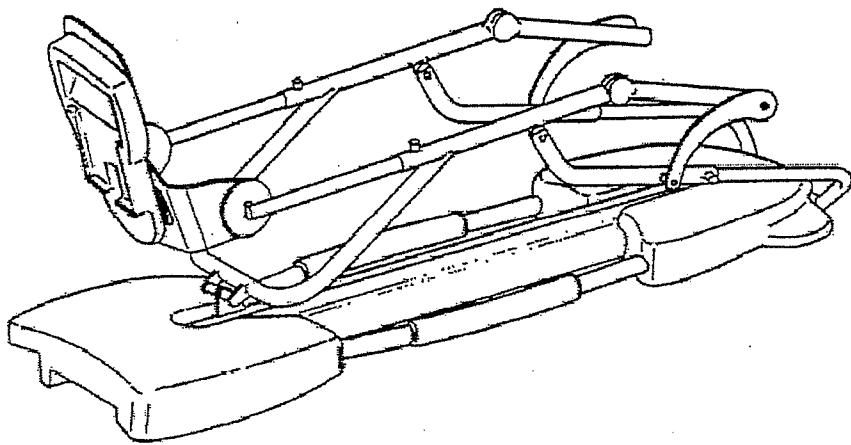


Servicing Manual



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Spectra S1

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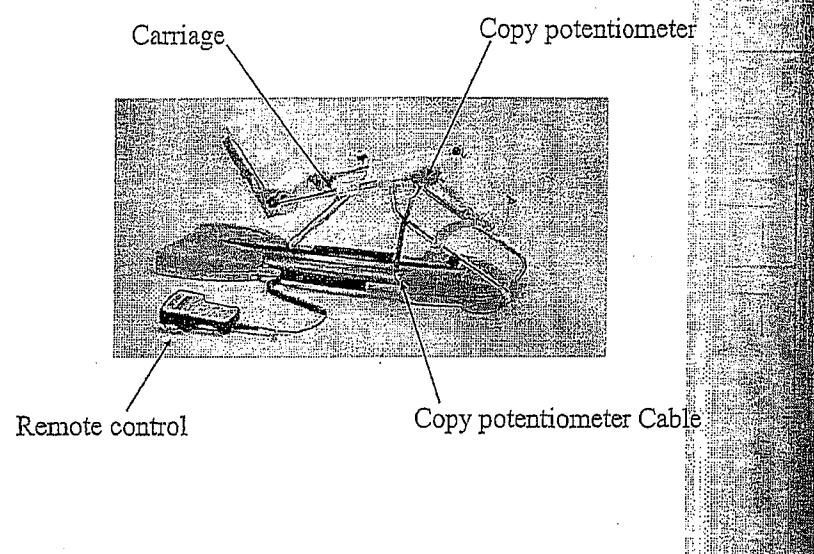
RETURNING THE UNIT TO OUR WORKSHOPS

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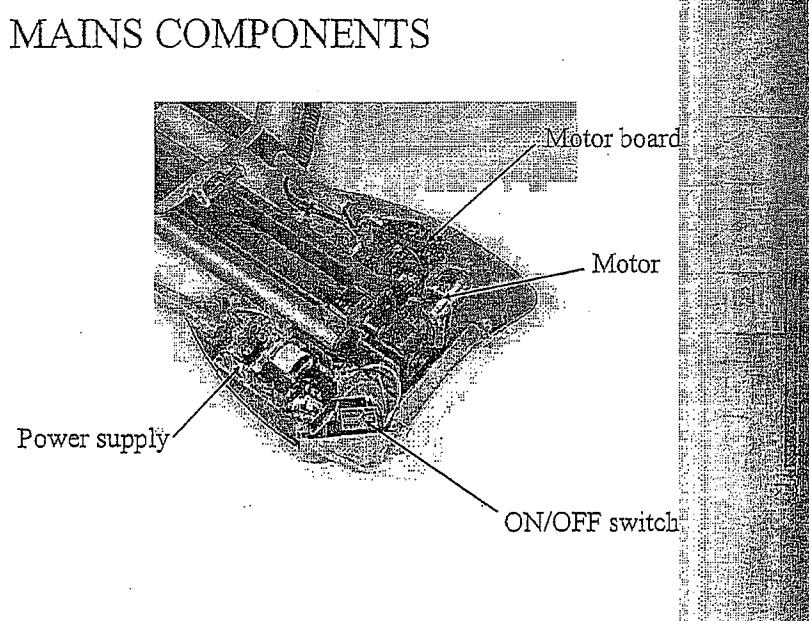
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MAINS COMPONENTS



MAINS COMPONENTS



DIFFERENT MESSAGES ON SPECTRA

Message "M1: SERVICE D1" is displayed

Failure of angle measurement function

- check the continuity of the spiral copy potentiometer cable
- check if a wire of the copy potentiometer is broken or not welded
- check if there is no short circuit between the connector and the fixation on the base
- change the copy potentiometer

Message "M1: SERVICE D2" is displayed

Motor is supplied but there is no movement

- check if the locking knob of the sliding upper leg support is tight
- if the problem appears during MODULATION Mode and when the unit is in upper or lower limits, redo the adjustment of the unit (see method "MET09041" for more details)
- change the motor and the gearbox
- change the copy potentiometer

Message "M1: SERVICE D3" is displayed

Short circuit or abnormal consumption of the motor

- run the motor without load with an external power supply at 10 Volts
- check the motor consumption after 2 minutes
- if the current is greater than 500 mA, change the motor and the gearbox
- else, redo the calibration of the motor (see method "MET09041" for more details)
- if the problem persists, change the motor and the gearbox

Message "M1: SERVICE D4" is displayed

Motor is supplied but it doesn't run

- check if a wire of the motor is broken or not welded
- check TTL level of GO line on the hand control connector (4.5V to 5V DC): change the spiral cable for hand control
- check TTL level of GO line on the junction cable (4.5V to 5V DC): change junction cable
- check 12V on the connector of the motor PCB in RUN mode: change the motor PCB
- motor carbons are blocked (the manufacturing process has changed after the unit n°210; now, date code on the motor and the gearbox are higher to 12.03 and part number of the motor is 30GT 2R 83 instead of 82): change the motor and the gearbox

Note: messages "SERVICE D1 to D4" are efficient only with the following software release

hand control → 1.2, 2.0 or greater

motor PCB → MOT31G, MOT100, MOT101 or greater.

Message "CHECK MOTOR CARD VERSION" appears after auto diagnostic

- check the jumps on the motor PCB.
- during the auto diagnostic, check if the release number of the software is SPECTRA
- redo the welds of the jumps (see "Electric wiring diagram" for more details)

Message "SELECT A VALID MOVEMENT" is displayed

Junction cable is unplugged

- plug the junction cable

Check the continuity of the communication line

- change the junction cable
- change the spiral cable for hand control

DIFFERENT MESSAGES ON SPECTRA

- change the fuse of the motor PCB
- change the motor PCB

Message "CONNECTION DEFECT" appears in RUN mode

- Junction cable is unplugged
 - plug the junction cable
- Check the continuity of the communication line
 - change the fuse of the motor PCB
 - change the junction cable
 - change the spiral cable for hand control
 - change the motor PCB

Message "DEFECT ANGULAR POSI." is displayed

- Parameters of the EEPROM are lost (until unit n°336)
 - the power-supply monitor is welded in a bad way, weld the component as figure 1 and redo the calibration
- Check the connection of the spiral cable on the copy potentiometer
 - repair the connection
- The spiral copy potentiometer cable is unplugged of the motor PCB
 - plug the spiral copy potentiometer cable on the motor PCB
- Check the continuity of the spiral copy potentiometer cable
 - change the spiral copy potentiometer cable

Message "MOTOR CARD BAD" or "SELECT A VALID MOVEMENT" after switching on

Switch OFF and wait 5 seconds

Switch ON

If the message is disappeared (until unit n°336)

- the power supply monitor is welded in a bad way, weld the component as figure 1 and redo the calibration

Else

- go to step "Message "SELECT A VALID MOVEMENT" is displayed"

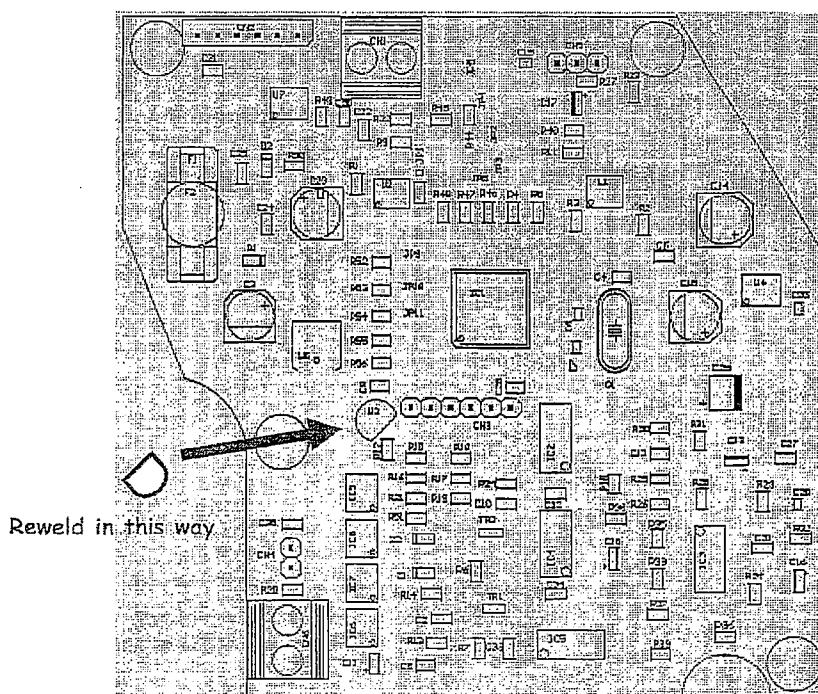


Figure 1

DIFFERENT MESSAGES ON SPECTRA

Message "LOAD MAXI" is displayed

Abnormal consumption of the motor

→ go to step "Message "M1: SERVICE D3" is displayed"

Message "SERVICE TIME M1" is displayed

After 2000 operating hours, the KINETEC SPECTRA requires a preventive maintenance. This is indicated by the message "SERVICE TIME M1" when the unit is switched on.

→ check all the points written on the "AFTER SALES CHECK LIST" sheet.

DIFFERENT FAILURE SITUATIONS ON SPECTRA

The machine doesn't recognize the connected motor during the auto diagnostic

Junction cable is unplugged

→ plug the junction cable

Check the continuity of the communication line

→ change the junction cable

→ change the fuse of the motor PCB

→ change the spiral cable for hand control

→ change the motor PCB

Nothing on the display of the hand control

The product is unplugged

→ plug the product in a wall-socket

The product is switched off

→ switch on the product

The hand control is unplugged

→ plug the hand control

Check AC voltage of the wall-socket (90 to 240 V AC)

→ plug in an other wall-socket

Check input AC voltage on the power supply PCB (90 to 240 V AC)

→ change primary fuses

→ change the power supply PCB

→ change the junction cable (between power entry module and power supply)

Check output DC voltage on the power supply PCB (12V ±0.5 DC)

→ change the power supply fuse

→ change the power supply PCB

Check input DC voltage on the motor PCB (12V ±0.5 DC)

→ change the junction cable (between power supply and motor PCB)

Check V+ on the connector panel of the hand control (12V ±0.5 DC)

→ change the junction cable (between motor PCB and connector panel of the hand control)

Check V+ on the hand control connector (12V ±0.5 DC)

→ change the spiral cable for hand control

→ change the display

→ change the hand control

Bad messages on the display of the hand control

Switch OFF/ON

Check the release number of the software during the auto diagnostic

If release number is 1.1 or lower

→ download the latest release (v.2.0)

Else

→ do a "Standard values" or a "Config Usine" (see method "MET09041" for more details)

Check the proximity of the ribbon cable with pins of LCD

→ cut the pins of the LCD and add silicone or insulating part between the pins and the ribbon cable (see Figures 2 and 3)

→ change the hand control

DIFFERENT FAILURE SITUATIONS ON SPECTRA

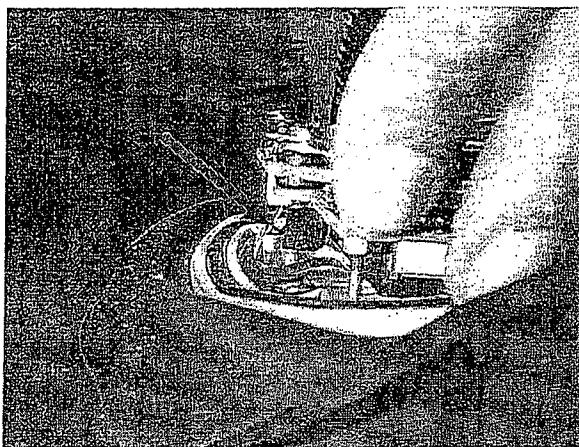


Figure 2

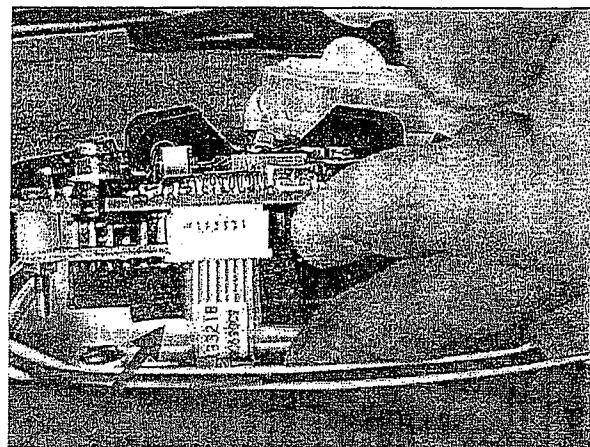


Figure 3

Incomplete messages on the display or first line squares dark

- change the display
- change the hand control

Motor doesn't work and RUN is displayed on the LCD

See step "Message "M1: SERVICE D4" is displayed"

One or more keys of the keypad are not working

- The ribbon cable is unplugged
 - plug the ribbon cable
- The ribbon cable is broken
 - change the keypad
- Change the hand control

The movement reverses before the limits

- Check if the angle value changes continuously
 - change the copy potentiometer
- See step "Message "M1: SERVICE D3" is displayed"

The movement doesn't reverse with the high load (*see method "MET09041" for more details*)

- Check the values with a dynamometer
 - redo the calibration of the motor
 - change the motor and the gearbox
 - change the motor PCB

The CPM is noisy

- Ball screw is noisy
 - grease the ball screw every 1000 hours
 - readjust the ball screw with the motor
 - change the ball screw
- Mechanical articulations are noisy
 - grease mechanical articulations

Offset between mechanical angle and displayed value (*see method "MET09041" for more details*)

- redo the adjustment of the unit (*see method "MET09041" for more details*)

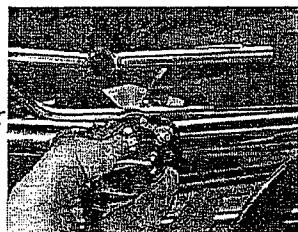
4-2 REGLAGE PAR VOLTMETRE

I) Liste du matériel nécessaire

- 1 voltmètre
- 1 règle ou goniomètre

II) Réglage de l'attelle SPECTRA

- Mettre un voltmètre sur le cordon du potentiomètre au niveau de la carte moteur entre le fil noir et le fil blanc.
- Mettre l'attelle sous tension.
- Régler le crural à 45cm (position grand fémur).
- Desserrer les boutons du crural pour venir en butée mécanique.
- Régler le potentiomètre au niveau de l'articulation; le voltmètre doit indiquer 675mV.
- Resserrer les boutons du crural (butée mécanique).
- Appuyer sur START et arrêter l'attelle lorsque celle-ci est à environ 70°.
- Régler le crural à 32cm (position petit fémur).
- Appuyer sur le bouton START de la poignée pour faire avancer l'attelle à 5mm de la butée (voir photo).



4-2 ADJUSTMENT WITH A VOLTMETER

I) Material needed list

- 1 voltmeter
- 1 angular tool or a goniometer

II) SPECTRA unit adjustment

- Put a voltmeter between the black wire and the white wire on the potentiometer cable (near the motor card).

- Power on the unit.
- Adjust the sliding upper leg support to 45cm (large femur adjustment).

- Unscrew the locking knob of the sliding upper leg support to be in mechanical thrust.

- Adjust the copy potentiometer. You must read 675mV on the voltmeter.
- Tight the locking knob of the sliding upper leg support.

- Press START and stop the unit near 70°.

- Adjust the sliding upper leg support to 32cm (small femur adjustment).

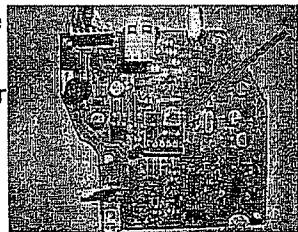
- Press START to run the unit to 5mm close to the thrust (see picture).

Il existe 2 cas possibles

There are 2 possibilities

Premier cas L'attelle est en butée

- Appuyer sur START et arrêter l'attelle à 5mm de la butée.
- Régler le potentiomètre multitour pour afficher 120° sur l'afficheur de la poignée (voir photos).



→ Passer à l'étape suivant le deuxième cas.

First case The unit has joint the thrust

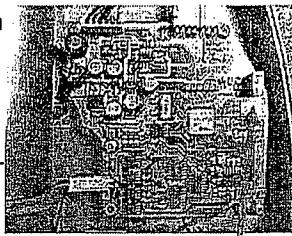
- Press START and stop the unit at 5mm from the thrust.
- Adjust the square multiturn trimmer to read 120° on the LCD (see pictures).

→ Go to the step following the second case.

Deuxième cas

L'afficheur indique 120° et l'attelle n'est pas à 5mm de la butée

- Régler le potentiomètre multitour a un degré d'angle plus faible que 120°.
- Appuyer sur START et arrêter l'attelle à 5mm de la butée.
- Régler le potentiomètre multitour pour afficher 120° sur l'afficheur de la poignée (voir photos).

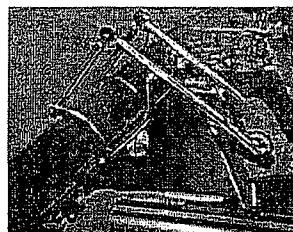


Second case

You read 120° on the LCD and the unit has not joint 5mm from the thrust

- Adjust the square multturn trimmer to a measurement smaller than 120°.
- Press START and stop the unit at 5mm from the thrust.
- Adjust the square multturn trimmer to read 120° on the LCD (see pictures).

- Une fois le réglage du potentiomètre multitour effectué, appuyer sur START et arrêter l'attelle à environ 70°.



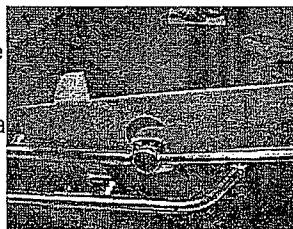
- When the square multturn trimmer is adjusted, press START and stop the unit near 70°.

- Régler le crural à 45cm (position grand fémur).
- Appuyer sur START et arrêter l'attelle lorsque l'afficheur indique -10°.



- Adjust the sliding upper leg support to 45cm (large femur adjustment).
- Press START and stop the unit when you read -10° on the LCD.

- Vérifier (avec une règle ou un goniomètre) que le -10° de la poignée correspond au -7° mécanique.
- Si ce n'est pas le cas recommencer la procédure de réglage.
- Le réglage est terminé.

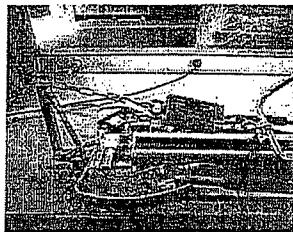


- Check (with a tooling or a goniometer) that when you read -10° on the LCD you are at -7° mechanical.
- If it is not, restart the adjustment procedure.
- Adjustment is finished.

4-3 RÉGLAGE DES LOADS / LOAD ADJUSTMENT

Régler la machine à chaud avec les forces suivantes

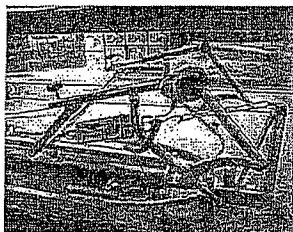
Flexion maxi = 40 ± 5 daN



Adjust the unit after running several minutes with following load

Maxi Flexion = 40 ± 5 daN

Extension maxi = 35 ± 5 daN



Maxi Extension = 35 ± 5 daN

Ces valeurs sont réglées par paramètres dans la poignée.

Pour accéder au mode PARAMETRES:

1. Appuyer simultanément sur: Limit ↓, Limit ↑ et -
2. Code: Limit ↓, Limit ↑, - and +
3. Confirmation: +, -, Limit ↑ and Limit ↓

ATTENTION, vous avez la possibilité d'accéder aux options « LOAD MVT Lo », « LOAD MVT Hi » et « LOAD MOTEUR 1 ».

EN AUCUN CAS, vous ne devez modifier les valeurs du « LOAD MVT 1 et 2 » lors du réglage du load en Flexion.

Réglage de « Flexion maxi » :

- Sélectionner (à l'aide des touches + ou -) le menu « LOAD MOTEUR 1 », valider par la touche Limit ↑ pour accéder au réglage.
- La force de l'attelle est réglable en ajustant le paramètre « % COMPENSATION LEVEL: XXX » par les touches + ou -.
- Ne pas oublier de valider par la touche Limit ↑.

These values are adjusted by parameters in the hand controller.

To access to the PARAMETERS's mode:

1. Press simultaneously on: Limit ↓, Limit ↑ and -
2. Code: Limit ↓, Limit ↑, - and +
3. Confirmation: +, -, Limit ↑ and Limit ↓

BE CAREFUL, you can modify "LOAD MVT Lo", "LOAD MVT Hi" and "LOAD MOTEUR 1".

NEVER, you have to change "LOAD MVT 1 and 2" during adjustment in Flexion.

Adjustment of "maxi Flexion":

- Select (with keys + or -) the menu "LOAD MOTEUR 1", valid by Limit ↑ to access to the adjustment.
- The unit's force is adjusted by parameter "% COMPENSATION LEVEL: XXX" by keys + or -.
- Don't forget to valid by Limit ↑.

Réglage de « Extension maxi » :

- Sélectionner (à l'aide des touches + ou -) les menus « LOAD MVT1 Lo » et « LOAD MVT2 Lo », valider par la touche Limit ↑ pour accéder au réglage.
- La force de l'attelle est réglable en ajustant le paramètre « % COMPENSATION LEVEL: XXX » par les touches + ou -.
- Ne pas oublier de valider par la touche Limit ↑.

ATTENTION : les paramètres « LOAD MVT1 Lo » et « LOAD MVT2 Lo » doivent être identiques.

Adjustment of "maxi Extension" :

- Select (with keys + or -) the menus "LOAD MVT1 Lo" and "LOAD MVT2 Lo", valid by Limit ↑ to access to the adjustment.
- The unit's force is adjusted by parameter "% COMPENSATION LEVEL: XXX" by keys + or -.
- Don't forget to valid by Limit ↑.

WARNING: parameters "LOAD MVT1 Lo" and "LOAD MVT2 Lo" must be identical.

ATTENTION : après toute intervention sur l'attelle, réinitialiser les paramètres en faisant un « standard value » :

- Faire OFF/ON
- A l'apparition du message SPECTRA, appuyer simultanément sur Limit ↑ et Limit ↓.

WARNING: after all intervention on the CPM, reinitialize the parameters with a "standard value":

- Switch OFF/ON
- When the message SPECTRA is displayed, press simultaneously Limit ↑ and Limit ↓.

Stéphane L'ETANG

Sandrine THOME

José ANDRY

SPECTRA - Procedure to change the motor PCB

I) Liste du matériel nécessaire

- 1 voltmètre
- 1 règle ou goniomètre
- 1 fer à souder
- 1 pince coupante

II) Remplacement avec une carte fabriquée entre Avril 2003 et Novembre 2004

Attention : le câblage entre l'alimentation et la carte moteur a changé en Avril 2003. Vérifier le câblage selon les photos ci-dessous et le modifier si nécessaire.

ATTENTION : avant toute manipulation, mettre l'attelle hors tension

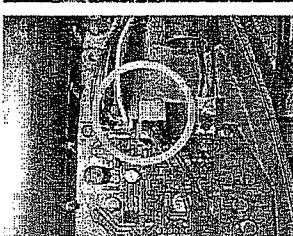
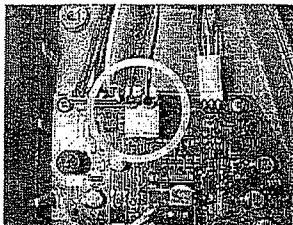
Vérifier que le fil rouge est à gauche et le fil noir à droite quelle que soit la position du connecteur.

I) Material needed list

- 1 voltmeter
- 1 angular tool or a goniometer
- 1 soldering iron
- 1 cutting pliers

II) Change with a motor PCB manufactured between April 2003 and November 2004

Warning: the connection wiring between the power supply and the motor card has changed in April 2003. Check the wiring following the pictures below and change the connection wiring if necessary.



WARNING: before any manipulation, switch OFF the unit.

Following these pictures check that the red wire is on the left and the black wire on the right whatever the connector position.

III) Remplacement avec une carte fabriquée après Novembre 2004

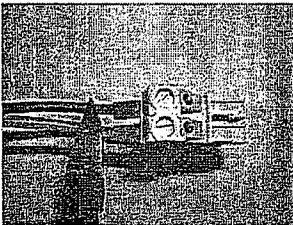
Attention : le connecteur d'alimentation de la carte moteur a changé en Novembre 2004 (à partir de l'attelle n°2757). Utiliser le kit de connexion Nouveau Modèle réf. 4670021581.

ATTENTION : avant toute manipulation, mettre l'attelle hors tension

- Couper le faisceau d'alimentation 5 mm avant le connecteur
- Dénuder les 2 fils sur 5 mm.
- Etamer les 2 fils.

III) Change with a motor PCB manufactured after November 2004

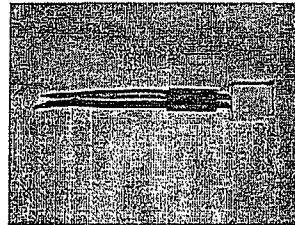
Warning: the power supply connector on the motor PCB has changed in November 2004 (since the unit n°2757). Use the connection kit New Model ref. 4670021581.



WARNING: before any manipulation, switch OFF the unit.

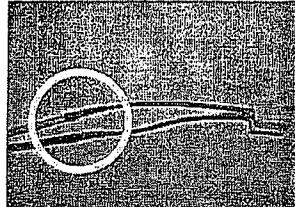
- Cut the power supply wires 5 mm close to the connector
- Bare the 2 wires (5 mm length).
- Tin the 2 wires.

- Utiliser le kit de connexion nouveau modèle ref. 4670021581.



- Use the connection kit new model ref. 4670021581

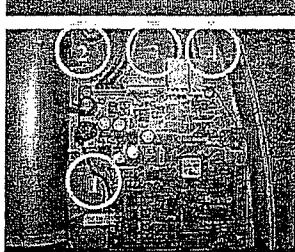
- Souder les fils du faisceau d'alimentation sur les fils du kit de connexion nouveau modèle en respectant les couleurs.
- Chauffer la gaine thermorétractable.



- Weld the power supply wires with the connection kit by respecting the colours.
- Heat the heat-shrinkable sleeve.

- Connecter la carte comme suit :

 1. Moteur
 2. Câble de jonction
 3. Faisceau d'alimentation
 4. Potentiomètre de copie

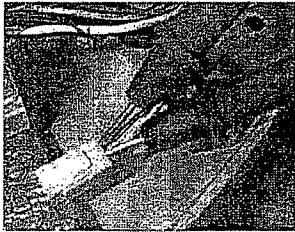


- Connect the PCB same as below :

 1. Motor
 2. Junction cable
 3. Power supply wires
 4. Copy potentiometer

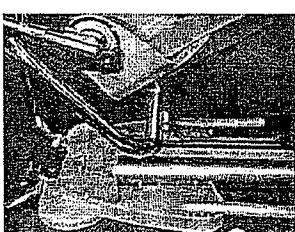
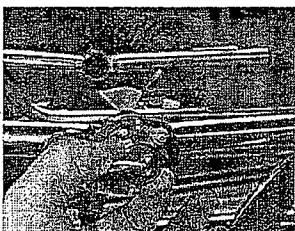
IV) Réglage de l'attelle SPECTRA

- Mettre un voltmètre sur le cordon du potentiomètre au niveau de la carte moteur entre le fil noir et le fil blanc.
- Mettre l'attelle sous tension.
- Régler le crural à 45cm (position grand fémur).
- Desserrer les boutons du crural pour venir en butée mécanique.
- Régler le potentiomètre au niveau de l'articulation; le voltmètre doit indiquer 675mV.
- Resserrer les boutons du crural (butée mécanique).
- Appuyer sur START et arrêter l'attelle lorsque celle-ci est à environ 70°.
- Régler le crural à 32cm (position petit fémur).
- Appuyer sur le bouton START de la poignée pour faire avancer l'attelle à 5mm de la butée (voir photo).



IV) SPECTRA unit adjustment

- Put a voltmeter between the black wire and the white wire on the potentiometer cable (near the motor card).
- Power on the unit.
- Adjust the sliding upper leg support to 45cm (large femur adjustment).
- Unscrew the locking knob of the sliding upper leg support to be in mechanical thrust.
- Adjust the copy potentiometer. You must read 675mV on the voltmeter.
- Tight the locking knob of the sliding upper leg support.
- Press START and stop the unit near 70°.
- Adjust the sliding upper leg support to 32cm (small femur adjustment).
- Press START to run the unit to 5mm close to the thrust (see picture).

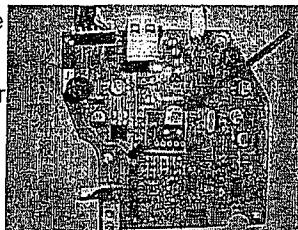


Il existe 2 cas possibles

There are 2 possibilities

Premier cas
L'attelle est en butée

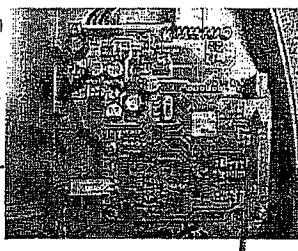
- Appuyer sur START et arrêter l'attelle à 5mm de la butée.
- Régler le potentiomètre multitour pour afficher 120° sur l'afficheur de la poignée (voir photos).



→ Passer à l'étape suivant le deuxième cas.

Deuxième cas
L'afficheur indique 120° et l'attelle n'est pas à 5mm de la butée

- Régler le potentiomètre multitour à un degré d'angle plus faible que 120°.
- Appuyer sur START et arrêter l'attelle à 5mm de la butée.
- Régler le potentiomètre multitour pour afficher 120° sur l'afficheur de la poignée (voir photos).



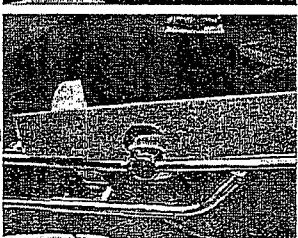
- Une fois le réglage du potentiomètre multitour effectué, appuyer sur START et arrêter l'attelle à environ 70°.



- Régler le crural à 45cm (position grand fémur).
- Appuyer sur START et arrêter l'attelle lorsque l'afficheur indique -10°.



- Vérifier (avec une règle ou un goniomètre) que le -10° de la poignée correspond au -7° mécanique.
- Si ce n'est pas le cas recommencer la procédure de réglage.
- Le réglage est terminé.



First case
The unit has joint the thrust

- Press START and stop the unit at 5mm from the thrust.
- Adjust the square multturn trimmer to read 120° on the LCD (see pictures).

→ Go to the step following the second case.

Second case
You read 120° on the LCD and the unit has not joint 5mm from the thrust

- Adjust the square multturn trimmer to a measurement smaller than 120°.
- Press START and stop the unit at 5mm from the thrust.
- Adjust the square multturn trimmer to read 120° on the LCD (see pictures).

- When the square multturn trimmer is adjusted, press START and stop the unit near 70°.

- Adjust the sliding upper leg support to 45cm (large femur adjustment).
- Press START and stop the unit when you read -10° on the LCD.

- Check (with a tooling or a goniometer) that when you read -10° on the LCD you are at -7° mechanical.
- If it is not, restart the adjustment procedure.
- Adjustment is finished.

DIFFERENT FAILURE SITUATIONS ON SPECTRA
SPARE PARTS TO BE KEPT IN STOCK FOR ABOUT 10 MACHINES

PART NUMBER	DESIGNATION	Nb.
4650001868	Complete set of pads	2
4670015328	Flexible coupling	1
4635008475	Ball screw 16x5mm	1
4610007864	Complete hand control	1
4610007921	Spiral cable of the hand control	1
4610007905	Gear motor	1
4610007939	Motor PCB	1
4670021581	Connection kit for motor PCB New Model	1
4610007971	Junction cable between motor PCB and hand control connector	1
4610007997	Power supply board Mean Well	1
4610008002	Power supply board Astec	
4610004539	Copy potentiometer	1
4610007012	Motor PCB fuse 2A	5
4610007434	Timed fuse 750mA/250V/6.3x32mm	10
4610006626	Power cord VDE 3.5m	1
4610006634	Power cord UL	1
4610007161	Power cord Australia	1
4610007400	Power cord UK	1
4615003122	Keypad 4 keys	2
4615002653	Keypad 11 keys	2

REQUIRED TOOLS

- Stabilized power supply (0-30V DC / 2.5A)
- Amperemeter, ohmmeter, voltmeter
- Allen wrenches
- Pin drift (2.5mm)
- Flat screwdrivers
- Cruciform screwdrivers
- Goniometer (angle adjustment)
- 0 - 60 daN dynamometer (load adjustments)
- Dynamometer attachment tools.
- Silicone: LOCTITE 5900 (black)

- Grease

Ball screw: MOBILUX EP2

Sliding parts on the nut support: MOLYKOTE M55

Rubber strips: MOLYKOTE PG54

Knee articulation points: MOLYKOTE PG75

RETURNING THE UNIT TO OUR WORKSHOPS

Please do not include pads when returning the knee CPM unit to our workshops due to health and safety standards within our company. These pads will be systematically incinerated.

REPAIR INFORMATION

If you want repair information you must have the serial number of the unit.

Vérifier le serrage de la clavette du potentiomètre et le centrage
Check if the copy potentiometer pin is tightened

Vérifier l'articulation crurale
Check the articulation assy

Vérifier le bruit de la vis à bille et du moteur
Check the noise

Vérification électrique / Electrical checking

Vérifier la consommation moteur / check the motor consumption :

Grand Fémur - Charge 10 Kg – Flexion montante entre 30° et 60°- après rodage
1 nuit

Large femur – load 10kg – flexion between 30° and 60° - after running 1 night

Vérifier le courant en vitesse maxi < 700mA

 mA

Check the currant in maximum speed < 700mA

Vérifier toutes les fonctions du clavier
Check all the function of the key board

Vérifier les fusibles 750 m A T

Check the value of the fuse 750m A T

Vérifier la fixation de la carte dans la poignée de commande (vis)

Check the tightening of the screws inside the hand control and put some varnish

Vérifier la tenue de la connectique (carte moteur ; carte alim ; pot)
Check the connection (motor card; power supply; copy potentiometer)

Vérifier load Flexion 40 DaN +/-5
Check the load Extension 35 DaN +/-5

 DaN DaN

Vérifier les segments LCD

Check the well conditioning of the LCD

Réinitialisation des compteurs («standard value» ou «config usine»)

Re-init the counter ("standard value" or "config usine")

Vérifier le test électrique Séquence 16

Check the electrical security

 TICKET

Vérifier le / Checking date :

Nom / Name :

Commentaires / Comments :

SPECTRA S1 QUICK REFERENCE GUIDE



AbilityOne Kinetec S.A.
Zone Industrielle
Rue Albert Deville, TOURNES
F-08014 Charleville-Mézières Cedex
+33 (0)3.24.52.91.21 Office
+33 (0)3.24.52.90.34 Fax

TASK	ACTION	NOTE
LOCK / UNLOCK HAND CONTROL	Simultaneously press the and keys	Hand control is unlocked when unit is switched ON/OFF at black switch
MANUAL SET UP MODE	Switch the CPM ON at black switch Press on hand control to run the machine. To change the <u>EXTENSION</u> limit, press Then use or key to increase or decrease extension ROM To change the <u>FLEXION</u> limit, press Then use or key to increase or decrease extension ROM To change <u>SPEED</u> , press Press or to increase or decrease speed To change <u>FORCE</u> , press Press or to increase or decrease speed To change <u>TIMER</u> , press Press or to increase or decrease speed	CPM will run between the preset ROM settings. The extension value will blink. (Make or changes within 3 seconds) The flexion value will blink. (Make or changes within 3 seconds) Value will blink. To validate new changes, wait 3 seconds.
SESSION TIME 	Press Session Time key to show the running time of the session	Session time is reset each time CPM is switched on at black switch
WARM UP MODE 	Unit must be stopped Press warm up mode key Press start	SPECTRA starts at 70% of full ROM and increases 5% of the range every other cycle until preset ROM is reached.

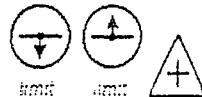
TASK	ACTION	NOTE
MODULATION MODE 	<p>Unit must be stopped </p> <p>Press Modulation mode key </p> <p>Press and hold down  to go into FLEXION until desire angle has been reached, then save degree by pressing .</p> <p>OR</p> <p>Press and hold down  to go into EXTENSION until desire angle has been reached, then save degree by pressing .</p> <p>Press start  to operate CPM with new ROM limits.</p>	Used to ensure CPM ROM is within pain limits.
BY-PASS MODE 	<p>Unit must be running (press start) </p> <p>Press By-Pass mode key </p> <p>Press and hold down  if the machine is going into FLEXION - CPM will bypass preselected flexion range. Save new ROM by pressing .</p> <p>OR</p> <p>Press and hold down  if the machine is going into EXTENSION - CPM will bypass preselected extension range. Save new ROM by pressing .</p>	Used to bypass preset ROM limits.
PROGRAM MODE	<p>Turn machine OFF at black switch</p> <p>Hold down  and  buttons at the same time whilst turning unit on at black switch. Program will appear on the hand control. Release the  and  buttons once program message appears.</p> <p>Select one of the 16 programs by pressing  or </p> <p>SELECT MODE: </p> <p>WARM UP - press  once MANUAL SET UP - press  twice</p> <p>Set ROM, force, pause time and speed as per normal. Then press Program Key once all settings have been made.</p> <p>To save program, press  To clear program, press </p> <p>Turn off machine and turn it on again to access stored programs.</p>	

CALIBRATION PROCEDURE FOR SPECTRA KNEE CPM

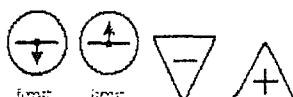
1. Remove rear casing upper cover.
2. Turn power "On" to Spectra, in normal operation mode (not Warm Up Mode), and set parameters, -10 to 120 degrees.
3. Loosen adjustment knobs and set femur length to maximum length.
4. Run unit into extension, split rubber strips. The guide nut should stop at 1/8 inch from hitting thrust bearing on threaded rod.
5. If not then remove two screws on knee pot cover, then loosen, don't remove, three shoulder screws of the potentiometer and turn to adjust (counter clockwise increases the degree of angle). Then tighten the three shoulder screws to secure pot at the appropriate angle(-10 degrees).
6. Press the "Start" button and stop unit at 90 degrees, by pressing the "Stop" button.
7. Loosen the two femur locking knobs and set femur length at shortest femur length, then press "Start".
8. The unit should reach 120 degrees approximately $\frac{1}{8}$ inch from rubber stop on flex end of threaded rod, between the rubber strips. If not then locate the small blue potentiometer on the motor board inside of machine and adjust accordingly (counter clockwise increases degree of angle).
9. Raise the femur length to maximum and run unit into extension, to check proper -10 degree calibration.
10. Run back into flexion and again at 90 degrees, lower the femur to minimum setting and recheck proper flexion setting at 120 degrees.
11. Your Spectra is calibrated!
12. Any Questions, please call 1-800-228-3693. Ask for CPM Repair

2000 HOUR SERVICE METER RESET

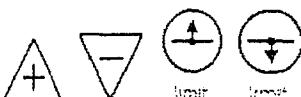
1. Hold Down These Keys Simultaneously:



2. Enter Code:



3. Confirm Code:



4. Scroll To Service Time:



5. Press "Up Limit":



6. To Reset, Press "Down Limit":



7. To Validate, Press "Up Limit":



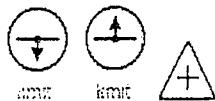
8. To Return To Operation Mode,
Press "Down limit":



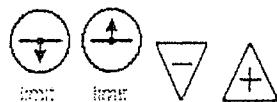
The reset of the 2000 Hour Meter is complete.

TO CHECK "TOTAL TIME" HOUR METER

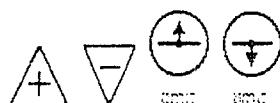
1. Hold Down These Keys Simultaneously...
(To initiate program mode)



2. Enter Code...



3. Confirm Code...



4. Press "Up Limit"...
(Check Total Time)



5. Press "Up Limit" ...
(To out of Total Time)



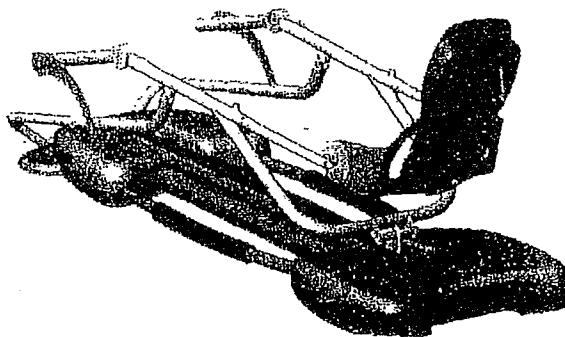
6. PRESS - "DOWN LIMIT"
(To return to Operation Mode)



Total Time hour meter has been accessed. Please do not make modifications to the internal Total Time hour meter.

NOTICE PIECES DE RECHANGE
CATALOGUE OF SPARE PARTS

SPECTRA S1



KINETEC
AbilityOne
AbilityOne Kinetec S.A.

APPAREIL DE MOBILISATION ARTICULAIRE PASSIVE DU GENOU
KNEE CONTINUOUS PASSIVE MOTION DEVICE

Notice N° 467899274 A
Mise à jour le 31/01/03
AbilityOne Kinetec se réserve le droit de toutes modifications techniques.
AbilityOne Kinetec reserves the right to effect technical modifications.

KINETEC

AbilityOne

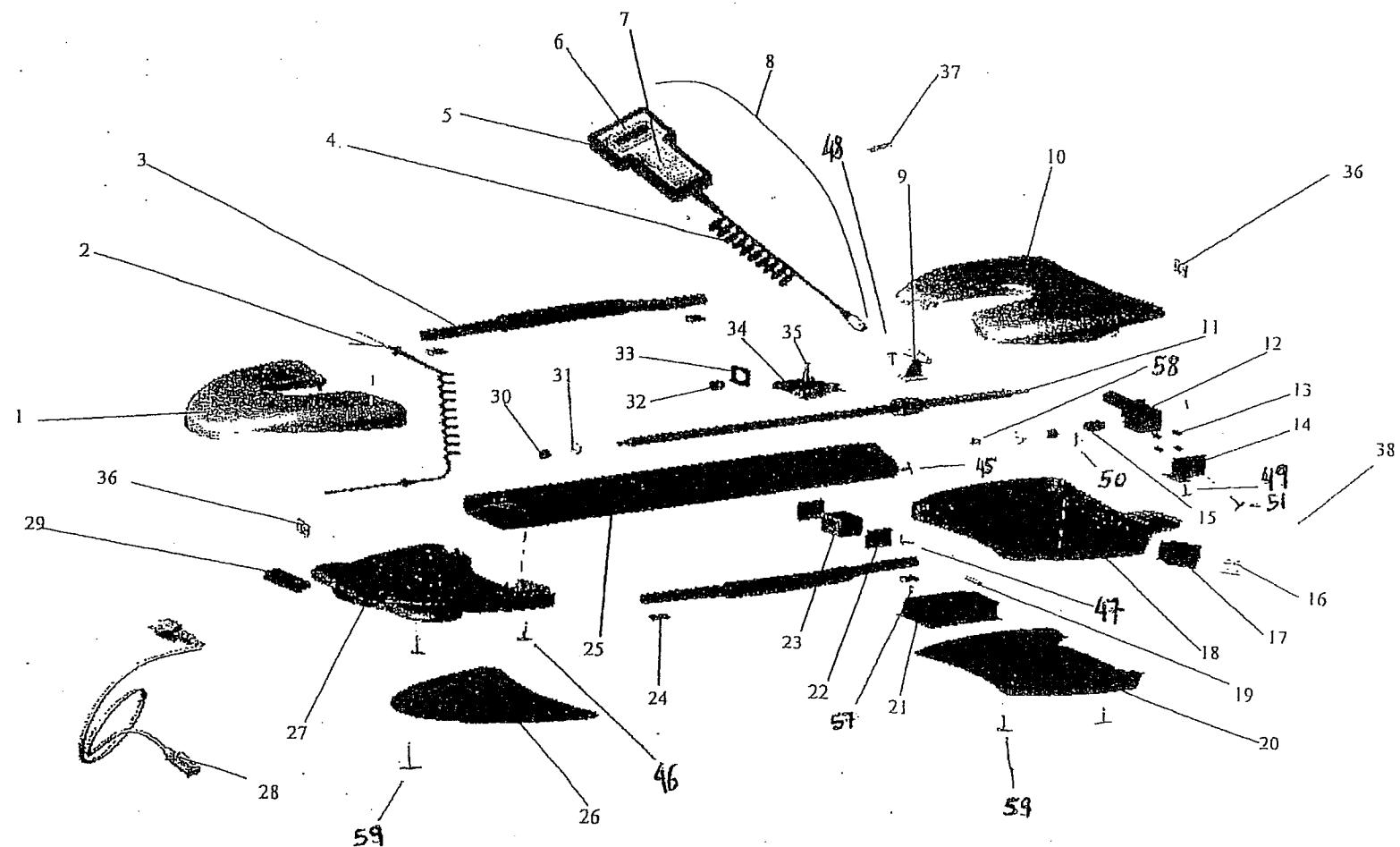
AbilityOne Kinetec S.A.

SPECTRA PARTS

Tournes, November 10. 2003

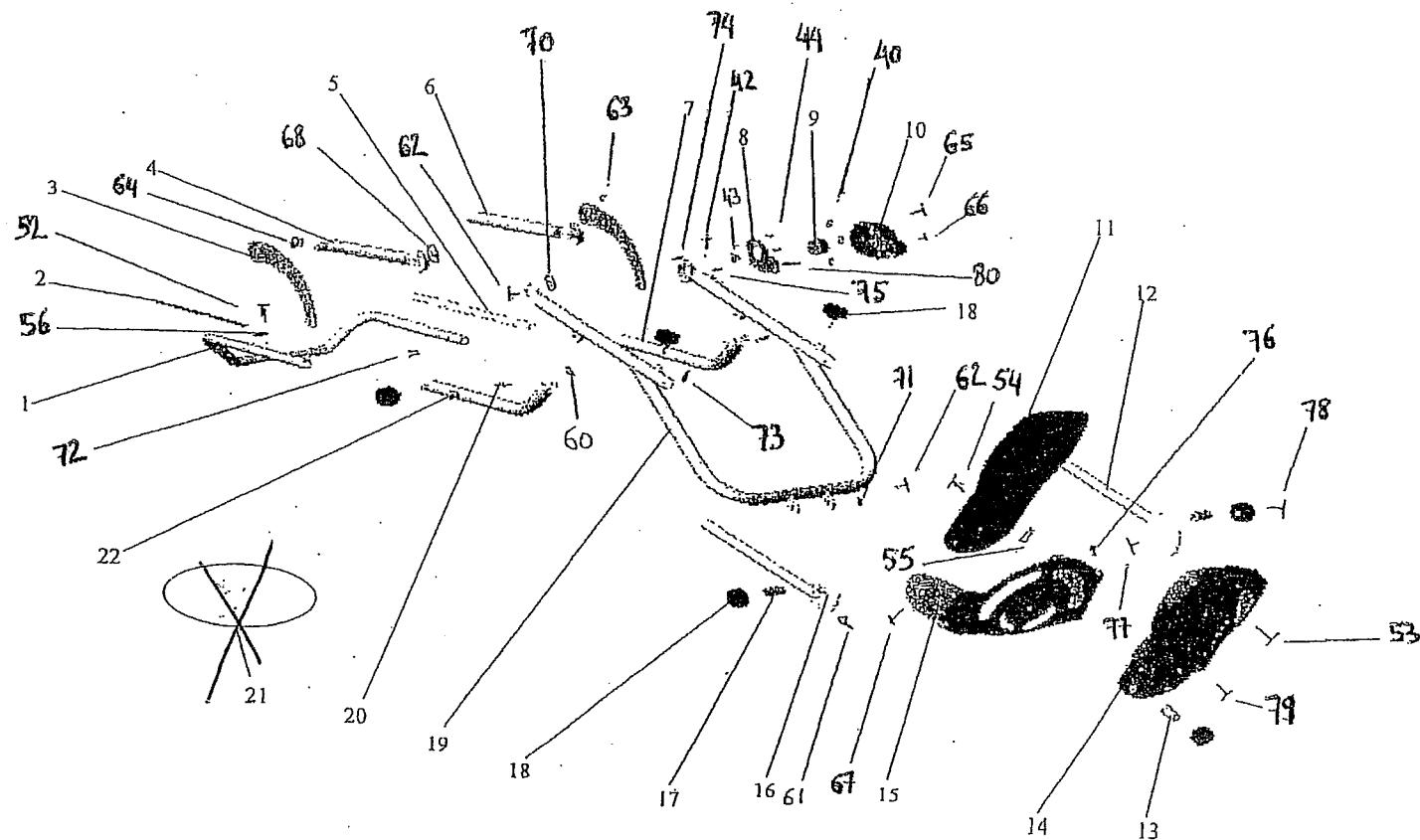
SET 4670021474

REP	ITEMS CODE	DESIGNATION	QUANTITY
40	4635000661	Potentiometer Flange	3
41	4630000020	Rondel AZ ZING 3	1
42	4620000874	3*12 Screw	1
43	4620000387	4*10 TF Screw	1
44	4620000494	2.5*5 Screw TCLF	3
45	4620003282	TH4 Screw	4
46	4620000725	5*10 BHC Screw	8
47	4620002755	4*16 FHC Screw	4
48	4620002747	4*12 FHC Screw	2
49	4620003274	5*8 CHC Screw	2
50	4626000240	2.5*16 Pin	2
51	4620000600	M4*8 TCF Screw	4
52	4620001947	M6*20 TF Screw	2
53	4620000361	M4*6 F Screw	2
54	4620002391	M6*12 Screw F. Stanley	1
55	4620001707	M6 Locknut	1
56	4620001682	M6 Nut	2
57	4620002870	HM 3*5 Screw	8
58	4620000741	5*16 Screw BHC	4
59	4620003258	3.5*16 Screw	11
60	4635008574	Washer brake	2
61	4637000065	Black cover 18-2	2
62	4620002325	6*12 Screw	8
63	4627000794	Spacer 6*8*4.05	4
64	4637000049	Black cover 15 mm	2
65	4620002606	M3*25 Screw	1
66	4620003290	M3*16 I Screw	1
67	4620001228	6*30 Screw	1
68	4670015386	Washer	2
69	4630000905	Washer 13.5*30*1	2
70	4630000921	6*16 *1.2 Plate washer	2
71	4627000075	6*8*5 Spacer	2
72	4626000696	4*15 Pin	1
73	4626000373	4*20 Pin	1
74	4635006263	Angular stop piece - Pion butée angulaire	2
75	4626000092	3*16 Pin	1
76	4627000710	6*8*3 Spacer	2
77	4620002440	6*12 Screw	2
78	4620002680	6*40 Screw	2
79	4620002218	4*6 Screw	1
80	4626000266	3*10 Pin	1

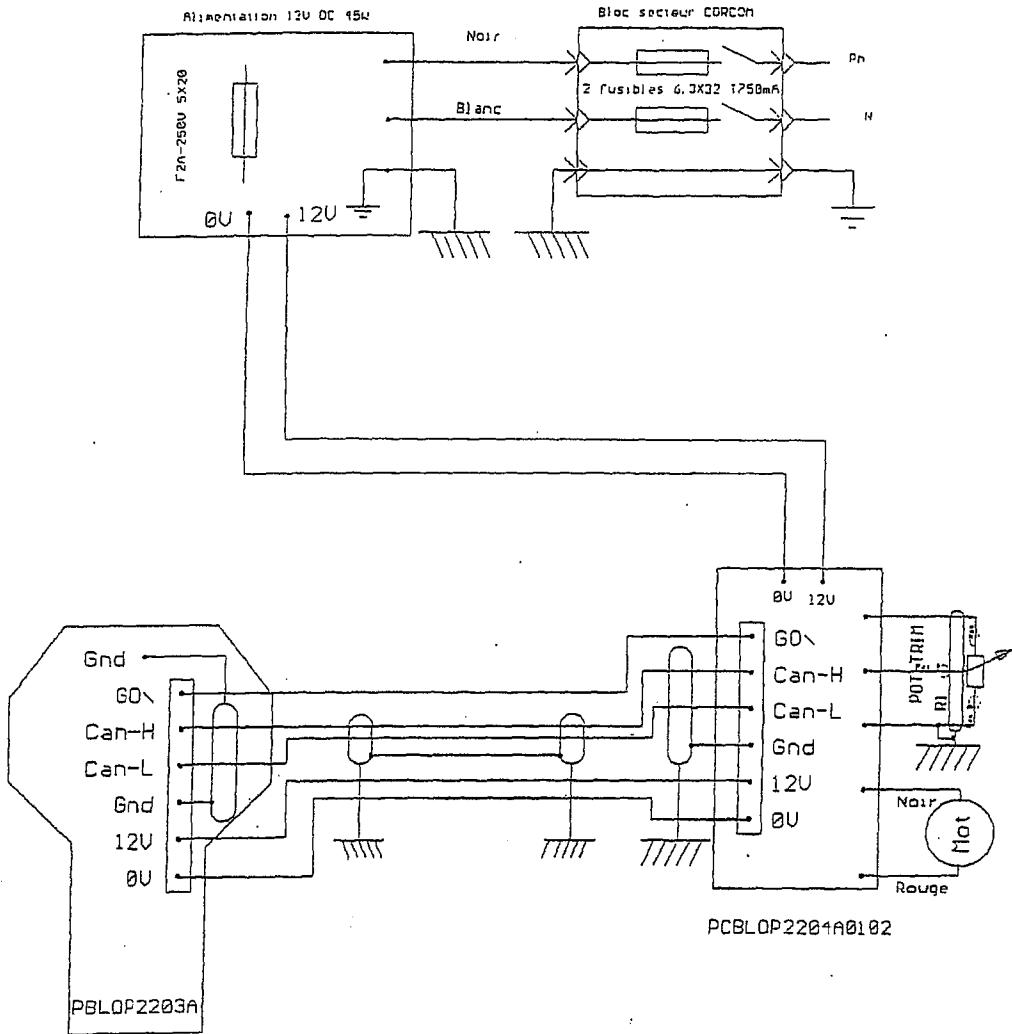


SPECTRA S1 page 2 / 5

IV	REFERENCE	Q.	DESIGNATION	DESIGNATION	MATER.
1	4670021466	1	CARTER SUPERIEUR AVANT	FRONT UPPER CASING	A.B.S.
2	4610007913	1	CORDON SPIRALE	SPIRAL CABLE	P.U.R.
3	4635008508	2	POIGNEE DE TRANSPORT	CARRY HANDLE	ALUM.+P.U.R.
4	4610007921	1	CORDON DE POIGNEE DE COMMANDE	CABLE OF HAND CONTROL	P.U.R.
5	4635007609	1	PROTECTION DE POIGNEE DE COMMANDE	PROTECTION HAND CONTROL	P.U.R.
6	4615003122	1	CLAVIER D'AFFICHEUR	SCREEN KEYPAD	POLYESTER
7	4615002653	1	CLAVIER	KEYPAD	POLYESTER
8	4610007864	1	POIGNEE DE COMMANDE COMPLETE	HAND CONTROL ASSY	ELECT.COMP
9	4670021341	1	ARTICULATION JAMBIERE	LEG ARTICULATION	ACIER / STEEL
10	4635008481	1	CARTER SUPERIEUR ARRIERE	BACK UPPER CASING	A.B.S.
11	4635008475	1	VIS A BILLES	BALL SCREW	ACIER / STEEL
12	4610007905	1	MOTOREDUCTEUR PERCE	GEAR MOTOR	ACIER+CU / COPPER
13	4635000281	4	PLOT ELASTIQUE	SCHOCK ABSORBER	P.V.C.
14	4670021482	1	SUPPORT MOTOREDUCTEUR	GEAR MOTOR SUPPORT	ACIER / STEEL
15	4670015328	1	ACCOUPLEMENT ELASTIQUE	FLEXIBLE COUPLING	ALUM.+P.U.R.
16	4610007434	2	FUSIBLE 6.3x32mm T 750mA	FUSE T 750mA 250V 6.3x32mm	ELECT.COMP
17	4670021408	1	EMBASE SECTEUR CABLEE	SUPPLY SOCKET	ELECT.COMP
18	4670021383	1	CARTER INFERIEUR ARRIERE	BACK LOWER CASING	ALUMINIUM
19	4610007468	1	FUSIBLE DE CARTE ALIMENTATION	FUSE OF SUPPLY BOARD	ELECT.COMP
20	4635008558	1	ANTIDERAPPANT ARRIERE	BACK ANTI SLIDING	POLYETHYLENE
21	4610006543	1	CARTE ALIMENTATION 260-90 VOLTS	SUPPLY BOARD	ELECT.COMP
22	4670021333	2	PATIN	SLIDING PART	POLYETHYLENE
23	4670021359	1	SUPPORT ECROU	NUT SUPPORT	ALUMINIUM
24	4635008615	4	ECROU DEMI ROND M 5	NUT M 5	ACIER / STEEL
25	4670021458	1	PROFIL ALUMINIUM	ALUMINIUM PROFIL	ALUMINIUM
26	4635008540	1	ANTIDERAPPANT AVANT	FRONT ANTI SLIDING	POLYETHYLENE
27	4670021375	1	CARTER INFERIEUR AVANT	FRONT LOWER CASING	ALUMINIUM
28	4610006626	1	CORDON SECTEUR VDE 3.5m	CABLE TO THE MAIN VDE	P.U.R.
	4610006634	1	CORDON SECTEUR 4m UL	CABLE TO THE MAIN UL	P.U.R.
	4610007161	1	CORDON SECTEUR AUSTRALIE	CABLE TO THE MAIN AUSTRALIA	P.U.R.
	4610007400	1	CORDON SECTEUR U.K.	CABLE TO THE MAIN U.K.	P.U.R.
29	4635005611	1	ENSEMBLE ARTICULATION CRURALE	ARTICULATION ASSY	P.O.M.
30	4639000071	2	BAGUE INTERIEUR LR diam 8x12x10.5mm	diam 8x12x10.5mm LR RING	ACIER / STEEL
	4639000047	2	CAGE A AIGUILLES HK diam 12x10mm	HK diam 12x10mm BALL BEARING	ACIER / STEEL
31	4639000097	4	RONDELLE BUTEE LS 0821 diam 8x21x2.75mm	diam 8x21x2.75mm LS 0821 WASHER	ACIER / STEEL
	4639000021	2	BUTEE A AIGUILLES AXK 0821 diam 8x21x2mm	AXK 0821 diam 8x21x2mm BALL BEARING	ACIER / STEEL
32	4610001569	1	EMBASE 7 BROCHES FEMELLE	CONNECTOR 7 PINS FEMEL	ELECT.COMP
33	4635008532	1	SUPPORT EMBASE	CONNECTOR SUPPORT	ACIER / STEEL
34	4610007939	1	CARTE MOTEUR	MOTOR PCB	ELECT.COMP
35	4610007012	1	FUSIBLE DE CARTE MOTEUR	FUSE OF MOTOR PCB	ELECT.COMP
36	4670021490	2	PALIER	BEARING SUPPORT	ALUMINIUM
37	4635008780	1	INSONORISANT CHARIOT	SOUND-PROOF	POLYURETHANE
38	4635008764	1	INSONORISANT MOTEUR	SOUND-PROOF	POLYURETHANE



N°	REFERENCE	Q.	DESIGNATION	DESIGNATION	MATER.
1	4670021309	1	COULISSE CRURALE	SLIDING HALF UPPER LEG SUPPORT	ACIER / STEEL
2	4615002182	1	ETIQUETTE REPERE FEMUR	FEMUR LABEL	POLYESTER
3	4670021292	2	PATTE ARTICULATION CRURAL	ARTICULATION PLATE	ACIER / STEEL
4	4670021276	1	ELEMENT CRURAL DROIT	RIGHT FIXED UPPER LEG SUPPORT	ACIER / STEEL
5	4635002451	1	EPINGLE ACIER	PIN	ACIER / STEEL
6	4670021284	1	ELEMENT CRURAL GAUCHE	LEFT FIXED UPPER LEG SUPPORT	ACIER / STEEL
7	4670021268	1	ELEMENT CRURAL INFÉRIEUR GAUCHE	LEFT INFERIOR UPPER LEG SUPPORT	ACIER / STEEL
8	4670021317	1	SUPPORT POTENTIOMETRE	POTENTIOMETER MOUNTING	ACIER / STEEL
9	4610004539	1	POTENTIOMETRE COPIE 10K	COPY POTENTIOMETER	ELECT.COMPON.
10	4635008483	1	CAPOT DE POTENTIOMETRE	COVER FOR POTNTIOMETER	A.B.S.
11	4670021226	1	PLANCHETTE	FOOT PLATE	ACIER / STEEL
12	4670021193	1	COULISSE JAMBIERE GAUCHE	LEFT FOOT SUPPORT TUBE	ACIER / STEEL
13	4627001239	1	ENTRETOISE SERRAGE SUPPORT POIGNEE	TIGHTEN SPACER OF HAND CONTROL SUPPORT	ALUMINIUM
14	4670021432	1	SUPPORT POIGNEE DE COMMANDE	HAND CONTROL SUPPORT	A.B.S.
15	4670021218	1	SUPPORT PLANCHETTE	PIVOTING FOOT SUPPORT	ACIER / STEEL
16	4670021200	1	COULISSE JAMBIERE DROITE	RIGHT FOOT SUPPORT TUBE	ACIER / STEEL
17	4627000637	2	ENTRETOISE SERRAGE PLANCHETTE	TIGHTEN SPACER OF FOOT PLATE	ALUMINIUM
18	4670021440	1	LOT DE BOUTONS DE SERRAGES	SET LOCKING KNOB	P.O.M.
19	4670021242	1	ELEMENT JAMBIER	LOWER LEG SUPPORT	ACIER / STEEL
20	4627001213	2	AXE DE CHAPE DIAM. 6	DIAM. 6 AXE	INOX / S.STEEL
21	4670021474	1	LOT DE VIS, RONDILLE, ENTRETOISE, COUPILLE	SET OF SCREW, WASHER, SPACER, PIN, CAPS.....	ACIER/STEEL
22	4670021250	1	ELEMENT CRURAL INFÉRIEUR DROIT	RIGHT INFERIOR UPPER LEG SUPPORT	ACIER / STEEL



Rév:	Date	Dessiné	Vérifié	Modifications
Orig.	22/03/98	LO		Observations:
Propriété exclusive - communication et reproduction interdites				
Tol. gén:	Echelle:			
Matière:	Code:		A4	
MATERIEL: DESIGNATION:		Schema Electrique No: 167810112		