

PATIENT NOTES:

4000 Ultra-Lite™

Stock #TGK-4000

For Low to Moderate K1/K2 individuals

Benefits:

- Ultra-light Graphite construction.
- Excellent stability.
- Very low energy consumption.
- Smooth ball bearing action.
- **4000 Ultra-Lite** features Extension Assist



IMPORTANT:

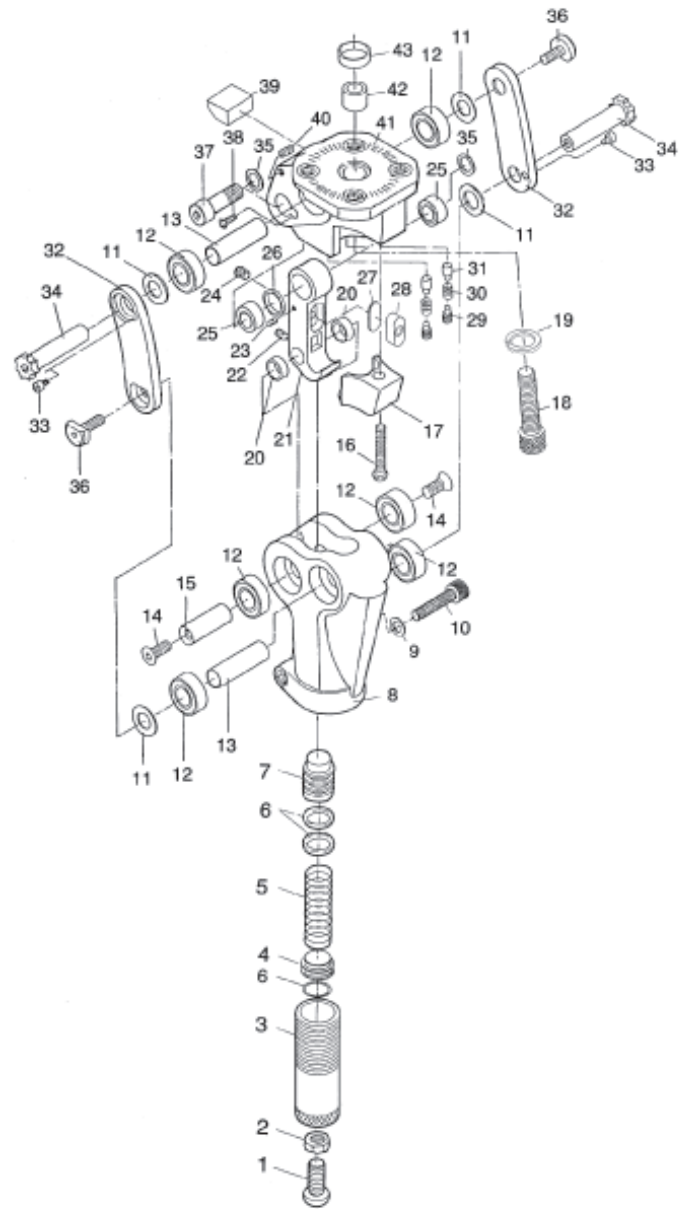
Read technical information thoroughly before using knee unit.



INDEX

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Extension Assist Adjustment	4
Knee Stability Adjustment	5
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Socket Attachment Procedure	7-10
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SCHEMATIC TKG-4000



ALIGNMENT PROCEDURE

Standard bench alignment must be observed to obtain the maximum benefits offered by this knee. All alignment references should be taken from the center of the anterior superior knee axis (commonly referred to as the knee center).

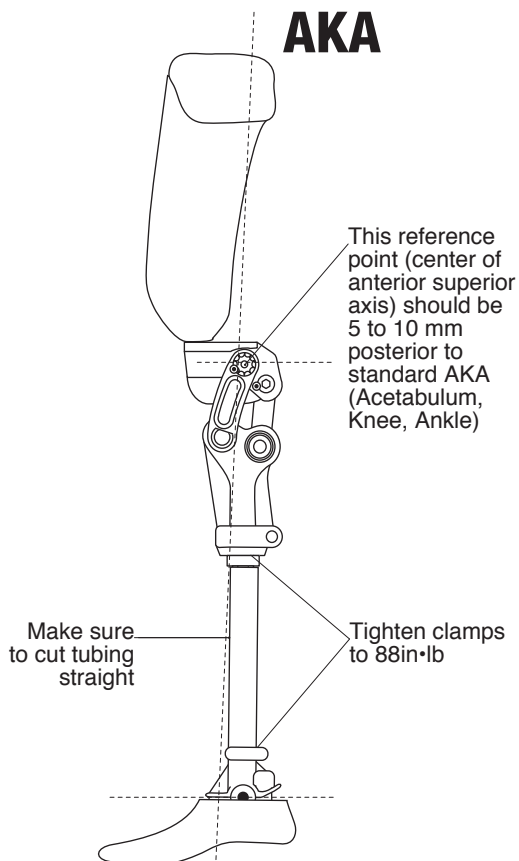
GRAPH-LITE™ PYLON TTG-14 Cutting and Securing

Cut the Graph-Lite™ pylon with a sharp hack saw or band saw (metal blade). It is important the cut be straight. **DO NOT USE A PIPE CUTTER**, this will damage the pylon. **REMOVE SHARP EDGE OF PYLON WITH 180 GRIT SANDPAPER.**

Secure all Graph-Lite pylons to the pylon connector with a torque of 88in•lb.

Important:

Do NOT use Otto-Bock Titanium pylon.
Do NOT use a spacer for height adjustment.



SWING PHASE ADJUSTMENT

Friction Control

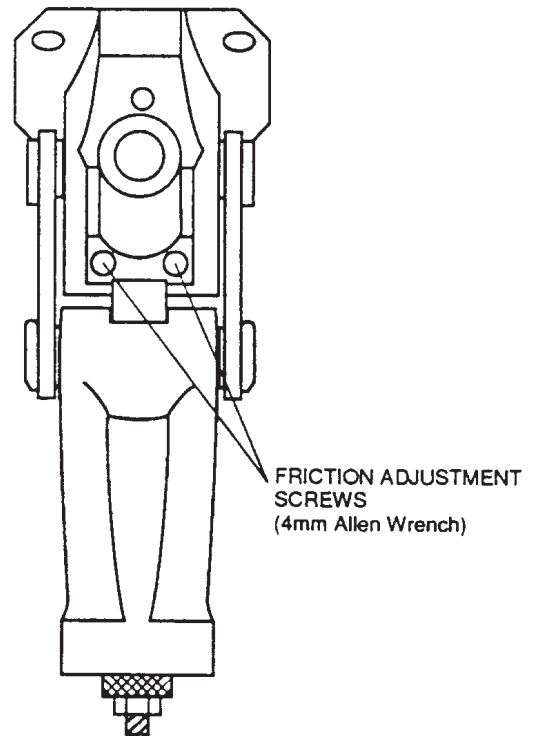
Friction control is accomplished by turning the two friction adjustment screws. These two screws apply pressure to a special friction plate against the proximal anterior knee axis. To access the heads to the friction adjustment screws, flex the knee 90 degrees.

Note:

Always adjust both friction adjustment screws exactly the same amount.

CLOCKWISE - adjustment increases friction

COUNTERCLOCKWISE - adjustment decreases friction



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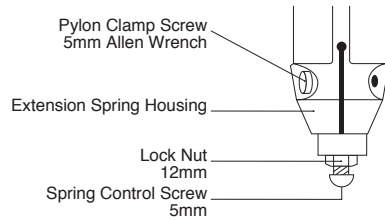
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EXTENSION ASSIST ADJUSTMENT

Increased or reduced extension assist is accomplished by adjusting the extension spring control screw located on the bottom of the knee unit.

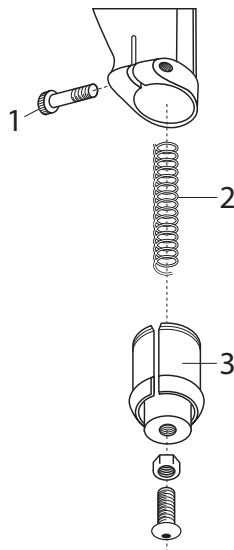


- A)** Make all pneumatic flexion and extension resistance adjustments
- B)** Remove pylon.
- C)** Loosen distal lock nut.
- D)** Adjust Spring Control Screw, with a 5mm Allen key.
 - Clockwise turn increases extension assist.
 - Counterclockwise turn decreases extension assist.
- E)** Tighten lock nut.

Removing or Replacing Extension Assist Spring

In some instances it may be necessary to shorten the spring or remove it completely on very active patients, or replace the existing spring with a heavier one for less active patients.

- A)** Remove pylon.
- B)** Remove pylon clamp screw ① completely with a 5mm Allen key.
- C)** Gently remove the extension spring housing ③ (flexing and extending the knee will help).
- D)** Make necessary adjustment to spring (cutting two coils max) or replace or remove the spring ②.
- E)** Replace extension spring housing ③ ensuring the vertical notch is aligned with vertical slot in the unit.
- F)** Replace the pylon (GUPG-PYLON-16) and pylon clamp screw ①.
- G)** Tighten the pylon clamp to 88 in•lbs.

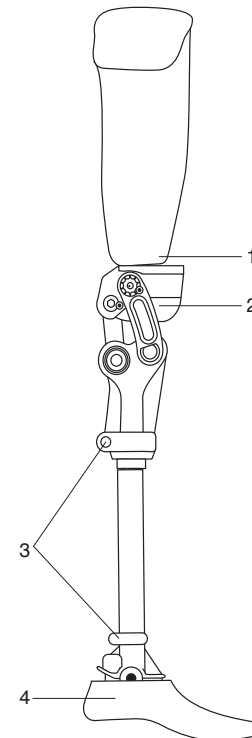


GRAPH-LITE 4-BAR PNEUMATIC, FRICTION & MANUAL LOCKING KNEE

Torque Setting and Inspection

Bolt	Torque Setting in in•lbs	Loc-tite™ Required?	Date Completed	Initials
Socket Connection Screws	88in•lb (9.9Nm)	YES		
Knee Bolt	108in•lb (12.2Nm)	YES		
Pylon Clamping Screws	88in•lb (9.9Nm)	YES		
Foot Bolt	108in•lb (12.2Nm)	YES		

It is recommended that all torques be inspected within 30 days and then again six months after initial fitting.



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WARRANTY

- All components have a limited warranty for a period of 12 months after date of order. However, DAW will replace any factory defect.
- Weight limit of the patient is 250 lbs. (113 kg).
- Bumpers are not under warranty.
- Tight screws and a straight cut of the tubing are a must. Not following recommended use of components, including weight limit and alignment, will void the warranty. Make sure to read all instructions enclosed with the knee unit.
- All repairs on the knee module must be done by a factory-trained DAW technician. Any disassembly done on the knee during the first 12 months will void the warranty, (excluding disassembly of extension spring housing.)

Service Under Warranty

- For all component repairs call DAW Industries right away. We will ship a replacement knee the same day, which will become your patient's new component. The replacement component is under warranty for the time remaining on the original component.
- The overnight shipping charge will be credited upon receipt of failed knee component.

Service Outside of Warranty

Knees not under warranty may be repaired by DAW. While any unwarranted knee is being serviced, DAW can provide a rental knee subject to availability. The DAW rental fee is listed under each knee. The rental fee covers the period DAW takes to complete the repair with ten (10) days allowed for shipping in both directions. DAW reserves the right to charge an additional rental fee if the rental knee is not returned in a timely manner upon completion of the repair. The full price of a new knee as well as the rental fee will be charged when the rental is shipped to you. Upon receipt of your knee, DAW will assess the repair and contact you with an estimate. Allow $\pm 10\%$ of estimate. Upon return of your repaired knee, you will be invoiced for the repair charges. When DAW receives the rental knee, your account will be credited for the value of the knee returned.

In the event your knee is unrepairable, you will be notified immediately. The rental must then be returned to DAW, 2nd day, within five (5) working days. The rental fee may be applied toward the purchase of a new DAW knee.

KNEE STABILITY ADJUSTMENT*

In the event that the prosthesis is properly aligned and the stability is unsatisfactory, the stability setting of the knee can be increased or reduced.

To vary the "break point" of the knees, delicate knee stability adjustments can be accomplished by adjusting the stability screw as follows:

- Remove the cosmetic plastic cover.
- Flex the knee and loosen the locking set screw with a 2mm Allen key.
- Adjust the stability screws with a 6mm Allen key.

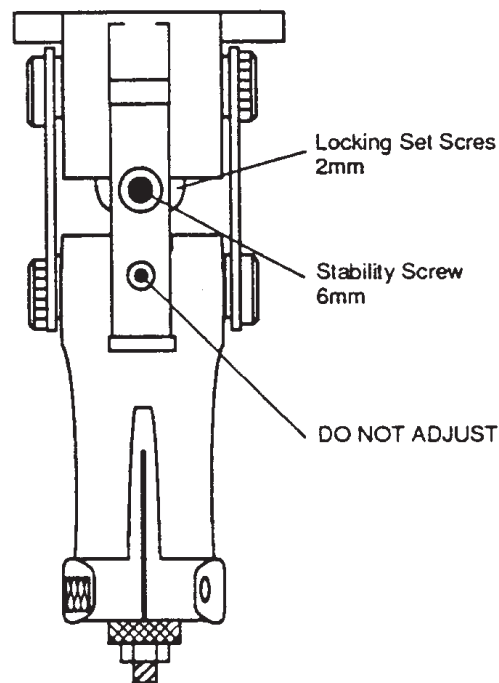
Clockwise = decreases alignment stability.

Counter Clockwise = increases alignment stability.

- Tighten locking set screws.

Replace the cosmetic plastic cover.

***NOTE:** This adjustment will affect the socket flexion.



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PROCEDURE INDEX

KNEE CONNECTORS & SOCKET ATTACHMENTS

Material Procedure Page

LAMINATED SOCKETS





Wood & Foam Blocks

- TWB-Ø4    **L3** 11

Flexible Wire Socket Connector

- TSC-A, TSC-BX   **L2** 10

AK Connectors

- TKC-SA, TKC-S, TSC-PSDS  **L4** 12
- GUPT-M4H, GUPT-F4HROT  **L6** 13
- TGB-ØT, TGB-Ø, TKC-ØA  **L6** 13
- GUPT-4HCLAMP  **L5** 13

Knee Disarticulation

- TSC-KDL  **L1** 9
- TSC-KDA-L  **L1** 9

THERMOPLASTIC SOCKETS

Thermoplastic Connector

- TSC-T  **T1** 16
- GUPA-TH4HROT  **T1** 16
- GUPA-TH4H-9CM  **T1** 16

ALIGNMENT ADJUSTMENTS:

- TKC-SA, TKC-S  **A1** 20

For more alignment options, please see centerfold (Pages 14-15) of this technote.

SYMBOLEGEND™

A = Aluminum Alloy	S = Stainless
AA = Aerospace Aluminum	T = Titanium
F = Foam	P = Plastic
G = Graph-Lite™	W = Wood



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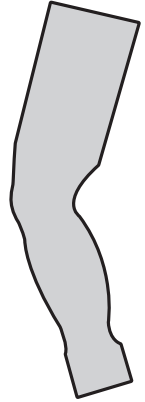
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UN - SHAPED FOAM COVER

RFC-AKL/Sx

- Allows for the ultimate in custom shaping.
- Extremely easy to shape.
- Very durable.
- Excellent stretch capability.
- Two AK sizes, left and right.



HOW TO ORDER

Stock # RFC-AKLx 40cm calf	Stock # RFC-AKSx 36cm calf
---	---

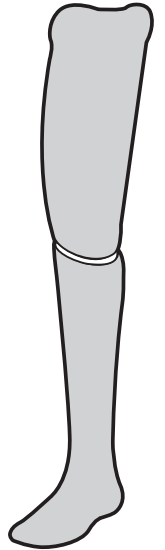
x = (L) left or (R) right

Helpful Hint: Use Shaping Cone (TFC-SC), that will fit onto a Trautman™ Carver, to assist you in shaping.

TWO - PART DISCONTINUOUS FOAM COVER

TFC-EK4PØØR (right)
TFC-EK4PØØL (left)

- Exoskeletal durability and cosmesis with endoskeletal light weight modularity.
- No interference with knee function.
- Excellent for knee disarticulation.
- Allows for kneeling without damage to cover.
- Inside is pre-cut for knee.



Each Cover Includes:

- Custom hard foam rubber knee cap.
- Pre-shaped plastazote tibial form.
- Inner soft form "filler" to protect the knee and prevent play between the knee and cover.



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DAWFLEX™

FUNCTIONAL

- Patented design – Maximum flexion without interference

DURABLE

- Extremely resilient

COSMETIC

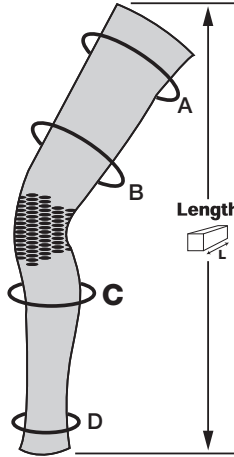
- 4 Sizes – easily shaped and modified

VERSATILE

- Adapts to any AK modular system

COST-EFFECTIVE

- Superior cosmesis in a fraction of the time

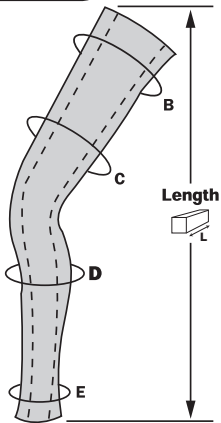


Size	X SMALL	SMALL	MEDIUM	LARGE
RIGHT	TFC-DFXSR	TFC-DFSR	TFC-DFMR	TFC-DFLR
LEFT	TFC-DFXSL	TFC-DFSL	TFC-DFML	TFC-DFLL
A	16 in (41cm)	19 in (48cm)	20 1/2 in (52cm)	21 1/2 in (55cm)
B	12 1/2 in (32cm)	15 in (38cm)	16 1/2 in (42cm)	17 1/2 in (44cm)
C	11 3/4 in (30cm)	13 in (33cm)	14 1/2 in (37cm)	15 1/2 in (39cm)
D	7 1/2 in (19cm)	8 in (20cm)	9 in (23cm)	10 in (25cm)
Length	29 in (74cm)	33 in (84cm)	35 in (89cm)	37 1/2 in (95cm)

PRE-SHAPED FOAM COVER

TFC-0AxR/L

- Natural shape.
- Saves time in fabrication.
- Can be modified for exact shape.
- Stretch without stress reduces any interference with knee functions.
- Inside is pre-cut for knee and socket.

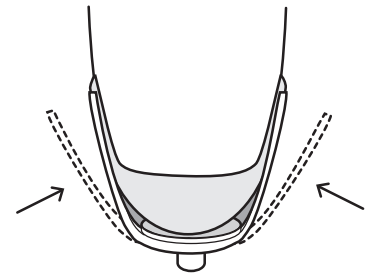


x = Size	2	3	4	5	6
D	13 in (33cm)	14 in (36cm)	15 in (38 cm)	16 in (41cm)	18 in (46cm)
E	8 in (20cm)	9 in (23cm)	8 1/2 in (22 cm)	10 in (25cm)	11 in (28cm)
B	14 1/2 in (37cm)	15 in (38cm)	16 in (41 cm)	17 in (43cm)	19 in (48cm)
C	14 in (36cm)	13 1/2 in (34cm)	14 1/2 in (37cm)	16 in (41cm)	17 1/2 in (44cm)
Length	33 in (84cm)	35 in (89cm)	35 in (89 cm)	39 in (99cm)	41 in (104cm)

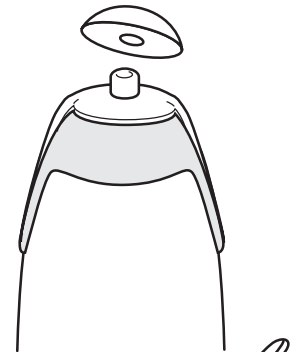


LAMINATION SOCKET ATTACHMENT PROCEDURE L1

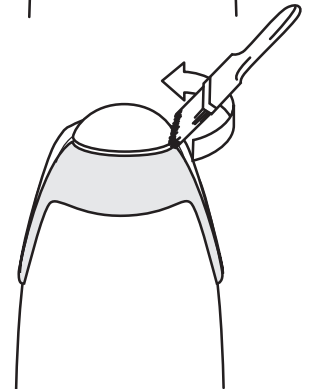
Shape metal arms to conform to the socket. Secure to socket with DGEL™ gunk (mix 3 parts Resin to 1 part Promoter) ensuring there are NO VOIDS OR GAPS BETWEEN THE “L” BRACKET AND SOCKET. Make sure NOT to bend flat section which MUST LAY FLAT on top of knee.



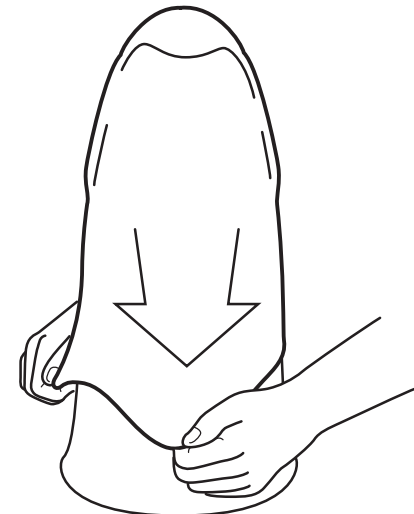
Invert the model and position the lamination plug (TSC-LPØ) onto the “L” bracket.



Paint DGEL™ Rigid Resin (mix 3 to 1 ratio) over the lamination plug (TSC-LPØ) to ensure the connector is sealed.



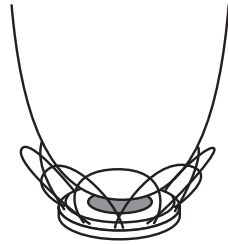
Pull the appropriate layers of DGEL™ Graph-Lite™ Tubular Braid (DGEL-TB) over the model. Apply a PVA sleeve and laminate with DGEL Rigid Resin (DGEL-RR2).



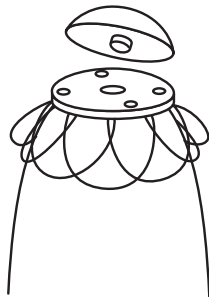
LAMINATION SOCKET ATTACHMENT PROCEDURE L2



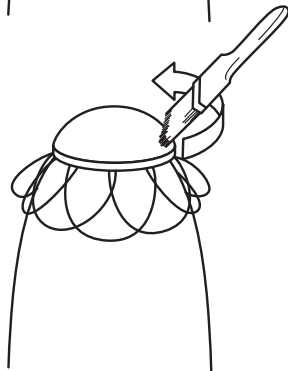
Secure the proximate surface of the Wire Socket Connector to the socket with DGEL™ Rigid Resin (Mix 3 parts Resin to 1 part Promoter), ensuring there are no voids or gaps between the connector and socket. **DO NOT GLUE DOWN THE “WIRES” OF THE CONNECTOR.**



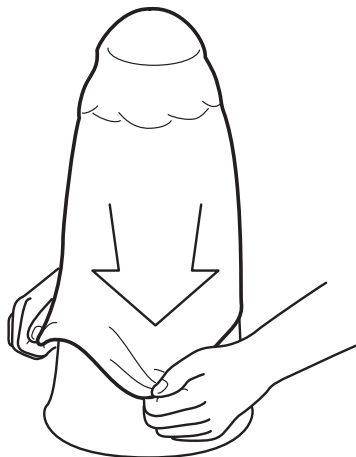
Invert the model and position the Lamination Plug (TSC-LP1) onto the connector.



Paint DGEL™ Rigid Resin (3 to 1 ratio) over the Lamination Plug (TSC-LP1) to ensure the connector is sealed.



Pull the appropriate layers of DGEL Graph-Lite™ Tubular Braid (DGEL-TB) over the model. Apply a PVA sleeve and laminate with DGEL™ Rigid Resin (DGEL-RR2).



GRAPH-LITE™ MULTI-AXIS ANKLE

TGA-ØM

The Graph-Lite Multi-Axis Ankle (TGA-ØM) is used with the **Single-Axis Foot** (TFF-Ø1xxR/L) and **Single-Axis Bumpers** (TFB-N1).

xx = size

ASSEMBLY

- 1) Insert the Foot Bumpers (TFB-N1) into the Single Axis Foot (TFF-Ø1xxR/L). Ensure the small metal plate is securely positioned under the dorsiflexion bumper.
- 2) Insert the Multi-Axis Ankle into the foot and tighten the ankle nut with a 7/16" nut driver to a torque of 108in•lb.
- 3) Insert a 30mm pylon into the pylon clamp and tighten to a torque of 88in•lb.

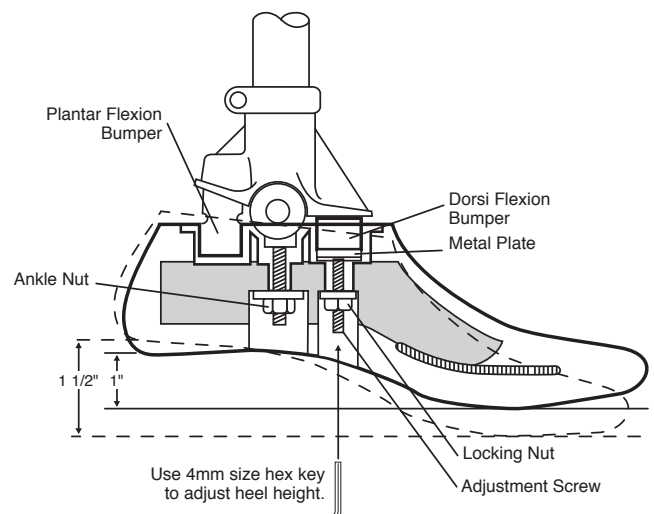
HEEL HEIGHT ADJUSTMENT

- 1) Place a 4mm Allen Key into the anterior hole on the bottom of the foot.
- 2) Turn the key 1/2 turn counter clockwise to loosen the Locking Nut.
- 3) Using your finger, unscrew the Locking Nut to the end of the adjusting screw in the foot.
- 4) Using the 4mm screw, turn the adjusting screw until the desired heel height is obtained:

Clockwise = increases heel height.

Counter Clockwise = decreases heel height.

- 5) Finger-tighten the Locking Nut on the adjustment screw and then secure with a final 1/2 turn with the 4mm screw.



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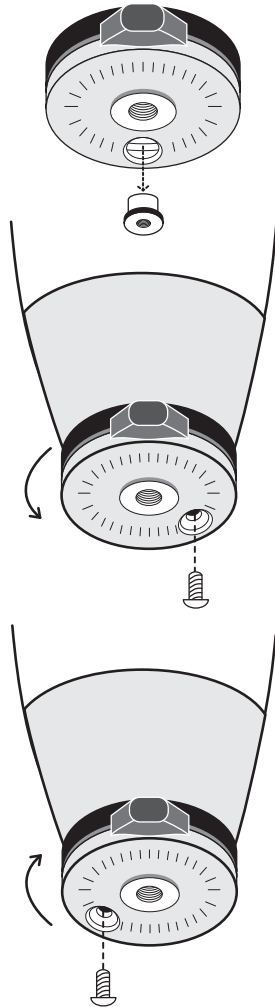
KNEE ROTATOR ATTACHMENT PROCEDURE

TKR-01

Socket Attachment

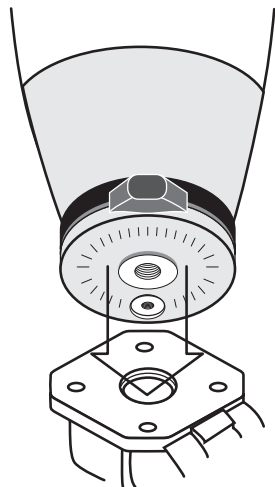
Remove the rubber plug located on the inferior surface of the rotator by inserting a 4mm screw into the plug and pulling it out.

- 1) Press the locking button located on the front of the rotator and turn the upper and lower halves of the rotator until the bottom plug hole aligns with one of the screw holes located on the upper surface of the rotator.
- 2) Insert a 6mm button head screw up through the bottom plug hole, through the screw hole in the upper half of the rotator, into the socket connector and torque to 88in•lb.
- 3) Repeat steps 1 & 2 until all four screws are secured to the socket attachment plate.
- 4) Replace the rubber plug.



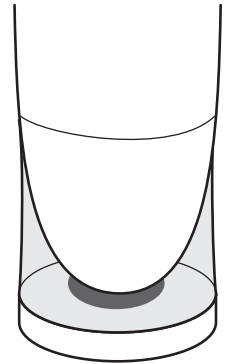
Knee Attachment

- 1) Remove the brass ring from the top of the knee.
- 2) Remove the cosmetic knee cap from the knee.
- 3) Place the rotator on top of the knee unit with the locking button facing front.
- 4) Insert a 7/16" x 1 3/4" knee bolt through the knee, into the rotator and torque to 108in•lb.

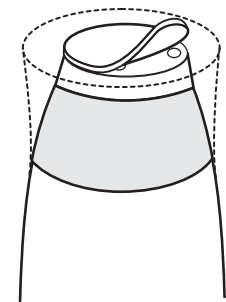


LAMINATION SOCKET ATTACHMENT PROCEDURE L3

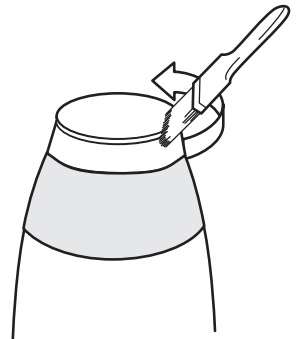
Adhere the proximal surface of the connector to the socket with DGEL™ gunk (mix 3 parts resin to 1 part promoter). Once cured, use rigid foam to fill in any void at the base of the socket and connector.



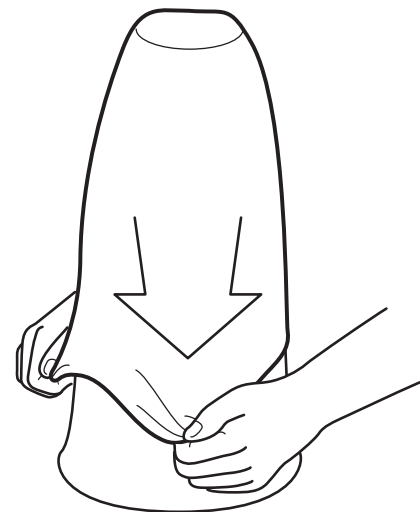
Once the alignment has been secured, trim the excess material on the connector and foam down to the European 4-hole pattern to obtain proper cosmesis. Glue a piece of leather, Pelite, or like material securely to the top of the connector to form a cap.



Paint DGEL™ Rigid Resin (mix 3 to 1) over the cap to ensure the connector is sealed.



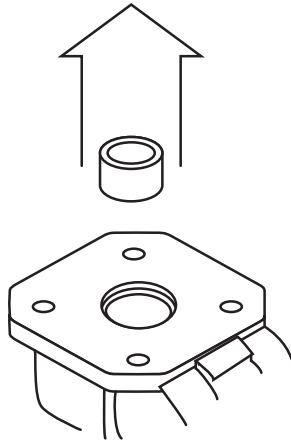
Pull the appropriate layers of DGEL Graph-Lite Tubular Braid (DGEL-TB) over the model. Apply a PVA sleeve and laminate with DGEL™ Rigid Resin (DGEL-RR2).



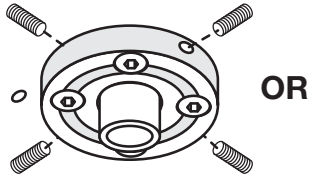
LAMINATION
SOCKET
ATTACHMENT
PROCEDURE L4



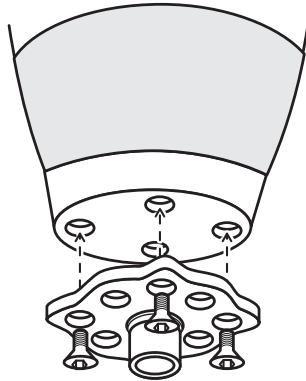
Remove the knee bushing from the knee.



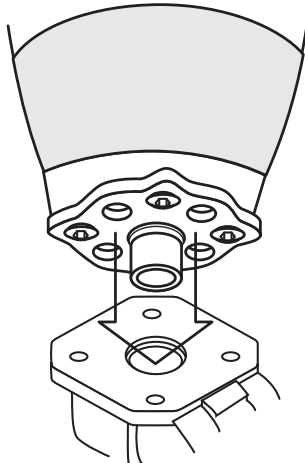
Secure the connector plate proximally to any 4-hole European pattern connector with four 6mm screws to a torque of 88in•lb.



OR



Secure the connector plate to the top of the knee with a 7/16" knee bolt to a torque setting of 108in•lb.



FOR
 TKC-S & TKC-SA
 GO TO
PROCEDURES A1 & A2

LAMINATION
ALIGNMENT
ATTACHMENT
PROCEDURE A1, A2, A3



SLIDE
ADJUSTMENT
PROCEDURE A1

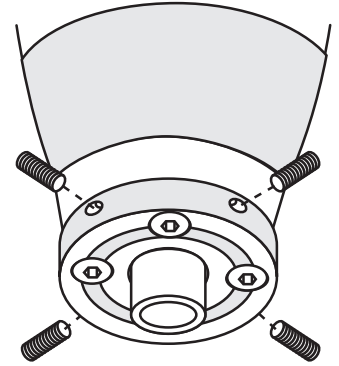
TWP-C2

Loosen the knee bolt.

Loosen the adjustment screw on the side of the plate you want to make the adjustment towards.

Tighten the opposing adjustment screw.

Tighten the knee bolt to 108in•lb.



WEDGE
PLATES
PROCEDURE A2

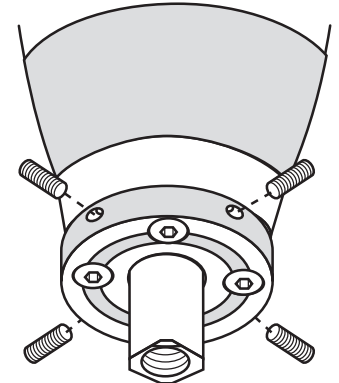
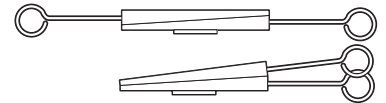
TWP-A2

Loosen the knee bolt.

Position the alignment pins in the side of the wedge plates.

Turn the plates with the alignment pins until the appropriate alignment is obtained.

Tighten the knee bolt to 108in•lb.

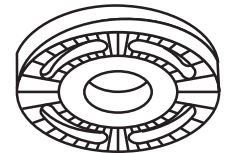


SLIDE + ANGLE
ADJUSTMENT
PROCEDURE A3

TKC-SA

Follow steps A1 and A2 to make the appropriate slide & angular adjustments.

NOTE: The slide angle connector (TKC-SA) is **NOT** a combination of the wedge plates (TWP-A2) and the slide adjustment (TKC-S). The TKC-SA is a separate item and must be ordered as a complete unit. **DO NOT USE THE TKC-SA WITHOUT THE INCLUDED WEDGE PLATES.**



THERMOPLASTIC
SOCKET
ATTACHMENT
PROCEDURE T1

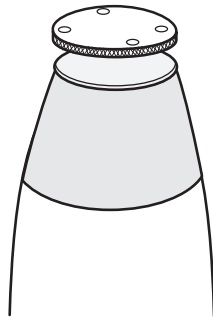
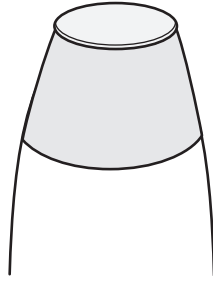


Invert the model and support in the appropriate alignment.

Add a buildup (i.e. plaster, pelite, rigid foam) on the end of the model.

Ensure the buildup is:

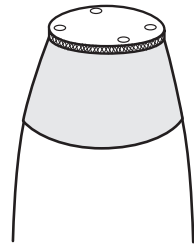
- a) The correct length.
- b) The correct alignment.
- c) Blends smoothly into the socket.
- d) Trimmed to the same diameter as the Thermoplastic connector \varnothing (TSC-T or TSC-WC with wires removed).



Position the Thermoplastic connector onto the end of the buildup.

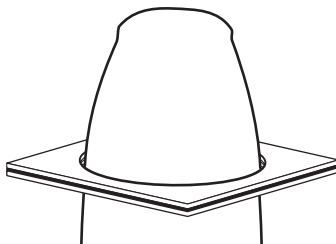


Vacuum form the appropriate thickness of THERMICS plastic over the model. Refer to the THERMICS manual for more details on vacuum forming temperatures, techniques, etc.



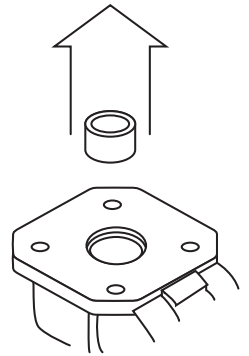
Helpful Hint:

While plastic is still clear (hot), mark placement of holes with 3/16in punch by indenting into plastic.

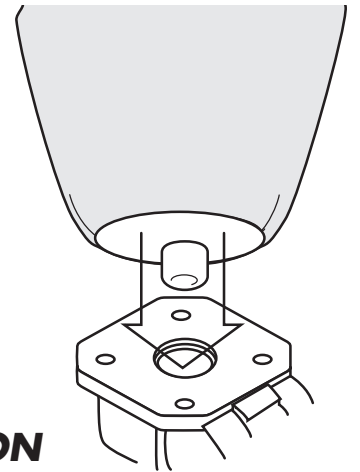


LAMINATION
SOCKET
ATTACHMENT
PROCEDURE L5

Remove the knee bushing from the knee.



Secure the connector plate to the top of the knee with a 7/16" knee bolt to a torque setting of 108in•lb.

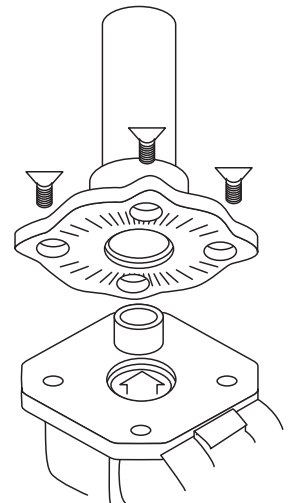


LAMINATION
SOCKET
ATTACHMENT
PROCEDURE L6

Remove the brass ring from the proximal surface of the knee.

Invert the connector and position it on the proximal surface of the knee. Secure the connector to the knee with four 6mm screws to a torque of 88in•lb.

IMPORTANT: Be sure the 6mm screws do not exceed threads in knee top. Failure to do so will result in damage to knee.

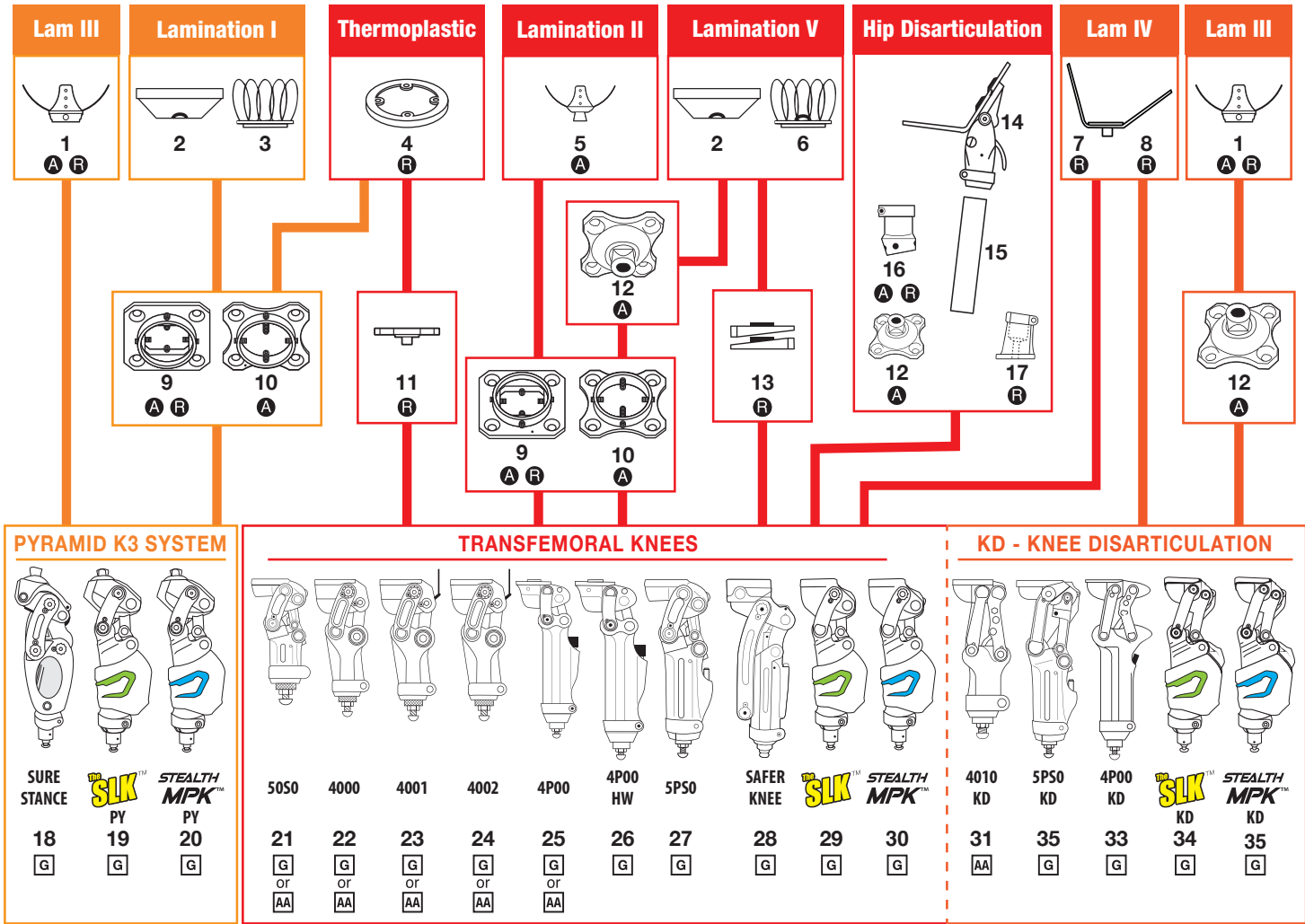




SELECTOR CHART FOR ADULT TYPE "T" KNEES

Knee Connectors and Alignment Systems for all Type "T" Knees*

* Type "T" Knees = DAW Adult Knees which stock # starts with a "T" (except TK-40C & TK-1C1)



STOCK NUMBERS			
1. GUPS-FLAM3PRROT	S	9. GUPT-F4HR0T	T
2. TWB-04	W	- GUPS-F4HR0T	S
3. TSC-BX	AA	10. GUPT-F4H	T
4. TSC-T	AA	- GUPS-F4H	S
5. GUPS-MLAM3PR	S	11. TSC-PSD	AA
6. TSC-A	AA	- TSC-PSDS	S
7. TSC-KDA-L	A	12. GUPT-M4H	T
8. TSC-KDL	S	- GUPA-M4H	A
		- GUPS-M4H	S

KNEE STOCK NUMBERS		
#	GRAPHITE	AEROSPACE ALUMINUM
18.	THK-4PSC	
19.	TGK-5PS0SLKPYMTX	
20.	THK-5PS0MPK PY	
21.	TGK-5050	TK-5050
22.	TGK-4000	TK-4000
23.	TGK-4001	TK-4001
24.	TGK-4002	TK-4002
25.	TGK-4P00-P	TK-4P00-P
26.	TGK-4P00HW	
27.	TGK-5P50	
28.	THK-4PSSL	
29.	TGK-5PS0SLKMTX	
30.	THK-5PS0MPK	
31.		TK-4010

FUNCTIONS	
A	= Angular Adjust
R	= Rotation
S	= Slide Adjust

MATERIALS	
A	= Aluminum Alloy
AA	= Aerospace Aluminum
F	= Foam
G	= Graph-Lite™
P	= Plastic
S	= Stainless
T	= Titanium
W	= Wood



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