M0703 Compact Hydraulic Single Axis Knee

INSTRUCTION MANUAL

Dolphin

M0703 Compact Hydraulic Single Axis Knee

CE

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■ Foreword

We would like to thank you for using our products.

This manual describes product handling, adjustments, precautions, etc. in order to ensure safe use for the lifetime of the product.

Before use, be sure to read the manual thoroughly in order to use the product safely and appropriately.

After reading the manual, remember to store it in a place easily accessible to the user. If there are problems during normal use, be sure to check the manual for confirmation.

⚠CAUTION

Do not use the product beyond its normal useful life for the following reason:
This may lead to problems such as damage to the part or other parts.
Law to Support Independence of Persons with Disabilities specifies the useful life of individual parts. For the part that exceeds its useful life, advise users to contact an orthotist for consultation. For faulty parts during useful life, perform service application procedures in order that repairs or adjustments may be made by our company.

■ Contents

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■ Safety precautions

- Before use, read the "Safety precautions" carefully for proper use.
- What is given here shows important instructions on safety. Be sure to follow them.
- Symbols and their meanings are as follows:

⚠ WARNING

In the event of a failure or anomaly:

No repair, modification, or disassembly should be carried out.
This may cause trouble.
A request for inspections or repairs should be made to us.

When used:

Make sure that a user firmly maintains stability of prosthetic knee by sitting on a chair or holding on to parallel bars before the hydraulic cylinder is adjusted.
When the instability of prosthetic knee causes the knee joint to be bent while the hydraulic cylinder is being adjusted, fingers could get caught between the hydraulic cylinder and the knee frame, causing serious injury.
Make sure that a user firmly maintains stability of the prosthetic knee before an adjustment is made.

⚠ CAUTION

Do not use parts beyond their useful life.
This may result in damage to parts.
For the parts that are beyond their useful life, advise users to contact an orthotist for consultation.

All adjustments should be carried out by an orthotist.
An incorrect adjustment may cause trouble.
This instruction should be given to users as well.

Tighten individual bolts to the specified torque.
Tighten bolts to the specified torque using a torque wrench.

Avoid contact with water, sea water or other liquids.
This is to prevent trouble that may be caused by rust formation on parts.
This instruction should be given to users as well.

Before use, check to breakage of part, loosen of bolts.
This is to prevent the trouble during use.
If the trouble found, stop the use, and guide to talk to orthotist immediately.

If the breakage of part or the bolts loosen or abnormality, stop the use immediately.
If the trouble found or felt, stop to use, and guide to talk to orthotist immediately.

With the knee joint bent, never put hands between the knee joint and the vicinity of the extension stopper or the backward of the socket.
This is to prevent injury that may occur to fingers when they are caught.
This instruction should be given to users as well.

When stored:

Avoid contact with water, sea water or other liquids.
This is to prevent trouble that may be caused by rust formation on parts.
This instruction should be given to users as well.

In the event of a failure or anomaly:

When there is an anomaly such as looseness, abnormal noises, and/or oil leakage, immediately contact an orthotist for consultation.
Neglecting looseness, abnormal noises, oil leakage, etc. may cause bodily injury or damage to parts, etc.
In the event of such problems, advise users to contact an orthotist for consultation

⚠ CAUTION

1. Heel Contact without full extension of the knee joint may cause knee-buckling.
2. If patient usually load on his prosthesis in maximum flexed position, put a shock reducing soft pads between socket and the knee (Fig. 7).

In case of maximum flexion of long stump, posterior end part of the socket may hit and damage the part or hydraulic cylinder (Fig. 8-a). If it is inevitable, please change the hitting point to distal part of the knee to reduce moment force. Use softer material and make a new hitting point at more proximal part of the socket (Fig. 8-b).

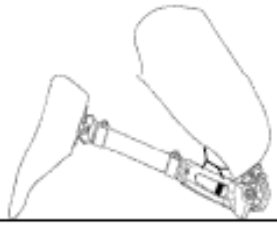
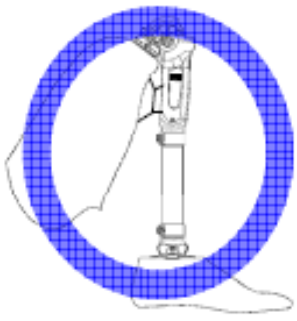


Fig.7

< Fig. 8-a Bad >



< Fig. 8-b Good >

Fig. 8

■ Indication

The knee is applicable for following patients.

	body weight	activity level
M0703 Swan	up to 100 kg(220 lbs)	low to moderate

■ Features

■ Lightweight, Slim, and Compact

The main component members use aluminum alloy for weight reduction. Slim and compact, this makes it possible to put a sporty finish on the cosmetic covering so that it can suit women, those who are slender, and children.

■ Extremely Stable Knee Axle Position

As compared with conventional floating single axis knees, Dolphin has set up a knee axis position backward. This provides excellent stability at an early stance phase, making it possible to use less muscle strength to be in voluntary control of the knee joint. Dolphin can be used by those who are capable of voluntary control; those who have been using it by keeping the brake sensitivity of a load brake down to a minimum, as well as current user of the floating single axis knees. The gait of users who are in voluntary control looks more natural if they can possibly go without the stance phase control.

■ A Hydraulic Cylinder Giving Consideration to Pre-Swing

We refer to "flexion of the knee joint which takes place at the final stage of the stance phase" as "preliminary flexion of the knee joint towards the swing phase" to imply the Pre-Swing (See Fig.1 Hatching).

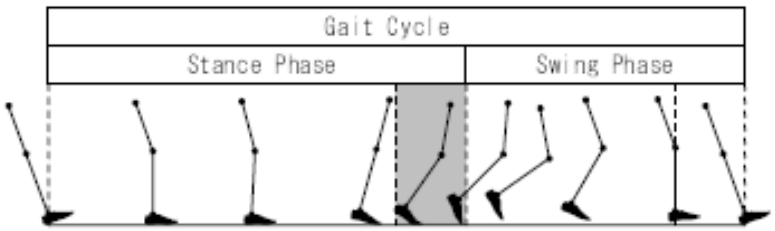
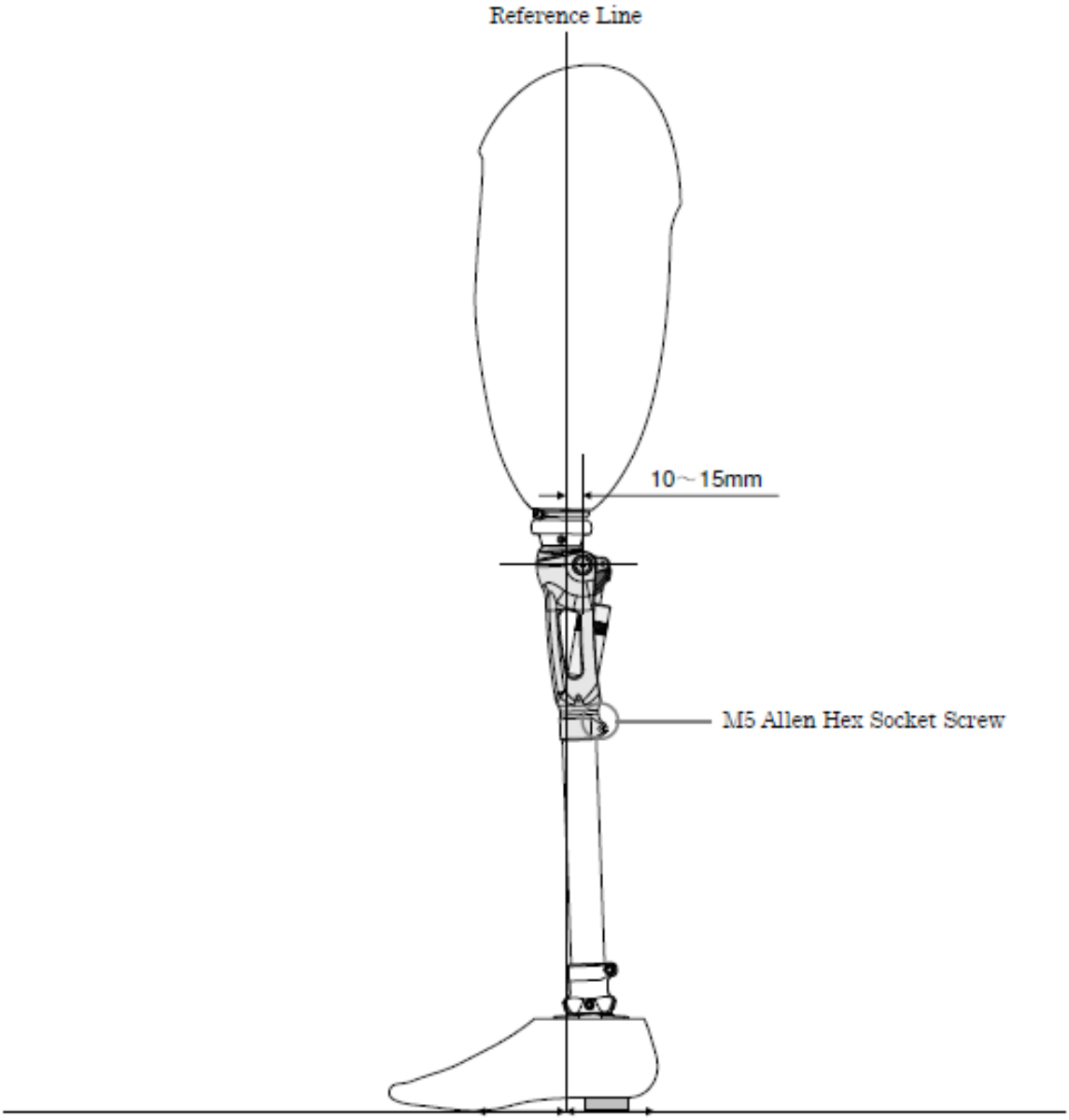


Fig.1 Pre-Swing

The ease of Pre-Swing performance influences the smoothness of the gait.

The knee joint that provides an easy pre-swing allows a smooth transition to be made to the swing phase where the start of the movement feels light. On the contrary, the difficulty of the pre-swing makes the start feel heavy, making it impossible for a smooth transition to be made to the swing phase. The characteristics of the hydraulic cylinder for the knee joint have an effect on the pre-swing. For hydraulic cylinders which generate strong oils piezoresistance simultaneously with a flex initiation, interference of this oil piezoresistance makes the pre-swing difficult. Since conventional oil pressure knees had a large majority of difficulties in the pre-swing, many amputees poorly evaluated them ("oil pressure knees are heavy in knee swing"), the result being that they were avoided.

■ Bench alignment



■ Tightening Torque

	Tightening Torque	Hexagon Wrench Used
M5 Allen Hex Socket Screw	7.8～8.0Nm	4 mm Hexagon Wrench

■ Method of Adjusting Hydraulic Cylinders (Flexion Resistance)

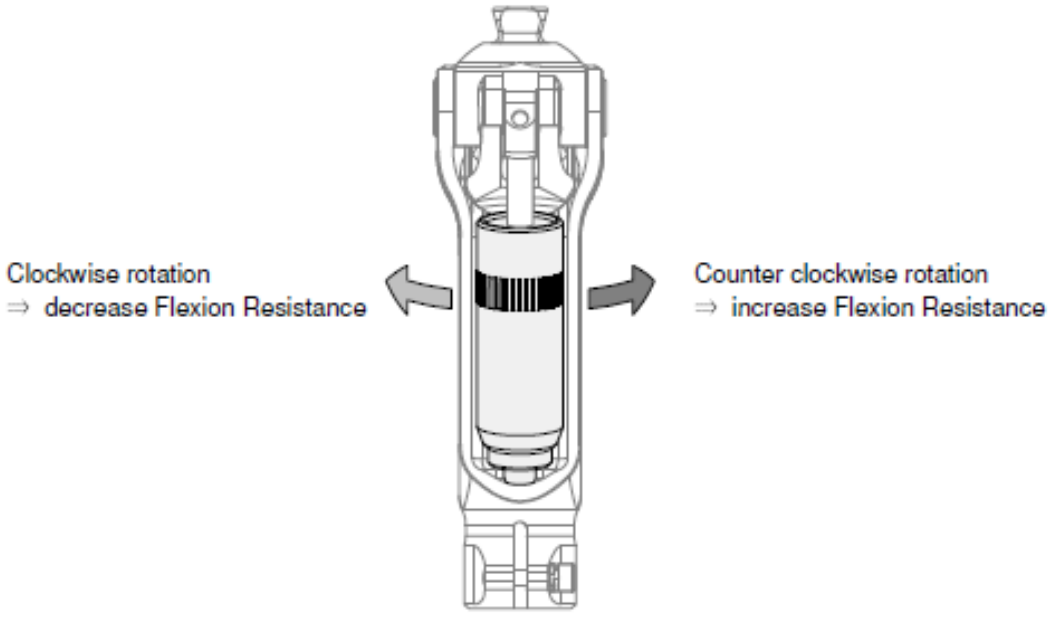
⚠ CAUTION

Make sure users firmly maintain stability of the prosthetic knee by sitting on a chair or holding on to parallel bars before the hydraulic cylinder is adjusted.
When buckling (instability of prosthetic knee) causes the knee joint to be bent while the hydraulic cylinder is being adjusted, fingers could get caught between the hydraulic cylinder and the knee frame, causing serious injury.
Make sure users firmly maintain stability of the prosthetic knee before an adjustment is made.

With flexion resistance at a minimum or at a maximum, do not turn the cylinder further in the direction of either the minimum or the maximum.
This may cause trouble.
The point at which rotation of the cylinder comes to a full stop is the adjustment limit for either the maximum or the minimum.
The range of adjustment is approximately 2 rotations from the minimum oils piezoresistance to the maximum.

■ Adjustment of Hydraulic Cylinder for Flexion Resistance

- Turn the hydraulic cylinder right and left from backward for adjustment.
- The range of adjustment is approximately 2 rotations from the minimum oil piezoresistance to the maximum.
- Flexion resistance is in the intermediate state in the product's default setting.



■ Method of Adjusting Hydraulic Cylinders (Extension Resistance)

⚠ CAUTION

Make an adjustment in resistance to the extension by making sure that the knee joint can be extended smoothly.
A sharp, major adjustment of resistance to the extension may delay extensions of the knee joint, causing buckling.
While observing the gait, increase resistance to the extension little by little so that a terminal impact may pass away.

With resistance to the extension at a maximum, do not tighten a screw further.
This may cause trouble.
The range of adjustment is approximately 2 rotations from the condition where the adjustment screw is loosened completely.

■ Adjustment of Hydraulic Cylinder for Extension Resistance

- Turn an adjustment screw using a hexagon wrench for adjustment.
- The range of adjustment is approximately 2 rotations from the condition where the adjustment screw is loosened completely (minimum resistance to the extension: in the product's default setting).
- Resistance to the extension is in the minimum state in the products default.