

No. IV-21011/19/2010-Prov-I
Government of India
Ministry of Home Affairs

26, Man Singh Road, Jaisalmer House,
New Delhi, 13.12.2010

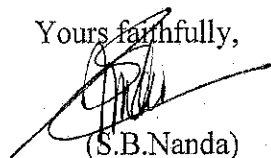
To
The ADG (Medical), Central Paramilitary Force Medical Services,
ITBP, TIGRI,
PO Madangir,
New Delhi-110016

Subject:- Specifications for (i) 27 equipments for Physiotherapy & Rehabilitation Equipments, and (ii) 15 equipments for Radio-diagnostic & Imaging Equipments for CPMFs Hospitals- approval thereof.

Sir,

The Specifications for the **(i) 27 equipments for Physiotherapy & Rehabilitation Equipments, and (ii) 15 equipments for Radio-diagnostic & Imaging Equipments** for CPMFs Hospitals for CPMFs Hospitals have been approved by the Competent Authority in MHA and the same are enclosed for information and Record.

Yours faithfully,


(S.B.Nanda)

Under Secretary

Encl. as above

Appendix-A

Physiotherapy & Rehabilitation Equipments for 10-20 Bedded Hospital

Sl No	Modality	Specifications
1.	Paraffin Wax Bath unit	Annexure-I
2.	Shoulder Wheel with Magnetic Resistance Unit	Annexure-II
3.	Infra-red Heat Therapy Unit	Annexure-III
4.	Hydrocollator unit	Annexure-IV
5.	Computerised Ergometer Cycle	Annexure-V
6.	Ultrasound Therapy Unit	Annexure-VI
7.	Complete electrotherapy unit	Annexure-VII
8.	Computerised Continuous and intermittent Cervical and Lumbar unit	Annexure-VIII
9.	Shortwave Diathermy Unit	Annexure-IX
10.	Inversion therapy unit	Annexure-X
11.	Tens & Stimulator	Annexure-XI
12.	Contrast Bath (Hot & Cold)	Annexure-XII
13.	Waist Traction belt System for Disc	Annexure-XIII
14.	Neck-Traction belt System for Disc	Annexure-XIV

Physiotherapy & Rehabilitation Equipments for 30-50 Bedded Hospital

Sl No	Modality	Specifications
1.	Paraffin Wax Bath unit	Annexure-I
2.	Shoulder Wheel with Magnetic Resistance Unit	Annexure-II
3.	Infra-red Heat Therapy Unit	Annexure-III
4.	Hydrocollator unit	Annexure-IV
5.	Computerised Ergometer Cycle	Annexure-V
6.	Ultrasound Therapy Unit	Annexure-VI

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7.	Complete electrotherapy unit	Annexure-VII
8.	Computerised Continuous and intermittent Cervical and Lumbar unit	Annexure-VIII
9.	Shortwave Diathermy Unit	Annexure-IX
10.	Inversion therapy unit	Annexure-X
11.	Tens & Stimulator	Annexure-XI
12.	Contrast Bath (Hot & Cold)	Annexure-XII
13.	Waist Traction belt System for Disc	Annexure-XIII
14.	Neck-Traction belt System for Disc	Annexure-XIV
15.	Microwave Diathermy Unit	Annexure-XV
16.	Rehabilitation Treadmill	Annexure-XVI
17.	Continuous Passive Motion Therapy (Upper body) for Shoulder and Elbow	Annexure-XVII
18.	Continuous Passive Motion Therapy Unit (Lower body) for knee	Annexure-XVIII
19.	Chilling Unit/Cold Therapy unit	Annexure-XVIX
20.	Advanced electro therapy unit, combination therapy equipment with electro therapy with ultrasound and laser therapy	Annexure-XX

Physiotherapy & Rehabilitation Equipments for 100 Bedded Hospital

Sl No	Modality	Specifications
1.	Paraffin Wax Bath unit	Annexure-I
2.	Shoulder Wheel with Magnetic Resistance Unit	Annexure-II
3.	Infra-red Heat Therapy Unit	Annexure-III
4.	Hydrocollator unit	Annexure-IV

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5.	Computerised Erygometer Cycle	Annexure-V
6.	Ultrasound Therapy Unit	Annexure-VI
7.	Complete electrotherapy unit	Annexure-VII
8.	Computerised Continuous and intermittent Cervical and Lumbar unit	Annexure-VIII
9.	Shortwave Diathermy Unit	Annexure-IX
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18.	Continuous Passive Motion Therapy Unit (Lower body) for knee	Annexure-XVIII
19.	Chilling Unit/Cold Therapy unit	Annexure-XIX
20.	Advanced electro therapy unit, combination therapy equipment with electro therapy with ultrasound and laser therapy	Annexure-XX
21.	Infra-Red laser Therapy Unit	Annexure-XXI
22.	Computerised Pulley System	Annexure-XXII
23.	EMG Biofeedback Unit	Annexure-XXIII
24.	<p>a. Gait Motion Analyser System with EMG or</p> <p>b. Complete Motion analyser system</p>	<p>Annexure-XXIV (a)</p> <p>Annexure-XXIV (b)</p>

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Physiotherapy & Rehabilitation Equipments for 200 Bedded Hospital


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1.	Paraffin Wax Bath unit	Annexure-I
2.	Shoulder Wheel with Magnetic Resistance Unit	Annexure-II
3.	Infra-red Heat Therapy Unit	Annexure-III
4.	Hydrocollator unit	Annexure-IV
5.	Computerised Ergometer Cycle	Annexure-V
6.	Ultrasound Therapy Unit	Annexure-VI
7.	Complete electrotherapy unit	Annexure-VII
8.	Computerised Continuous and intermittent Cervical and Lumbar unit	Annexure-VIII
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18.	Continuous Passive Motion Therapy Unit (Lower body) for knee	Annexure-XVIII
19.	Chilling Unit/Cold Therapy unit	Annexure-XIX
20.	Advanced electro therapy unit, combination therapy equipment with electro therapy with ultrasound and laser therapy	Annexure-XX
21.	Infra-Red laser Therapy Unit	Annexure-XXI
22.	Computerised Pulley System	Annexure-XXII
23.	EMG Biofeedback Unit	Annexure-XXIII

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24.	a. Gait Motion Analyser System with EMG or b. Complete Motion analyser system	Annexure-XXIV (a) Annexure-XXIV (b)
25.	High Low cum Tilt Table	Annexure-XXV
26.	Scanning Laser Unit	Annexure-XXVI
27.	Professional Vibrator System	Annexure-XXVII


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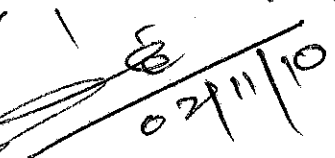

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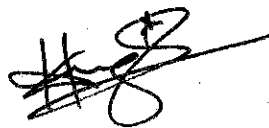
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TECHNICAL SPECIFICATIONS OF PARAFFIN WAX BATH

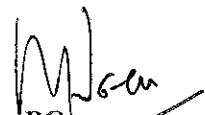
- The paraffin bath should be operatable on the "bain Maire" principle, the paraffin is heated indirectly by the heat transferred from a liquid (water)
- The model should offer a number of significant advantages such as quicker heating
- More even heat distribution
- Practically on temperature fluctuations in the paraffin
- The wax bath should be mobile and contains a stainless steel inner tank with splash cover
- This bath should be equipped with an electric heating element with thermostatic temperature control (adjustable between 30° and 90° C and an overheating safety mechanism)
- The wax bath should be ideal for dipping treatment

Technical data

Main Voltage	20-240 V (50/60 Hz)
Power consumption	2000 watts
Tank Capacity	30 Ltr
Heat transfers liquid	10 ltr (water
Temperature Range	30-95 deg C
Dimension	27 X37 X 41.5 cms


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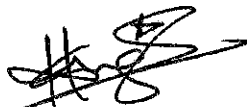
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TECHNICAL SPECIFICATIONS OF SHOULDER WHEEL WITH MAGNETIC RESISTANCE

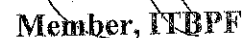
- The unit should be of compact size.
- The unit should not have with the large wheel
- The unit should have Magnetic resistance
- The unit should have automatic 5 function LCD display which indicates stride count, strides per minute, time exercised, calories consumed and scan of all functions
- The unit should have bi directional movement that allows exercise in either direction
- The unit should have quick release knob for instant height adjustment
- The adjustable height should allow for sitting or standing exercise
- The Arm length should have adjustment from 15" (38cm) to 21" (53cm)
- The unit should be supplied with wall mounting hardware



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TECHNICAL SPECIFICATIONS OF INFRARED HEAT THERAPY

It should provide thermal energy deep into the knees to relieve pain

It should have wavelength 800 to 1,200 nm

It should have maximum output power Up to 400 watt

It should have height adjustable upto 2.20 m

It should have very good heat penetration

It should have protective grid in front of the lamp and handle on the shade

It should have automatic timer (Max time:60 Min)

It should be ergonomically designed for knee joint contour

It should have infrared lamp and thermal cathode for superficial and deep knee joint heating treatment

It should have temperature control to maintain temp. 45°C-65°C

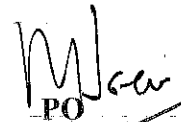
It should have international safety standard



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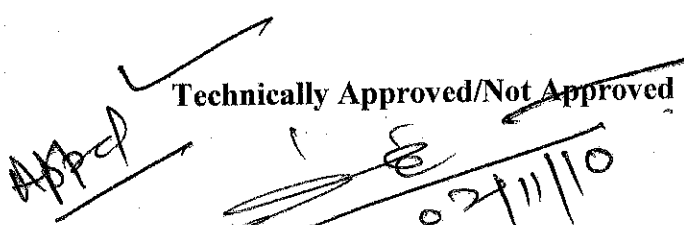
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TECHNICAL SPECIFICATIONS OF HYDROCOLLATOR UNIT

The unit should be provided with thermostat temperature control

The unit should have detachable insert rack to hold and suspend packs for heating

The unit should be supplied with twelve standard enno moist packs of size 25 x 30 cm

The unit should be made of stainless steel with rubber wheels for easy mobility

The unit should be supplied with stainless steel storage rack attachment

The unit should have energy efficient insulated casing


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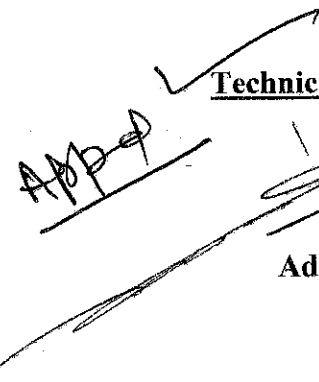
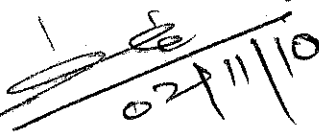

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TECHNICAL SPECIFICATIONS OF COMPUTERISED ERGOMETER CYCLE

1. Accurate instrumentation to measure heart rate, speed, distance, time and energy
2. Force required for moving the pedal can be regulated
3. Body made of steel with powder paint finish
4. Friction free electromagnetic resistance
5. Self generating electronics.
6. Programmable computer features programs with Large windows LED Readout
7. Built in hand grip pulse sensor
8. Durable pedals with shock absorbing air cushion and adjustable strap/strap adjuster buckle
9. Large adjustable softer HR seat
10. Generator: $\text{Ø}230$ (c) one way pulley : $\text{Ø} 300$
11. Crank : 3 Pcs size : 1200 x 620 x 1500 mm

Standards, Safety and Training


- Manufacturer should have ISO certification for quality standards.
- Comprehensive warranty for two years and next 5 years CMC charges after warranty
- Comprehensive training schedule for technical staff and support services with the system

Documentation

- User./Technical/maintenance manuals to be supplied in English
- List of equipments available for providing calibration and routine Preventive maintenance Support, as per manufacturer documentation in service/technical manual.
- Certificate of calibration and inspection
- Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.




- List of important spare parts and accessories with their part number and costing.
- Compliance Report as per tender enquiry to be submitted in a tabulated and point wise manner clearly mentioning the page/para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue, will not be considered.


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TECHNICAL SPECIFICATIONS OF ULTRASOUND THERAPY UNIT

The unit must have the following specifications :-

Ultrasound frequencies	1 & 3 MHz
Ultrasound output modes	Continuous and pulsed
Intensity i) Pulsed	0-3 W/cm sq
ii) Continuous	0-2 W/cm sq
Display	Intensity in W/cm sq in LCD
Timer	0-30 minutes coupled to contact control
Contact control threshold	65%
Pulse duration	10%,20% and 50%
Pulse duration cycle	16,48 & 100 Hz
BNR Ratio	5:1 to avoid the hot spots and tissue damage
Treatment head	Large Multi frequency treatment head ERA 5.0 cm ² with head warming

Treatment head should be water tight for underwater use.

Main Supply	220-230V (50/60Hz)
Battery charger	12V,1.9 Ah ,MF Accumulator
Safety class	According to IEC 601-1/CE-MDD,FDA

The unit should have at least 10 free programmable memory positions

The unit should have at least 9 pre-programmed positions

The unit should have automatic power switch-off and treatment time interruption incase of insufficient contact

The unit should have visual indicator on the treatment head to show the insufficient contact.

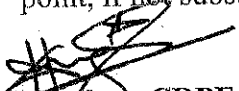
Standards, Safety and Training

- Manufacturer should have ISO certification for quality standards.



- Comprehensive warranty for two years and next 5 years CMC charges after warranty
 - Comprehensive training schedule for technical staff and support services with the system
- Documentation**

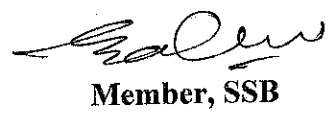
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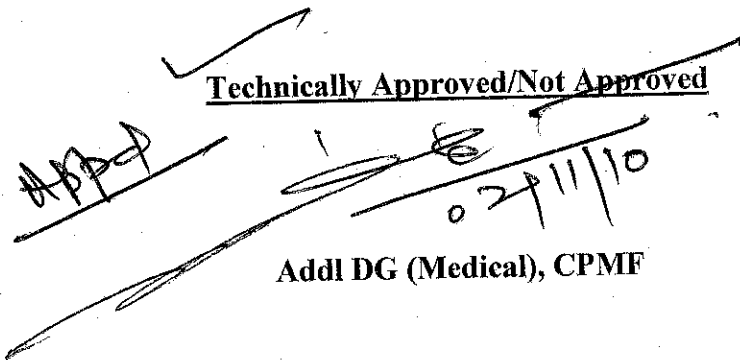

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TECHNICAL SPECIFICATIONS OF COMPLETE ELECTROTHERAPY MACHINE

The unit should meet the following specification:

It Should have all low and medium frequency current types as mentioned under:

Four pole interferential therapy, Bipolar interferential therapy, Asymmetrical biphasic pulsed current, rectangular pulsed current, alternating rectangular pulsed current, Monophasic rectangular pulsed current, Monophasic triangular pulsed current, surge current, continuous (galvanic) direct current, Medium-frequency interrupted current, MF-Menopause fixe, DF-Diphase Fixe, CP Module en courts periods, CP-id-Module en courtes periods, Isodynamique, LP-Module en Longues Perodes Micro Currents, High Voltage Currents, Interrupted Galvanic Current and VMS(Variable Muscles Stimulation with Burst)

- It should have constant current and constant voltage characteristics
- It should have two separate channels for(a) synchronous stimulation of muscle groups
- It should have more than 150 preset protocols for treatment indications with suggestive placement of electrodes
- It should have sequential programmable indications
- It should have with vacuum unit
- It should have more than 100 memory positions to store the patient data
- It should have carrier frequency 2-10 KHz
- It should have stimulation frequency (AMF) 0-200 Hz
- It should have frequency modulation (Spectrum) 0-200 Hz
- Alternating rectangular pulsed current should have phase duration of 20-1000 μ s
- It should have automatic timer of 0-60 in with audio signal for switch off.
- It should have S/D curve for Diagnosis
- It should have colour LCD/TFT screen to display the parameters & multimedia anatomical directory
- It should have two separate channels in which different current patterns can be applied on two different channels



- The system should be up gradable
- The system should work on 220-240 V/50-60 Hz

Standards, Safety and Training


- Manufacturer should have ISO certification for quality standards.
- Comprehensive warranty for two years and next 5 years CMC charges after warranty
- Comprehensive training schedule for technical staff and support services with the system

Documentation

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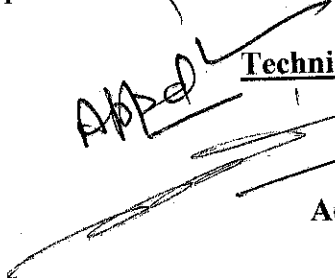

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TECHNICAL SPECIFICATION

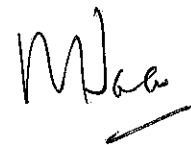
COMPUTERIZED CONTINUOUS AND INTERMITTENT CERVICAL & LUMBER TRACTION UNIT

The unit should have got traction force base force regressive progressive, state cyclic ,hold time & treatment time which can be individually adjustable and digitally display on LCD

- The unit should have got traction force adjustable traction force adjustable between 1.5-90kg variable in steps of 0.5 up to 10kg and then in steps of 1 up to 90kg
- It should have more than 20 pre set protocols for treatment indications with suggestive placement of traction belts
- The unit should have got traction hold time setting of 0-60s
- The unit should have got base force setting of 1-5-90kg
- The unit should have got base old time setting of 0-60s
- The unit should have got LCD displays for traction force hold time and treatment time
- The unit should have got treatment time of 1-60 minutes (step of 1 minute) with acoustic signal and automatic reduction of traction force
- The unit should have got transition speed adjustable in variable steps
- LCD display of transition speed and current instantaneous traction force for convenience
- The unit should have indication against accidental setting of force over 22 kg
- The unit must have built in software package for service (test routines)
- The unit should have got emergency stop switch
- The package should include the fixed height traction Bed Flexion stool Traction Belts Spreader Bar

Technical Data:

- Power supply: 220 V / 50 hz
- Voltage variation: max. $\pm 15\%$



- Power consumption: max. 0.22 A (at 220V)
- Safety class: 1 type B according to EEC 601-1 & FDA

Standards, Safety and Training

- Manufacturer should have ISO certification for quality standards.
- Comprehensive warranty for two years and next 5 years CMC charges after warranty
- Comprehensive training schedule for technical staff and support services with the system

Documentation

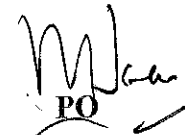
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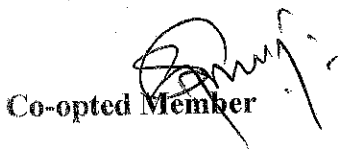
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TECHNICAL SPECIFICATIONS OF SHORTWAVE DIATHERMY UNIT

Microprocessor based continuous /pulsed shortwave Diathermy unit for superficial and deep tissue treatment

The unit should have the following features

Working Frequency	27.12 MHz
Pulsed output	1000W or 1100 W
Continuous Output	400W or 470 W
Protection Class	CEI 62-5 :1 BF
Tuning	Automatic
Frequency	10-250Hz
Impulse Length	400 micro seconds
Display	LCD
Dimension	CM 40 x 37 x 95 h

The unit should offer minimum 20 pre-set therapeutic protocols with electrode placement images to make operation of the unit simple and convenient

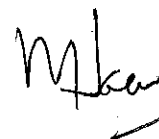
The unit should be supplied complete with disc electrodes rubber electrodes felt spacers high frequency cable electrodes arms and servo voltage stabilizer.

Standards, Safety and Training

- Manufacturer should have ISO certification for quality standards.
- Comprehensive warranty for two years and next 5 years CMC charges after warranty
- Comprehensive training schedule for technical staff and support services with the system

Documentation

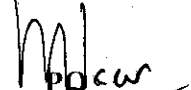
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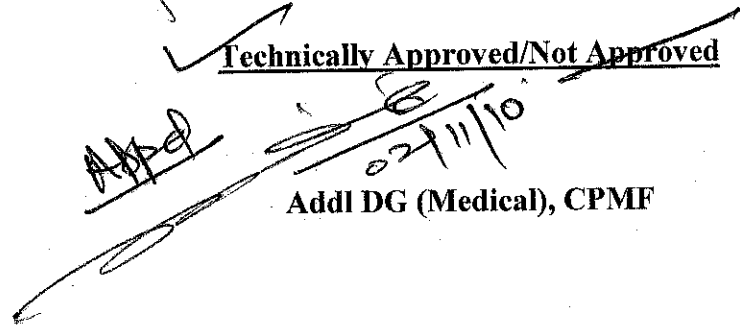

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Technical specifications of Inversion therapy Unit

It must have complete range of inversion angles from slight downward tilt to a full upside-down inversion. The angles should be controllable and the change should be possible instantaneously.

It must be durable, made of high quality-MS steel, with usage of strong and well made mechanical parts

It must be quick and easy to assemble & convenient for hospital use.

It must be compatible with a patient between the heights of 4'8" and 6'6"

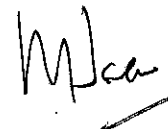
It must be compatible with a patients with weight upto 300 pounds.

Standards, Safety and Training

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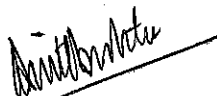
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- List of important spare parts and accessories with their part number and costing.




Compliance Report as per tender enquiry to be submitted in a tabulated and point wise manner clearly mentioning the page/para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue, will not be considered.


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TECHNICAL SPECIFICATIONS OF TENS & STIMULATOR

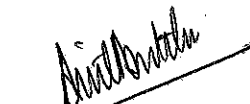
The unit should have the following features:-

- Editing mode with 3 client defined programs
- Locking the programs enables the therapist to fix the best-suited therapy program for the patient
- Integrated AKS (output short circuit control)
- 12 pre-sets programmed

The unit should have the following technical details

- (i) Pulse width: 60-300 μ s
- Wave type: Positive rectangle with negative part
- Frequency range: 0,5-120 Hz
- Power supply 9V- battery
- Output power: 70mA (at 1K ohm real)


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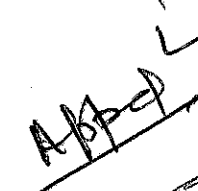

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TECHNICAL SPECIFICATIONS OF CONTRAST BATH (HOT & COLD)

MAIN FEATURES:-

1.	Suitable for treatment of arms and legs
2.	Two stainless steel heavy gauge tanks
3.	One tank fitted with special heating unit and other
4.	With heavy duty cooling unit. Each tank should be well insulated and provided with thermostat for temperature control, pilot light and water outlet.


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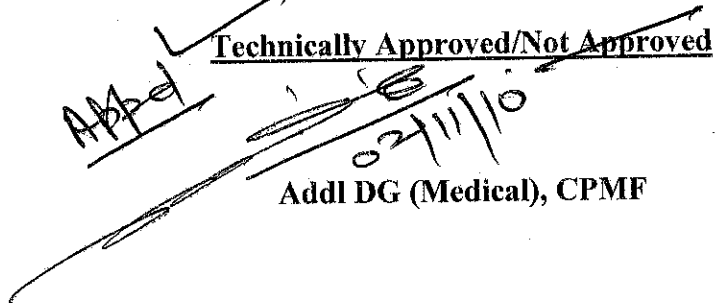

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TECHNICAL SPECIFICATIONS OF WAIST TRACTION BELT SYSTEM FOR DISC.

- ❖ Should be available in all dimension size CS,ML,XL,2XL,3XL and 4 XL
- ❖ It should be light weight and not more than 300 gms
- ❖ Outer face should be of polyurethane coating on cotton fabric
- ❖ Inner face should be 100% cotton
- ❖ Internal Air hole should have polyurethane elastomeric
- ❖ Brass Air injection Nozzle
- ❖ Air pump (manually operated type)
- ❖ Max pressure 4.1 bar (60psi)
- ❖ Correct applied air pressure : 0.7-10 bar(10-14psi)

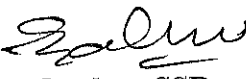
Accessories

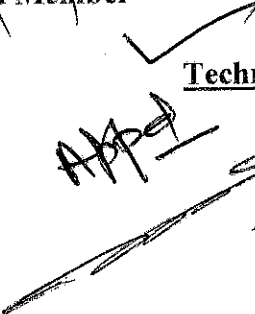

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TECHNICAL SPECIFICATIONS OF NECK-TRACTION BELT SYSTEM FOR DISC

- ❖ Should be available in dimension of :-
 - a) Weight should not be more than 150 for Traction belt – 400 (length-width-20)
 - b) Weight should not be more than 160 for Chin Caller -310 (Length—width=09)
 - ❖ Outer face should be of polyurethane coating on cotton fabric
 - ❖ Inner face should have 35% cotton, 65% polyurethane coating
 - ❖ 100% polyurethane Neck support
 - ❖ Plastic support frame
 - ❖ Brass Air injection Nozzle
 - ❖ Internal Air hole should have polyurethane elastomeric
- Accessories**
- ❖ Air pump (manually operated type)
 - ❖ Max pressure 4.1 bar (60psi)
 - ❖ Correct applied air pressure : 0.7-0.8 bar(10-12psi)



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TECHNICAL SPECIFICATIONS OF MICROWAVE DIATHERMY UNIT

Should have following feature:

Working Frequency	24.50 MHz
Modes	Continuous & Pulsed
Output Power	240 Watts
Timer	Digital
Display	Digital
Protection Class	1B
IEC standard	IEC 601-1
Dimension	40x37x865 cm
Weight	25kg

The equipment should be supplied with large field radiator as standard

Standards, Safety and Training

- Manufacturer should have ISO certification for quality standards.
- Comprehensive warranty for two years and next 5 years CMC charges after warranty
- Comprehensive training schedule for technical staff and support services with the system

Documentation

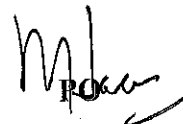
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- Certificate of calibration and inspection



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TECHNICAL SPECIFICATION OF REHABILITATION TREADMILL

- The unit should have 5 HP continuous heavy duties motor
- The unit should have 0.5 to 11.0 MPH speed range easily adjustable in .5 grades to cater multi purpose usage as patients need
- The unit should have 15% grade electric elevation for uphill exercise treatment
- The unit should have 20" x 58" four-ply tread belt for smooth running
- The unit should have 2-1/2" diameter crowned rollers for noise free belt movement
- The unit should have weight : 300 lbs to provide sturdy and anchoring the ground surface
- The unit should have computer animated video displays with state of art colored display panel
- The unit should have built in/use programs
- The unit should have numeric key pad and wireless interactive heart rate control
- The unit should have emergency stop switch and chest connected stop control

Standards, Safety and Training

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Documentation

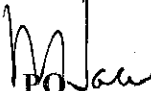
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TECHNICAL SPECIFICATIONS OF CONTINUOUS PASSIVE MOTION THERAPY UNIT FOR SHOULDER & ELBOW

- ❖ It provides post operative ROM exercise that can help prevent joint stiffness, soft tissues contracture and muscles atrophy
- ❖ It must have abduction/adduction available with fixed rotation 20 to 180 degrees
- ❖ It must have abduction/adduction available with synchronized rotation: Combined range 20-180 degree of abduction with 30 degree
- ❖ It must have rotation with fixed abduction/adduction available with 60 degree internal and 90 degree external rotation available
- ❖ It must have flexion /extension available 20 degree to 180degree
- ❖ It must have Horizontal abduction/adduction available with 30 degree to 110 degree
- ❖ It must have feature such as the ability to make quick movement pause a visual bio-feed back and progressive protocols for consistency are available on LCD touch screen display
- ❖ It must have shoulder CPM come with elbow attachment to provide additional movement to the shoulder machine should provide extension/Flexion of the elbow joint from 0 degree-150 degree with fixed pronation/supination
- ❖ It must have convenient conversion of right or left to the other side
- ❖ It must have programmable parameters
- ❖ It must have accelerated motion and uniform motion

Standards, Safety and Training

- Manufacturer should have ISO certification for quality standards.
- Comprehensive warranty for two years and next 5 years CMC charges after warranty
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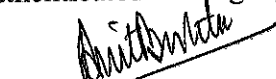
Documentation

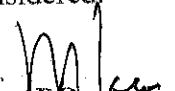
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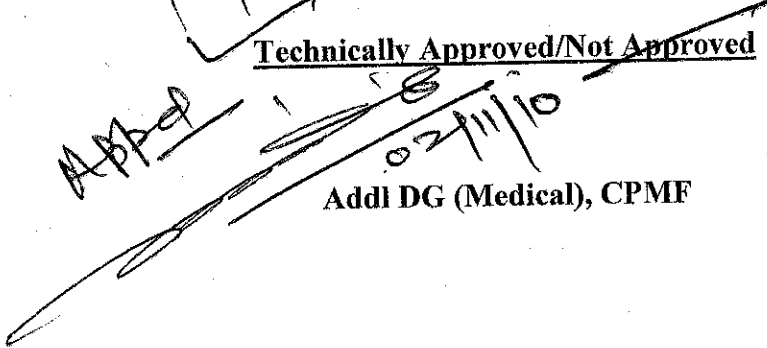

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**TECHNICAL SPECIFICATIONS OF CONTINUOUS PASSIVE MOTION THERAPY
UNIT FOR KNEE (lower Extremity)**

- ❖ It must have knee flexion ROM limit 120 degree
- ❖ It must have knee extension limit to 10 degree
- ❖ It must have knee speed range 30 degree/Min to 150 degree/Max
- ❖ It must have maximum patient weight 159 kg
- ❖ It must have variable calf length range
- ❖ It must have variable thigh length range
- ❖ It must have progressive range of Motion-Eliminates time consuming adjustments by automatically increasing the programmed flexion angle by 1° every hour, up to 5° per 24 hour period of time
- ❖ It must have patient lock out feature
- ❖ It must have fast back accelerates quicker through the non working ROM allowing the knee to spend more time in the active ROM
- ❖ It must have force reversal safety feature allows the therapist to safely set the amount of passive force without causing unnecessary post surgical pain & Damage
- ❖ It must have patient statistics unit which will track total number of Cycles & Hours by each patient

Standards, Safety and Training

- Manufacturer should have ISO certification for quality standards.
- Comprehensive warranty for two years and next 5 years CMC charges after warranty
- Comprehensive training schedule for technical staff and support services with the system

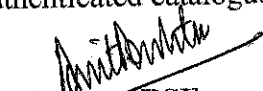
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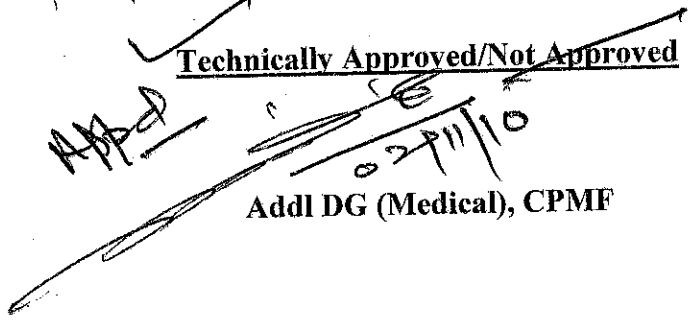

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TECHNICAL SPECIFICATIONS OF COLD THERAPY (CHILLING UNIT)

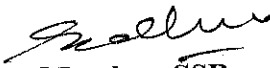
- The unit should be provided with thermostat temperature control
- The unit should have detachable insert rack to hold and suspend packs for heating
- The unit should be made of stainless steel with rubber wheels for easy mobility
- The unit should have proper insulation eq of the international safety standard (imported)
- The unit should be made with stainless steel
- The unit should have energy efficient insulated casing
- Should be supplied with six standard cold packs of size 28 x 36 cm each


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QRs FOR ADVANCED ELECTRO THERAPY UNIT, COMBINATION THERAPY EQUIPMENT WITH ELECTRO THERAPY WITH ULTRASOUND AND LASER THERAPY & VACUUM

The unit should have following features

1. Therapies

Electro therapy, w and 4 poles, 2 channels completely independent

Ultrasound therapy

Simultaneous therapy (2 different locations treated simultaneously by using electro and ultrasound therapy)

Combination therapy (treating one injury simultaneously using a combination of electro and ultrasound therapy)

2. ULTRASOUND

3. Laser: (The probes are optional)

02 probe:-

Monoprobe P43: mono probe

Cluster Probe P45: cluster probe (4 diodes)

Combination therapy unit for 2 channel electrotherapy, ultrasound, and laser therapy with unique guided therapy system for objective based therapy

- i. Electrode placement and help & information key on screen
 - ii. More than 26 current forms: namely MF rectangular, Rectangular pulse, Triangular, 2-5 current (Ultra Reiz), MF, DF, CF, CP-ISO, LP, LP-ISO, Conventional Tense, Low Frequency Tense, Random Frequency Tense, Brst Tense, Han Stim, Rectangular surge, Traingular surge, Symmetrical Biphasic Surge, a-symmetrical Biphasic Surge,, Intrapulse interval surge, vector field surge, 2- pole MF, Dipole vector field & isoplanar vector field
 - iii. More than 260 pre-programmed protocols
 - iv. Must have 60 pre- programmed treatment memory
 - v. Combination of Ultrasound and Electrotherapy unit
- CARRIER WAVE FREQUENCY 2-10 KHz IN STEPS OF 100 Hz FOR RESEARCH PURPOSES**
- i. Frequency- 1 & 3 MHz in single head for deep & superficial treatment
 - ii. Both pulsating and continuous output mode 10% ,20%, 30%, 40%, 40%, 50% & 100%
 - iii. Output coupled to contact control
 - iv. Acoustic and visual contact
 - v. Simultaneous therapy, 2 different indications treated simultaneously by using electro and ultrasound therapy

LASER THERAPY

- i. Should have facility for automatic calculation of dosing parameters and facility to set treatment area
- ii. Facility to accumulate total energy to be used in semi stationary method
- iii. LCD display to simultaneously display: the probe in use, pulse repetition frequency, Energy, density, total energy & surface area under treatment
- iv. Should have inbuilt laser tester



SHOULD PROVIDE

Number of laser diodes	1 (monoprobe)
Nominal ocular hazard distance	214 mm
Wave length	905 nm
Energy per pulse	2.35 μ J
Peak performance	13.5 W
Maximum average	70.5 mW
Pulse frequency	2 to 30 kHz
Pulse width at 50% of the peak power	115 ns
Beam surface laser aperture	12.9 m x sqm
Beam divergence	Dual mode 10 degree and 45 degree

Along with standard accessories and optional accessories i.e. bag (carrying case) US Head, multi frequency (1 * 3MHz), 1 cm² vaginal probe, Electrode rubber 4 x 6 cm (per 2), Elect., Electrode rubber 8 x 12 cm (per 2), Electrode adhesive \varnothing 3 cm (per 4), electrode adhesive, 2, 5 x 5 cm (per 4), Electrode adhesive 5 x 5 cm (per 4)


Standards, Safety and Training


- Manufacturer should have ISO certification for quality standards.
- Comprehensive warranty for two years and next 5 years CMC charges after warranty
- Comprehensive training schedule for technical staff and support services with the system

Documentation

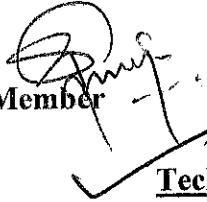
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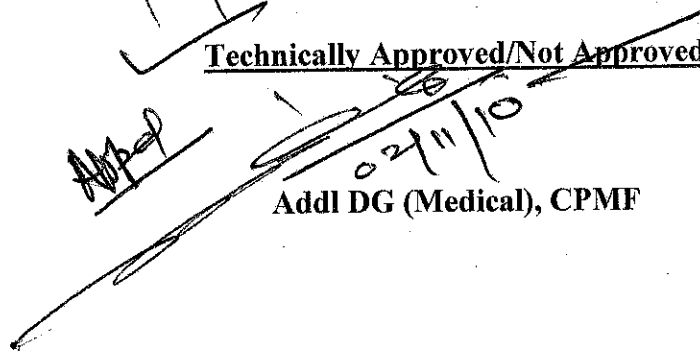
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TECHNICAL SPECIFICATIONS OF INFRA RED LASER THERAPY UNIT

The unit should have the following specifications

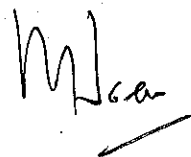
- Single output channel
- Should be supplied with 100 m W laser probe & patient Interruption switch as standard
- At least 10 pre programmed protocols
- At least 10 free programmable positions impulse frequency of range 10 Hz to 20 KHz
- Must have diode laser wavelength emission of 850 nm
- Large & clear LCD display
- Pulsed (10-100%) & continuous mode
- Programmable treatment time upto 90 min
- Must have inbuilt interlock/safety & provision of acupuncture point finder with GSR mode
- Must have 3B laser class
- Two pair of protective Goggles as standard accessory

Standards, Safety and Training

- Manufacturer should have ISO certification for quality standards.
- Comprehensive warranty for two years and next 5 years CMC charges after warranty
- Comprehensive training schedule for technical staff and support services with the system

Documentation

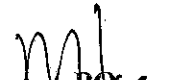
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TECHNICAL SPECIFICATIONS OF COMPUTERISED PULLEY SYSTEM


- It should have different possibilities for feed back
- It should have customized system for the measurement of functional capacity
- It should be able to accurately determine test result like position velocity force poser and work
- Should have the facility to test and exercise the musculature of all the major human joints It should have mono articular movement complex multi articular movement and work simulator test and training sessions
- It should have user friendly software for composing various tests and training protocols
- It should have the facility of determining goals of treatment i.e right comparison assessment of normal or abnormal movement patterns from the graphics compare test result between individuals
- It should have the software for selecting different diagrams e.g powers Vs time positions Vs time fore Vs time velocity Vs time power Vs position etc and other important numerical values like peak power and average power To stimulate the process of exercise therapy and rehabilitation various motivating feedback screens should be available


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TECHNICAL SPECIFICATIONS OF EMG BIO FEED BACK

- Complete device for EMG feedback and electrotherapy(2 channel EMG,1 Channel EMG with Triggered Stimulation,2 Channel Electrotherapy)
- Optional multimedia card for storing measurement results
- Wide measurement range (0μ V-999 μ V) allows measurement of both large and small muscles
- Connection to PC possible using patient Management software package
- Parameters definable in the PC
- It should have color LCD/TFT screen to display the parameters & multimedia anatomical directory for Electrotherapy & EMG Unit
- Analysis of EMG measurement via PC
- It must supply with surface electrode & 5 Intravaginal probes
- The unit should be supplied with personal computer of Latest configuration
- Work on 220 V/50 Hz

Standards, Safety and Training

- Manufacturer should have ISO certification for quality standards.
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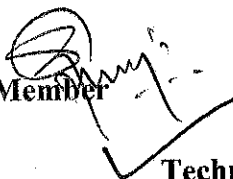
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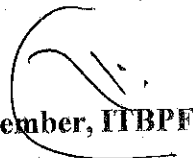

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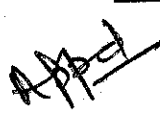
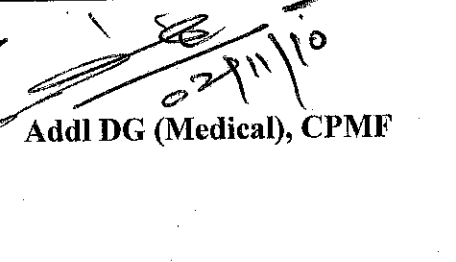

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**TECHNICAL SPECIFICATIONS OF GAIT MOTION ANALYSIS SYSTEM WITH
EMG**

(1) General-I :

1. Should be user friendly system with wireless markers and electrodes for EMG recording to ensure natural movement of the subject / patient.
2. Should be capable of automatic and synchronized recording of kinematic and kinetic parameters (i.e 2D & 3D motion, Dynamic EMG & forces) along with analysis and reporting
3. Should be up-gradable in terms of the Hardware and Software and must have provisions for easy and quick calibration.
4. Should work on 220-240 V, AC- 50 Hz and be supplied with colour laser Printer, UPS of adequate capacity and C.V.T.

(2) Kinematic Parameters :

System should have high resolution motion data capturing system, with provision of acquiring data for analysis in 2D as well as 3D motion with minimum 4 Nos of optoelectronic cameras (capture rate of min. 100 Hz) - up-gradable upto 12 Nos cameras.

Should be capable of online detection of retro reflective markers .- of different types and sizes and capturing reflected infra Red signals from them.

System must have facility of (all) event identification automatically, to (and) give correlated information of kinematic data for motion analysis.

Should be supplied along with Analog to Digital converter (ADC).

2 Nos of Digital colour Video cameras to be supplied with suitable lenses:

(A) Software to be provided:-

1. Software for identification and automatic tracking of markers with an option for manual tracking.
2. Software for 2D/3D motion Analysis - i.e, calculation of co-ordinates, centre of Gravity, Vectors, Acceleration, Angles, etc.



3. Software for integrated multiple parameter display monitoring in single or multi-frame with synchronized, simultaneous video recording.
4. Software for mathematical modelling and algorithms for Gait Analysis.
5. Software for Report Generation and comparison with reference to normative data along with provision of generating hard copy and plotter.
6. Software to provide facility for developing / modifying normalized data.
7. Software for Synchronized viewing reconstructed data, patient video, kinematic graphs and kinetic parameters.
8. System should have integrated software with capacity of data export. from one type of File format i.e. C3D/HTML/ASC II
9. Software for integration of kinetic, kinematic and EMG parameters and display of joint moments, force and muscle EMG.

(B) Computer Hardware:

Must be of latest configuration.

Should be capable of handling storage & display of desired software and drivers

Should have high speed processor - min 3.2 GHz or the latest one.

Should have -

- Minimum data storage capacity: 500 GB or more with compatible hard disk Speed
- External 500 GB Hard Disk (min) with USB port connection – Min 1No.
- RAM: compatible 1CH~video - min 1 GB and higher.
- User friendly operative system - preferably Window XP based latest version.
- Related Ethernet card, Graphic card with accelerator along with Video input card compatible with software - with latest compatible DVD writer/ re-writer.
- System should be capable of acquiring, storing, display, analysis and retrieving data with capability of individual and simultaneous display of all parameters (i.e. kinematic, kinetic, EMG, H.R., video etc.) in different windows on the monitor.
- One LCD Monitor of min. 75 cm Size - (Clinician viewing) with flat screen, high resolution and wide angle view

(3) KINETIC PARAMETERS

Must be synchronized with kinematics parameters.

a. Integrated and synchronized recording of forces in 3 planes

1. Minimum two force - plates with capacity to cover paediatric as well as adult
2. population minimum 2000 N force

3. Size - (40 to 60) x (40 to 60) cm (L X B) approx.
4. Data Analysis, amplification, filtration, interpretation, recording & display of
 - Vertical component of ground force reaction.
 - Fore and aft shear
 - ML shear
 - Moment of force
 - Vectors

Software to provide

Analysis of vectors, moment of force recording and graphs.

Dynamic EMG:

1. 8 channel upgradable to 16 channels Wireless telemetric EMG recording and Analysis facility
2. Surface electrodes of silver - silver chloride of size 15 mm, 10 mm,
3. Software to provide integration of EMG with kinematic parameters.

Specific:-

1. Integrated monitoring should be available
2. Passive retro -reflective markers of all types and all size-no. of markers - 200 to be provided as standard accessory
3. Method of anchoring markers should be easy and user / patient friendly.
4. Provision for wall mounting of cameras
5. EMG surface electrodes - disposable / reusable. 1000 to be provided along with the system

Installation:-

- Free installation at site.

Warranty :-

- Warranty should be two years. The warranty will be for the main equipment along with accessories from the date of satisfactory installation certificate issued by the user
- 98% uptime warranty during warranty period of the complete system with extension of warranty period by double the downtime

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Comprehensive maintenance contract (optional):

1. For the main equipment along with accessories for 5 years.
2. With labour and spares after successful completion of warranty period
3. The cost of CMC must be quoted along with taxes applicable on the date of opening of the tender
4. Cost of CMC will be added for ranking purpose .
5. The payment of CMC will be paid on six monthly basis after successful completion of contract, duly certified the user.
6. There will be 98% uptime warranty during CMC period of the complete system with extension of CMC period by the double the downtime period.

Documentation

- User./Technical/maintenance manuals to be supplied in English
- List of equipments available for providing calibration and routine Preventive maintenance Support, as per manufacturer documentation in service/technical manual.
- Certificate of calibration and inspection
- Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.
- List of important spare parts and accessories with their part number and costing.
- Compliance Report as per tender enquiry to be submitted in a tabulated and point wise manner clearly mentioning the page/para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue, will not be considered.


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Technical specifications of motion analysis system

(1) General-1:-

1. Should be user friendly system with wireless markers and electrodes for EMG recording to ensure natural movement of the subject/patient
2. Should be capable of automatic and synchronized recording of kinematic and kinetic parameters (i.e. 2D & 3D motion, Dynamic EMG & forces) along with analysis and reporting.
3. Should be up-gradable in terms of the Hardware and Software and must have provisions for easy and quick calibration
4. Should work on 220-240 V, AC-50 Hz and be supplied with color laser printer, UPS of adequate capacity and C.V.T
5. Real-time tracking and automatic identification of marker trajectories allowing subjects to walk in and out of measurement volume without the operator needing to re-identify marker trajectories.
6. Capture up to 192 channels of analog data in perfect synchronization with coordinate data
7. An audio tone tool embedded within the data collection software creating biofeedback, performance and training abilities. Create kinematic variables establishing performance limitations based on real-time kinematics and the (virtual and real) marker set on the subject, to trigger and audio tone to monitor performance.

(2) Kinematic Parameters

1. System should have high resolution motion data capturing system, with provision of acquiring data for analysis in 2D as well as 3D motion with minimum 4 nos of optoelectric cameras (capture rate of min. 100 Hz)- upgradeable up to unlimited Nos cameras
2. Cameras can be refocused without assistance of a computer screen or an additional person
3. Should be capable of online detection of retro-reflective markers,- of different types and sizes and capturing reflected infra Red signals from them.
4. System must have facility of (all) event identification automatically, to (and) give correlated information of kinematic data for motion analysis.
5. Real-time data viewing of a subject-scaled musculo-skeletal models and characters. Calculations of real-time kinematics, real-time calculations of forces and presentation of 3D data in real-time graphs. Such models have muscular origin and insertions that have been validated through medical MRI and scanning procedures.
6. Auto-event triggering. Can accept TTL electrical signals to initiate or cease sampling, e.g. electronic eye, force plate strikes or MTS instron machines.
7. Analog collection feature utilizes the same tracking computer hardware and does not require a second or third data station. The A/D acquisition utilizes a

- single clock to synchronize digital video data with analog data.
8. Acquisition software must have the capability to display in real-time an overlay of 3D markers and stick figure on the on the video image.
 9. System must display Cartesian graphs drawn in real-time of lower extremity angles (Flex/Extension, Abd/Adduction and Int/External rotation) where the graph sizes, line colors and widths, range on the X and Y axis and background colors can be specified by the operator
 10. Collection software must trigger in real-time at least 7 digital I/O ports from coordinate, kinematic (angles, velocities, accelerations) or analog data in conditions specified by the operator
 11. System must be able to compute and display the total ground reaction force as a vector in the 3D workspace without using force plates or pressure plates.

(A) Software to be provided:-

1. Software for identification and automatic tracking of markers
2. Software for identification and automatic tracking of markers both indoor and outdoor (in direct sunlight)
3. Software for identification and automatic tracking of markers indoor where there is intensive lights and windows.
4. Real-time data collection without third party software
5. When stepping into the field of view, subject must be re-identified automatically by the software without technician assistance
6. Completely integrated software- collect, edit, clean and analyze the data in the same executable software
7. Software can work in 32 and 64-bit MS Windows XP, Vista, 7 and use the full bit range of each operating system
8. Data capture and display of 3D motion in real-time for up to ten people
9. System to output data in the following formats- .anc, .anb, .trb, .trc. This ensures file compatibility with data collected previously. Custom data analysis software is written for these data file formats specifically. Different file formats would require completely rewriting existing software and delay currently planned data collections.
10. Real-time computation of joint segment translations and rotations
11. Capture and track 3D motion data on up to 1000 markers in post-processing mode with software selectable frame rates
12. Multi-threaded software code design for optimal use of dual and quad Pentium processors
13. Software calibration must use real-time wand calibration and have the ability to re-process the calibration without recapturing the wand motion
14. Software tools for post processing raw coordinate or tracked data
15. Real-time Software Development Tool Kit (SDK) for interfacing user developed application packages
16. Software for 3D motion analysis- i.e. calculation of co-ordinates, centre of Gravity, Vectors, Acceleration, Angles etc.
17. Software must display after calibration the H and V residual and



- computed focal length for each camera plus the 3D average and standard deviation residuals
18. Real-time 3D skeleton builder and viewer embedded within the data collection software and not a third party or secondary program. Allows the user to build models, calculate and present 3D joint center calculated angles in real-time and to define and align the 3D data relative to the local coordinate system and also to the global coordinate system.
 19. Software should provide capability to setup and compute during real-time collection displacements between points, point velocities, point accelerations and angles between three selected points.
 20. Software should be backwards compatible, permitting data import from previous software versions.
 21. Software must have integrated (within the same executable program as setup and collection software) software to setup and compute the model's center of mass, segmental angles, and joint kinetics (forces, moments and powers)
 22. Software must display in real-time within the 3D workspace ground reaction forces, joint force vectors and joint moments with the segmented model
 23. Software for integrated multiple parameters display monitoring in single or multi-frame with synchronized, simultaneous video recording
 24. Software for mathematical modeling and algorithms for Gait Analysis
 25. Software for report generation and comparison with reference to normative data along with provision of generating hard copy and plotter
 26. Software to provide facility for developing /modifying normalized data
 27. Software for synchronized viewing reconstructed data, patient video, kinematic graphs and kinetic parameters
 28. System should have integrated software with capacity of data export from one type of File format i.e. C3D/HTML/ASC II
 29. Capable of offline processing of raw video and analog data and sending such data via C3D, TRB, TRC and ANB file formats to allow offline measurements to occur on non-primary workstations.
 30. Software for integration to kinetic, Kinematic and EMG parameters and display of joint movements, force and muscle EMG
 31. ISO 9001:2000 Certified
 32. TUV/CE certified
 33. System operates with passive , retro reflective markers offering no wires or lights on the body of the subject, or any additional increases in weight due to heavy markers, LEDs and batteries
 34. 3D system accuracy of .01 mm in a 2 X 2 X 2 m volume

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35. Minimum F. stop set at 4.8. The higher number means that there is less light coming into the lens and provides us a greater depth of field
36. System latency with an eight camera (1.3 MP) system at 500 Hz and full-body marker set is less than five milliseconds.
37. Software calibration must use real-time wand calibration and have the ability to re-process the calibration without recapturing the wand motion.

(B) Computer Hardware

1. Must be of latest configuration

Should be capable of handling storage & display of desired software and drivers

Should have high speed processor- Min 3.2 GHz or the latest one

Should have:-

- Minimum data storage capacity: 500GB or more with compatible hard disk
- External 500 GB hard disk (min) with USB port connection- Min 1 No
- RAM: compatible I CH-video-min 1 GB and higher
- User friendly operative system- preferably windows XP based latest version.
- Related Ethernet card, graphics card with accelerator along with video input card compatible with software with latest compatible DVD writer/rewriter
- System should be capable of acquiring, storage, display, analysis and retrieving data with capability of individual and simultaneous display of all parameters (i.e. kinematic, kinetic, EMG, H.R, video etc) in different windows on the monitor.
- One LCD monitor of min. 75 cm size- (clinician viewing) with flat screen, high resolution and wide angle view

(C) KINEMATIC PARAMETERS

Must be synchronized with kinematic parameters.

- a. Integrated and synchronized recording of forces in 3 planes



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Specific:-

1. Integrated monitoring should be available
2. Passive retro-reflective markers of all types and all size- no. of markers- 200 to be provided as a standard accessory
3. Method of anchoring markers should be easy and user / patient friendly.
4. Provision for wall mounting of cameras

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5. EMG surface electrodes- disposable/ reusable. 1000 to be provided along with the system
6. ADDITIONAL

Installation:-

- Free installation at site

Demonstration:-

- Physical demonstration or demonstration through video conferencing for quoted model

Warranty:-

- Warranty should be 2 years. The warranty will be for the main equipment along with accessories from the date of satisfactory installation certificate issued by the user
- 98% uptime warranty during warranty period of the complete system with extension of warranty period by double the downtime.

Comprehensive maintenance warranty (optional):-

1. For the main equipment along with accessories for five years
2. With labour and spares after successful completion of warranty period
3. The cost of CMC must be quoted along with taxes applicable on the date of opening of the tender
4. Cost of CMC will be added to ranking purpose

Documentation

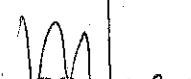
- User./Technical/maintenance manuals to be supplied in English
- List of equipments available for providing calibration and routine Preventive maintenance Support, as per manufacturer documentation in service/technical manual.



- Certificate of calibration and inspection and inspection
- Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.
- List of important spare parts and accessories with their part number and costing.
- Compliance Report as per tender enquiry to be submitted in a tabulated and point wise manner clearly mentioning the page/para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue, will not be considered.


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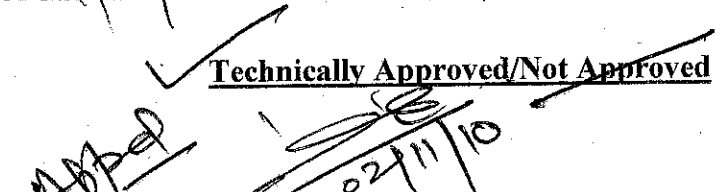

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TECHNICAL SPECIFICATIONS OF HIGH LOW CUM TILT TABLE

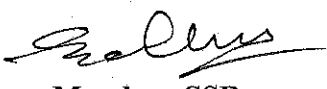
- Electrically operated Tilt from 0 to 85 degrees or more
- Hand switch operable by therapist and the patient
- Both vertical and angular adjustment
- Fixation rails for straps
- Adjustable foot plate
- Three straps for chest, pelvis and Knee
- Durable washable and hygienic upholstery
- Easy to move with large lockable wheels


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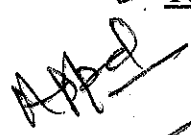


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TECHNICAL SPECIFICATIONS OF SCANNING LASER

THE UNIT SHOULD BE OF THE FOLLOWING SPECIFICATION

Laser protection class	IV
IEC Protection Class	I type BF
Power supply	230 VAC, 50/60 Hz
LASER SCANNING SECTION	
Visible beam	808 nm
Wave Length	632 nm
Effective power	1700 mw
Emission	Continuous and pulsed
Duty cycle	10-100%
Frequency	10-10000Hz
Laser energy	0-100 joules
Rotation of scanning plan	-45°/+90°
Available protocols	50 pre set protocols and adjustable during treatment
Customized protocols	50 protocols
Hand probe section Laser sources	IR Laser diode GaAs
	904 nm
Peak power	25mW
Frequency	5-10000Hz

The unit should have the facility of using the scanning section and the hand probe section simultaneously. He (Helium) & Ne(Neon) laser not accepted.

Standards, Safety and Training

• Manufacturer should have ISO certification for quality standards.

- Comprehensive warranty for two years and next 5 years CMC charges after warranty
- Comprehensive training schedule for technical staff and support services with the system

Documentation

- User./Technical/maintenance manuals to be supplied in English
- List of equipments available for providing calibration and routine Preventive maintenance Support, as per manufacturer documentation in service/technical manual.
- Certificate of calibration and inspection
- Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.
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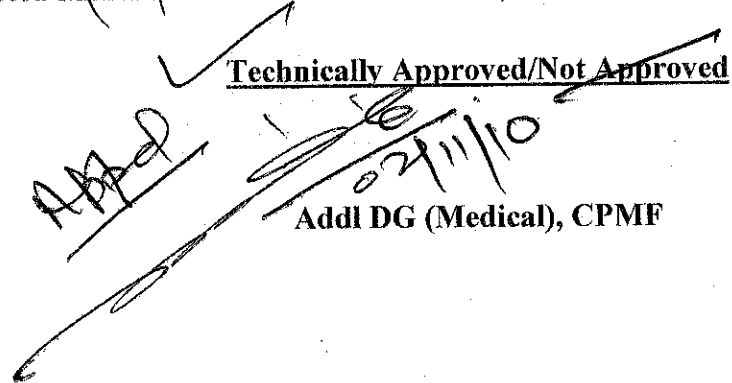

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TECHNICAL SPECIFICATIONS OF PROFESSIONAL VIBRATOR SYSTEM

The unit should have following features:-

- Heavy Duty & sturdy motor with internal 24 Volt/50W Transformer for Continuous operation
- Variable frequency controls
- Rolling caser stand & accessory tray.
- Must have Physio kit of 7 different applicator for Soft Massage, Deep Massage, Trigger Point and Relaxation Drainage
- Bi-Directional –stroking
- Useful for Physiotherapy, Sports Therapy, Chiropractic, Osteopath
- Operable on 230 Volt/50 Hz
- Should be supplied with CVT of required rating



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