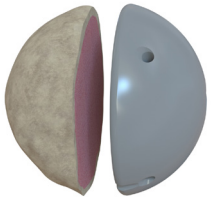

Figure 30

Figure 31

Center the humeral head trial on the resected surface of the humerus, checking for a consistent gap between the edge of the humeral head trial and the anterior, superolateral and posterior aspects of the humerus.

Note:
Any excess medial bone can be removed with rongeurs once the definitive implant is placed.

Once the size of the humeral head trial has been selected, place the humeral head trial pin placement guide into the center of the humeral head trial. This is designed to guide the pin through the center of the humeral head trial. (Figure 32)

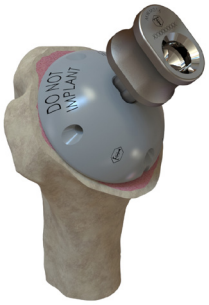

Figure 32

With the humeral head trial centered and flat on the resected surface of the humerus, place the single use 3x100 mm guide pin by hand into the central hole of the humeral head trial. Attach the pin driver to power and advance the pin until it engages the lateral cortex. (Figure 33)

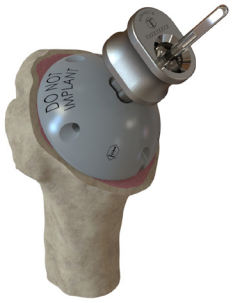

Figure 33

Operative technique

Remove the humeral head trial and assess the position, orientation and stability of the pin. The pin should be centered anterior to posterior and just slightly superior, perpendicular to the resection plane. (Figures 34 and 35)

If the pin is not in the correct orientation, remove the pin, reposition the humeral head trial and reinsert the pin in the correct orientation.

If the pin is not stable, place the humeral head trial over the pin and advance the pin to ensure that it has engaged the lateral cortex.

If the pin is still not stable, due to poor patient bone quality, it may be advisable to switch to Tornier Perform Stem.

Note:
It is important that the pin remains perpendicular to the resection throughout the humeral bone preparation steps. If the pin is damaged or bent during preparation, replace with a new pin.

Once the pin is in the center of the metaphysis, place the sizer disc over the pin to select the largest sizer disc that remains within the cancellous bone surface of the humerus. (Figures 36 and 37)

Figure 34

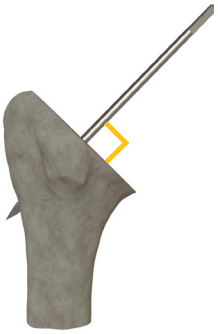

Figure 35

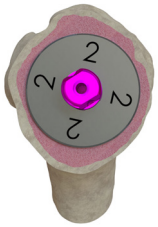

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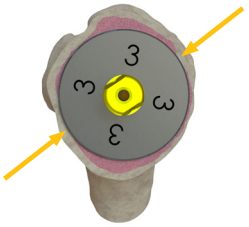
Figure 36



Incorrect

Figure 37

Operative technique

Ream

With the guide pin in place, select the reamer that corresponds with the final sizer disc from the previous step. The instrument has been color-coded by size for the operative team's convenience.

Assemble the reamer to the reamer handle and attach the assembly to power. Place it over the guide pin and initiate power before the reamer engages the bone. Advance the reamer to engage the bone. (Figure 38)

Note:
It is critical to initiate power prior to engaging the bone to avoid kickback on the reamer which could compromise pin stability.

The reamer should fully seat into the metaphysis, stopping when the collar of the reamer is flush to the resected surface of the humerus. This collar acts as a depth stop. (Figure 39)

Back the reamer off of the guide pin. (Figure 40)

Remove the guide pin.

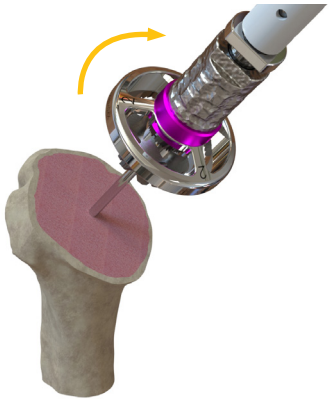


Figure 38

Figure 39

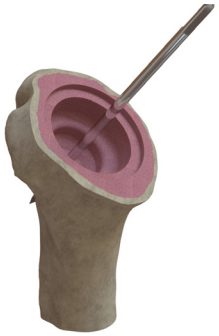


Figure 40

Operative technique

Blaze

There are two different options for placing the blazer: cannulated or non-cannulated.

Option #1: cannulated

Note:
The cannulated technique for placing the blazer requires the pin to remain in place.

To prepare the metaphysis, select the blazer that matches the reamer size previously used and place it over the pin into the prepared humeral cavity. (Figures 41 and 42)

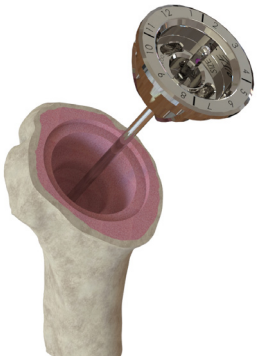


Figure 41

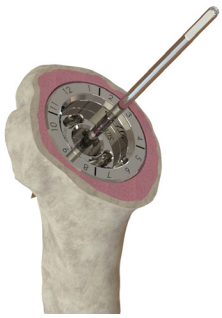


Figure 42

Note:
The blazer is oversized from the reamer by .75 mm diametrically to allow for initial compression of the cancellous bone.

Insert the blazer with the 12 o'clock position oriented to the superior lateral apex of the bone, so that the fins create an "X" with two fins pointing superolaterally and two fins point inferomedially.

Assemble the appropriate sized impactor tip onto the inserter handle. The impactor tip has tabs superolaterally that align and fit within the inner cavity of the blazer.

Place the assembly over the guide pin and insert into the blazer. Impact the blazer until the collar is flush with the resected surface of the humerus, taking care not to advance the blazer deeper than the resection level. (Figures 43 and 44)

Figure 43

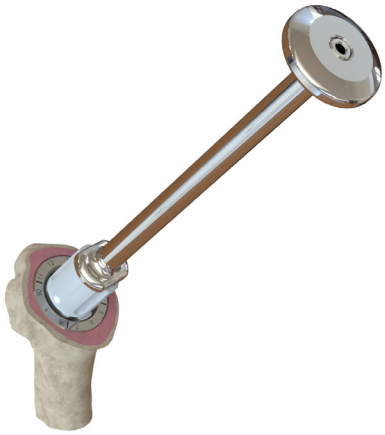


Figure 44

Remove the impactor tip assembly from the pin. The pin should now be removed by utilizing pin pullers. (Figures 45 and 46)

Figure 45

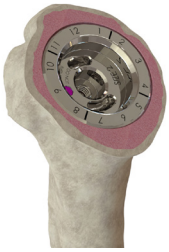


Figure 46

Operative technique

Option #2: non-cannulated

Note:
If following the non-cannulated blazing technique, which utilizes the impactor handle to seat the blazer, the pin must first be removed using pin pullers.

To prepare the metaphysis, select the blazer that matches the reamer size previously used and attach to the impactor handle. With the impactor handle open, align to the 12 o'clock position on the blazer with the etch mark on the strike plate and insert the pegs into the slots on the blazer. Close the impactor handle to lock the blazer to the inserter handle. (Figures 47 and 48)

Figure 47

Note:
The blazer is oversized from the reamer by .75 mm diametrically to allow for initial compression of the cancellous bone.

There is an etch mark on the strike plate of the inserter handle, which points to the 12 o'clock position on the blazer. (Figure 49)

Figure 49

Insert the blazer with the 12 o'clock position oriented to the superior lateral apex of the bone, so that the fins create an "X" with two fins pointing superolaterally and two fins point inferomedially.

Figure 48

Note:
The fins are located under the radially etched lines on the collar.

Impact until the collar is flush with the resected surface of the humerus, taking care not to advance the blazer deeper than the resection level. (Figures 50 and 51)

Figure 50

Note:
Once the blazer is impacted, do not twist, turn or lever on the inserter handle.

If the blazer needs additional seating, remove the inserter handle and utilize the impactor assembly. (Figure 52)

Figure 51

Figure 52

Operative technique

Plane

With the blazer in place, attach the corresponding size planer to the reamer handle. (Figure 53)

Attach the assembled planer to power and place it into the seated blazer. Before initiating power, place the planer flat on the resected surface of the humerus and assess the planer's size to the bone surface. An ideal size planer would cover the entire resected surface without interfering with the soft tissue. (Figure 54)

Once the size is confirmed, initiate power and engage until all excess bone is removed. (Figure 55)

Figure 53

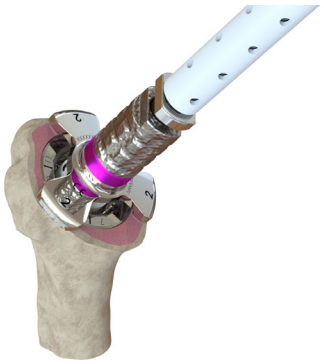


Figure 54

Figure 55

Operative technique

Trial

The initial size of the humeral head trial can be determined by mimicking the resected humeral head, except in the case of a severe deformity. This can be accomplished by placing the resected head against a humeral head trial and determining which size humeral head trial most closely represents the resected humeral head. (Figure 56)

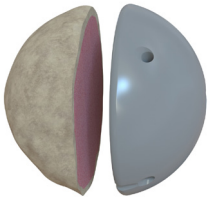


Figure 56

In case of severe deformity of the native humeral head, preoperative radiograph templating may be utilized to determine the optimally sized humeral head implant.

The humeral head trial attaches to the blazer utilizing a coupler trial. The coupler trial is offered in three different offsets: centered 0 mm, low 1.5 mm, and high 3.5 mm. Select the coupler trial that best allows the humeral head trial to mimic the patient's native anatomy. (Figure 57)

Centered **0 mm** | **Low** **1.5 mm** | **High** **3.5 mm**

Figure 57

Note:
Since the canal is not referenced, it is recommended to begin with a centered coupler trial and then move to a low or high offset coupler, if necessary.

Place the tips of the trial clamp into the selected coupler trial and then place the coupler trial into the blazer. Use the 2.5 mm hex driver to lightly engage a few threads of the coupler trial into the blazer. (Figure 58)

Note:
Do not fully thread the coupler trial onto the blazer, as the coupler trial should spin freely. This is important for offset couplers, as the centered coupler can be fully threaded and locked.

Figure 58

Operative technique

Place the tips of the trial clamp into the holes of the humeral head trial and place the humeral head trial onto the coupler trial. (Figure 59)

Note:
If using an offset coupler, utilize the trial clamp to turn the humeral head trial to locate the desired offset, which should cover the anterior, superior and posterior portions of the humeral head. The humeral head trial should not be impacted once placed onto the blazer. (Figure 60)

Figure 59

Once the desired humeral head coverage and orientation are achieved, place the 2.5 mm hex driver through the center of the humeral head trial and tighten the coupler screw. (Figure 61)

Note:
If the initial humeral head trial size is not appropriate, it can be removed by engaging the tips of the trial clamp into the humeral head trial and lifting the humeral head trial off of the coupler trial.

Figure 60

Note:
If the offset of the coupler trial is not appropriate, first remove the humeral head trial by engaging the tips of the trial clamp into the humeral head trial and lift until the coupler trial is fully exposed. Then, engage the tips of the trial clamp into the coupler trial. The coupler trial can then be disengaged using a 2.5 mm hex driver in a counterclockwise motion. Using the trial clamp, twist the coupler trial to easily disassociate from the blazer.

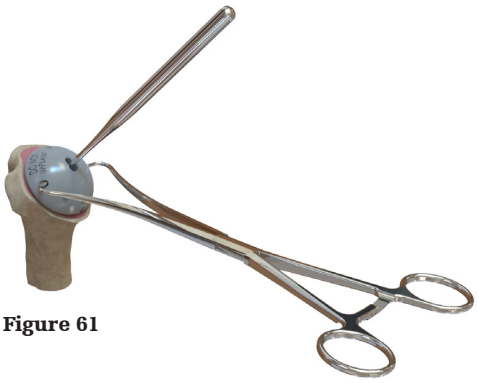


Figure 61

Operative technique

Reduce the humeral head trial into the glenoid.

Remove the humeral head trial.

If utilizing an offset coupler trial, take note of the orientation of the coupler trial relative to the clockface on the blazer. The coupler has a U-shaped cutout that serves as an alignment key to identify the orientation of the final implant. (Figure 62)

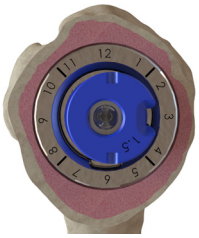


Figure 62

To remove the coupler trial and the blazer, thread a slap hammer onto the coupler trial and blazer assembly. (Figure 63)

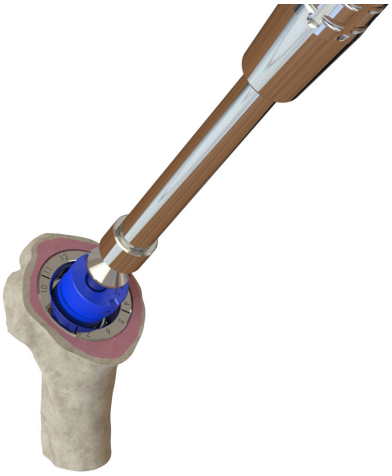


Figure 63

Operative technique

Final nucleus implantation

Note:
The surgeon should inspect the implant tapers and articular surfaces for debris or blemishes before assembly. The tapers should be clean and dry for assembly. The humeral head should be assembled to the definitive coupler and nucleus with clean gloves.

To implant the final prosthesis, select the appropriate sized nucleus and attach the implant to the inserter handle. (Figures 64 and 65)

The top of the inserter handle is marked with an etch line. The etch line on the inserter handle should align with the 12 o'clock position marking on the implant. (Figure 66)

Place the nucleus into the prepared proximal humerus. Check to ensure that the implant is inserted perpendicular to the resected surface, with the etch line on the inserter handle and the 12 o'clock position on the implant facing superolaterally.

Impact the nucleus until flush with the resection and then detach the inserter handle. (Figures 67 and 68)

If desirable fixation is not initially available, due to poor patient bone quality, it may be advisable to switch to Tornier Perform Stem.

Figure 64

Figure 66

Figure 65

Figure 67

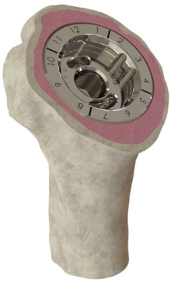


Figure 68

Operative technique

Note:
If the nucleus needs additional seating, remove the inserter handle and utilize the impactor assembly. (Figures 69 and 70)

Note:
The peripheral planers may be used after the final implantation of the nucleus to remove any excess bone.

Figure 69

Figure 70

Operative technique

Final anatomic head assembly and implantation

Assembling the humeral head and coupler on the back table:

Select the previously selected coupler and sized humeral head. Place the coupler into the impaction block with smaller taper inserted into the impaction block. (Figures 71 and 72)

Place the humeral head onto the coupler and impact the components together using the humeral head impaction handle and tip assembly. (Figure 73)

Note:
The humeral head must be impacted at least three times to fully engage the coupler and the humeral head.

Figure 71

Figure 72

Figure 73

Operative technique

Identify the orientation on the coupler, which is located by the U-shaped cutout. (Figure 74)

Place the humeral head construct into the nucleus in the desired orientation by matching the U-shaped cutout with the previously determined number on the face of the nucleus. (Figure 75)

Impact until flush on the resection. (Figures 76)

Figure 74

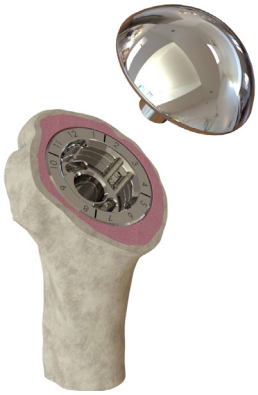


Figure 75

Figure 76

Operative technique

Revision

If the nucleus must be removed, there are specific revision instruments to assist.

Remove the humeral head and coupler by placing the tips of the distractor between the resection and bottom of the humeral head assembly and impact to free the morse taper. (Figure 77)

Figure 77

If the coupler remains in the nucleus, utilize the coupler separator for the removal of the coupler from the nucleus. Thread the coupler separator clockwise into the threads of the coupler. Thread until the coupler disassociates from the nucleus. Assess the position, fixation and taper of the nucleus. (Figure 78)

Figure 78

Once the humeral head and coupler have been removed, identify the size of the nucleus currently implanted. The size is etched on the inside of the bowl on the nucleus.

Select the extraction crown that matches the size of the nucleus and place the extraction crown into the center of the bowl on the nucleus. Insert the extraction crown bolt through the extraction crown and tighten. Once tightened, the extraction crown should rotate freely around the collar of the nucleus. (Figures 79 and 80)

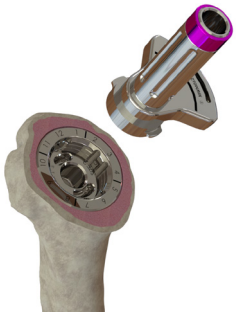


Figure 79

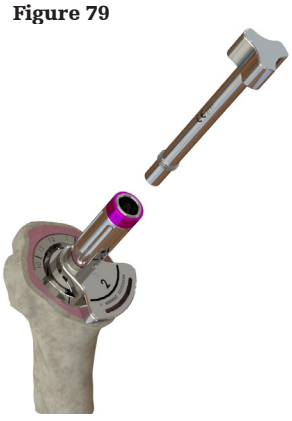


Figure 80

Operative technique

Place the curved osteotome through the slot on the extraction crown and insert around the collar of the nucleus. This will break the bond between the bone and nucleus. Complete this around the entire circumference of the nucleus. (Figure 81)

Place the inserter handle on the nucleus to remove. (Figure 82)

Note:
If desired, a slap hammer can be used to aid in removal of the nucleus.

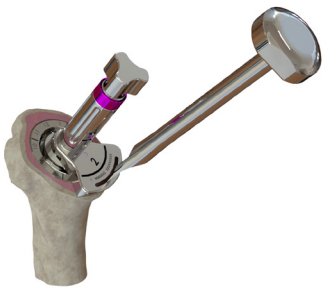
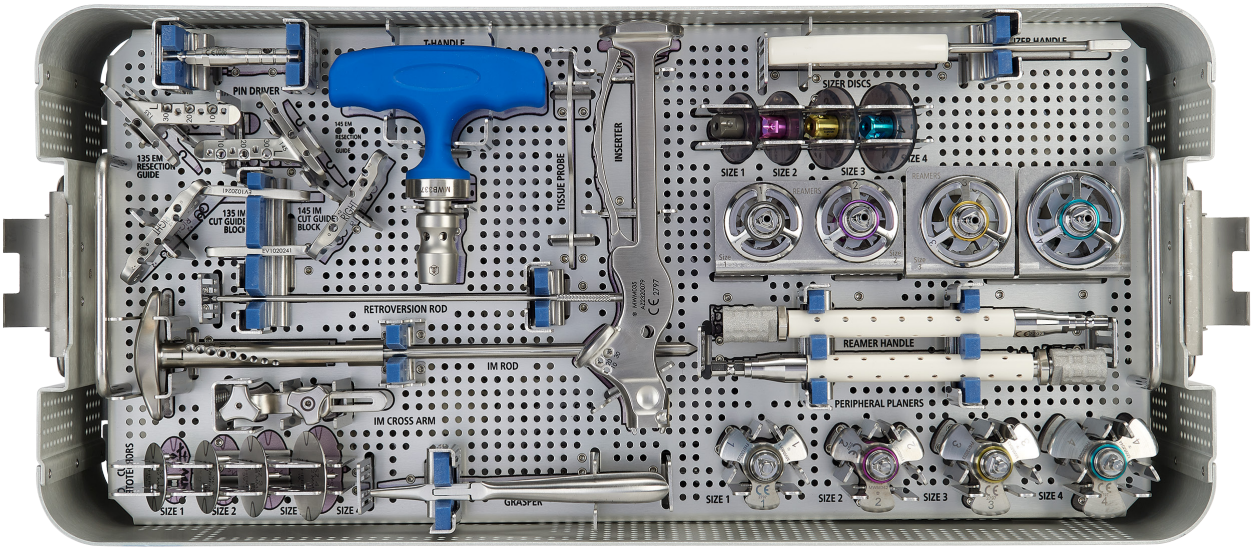


Figure 81

Figure 82

Instrumentation



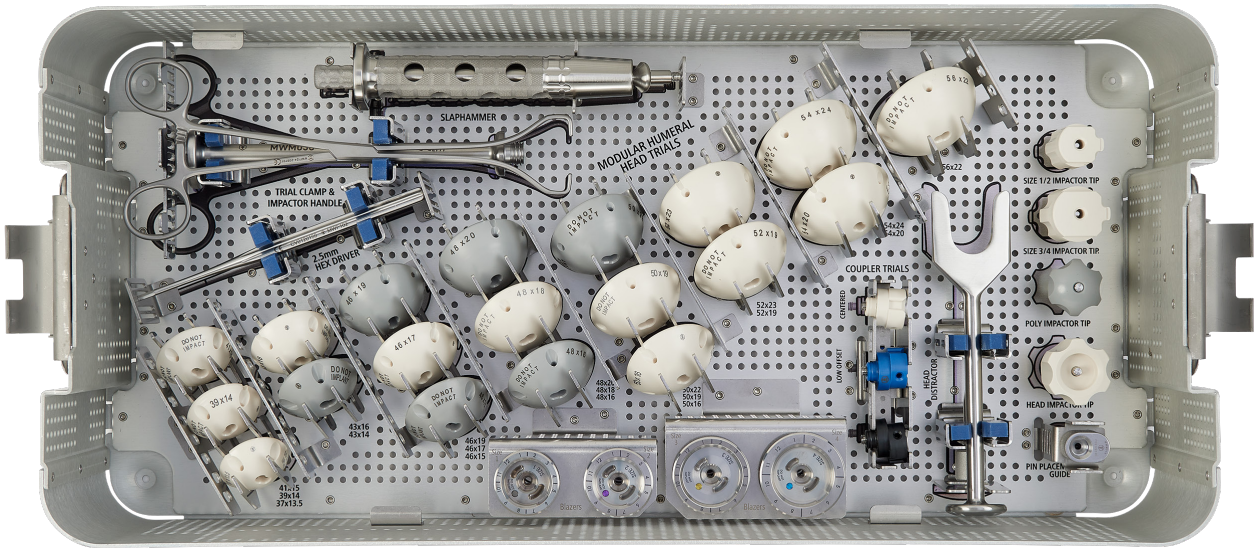
YKAD10300

Core set (top tray)

Reference	Description
9722885	Pin driver
MWM001	135° EM resection guide
MWM002	145° EM resection guide
MWX135	135° IM cut guide block
MWX145	145° IM resection guide
MWF113	Retroversion rod
MWX100	Intramedullary cut guide – rod
MWX101	Intramedullary cut guide – cross arm
MWM003	Size 1 cut protector
MWM004	Size 2 cut protector
MWM005	Size 3 cut protector
MWM006	Size 4 cut protector
9722895	Pin pullers
MWB337	T-handle
MWF533	IM guide tissue probe

Reference	Description
MWM035	Inserter handle
MWM015	Sizer handle
MWM011	Size 1 sizer disc
MWM012	Size 2 sizer disc
MWM013	Size 3 sizer disc
MWM014	Size 4 sizer disc
MWM021	Size 1 reamer
MWM022	Size 2 reamer
MWM023	Size 3 reamer
MWM024	Size 4 reamer
MWM020	Modular reamer handle
MWM041	Size 1 peripheral planer
MWM042	Size 2 peripheral planer
MWM043	Size 3 peripheral planer
MWM044	Size 4 peripheral planer

Instrumentation



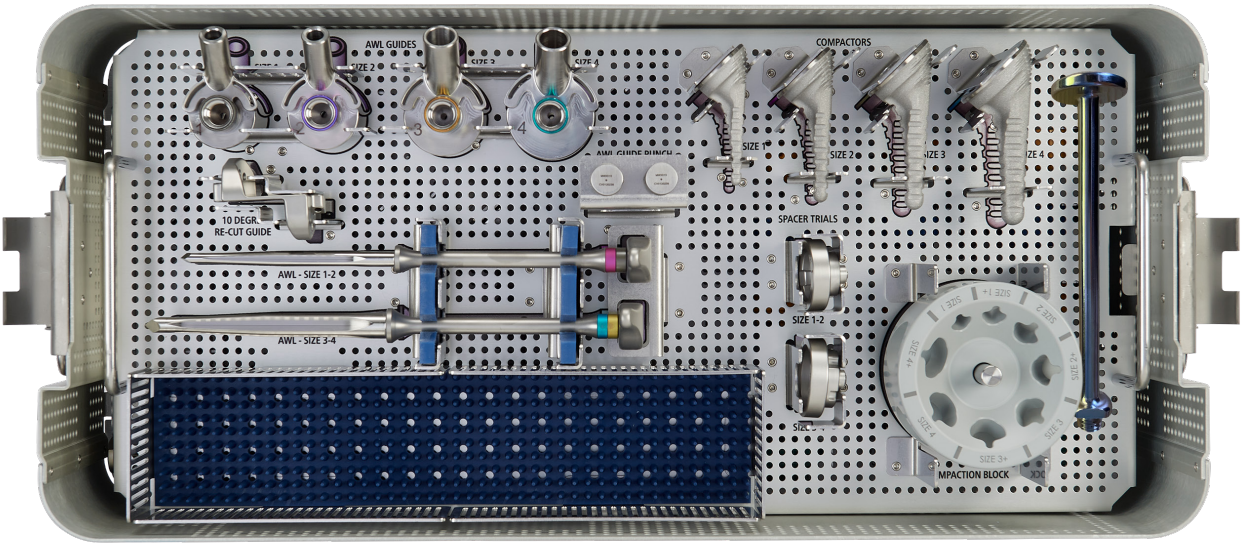
YKAD10300

Core set (bottom tray)

Reference	Description	Resection diameter	Height
MWN3713	Humeral head trial	37 mm	13.5 mm
MWN3914	Humeral head trial	39 mm	14 mm
MWN4115	Humeral head trial	41 mm	15 mm
MWN4314	Humeral head trial	43 mm	14 mm
MWN4316	Humeral head trial	43 mm	16 mm
MWN4615	Humeral head trial	46 mm	15 mm
MWN4617	Humeral head trial	46 mm	17 mm
MWN4619	Humeral head trial	46 mm	19 mm
MWN4816	Humeral head trial	48 mm	16 mm
MWN4818	Humeral head trial	48 mm	18 mm
MWN4820	Humeral head trial	48 mm	20 mm
MWN5016	Humeral head trial	50 mm	16 mm
MWN5019	Humeral head trial	50 mm	19 mm
MWN5022	Humeral head trial	50 mm	22 mm
MWN5219	Humeral head trial	52 mm	19 mm
MWN5223	Humeral head trial	52 mm	23 mm
MWN5420	Humeral head trial	54 mm	20 mm
MWN5424	Humeral head trial	54 mm	24 mm
MWN5622	Humeral head trial	56 mm	22 mm

Reference	Description
MWM066	Slap hammer
MWM038	Humeral impactor handle
MWF124	Trial clamp
MWF102	2.5 hex driver
MWM031	Size 1 nucleus blazer
MWM032	Size 2 nucleus blazer
MWM033	Size 3 nucleus blazer
MWM034	Size 4 nucleus blazer
MWN100	Centered coupler trial
MWN110	Low offset coupler trial
MWN120	High offset coupler trial
MWM060	Coupler separator
MWM068	Humeral head distractor
MWM330	Insert impactor tip
MWM054	Humeral head impactor tip
MWM051	Humeral size 1/2 impactor tip
MWM052	Humeral size 3/4 impactor tip
MWM016	Humeral head pin placement guide

Instrumentation

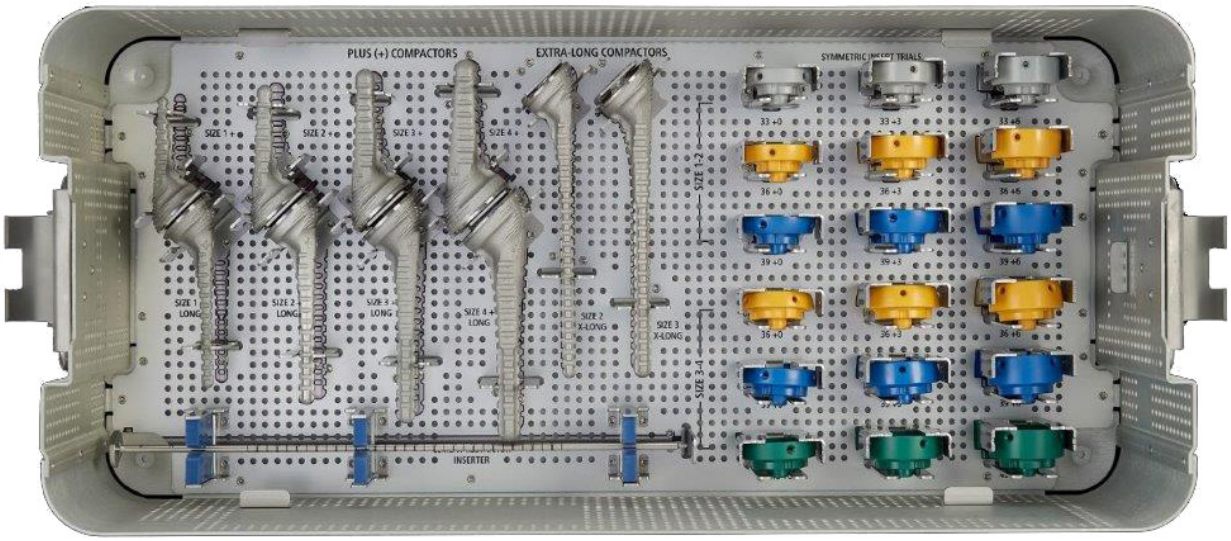


YKAD10310

Stem set (top tray)

Reference	Description
MWX011	Size 1 awl guide
MWX012	Size 2 awl guide
MWX013	Size 3 awl guide
MWX014	Size 4 awl guide
MWX010	Humeral 10 deg re-cut guide
MWX120	Size 1-2 awl
MWX340	Size 3-4 awl
MWX015	Awl guide punch
MWX1SS	Size 1 compactor
MWX2SS	Size 2 compactor
MWX3SS	Size 3 compactor
MWX4SS	Size 4 compactor
MWM038	Humeral impactor handle
MWX912	+9 mm humeral spacer trial – size 1/2
MWX934	+9 mm humeral spacer trial – size 3/4
MWX055	Stem and humeral head impaction block

Instrumentation



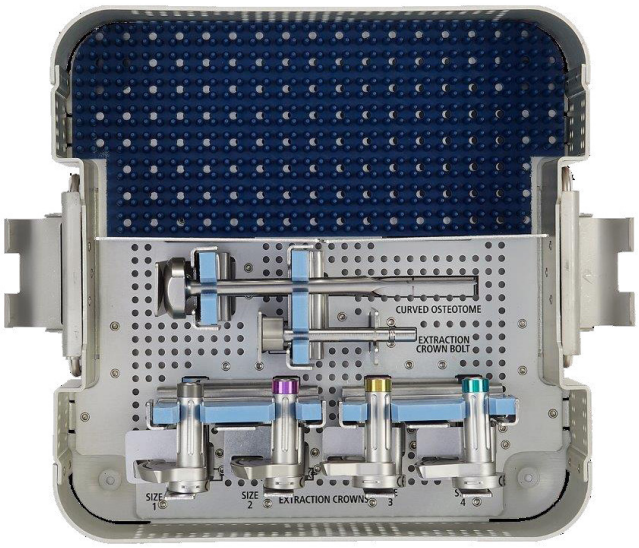
YKAD10310

Stem set (bottom tray)

Reference	Description
MWX1PS	Size 1 plus compactor
MWX2PS	Size 2 plus compactor
MWX3PS	Size 3 plus compactor
MWX4PS	Size 4 plus compactor
MWX1PL	Size 1 plus compactor – long
MWX2PL	Size 2 plus compactor – long
MWX3PL	Size 3 plus compactor – long
MWX4PL	Size 4 plus compactor – long
MWX2SX	Size 2 compactor – extra long
MWX3SX	Size 3 compactor – extra long
MBO101	Cement restrictor inserter

Reference	Description	Size	Diameter	Thickness
MWP1330	Reversed insert trial	1/2	33 mm	+0
MWP1333	Reversed insert trial	1/2	33 mm	+3
MWP1336	Reversed insert trial	1/2	33 mm	+6
MWP1360	Reversed insert trial	1/2	36 mm	+0
MWP1363	Reversed insert trial	1/2	36 mm	+3
MWP1366	Reversed insert trial	1/2	36 mm	+6
MWP1390	Reversed insert trial	1/2	39 mm	+0
MWP1393	Reversed insert trial	1/2	39 mm	+3
MWP1396	Reversed insert trial	1/2	39 mm	+6
MWP2360	Reversed insert trial	3/4	36 mm	+0
MWP2363	Reversed insert trial	3/4	36 mm	+3
MWP2366	Reversed insert trial	3/4	36 mm	+6
MWP2390	Reversed insert trial	3/4	39 mm	+0
MWP2393	Reversed insert trial	3/4	39 mm	+3
MWP2396	Reversed insert trial	3/4	39 mm	+6
MWP2420	Reversed insert trial	3/4	42 mm	+0
MWP2423	Reversed insert trial	3/4	42 mm	+3
MWP2426	Reversed insert trial	3/4	42 mm	+6

Instrumentation



YKAD10370

Revision

Reference	Description
MWM061	Size 1 extraction crown
MWM062	Size 2 extraction crown
MWM063	Size 3 extraction crown
MWM064	Size 4 extraction crown
MWM067	Extraction crown bolt
MWM065	Curved osteotome

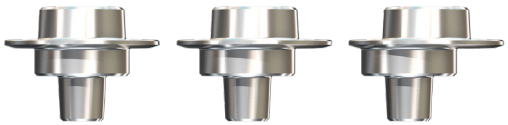
Implants

Nucleus

Reference	Description	Collar diameter
DWM001A	Size 1 nucleus – US anatomic	32 mm
DWM002A	Size 2 nucleus – US anatomic	34 mm
DWM003A	Size 3 nucleus – US anatomic	38 mm
DWM004A	Size 4 nucleus – US anatomic	42 mm

Humeral head coupler

Reference	Description	Offset
DWT100	Centered humeral head coupler Ti	0 mm
DWT110	Low offset humeral head coupler Ti	1.5 mm
DWT120	High offset humeral head coupler Ti	3.5 mm



Implants

Humeral heads (cobalt chrome)

Reference	Description	Diameter	Height
*DWN3713	CoCr humeral head	37 mm	13.5 mm
DWN3914	CoCr humeral head	39 mm	14 mm
DWN4115	CoCr humeral head	41 mm	15 mm
DWN4314	CoCr humeral head	43 mm	14 mm
DWN4316	CoCr humeral head	43 mm	16 mm
DWN4615	CoCr humeral head	46 mm	15 mm
DWN4617	CoCr humeral head	46 mm	17 mm
DWN4619	CoCr humeral head	46 mm	19 mm
DWN4816	CoCr humeral head	48 mm	16 mm
DWN4818	CoCr humeral head	48 mm	18 mm
DWN4820	CoCr humeral head	48 mm	20 mm
DWN5016	CoCr humeral head	50 mm	16 mm
DWN5019	CoCr humeral head	50 mm	19 mm
DWN5022	CoCr humeral head	50 mm	22 mm
DWN5219	CoCr humeral head	52 mm	19 mm
DWN5223	CoCr humeral head	52 mm	23 mm
DWN5420	CoCr humeral head	54 mm	20 mm
DWN5424	CoCr humeral head	54 mm	24 mm
*DWN5622	CoCr humeral head	56 mm	22 mm

Humeral heads (titanium)

Reference	Description	Diameter	Height
*DWT3914	Ti humeral head	39 mm	14 mm
*DWT4115	Ti humeral head	41 mm	15 mm
*DWT4316	Ti humeral head	43 mm	16 mm
*DWT4617	Ti humeral head	46 mm	17 mm
*DWT4818	Ti humeral head	48 mm	18 mm
*DWT5016	Ti humeral head	50 mm	16 mm
*DWT5019	Ti humeral head	50 mm	19 mm
*DWT5219	Ti humeral head	52 mm	19 mm
*DWT5223	Ti humeral head	52 mm	23 mm
*DWT5420	Ti humeral head	54 mm	20 mm
*DWT5424	Ti humeral head	54 mm	24 mm

*Available by special request only.

System Compatibility

The Tornier Perform Humeral System– Stemless in the anatomic configuration must be used with Tornier Perform Anatomic, Tornier Perform Anatomic Augmented or Affiniti glenoids in case of total shoulder arthroplasty.

Mismatch Charts

Tornier Perform humeral heads with Tornier Perform Anatomic/Tornier Perform Anatomic Augmented glenoid – mismatch chart

Recommended combinations heads/glenoids
Diametrical mismatch in mm

Size	Heads	37x13.5	39x14	41x15	43x14	43x16	46x15	46x17	46x19	48x16	48x18	48x20	50x16	50x19	50x22	52x19	52x23	54x20	54x24	56x22
Glenoid	**Diameter of curvature**	**39.67**	**41.91**	**43.68**	**48.20**	**45.64**	**51.12**	**48.60**	**47.08**	**52.93**	**50.59**	**49.14**	**56.13**	**52.58**	**50.64**	**55.23**	**52.61**	**57.06**	**54.58**	**58.10**
Small	**55.4**	15.7	13.5	11.7	7.2	9.8	4.3	6.8	8.3	2.5	4.8	6.3	-0.7	2.8	4.8	0.2	2.8	-1.7	0.8	-2.7
Medium	**59.6**	19.9	17.7	15.9	11.4	14.0	8.5	11.0	12.5	6.7	9.0	10.5	3.5	7.0	9.0	4.4	7.0	2.5	5.0	1.5
Large	**63.6**	23.9	21.7	19.9	15.4	18.0	12.5	15.0	16.5	10.7	13.0	14.5	7.5	11.0	13.0	8.4	11.0	6.5	9.0	5.5
XL	**67.8**	28.1	25.9	24.1	19.6	22.2	16.7	19.2	20.7	14.9	17.2	18.7	11.7	15.2	17.2	12.6	15.2	10.7	13.2	9.7

*The acceptable range for this combination is 1 to 24.8 mm

Tornier Perform humeral heads with Affiniti glenoid – mismatch chart

Recommended combinations heads/glenoids
Diametrical mismatch in mm

Size	Heads	37x13.5	39x14	41x15	43x14	43x16	46x15	46x17	46x19	48x16	48x18	48x20	50x16	50x19	50x22	52x19	52x23	54x20	54x24	56x22
Glenoid	**Diameter of curvature**	**39.67**	**41.91**	**43.68**	**48.20**	**45.64**	**51.12**	**48.60**	**47.08**	**52.93**	**50.59**	**49.14**	**56.13**	**52.58**	**50.64**	**55.23**	**52.61**	**57.06**	**54.58**	**58.10**
40	**46**	6.3	4.1	2.3	-2.2	0.4	-5.1	-2.6	-1.1	-6.9	-4.6	-3.1	-10.1	-6.6	-4.6	-9.2	-6.6	-11.1	-8.6	-12.1
44	**50**	10.3	8.1	6.3	1.8	4.4	-1.1	1.4	2.9	-2.9	-0.6	0.9	-6.1	-2.6	-0.6	-5.2	-2.6	-7.1	-4.6	-8.1
48	**54**	14.3	12.1	10.3	5.8	8.4	2.9	5.4	6.9	1.1	3.4	4.9	-2.1	1.4	3.4	-1.2	1.4	-3.1	-0.6	-4.1
52	**58**	18.3	16.1	14.3	9.8	12.4	6.9	9.4	10.9	5.1	7.4	8.9	1.9	5.4	7.4	2.8	5.4	0.9	3.4	-0.1
56	**62**	22.3	20.1	18.3	13.8	16.4	10.9	13.4	14.9	9.1	11.4	12.9	5.9	9.4	11.4	6.8	9.4	4.9	7.4	3.9

*The acceptable range for this combination is 1 to 24.8 mm

Cleared mismatch range **Non-cleared mismatch range**

Notes

Notes

This document is intended solely for the use of healthcare professionals. A surgeon must always rely on his or her own professional clinical judgment when deciding whether to use a particular product when treating a particular patient. Stryker does not dispense medical advice and recommends that surgeons be trained in the use of any particular product before using it in surgery.

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Content ID: AP-011842C 10-Oct-2022

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