

# Beyond Standard: Wheelchair Prescription for Bariatric Clients

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# Prevalence and Definition of Bariatric

## Definition:

- weighs 150kg or more,
- has a BMI of 40 or
- Has large physical dimensions (>20" seat width)
- A lack of mobility or other conditions that make moving and handling difficult. (ACC, 2012)

## • Demographics

- Found throughout any diagnosis and population groups
- Increasing over the years
- In Australia: 31% of population lives with obesity, with 12% living with severe obesity (AIHW, 2023)
- In New Zealand: One in three adults (33.8% or nearly 1.5 million) were classified as obese in 2023/24, One in eight children aged 2–14 years (12.5%) were classified as obese in 2023/24 (New Zealand Health Survey, 2023/24)

# Prevalence and Definition of Bariatric

- Measurement of obesity
  - Percentage of body fat – more complex, with specific instruments
  - BMI – guide line, but simple to use
    - Weight / Height<sup>2</sup>
    - BMI > 25: Overweight
    - BMI > 30: Obese
    - BMI >40: Severe obesity

(WHO, 2023)

- What about clients with a disability?
  - 1.2 to 3.9 fold increase in prevalence?
  - Reduced HRQoL, function and access
  - Increase difficulty with getting back to base line function after minor incidences

(Lange & Minkel, 2025; Lou et al, 2005; Salem et al, 2014)

# Apple Ascites / Apple Pannus

## Apple Ascites

- Increase waist to hip ratio
  - Excessive weight distribution
  - Accumulation of body fluids in peritoneal cavity

## Apple Pannus

- Hanging mass of subcutaneous fat in lower abdomen
- Also know as an “abdominal apron”

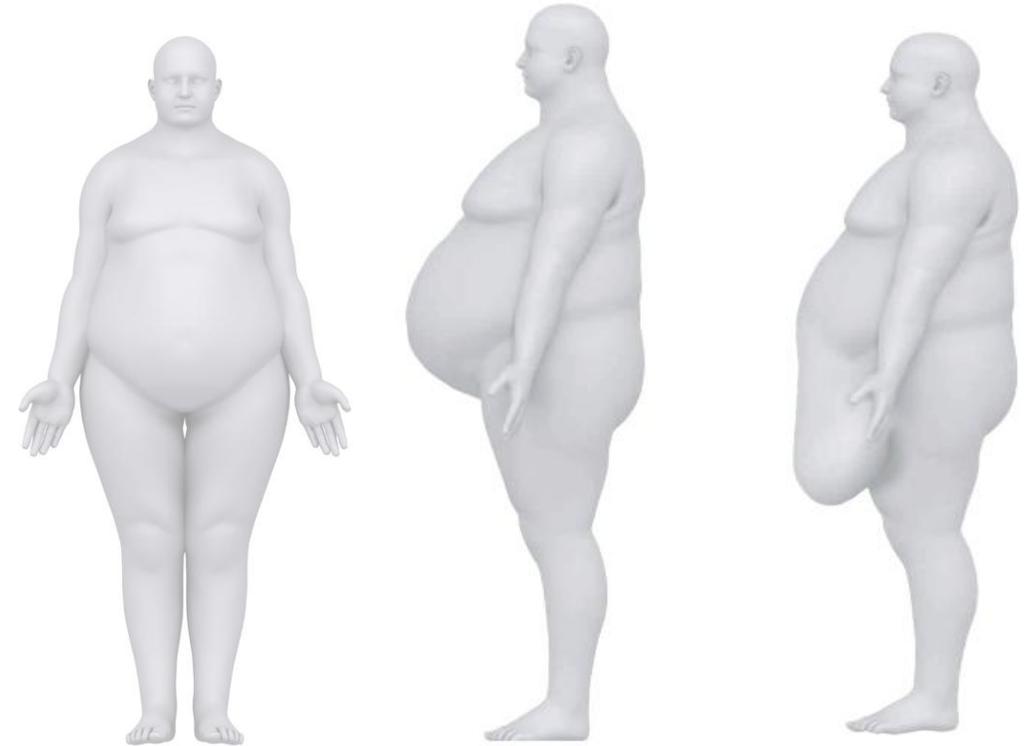


Image from Innvacare: Introduction to plus size

# Considerations for Seating: Apple Shape

Apple Ascites:

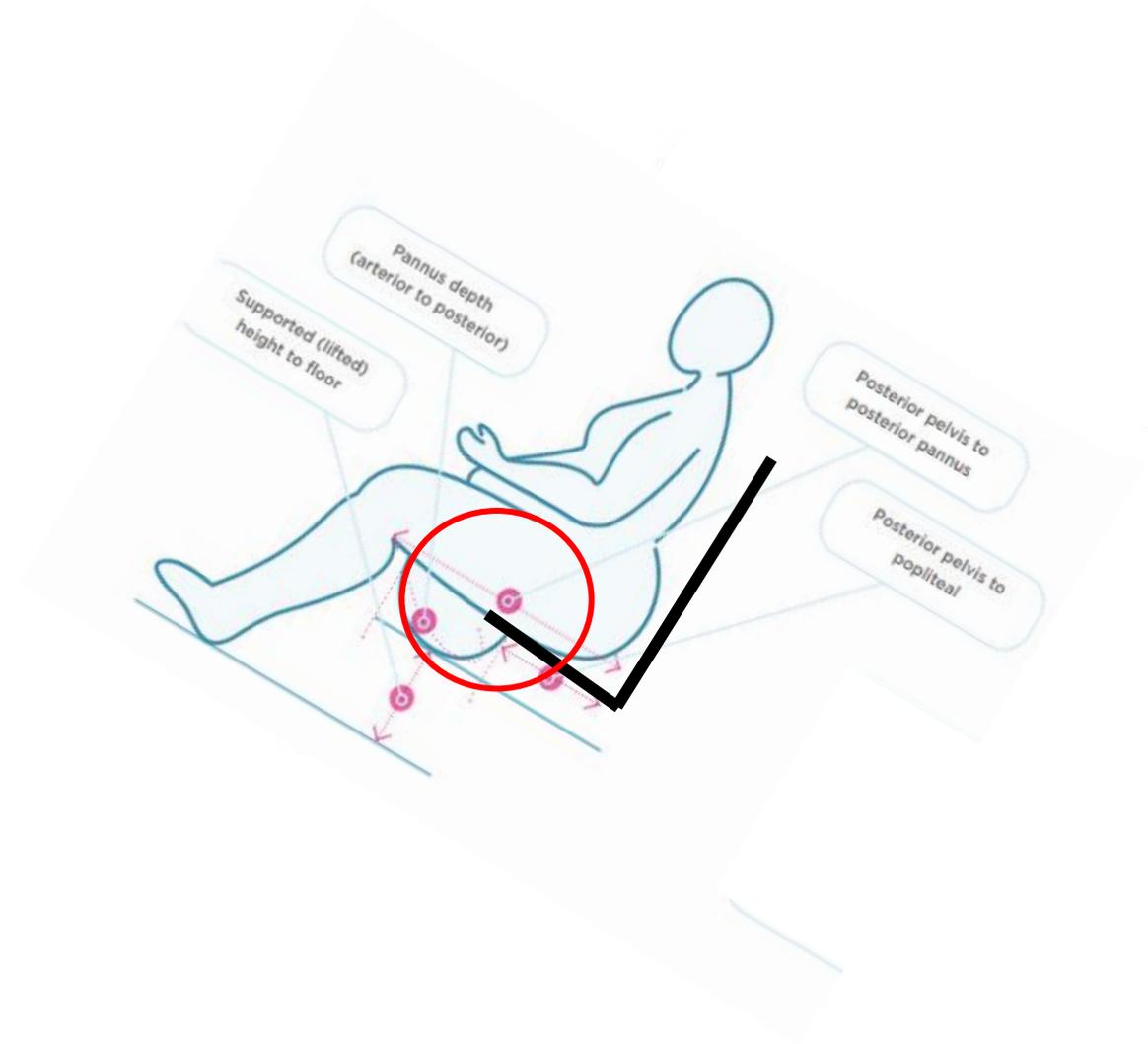
- 1) Limited trunk flexion
- 2) Increased effort for sit to stand transfers
- 3) Reduced functional forwards reach due to seating posture
- 4) Wider backrest than seat width due to increase waist size
- 5) Forward weight distribution
- 6) Seated in hip abduction – increase seat width needed at front / off set hangers



# Considerations for Seating: Apple Shape

Pannus:

- 1) Functional seat depth consideration (anterior tilt of pelvis to off load pannus)
- 2) Tissue displacement in tilt (increase pressure of pannus on seat pan, padding required)



# Pear Abducted / Adducted

Pear shape Abducted / Adducted

- Excess weight around bottom and thigh
- Abducted: excessive tissue on medial aspects of thighs– leading to LL Abduction
- Adducted: excessive tissue on lateral aspects of thighs – leading to LL Adducti



Image from Innvacare:  
Introduction to plus size

# Considerations for Seating: Pear Shape

## Pear Shape

1. Seat width differ from backrest width
  - Tend to require narrower backrest
2. Wider Seat width impacting on access to wheels / propulsion
3. Leg positioning
  - Abducted LL: Off set hanger brackets, use of thigh supports
  - Adducted: Center mount
  - Position that does not impede circulation
4. Armrest positioning
  - Not reaching armpads / lack of use of UL for support



# Pear Gluteal Shelf

Pear shape gluteal shelf

- Excess weight around buttocks that results in protruding mass posteriorly

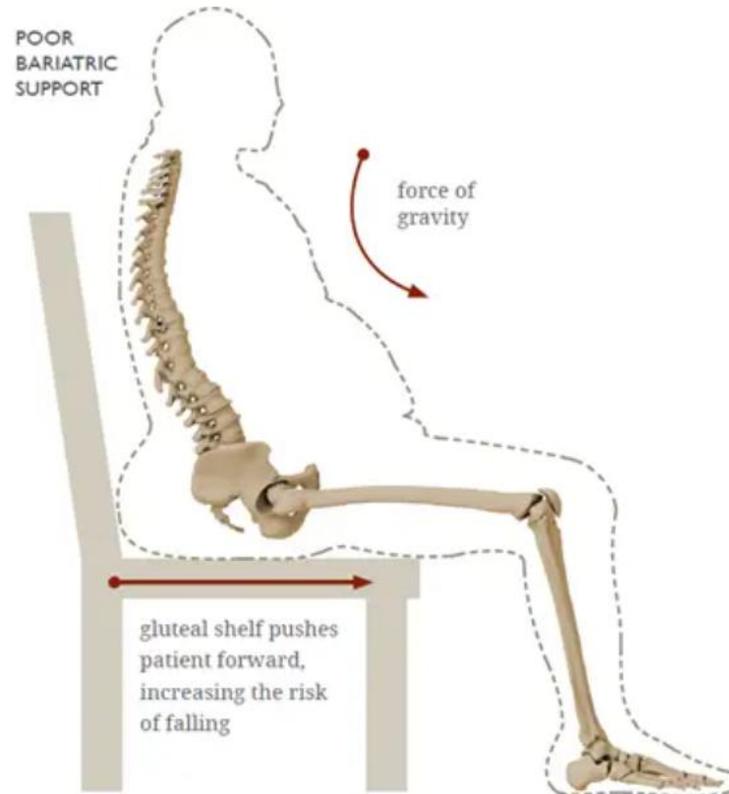


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# Considerations for Seating: Gluteal Shelf

- Accurate measurement of effective seat depth
- Positioning of trunk support
- Support of excess
- Forward weight distribution due to seating position – COG of chair

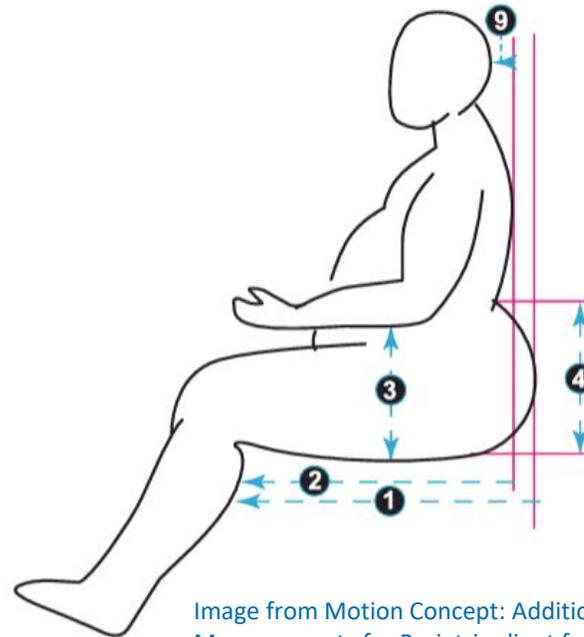


Image from Motion Concept: Additional Measurements for Bariatric client form



Image from SPEX

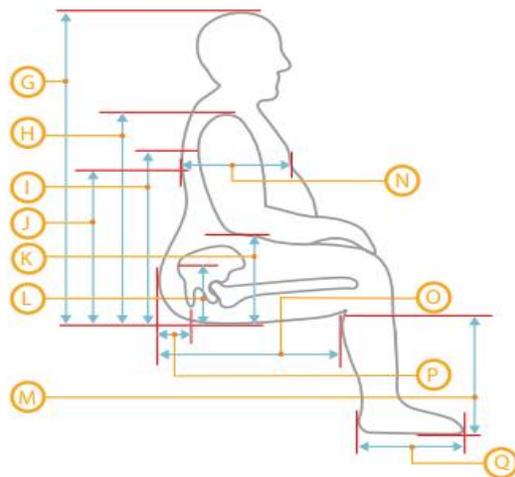
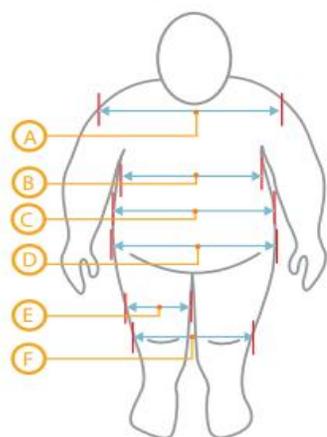
# Seating Measurements

## EDUCATION IN MOTION

### Bariatric Wheelchair Assessment Measuring Guide

CLIENT NAME \_\_\_\_\_

DATE \_\_\_\_\_



- A. SHOULDER WIDTH: \_\_\_\_\_
- B. CHEST WIDTH: \_\_\_\_\_
- C. WAIST WIDTH: \_\_\_\_\_
- D. HIP WIDTH: \_\_\_\_\_
- E. INDIVIDUAL KNEE WIDTH: \_\_\_\_\_
- F. EXTERNAL KNEE WIDTH: \_\_\_\_\_
- G. SITTING HEIGHT: \_\_\_\_\_
- H. SHOULDER HEIGHT: \_\_\_\_\_
- I. AXILLA HEIGHT: \_\_\_\_\_
- J. SCAPULA HEIGHT: \_\_\_\_\_
- K. ELBOW HEIGHT: \_\_\_\_\_
- L. PSIS HEIGHT: \_\_\_\_\_
- M. LOWER LEG LENGTH: \_\_\_\_\_
- N. CHEST DEPTH: \_\_\_\_\_
- O. BUTTOCK TO THIGH: \_\_\_\_\_
- P. ISCHIAL DEPTH: \_\_\_\_\_
- Q. FOOT SIZE: \_\_\_\_\_

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<https://www.sunrisemedical.com/getattachment/5f765bd3-c7f1-499b-b522-346f7a8ce6b0/Education-in-Motion-Resources-Other-Articles-Bariatric-Wheelchair-Assessment-Measuring-Guide.pdf>



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*The Wheelchair People*

# Additional Seating Measurements

- Panniculus measurement
  - Size and weight of panniculus will determine how seat pan / seating surface needs to be modified
- Cut out to accommodate +/- support

**PANNICULUS MEASUREMENTS**

Current weight: \_\_\_\_\_ Weight history: \_\_\_\_\_

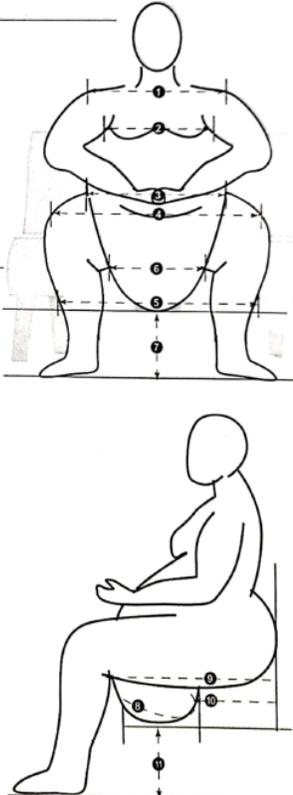
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\_\_\_\_\_

Pannus weight: \_\_\_\_\_

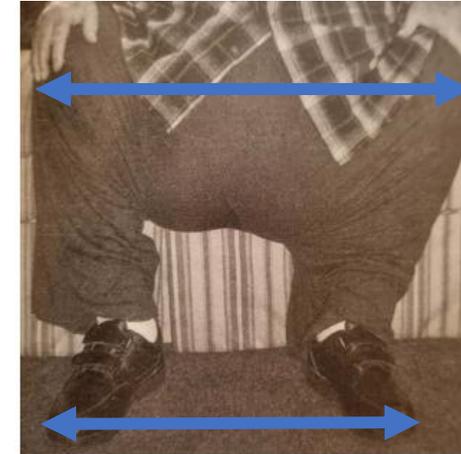
1. Overall shoulder width (at widest aspect) \_\_\_\_\_
2. Overall chest width \_\_\_\_\_
3. Overall hip width \_\_\_\_\_
4. Width at lateral thigh distal (at widest aspect) \_\_\_\_\_
5. Width at lower leg (at widest aspect) \_\_\_\_\_
6. Pannus width (at widest aspect) \_\_\_\_\_
7. Pannus to floor \_\_\_\_\_
8. Pannus depth (anterior to posterior) \_\_\_\_\_
9. Posterior pelvis to popliteal:  
Left Side: \_\_\_\_\_ Right Side: \_\_\_\_\_
10. Posterior pelvis to posterior pannus:  
Left Side: \_\_\_\_\_ Right Side: \_\_\_\_\_
11. Supported (lifted) height to floor \_\_\_\_\_



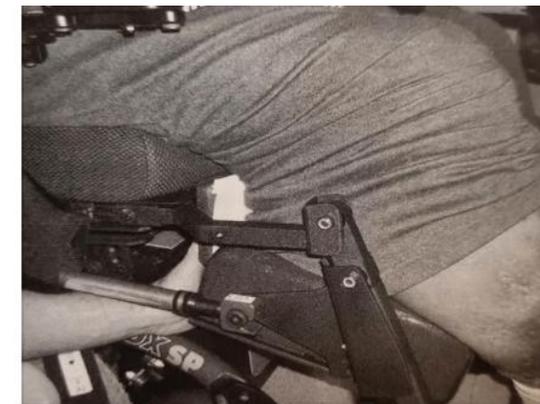
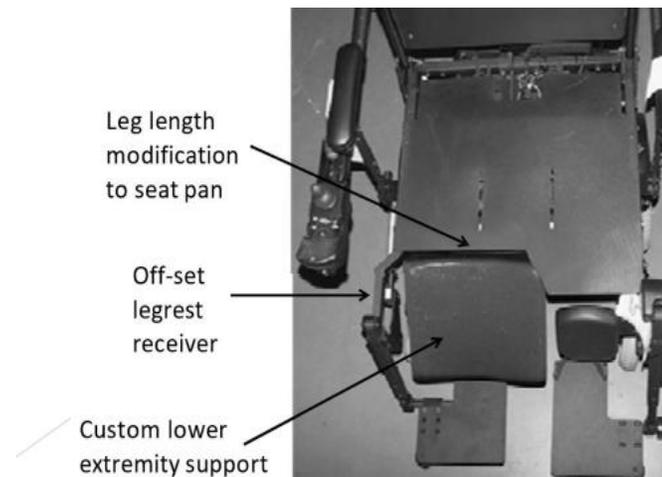
Lange & Minkel, 2018

# Additional Seating Measurements

- Leg support and positioning
  - Lower Extremity measurements (widest point, Feet positioning)
- Odema and LL positioning
  - Lymphedema
  - Cellulitis
  - Lymphorrhea



Lange & Minkel, 2018



Possible modifications

Stephanie Tanguay  
(Motion Concepts)  
2014: When  
Lymphoedema  
Impedes Seating &  
Mobility

# Impact on wheelchair stability and overall effectiveness



- Weight distribution is going to be more anterior
  - Anterior tipping of chair more common in this population
  - Consider functional positions and activities
  - Causes increase weight loading on front casters

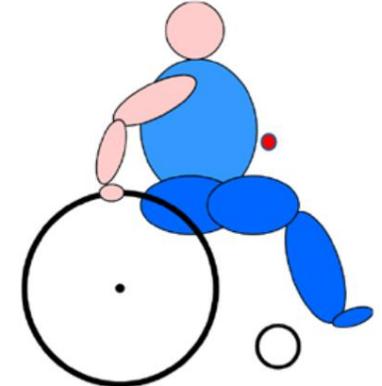
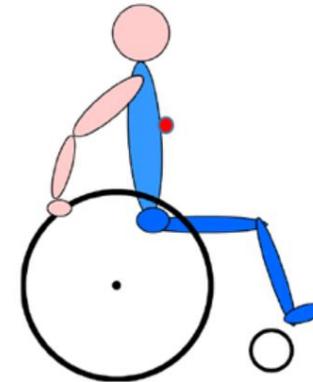
# Impact on wheelchair stability and overall effectiveness



*The Wheelchair People*

# Wheelchair Considerations- MWC

- Positioning of Axle
- Potential foot propulsion due to increase effort
- Increased supports for transfers



# Wheelchair Considerations- MWC

- Overall weight of client + chair
  - Consider manual handling risk
    - Additional features for safety
    - Weight limit of chair
  - Travel options – lifts, mobility vehicles
- Power Add-on options
  - Weight limit of most models 156kg



# Wheelchair Consideration - Powered



- Advantages:
  - Reduced manual handling for mobility
  - Reduced effort and endurance
  - Smaller footprint
  - Repositioning / functional positioning
  - Adaptable seating
  
- Cons:
  - Transportability
  - Weight
  - Circulation space
  - Limited function

# Wheelchair Consideration - Powered

## Considerations:

- CoG –
  - Does model allow for adjustment to COG / weight distribution
  - Drive wheel position impact on seating
- Overall weight
  - Transport options (taxi lifts/ trailers)
  - Home flooring considerations



# Limitations and considerations of Powered Wheelchairs

- Reduced functions available
  - Elevation and anterior tilt (very limited models)
  - Powered LL elevation (might not be possible dependent on weight limit of actuators)
  - Reduced Speed
- Crash testing
- Consider seating system – HD seating have stronger but also heavier mounting
  - Addition of modifications will also add weight to chair (starting weight  $\neq$  actual chair)
- Weight limit on standard models / adjustability

# Seating Systems considerations

## Cushions

- Weight limit of cushion
- Material used (gel vs air)
- Positioning Cushions
- Micro-climate management
- Maintenance



# Seating Systems considerations

## Backrests

- HD mounting brackets
- Ability to add on supports / accommodate gluteal shelf

Models	
<p>Jay 3 Posterior Backrest (PA) HD 22"-26"</p> 	<p>J3 Plus Width: up to 26"</p> 
<p>NXT Armidillo</p> 	<p>Spex XLElla Back Support Range</p> 

## Conclusion...

- Working with clients has unique challenges, and requires a sensitive and respectful approach
- Requires a team approach to manage different aspects
- Get assistance with completing measurements – safety first
- Range of bariatric wheelchairs are limited but IMPROVING!  
Working closely with suppliers to manage modifications and requirements

# Thank you!

Any questions?

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# Reference:



ACC (2012) Moving Guide for Bariatric Clients <https://www.acc.co.nz/assets/provider/bc9f7f9b2e/acc6075-moving-guide-bariatric.pdf>

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Motion Concepts: Additional Measurements for Bariatric Client Form

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extension://efaidnbmnnnibpcajpcglclefindmkaj/[https://www.motionconcepts.com/pdf/order\\_forms/TRD0714%20Rev%20B\\_Additional%20Measurements%20for%20Bariatric%20Clients\\_2024%20Final.pdf](https://www.motionconcepts.com/pdf/order_forms/TRD0714%20Rev%20B_Additional%20Measurements%20for%20Bariatric%20Clients_2024%20Final.pdf)