UPPER BODY CYCLE AND
UPPER BODY CYCLE CLINICAL PRO

INSTALLATION/ OPERATION MANUAL

950-146
950-148

BIODEX
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UPPER BODY CYCLE

This manual covers installation and operation procedures for the following Upper Body Cycle products:

#950-146	Cycle, Upper Body
#950-148	Cycle, Upper Body, Clinical Pro

NOTE: *All or some of the following symbols, cautions, warnings and notes may apply to your Upper Body Cycle and correspond to this operation manual:*

Symbol	**Meaning**
⚠	Attention, consult accompanying documents.
⚠	Symbol signification: Attention, se référer à la notice.
⚠	Warning: Injuries to health may result from incorrect or excessive training.
⚠	Attention, incorrect ou extrême entrainement peut aboutir des lesíons au santé.

⚠ ***Caution:*** *Federal law restricts this device to sale by or on the order of a medical practitioner. When prescribed for therapeutic purpose, a physician should clearly define the parameters of use (i.e., total work, maximum heart rate, etc.) to reduce the risk of patient injury.*

NOTE: *Circuit diagrams for this product are available upon request.*

NOTE: *Use with battery charger for first 24 hours.*

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1. Introduction

Designed for versatility and durability, the Biodex Upper Body Cycle (UBC) and Upper Body Cycle Clinical Pro meet the demands of orthopedic, cardiopulmonary, sports medicine, wellness and general conditioning programs. Featuring a work range of up to 600 watts, plus self-powered, self-charging capability, these cycles accommodate a wide variety of patient profiles and can be used virtually anywhere.

Use the UBC to exercise individuals with limited lower body function, help rehabilitate a wide variety of shoulder, back, neck, wrist and elbow patients, and provide healthy athletes with a grueling workout. Retro-cycling capability provides smooth and instantaneous bi-directional resistance in both exercise modes to help promote the use of reciprocal muscle groups not normally exercised during forward cycling alone.

The Biodex Upper Body Cycle features Isokinetic Speed Control. Because the internal battery is automatically recharged when work rates reach or exceed 30 watts and speed exceeds 50 rpms, the cycle can be used in the gym, at the clinic or on the sidelines - without cumbersome power cords. An AC adapter is provided for use at work rates below 30 watts and 50 rpms. Large wheels make the cycle easy to move.

Ergonomically designed and simple to operate, the Upper Body Cycle features a step-through design that makes it easy for patients - including those with limited mobility - to get into and out of the exercise position. The contoured seat with lumbar support and an indexed track allows extensive front-to-back adjustment to ensure comfort, safety and biomechanically correct positioning. The seat can also be removed quickly for easy standing or wheelchair access. The UBC accommodates users from 4'6" to 6'10" and weighing up to 500 pounds.

The easy-to-read, LED display turns on as soon as exercise begins. The display provides immediate user biofeedback for increased motivation and compliance, maintaining all settings and LED displays for 60 seconds after the workout is finished.

The UBC Clinical Pro incorporates all of the above, plus a wider rotating seat that makes wheelchair transfers a snap, EZ-Grip Handgrips to allow patients with hand control limitations to better hold onto the crank handles, fixed support handles alongside the seat, and a seat belt that provides added security for patients with palsy or balance difficulties.

NOTE: *The UBC battery is shipped without the battery charged. Please plug in the AC Adapter and use the UBC with the battery charger connected during the first 24 hours of use. It is not required to keep the charger connected if work rates will exceed 30 watts on a regular basis, which is sufficient to charge the battery. To use the UBC at work rates below 30 watts the AC adapter is required.*

2. Parts and Adjustments

E-Z Grip Handgrips

Figure 1: *The Biodex Upper Body Cycle parts and adjustment mechanisms.*

1. Display Panel
2. Seat Front-to-Back Release Handle
3. Seat Front-to-Back Scale
4. Actuator Adjust Locking Knob
5. Actuator Tilt Scale
6. Adjustable Arm Cranks
7. Battery Recharge Jack
8. RS-232 Jack
9. Rear Seat Stop (removable for wheelchair use)
10. Seat Rotation Handle (Clinical Pro only)
11. Seat Belt (Clinical Pro only)
12. Support Handles (Clinical Pro only)
13. Handgrips (E-Z Grip Handgrips on Clinical Pro only)
14. Arm Crank Locking Knobs

The Biodex UBCs are easy to adjust for patient comfort. The seat can be moved forward or back and the arm cranks can be adjusted for comfortable and efficient exercise. The following section explains how to adjust your bike for optimum patient comfort and positioning.

Seat Front-to-Back Adjustment: The seat can be moved forward or back over a range of 20" to match user comfort requirements.

To adjust the seat front-to-back position:

- Pull out on the seat front-to-back release handle. While holding the handle out, slide the seat either forward or back to the desired position. To lock the seat in position, release the handle and make sure it engages in the appropriate hole. To ensure reproducible positioning, note the seat position as per the Seat Front-to-Back Position Scale, located on the seat slide track. The seat is easily moved, even while the user is seated.

Removing the Seat: The UBC seat is easily removed to accommodate wheelchair-bound users.

To remove the seat:

- Remove the rear seat stop.
- Pull out on the seat front-to-back release handle and slide the seat off the back of the trolly. You can now easily position a wheelchair patient for exercise.

NOTE: *Do not sit on seat when removed.*

Actuator Tilt: The actuator can be tilted over a range of 21" to accommodate patients large and small.

To adjust the actuator tilt:

- Loosen the actuator adjust locking knob by turning it in a counterclockwise direction. Tilt the actuator to the desired angle. Tighten the locking knob to secure the actuator in position.
- To ensure reproducible positioning, note the actuator tilt position on the actuator tilt scale.

Arm Crank Length: Arm crank length is adjustable over a range of 10 inches.

To adjust position of the arm cranks:

- Loosen either Arm crank locking knob by turning it in a counterclockwise direction. Adjust the arm crank to the desired length and tighten the locking knob to secure. Perform the identical procedure on the opposite arm crank.

ROTATING SEAT (Clinical Pro only)

To aid the user in getting on and off the UBC Clinical Pro's rotational seat can be turned left or right. This seat also features a safety belt and sturdy grab rails for added patient security -especially for patients with balance deficiency and palsy.

To rotate the seat:

- Pull forward on the seat rotation handle to release the seat. You may now swivel the seat left or right until it engages in either position.
- With the seat locked in the desired position, instruct the patient to sit down. Pull out on the seat rotation handle and rotate the seat until it engages in the forward locked position.

3. Operation and Display Settings

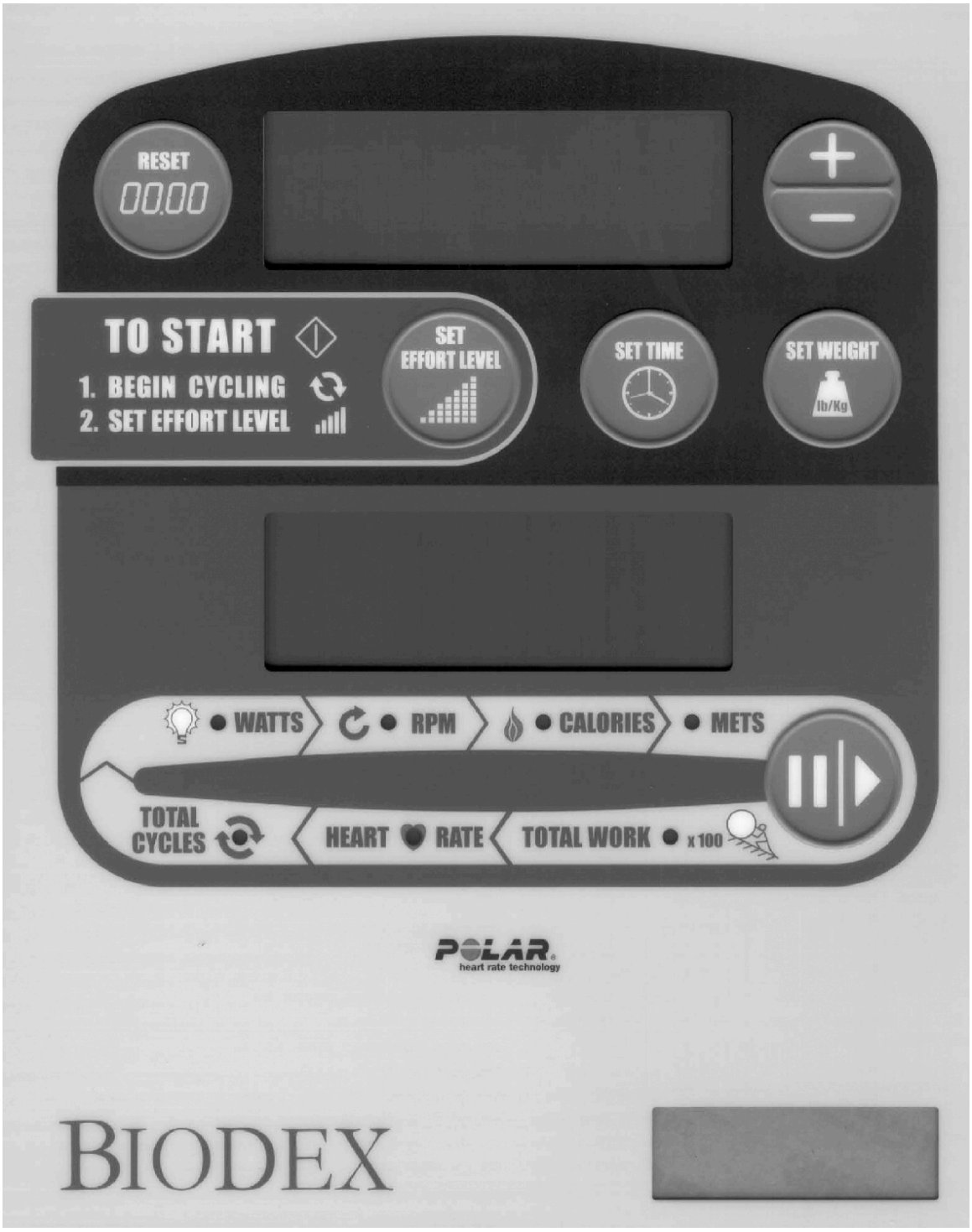


Figure 2. *The Biodex Upper Body Cycle Display Panel.*

The display turns on (powering up) when the user starts to turn the arm cranks. There is no ON or OFF switch. Power up is the same if the power supply is plugged or not.

Time is displayed initially after anything has been set.

The user can stop exercising after the initial motion to set the effort level, time and weight if desired.

The upper buttons are used to set the effort level, time and weight (if desired of the user)

SET EFFORT LEVEL - The resistance for the UBC is set to Isokinetic. The settings range from 50 to 120 rpms in 5 rpm increments.

SET TIME - When the display first turns on, 0.0 time is displayed in the upper window. If time is not set, it will count down from 10 minutes. If time is set, it will count up.

To set time, Press the SET TIME button, then adjust the +/- buttons to the desired Time setting.

Time can be reset any time. While exercising, the user can hit the Time button and the time display will freeze at the present displayed time. If the user then presses the + button, the time will increment up to the next whole minute, then continue to increment the same way. If the user presses the - button, the time will increment down to the next whole minute, then continue to increment the same way. Ether way, after the + or - button hit, the time will start to count down from the new set time after 2 seconds.

SET WEIGHT - When the display first turns on, 0.0 time is displayed in the upper window. Often the user will stop pedaling to set things, or they will keep pedaling and time will start to count up. If the weight button is changed, the default is 150 lbs (68 kg). The weight will be used to calculate Calories and METS.

If the display is set to Euro (metric) the weight will be converted to Kilograms.

For all circumstances, when the + / - buttons are held down, the weight will increment up to 500 lbs. (227 kg). The weight can be reset at any time during use similar to time.. After the new weight is set, the new weight is used to calculate the calories and METS from that time forward. Earlier calories calculated do not change if the weight is changed after starting.

The lower readout is to display TOTAL CYCLES, HEART RATE, TOTAL WORK (x 100), METS, CALORIES, RPM, and WATTS. These items are displayed one by one automatically. The Start / Pause button is used to interrupt the automatic display so that a specific item may remain displayed. Press the Start/Pause button to resume automatic display of each item.

If the user stops exercising after moving enough to light the display, the display remains lit for two minutes before going out if no buttons are pressed. If any button is pressed, the time out count down starts over. This is the same if the power supply is plugged in or not.

Pausing and Resuming During Exercise

When the user has been exercising, time is counting up or down, total steps, distance and calories are accumulated. If the user stops exercising, the active calculations stop but are not cleared and the lower window stops scrolling through for a period of 60 seconds. When the user starts to exercise again, everything resumes from where it stopped if it is under 1 min.

Clearing Settings

There is no Clear button to reset the effort level, time and weight to default values or reset the accumulated cycles, total work, and calories to zero. The user can use the Start / Pause button to look at the accumulated values of total cycles, total work and calories 60 seconds after the user stops pedaling if no other buttons are hit, or 60 seconds after the last button is hit, all items reset to the original default values.

Display Shut Down

Two minutes after the user stops exercising or the last button is pressed, the display shuts off, plugged into the power supply or not. The user must start exercising to turn it back on.

NOTE: *An explanation of METs, and the relationship of calories burned to oxygen consumption and METs, is provided in the Clinical Considerations section.*

NOTE: *It is possible to turn OFF the "beep" that sounds as parameters scroll during exercise: See changing configuration settings.*

4. Isokinetic Resistance Explained

Isokinetic resistance (Isokinetics) is excellent for building strength and building endurance.
- Speed is always constant and resistance is accommodating
- Pedal hard, work rate increases. Pedal easy, work rate decreases

Isokinetics provides accommodating resistance throughout the subject's entire pedaling range of motion for the duration of the exercise period. Resistance continuously matches effort, accommodating to variations in the subject's force output due to weakness or pain at specific points in the range of motion, and to fatigue over the course of the cycling period. As subjects exercise they will quickly notice that they can go only so fast. Once the selected speed is reached, increasing effort results in increased exercising resistance - try as they might, subjects can't exercise any faster. On the other hand, if effort is lessened, the exercising resistance will decrease. This reflects the basic premise of Isokinetic exercise: fixed speed with totally accommodating, variable resistance.

Just what is "totally accommodating, variable resistance?" Simply put, this means that at any point in the range of motion (in this case, the arm crank revolution) the resistance encountered by the user will exactly match the force exerted. In other words, the harder one pushes on the arm crank, the greater the resistance. Maximum speed never changes and there is little or no resistance provided until the preset speed is achieved.

Because the UBC provides totally accommodating Isokinetic resistance for each and every revolution, fluctuations in force output are instantaneously accommodated. Since the amount of resistance the musculoskeletal system must overcome can never exceed that which it can produce at any point in the range of motion, the Isokinetic mode ensures extremely safe and comfortable exercise for rehabilitation users.

Retro-Cycling

Retro-cycling provides bi-directional arm crank exercise to alternately work reciprocal muscle groups with resistance fully functional in both directions.

Both UBCs come with retro-cycling capability as a standard feature. You'll be able to feel resistance in both directions as you exercise. No additional adjustments or display input are necessary to use this function.

5. Heart Rate Monitoring

The UBC's Heart Rate Monitoring allows clinicians to monitor user heart rate during exercise sessions. This is accomplished by attaching a wireless heart-rate monitor directly to the patient. The chest strap then sends heart rate related information directly to the display panel.

To attach the Heart Chest Strap to the patient:
1. Have the patient lift shirt and secure the Heart Rate Chest Strap around the chest so that it is in direct contact with the skin just below the breast. (The strap should be dampened with a conducting gel, sponge or wet cloth to ensure maximum conductivity.)

2. Position the patient on the UBC and check that the heart rate information is being provided in the top window of the display panel.

Heart Rate Chart

As illustrated by the following chart, medical authorities have determined target heart rate ranges for optimum cardiovascular benefit. While the chart may be used as a guide or starting point, concessions must be made based on individual user needs.

CAUTION: *As a general guideline, use the following equation in estimating Maximum Heart Rate for a heart rate healthy user:*

Maximum Heart Rate = 220 - user age in years

Example: A heart rate healthy 30 year-old would use a Max. H/R of 190 beats per minute.

ATTENTION: *On ne doit jamais se servir de la pulsation cardiaque qui se rapproche de la limite maximum de sécurité de la personne. Servez-vous de l'équation suivante comme guide pour estimer la pulsation cardiaque maximum sécuritaire pour une personne en santé.*

Pulsation cardiaque maximum = 220 - l'âge de la personne

Example: Une personne de 30 ans en santé et sane probléme cardiaque devrait s'en tenir à une pulsation cardiaque maximum de 190 par minute.

NOTE: *If the heart rate is not displayed, or appears to be incorrect, adjust the Heart Rate Monitor Strap for improved conductivity, or have the patient reposition both hands on the heart rate handle bar. (You may want to take the user's pulse rate manually and compare it against the displayed heart rate to con-firm accuracy.)*

The following chart depicts standard Target Heart Rate ranges for optimum cardiovascular benefit. While this chart may be used as a guide for heart rate-healthy users, clinicians must be sure to set the Target Heart Rate based on individual patient protocol.

CAUTION: *When prescribed for therapeutic purposes, a physician should clearly define the parameters of use (i.e., total work, maximum heart rate, etc.) to reduce the risk of patient injury.*

ATTENTION: *Quand l'appareil est untilisé en thérapue, le médecin responsable doit définir les paramétres spécifiques en patient pour limiter tout rique et nnotamment le travail total et lafréquence cardiaque.*

Age	Estimated Maximal Attainable Heart Rate	85% Level	70% Level
20	200	170	140
25	195	166	136
30	190	162	133
35	185	157	129
40	180	153	126
45	175	149	122
50	170	145	119
55	165	140	115
60	160	136	112
65	155	132	108

6. Clinical Considerations

As with any other piece of user-interactive rehabilitation equipment, certain clinical considerations must be ensured before anyone is allowed to exercise on a Biodex UBC or UBC Clinical Pro. Following is a brief summary of some points to consider.

1. All users should have medical clearance prior to undertaking any rigorous exercise program. This is especially necessary for any user with a past history of heart rate problems or known risk factors including: family history of cardiovascular disease, elevated blood pressure, hyperlipidemia, diabetes, obesity, sedentary life style and smoking.
2. Start each user at a safe exercise level. Do not allow users to overexert themselves on either UBC. Symptoms of overexertion may include, but are not limited to: dizziness, nausea, pain or discomfort, shortness of breath or difficulty in breathing.
3. Prior to starting any exercise session, ensure that the user is comfortably seated. Be sure to adjust the seat fore/aft position, actuator tilt angle and arm cranks as necessary. Mechanical adjustments are described in detail in Chapter 2, Parts and Adjustments.
4. Warm-up and warm-down periods are necessary to avoid suddenly taxing the heart and circulation system, and to help prevent injury to the muscles or joints. Sufficient warm-up and warm-down periods have also been shown to reduce muscle soreness following exercise. Be sure to allow for a minimum of 3 to 5 minutes of gradually increasing exercise intensity prior to starting the actual exercise session and a similar amount of time of decreasing exercise intensity following each session.
5. Proper seat fore/aft positioning is essential. The distance of the seat from the arm cranks greatly influences involvement of the shoulder girdle and torso rotation. Moving the seat closer to the arm cranks increases shoulder retraction. Conversely, moving the seat away from the arm cranks adds to shoulder protraction. Adjustment of arm crank length and actuator tilt may also influence shoulder involvement and torso rotation.
6. Arm crank length, to a large degree, controls the total range of motion of both the elbow and shoulder. Increasing the length of the arm cranks will increase the range of extension and flexion for both elbow and shoulder. Conversely, decreasing the arm crank length will decrease the range for these joints. Adjustment of seat fore/aft position and actuator tilt may also influence shoulder and elbow range of motion for both flexion and extension.

Considérations Cliniques

Comme c'est le cas pour tout appareil de réadaptation permettant une interaction avec l'utilisateur, on doit s'assurer du respect de certaines considérations cliniques avant de permettre à quiconque de faire de l'exercise sur le cycle à bras, appelé UBC (Upper Body Cycle), Proffessional Clinique, de Biodex. Voici un résumé de certains points dont il faut tenir compte.

1. Tout utilisateur doit avoir une autorisation du médecin avant d'entreprendre tour programme d' exercise astreignant. Ceci revêt une importance particulière dans le cas d'un utilisateur possédant un historique de malaises cardiaques ou des facteurs de risque connus, notammment: historique familial de maladie cardiovasculaire, hypertension artérielle, hyperlipidémie, diabéte, obésité, mode de vie sédentaire, tabagisme.
2. Faire commencer chaque utilisateur à un niveau d'exercice sécuritaire. Ne pas permettre aux utilisateurs de se surmener sur l'appareil UBC. Les symptômes de surmenage peuvent com prendre, sans limiter ce qui suit: vertige, nausée, douleur ou gêne, souffle court ou difficulté à respirer.

3. Avant de débuter une séance d'exercice, s'assurer que le patient est assis en position confortable. Veiller au réglage avant-arriére du siége, de l'angle d'inclinaison du vérin et des manivelles à bras, selon le besoin. On trouvers au chapitre 2, Réglages mécaniques, la description détaillée des réglages mécaniques.
4. Des périodes de réchauffage et de refroidissement sont nécessaires pour éviter de surcharger soudainement le coeur et l'appareil circulatoire, et pour aider à prévenir les lésions aux muscles ou aux articulations. On a aussi établi que des périodes suffisantes de réchauffement et de refroidissement réduisent les douleurs musculaires aprés l'exercice. Veiller à prévoir un minimum de 3 à 5 minutes d'exercise d'intensité graduellement croissante avant de démarrer la séance proprement dite, et une période semblable d'exercice d'intensité graduellement décroissante aprés chaque séance.
5. e positionnement avant-arrière du siège est d'importance cruciale. La distance du siège aux manivelles a une grande influence sur l'activité de la ceinture scapulaire et sur la rotation du torse. En rapprochant le siège des manivelles, on augmente la rétraction des épaules. À l'in-verse, en éloitnant le siége des manivelles, on augmente la protraction des épaules. Le réglage de la longeur des manivelles et de l'inclinaison de vérin peuvent aussi modifier l'activité des éplaules et la rotation du torse.
6. La longueur des manivelles détermine pour une grande part la portée totale des mouvements du coude et de l'épaule. En allongant les manivelles, on augmente la portée de l'extension et de la flexion du coude et de l'épaule. À l'inverse, en raccourcissant les manivelles, on diminue la portèe pour ces articulation. Le réglage du positionnement avant-arrière du siège et de l'inclinaison du vérin peuvent aussi modifier la portée des mouvements de l'épaule et du coude, en flexion comme en extension.

What Is A MET?

The Acronym MET stands for "metabolic equivalents"

METs are a unit of measurement that estimate the amount of physical demand placed on a person’s cardiopulmonary system. METs are often used in prescribing exercise for patients involved in cardiopulmonary rehabilitation.

The MET level at which one exercises, is directly proportional to the amount of oxygen being consumed, the amount of power (watts) accomplished, and the amount of calories burned while exercising.

1 MET is equal to the amount of oxygen the body consumes at rest (lying down). The amount of oxygen one consumes at rest is estimated to be approximately 3.5 ml of oxygen for each kilogram of body weight every minute or 3.5ml/kg/min.

Each increase in energy expenditure of 3.5 ml/kg/min. is increasing one’s energy expenditure by 1 MET.

MET charts have been developed by researchers to estimate the MET levels of domestic and recreational activities. These estimations are generalizations as to how many times an individual needs to elevate their metabolic rate (METs) to accomplish such activities.

The American College of Sports Medicine has published formulas to estimate the oxygen cost of exercising at various work loads on treadmills, lower body cycles, upper body cycles, stepping, and outdoor walking and running. MET levels can be determined by simply dividing oxygen consumption in ml/kg/min. by 3.5.

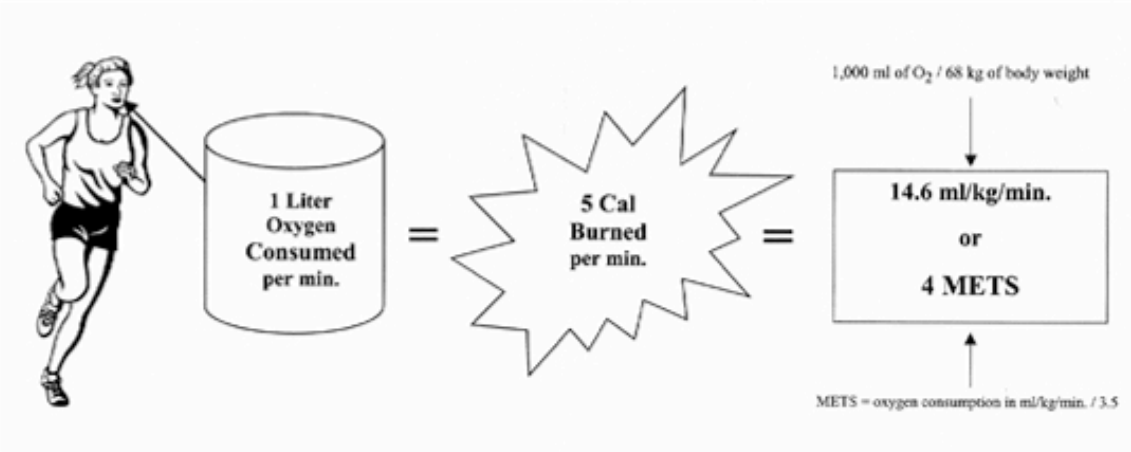
Biodex Ergometers Support METS and Aid Exercise Prescription for Both Cardiopulmonary Rehabilitation and Medical Fitness

A cardiac stress test typically reports the max MET level achieved by the patient and/or the MET level achieved at the point the test turned positive (often demonstrating ischemic changes in the heart muscle and/or inappropriate arrhythmias). Cardiologists often ask therapists to keep a patient below a certain MET level based on this information from the cardiac stress test. The Cardiologist will report, for example, "ischemic changes at 10 METs/Heart Rate 128. Exercise at or below 9 METs".

Different types of cardiovascular exercise machines require the user to work at different work loads (watts) to ensure a consistent elevation of an individual's metabolic rate and the corresponding appropriate heart rate. Cranking an upper body cycle at 100 watts will, for example, have a very different effect on one's metabolic rate and heart rate when compared to pedaling a lower body cycle at 100 watts. It is up to the clinician to set the appropriate workloads on each ergometer, or speed and elevation on the treadmill, to achieve the appropriate MET level.

The Relationship of Calories Burned to Oxygen Consumption and METS

For every liter of oxygen consumed by the body during exercise, the body burns approximately 5 calories. The example below shows a 150 lb (68 kg) individual exercising at a level requiring an oxygen consumption of 1 liter (1,000 ml) of oxygen each min., which would require that they burn 5 calories each min. to supply the appropriate amount of energy for the exercise. This same individual would be burning 14.6 milliliters of oxygen for each kilogram of body weight per min. (1,000 ml of oxygen / 68 kg of body weight). Since one MET = (oxygen consumption in ml/kg/min.) / (3.5), this individual would be exercising at 4 METs. They would need to elevate their resting metabolism approximately 4 times to sustain this rate of exercise.



Qu’est-ce qu’un MET?

L’acronyme MET signifie « équivalent métabolique ».

Le MET sert d’unité de mesure pour estimer l’effort demandé au système cardiopulmonaire d’une personne. On utilise souvent les MET pour prescrire des exercices à des patients en cours de réadaptation cardiopulmonaire.

Le taux métabolique (en MET) auquel on effectue un exercice est directement proportionnel à la quantité d’oxygène consommée, à la puissance développée (en watts) et aux calories brûlées durant l’exercice.

Le MET correspond à la quantité d’oxygène que l’organisme consomme au repos (sujet couché). On estime cette quantité à environ 3,5 millilitres d’oxygène par kilogramme de poids corporel par minute, soit 3,5 ml/kg/min.

Chaque augmentation de 3,5 ml/kg/min de la dépense énergétique augmente la vitesse de métabolisme de 1 MET.

Les chercheurs ont mis au point des tableaux où ils estiment le nombre de MET pour des activités domestiques et récréatives. Ces estimations sont des généralisations sur le nombre de fois qu’une personne doit augmenter son taux métabolique (le nombre de MET qu’elle doit développer) pour effectuer ces activités.

L’American College of Sports Medicine publie des formules permettant de faire l’estimation de la dépense en oxygène de l’exercice, sous diverses charges de travail, sur tapis roulant, sur cycles pour membres inférieurs et pour membres supérieurs, de la montée-descente sur escabeau, ainsi que de la marche et de la course à l’extérieur. On calcule le taux métabolique en MET en divisant simplement la consommation d’oxygène (en ml/kg/min) par 3,5.

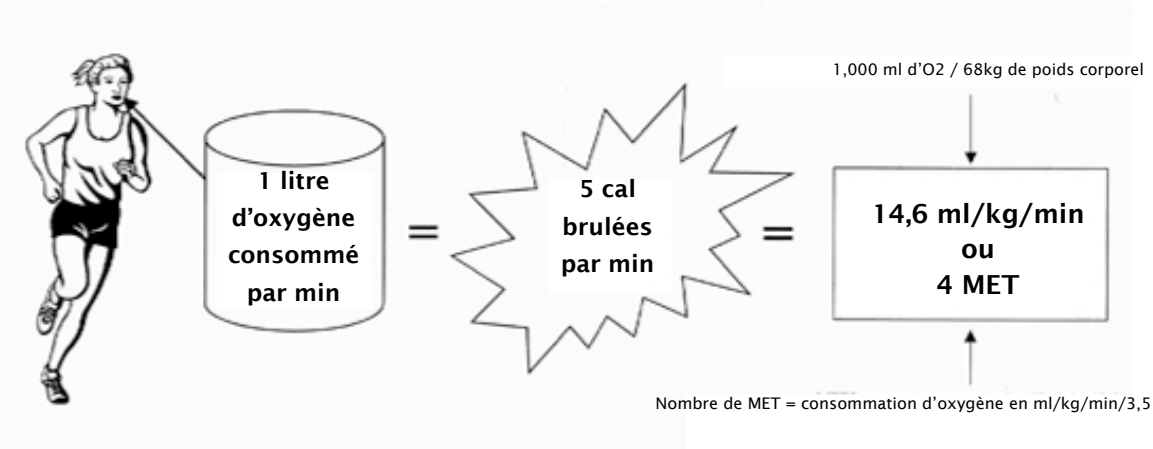
Les ergomètres Biodex facilitent le calcul des MET et les prescriptions d’exercice pour réadaptation cardiopulmonaire et mise en forme sous surveillance médicale.

L’épreuve d’effort cardiaque indique normalement le nombre maximal de MET atteint par le patient, ou le nombre de MET au point où l’épreuve passe au positif (souvent avec manifestation de changements ischémiques dans le muscle cardiaque ou d’arythmies inappropriées). Les cardiologues demandent souvent aux thérapeutes de maintenir le patient au-dessous d’un certain nombre de MET sur la foi de cette information, glanée de l’épreuve d’effort cardiaque. Dans son rapport, le cardiologue fait état, par exemple de « modifications ischémiques à 10 MET/fréquence cardiaque 128. Exercice à vitesse de métabolisme égale ou inférieure à 9 MET. »

Les différents types de machines d’exercice cardiovasculaire demandent à l’utilisateur des charges de travail (en watts) différentes pour assurer une augmentation uniforme de la vitesse de son métabolisme, ainsi que la fréquence cardiaque correspondante appropriée. Activer les manivelles d’un cycle pour membres supérieurs à 100 watts, ou pédaler un cycle pour membres inférieurs à 100 watts, sont des activités qui ont de effets très différents sur la vitesse de métabolisme et la fréquence cardiaque du sujet. C’est au clinicien qu’il revient de fixer les charges de travail qui conviennent sur chaque ergomètre, ou la vitesse et l’élévation du tapis roulant, afin d’atteindre le taux métabolique en MET approprié.

Rapport entre calories brûlées, consommation d'oxygène et MET

Pour chaque litre d'oxygène consommé par l'organisme durant l'exercice, ce dernier brûle environ 5 calories. L'exemple ci-dessous illustre une personne de 68 kg (150 lb) s'exerçant à un niveau qui demande une consommation de 1 litre (1 000 ml) d'oxygène chaque minute. Pour ce faire, elle doit brûler 5 calories chaque minutes afin de fournir la quantité d'énergie appropriée à l'exercice. Cette même personne brûle 14,6 millilitres d'oxygène pour chaque kilogramme de son poids corporel par minute (1 000 ml d'oxygène / 68 kg de poids corporel). Étant donné que un MET = (consommation d'oxygène en ml/kg/min) / (3,5), cette personne s'exerce à un taux de 4 MET. Elle doit augmenter son métabolisme au repos environ 4 fois pour atteindre et main-tenir ce taux d'exercice.



7. Maintenance

The Biodex UBCs are designed to provide many years of dependable use. To help ensure this product performs to maximum specifications, and to increase the life of the product, please note the following general cleaning instructions.

Daily Maintenance

- As required, clean all exterior surfaces, upholstery and restraining straps. Specialized vinyl cleaners or protectants are recommended for upholstery and cushions. Otherwise, use a solution of warm water and mild detergent.

- As needed, wipe the display using a soft rag dampened with alcohol.

NOTE: *Do not use cleaning solutions containing ammonia.*

Annual Maintenance

The following maintenance operations should be performed annually.

Tools Required: Phillips Screwdriver, set of Allen Wrenches, Adjustable Wrench, White Lithium Grease.

Before proceeding with the following procedures:

1. Verify operation of all functions.
2. Remove all the screws on both upper covers and let covers hang straight down.

Adjust for Axial Play in the Sprocket Axle

Check for axial play on the sprocket axle. If an adjustment is necessary:

1. Remove the arm cranks (Figure 3 in Service Procedures) so the covers can be removed. To do this, remove the hex nut at the hub of each crank, drive the cotter pin through and discard. Replacement part number for the cotter pin is #C08602. Do not re-use cotter pin.
2. Loosen the hex socket head screw on the clamp collar and tighten collar to remove all axial play in the sprocket axle. Re-tighten the hex socket locking screw on the clamping collar.

Lube Chain

Apply a liberal amount of white grease to the chain.

NOTE: *Refer to Chain Replacement Procedure in Chapter 11, Service Procedures, to verify proper alignment, tension, and tracking of the chain and timing belts.*

Lube Idler Rollers

Apply white grease to the flat shaft that goes through the spring of the idler rollers.

Lube Locking Knobs

Back out the locking knob on each crank assembly and apply white lithium grease to the threads. Expose threads on the locking knob located on the arm adjust tube and apply white grease.

Lube Chair Slide Rail

Wipe down slide rail with a clean dry cloth and lubricate with a silicon or teflon-based spray.

Chair Inspection

Inspect the chair for stability and ease of movement.

8. Service Procedures

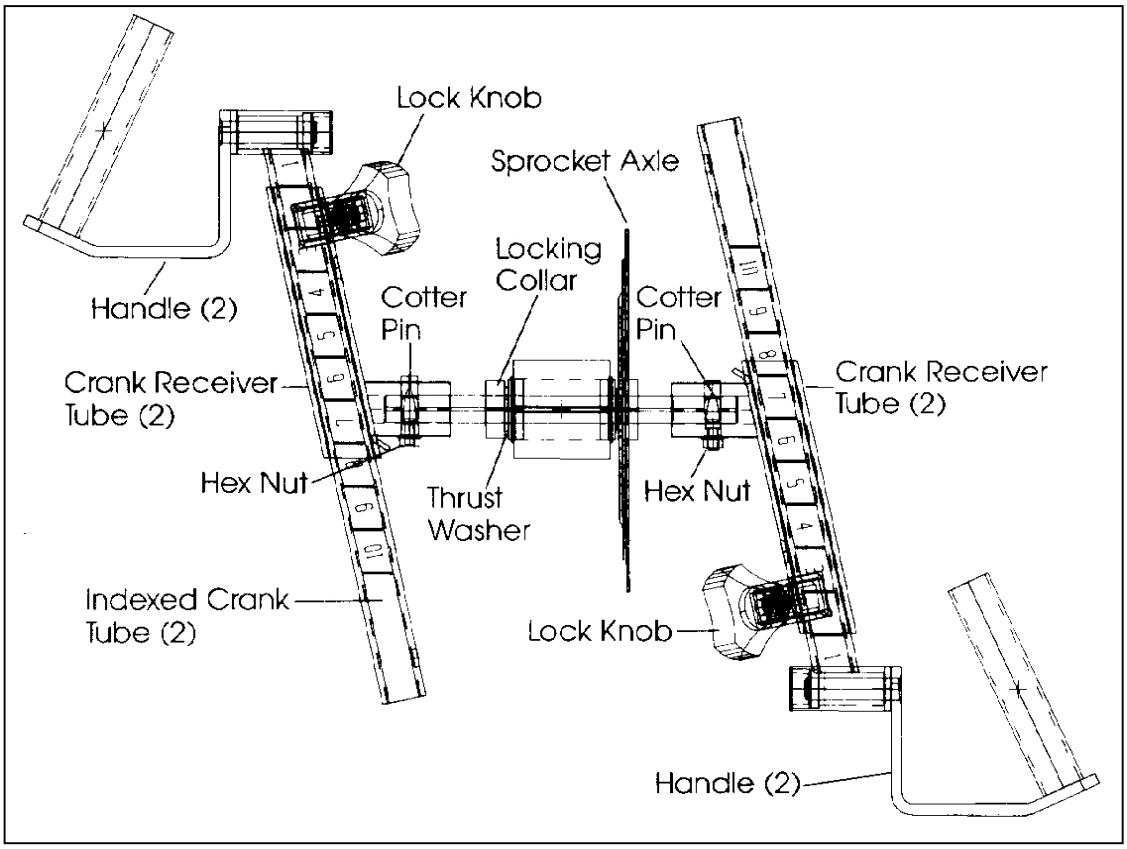


Figure 3: *The UBC crank assembly.*

Chain Replacement

The Chain Replacement Procedure is actually a four-part operation that requires the user to replace the chain, align the replacement chain, check the replacement chain for proper tension adjustment.

Tools Required: (2) ½" Open-End Wrenches, Phillips Screwdriver, Tape Measure or Ruler, 14 mm Socket Wrench.

To replace the chain:

1. Unplug the power cord from the wall socket.

2. Remove both arm cranks (see Figure 3). To do this, remove the hex nuts at the hub of each crank, and drive tapered pin through and discard. Replacement tapered pin is C08602. Do not reuse tapered pin.

3. Remove both side covers with Phillips screwdriver.

4. Remove chain take-up weldment secured with bolt and ½" nut.

5. Remove chain and install replacement.

Chain Tensioning Procedure

1. Reinstall take-up assembly, but leave securing nut loose.

2. Slide take-up weldment up, so that the chain has some slack and is not taught.

3. Once properly tensioned, tighten ½" to secure nut and bolt.

4. Replace pedal on sprocket axle.

5. Rotate the pedal forward (clockwise) at slow, medium and fast speed. Then rotate pedal in reverse at slow, medium and fast speed. Look for signs of a loose or tight chain.
   - A loose chain will slap and possibly skip a tooth.
   - A tight chain will make a snapping sound as each tooth engages the chain, sometimes more so in reverse.
6. Once again, the chain should be just slack, but not taught.

7. Lubricate entire chain with white lithium grease.

Display Panel Replacement

Tools Required: Phillips Screwdriver

1. Unplug power cord from wall.

2. Remove the four Phillips head screws, on the back of the display, that pass through the weldment. This will disengage the display module.

3. Disconnect the display cable and remove the display assembly.

4. Install replacement display assembly by reconnecting the cable and replacing the four Phillips head screws. The connector is keyed so it only fits one way.

Battery Removal and Replacement

(See Figure 4.)

Tools: Phillips Screwdriver, 10mm Wrench

NOTE: *Before proceeding, turn OFF power and ensure power pack is unplugged from outlet.*

1. Loosen the left side arm assembly tapered pin nut 10mm. Loosen the nut so that it is flush with end of threaded end. Tap on threaded end until taper pin releases, and remove.

2. Slide left side arm assembly off.

3. Remove the 5 Phillips screws securing the left cover and remove.

4. Locate the battery and disconnect the + red and - black connectors.

5. Loosen and remove the securing bracket, which is secured by two Phillips screws.

6. Install new battery by reversing the procedure.

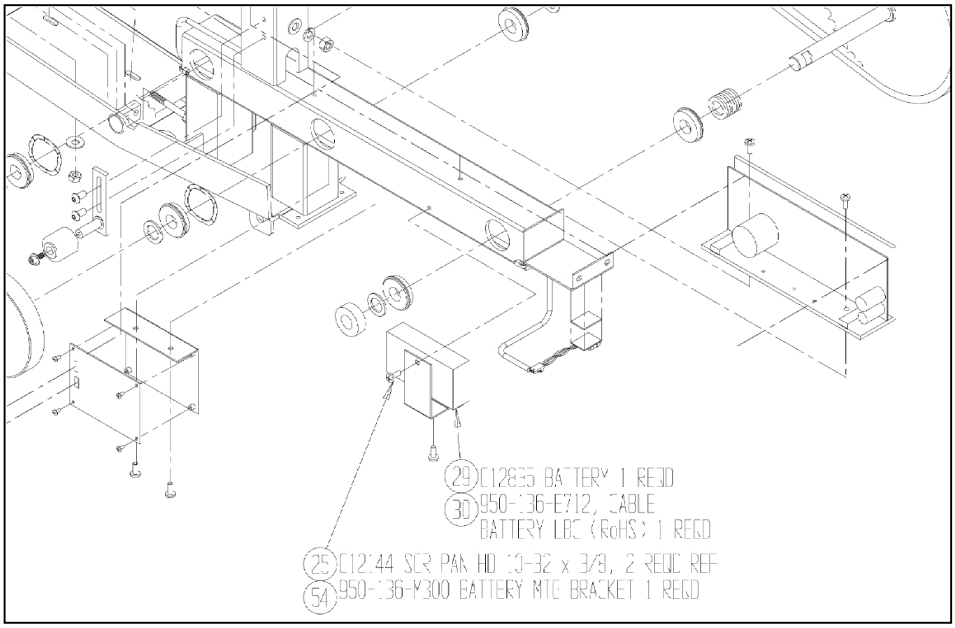


Figure 4. *Replacing the battery.*

Sprocket Axle Replacement

Tools Required: Phillips Screwdriver, (2) Adjustable Wrenches, Tape Measure, Straight Edge, 5/32" Allen Wrench.

1. Remove power cord from wall.

2. Remove the arm cranks (refer to Figure 4) so the covers can be removed. To do this, remove the hex nut at the hub of each crank, drive the cotter pin through and discard. Replacement part number for the cotter pin is #C08602. Do not re-use cotter pin.

3. Remove both side covers.

4. Remove chain take-up weldment secured with bolt and ½" nut.

5. Loosen 5/32" Allen screw on the sprocket axle locking collar. Remove the locking collar and washer, then remove the sprocket axle.

6. Install the new sprocket axle, washer and locking collar. Tighten the locking collar until all axial play is removed. Tighten the 5/32" Allen screw.

7. Refer to the Chain Replacement Procedure to tighten, align and check tensioning of chain.

8. Install side covers and pedals.

Seat Slide Adjustment Procedure

(See Figures 5 and 6.)

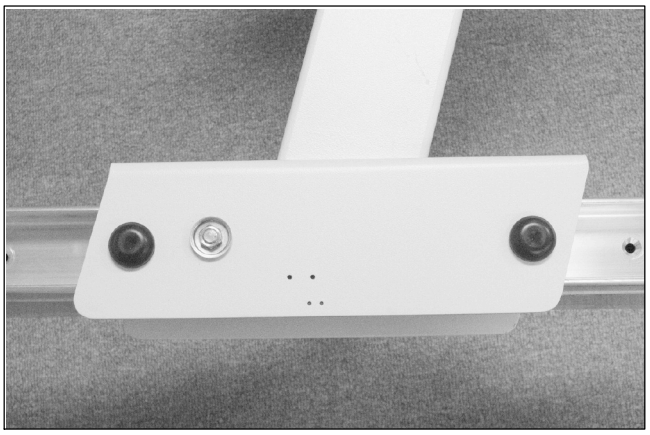


***Figure 5**. Adjusting the Seat Slide.*

The seat slide consists of six wheels (three on each side). The center wheel, if out of adjustment, will cause looseness or stiffness in the seat slide operation. Figure 5 shows a side view of the chair slide assembly with the center wheel cap removed for illustration.

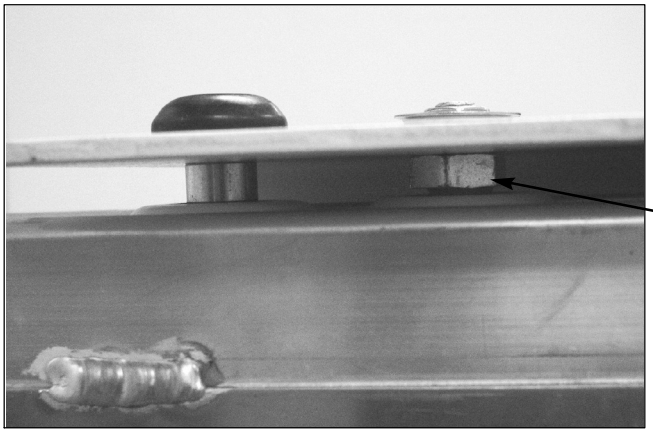


***Figure 6**. Rotating the eccentric cam.*

To access the slide adjustment, simply tilt ergometer on its side. Figure 6 shows a close-up of the slide assembly.

The center wheel on each side is adjustable by rotating the eccentric cam (3/4 hex head). It is easily, adjusted by turning ergometer on its side and inserting open-end wrench on to center wheel cam and turning. The outside wheels on each side ride and on the bottom of the track. The center wheel rides on the upper track.

If the seat has excessive side-to-side play, then the center wheel adjustment should be rotated so that the wheel just comes in contact with the upper track. Adjustment should be made to both sides.

If the seat is difficult to slide and there is no side-to-side play, then the center wheel cam has been over-tightened. Rotate the center wheel cam on each side so that the center wheel just comes in contact with the upper track. Again, adjustments should be made to both sides.

Seat Slide Release Assembly Removal and Replacement

(See Figure 7.)

The release assembly consists of a pull handle (located under and to the side of the seat base), a cable assembly, and plunger.

Removal:

1. Remove seat from pedestal.

2. Slide pedestal back and remove from track. If release assembly will not disengage, you will need to retract the plunger manually. Insert a long, flat blade screwdriver between plunger and seat index slot and pry plunger up. Then slide pedestal back and off of track.

3. The plunger is secured on the bottom with a 1-5/16" nut, which must be loosened. On the other end is a housing with a 3/4" slot, for a wrench, to prevent the housing from turning.

4. Once the plunger housing nut is removed, loosen the 3/4" nut which secures the pull handle assembly.

5. The entire assembly will now slide out. Install the new assembly. The new plunger assembly should be adjusted so that when the release handle is pulled the plunger is completely disen-gaged. When the pull handle is released the plunger should be fully engaged into the index slot.

6. Apply Loctite blue on the 1-5/16" plunger nut threads.

***Figure** 7. Seat Slide Release Assembly removal.*

9. Configuration and Diagnostics

Configuration Setup Mode

1. With power off to the display
2. Pedal the unit so that the display turns on.
3. Press and hold both the <Set Effort Level> button and the “yy | >” <play pause> button simultaneously.
4. The first thing shown is the resistance mode.
5. Pressing the +/- <Adjust> buttons toggles through the three modes (iSo, CrES, Cpor)
6. Press the “yy | >” <play pause> button.
7. The next displayed configuration setting is English or metric units.
8. Pressing the +/- <Adjust> buttons toggles through the two selections (EngL, Euro)
9. Press the “yy | >” <play pause> button.
10. The next displayed configuration setting is product type.
11. Pressing the +/- <Adjust> buttons toggles through the two selections (bio, ubC)
12. The next displayed configuration setting is brake type.
13. Pressing the +/- <Adjust> buttons toggles through the two selections (LIt, BIG)
14. Press the “yy | >” <play pause> button.
15. The next displayed configuration setting is the gear ratio.
16. Pressing the +/- <Adjust> buttons toggles through the two selections (10:1, 8:1)
17. Press the “yy | >” <play pause> button.
18. The next displayed configuration setting is the turn on start speed in RPM in RPM.
19. Pressing the +/- <Adjust> buttons toggles through the range of values that determines the speed in RPM that has to be achieved before the display will turn on (0-50 RPM).
20. Press the “yy | >” <play pause> button.
21. The top window displays beeP.
22. Pressing the +/- <Adjust> buttons toggles through the three modes (P_on, on, oFF)
23. Press the “yy | >” <play pause> button.
24. A long beep sounds. This indicates that the settings are saved.

Diagnostic Debug Mode

1. With power off to the display
2. Pedal the unit so that the display turns on.
3. Press and hold both the <Set Weight> button and the “yy | >” <play pause> button simultaneously.
4. The firmware version is displayed in the upper window.
5. Press the “yy | >” <play pause> button.
6. The upper window displays HrS and the lower display shows the number of hours of operation.
7. Press the “yy | >” <play pause> button.
8. The PWM value is displayed in the lower window and “LOAD” is displayed in the upper window.
9. Pressing the +/- <Adjust> buttons scrolls the PWM value either up or down.
10. Press the “yy | >” <play pause> button.
11. The letters EE are displayed in the upper window.
12. Pressing the +/- <Adjust> buttons scrolls the EEprom address showing the value at that address location in the lower window.
13. Press the “yy | >” <play pause> button.
14. The letters Atod are displayed in the upper window.
15. A/D counts are shown in the lower window.
16. Press the “yy | >” <play pause> button.
17. The LED test is performed.
18. Press the “yy | >” <play pause> button.
19. A long beep sounds. This indicates that the settings are saved.

10. Specifications

Specifications

- **Dimensions:** 62" l x 29" w x 72" h (157 x 74 x 183 cm)
- **Crank Axis height:** Adjustable from 37" to 58" (94 to 147 cm)
- **Resistance:** Isokinetic (speed control): 15 speed settings (increments of 5 deg/sec)
- **Work Rate Range:** Up to 600 watts (120 rpm)
- **Speed Control Range:** 50 to 120 deg/sec
- **Readouts:** Time, RPM, watts, calories, METs, heart rate, total work, total cycles
- **Heart Rate Monitoring:** Polar® Telemetry (chest strap)
- **Communication:** RS232
- **Patient Capacity:** 500 lb (227 kg)
- **Weight:** 230 lb (105 kg)
- **Power:** Self-powered; no external power requirement at user work rates over 30 watts and 50 rpms; 115 VAC adapter (230 VAC available) is provided to power system and charge battery during applications below 30 watts and 50 rpms. Battery automatically recharges at work rates above 30 watts and 50 rpms.
- **Certification:** ETL listed to UL 60601-1, and CAN/CSA C22.2 No.: 601-1.1-M90. EMC compliance to EN 60601-1-2.
- **Warranty:** Two-years parts; one-year labor

Mfg: Biodex Medical Systems
20 Ramsay Road
Shirley, NY 11967-4704

Classification: Class I measuring, Type B, ordinary equipment, continuous operation

Authorized European Community Representative:

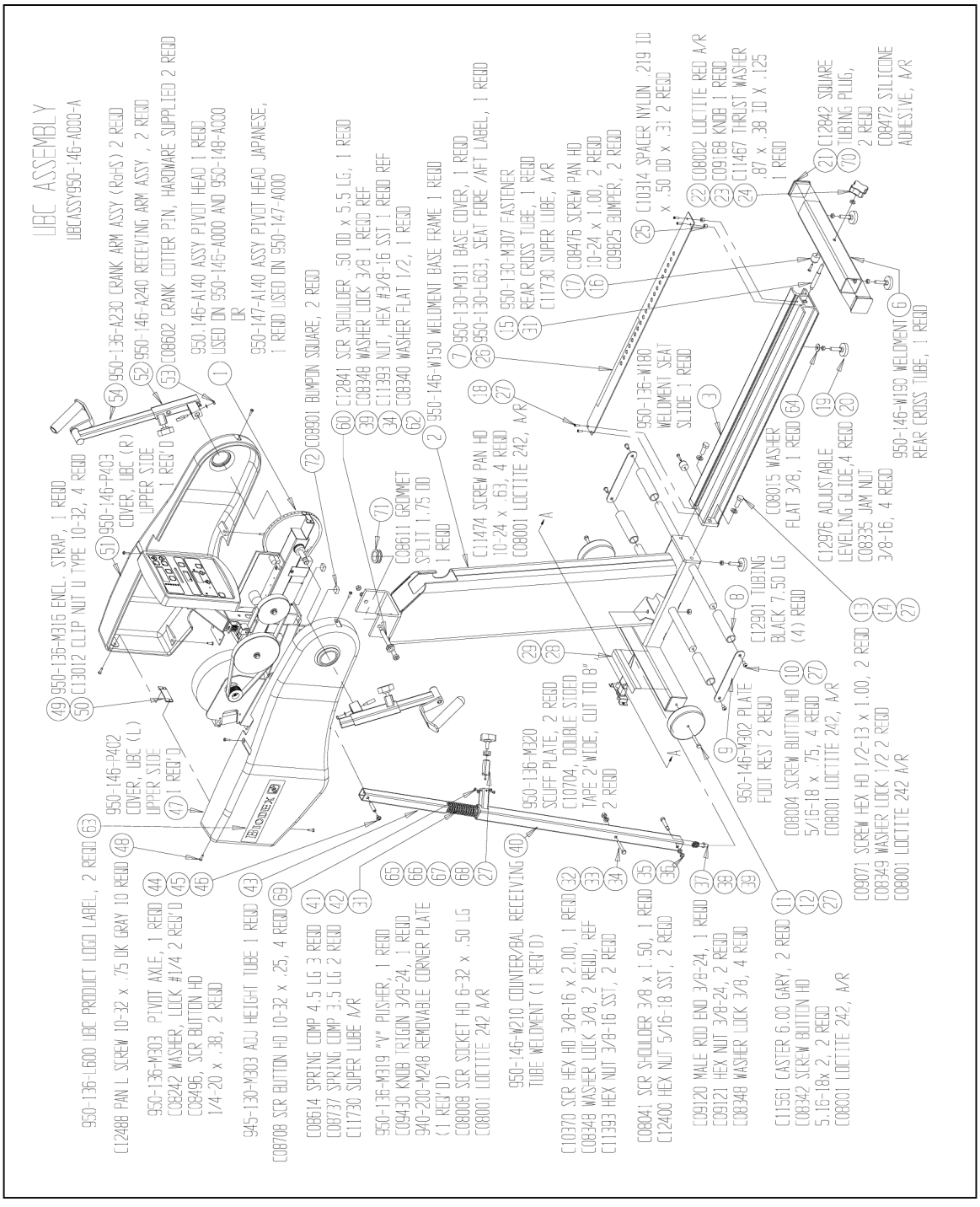
EC REP

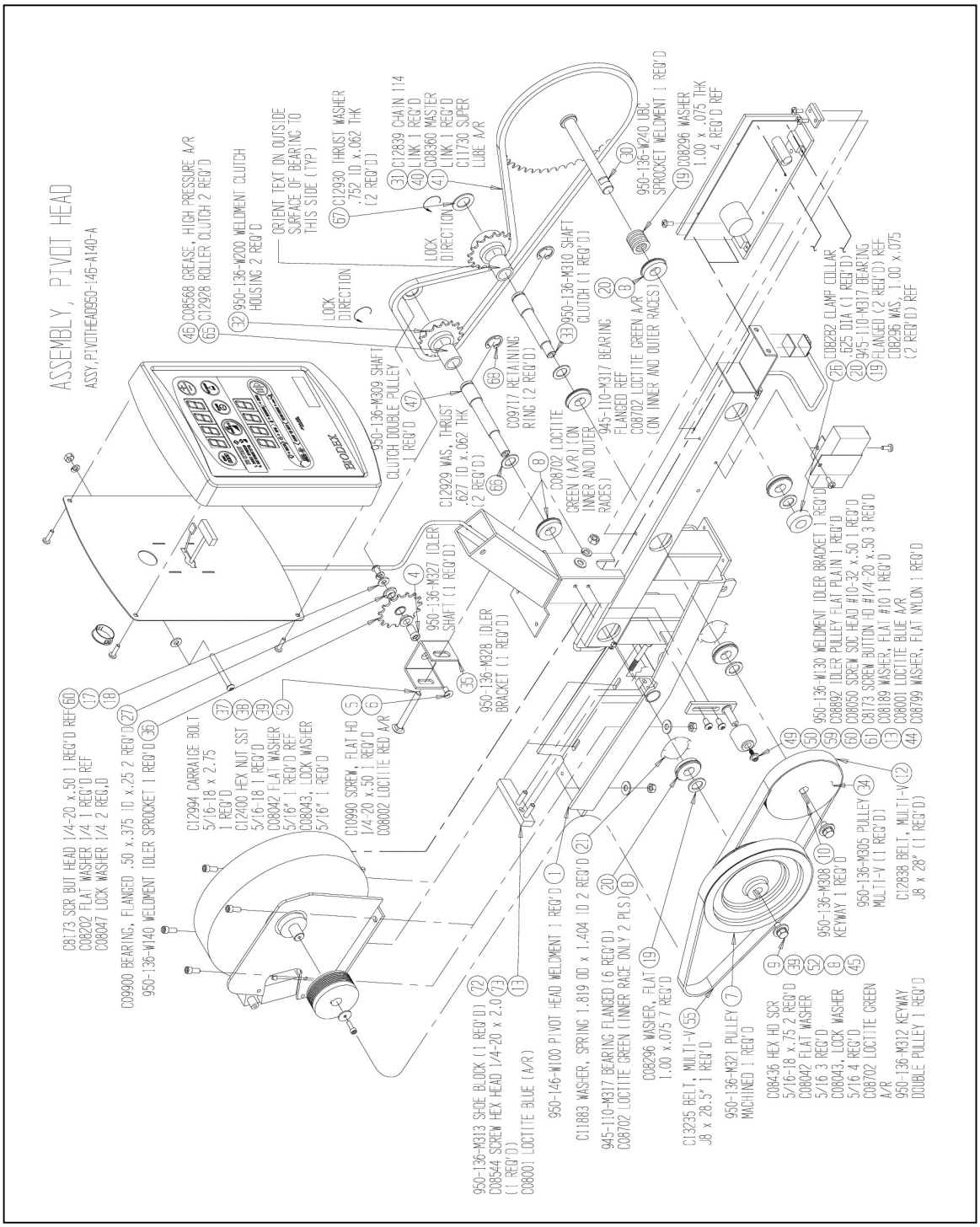
Emergo Europe
Molenstraat 15
2513 BH, The Hague
The Netherlands

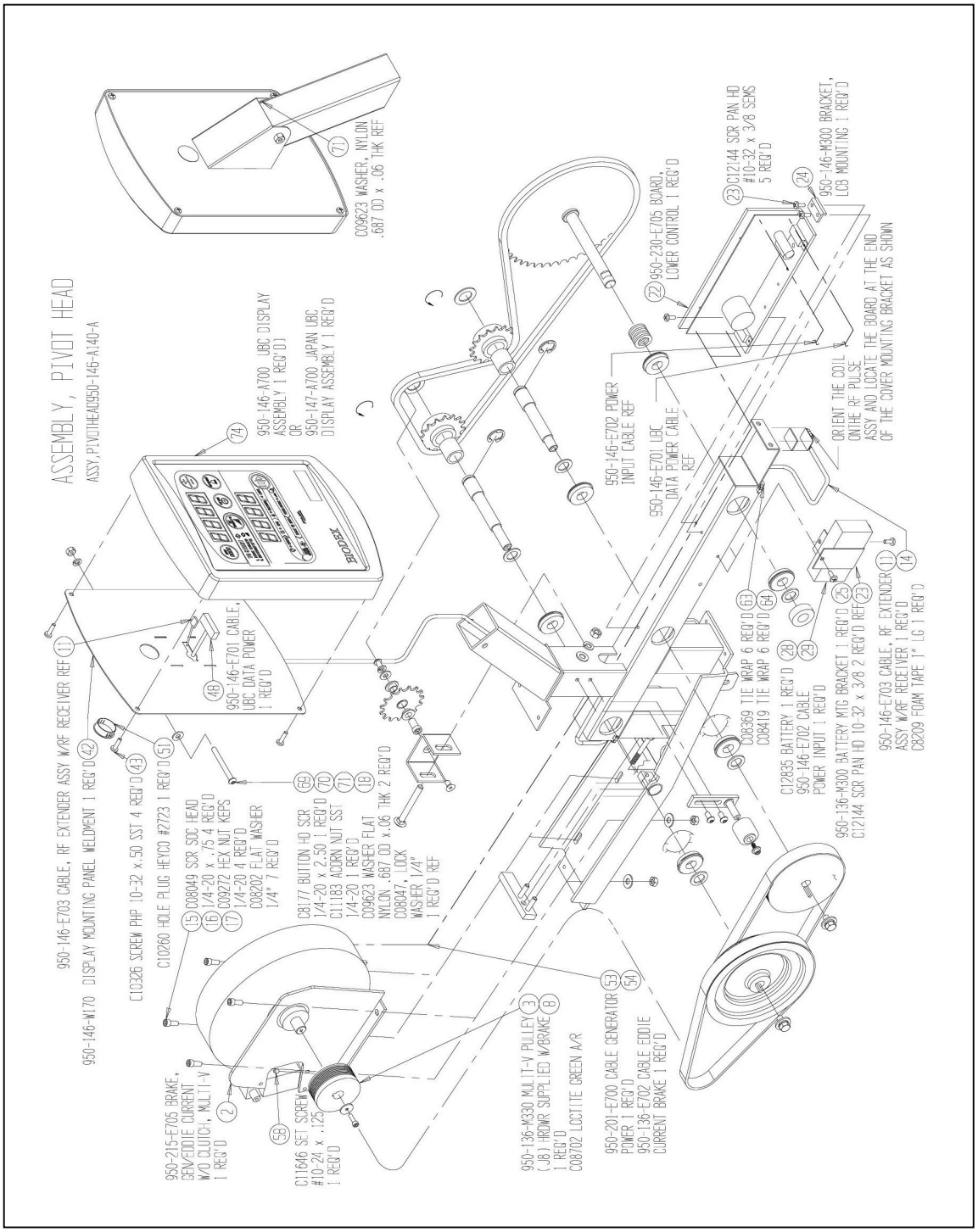
11. Electromagnetic Compatibility

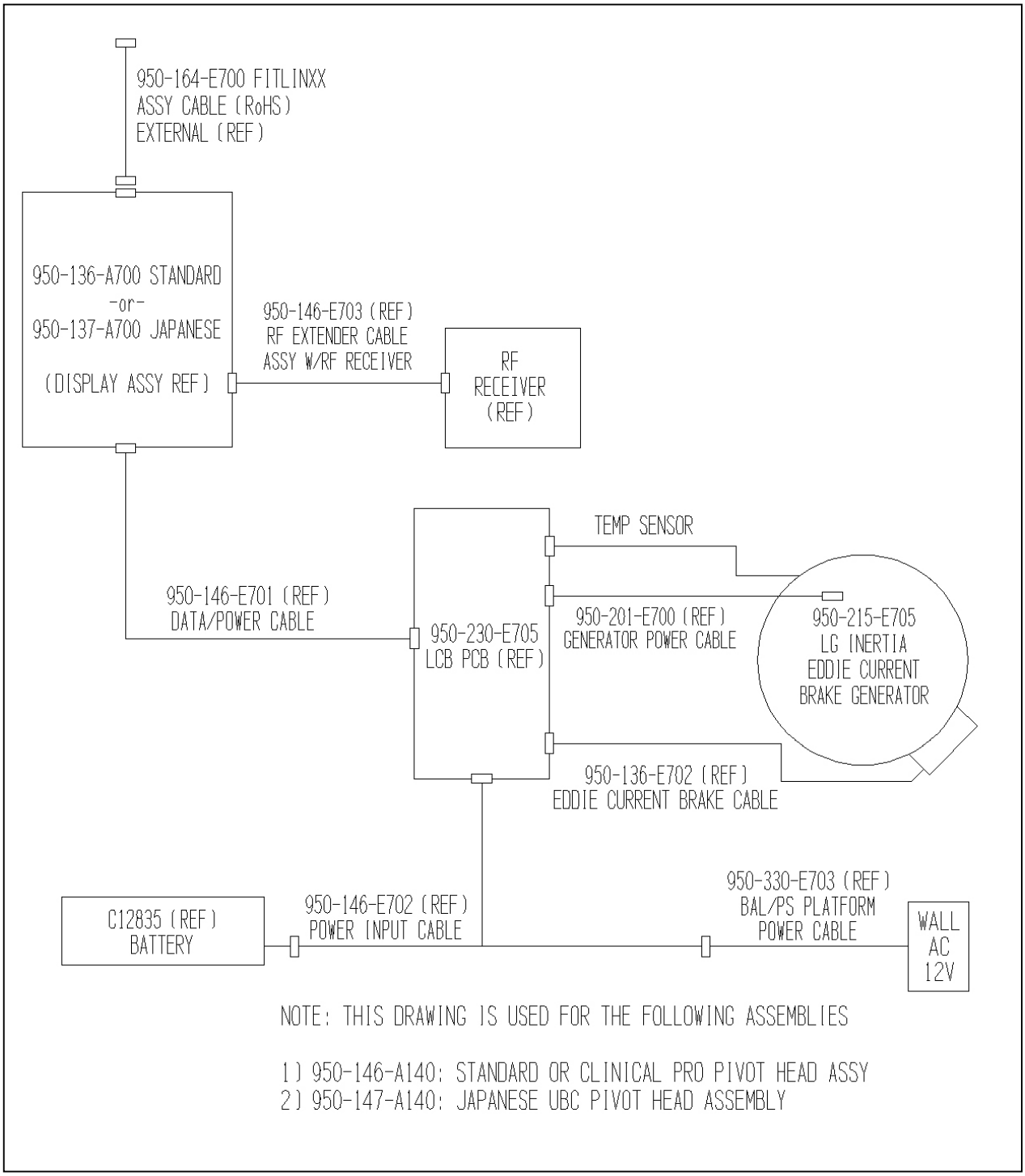
Standard	Test Method	Range	Limits	Result
IEC 61000-3-2	Harmonics	100 Hz to 2KHz	Class A	THD = 251.94%
IEC 61000-3-3	Flicker	observation time (TP) 10 min	-	-
		max voltage change (dmax)	4%	0.00 %
		max Rel steady state voltage change (dc)	3%	0.00 %
		duration of d(t)>3%(t)	.2 sec	0.00 sec
		short term flicker Sev (PST)	1.00	0.00
		long term flicker Sev (PLT)	.65	0.00
IEC 61000-4-2	Electrostatic Discharge	Contact: 4 & 6Kv pos/neg 1pps for 10 sec Air: 2, 4, & 8Kv pos/neg 1pps for 10 sec	no degradation of performance	complied
IEC 61000-4-3	Radiated Immunity	80 MHz to 1000 MHz / 3v/m Horiz & Vertical @ 2M 1000 MHz to 2500 MHz / 3v/m Horiz & Vertical @ 1M	no degradation of performance	complied
IEC 61000-4-4	Electrical Fast Transient/ Burst, Power Leads	PWR Input leads .5, 1, & 2 Kv / pos & neg / 5KHz Rep Rate	no degradation of performance	complied
IEC 61000-4-6	Conducted Immunity, Power Leads	150 KHz to 80 MHz /3Vrms	no degradation of performance	complied
IEC 61000-4-8	Magnetic Immunity	3A/M RMS @ 50/60 Hz	no degradation of performance	complied
IEC 61000-4-11	Voltage Dips and Interrupts	**Int Duration / Pause between / % reduction**	no degradation of performance	complied
		Int 20msec / pause 10 sec / >95%	no degradation of performance	complied
		Int 100msec / pause 10 sec / 60%	no degradation of performance	complied
		Int 500msec / pause 10 sec / 30%	no degradation of performance	complied
		Int 5000msec / pause 10 sec / >95%	no degradation of performance	complied
CISPR 11	Conducted Emissions	150 KHz - 500 KHz / 5 MHz - 30 MHz, Class A, Group 1	79/73 dbuV QP 66/60 dbuV AV	complied
CISPR 11	Radiated Emissions	30 MHz - 230 MHz / 230MHz - 1GHz, Class A, Group 1	40/47 dbuVm @ 10 m	complied
IEC 61000-4-5	Surge Immunity, Power Leads	1 Kv, differential 1ppm, pos/neg	no degradation of performance	complied

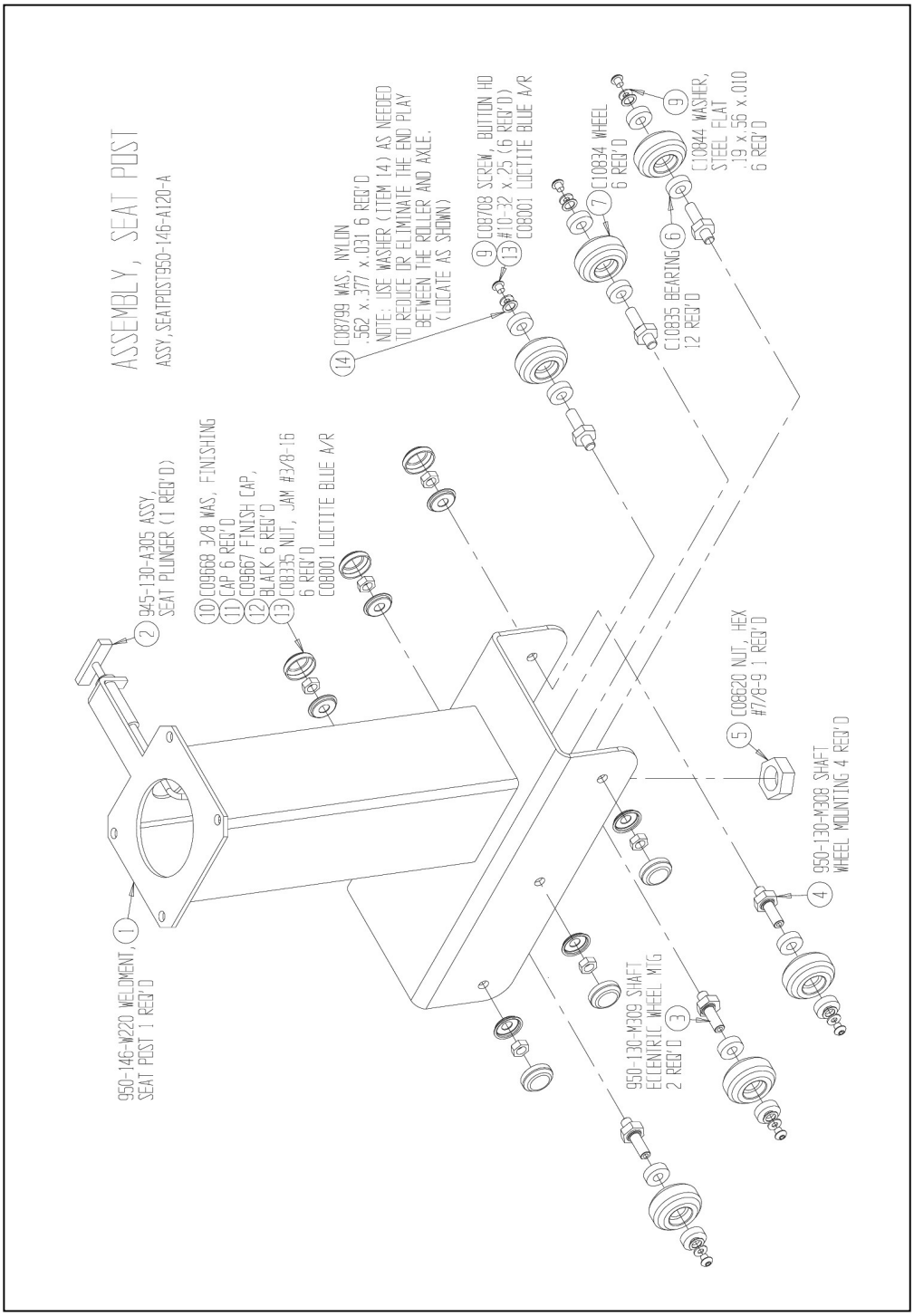
12. Replacement




ASSEMBLY, PIVOT HEAD
ASSY,PIVOTHEAD950-146-A140-A

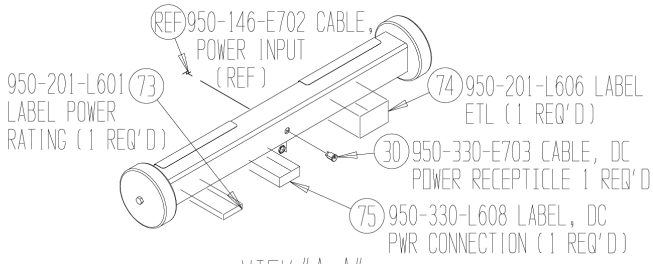

ASSEMBLY, PIVOT HEAD
ASSY,PIVOTHEAD950-146-A140-A
950-146-E703 CABLE, RF EXTENDER ASSY W/RF RECEIVER REF (11)
950-146-W170 DISPLAY MOUNTING PANEL WELDMENT 1 REQ'D (42)
C10326 SCREW PHP 10-32 x.50 SST 4 REQ'D (43)
C10260 HOLE PLUG HEYCO #2723 1 REQ'D (51)
C08049 SCR SOC HEAD 1/4-20 x .75 4 REQ'D (15)
C09272 HEX NUT KEPS 1/4-20 4 REQ'D (16)
C08202 FLAT WASHER 1/4" 7 REQ'D (17)
C8177 BUTTON HD SCR 1/4-20 x 2.50 1 REQ'D (69)
C11183 ACORN NUT SST 1/4-20 1 REQ'D (70)
C09623 WASHER FLAT NYLON .687 OD x.06 THK 2 REQ'D (71)
C08047, LOCK WASHER 1/4" 1 REQ'D REF (18)
950-146-E701 CABLE, UBC DATA POWER 1 REQ'D (48)
950-146-A700 UBC DISPLAY ASSEMBLY 1 REQ'D (74)
OR
950-147-A700 JAPAN UBC DISPLAY ASSEMBLY 1 REQ'D
C09623 WASHER, NYLON .687 OD x .06 THK REF (71)
950-146-E702 POWER INPUT CABLE REF
950-146-E701 UBC DATA POWER CABLE REF
950-230-E705 BOARD, LOWER CONTROL 1 REQ'D (22)
C12144 SCR PAN HD #10-32 x 3/8 SEMS 5 REQ'D (23)
950-146-M300 BRACKET, LCB MOUNTING 1 REQ'D (24)
ORIENT THE COIL ON THE RF PULSE ASSY AND LOCATE THE BOARD AT THE END OF THE COVER MOUNTING BRACKET AS SHOWN
C08369 TIE WRAP 6 REQ'D (63)
C08419 TIE WRAP 6 REQ'D (64)
C12835 BATTERY 1 REQ'D (28)
950-146-E702 CABLE POWER INPUT 1 REQ'D (29)
950-136-M300 BATTERY MTG BRACKET 1 REQ'D (25)
C12144 SCR PAN HD 10-32 x 3/8 2 REQ'D REF (23)
950-146-E703 CABLE, RF EXTENDER (11)
ASSY W/RF RECEIVER 1 REQ'D (14)
C8209 FOAM TAPE 1" LG 1 REQ'D
950-215-E705 BRAKE, GEN/EDDIE CURRENT W/O CLUTCH, MULTI-V 1 REQ'D (2)
C11646 SET SCREW #10-24 x .125 1 REQ'D (58)
950-136-M330 MULTI-V PULLEY (3)
(JBJ) HRDWR SUPPLIED W/BRAKE (8)
1 REQ'D
C08702 LOCTITE GREEN A/R
950-201-E700 CABLE GENERATOR (53)
POWER 1 REQ'D (54)
950-136-E702 CABLE EDDIE CURRENT BRAKE 1 REQ'D


950-164-E700 FITLINXX
ASSY CABLE (RoHS)
EXTERNAL (REF)
950-136-A700 STANDARD
-or-
950-137-A700 JAPANESE
(DISPLAY ASSY REF)
950-146-E703 (REF)
RF EXTENDER CABLE
ASSY W/RF RECEIVER
RF
RECEIVER
(REF)
TEMP SENSOR
950-146-E701 (REF)
DATA/POWER CABLE
950-230-E705
LCB PCB (REF)
950-201-E700 (REF)
GENERATOR POWER CABLE
950-215-E705
LG INERTIA
EDDIE CURRENT
BRAKE GENERATOR
950-136-E702 (REF)
EDDIE CURRENT BRAKE CABLE
950-330-E703 (REF)
BAL/PS PLATFORM
POWER CABLE
C12835 (REF)
BATTERY
950-146-E702 (REF)
POWER INPUT CABLE
WALL
AC
12V
NOTE: THIS DRAWING IS USED FOR THE FOLLOWING ASSEMBLIES
1) 950-146-A140: STANDARD OR CLINICAL PRO PIVOT HEAD ASSY
2) 950-147-A140: JAPANESE UBC PIVOT HEAD ASSEMBLY


ASSEMBLY, SEAT POST
ASSY,SEATPOST950-146-A120-A
950-146-W220 WELDMENT, SEAT POST 1 REQ'D
945-130-A305 ASSY, SEAT PLUNGER (1 REQ'D)
C09668 3/8 WAS, FINISHING CAP 6 REQ'D
C09667 FINISH CAP, BLACK 6 REQ'D
C08335 NUT, JAM #3/8-16 6 REQ'D
C08001 LOCTITE BLUE A/R
C08799 WAS, NYLON .562 x .377 x .031 6 REQ'D
NOTE: USE WASHER (ITEM 14) AS NEEDED TO REDUCE OR ELIMINATE THE END PLAY BETWEEN THE ROLLER AND AXLE. (LOCATE AS SHOWN)
C08708 SCREW, BUTTON HD #10-32 x .25 (6 REQ'D)
C08001 LOCTITE BLUE A/R
C10834 WHEEL 6 REQ'D
C10844 WASHER, STEEL FLAT .19 x .56 x .010 6 REQ'D
C10835 BEARING 12 REQ'D
C08620 NUT, HEX #7/8-9 1 REQ'D
950-130-W308 SHAFT WHEEL MOUNTING 4 REQ'D
950-130-W309 SHAFT ECCENTRIC WHEEL MTG 2 REQ'D

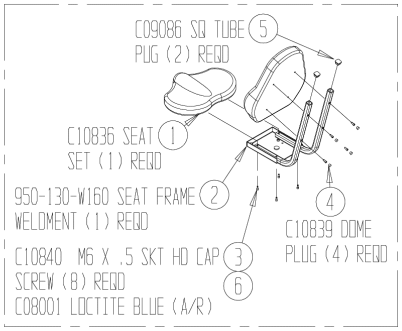
UBC ASSEMBLY

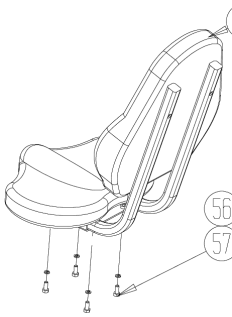
UBCASSY950-146-A000-A



VIEW "A-A"

950-130-A130 STANDARD SEAT ASSEMBLY



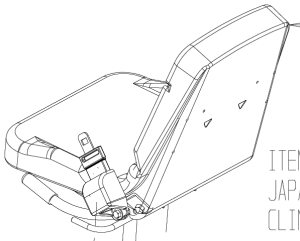


(55) 950-130-A130 STABDARD SEAT ASSEMBLY, 1 REQD

ITEM 55 IS USED ON 950-146-A000 STANDARD UNITS ONLY

(56) C08436 SCREW HEX HD
(57) 5/16-18 x .75, 4 REQD
C08043 WASHER LOCK 5/16, 4 REQD

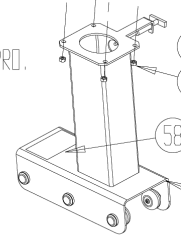
OR



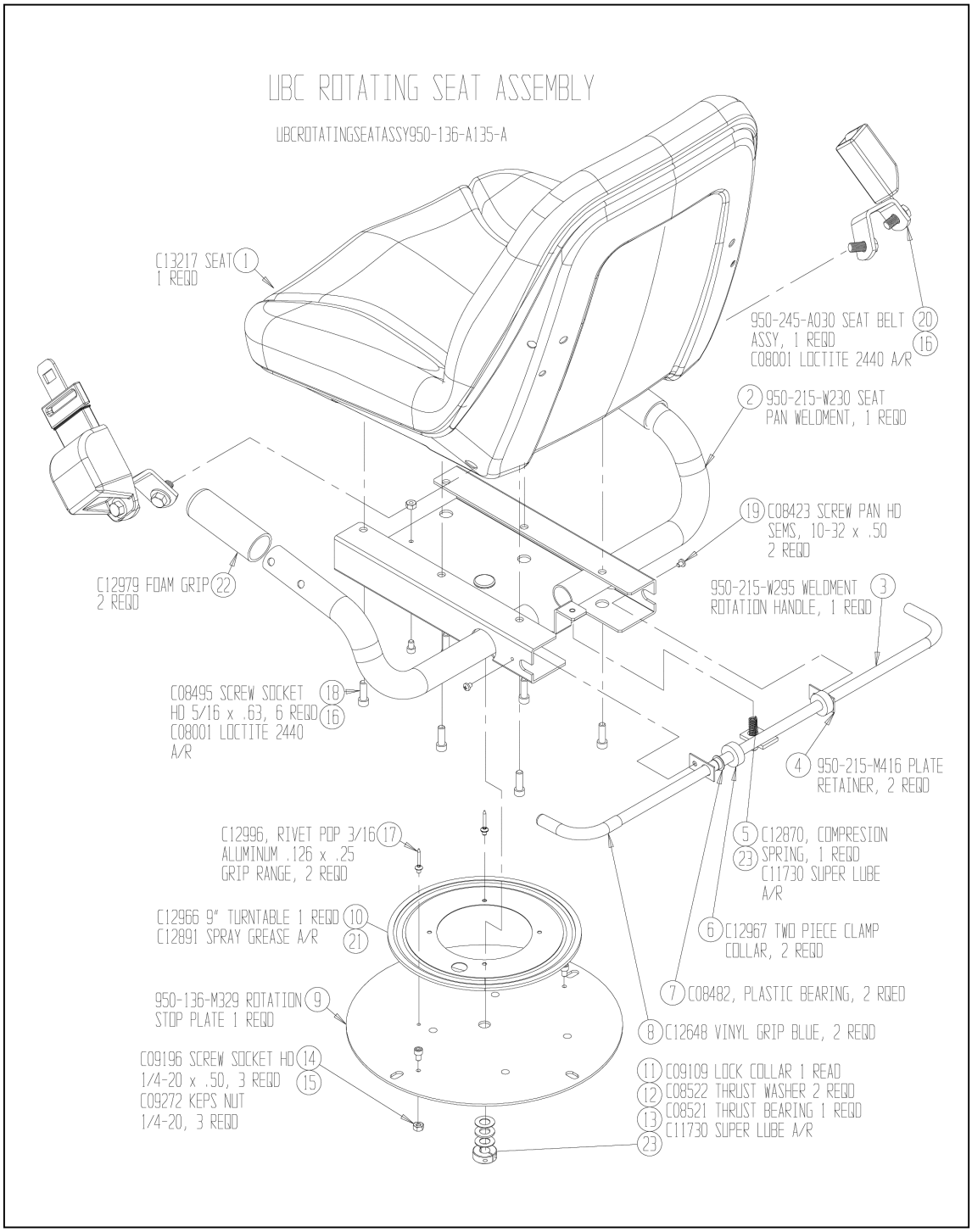
(5) 950-136-A135 UBC ROTATING SEAT ASSY 1 REQD, USED ON CLINICAL PRO ONLY

ITEM 5 IS USED ON 950-147-A000 JAPANESE CLINICAL PRO AND 950-148-A000 CLINICAL PRO UNITS ONLY

NOTES:
1. P/N 950-146-A000 IS USED FOR THE STANDARD UBC
2. P/N 950-147-A000 IS USED FOR THE JAPANESE CLINICAL PRO.
2. P/N 950-148-A000 IS USED FOR THE CLINICAL PRO UBC.



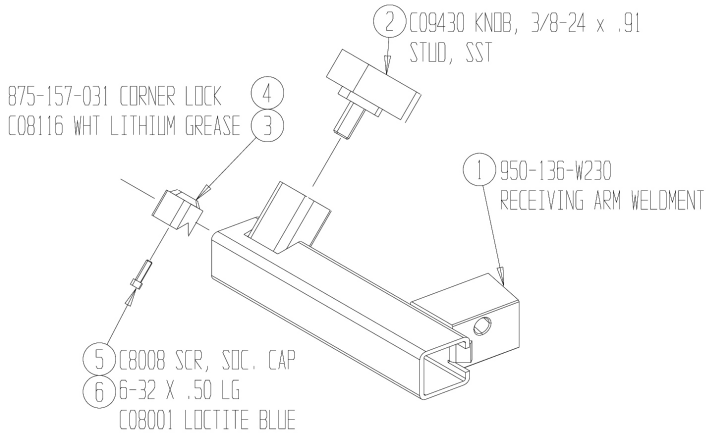
(36) C12400 HEX NUT 5/16-18 4 REQD
(57) C08043 WASHER LOCK 5/16 4 REQD
(58) 950-120-L605 LABEL CAUTION SEAT, 1 REQD
(4) 950-146-A120 SEAT POST ASSY 1 REQD


UBC ROTATING SEAT ASSEMBLY
UBCROTATINGSEATASSY950-136-A135-A
C13217 SEAT 1
1 REQD
950-245-A030 SEAT BELT ASSY, 1 REQD 20 16
C08001 LOCTITE 2440 A/R
2 950-215-W230 SEAT PAN WELDMENT, 1 REQD
19 C08423 SCREW PAN HD SEMS, 10-32 x .50
2 REQD
C12979 FOAM GRIP 22
2 REQD
950-215-W295 WELDMENT 3
ROTATION HANDLE, 1 REQD
C08495 SCREW SOCKET 18
HD 5/16 x .63, 6 REQD 16
C08001 LOCTITE 2440
A/R
4 950-215-M416 PLATE RETAINER, 2 REQD
C12996, RIVET POP 3/16 17
ALUMINUM ..126 x .25
GRIP RANGE, 2 REQD
5 C12870, COMPRESION
23 SPRING, 1 REQD
C11730 SUPER LUBE
A/R
C12966 9" TURNTABLE 1 REQD 10
C12891 SPRAY GREASE A/R 21
6 C12967 TWO PIECE CLAMP COLLAR, 2 REQD
7 C08482, PLASTIC BEARING, 2 REQD
950-136-M329 ROTATION 9
STOP PLATE 1 REQD
8 C12648 VINYL GRIP BLUE, 2 REQD
C09196 SCREW SOCKET HD 14
1/4-20 x .50, 3 REQD 15
C09272 KEPS NUT
1/4-20, 3 REQD
11 C09109 LOCK COLLAR 1 READ
12 C08522 THRUST WASHER 2 REQD
13 C08521 THRUST BEARING 1 REQD
23 C11730 SUPER LUBE A/R

CRANK & RECEIVING ARM ASS'Y

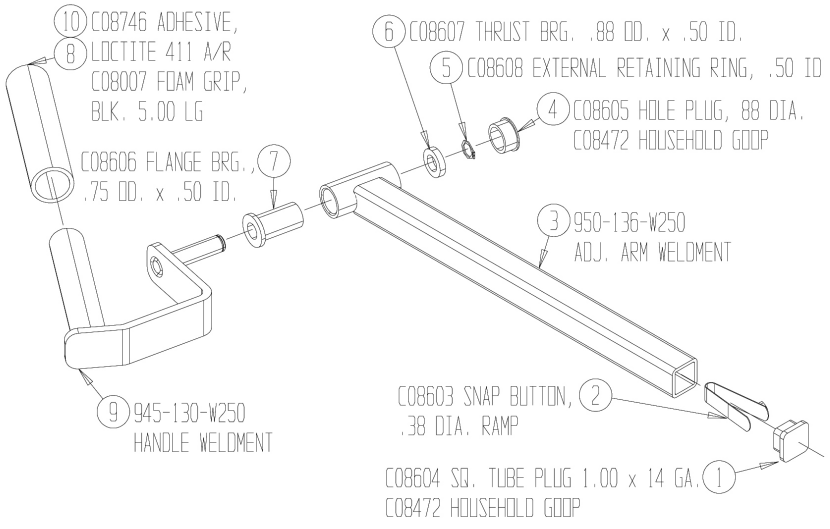
CRANK&RECARMASSY'S950-146-A240-A

RECEIVING ARM ASSY



CRANK ARM ASSY

CRANKARMASSY950-136-A230-B



Quick Reference Parts List

1.	Standard Seat	950-130-A130
2.	Rotating Seat	950-136-A135
3.	Chain	C12930
	a. Master Link	C08360
	b. Lubricant	C11730
4.	Belt Multi-V Brake	C13235
5.	Belt Multi-V Reverse	C12838
6.	Display Switch Panel	950-146-E103
7.	UBC Display	950-146-A700
8.	UBC Display Japanese	950-147-A700
9.	Lower Control Brd.	950-230-E705
10.	Battery	C12835
11.	Power Adapter AC to DC	C13163
12.	Seat Plunger Assy	945-130-A305