stryker

Tornier HRS
Max

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 HRS Max

Contents

Indications and contraindications

Intended use

The prostheses are intended for replacement of the shoulder joint to reduce pain and improve mobility in comparison with preoperative status.

System overview

The Tornier HRS Max humeral assembly components includes a deltoid-wrapping proximal body, stem, and optional spacer(s). The tuberosity body is compatible with Tornier HRS.

Indications for use

In anatomic:

Tornier HRS Max humeral assembly can be used for anatomic arthroplasty when used with a humeral head. It can be used as a hemiarthroplasty, if the natural glenoid provides a sufficient bearing surface, or in conjunction with a glenoid, as a total replacement.

Tornier HRS Max is indicated for use as a replacement of shoulder joints for patients with a functional deltoid muscle and with an intact or reconstructable rotator cuff with pain disabled by:

- Rheumatoid arthritis
- Non-inflammatory degenerative joint disease (i.e., osteoarthritis and avascular necrosis)
- Fractures of the humeral head
- Post-traumatic arthritis
- Oncology applications including bone loss due to tumor resection
- Significant humeral resection where adequate fixation can be achieved

In reverse:

Tornier HRS Max is indicated for use as a replacement of shoulder joints for patients with a functional deltoid muscle and with massive and non-repairable rotator cuff-tear with pain disabled by:

- Rheumatoid arthritis
- Non-inflammatory degenerative joint disease (i.e., osteoarthritis and avascular necrosis)
- Fractures of the humeral head
- Post-traumatic arthritis
- Massive and non-repairable rotator cuff tear
- Oncology applications include bone loss due to tumor resection
- Significant humeral resection where adequate fixation can be achieved

The reversed tray and polyethylene insert are indicated for use in the conversion from an anatomic to reversed shoulder arthroplasty without the removal of a well-fixed humeral assembly during revision surgery for patients with functional deltoid muscle.

Notice:

- **All components are single use.**
- **The coated humeral stem is intended for cemented or cementless use.**
- **The all-poly glenoid components are intended for cemented use only.**
- **The glenoid sphere implant is anchored to the bone with screws and is for non-cemented fixation.**
- **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 who lack a suspected material sensitivity to cobalt alloy.**

Indications and contraindications

Contraindications

Absolute contraindications include infection, sepsis, and osteomyelitis.

Relative contraindications include:

1. Uncooperative patient or patient with neurological disorders who is incapable of following directions
2. Osteoporosis
3. Metabolic disorders which may impair bone formation
4. Osteomalacia
5. Distant foci of infections which may spread to the implant site
6. Vascular insufficiency, muscular atrophy, or neuromuscular disease
7. Patient pregnancy
8. Inadequate bone support for fixation of the prosthesis
9. Significant injury to the brachial plexus
10. Non-functional deltoid muscle
11. Acromion or scapular spine fracture

System compatibility

In anatomic:

Tornier HRS Max in the anatomic configuration must be used in association with the Tornier Perform Anatomic Glenoid and Tornier Perform Anatomic Augmented Glenoid, and Tornier Perform Humeral.

In reverse:

Tornier HRS Max in the reversed configuration must be used in association with the Aequalis Reversed II Shoulder System, Tornier Perform Reversed Glenoid, or Tornier Perform Reversed Augmented Glenoid, Tornier HRS, Shoulder iD Primary Reversed Glenoid (in primary case only), and Tornier Perform Humeral.

Pre-operative planning

Four shoulder X-rays are recommended:

1. A-P view
2. True A-P view (grashey view)
3. Supraspinatus outlet view (SOV) / lateral view
4. Axillary view

CT scan may be appropriate to assist in evaluating the glenoid morphology.

MRI scan may be appropriate.

Operative technique

Exposure

Using a standard delto-pectoral approach, releases are performed, and the subscapularis is prepared per surgeon discretion.

The shoulder is gently dislocated anteriorly. This is facilitated by placing a Darrach retractor within the glenohumeral joint and performing gentle adduction and external rotation of the humerus. As the humeral head is fully dislocated, the inferior capsule is released up to the posterior aspect of the humeral head. Identification, palpation, and protection of the axillary nerve during this release is important. An anterior capsulotomy is performed with a release of the middle and inferior glenohumeral ligaments off the glenoid. For reverse, a complete capsulotomy is performed. A gentle mobilization of the subscapularis muscle is necessary to allow for tension-free reinsertion following the procedure.

Once these releases have been performed, the humeral head is fully dislocated by abduction of the arm with progressive external rotation and extension. Consider further release of the pectoralis major insertion if full external rotation is not obtained.

Resection

Open the bone clamp by loosening the threaded knob, and position it on either the left or right targeted bone surface. (Bone clamp is marked left and right.) Using the drop rod as a guide, align parallel and axial to the humeral shaft, providing perpendicular positioning of the bone clamp. Ensure that the clamp is applied with even pressure to stabilize without deforming the bone. Confirm that the bone clamp does not interfere with the planned resection area. Tighten the bone clamp using the threaded knob, being careful not to overtighten.

Note:
When positioning the bone clamp, a 10mm thickness to the top of the saw guide should be anticipated. Captured cut is 2mm below or 8mm total.

Securely attach the saw guide to the bone clamp by engaging the captured feature into the thumb stop. Round portion of the saw guide should be facing the humerus (clamp is marked “This side of clamp toward bone.” Verify that the saw guide is firmly in place to maintain accuracy during the cutting process.

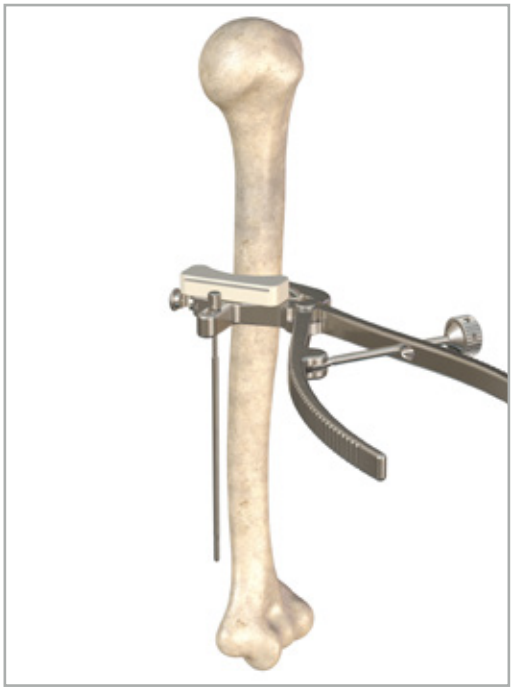


Figure 1

Operative technique

Note:
Saw can be used on top surface or within the cut guide for a captured cut.

Activate the surgical saw and carefully guide it along the edges of the saw guide (or within the guide) to perform the bone resection. Maintain a steady and controlled motion to achieve a precise cut.

Ream/Plane

Using the T-handle, begin with a size 9mm reamer/planer and align it axially with the humeral canal. Incrementally drop reamer/planers into the humeral canal sequentially. Note size when cortical wall contact is achieved midway between distal tip and planer.

Using the size which achieved cortical wall contact mid-way on the reamer/planer, decrease one size and ream under power. Carefully ream until the planer portion provides a uniform resection surface. Once complete, complete a secondary ream using the appropriate size which achieved cortical wall contact at the mid-point of the reamer/planer. Do not over-ream. Use care to complete the conical prep of the humeral canal.

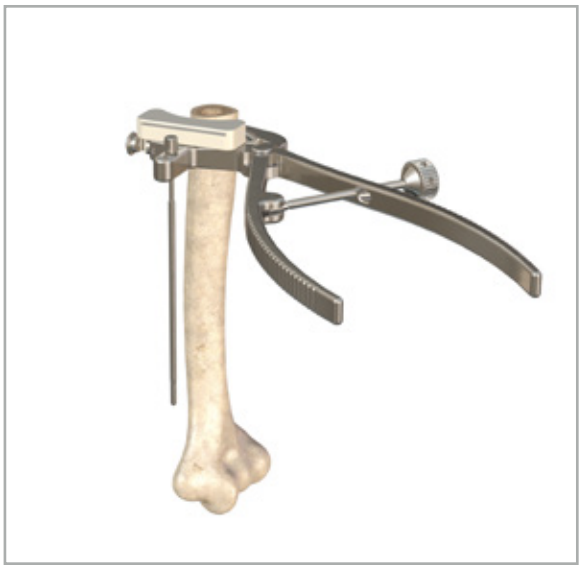


Figure 2

Figure 3

Operative technique

Trial

Choose trial stem size that corresponds with the last reamer/planer used.

Lifting the collared sleeve of the inserter and extractor handle, insert expanding trial stem. **| Figure 4** Release the collared sleeve to lock and fully secure the expanding trial assembly. Attach version rod into the inserter to set the desired humeral version. **| Figure 5**

Pass the T20 driver through the inserter, engaging the screw head within the expanding trial. **| Figure 7** Rotate clockwise until rotational stability of the expanding trial is achieved. Lift the collared sleeve and disengage the inserter from the expanding trial.

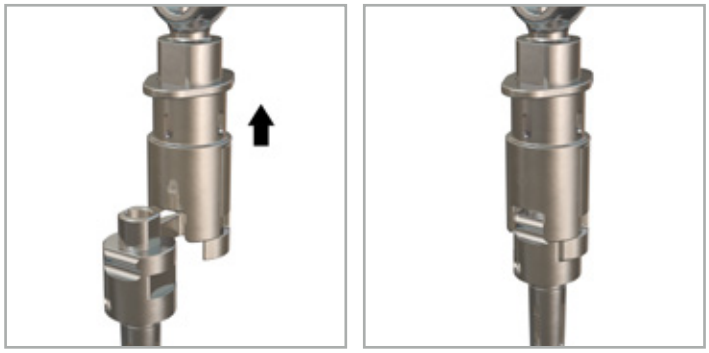


Figure 4

Figure 5

Figure 6

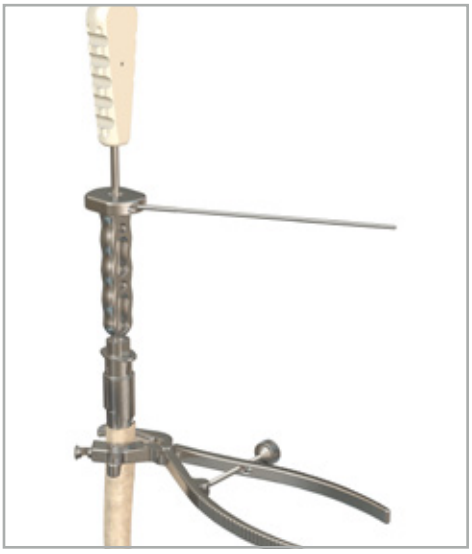


Figure 7

Operative technique

Assemble height gauge by sliding the clamp onto the tower while aligning the d-shaped hole feature. Insert drop rod horizontally into self-retaining mechanism.
| Figures 8, 9, 10

Orient and attach assembled height gauge tower to trial stem and use drop rod to find the center of the glenoid.
| Figure 11

Figure 11

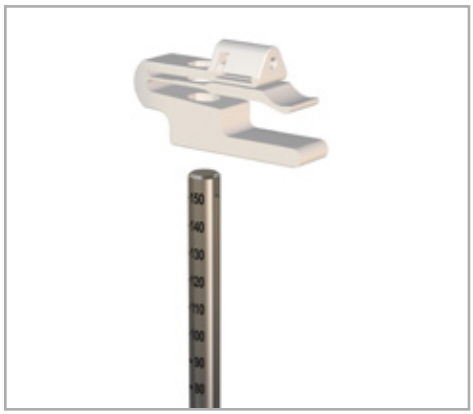


Figure 8

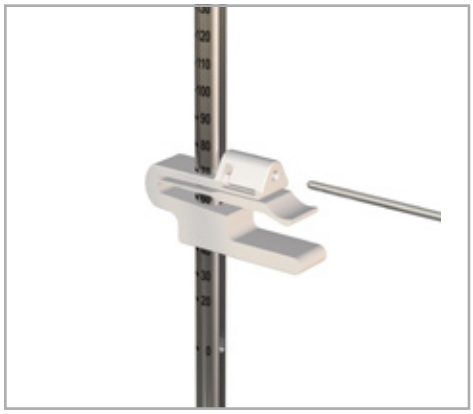


Figure 9

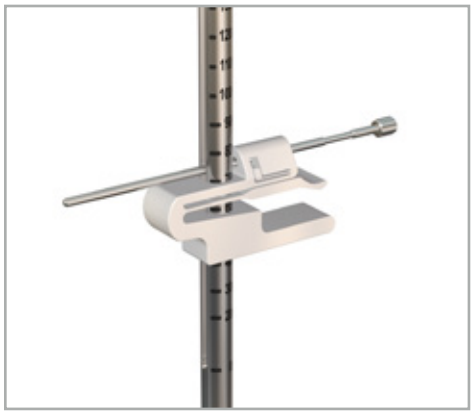


Figure 10

Operative technique

Using the measurement from the previous step, build the construct using trial spacers (see assembly matrix chart, page 19) by stacking together. **| Figure 12**

Select the desired trial proximal body and attach to top of trial assembly (stem or spacers depending on height). When determining the appropriate size of proximal body, reference the native humeral head if available. **| Figure 13**

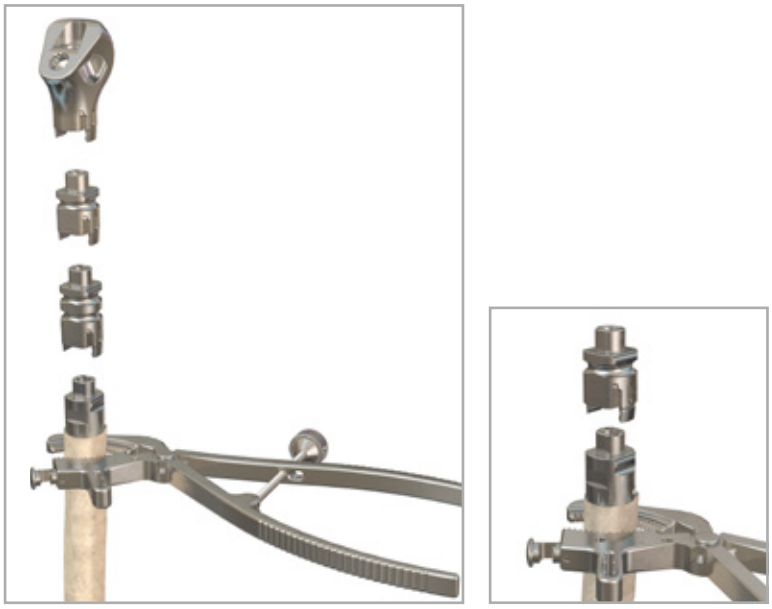


Figure 12

Figure 13

Operative technique

Anatomic preparation

Trialing humeral head components

Tornier HRS Max is designed to be compatible with Perform Humeral Heads. The humeral head trial attaches to the stem utilizing a coupler trial. The humeral head coupler trial is offered in three different offsets: centered 0mm, low 1.5mm and high 3.5mm (centered = white, low offset = blue, high offset = black). **| Figure 14** Select the humeral head coupler that best allows the humeral head trial to recreate the patient's native anatomy.

Figure 14

Place the tips of the trial clamp into the selected coupler trial and then place the coupler trial into the proximal body trial. Use the Tornier HRS 2.5mm hex driver to lightly engage a few threads of the coupler trial into the proximal body trial.

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.

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

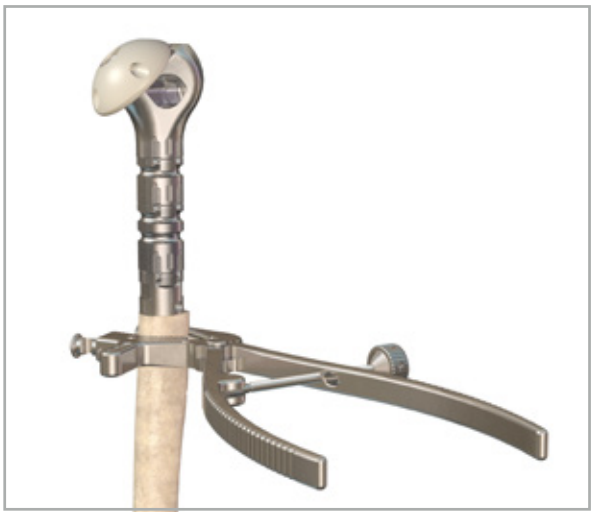


Figure 15

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.

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

Operative technique

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 the Tornier HRS 2.5mm hex driver in a counterclockwise motion. Using the trial clamp, twist the coupler trial to easily disassociate.

Reduce the humeral head trial into the glenoid.

After the shoulder joint is reduced, posterior force on the humeral head should allow for subluxation of 50% of the width of the joint. If less than 50% subluxation is possible, remove the humeral head trial and replace it with the next smaller humeral head trial. If direct posterior force dislocates the humeral head trial, remove the trial, and replace it with the next largest humeral head trial.

Reversed preparation

Trialing reversed components

The Tornier HRS Max System is designed to be compatible with the Tornier HRS Reversed Trays and Perform Humeral Reversed Polyethylene Inserts. The reversed components are comprised of reversed trays that are placed into the Morse taper of the proximal body and reversed polyethylene inserts that "snap" into the reversed tray. 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 four thicknesses (-2, +0, +3, +6) and three glenosphere sizes (36mm, 39mm, 42mm). There are three capture rates for each: 45%, 55%, and 65%.

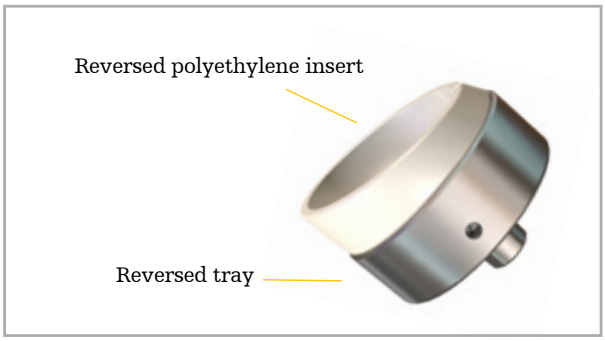


Figure 16

Operative technique

Reversed tray overview

The reversed trays are offered in centered (+8, +12) and high (3.5mm) offsets (+8), providing flexibility in the operative setting to include the following:

- The flexibility to adjust the humeral center of rotation to be either centered within the resection surface or more lateral like the Grammont design.
- The flexibility to facilitate reduction by decreasing tension when reducing the shoulder.

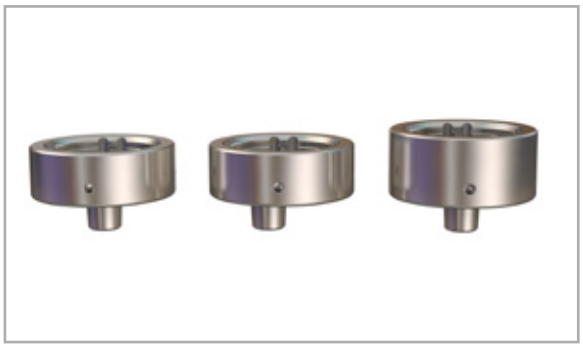


Figure 17

Selecting the reversed tray trial and trial reduction

The selection of the reversed tray trial offset is dependent upon the surgeon's preference, as each option has unique advantages. Below are guidelines based upon simulated use studies and laboratory experiences, which are worth consideration when selecting a reversed tray trial.

- Medial overhang of the tray should be avoided as it reduces overall range of motion and increases the likelihood of both scapular and acromial impingements.
- Excessive posterior placement of the tray should be avoided as it will move the humerus anterior and may limit internal rotation due to conflict between the lesser tuberosity and the conjoined tendon.
- Central placement of the tray within the resection reduces the chance of impingement and may be beneficial to both internal and external rotation.

Once a reversed tray trial offset has been chosen, select the +8 trial of that particular offset. Insert the tips of the trial clamp into the holes located on the sides of the trial. The trial can then be placed on the humeral trial assembly and rotated to the desired location. Due to the clocking feature on the back of the tray trial, rotation requires slightly lifting the tray out of the proximal body. **| Figure 18**

Figure 18

With the trial placed in the desired location, insert the 2.5mm hex driver into the screw of the reversed tray trial and advance the screw to lock the trial into position. Take care not to over-tighten. **| Figure 19**

Figure 19

Operative technique

Next, select the +0 reversed insert trial that matches with the diameter of the glenoid sphere. Orient the reversed insert trial so the notch is positioned at the most lateral position of the humerus. When trialing with a 10°, the thinnest portion of the reversed insert trial should be lateral (superior) and the thickest portion of the insert trial should be medial (inferior). **| Figure 20**

The humeral trial construct is then reduced into the joint to check deltoid tension, stability, range of motion, and impingement. If needed the thickness of the trial implant can be adjusted to provide optimal deltoid tension. The following table provides the guidance on the possible reversed adapter combinations and their impact on thickness. **(Table 2)**

Mobility testing

Pull the arm away from the body after reduction to ensure that there is no pistoning effect. A complete separation of the reversed tray trial from the glenoid sphere indicates inadequate tensioning of the deltoid.

Abduction of the arm is performed to check that there is no impingement and that anterior elevation and abduction has been restored.

External rotation with the elbow at the side checks for mobility and risk of subluxation.

Internal rotation with the elbow at the side and in abduction (the forearm has to be parallel to the thorax) is performed.

Adduct the arm to check that there is no impingement between the pillar of the scapula and the humeral trial construct.

After reduction, the conjoined tendon should show sufficient muscular tension (similar to the deltoid).

Figure 20

Articulation distance from the resection surface

Reversed tray	Reversed insert	Combined thickness
+8	-2	+6
	+0	+8
	+3	+11
	+6	+14
+12	-2	+10
	+0	+12
	+3	+15
	+6	+18

Table 2

Operative technique

Trial adjustments

In case of impingement, remove the reversed insert trial and adjust the position of the reversed tray trial to prevent impingement. This can be accomplished by simply changing the position of an offset tray or by switching from a centered tray to an offset tray.

If the initial reduction is too loose, remove the +0 reversed insert trial and replace it with a +3 reversed insert trial. If additional thickness is required, remove the +3 reversed insert trial and +8 reversed tray trial and replace them with the +12 reversed tray trial and +0 reversed insert trial. Continue incrementally until the desired tension is obtained.

If muscles are over-tensioned, first try adjusting the position of the reversed tray trial. If this does not adequately reduce the tension, additional resection of the metaphysis may be required.

The dimensions of the final implants (reversed tray and reversed inserts) are determined based upon the combination that provides the best stability and range of motion.

Figure 21

Removing the trial construct

Once the reversed trial components have been confirmed, dislocate the shoulder and remove the reversed insert trial.

To remove the trial construct, use the 2.5mm hex driver to unscrew the reversed tray trial from the humeral trial assembly.**| Figures 21 and 22**

A black line is marked on the bottom of the offset reversed tray trial. Take note of the mark as relative to the lateral most edge of the humeral trial assembly. This mark will determine the position of the final reversed tray as it relates to the lateral edge of the humeral implant assembly.

Figure 22

Note:
If trialing, use trial adaptor if no spacers are needed (only when trialing off implant).

Note:
Use least number of connections possible if using spacers (see assembly matrix chart, page 22).

Operative technique

Implant

Back table assembly

Choose implants that correspond to the previous humeral trial assembly. Starting with the stem implant, slide stem into impaction stand. If humeral implant assembly requires spacers, thread the impactor tip onto the impactor handle. If using multiple spacers, connect the longest spacer to the humeral stem. Impact one at a time. Attach the inserter handle to the proximal body implant. Attach the version to the inserter to set desired humeral retroversion. Align the lateral etch on the proximal body with etch in the impaction stand, and mallet on strike plate of the inserter handle. Press thumb trigger to release stem from impaction stand.

Attach version rod to inserter handle. Using position from trialing, insert the assembly into the humeral canal. Impact using mallet on strike plate of inserter handle. The collar of the stem should be flush with the resection surface.

Figure 23

Operative technique

In situ assembly

Choose implants that correspond to the previous humeral trial assembly. Attach the stem implant to the inserter by pulling up on the collared feature. Once engaged, release the collared feature to secure the stem onto the inserter. Attach the version rod to the inserter to set desired humeral retroversion. Impact using mallet on strike plate until seated on humeral resection. The collar of the stem should be flush with the resection surface.

Note:
Trialing off implanted stem is possible with use of the trial alignment peg.

If humeral implant assembly requires spacers, thread the impactor tip onto the humeral impactor handle. If using multiple spacers, connect the longest spacer to the humeral stem. Impact one at a time. Attach the version rod to the inserter to set desired humeral retroversion. Attach the inserter handle to the proximal body. Impact on the strike plate on the inserter handle to connect proximal body to humeral construct.

Anatomic preparation

Choose implants that correspond with the selected trial sizes.

Orient the selected humeral head and coupler assembly to the previously determined rotation. To execute the final humeral head implant assembly, complete the below steps.

Assembling the humeral head and coupler on the back table:

1. Select the previously selected coupler and sized humeral head. Place the coupler into the impaction block with smaller taper inserted into the impaction block.

2. Place the humeral head onto the coupler and impact the components together using the humeral head impaction handle and tip assembly.

Excess force should be avoided during impaction and care should be taken not to damage the articular surface of the humeral head implant.

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

Figure 24

Figure 25

Figure 26

Figure 27

Figure 28

Operative technique

Reversed preparation

Choose implants that correspond with the selected trial sizes.

Orient the selected reversed tray with the laser etch superiorly and apply pressure to lock the tray in this position. Seat the taper using the impaction handle with the head/tray impactor tip and continue to impact until the bottom of the reversed tray is fully seated within the proximal body.

To place the polyethylene insert, select the size and thickness determined during the trial step and orient the polyethylene insert so the notch is aligned with the most lateral aspect of the reversed tray. If implanting a 10 degree insert, the thinnest portion of the polyethylene insert should be lateral (superior) and the thickest portion of the polyethylene insert should be medial (inferior).

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

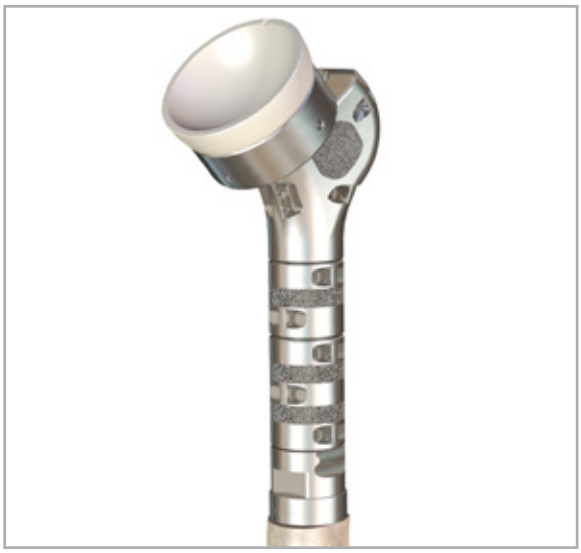


Figure 29

Testing and closure

After the joint has been irrigated and the prosthesis reduced, the stability and mobility of the shoulder are tested.

In the supero-lateral approach, the deltoid is reattached to the acromion and with trans osseous suture. In the delto-pectoral approach, a full or partial re-insertion of the subscapularis is performed, if possible.

Figure 30

Operative technique

Conversion of anatomic to reversed configuration

Removing the humeral head

To begin, remove the humeral head by placing the top of the taper distractor between the resection and bottom of the humeral head and impact to release the Morse taper. Once the humeral head has been removed, assess the position, fixation, and taper of the humeral stem assembly. **| Figure 31**

Figure 31

Trialing overview

Once the metaphyseal surface is prepared, select the desired reversed tray trial and place it on the humeral trial assembly in the desired orientation.

Once the reversed tray trial is in place, select the reversed insert trial that matches with the diameter of the glenoid sphere. Orient the reversed insert trial so the notch is positioned as the most lateral position of the humerus. As a check, the thinnest portion of the reversed insert trial should be lateral (superior) and the thickest portion of the reversed insert trial should be medial (inferior). **| Figure 32**

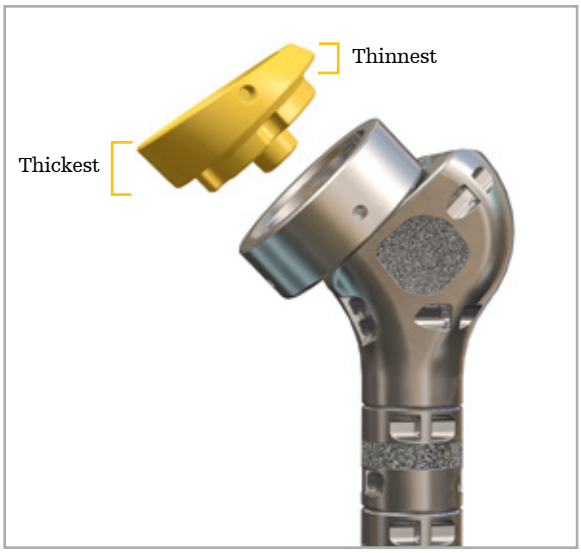


Figure 32

Reduce the joint and check deltoid tension, stability, range of motion, and impingement. If necessary, adjust the thickness of the reversed insert trial and/or reversed tray trial until the desired results are achieved. The following table provides the guidance on the possible reversed adapter combinations and their impact on thickness. **((Table 3)**

Articulation distance from the resection surface

Reversed tray	Reversed insert	Combined thickness
+8	-2	+6
	+0	+8
	+3	+11
	+6	+14
+12	-2	+10
	+0	+12
	+3	+15
	+6	+18

Table 3

Operative technique

Implant assembly

Orient the selected reversed tray implant to the desired position. Seat the taper using the impactor handle/tray impactor tip. **| Figure 33**

To place the reversed insert, select the size and thickness determined during the trialing step and orient the reversed insert so the laser mark is aligned with the most lateral aspect of the humerus. As a check, the thinnest portion of the reversed insert should be lateral (superior) and the thickest portion of the reversed insert should be medial (inferior). **| Figure 34**

With the reversed insert aligned, use the impactor handle with the insert impactor tip to seat the reversed insert into the reversed tray. **| Figure 35**

Figure 33

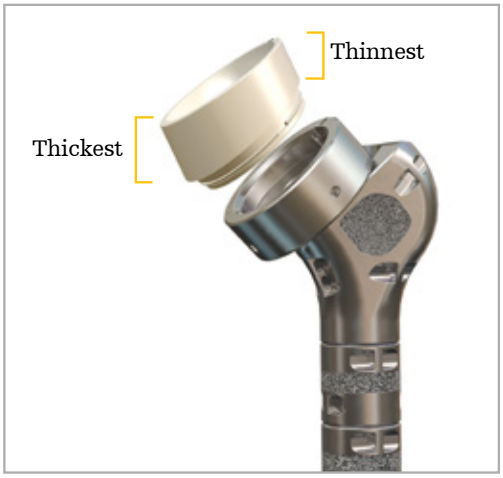


Figure 34

Figure 35

Operative technique

Implant Removal

If intraoperative disassembly or revision of a tapered connection is required, a taper breaker is provided. Align anvils at taper junction. **| Figure 36** Rotate t-handle until taper is disconnected.

Figure 36

Figure 37

Operative technique

Implant Removal

To remove the stem, first remove all spacers and proximal body. Complete vertical and horizontal osteotomies to create a humeral bone window. Utilizing a flexible osteotome, attempt to break the bond between the bone and humeral stem. Pulling up on the collared feature of the inserter, attach the inserter handle to the stem. Thread large slaphammer into inserter handle. Slide hammer upwards until stem is removed.

Figure 38

Implants

Proximal Body

Reference	Description	Size
ARS10408	Deltoid wrapping proximal body	Small
ARS10409	Deltoid wrapping proximal body	Medium
ARS10410	Deltoid wrapping proximal body	Large

Spacers

Reference	Description	Size
ARS1040720	Spacer	20mm
ARS1040730	Spacer	30mm
ARS1040760	Spacer	60mm
ARS10407100	Spacer	100mm

Stems

Reference	Description	Size
ARS1040609	Stem	9
ARS1040610	Stem	10
ARS1040611	Stem	11
ARS1040612	Stem	12
ARS1040613	Stem	13
ARS1040614	Stem	14
ARS1040615	Stem	15
ARS1040616	Stem	16
ARS1040617	Stem	17
ARS1040618	Stem	18
ARS1040619	Stem	19

Tornier humeral head couplers

Reference	Description	Offset
ARS1054401	Humeral head coupler	Centered
ARS1054402	Humeral head coupler	Low
ARS1054403	Humeral head coupler	High

*Please reference Perform Humeral Stem operative technique AP - 012819 for associated compatible heads.

Tornier HRS reversed trays

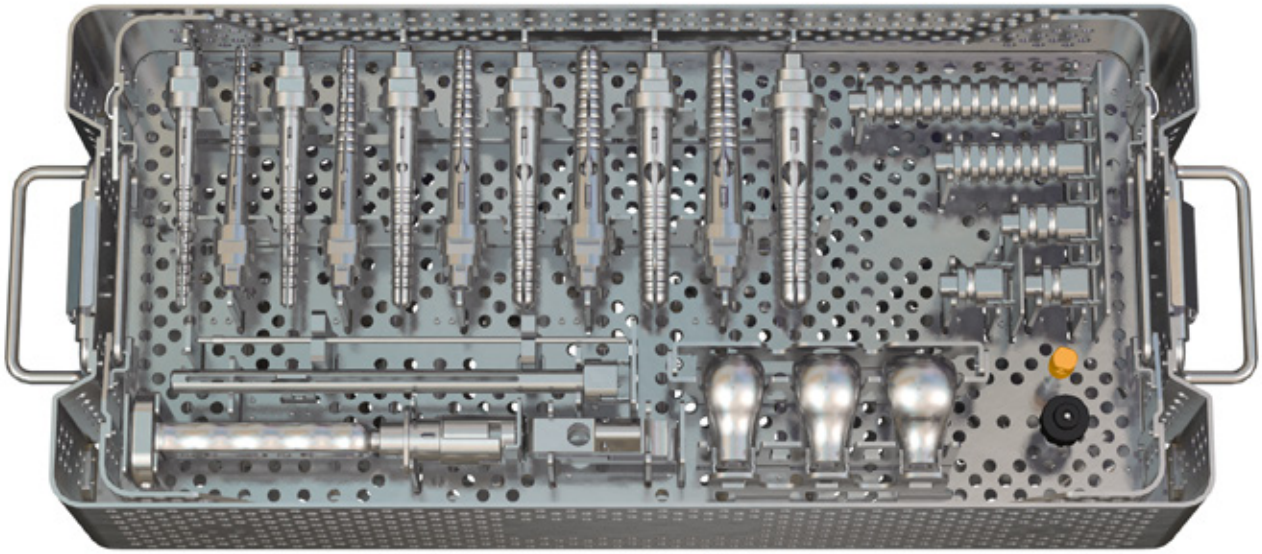
Reference	Description	Size
ARS1022801	Reversed tray	8mm
ARS1022802	Reversed tray eccentric	8mm +3.5mm
ARS1022803	Reversed tray	12mm

Tornier Perform humeral reversed inserts

Reference	Description	Capture	Size	Diameter	Thickness
ARS1022301	VE Perform insert	45%	3/4	36mm	-2
ARS1022302	VE Perform insert	45%	3/4	39mm	-2
ARS1022303	VE Perform insert	45%	3/4	42mm	-2
ARS1022304	VE Perform insert	55%	3/4	36mm	-2
ARS1022305	VE Perform insert	55%	3/4	39mm	-2
ARS1022306	VE Perform insert	55%	3/4	42mm	-2
ARS1022307	VE Perform insert	65%	3/4	36mm	-2
ARS1022308	VE Perform insert	65%	3/4	39mm	-2
ARS1022309	VE Perform insert	65%	3/4	42mm	-2
ARS1022401	VE 10° Perform insert	45%	3/4	36mm	-2
ARS1022402	VE 10° Perform insert	45%	3/4	39mm	-2
ARS1022403	VE 10° Perform insert	45%	3/4	42mm	-2
ARS1022404	VE 10° Perform insert	55%	3/4	36mm	-2
ARS1022405	VE 10° Perform insert	55%	3/4	39mm	-2
ARS1022406	VE 10° Perform insert	55%	3/4	42mm	-2
ARS1022407	VE 10° Perform insert	65%	3/4	36mm	-2
ARS1022408	VE 10° Perform insert	65%	3/4	39mm	-2
ARS1022409	VE 10° Perform insert	65%	3/4	42mm	-2

Please reference the Perform Humeral Stem operative technique AP - 012819 for associated compatible reversed inserts.

Instruments



YKAD7005
Top tray

Expanding trial stems

Reference	Description	Size
ARS1024409	Expanding trial	Ø9
ARS1024410	Expanding trial	Ø10
ARS1024411	Expanding trial	Ø11
ARS1024412	Expanding trial	Ø12
ARS1024413	Expanding trial	Ø13
ARS1024414	Expanding trial	Ø14
ARS1024415	Expanding trial	Ø15
ARS1024416	Expanding trial	Ø16
ARS1024417	Expanding trial	Ø17
ARS1024418	Expanding trial	Ø18
ARS1024419	Expanding trial	Ø19

Trial spacers

Reference	Description	Size
ARS1024820	Trial spacer	20mm
ARS1024830	Trial spacer	30mm
ARS1024860	Trial spacer	60mm
ARS10248100	Trial spacer	100mm

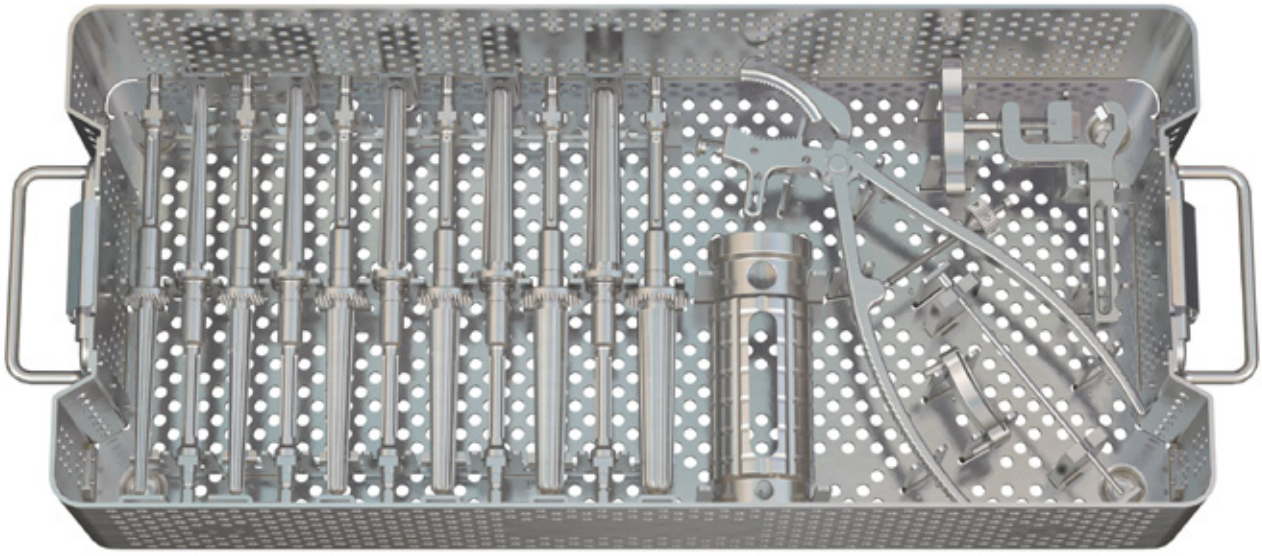
Trial proximal bodies

Reference	Description	Size
ARS10249	Trial proximal body	Small
ARS10250	Trial proximal body	Medium
ARS10251	Trial proximal body	Large

Ancillary instruments

Reference	Description
MWF113	Ascend flex retroversion rod
ARS10247	Height gauge tower
ARS10246	Height gauge clamp
ARS10245	Inserter and extractor handle
ARS10256	Impactor tip
ARS10254	Trial alignment peg

Instruments



YKAD7005
Case base

Reamer planer

Reference	Description	Size
ARS1024309	Reamer planer	Ø9
ARS1024310	Reamer planer	Ø10
ARS1024311	Reamer planer	Ø11
ARS1024312	Reamer planer	Ø12
ARS1024313	Reamer planer	Ø13
ARS1024314	Reamer planer	Ø14
ARS1024315	Reamer planer	Ø15
ARS1024316	Reamer planer	Ø16
ARS1024317	Reamer planer	Ø17
ARS1024318	Reamer planer	Ø18
ARS1024319	Reamer planer	Ø19

Ancillary instruments

Reference	Description
ARS10255	Impaction stand
ARS10240	Bone clamp
ARS10241	Saw guide
ARS10242	Drop rod
ARS10257	Taper breaker

Reference guide

Assembly matrix

Total construct	Height above resection	Proximal body	Spacers				Stem/collar
			20mm	30mm	60mm	100mm	
160	70	●					●
180	90	●	●				●
190	100	●		●			●
200	110	●	●●				●
210	120	●	●	●			●
220	130	●			●		●
230	140	●	●●	●			●
240	150	●	●		●		●
250	160	●		●	●		●
260	170	●				●	●
270	180	●	●	●	●		●
280	190	●	●			●	●
290	200	●		●		●	●
300	210	●	●●			●	●
310	220	●	●	●		●	●

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.

The information presented is intended to demonstrate a Stryker product. A surgeon must always refer to the package insert, product label and/or instructions for use, including the instructions for cleaning and sterilization (if applicable), before using any Stryker product. Products may not be available in all markets because product availability is subject to the regulatory and/or medical practices in individual markets. Please contact your Stryker representative if you have questions about the availability of Stryker products in your area.

The instructions for use, operative techniques, cleaning instructions, patient information leaflets and other associated labeling may be requested online at ifu.stryker.com or stryker.com. If saving the instructions for use, operative techniques, cleaning instructions from the above mentioned websites, please make sure you always have the most up to date version prior to use.

Content ID: UE-THRS-TECHG-2231850 21-Aug-2025

Manufacturer:

Tornier, Inc.
10801 Nesbitt Avenue South
Bloomington, MN 55437
t: 888 867 6437
t: 952 426 7600

stryker.com