stryker

Tornier Perform®
Humeral System
Stem

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 – Stem

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Overview

The Tornier Perform Humeral System – Stem is intended for use in anatomic, reverse, and hemiarthroplasty of the shoulder.

The system was designed to be a short, metaphyseal fixated implant that decreases the distal filling ratio.

The Tornier Perform Humeral System – Stem offers a variety of implant options.

Humeral stems are available in four collar diameters: 32 mm, 34 mm, 38 mm and 42 mm. The humeral stems are also available in multiple lengths: short, long and x-long.

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.

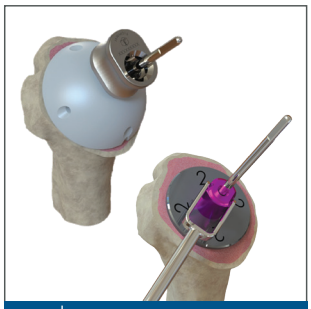
Reversed inserts are available in symmetric and 10° options, allowing for both 135° and 145° reverse neck shaft angles. The reversed inserts are available in conventional and vitamin E UHMWPE.

Humeral spacers are available in size 1/2 and size 3/4. The humeral spacer allows for an additional +9 mm of thickness to the reverse construct.

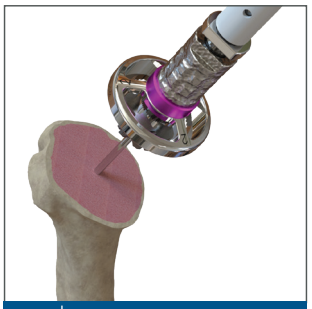
Operative technique steps

1 Resect

2 Protect



3 Size and place pin

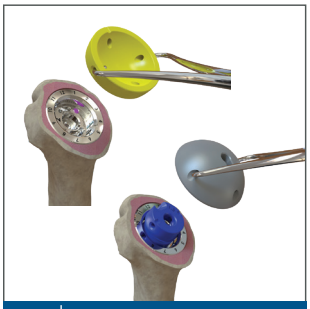


4 Ream

5 Distal stem prep

6 Compact

7 Plane



8 Trial

9 Implant stem

10 Head/poly impaction

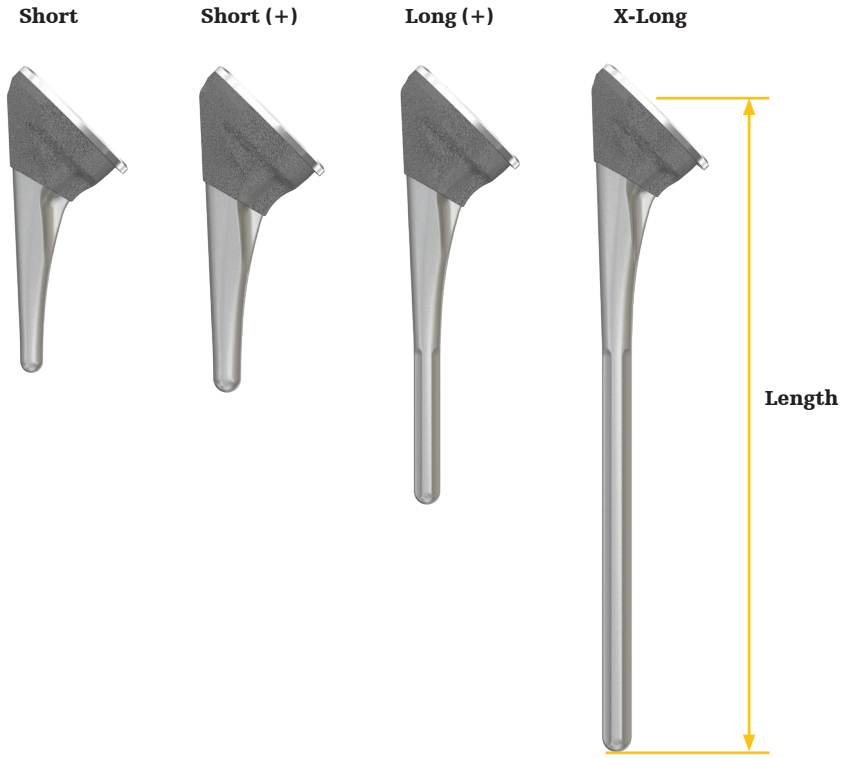
Implant sizing

Tornier Perform humeral stem sizing chart

Short stems	**Size**	**1**	**1+**	**2**	**2+**	**3**	**3+**	**4**	**4+**
	Collar	32 mm		34 mm		38 mm		42 mm	
	Length	56 mm	59 mm	62 mm	65 mm	68 mm	71 mm	74 mm	77 mm
	Distal tip	5 mm	6 mm	7 mm	8 mm	9 mm	10 mm	11 mm	12 mm

Long stems	**Size**		1+ Long		2+ Long		3+ Long		4+ Long
	Collar		32 mm		34 mm		38 mm		42 mm
	Length		89 mm		98 mm		107 mm		116 mm
	Distal tip		6 mm		8 mm		10 mm		12 mm

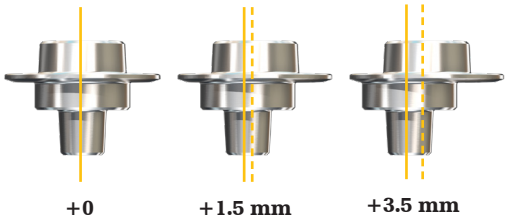
X-Long stems	**Size**			2 X-Long		3 X-Long			
	Collar			34 mm		38 mm			
	Length			150 mm		150 mm			
	Distal tip			7 mm		9 mm			



Implant sizing

Tornier Perform humeral head coupler

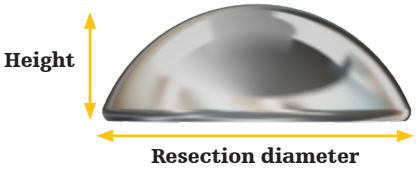
Reference	Description	Offset	
DWT100	Centered humeral head coupler Ti	Centered	0 mm
DWT110	Low offset humeral head coupler Ti	Low	1.5 mm
DWT120	High offset humeral head coupler Ti	High	3.5 mm



Tornier Perform humeral heads

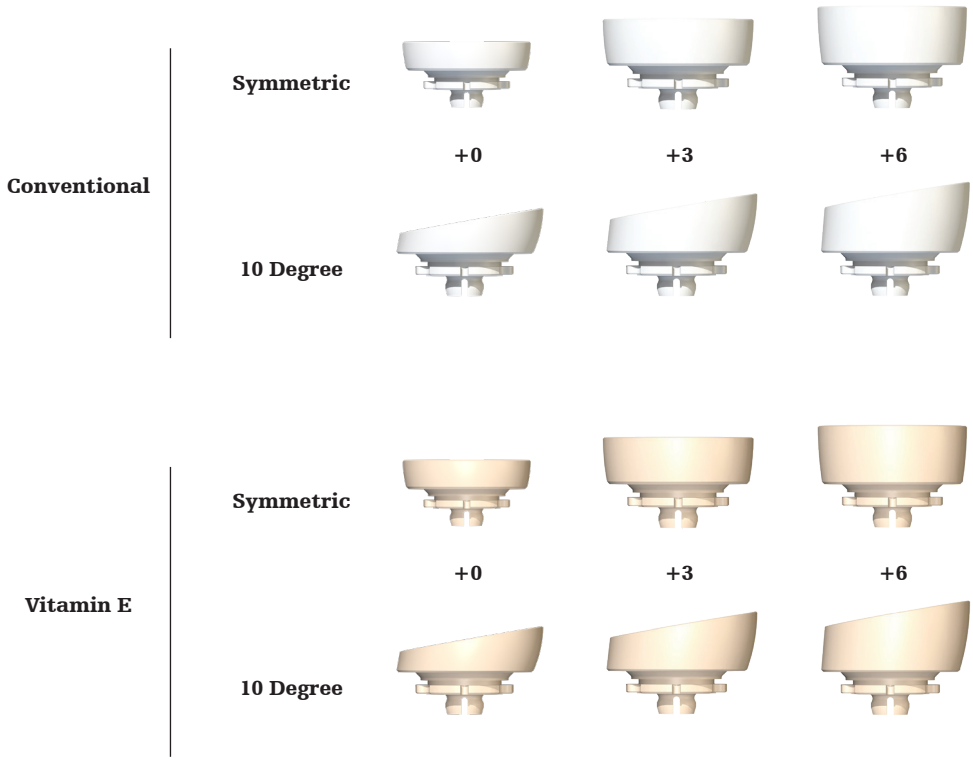
Reference	Description	Resection diameter	Height
*DWN3713	CoCr humeral head	37 mm	13.5 mm
DWN3914	CoCr humeral head	39 mm	14 mm
DWN4115	CoCr humeral head	41 mm	15 mm
DWN4314	CoCr humeral head	43 mm	14 mm
DWN4316	CoCr humeral head	43 mm	16 mm
DWN4615	CoCr humeral head	46 mm	15 mm
DWN4617	CoCr humeral head	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.



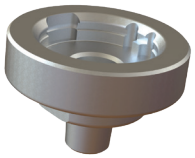
Implant sizing

Tornier Perform reversed inserts



Tornier Perform humeral spacers

Reference	Description	Size	Thickness
DWX912	Humeral spacer	1/2	+9 mm
DWX934	Humeral spacer	3/4	+9 mm



Indications and contraindications

Intended use

The Tornier Perform Humeral System – Stem is intended for anatomic, reverse, and hemi-arthroplasty of the shoulder. The shoulder system also allows for conversion from an anatomic to a reverse shoulder prosthesis in the case of revision.

Indications for use

Anatomic

The humeral stem, humeral head coupler and humeral head may be used by themselves, as a hemiarthroplasty, if the natural glenoid provides a sufficient bearing surface, or in conjunction with a glenoid implant, as a total replacement.

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

- Non-inflammatory degenerative joint disease (i.e. osteoarthritis) and avascular necrosis
- Correction of functional deformity
- Post-traumatic arthritis
- Revisions or fractures of the humeral head where adequate fixation can be achieved and adequate bone stock remains

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. The humeral stems are intended for cemented or cementless use.

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

Reverse

The Tornier Perform Humeral System – Stem is indicated for use as a replacement of a shoulder joint for patients with a functional deltoid muscle, grossly deficient rotator cuff, and pain disabled by one or more of the following:

- Non-inflammatory degenerative joint disease (i.e. osteoarthritis) and avascular necrosis
- Pseudoparalysis or anterior superior escape
- Rotator cuff tear arthropathy
- Correction of functional deformity
- Post-traumatic arthritis
- Revisions or fractures of the humeral head where adequate fixation can be achieved and adequate bone stock remains

The reversed insert is indicated for use for the conversion from an anatomic to reverse shoulder prosthesis without the removal of a well fixed humeral stem for patients with a functional deltoid muscle.

All components are single use. The humeral stems are intended for cemented or cementless use. The Tornier Perform Humeral System – Stem is intended to be used with glenoid implants that are anchored to the bone with screws for non-cemented fixation.

Indications and contraindications

Contraindications

Anatomic

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

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

Reverse

Absolute contraindications for shoulder arthroplasty:

- Active local or systemic infection, sepsis and osteomyelitis
- Poor quality or insufficient quantity of proximal humeral or glenoid bone stock
- Non-functional deltoid
- Use of this implant is contraindicated in the presence of significant injury to the upper brachial plexus.
- Paralysis of the axillary nerve
- Neuromuscular disease (e.g. joint neuropathy)
- Known allergy to one of the materials
- Patient pregnancy

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

Relative contraindications for conversion from anatomic to reverse shoulder prosthesis:

- Stability of the reversed components relies on secure fixation to a stable humeral component. If this is compromised by poor fixation or damage to the locking mechanism, the entire humeral component must be removed and replaced with a new prosthesis in a reversed configuration.

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.

Radiographs are also used to determine the length of the humeral stem.

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

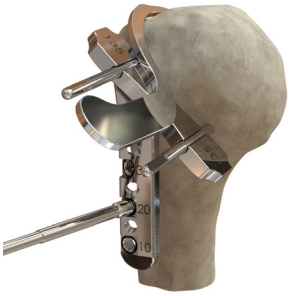


Figure 4

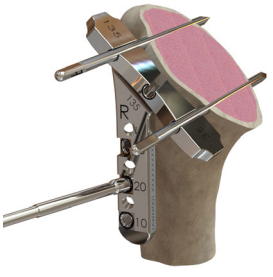


Figure 5

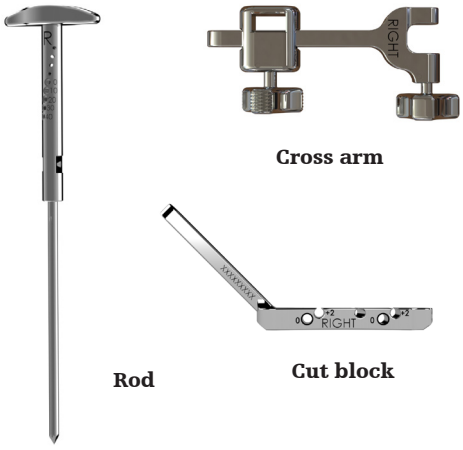
Operative technique

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

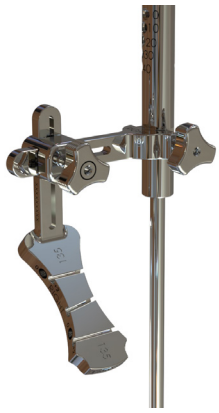


Figure 11

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)

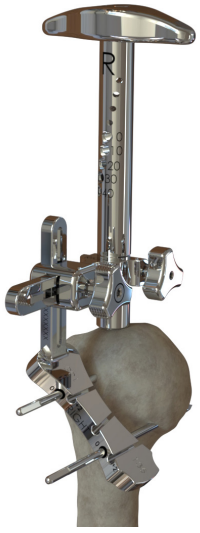


Figure 13

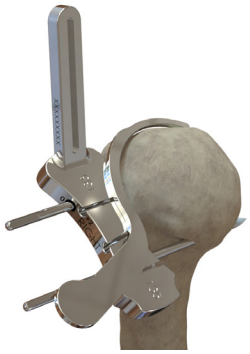


Figure 14

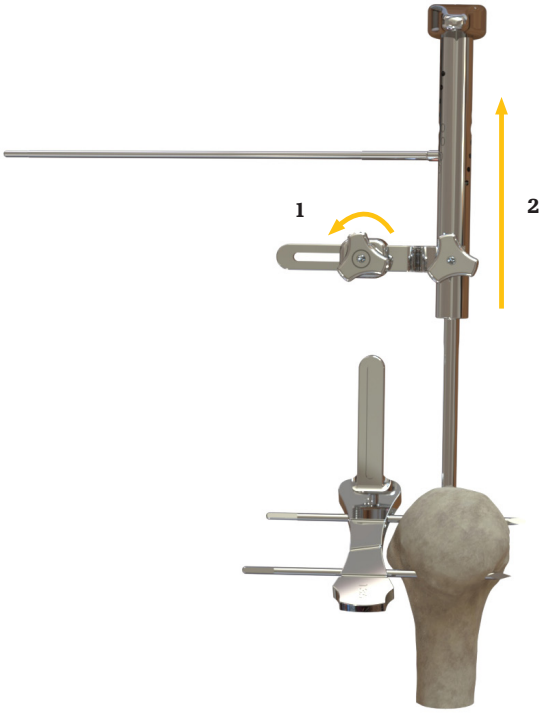


Figure 15

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

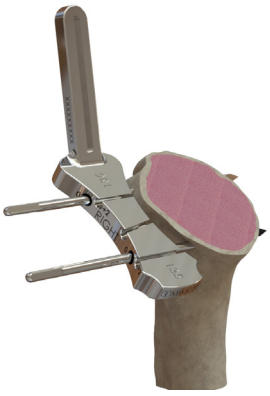


Figure 18

Operative technique

Protect

Humeral cut protectors are provided to protect the resection from 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 and impact the cut protector into the resected surface of the humerus until it is flush with the resection. (Figure 20)

The glenoid can now be exposed and 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 sizing discs to the sizer handle. Place the sizer onto the resected surface of the humerus. (Figure 22)

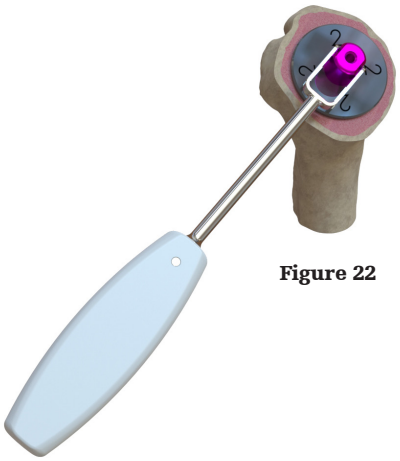
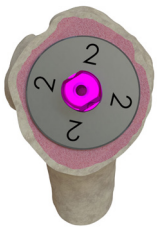


Figure 22

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

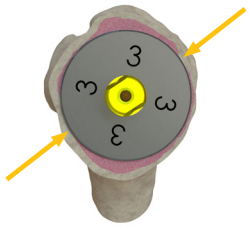
The diameter of the sizer disc matches the diameter of the final stem collar. (Figures 25 and 26)

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



Correct

Figure 23



Incorrect

Figure 24

Figure 25

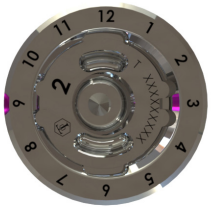


Figure 26

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

Table A

Operative technique

Place 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 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)

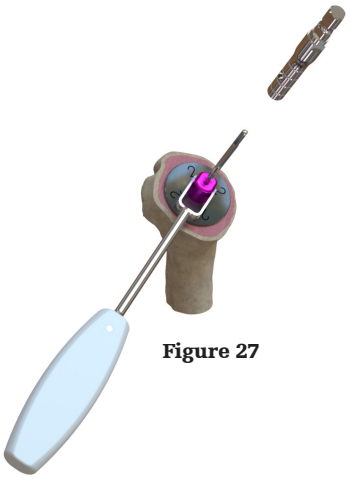


Figure 27

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 superolateral, and 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.

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

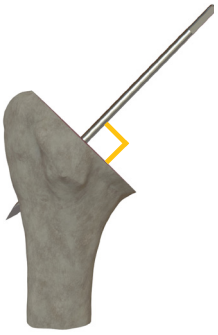


Figure 29

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)

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. (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)

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)

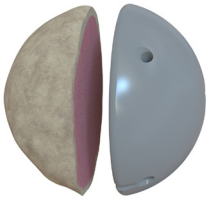


Figure 30

Figure 31

Figure 32

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 superolateral, and 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.

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 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

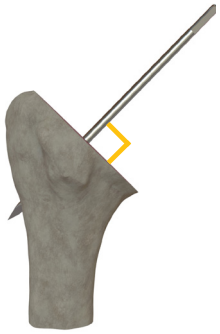
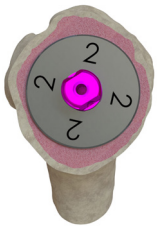
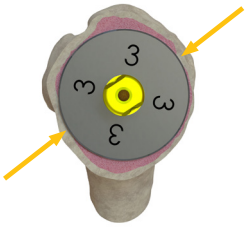


Figure 35



Correct

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.

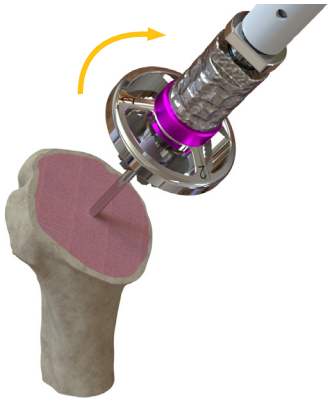


Figure 38

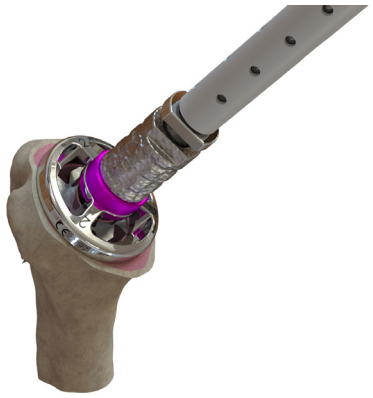


Figure 39

Figure 40

Operative technique

Distal preparation

Select the awl guide that matches the reamer size previously used. Thread the impactor handle onto the appropriately sized awl guide. Insert the awl guide into the reamed proximal humerus and ensure that it is flush to the resection. (Figure 41)

To ensure proper alignment with the humeral canal, there is an etch at the inferior rim of the awl guide. The etch should align with the most inferior point of the resection. (Figure 42)

Select the appropriately sized awl that matches the awl guide: size 1/2 or size 3/4. Insert and fully seat the awl into the awl guide tower. Once fully seated, rotate awl to clear bone. Remove the awl and then remove the awl guide. (Figure 43)

Note:
It is not recommended to impact the awl.

Optional: humeral punch

In cases of hard proximal humeral bone, it may be necessary to utilize the awl guide punches to remove additional bone on the lateral side of the humerus. Once the awl guide and awl have been inserted into the humerus, place the humeral awl guide punches into the slots on the awl guide. It may be necessary to insert the punches with a mallet to ensure that they are fully seated. (Figure 44)

Remove the awl and awl guide with the punches captured in the awl guide.

Figure 41

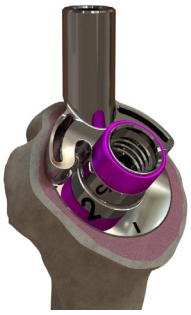


Figure 42

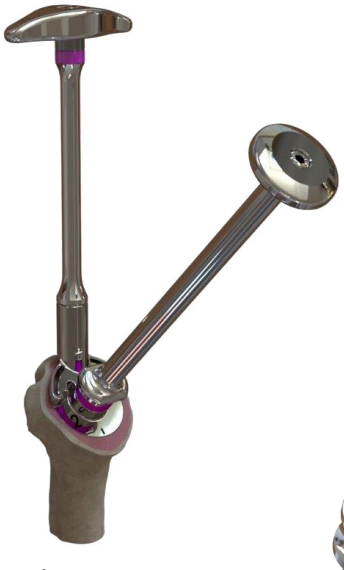


Figure 43

Figure 44

Operative technique

Compact

To prepare the metaphysis, select the compactor that matches the reamer previously used and attach the compactor to the inserter handle. With the inserter handle open, align and insert the pegs into the slots on the compactor. Close the impactor handle to lock the compactor to the inserter handle. (Figures 45 and 46)

Note:
The compactor is oversized from the awl guide by .75 mm diametrically. This will provide stability during the trialing step.

There is an etch mark on the strike plate of the inserter handle, which points to the 12 o'clock position on the compactor. (Figure 47)

Impact the compactor until the collar is flush with the resected surface of the humerus, taking care not to advance the compactor deeper than the resection level. (Figures 48 and 49)

Note:
There are two strike plates on the inserter handle. First, gently impact the inserter handle in parallel with the humeral canal using the top strike plate. Then, impact the strike plate that is perpendicular to the resection level to fully seat the compactor, ensuring the collar is flush with the resected surface of the humerus.

If the compactor needs additional seating, remove the inserter handle and utilize the impactor assembly. (Figure 50)

Note:
If adequate fixation is not achieved, consider the following options:

1. **Move from a standard compactor to a plus compactor.**
2. **Move from a standard compactor to a plus size final stem.**
3. **Move to a long compactor or long final stem.**

Figure 45

Figure 46

Figure 47

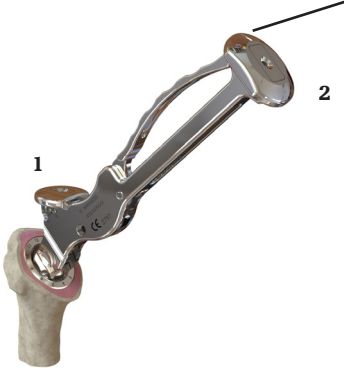


Figure 48

Figure 49

Figure 50

Operative technique

Plane

With the compactor in place, attach the corresponding size planer to the reamer handle.

Attach the assembled planer to power and place it into the seated compactor. 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. (Figures 51 and 52)

Once the size is confirmed, initiate power and engage until all excess bone is removed. (Figure 53)

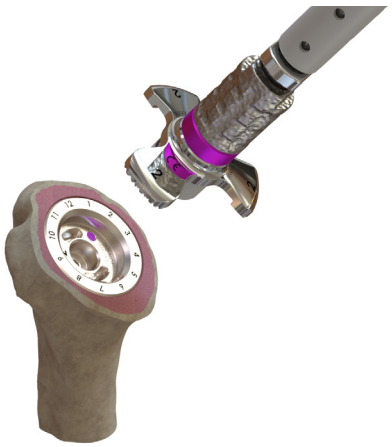


Figure 51

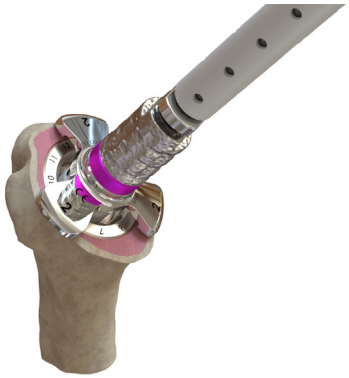


Figure 52

Figure 53

Operative technique

Trial

Anatomic

The initial size of the humeral head trial can be determined by mirroring 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 54)

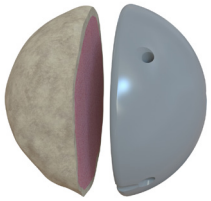


Figure 54

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 compactor 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 recreate the patient's native anatomy. (Figure 55)

Centered **Low** **High**

0 mm **1.5 mm** **3.5 mm**

Figure 55

Place the tips of the trial clamp into the selected coupler trial and then place the coupler trial into the compactor. Use the 2.5 mm hex driver to lightly engage a few threads of the coupler trial into the compactor. (Figure 56)

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

Figure 56

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 57)

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 compactor. (Figure 58)

Figure 57

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 59)

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 58

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 compactor.

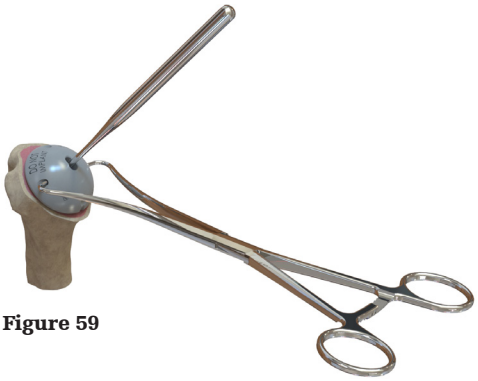


Figure 59

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 compactor. The coupler has a u-shaped cutout that serves as an alignment key to identify the orientation of the final implant. (Figure 60)

To remove the coupler trial and the compactor, thread a slap hammer onto the coupler trial and compactor assembly. (Figure 61)

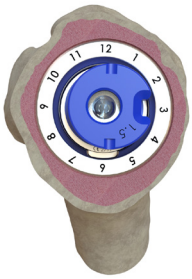


Figure 60

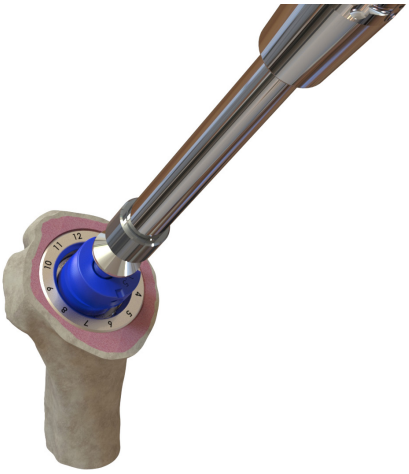


Figure 61

Operative technique

Reverse

There are two types of reversed insert trials available. To achieve a 135° reversed neck shaft angle, utilize the symmetric reversed insert trials. To achieve a 145° reversed neck shaft angle, utilize the 10° reversed insert trials.

Both the symmetric and 10° reversed insert trials are available in three thicknesses (+0, +3, +6) and four glenosphere sizes (33 mm, 36 mm, 39 mm, 42 mm). (Figures 62 and 63)

Note:
The reversed insert trials are color-coded to correspond with selected glenosphere size.

A size 1 or 2 compactor or stem is compatible with glenosphere sizes 33 mm, 36 mm and 39 mm and share the same reversed insert trials and implants.

A size 3 or 4 compactor or stem is compatible with glenosphere sizes 36 mm, 39 mm and 42 mm and share the same reversed insert trials and implants.

See the compatibility table. (Table B)

Symmetric reversed insert trials

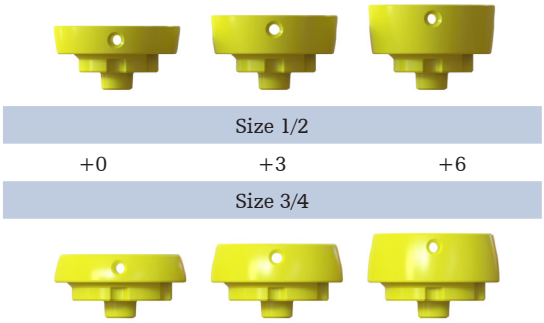


Figure 62

10° reversed insert trials

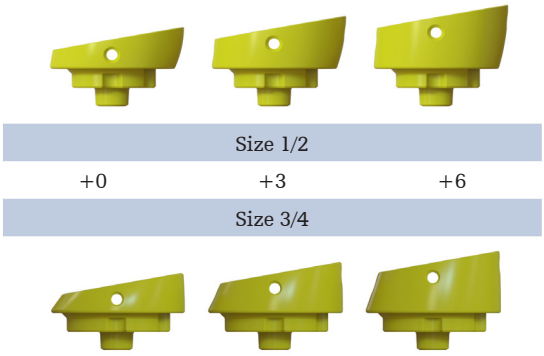


Figure 63

	Glenosphere diameter	Size 1/2 reversed inserts		Size 3/4 reversed inserts	
		Size 1/1+ stem	Size 2/2+ stem	Size 3/3+ stem	Size 4/4+ stem
Reversed insert color code	33 mm	X	X		
	36 mm	X	X	X	X
	39 mm	X	X	X	X
	42 mm			X	X

Table B

Operative technique

With the compactor remaining in place, select the +0 reversed insert trial that matches the glenosphere size and compactor size. For example, the reversed insert trial for a size 2 compactor with a 36 mm glenosphere and +0 thickness would read size 1-2/ 36 mm +0. (Figures 64 and 65)

Figure 64

Figure 65

Once the appropriate reversed insert trial is selected, insert the selected reversed insert trial into the compactor. Orient the notch [1] in the reversed insert trial in a superolateral position aligned with the 12 o'clock position on the compactor. (Figure 66)

Figure 66

Once the reversed insert trial and compactor are aligned, fully seat the reversed insert trial into the compactor until flush with the collar of the compactor. (Figure 67)

Reduce the reversed insert trial into the joint to check deltoid tension, stability, range of motion and impingement.

Figure 67

If the initial reduction is too loose, remove the reversed insert trial and replace it with the next greater reversed insert trial thickness.

To remove the reversed insert trial, insert the tips of the trial clamp into the holes of the reversed insert trial. Then remove the reversed insert trial from the compactor and select the next greater reversed insert trial thickness. (Figures 68 and 69)

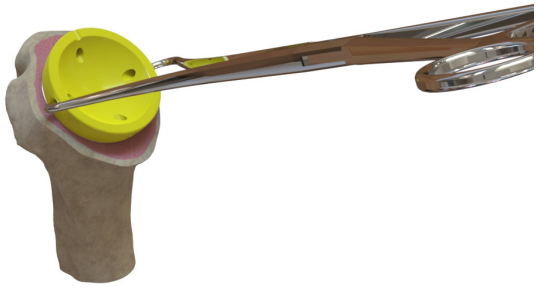


Figure 68

Note:
The reversed insert trials are intended to have a loose fit into the compactor and definitive implants. Slight movement should be expected.

Figure 69

Operative technique

Spacers for trialing

If the +6 reversed insert trial is not thick enough to provide a stable reduction, there are spacers that can be utilized.

There are two spacers offered: size 1/2 and size 3/4. Both offer an additional +9 mm of thickness to the reverse construct.

Select the appropriate size +9 mm spacer trial. Make sure to align the etch mark of the spacer trial with the 12 o'clock position of the compactor. Insert the spacer trial into the compactor and tighten with the 2.5 mm hex driver. (Figure 70)

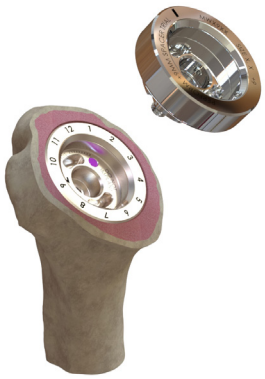


Figure 70

Place the desired reversed insert trial into the spacer and reduce the joint. (Figure 71)

Once desired trialing has been achieved, remove the reversed insert trial, spacer and compactor. A 2.5 mm hex driver may be used to remove the spacer. The compactor can be removed utilizing a slaphammer. (Figure 72)

Figure 71

Final 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 or reversed insert should be assembled to the definitive stem with clean gloves.

The final implant can be assembled on the back table or in-vivo.

Figure 72

Operative technique

Anatomic

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. (Figure 73)

Figure 73

Place the humeral head onto the coupler and impact the components together using the humeral head impaction handle and tip assembly. (Figures 74 and 75)

Figure 74

Figure 75

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

In-vivo assembly

To implant the final prosthesis, select the appropriately sized stem and attach the implant to the inserter handle. (Figures 76 and 77)

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 of the implant. (Figure 78)

Figure 76

Figure 78

Figure 77

Operative technique

Note:
There are two strike plates on the inserter handle. First, impact the inserter handle in parallel with the humeral canal using the top strike plate. Then, impact the strike plate that is perpendicular to the resection level to fully seat the component, ensuring the collar is flush with the resection. (Figure 79)

Place the stem into the prepared proximal humerus. Impact the stem until flush with the resection and then detach the inserter handle. (Figure 80)

If the stem needs additional seating, remove the inserter handle and utilize the impactor assembly. (Figure 81)

Orient the selected size humeral head and coupler assembly to the previously determined rotation. Utilize the impactor handle with the humeral head impactor tip to fully seat the taper of the coupler into the final stem. (Figure 82)

To cement a stem, irrigate and dry the humeral canal and then insert a cement restrictor. Inject cement into the medullary canal using a standard cementing technique. Insert the stem into the humeral canal. Advance the stem until the collar is flush against the resection, taking care not to countersink the implant.

Remove the inserter handle and any excess cement and wait for the cement to harden.

Orient the selected humeral head and coupler assembly to the previously determined rotation. Utilize the impactor handle with the humeral head impactor tip to fully seat the taper of the coupler into the final stem.

Figure 79

Figure 80

Figure 81

Figure 82

Operative technique

Back table assembly

Place the chosen definitive humeral stem into the appropriate slot of the impaction block. Make sure to respect the size of the final stem by placing it in the correctly labeled slot. (i.e. a size 2 humeral stem will be placed in the size 2 slot on the impaction block.) (Figures 83 and 84)

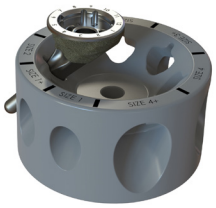


Figure 83

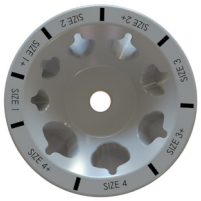


Figure 84

If utilizing a plus (+) stem it is necessary to place it into the slots on the impaction block labeled with the size +.

Orient the selected size humeral head and coupler assembled to the previously determined rotation. Utilize the impactor handle with the humeral head impactor tip to fully seat the taper of the coupler into the final stem. (Figure 85)

Figure 85

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

Implant the final stem assembly into the prepared humerus and impact the implant assembly until it is flush with the resected surface of the humerus.

To cement a stem, irrigate and dry the humeral canal and insert a cement restrictor. Inject cement into the medullary canal using a standard cementing technique. Insert the implant assembly until the humeral head is flush with the resection.

Operative technique

Reverse

In-vivo assembly

To implant the final prosthesis, select the appropriate sized stem and attach the implant to the inserter handle. (Figures 86 and 87)

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 of the implant. (Figure 88)

Note:
There are two strike plates on the inserter handle. First, impact the inserter handle in parallel with the humeral canal using the top strike plate. Then, impact the strike plate that is perpendicular to the resection level to fully seat the component, ensuring that the collar is flush with the resection. (Figure 89)

Place the stem into the prepared proximal humerus. Impact the stem until flush with the resection and then detach the inserter handle. (Figure 90)

If the stem needs additional seating, remove the inserter handle and utilize the impactor assembly. (Figure 91)

Figure 86

Figure 88

Figure 87

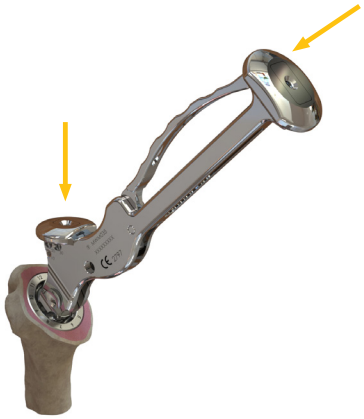


Figure 89

Figure 90

Figure 91

Operative technique

Select the final reversed insert that matches the previously selected reversed insert trial.

Locate the tabs on the underneath side of the reversed insert. Align the tabs at the 12 o'clock and 6 o'clock position. Orient the reversed insert parallel to the collar of the stem and place the reversed insert into the bowl of the stem. (Figures 92 and 93)

Note:
If the reversed insert is off axis, remove and realign. (Figures 94 and 95)

Once the reversed insert is aligned and parallel to the collar of the stem, apply hand pressure to begin to engage the locking mechanism. (Figures 96 and 97)

Use the impaction handle assembly to fully seat the reversed insert. (Figures 98 and 99)

Note:
If a spacer is utilized, insert the spacer into the bowl of the stem after the stem has been inserted into the prepared humerus. Be sure to align the etch mark of the spacer with the 12 o'clock position of the stem. Insert the reversed insert into the spacer.

To cement a stem, irrigate and dry the humeral canal and then insert a cement restrictor. Inject cement into the medullary canal using a standard cementing technique. Insert the stem into the humeral canal. Advance the stem until the collar is flush against the resection, taking care not to countersink the implant.

Remove the inserter handle and any excess cement. Clean and dry the stem taper.

To place the reversed insert, select the size and thickness determined during the trailing step and orient the reversed insert with the notch aligned at the 12 o'clock position.

With the reversed insert aligned, use the impactor handle with the insert impactor tip to seat the reversed insert into the stem.

Figure 92

Figure 93

Figure 94

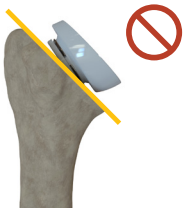


Figure 95

Figure 96

Figure 97

Figure 98

Figure 99

Operative technique

Back table assembly

Place the chosen definitive humeral stem into the appropriate slot of the impaction block. Make sure to respect the size of the final stem by placing it in the correctly labeled slot. (i.e. a size 2 humeral size will be placed in the size 2 slot on the impaction block.) (Figure 100)

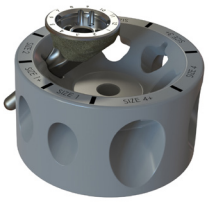


Figure 100

If utilizing a plus (+) stem, it is necessary to place it into the slots on the impaction block labeled with the size +.

Select the final reversed insert that matches the previously selected reversed insert trial and place into the final stem. Orient the final reversed insert in the superior position and align to the 12 o'clock marking on the stem. (Figure 101)

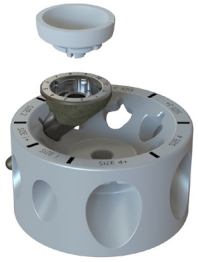


Figure 101

Once the reversed insert is aligned and parallel to the collar of the stem, apply hand pressure to begin to engage the locking mechanism.

To fully seat the reversed insert into the stem, select the impactor tip and attach to the impactor handle. Place the impactor assembly into the final reversed insert and impact until flush with the collar of the stem. (Figure 102)

With the stem and insert assembled, insert the assembly into the prepared humerus. Impact the assembly utilizing the impactor handle and impactor tip until the stem is flush with the resected surface of the humerus.

Figure 102

Note:
If a spacer is utilized, insert the spacer into the taper of the stem while the stem is in the impaction block. Make sure to align the etch mark of the spacer with the 12 o'clock position of the stem. Impact the spacer onto the stem with the impactor tip and impactor handle. Insert the reversed insert into the spacer.

To cement a stem, irrigate and dry the humeral canal and then insert a cement restrictor. Inject cement into the medullary canal using a standard cementing technique. Insert the implant assembly.

Operative technique

Conversion

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 103)

Figure 103

If the coupler remains in the stem, utilize the coupler separator for the removal of the coupler from the stem. Thread the coupler separator clockwise into the threads of the coupler. Thread until the coupler disassociates from the stem. Assess the position, fixation and taper of the stem. (Figure 104)

If the position, fixation and taper of the stem are acceptable, select the planer that corresponds with the stem size and attach to the reamer handle. To plane, engage the power prior to advancing the planning teeth to the resection. Take care to ensure that the planer is aligned with the taper of the stem. (Figure 105)

Utilizing the planer will ensure adequate clearance for the reversed insert that will be placed into the stem.

Figure 104

Once the resection surface is prepared, select the desired reversed insert trial and place it into the stem. (Figures 106 and 107)

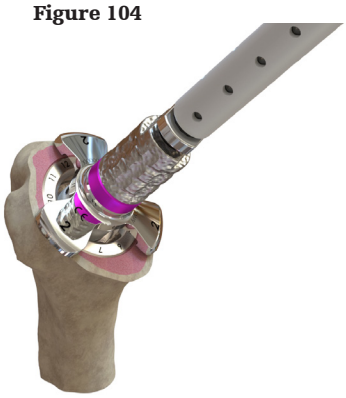


Figure 105

Reduce the reversed insert trial into the joint to check deltoid tension, stability, range of motion and impingement.

Figure 106

Figure 107

Operative technique

Select the final reversed insert that matches the previously selected reversed insert trial.

Locate the tabs on the underneath side of the reversed insert. Align the tabs at the 12 o'clock and 6 o'clock position. Orient the reversed insert parallel to the collar of the stem and place the reversed insert into the bowl of the stem. (Figures 108 and 109)

Note:
If the reversed insert is off axis, remove and realign. (Figures 110 and 111)

Once the reversed insert is aligned and parallel to the collar of the stem, apply hand pressure to begin to engage the locking mechanism. (Figures 112 and 113)

Use the impaction handle assembly to fully seat the reversed insert. (Figures 114 and 115)

Figure 108

Figure 109

Figure 110

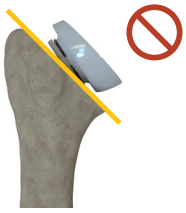


Figure 111

Figure 112

Figure 113

Figure 114

Figure 115

Operative technique

Reversed insert removal

To facilitate the removal of a final reversed insert, it is necessary to have a drill and bone screw.

Align the drill in the center of the reversed insert and advance until the drill bit hits the bottom of the stem bowl. (Figure 116)

Select a screw that is at least 34 mm long and 4.5 mm, or greater, in diameter and advance into the prepared hole from the drill bit. (Figure 117)

Inserting the screw on power, the screw will bottom out on the stem bowl and push the reversed insert out of the stem. The reversed insert cannot be reinserted.

Note:
The locking ring of the reversed insert may be retained in the stem. Should this occur, the locking ring must be removed.

Figure 116

Figure 117

Operative technique

Revision

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

Once the humeral head assembly or reversed insert are removed, locate the curved osteotome. Insert the curved osteotome next to the collar of the stem. (Figure 118)

Complete this around the entire circumference of the collar of the stem. This will break the bond between the bone and proximal stem.

Attach the inserter handle to the stem to remove. (Figure 119)

Figure 118

Figure 119

Operative technique

Plus (+) size stems

If there is not adequate fixation during the compaction step, rather than sizing up to the next bowl diameter, a plus (+) compactor can be utilized to increase stability. The plus (+) compactors have the same collar diameter, however, everything distal to the collar is increased. When utilizing the plus (+) compactors it is important to make sure to implant the plus (+) size final stem.

Each bowl diameter offers a standard length plus (+) stem and a plus (+) long stem. The press-fit is the same from compactor to stem or plus (+) compactor to plus (+) stem. (See sizing chart for comparison.)

Tornier Perform shared reversed inserts

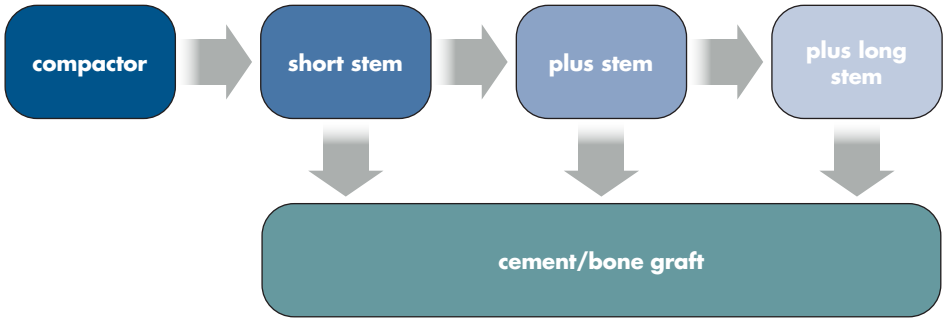
		Sizes 33-39				Sizes 36-42			
Short stems	**Size**	**1**	**1+**	**2**	**2+**	**3**	**3+**	**4**	**4+**
	Collar	32 mm		34 mm		38 mm		42 mm	
	Length	56 mm	59 mm	62 mm	65 mm	68 mm	71 mm	74 mm	77 mm
	Distal tip	5 mm	6 mm	7 mm	8 mm	9 mm	10 mm	11 mm	12 mm

Long stems	**Size**		1+ Long		2+ Long		3+ Long		4+ Long
	Collar		32 mm		34 mm		38 mm		42 mm
	Length		89 mm		98 mm		107 mm		116 mm
	Distal tip		6 mm		8 mm		10 mm		12 mm

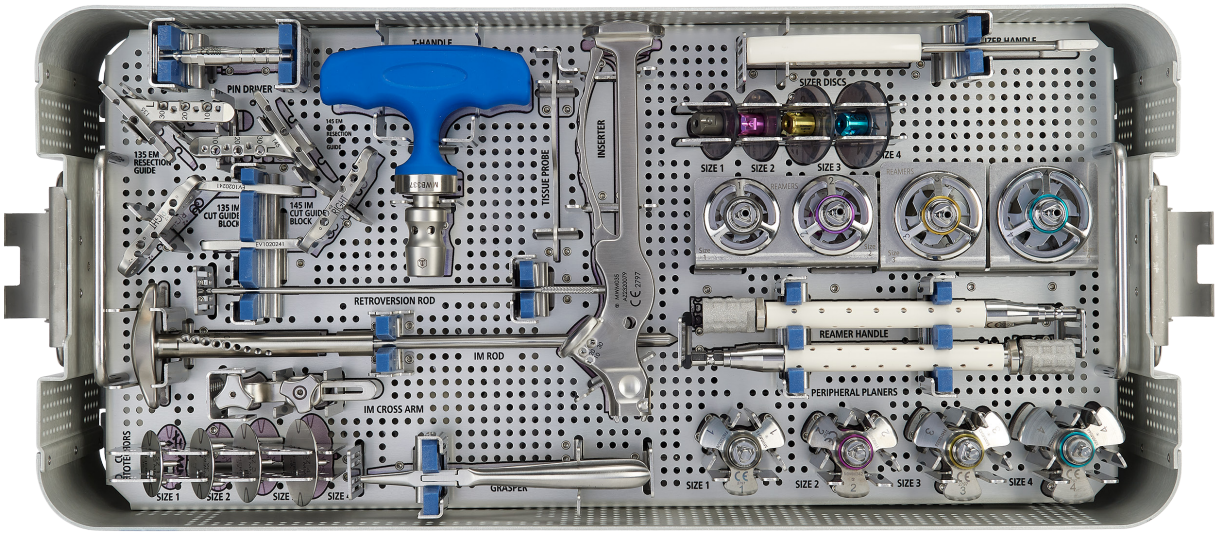
X-Long stems	**Size**			2 X-Long		3 X-Long			
	Collar			34 mm		38 mm			
	Length			150 mm		150 mm			
	Distal tip			7 mm		9 mm			

Stem sequence

In patients with poor metaphyseal bone quality and quantity, it may be necessary to consider a plus stem to achieve adequate fixation. If going from a compactor to a plus stem, there will be additional pressfit of the definitive implant. If a plus stem does not provide adequate fixation, a long stem, cement, or bone graft are recommended.



Instrumentation



YKAD10300

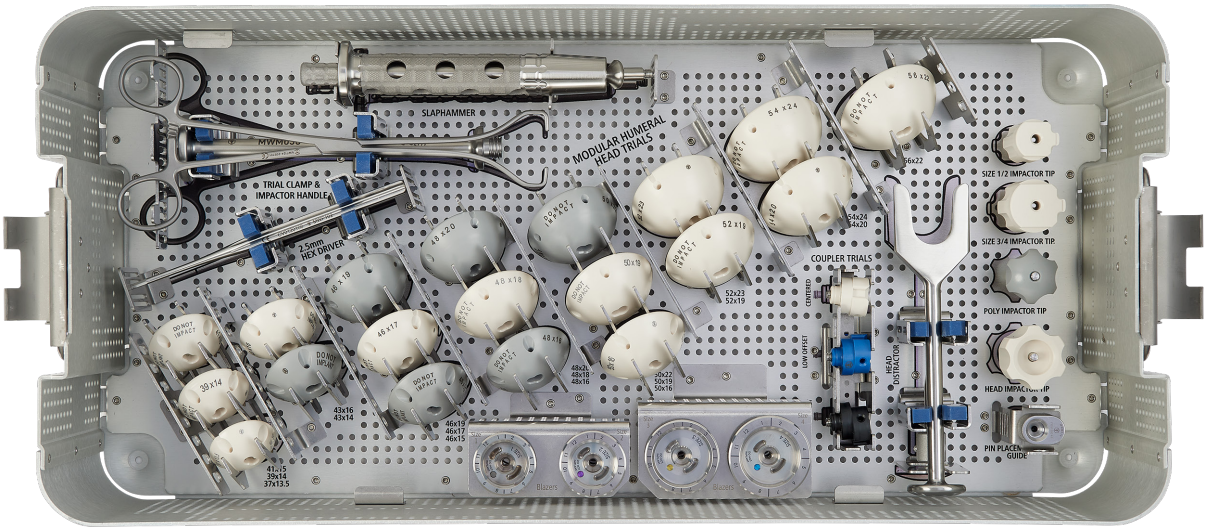
Core set (top tray)

Reference	Description
9722885	Pin driver
MWM001	135° EM resection guide
MWX135	135° IM cut guide block
MWM002*	145 EM resection guide
MWX145*	145 IM cut guide block
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

*Not applicable to the Tornier Perform Humeral Stem operative technique. For additional information, reference the Tornier Perform Humeral Stemless operative technique AP-011842.

Instrumentation



YKAD10300

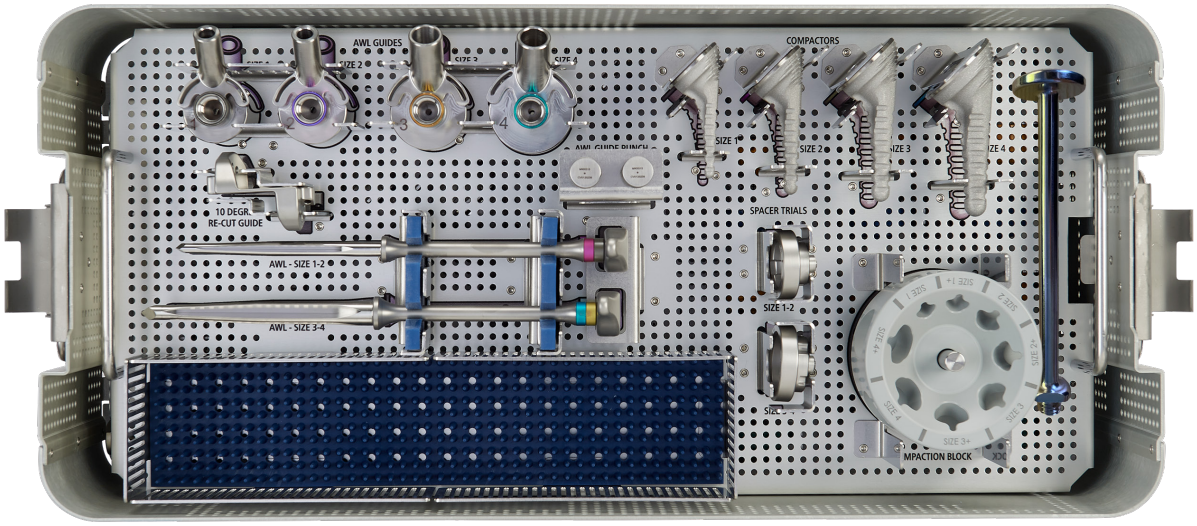
Core set (bottom tray)

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
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
MWM031*	Size 1 stemless blazer
MWM032*	Size 2 stemless blazer
MWM033*	Size 3 stemless blazer
MWM034*	Size 4 stemless blazer

*Not applicable to the Tornier Perform Humeral Stem operative technique. For additional information, reference the Tornier Perform Humeral Stemless operative technique AP-011842.

Instrumentation



YKAD10310

Stem set (top tray)

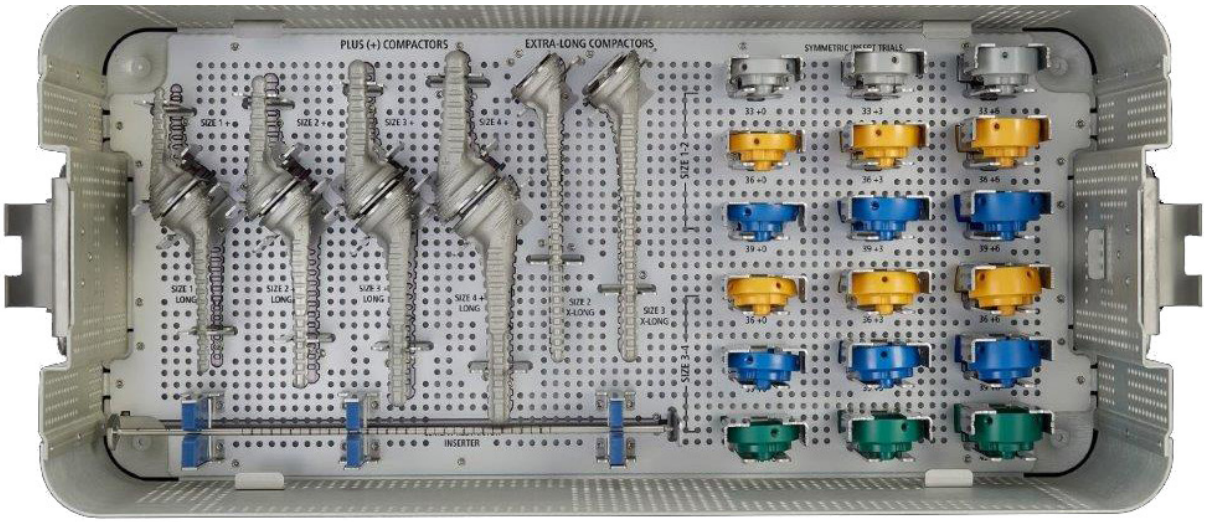
Reference	Description
MWX011	Size 1 awl guide
MWX012	Size 2 awl guide
MWX013	Size 3 awl guide
MWX014	Size 4 awl guide
MWX010*	Humeral 10 deg re-cut guide
MWX120	Size 1-2 awl
MWX340	Size 3-4 awl
MWX015	Awl guide punch
MWX1SS	Size 1 compactor
MWX2SS	Size 2 compactor
MWX3SS	Size 3 compactor
MWX4SS	Size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

Miscellaneous – special order	
MWX900	Perform Humeral spacer screw

*Not applicable to the Tornier Perform Humeral Stem operative technique. For additional information, reference the Tornier Perform Humeral Stemless operative technique AP-011842.

Note: When ordering replacement spacer trials, the spacer trial and set screw are separate item numbers. Reference chart above to order the specific parts.

Instrumentation



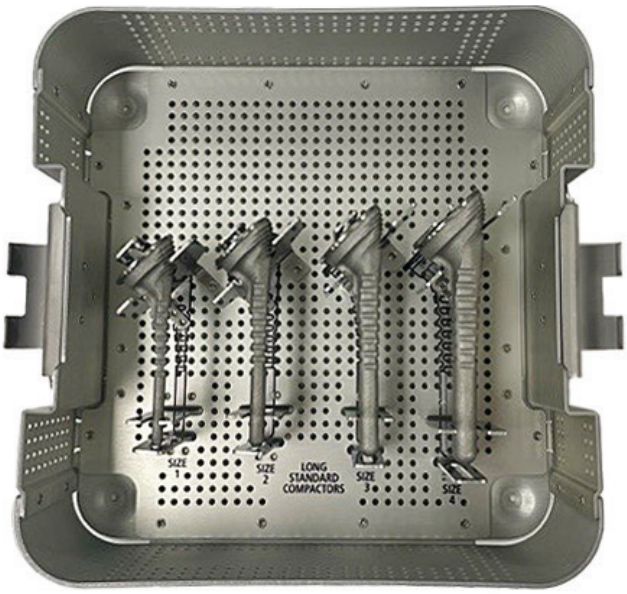
YKAD10310

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

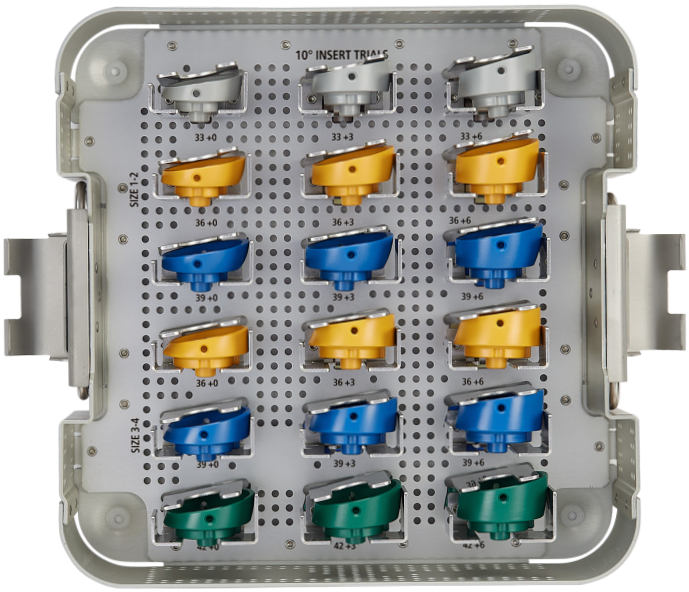


YKAD10390

Long standard compactors

Reference	Description
MWX1SL	Perform Compactor Sz 1 Long
MWX2SL	Perform Compactor Sz 2 Long
MWX3SL	Perform Compactor Sz 3 Long
MWX4SL	Perform Compactor Sz 4 Long

Instrumentation

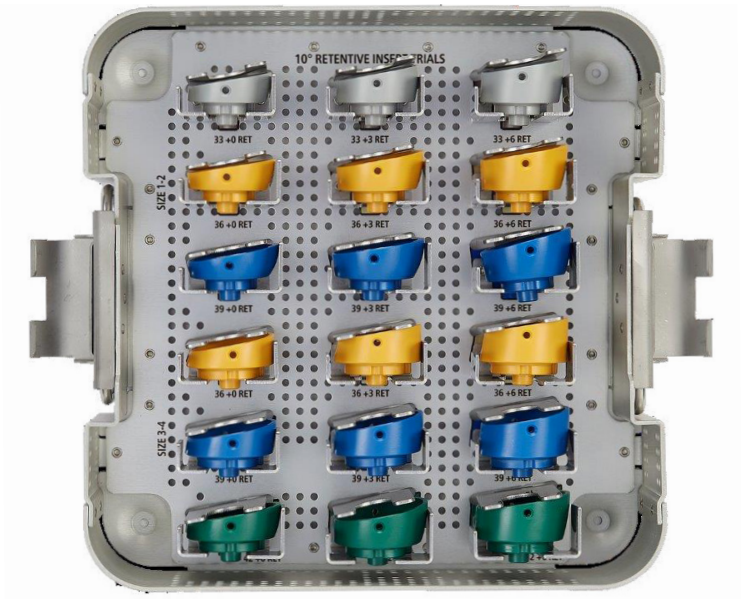


YKAD10320

10° reversed insert trials

Reference	Description	Size	Diameter	Thickness
MWR1330	10° reversed insert trial	1/2	33 mm	+0
MWR1333	10° reversed insert trial	1/2	33 mm	+3
MWR1336	10° reversed insert trial	1/2	33 mm	+6
MWR1360	10° reversed insert trial	1/2	36 mm	+0
MWR1363	10° reversed insert trial	1/2	36 mm	+3
MWR1366	10° reversed insert trial	1/2	36 mm	+6
MWR1390	10° reversed insert trial	1/2	39 mm	+0
MWR1393	10° reversed insert trial	1/2	39 mm	+3
MWR1396	10° reversed insert trial	1/2	39 mm	+6
MWR2360	10° reversed insert trial	3/4	36 mm	+0
MWR2363	10° reversed insert trial	3/4	36 mm	+3
MWR2366	10° reversed insert trial	3/4	36 mm	+6
MWR2390	10° reversed insert trial	3/4	39 mm	+0
MWR2393	10° reversed insert trial	3/4	39 mm	+3
MWR2396	10° reversed insert trial	3/4	39 mm	+6
MWR2420	10° reversed insert trial	3/4	42 mm	+0
MWR2423	10° reversed insert trial	3/4	42 mm	+3
MWR2426	10° reversed insert trial	3/4	42 mm	+6

Instrumentation

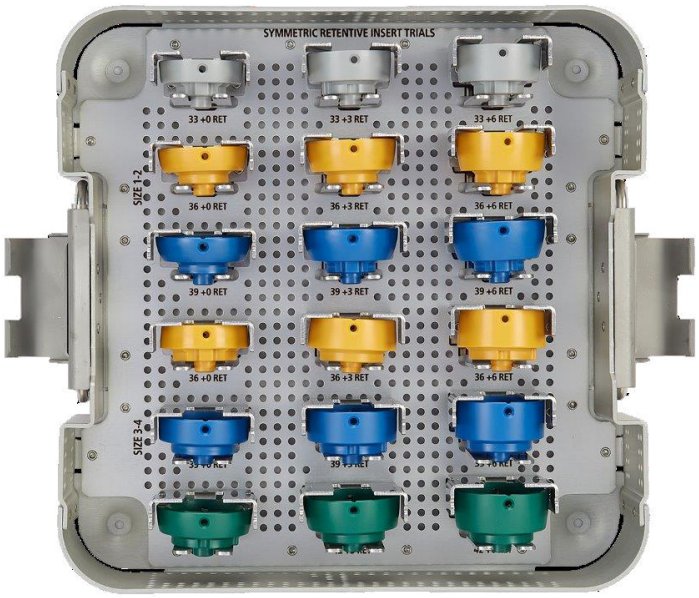


YKAD10330

10° retentive reversed insert trials

Reference	Description	Size	Diameter	Thickness
MWR3330	10° retentive reversed insert trial	1/2	33 mm	+0
MWR3333	10° retentive reversed insert trial	1/2	33 mm	+3
MWR3336	10° retentive reversed insert trial	1/2	33 mm	+6
MWR3360	10° retentive reversed insert trial	1/2	36 mm	+0
MWR3363	10° retentive reversed insert trial	1/2	36 mm	+3
MWR3366	10° retentive reversed insert trial	1/2	36 mm	+6
MWR3390	10° retentive reversed insert trial	1/2	39 mm	+0
MWR3393	10° retentive reversed insert trial	1/2	39 mm	+3
MWR3396	10° retentive reversed insert trial	1/2	39 mm	+6
MWR4360	10° retentive reversed insert trial	3/4	36 mm	+0
MWR4363	10° retentive reversed insert trial	3/4	36 mm	+3
MWR4366	10° retentive reversed insert trial	3/4	36 mm	+6
MWR4390	10° retentive reversed insert trial	3/4	39 mm	+0
MWR4393	10° retentive reversed insert trial	3/4	39 mm	+3
MWR4396	10° retentive reversed insert trial	3/4	39 mm	+6
MWR4420	10° retentive reversed insert trial	3/4	42 mm	+0
MWR4423	10° retentive reversed insert trial	3/4	42 mm	+3
MWR4426	10° retentive reversed insert trial	3/4	42 mm	+6

Instrumentation

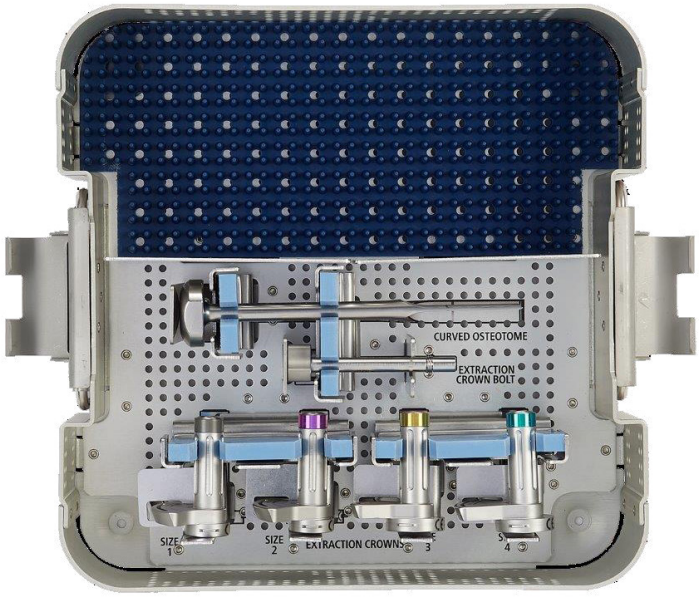


YKAD10350

Symmetric retentive reversed insert trials

Reference	Description	Size	Diameter	Thickness
MWP3330	Symmetric retentive reversed insert trial	1/2	33 mm	+0
MWP3333	Symmetric retentive reversed insert trial	1/2	33 mm	+3
MWP3336	Symmetric retentive reversed insert trial	1/2	33 mm	+6
MWP3360	Symmetric retentive reversed insert trial	1/2	36 mm	+0
MWP3363	Symmetric retentive reversed insert trial	1/2	36 mm	+3
MWP3366	Symmetric retentive reversed insert trial	1/2	36 mm	+6
MWP3390	Symmetric retentive reversed insert trial	1/2	39 mm	+0
MWP3393	Symmetric retentive reversed insert trial	1/2	39 mm	+3
MWP3396	Symmetric retentive reversed insert trial	1/2	39 mm	+6
MWP4360	Symmetric retentive reversed insert trial	3/4	36 mm	+0
MWP4363	Symmetric retentive reversed insert trial	3/4	36 mm	+3
MWP4366	Symmetric retentive reversed insert trial	3/4	36 mm	+6
MWP4390	Symmetric retentive reversed insert trial	3/4	39 mm	+0
MWP4393	Symmetric retentive reversed insert trial	3/4	39 mm	+3
MWP4396	Symmetric retentive reversed insert trial	3/4	39 mm	+6
MWP4420	Symmetric retentive reversed insert trial	3/4	42 mm	+0
MWP4423	Symmetric retentive reversed insert trial	3/4	42 mm	+3
MWP4426	Symmetric retentive reversed insert trial	3/4	42 mm	+6

Instrumentation



YKAD10370

Humeral revision tray

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

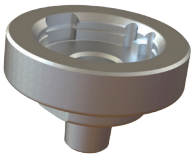
Humeral stems and spacers

Reference	Description	Collar diameter	Length	Distal diameter	Type
Short					
DWX1SS	Size 1 humeral stem	32 mm	56 mm	5 mm	Standard
DWX2SS	Size 2 humeral stem	34 mm	62 mm	7 mm	
DWX3SS	Size 3 humeral stem	38 mm	68 mm	9 mm	
DWX4SS	Size 4 humeral stem	42 mm	74 mm	11 mm	
Short					
DWX1PS	Size 1 plus humeral stem	32 mm	59 mm	6 mm	Plus (+)
DWX2PS	Size 2 plus humeral stem	34 mm	65 mm	8 mm	
DWX3PS	Size 3 plus humeral stem	38 mm	71 mm	10 mm	
DWX4PS	Size 4 plus humeral stem	42 mm	77 mm	12 mm	
Long					
*DWX1PL	Size 1 plus humeral stem – long	32 mm	89 mm	6 mm	Plus (+)
*DWX2PL	Size 2 plus humeral stem – long	34 mm	98 mm	8 mm	
*DWX3PL	Size 3 plus humeral stem – long	38 mm	107 mm	10 mm	
*DWX4PL	Size 4 plus humeral stem – long	42 mm	116 mm	12 mm	
Extra-long					
*DWX2SX	Size 2 humeral stem – extra long	34 mm	150 mm	7 mm	Standard
*DWX3SX	Size 3 humeral stem – extra long	38 mm	150 mm	9 mm	

*Available by special request only.

Spacers	
DWX912	+9 mm humeral spacer – sz 1/2
DWX934	+9 mm humeral spacer – sz 3/4

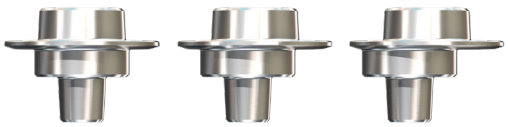
Single-use instruments	
MWM100	Guide pin 3.0 x 100 mm
9722908	Sterile 3x75 mm guide pin



Implants

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



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.

Implants

Symmetric reversed inserts

Reference	Description	Size	Diameter	Thickness
DWP1330	Reversed insert	1/2	33 mm	+0
DWP1333	Reversed insert	1/2	33 mm	+3
DWP1336	Reversed insert	1/2	33 mm	+6
DWP1360	Reversed insert	1/2	36 mm	+0
DWP1363	Reversed insert	1/2	36 mm	+3
DWP1366	Reversed insert	1/2	36 mm	+6
DWP1390	Reversed insert	1/2	39 mm	+0
DWP1393	Reversed insert	1/2	39 mm	+3
DWP1396	Reversed insert	1/2	39 mm	+6
DWP2360	Reversed insert	3/4	36 mm	+0
DWP2363	Reversed insert	3/4	36 mm	+3
DWP2366	Reversed insert	3/4	36 mm	+6
DWP2390	Reversed insert	3/4	39 mm	+0
DWP2393	Reversed insert	3/4	39 mm	+3
DWP2396	Reversed insert	3/4	39 mm	+6
DWP2420	Reversed insert	3/4	42 mm	+0
DWP2423	Reversed insert	3/4	42 mm	+3
DWP2426	Reversed insert	3/4	42 mm	+6

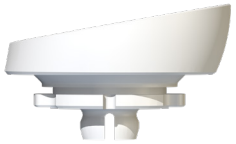
Symmetric reversed inserts vitamin E

Reference	Description	Size	Diameter	Thickness
DWS1330	Reversed insert VE	1/2	33 mm	+0
DWS1333	Reversed insert VE	1/2	33 mm	+3
DWS1336	Reversed insert VE	1/2	33 mm	+6
DWS1360	Reversed insert VE	1/2	36 mm	+0
DWS1363	Reversed insert VE	1/2	36 mm	+3
DWS1366	Reversed insert VE	1/2	36 mm	+6
DWS1390	Reversed insert VE	1/2	39 mm	+0
DWS1393	Reversed insert VE	1/2	39 mm	+3
DWS1396	Reversed insert VE	1/2	39 mm	+6
DWS2360	Reversed insert VE	3/4	36 mm	+0
DWS2363	Reversed insert VE	3/4	36 mm	+3
DWS2366	Reversed insert VE	3/4	36 mm	+6
DWS2390	Reversed insert VE	3/4	39 mm	+0
DWS2393	Reversed insert VE	3/4	39 mm	+3
DWS2396	Reversed insert VE	3/4	39 mm	+6
DWS2420	Reversed insert VE	3/4	42 mm	+0
DWS2423	Reversed insert VE	3/4	42 mm	+3
DWS2426	Reversed insert VE	3/4	42 mm	+6

Implants

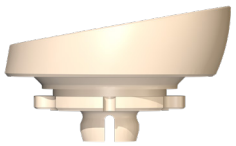
10° reversed inserts

Reference	Description	Size	Diameter	Thickness
DWR1330	10° reversed insert	1/2	33 mm	+0
DWR1333	10° reversed insert	1/2	33 mm	+3
DWR1336	10° reversed insert	1/2	33 mm	+6
DWR1360	10° reversed insert	1/2	36 mm	+0
DWR1363	10° reversed insert	1/2	36 mm	+3
DWR1366	10° reversed insert	1/2	36 mm	+6
DWR1390	10° reversed insert	1/2	39 mm	+0
DWR1393	10° reversed insert	1/2	39 mm	+3
DWR1396	10° reversed insert	1/2	39 mm	+6
DWR2360	10° reversed insert	3/4	36 mm	+0
DWR2363	10° reversed insert	3/4	36 mm	+3
DWR2366	10° reversed insert	3/4	36 mm	+6
DWR2390	10° reversed insert	3/4	39 mm	+0
DWR2393	10° reversed insert	3/4	39 mm	+3
DWR2396	10° reversed insert	3/4	39 mm	+6
DWR2420	10° reversed insert	3/4	42 mm	+0
DWR2423	10° reversed insert	3/4	42 mm	+3
DWR2426	10° reversed insert	3/4	42 mm	+6



10° reversed inserts vitamin E

Reference	Description	Size	Diameter	Thickness
DWT1330	10° reversed insert VE	1/2	33 mm	+0
DWT1333	10° reversed insert VE	1/2	33 mm	+3
DWT1336	10° reversed insert VE	1/2	33 mm	+6
DWT1360	10° reversed insert VE	1/2	36 mm	+0
DWT1363	10° reversed insert VE	1/2	36 mm	+3
DWT1366	10° reversed insert VE	1/2	36 mm	+6
DWT1390	10° reversed insert VE	1/2	39 mm	+0
DWT1393	10° reversed insert VE	1/2	39 mm	+3
DWT1396	10° reversed insert VE	1/2	39 mm	+6
DWT2360	10° reversed insert VE	3/4	36 mm	+0
DWT2363	10° reversed insert VE	3/4	36 mm	+3
DWT2366	10° reversed insert VE	3/4	36 mm	+6
DWT2390	10° reversed insert VE	3/4	39 mm	+0
DWT2393	10° reversed insert VE	3/4	39 mm	+3
DWT2396	10° reversed insert VE	3/4	39 mm	+6
DWT2420	10° reversed insert VE	3/4	42 mm	+0
DWT2423	10° reversed insert VE	3/4	42 mm	+3
DWT2426	10° reversed insert VE	3/4	42 mm	+6



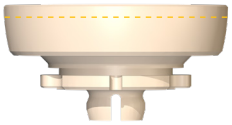
Implants

*Symmetric retentive reversed inserts

Reference	Description	Size	Diameter	Thickness
DWP3330	Symmetric retentive reversed insert	1/2	33 mm	+0
DWP3333	Symmetric retentive reversed insert	1/2	33 mm	+3
DWP3336	Symmetric retentive reversed insert	1/2	33 mm	+6
DWP3360	Symmetric retentive reversed insert	1/2	36 mm	+0
DWP3363	Symmetric retentive reversed insert	1/2	36 mm	+3
DWP3366	Symmetric retentive reversed insert	1/2	36 mm	+6
DWP3390	Symmetric retentive reversed insert	1/2	39 mm	+0
DWP3393	Symmetric retentive reversed insert	1/2	39 mm	+3
DWP3396	Symmetric retentive reversed insert	1/2	39 mm	+6
DWP4360	Symmetric retentive reversed insert	3/4	36 mm	+0
DWP4363	Symmetric retentive reversed insert	3/4	36 mm	+3
DWP4366	Symmetric retentive reversed insert	3/4	36 mm	+6
DWP4390	Symmetric retentive reversed insert	3/4	39 mm	+0
DWP4393	Symmetric retentive reversed insert	3/4	39 mm	+3
DWP4396	Symmetric retentive reversed insert	3/4	39 mm	+6
DWP4420	Symmetric retentive reversed insert	3/4	42 mm	+0
DWP4423	Symmetric retentive reversed insert	3/4	42 mm	+3
DWP4426	Symmetric retentive reversed insert	3/4	42 mm	+6

*Symmetric retentive reversed inserts vitamin E

Reference	Description	Size	Diameter	Thickness
DWS3330	Symmetric retentive reversed insert VE	1/2	33 mm	+0
DWS3333	Symmetric retentive reversed insert VE	1/2	33 mm	+3
DWS3336	Symmetric retentive reversed insert VE	1/2	33 mm	+6
DWS3360	Symmetric retentive reversed insert VE	1/2	36 mm	+0
DWS3363	Symmetric retentive reversed insert VE	1/2	36 mm	+3
DWS3366	Symmetric retentive reversed insert VE	1/2	36 mm	+6
DWS3390	Symmetric retentive reversed insert VE	1/2	39 mm	+0
DWS3393	Symmetric retentive reversed insert VE	1/2	39 mm	+3
DWS3396	Symmetric retentive reversed insert VE	1/2	39 mm	+6
DWS4360	Symmetric retentive reversed insert VE	3/4	36 mm	+0
DWS4363	Symmetric retentive reversed insert VE	3/4	36 mm	+3
DWS4366	Symmetric retentive reversed insert VE	3/4	36 mm	+6
DWS4390	Symmetric retentive reversed insert VE	3/4	39 mm	+0
DWS4393	Symmetric retentive reversed insert VE	3/4	39 mm	+3
DWS4396	Symmetric retentive reversed insert VE	3/4	39 mm	+6
DWS4420	Symmetric retentive reversed insert VE	3/4	42 mm	+0
DWS4423	Symmetric retentive reversed insert VE	3/4	42 mm	+3
DWS4426	Symmetric retentive reversed insert VE	3/4	42 mm	+6

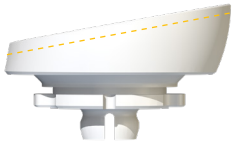


*Retentive inserts have a 2 mm greater wall height than standard inserts.

Implants

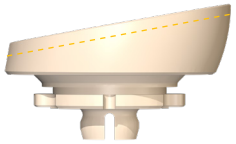
*10° retentive reversed inserts

Reference	Description	Size	Diameter	Thickness
DWR3330	10° retentive reversed insert	1/2	33 mm	+0
DWR3333	10° retentive reversed insert	1/2	33 mm	+3
DWR3336	10° retentive reversed insert	1/2	33 mm	+6
DWR3360	10° retentive reversed insert	1/2	36 mm	+0
DWR3363	10° retentive reversed insert	1/2	36 mm	+3
DWR3366	10° retentive reversed insert	1/2	36 mm	+6
DWR3390	10° retentive reversed insert	1/2	39 mm	+0
DWR3393	10° retentive reversed insert	1/2	39 mm	+3
DWR3396	10° retentive reversed insert	1/2	39 mm	+6
DWR4360	10° retentive reversed insert	3/4	36 mm	+0
DWR4363	10° retentive reversed insert	3/4	36 mm	+3
DWR4366	10° retentive reversed insert	3/4	36 mm	+6
DWR4390	10° retentive reversed insert	3/4	39 mm	+0
DWR4393	10° retentive reversed insert	3/4	39 mm	+3
DWR4396	10° retentive reversed insert	3/4	39 mm	+6
DWR4420	10° retentive reversed insert	3/4	42 mm	+0
DWR4423	10° retentive reversed insert	3/4	42 mm	+3
DWR4426	10° retentive reversed insert	3/4	42 mm	+6



*10° retentive reversed inserts vitamin E

Reference	Description	Size	Diameter	Thickness
DWT3330	10° retentive reversed insert VE	1/2	33 mm	+0
DWT3333	10° retentive reversed insert VE	1/2	33 mm	+3
DWT3336	10° retentive reversed insert VE	1/2	33 mm	+6
DWT3360	10° retentive reversed insert VE	1/2	36 mm	+0
DWT3363	10° retentive reversed insert VE	1/2	36 mm	+3
DWT3366	10° retentive reversed insert VE	1/2	36 mm	+6
DWT3390	10° retentive reversed insert VE	1/2	39 mm	+0
DWT3393	10° retentive reversed insert VE	1/2	39 mm	+3
DWT3396	10° retentive reversed insert VE	1/2	39 mm	+6
DWT4360	10° retentive reversed insert VE	3/4	36 mm	+0
DWT4363	10° retentive reversed insert VE	3/4	36 mm	+3
DWT4366	10° retentive reversed insert VE	3/4	36 mm	+6
DWT4390	10° retentive reversed insert VE	3/4	39 mm	+0
DWT4393	10° retentive reversed insert VE	3/4	39 mm	+3
DWT4396	10° retentive reversed insert VE	3/4	39 mm	+6
DWT4420	10° retentive reversed insert VE	3/4	42 mm	+0
DWT4423	10° retentive reversed insert VE	3/4	42 mm	+3
DWT4426	10° retentive reversed insert VE	3/4	42 mm	+6



*Retentive inserts have a 2 mm greater wall height than standard inserts.

System compatibility

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

The Tornier Perform Humeral System – Stem in the reversed configuration must be used with the Aequalis Reversed II, Tornier Perform Reversed, or Tornier Perform Reversed Augmented glenoid implant.

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**

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