R Healthcare Technical Information Guide

8TRL, SP100, 9TRL, AP100, ACCESS, ACCESS HEAVY DUTY, ACCENT, & ACCENT HEAVY DUTY

Index

1.1. INTRODUCTION and SERVICE NEED ASSESSMENT.

This Section of the manual is concerned with the practical mechanics and service workshop management aspects of providing a wheelchair service. It is intended to be a guide for Rehabilitation Engineers and those responsible for the management of wheelchair issue and the continued maintenance of wheelchairs to a satisfactory safe service standard.

Reconditioning as the definition of a service based re-manufacturing operation has been replaced by component replacement and recycling, and this is discussed at length.

Although technical in detail, Therapists may also find elements of this section useful in appreciating the technical and evolving functional relationships in relation to user need and environment.

In this edition of the manual we have placed greater emphasis on preventive service action, as compared to reaction.

Both wheelchair manufacturer and service must evolve to meet the growing needs of users. Recent improvements in the collection and analysis of reliable data on wheelchair reliability in the field means that service management can more accurately control and predict the lifetime service and economic factors of maintaining a fleet of wheelchairs.

From our own experiences with products returned from the field, we have produced suggestions for **Wheelchair Service Guidelines,** for use by service management and Rehabilitation Engineers and Therapists, to determine by an objective scoring assessment the recommended service interval for individual wheelchair, occupant and environment combinations.

In conjunction with the above we have added a **Critical Component Replacement Schedule,** which suggests a regular preventive spare part replacement based upon the available data, and the objective assessment of the application.

The following examples are intended to put these proposals into context.

1.2 WARRANTY POLICY

1. It is the R Healthcare policy to guarantee our products for a period of "36" months from their placement into service. The warranty applies to any defects in workmanship or materials, which renders the product unfit for its intended use. R Healthcare wheelchairs must be used in accordance with the information provided, with service work carried out through an NHS approved service agent in accordance with the R Healthcare wheelchair information manual. The wheelchair information guide includes service record information, which should remain with the wheelchair.

2. Defective Parts / Sub-Assemblies / Assemblies

In the event of a defective part / sub assembly or assembly that requires replacement(s) the preference is that only genuine R Healthcare components shall be utilised. The fitting of other industry standard components is acceptable when fitted as recommended in our technical manual. Unsupported modifications shall render the warranty void and any subsequent losses or claims shall be the liability of the organisation undertaking such repairs or modifications.
R Healthcare will not be liable for consumable items at any stage during the warranty period unless defects in workmanship or materials have caused a product failure. Such consumable items include tyres, inner tube, handgrips, tipping sleeves, footplate mats, upholstery, fabrics, belts etc.

3. Spares
All orders for warranty replacement parts shall be processed by R Healthcare within 4 working days or as stock levels permit. All parts will be supplied and invoiced under normal trading terms. All genuine R Healthcare Spares carry 12 months warranty from the date it is put into service.

4. All warranty claims, spare parts returns and relevant queries relating to this warranty procedure should be addressed to:

Customer Services,
Sheffield Road
Whittington
Chesterfield
Derbyshire
S41 8NJ

Telephone. 0870 609 0600.
Fax. 01685 881 755
R Healthcare Internet site www.rhealthcare.co.uk gives further details of Healthcare products.

!

Important

R Healthcare recommend that reconditioning or service of spare parts and accessories is not carried out, the advice is to purchase new approved R Healthcare parts.

1.3 Technical Data Sheets

Positive Momentum

TECHNICAL INFORMATION CE

RANGE **8TRL** MAUNAL WHEELCHAIRS

OCCUPANT WEIGHT RANGE 50Kg TO 127Kg

KG

INFORMATION GIVEN COVERS ALL OPTIONS SEE REMPLOY RECOMENDED BUILD CHART SUGGESTED COMBINATIONS OF FEATURES TO MEET A RANGE OF SPECIFIC APPLICATIONS

SEATING AREA DIMENSIONS

RANGE AND SEAT WIDTH REFERENCE NUMBER. COVERING ALL GENERIC CONFIGURATIONS	SERVICE FRAME REFERENCE (inch)		ISO 7176 EFFECTIVE MEASUREMENTS (mm)	
	WIDTH	DEPTH	WIDTH	DEPTH
8TRLJ	13	15	365	415
8TRLJ	15	16	390	440
8TRLJ	16	16	440	440
8TRL	17	17	465	465
8TRL	18	17	490	465

SEAT FRONT EDGE TO GROUND HEIGHT

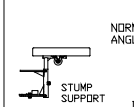
CONFIG.	SERVICE (FRAME) REFERENCE (inch)	EFFECTIVE (CENTRE) MEASUREMENTS (mm)
8TRLJ	19	450 including sag
8TRL	19	450 including sag

BACKREST HEIGHT - 445mm
MEASURED FROM SEAT TO TOP OF CANVAS AT FRAME

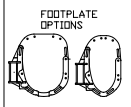
FOOTREST INFORMATION

PRIMARY LEG TO SEAT RELATIONSHIPS

TYPES	LEG ANGLE	HEIGHT RANGE FROM SEAT(mm)
STANDARD	90° FIXED	-235 - -375



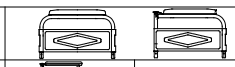
ELEV. LEG REST	120° - 180°	N/A
STUMP SUPPORT	180° FIXED	0 - +80

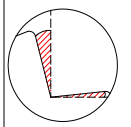


SWIVEL FOR SIDE TRANSFER
DETACHABLE FOR LIFTING

ARMREST INFORMATION

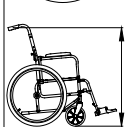
HEIGHT OF DETACHABLE ARMRESTS (mm)

UNIVERSAL AND TRAY		255
DESK ADJUSTABLE		HEIGHT RANGE 255 - 315



FRAME / SEAT ANGLE INFORMATION

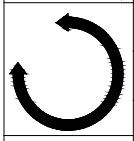
BACKREST ANGLE FROM VERTICAL
10° DEGREES REARWARD



FRAME ANGLE FROM HORIZONTAL
5° DEGREES LOWER AT BACK

PUSH HANDLE HEIGHT - 940
MEASURED FROM GROUND TO CENTRE OF GRIP

CORRIDOR WIDTH TURNING SPACE



WITH ATTENDANT BEHIND

MODEL	THROUGH 180° BETWEEN WALLS
8TRLJ	1200
8TRL	1250

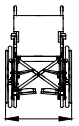
DATA BASED ON ISO 7176 TESTS & MEASUREMENTS ON BASIC FACTORY BUILD SPECS. WITHOUT INCLUSION OF ANY ADAPTATION. INFORMATION GIVEN IS FOR COMPARISON AND GUIDANCE, NOT A MANUFACTURING STANDARD. USER TRIAL RECOMMENDED

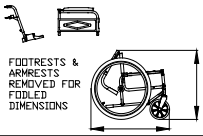
WWW.REMPLOYHEALTHCARE.COM

DXP335-4

OVERALL DIMENSIONS

OVER ALL DIMENSIONS CAN BE REDUCED FROM THESE FIGURES BY REMOVAL OF QD WHEELS





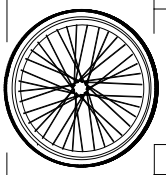
DESCRIPTION AND SEAT WIDTH REF.		CHAIR OPEN (mm)			CHAIR FOLDED (mm)		
		WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT
JUNIOR MODELS	13	535	990	940	290	760	685
	15	585	990	940	290	760	685
	16	610	990	940	290	760	685
ADULT MODELS	17	635	1040	940	290	810	685
	18	660	1040	940	290	810	685

WHEEL BASE CASTORS TRAILING

WIDTH REFERENCE	13"	18"
WHEELBASE (mm)	375 min	430 max

WHEELBASE RANGE ACCROSS ALL MODELS

REAR WHEEL INFORMATION

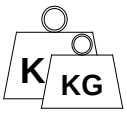


DIMENSION	Ø mm	WIDTH
SELF PROPELLED	560 ONLY	31mm PNEUMATIC
		25mm PUNCTURE FREE
TYRE	CHOICE- PUNCTURE FREE OR PNEUMATIC	

CASTOR INFORMATION

SPIGOT FITTING WITH ANGLE ADJUSTABLE MOUNTING TO SUIT SEAT TO GROUND ANGLE

PUNCTURE FREE TYRE Ø190 BY 25mm WIDE



WEIGHT INFORMATION

MEASUREMENT	TOTAL WEIGHT	LIFTING WEIGHT
ATTENDANT	18.5Kg	14.0Kg

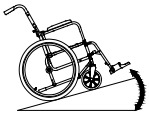
OBSTACLES AND ENVRIONMENTS

SAFE SLOPE FOR MANUAL CHAIRS IS BASED UPON ABILITY OF OCCUPANT OR ATTENDANT TO CONTROL THE CHAIR ON A SLOPE IN ALL DIRECTIONS.	8 DEGREES

ISO 7176 IMPACT STRENGTH & DYNAMIC TESTS

TRANSPORT COMPATIBLE
CRASH TESTED AT 48Kmph/30mph
APPROVED FOR USE WITH WEBBING TIE-DOWN & OCCUPANT RESTRAINT SYSTEM (WTORS) NOT CLAMPS

200,000 CYCLES TWO DRUM
6,666 CYCLES KERB DROP



STATIC STABILITY RANGE (BRAKES ON)

MODEL AND CONFIG.	FORWARDS	BACKWARDS	SIDEWAYS
RANGER 8TRLJ 15"	13° SLIDES	15°	14°
RANGER 8TRL 17"	13° SLIDES	15°	15°

Positive Momentum

TECHNICAL INFORMATION CE

RANGE **9TRL** MANUAL WHEELCHAIRS

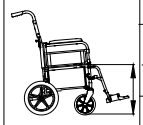
OCCUPANT WEIGHT RANGE 50Kg TO 127Kg

KG

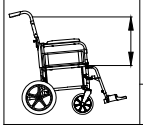
GENERAL PURPOSE FOR JUNIOR OR ADULT OCCUPANTS CONFIGURABLE TO ATTENDANT PROPULSION. FOR INDOOR AND OUTDOOR USE IN PUBLIC ACCESS AREAS. SUITABLE AS A TRANSPORT VEHICLE SEAT WITH APROVED RESTRAINTS

SEATING AREA DIMENSIONS

RANGE AND SEAT WIDTH REFERENCE NUMBER. COVERING ALL GENERIC CONFIGURATIONS	SERVICE FRAME REFERENCE inch		ISO 7176 EFFECTIVE MEASUREMENTS mm	
	WIDTH	DEPTH	WIDTH	DEPTH
9TRLJ	13	15	365	415
9TRLJ	15	16	390	440
9TRLJ	16	16	440	440
9TRL	17	17	465	465
9TRL	18	17	490	465

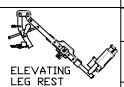


SEAT FRONT EDGE TO GROUND HEIGHT		
CONFIG.	SERVICE (FRAME) REFERENCE (inch)	EFFECTIVE (CENTRE) MEASUREMENTS (mm)
9TRLJ	19	450 INCLUDING SAG
9TRL	19	450 INCLUDING SAG

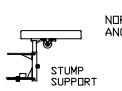


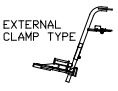
BACKREST HEIGHT - 445mm
MEASURED FROM SEAT TO TOP OF CANVAS AT FRAME

FOOTREST INFORMATION

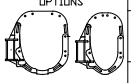


PRIMARY LEG TO SEAT RELATIONSHIPS		
TYPES	LEG ANGLE	HEIGHT RANGE FROM SEAT(mm)
STANDARD	90° FIXED	-235 - -375





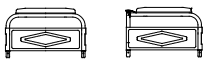
ELEV. LEG REST	120° - 180°	N/A
STUMP SUPPORT	180° FIXED	0 - +80

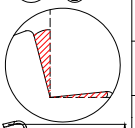


SWIVEL FOR SIDE TRANSFER
DETACHABLE FOR LIFTING

ARMREST INFORMATION

HEIGHT OF DETACHABLE ARMRESTS (mm)

UNIVERSAL AND TRAY		255

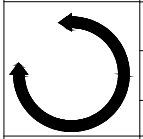


FRAME / SEAT ANGLE INFORMATION

BACKREST ANGLE FROM VERTICAL
5° TO 25° REARWARD

FRAME ANGLE FROM HORIZONTAL
5° DEGREES LOWER AT BACK

PUSH HANDLE HEIGHT - 940mm
MEASURED FROM GROUND TO CENTRE OF GRIP



CORRIDOR WIDTH TURNING SPACE

WITH ATTENDANT BEHIND

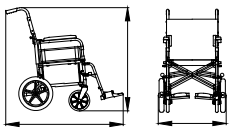
MODEL	THROUGH 180° BETWEEN WALLS
9TRLJ	1090
9TRL	1150

DATA BASED ON ISO 7176 TESTS & MEASUREMENTS ON BASIC FACTORY BUILD SPECS. WITHOUT INCLUSION OF ANY ADAPTATION. INFORMATION GIVEN IS FOR COMPARISON AND GUIDANCE, NOT A MANUFACTURING STANDARD. USER TRIAL RECOMMENDED

WWW.REMPLOYHEALTHCARE.COM

OVERALL DIMENSIONS

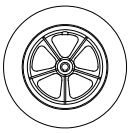
OVER ALL DIMENSIONS CAN BE REDUCED FROM THESE FIGURES BY REMOVAL OF QD WHEELS



DESCRIPTION AND SEAT WIDTH REF.		CHAIR OPEN (mm)			CHAIR FOLDED (mm)		
		WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT
JUNIOR MODELS	13	535	840	940	290	610	685
	15	585	840	940	290	610	685
	16	610	840	940	290	610	685
ADULT MODELS	17	635	915	940	290	685	685
	18	660	915	940	290	685	685

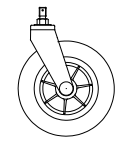
WHEEL BASE CASTORS TRAILING

WIDTH REFERENCE	13"	18"
WHEELBASE (mm)	360 min	420 max



REAR WHEEL INFORMATION

DIMENSION	Ø mm	WIDTH
ATTENDANT PROPELLED	315 ONLY	50mm
TYRE	PUNCTURE FREE	



CASTOR INFORMATION

SPIGOT FITTING WITH ANGLE ADJUSTABLE MOUNTING TO SUIT SEAT TO GROUND ANGLE

PUNCTURE FREE TYRE Ø190 BY 25mm WIDE

K KG

WEIGHT INFORMATION

MEASUREMENT	TOTAL WEIGHT	LIFTING WEIGHT
ATTENDANT PROPELLED	14Kg	10.5Kg

OBSTACLES AND ENVRIONMENTS

SAFE SLOPE FOR MANUAL CHAIRS IS BASED UPON ABILITY OF OCCUPANT OR ATTENDANT TO CONTROL THE CHAIR ON A SLOPE IN ALL DIRECTIONS.	8 DEGREES

ISO 7176 IMPACT STRENGTH & DYNAMIC TESTS

TRANSPORT COMPATIBLE
CRASH TESTED AT 48Kmph/30mph
APPROVED FOR USE WITH WEBBING TIE-DOWN & OCCUPANT RESTRAINT SYSTEM (WTORS) NOT CLAMPS

200,000 CYCLES TWO DRUM
6,666 CYCLES KERB DROP

STATIC STABILITY RANGE (BRAKES ON)			
MODEL AND CONFIG.	FORWARDS	BACKWARDS	SIDEWAYS
RANGER 9TRLJ 15"	13° SLIDES	12°	13°
RANGER 9TRL 17"	13° SLIDES	12°	14°

DXP335-5

Positive Momentum

TECHNICAL INFORMATION CE

RANGE **SP100** MAUNAL WHEELCHAIR

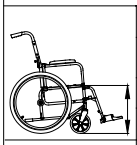
OCCUPANT WEIGHT RANGE 50Kg TO 112Kg

KG

INFORMATION GIVEN COVERS ALL OPTIONS SEE REMPLOY RECOMENDED BUILD CHART SUGGESTED COMBINATIONS OF FEATURES TO MEET A RANGE OF SPECIFIC APPLICATIONS

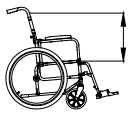
SEATING AREA DIMENSIONS

RANGE AND SEAT WIDTH REFERENCE NUMBER, COVERING ALL GENERIC CONFIGURATIONS	SERVICE FRAME REFERENCE (inch)		ISO 7176 EFFECTIVE MEASUREMENTS (mm)	
	WIDTH	DEPTH	WIDTH	DEPTH
SP100	17	17	465	465



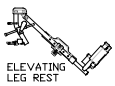
SEAT FRONT EDGE TO GROUND HEIGHT

CONFIG.	SERVICE (FRAME) REFERENCE (inch)	EFFECTIVE (CENTRE) MEASUREMENTS (mm)
SP100	17	450 including sag



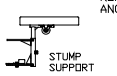
BACKREST HEIGHT - 445mm
MEASURED FROM SEAT TO TOP OF CANVAS AT FRAME

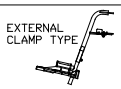
FOOTREST INFORMATION



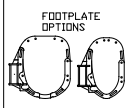
PRIMARY LEG TO SEAT RELATIONSHIPS

TYPES	LEG ANGLE	HEIGHT RANGE FROM SEAT(mm)
STANDARD	90° FIXED	-235 - -375





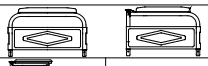
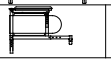
ELEV. LEG REST	120° - 180°	N/A
STUMP SUPPORT	180° FIXED	0 - +80

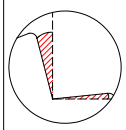


SWIVEL FOR SIDE TRANSFER
DETACHABLE FOR LIFTING

ARMREST INFORMATION

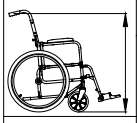
HEIGHT OF DETACHABLE ARMRESTS (mm)

UNIVERSAL AND TRAY		255
DESK ADJUSTABLE		HEIGHT RANGE 255 - 315



FRAME / SEAT ANGLE INFORMATION

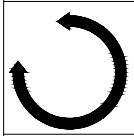
BACKREST ANGLE FROM VERTICAL
10° DEGREES REARWARD



FRAME ANGLE FROM HORIZONTAL
5° DEGREES LOWER AT BACK

PUSH HANDLE HEIGHT - 940
MEASURED FROM GROUND TO CENTRE OF GRIP

CORRIDOR WIDTH TURNING SPACE



WITH ATTENDANT BEHIND

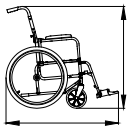
MODEL	THROUGH 180° BETWEEN WALLS
SP100	1250

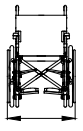
DATA BASED ON ISO 7176 TESTS & MEASUREMENTS ON BASIC FACTORY BUILD SPECS. WITHOUT INCLUSION OF ANY ADAPTATION. INFORMATION GIVEN IS FOR COMPARISON AND GUIDANCE, NOT A MANUFACTURING STANDARD. USER TRIAL RECOMMENDED

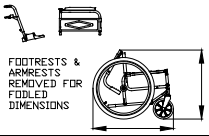
WWW.REMPLOYHEALTHCARE.COM

OVERALL DIMENSIONS

OVER ALL DIMENSIONS CAN BE REDUCED FROM THESE FIGURES BY REMOVAL OF QD WHEELS





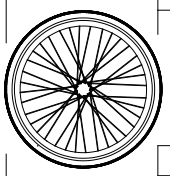


DESCRIPTION AND SEAT WIDTH REF.	CHAIR OPEN (mm)			CHAIR FOLDED (mm)		
	WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT
17	635	1040	940	290	810	685

WHEEL BASE CASTORS TRAILING

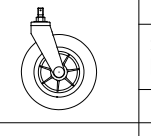
WIDTH REFERENCE	17"
WHEELBASE (mm)	430 max

WHEELBASE RANGE ACCROSS ALL MODELS



REAR WHEEL INFORMATION

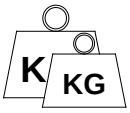
DIMENSION	Ø mm	WIDTH
SELF PROPELLED	560 ONLY	31mm PNEUMATIC
		25mm PUNCTURE FREE
TYRE	CHOICE- PUNCTURE FREE OR PNEUMATIC	



CASTOR INFORMATION

SPIGOT FITTING WITH ANGLE ADJUSTABLE MOUNTING TO SUIT SEAT TO GROUND ANGLE

PUNCTURE FREE TYRE Ø190 BY 25mm WIDE



WEIGHT INFORMATION

MEASUREMENT	TOTAL WEIGHT	LIFTING WEIGHT
ATTENDANT	18.5Kg	14.0Kg

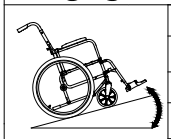
OBSTACLES AND ENVRIONMENTS

SAFE SLOPE FOR MANUAL CHAIRS IS BASED UPON ABILITY OF OCCUPANT OR ATTENDANT TO CONTROL THE CHAIR ON A SLOPE IN ALL DIRECTIONS.	8 DEGREES

ISO 7176 IMPACT STRENGTH & DYNAMIC TESTS

TRANSPORT COMPATIBLE
CRASH TESTED AT 48Kmph/30mph
APPROVED FOR USE WITH WEBBING TIE-DOWN & OCCUPANT RESTRAINT SYSTEM (WTORS) NOT CLAMPS

200,000 CYCLES TWO DRUM
6,666 CYCLES KERB DROP



STATIC STABILITY RANGE (BRAKES ON)

MODEL AND CONFIG.	FORWARDS	BACKWARDS	SIDEWAYS
SP100 17"	13° SLIDES	15°	15°

DXP335-14

Positive Momentum

TECHNICAL INFORMATION CE

RANGE **AP100** MANUAL WHEELCHAIR

OCCUPANT WEIGHT RANGE 50Kg TO 112Kg

KG

GENERAL PURPOSE FOR JUNIOR OR ADULT OCCUPANTS CONFIGURABLE TO ATTENDANT PROPULSION. FOR INDOOR AND OUTDOOR USE IN PUBLIC ACCESS AREAS. SUITABLE AS A TRANSPORT VEHICLE SEAT WITH APROVED RESTRAINTS

SEATING AREA DIMENSIONS

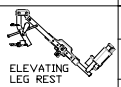
RANGE AND SEAT WIDTH REFERENCE NUMBER. COVERING ALL GENERIC CONFIGURATIONS	SERVICE FRAME REFERENCE inch		ISO 7176 EFFECTIVE MEASUREMENTS mm	
	WIDTH	DEPTH	WIDTH	DEPTH
AP100	17	17	465	465

SEAT FRONT EDGE TO GROUND HEIGHT

CONFIG.	SERVICE (FRAME) REFERENCE (inch)	EFFECTIVE (CENTRE) MEASUREMENTS (mm)
AP100	17	450 INCLUDING SAG

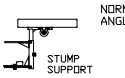
BACKREST HEIGHT - 445mm
MEASURED FROM SEAT TO TOP OF CANVAS AT FRAME

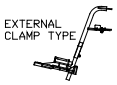
FOOTREST INFORMATION



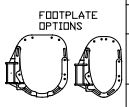
PRIMARY LEG TO SEAT RELATIONSHIPS

TYPES	LEG ANGLE	HEIGHT RANGE FROM SEAT(mm)
STANDARD	90° FIXED	-235 - -375





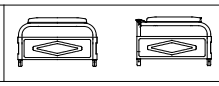
ELEV. LEG REST	120° - 180°	N/A
STUMP SUPPORT	180° FIXED	0 - +80



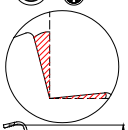
SWIVEL FOR SIDE TRANSFER
DETACHABLE FOR LIFTING

ARMREST INFORMATION

HEIGHT OF DETACHABLE ARMRESTS (mm)

UNIVERSAL AND TRAY		255

FRAME / SEAT ANGLE INFORMATION

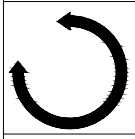


BACKREST ANGLE FROM VERTICAL
5° TO 25° REARWARD

FRAME ANGLE FROM HORIZONTAL
5° DEGREES LOWER AT BACK

PUSH HANDLE HEIGHT - 940mm
MEASURED FROM GROUND TO CENTRE OF GRIP

CORRIDOR WIDTH TURNING SPACE



WITH ATTENDANT BEHIND

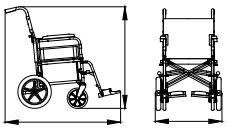
MODEL	THROUGH 180° BETWEEN WALLS
AP100	1150

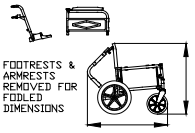
DATA BASED ON ISO 7176 TESTS & MEASUREMENTS ON BASIC FACTORY BUILD SPECS. WITHOUT INCLUSION OF ANY ADAPTATION. INFORMATION GIVEN IS FOR COMPARISON AND GUIDANCE, NOT A MANUFACTURING STANDARD. USER TRIAL RECOMMENDED

WWW.REMPLOYHEALTHCARE.COM

OVERALL DIMENSIONS

OVER ALL DIMENSIONS CAN BE REDUCED FROM THESE FIGURES BY REMOVAL OF QD WHEELS

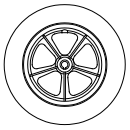




DESCRIPTION AND SEAT WIDTH REF.	CHAIR OPEN (mm)			CHAIR FOLDED (mm)		
	WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT
17	635	915	940	290	685	685

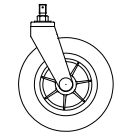
WHEEL BASE CASTORS TRAILING

WIDTH REFERENCE	17"
WHEELBASE (mm)	420 max



REAR WHEEL INFORMATION

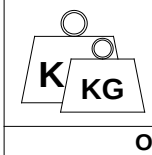
DIMENSION	ø mm	WIDTH
ATTENDANT PROPELLED	315 ONLY	50mm
TYRE	PUNCTURE FREE	



CASTOR INFORMATION

SPIGOT FITTING WITH ANGLE ADJUSTABLE MOUNTING TO SUIT SEAT TO GROUND ANGLE

PUNCTURE FREE TYRE ø190 BY 25mm WIDE



WEIGHT INFORMATION

MEASUREMENT	TOTAL WEIGHT	LIFTING WEIGHT
ATTENDANT PROPELLED	14Kg	10.5Kg

OBSTACLES AND ENVRIONMENTS

SAFE SLOPE FOR MANUAL CHAIRS IS BASED UPON ABILITY OF OCCUPANT OR ATTENDANT TO CONTROL THE CHAIR ON A SLOPE IN ALL DIRECTIONS.	8 DEGREES

ISO 7176 IMPACT STRENGTH & DYNAMIC TESTS

TRANSPORT COMPATIBLE
CRASH TESTED AT 48Kmph/30mph
APPROVED FOR USE WITH WEBBING TIE-DOWN & OCCUPANT RESTRAINT SYSTEM (WTORS) NOT CLAMPS

200,000 CYCLES TWO DRUM
6,666 CYCLES KERB DROP

STATIC STABILITY RANGE (BRAKES ON)

MODEL AND CONFIG.	FORWARDS	BACKWARDS	SIDEWAYS
AP100 17"	13° SLIDES	12°	14°

DXP335-15

Positive Momentum

TECHNICAL INFORMATION CE

RANGE **ACCESS** JUNIOR AND ADULT MANUAL WHEELCHAIRS

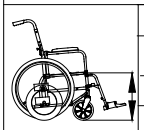
OCCUPANT WEIGHT RANGE 50Kg TO 127Kg

KG

GENERAL PURPOSE FOR JUNIOR OR ADULT OCCUPANTS CONFIGURABLE TO ATTENDANT OR OCCUPANT PROPULSION. FOR INDOOR AND OUTDOOR USE IN PUBLIC ACCESS AREAS. SUITABLE AS A TRANSPORT VEHICLE SEAT WITH APROVED RESTRAINTS

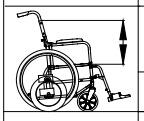
SEATING AREA DIMENSIONS

RANGE AND SEAT WIDTH REFERENCE NUMBER. COVERING ALL GENERIC CONFIGURATIONS	SERVICE FRAME REFERENCE inch		ISO 7176 EFFECTIVE MEASUREMENTS mm	
	WIDTH	DEPTH	WIDTH	DEPTH
□6J	13	15	365	415
□6J	14	15	390	415
□6J	15	16	415	440
□6J	16	16	440	440
□6A	17	17	490	465
□6A	18	17	490	465
□6A	19	17	515	465



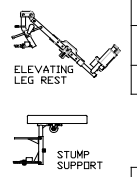
SEAT FRONT EDGE TO GROUND HEIGHT

CONFIG.	SERVICE (FRAME) REFERENCE (inch)	EFFECTIVE (CENTRE) MEASUREMENTS (mm)
□6A/J	19	450 INCLUDING SAG
□6A/J LOW	17	400 INCLUDING SAG



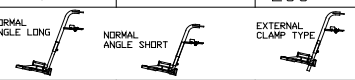
BACKREST HEIGHT - 430mm MEASURED FROM SEAT TO TOP OF CANVAS AT FRAME

FOOTREST INFORMATION



PRIMARY LEG TO SEAT RELATIONSHIPS

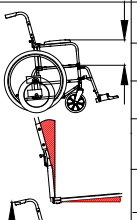
TYPES	LEG ANGLE	HEIGHT RANGE FROM SEAT(mm)
STANDARD	90° FIXED	-235 - -375



ELEV. LEG REST	120° - 180°	N/A
STUMP SUPPORT	180° FIXED	0 - +80

SWIVEL FOR SIDE TRANSFER
DETACHABLE FOR LIFTING

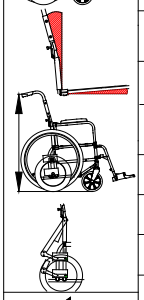
ARMREST INFORMATION



HEIGHT OF DETACHABLE ARMRESTS (mm)

UNIVERSAL AMD TRAY		255
DESK ADJUSTABLE		HEIGHT RANGE 255 - 315

FRAME / SEAT ANGLE INFORMATION



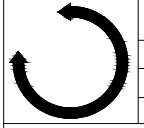
BACKREST ANGLE FROM VERTICAL 5° TO 25° REARWARD

FRAME ANGLE FROM HORIZONTAL 5° TO 7° DEPENDANT ON WHEELBASE

06PA	925	ADJUSTABLE OPTION	925 TO 1000
06PA LOW	875		875 TO 950

CORRIDOR WIDTH TURNING SPACE

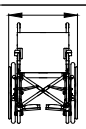
WITH ATTENDANT BEHIND



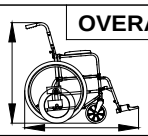
MODEL	THROUGH 180° BETWEEN WALLS
06H18 SP	1300
06H18 ATT	1200

DATA BASED ON ISO 7176 TESTS & MEASUREMENTS ON BASIC FACTORY BUILD SPECS. WITHOUT INCLUSION OF ANY ADAPTATION. INFORMATION GIVEN IS FOR COMPARISON AND GUIDANCE, NOT A MANUFACTURING STANDARD. USER TRIAL RECOMMENDED

WWW.REMPLOYHEALTHCARE.COM



OVERALL DIMENSIONS



OVER ALL DIMENSIONS CAN BE REDUCED FROM THESE FIGURES BY REMOVAL OF QD WHEELS

DESCRIPTION AND SEAT WIDTH REF.		CHAIR OPEN (mm)			CHAIR FOLDED (mm)		
		WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT
OCCUPANT MODELS	□6J13	550	990	940	280	730	685
	□6J14	575	990	940	280	730	685
	□6J15	600	990	940	280	730	685
	□6J16	625	990	940	280	730	685
	□6A17	650	1040	940	280	730	685
	□6A18	675	1040	940	280	730	685
	□6A19	700	1040	940	280	730	685
ATENDANT MODELS	□6J13	510	940	940	240	605	685
	□6J14	535	940	940	240	605	685
	□6J15	560	940	940	240	605	685
	□6J16	585	940	940	240	605	685
	□6A17	610	990	940	240	655	685
	□6A18	635	990	940	240	655	685
	□6A19	660	990	940	240	655	685

WHEEL BASE CASTORS TRAILING

WHEELBASE RANGE ACCROSS ALL MODELS 13"-19"

330mm SMALLEST JUNIOR TO 480mm LARGEST ADULT

REAR WHEEL INFORMATION

DIMENSION	Ø mm			WIDTH (mm)
ATTENDANT PROPELLED	315 ONLY			40
OCCUPANT PROPELLED	510	560	610	31 or 25
TYRE	CHOICE- PUNCTURE FREE OR PNEUMATIC			

CASTOR INFORMATION

MOUNTING - FIXED M14 & TYRE - MCP PUNCTURE FREE

Ø mm	125	LOW SEAT AND MODULAR	190	200	STANDARD SEAT AND MODULAR
WIDTH	40		25	32	

K KG

WEIGHT INFORMATION

MEASUREMENT	ATTENDANT	SP FIXED	SP DETACH
TOTAL WEIGHT	17.5Kg	19Kg	19Kg
WEIGHT FOR LIFTING	13.5Kg	15Kg	10.5Kg

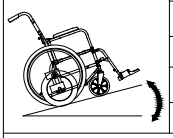
OBSTACLES AND ENVRIONMENTS

SAFE SLOPE FOR MANUAL CHAIRS IS BASED UPON ABILITY OF OCCUPANT OR ATTENDANT TO CONTROL THE CHAIR ON A SLOPE IN ALL DIRECTIONS. 8 DEGREES

ISO 7176 IMPACT STRENGTH & DYNAMIC TESTS

TRANSPORT COMPATIBLE
CRASH TESTED AT 48Kmph/30mph
APPROVED FOR USE WITH WEBBING TIE-DOWN & OCCUPANT RESTRAINT SYSTEM (WTORS) NOT CLAMPS

200,000 CYCLES TWO DRUM
6,666 CYCLES KERB DROP



STATIC STABILITY RANGE (BRAKES ON)

MODEL AND CONFIG.	FORWARDS	BACKWARDS	SIDEWAYS
ACCESS S/P MODEL 06A17	15° - 12.5° SLIDES	9° - 18°	18.5°
ACCESS ATT MODEL 06A17	15° - 13° SLIDES	9° - 18°	17.5°

DXP335-6

Positive Momentum

TECHNICAL INFORMATION CE

RANGE **ACCESS** HEAVY DUTY ADULT WHEELCHAIRS

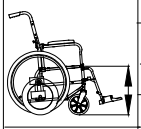
OCCUPANT WEIGHT RANGE 50Kg TO 146Kg*

KG

GENERAL PURPOSE FOR JUNIOR OR ADULT OCCUPANTS CONFIGURABLE TO ATTENDANT OR OCCUPANT PROPULSION. FOR INDOOR AND OUTDOOR USE IN PUBLIC ACCESS AREAS. SUITABLE AS A TRANSPORT VEHICLE SEAT WITH APROVED RESTRAINTS

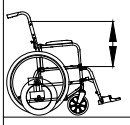
SEATING AREA DIMENSIONS

RANGE AND SEAT WIDTH REFERENCE NUMBER. COVERING ALL GENERIC CONFIGURATIONS	SERVICE FRAME REFERENCE inch		ISO 7176 EFFECTIVE MEASUREMENTS mm	
	WIDTH	DEPTH	WIDTH	DEPTH
06H	18	17	490	460
06H	19	17	515	460
06H	20	17	540	460
06H	22	17	590	460
06H	24	17	645	460



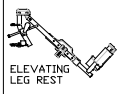
SEAT FRONT EDGE TO GROUND HEIGHT

CONFIG.	SERVICE (FRAME) REFERENCE (inch)	EFFECTIVE (CENTRE) MEASUREMENTS (mm)
06H	19.25	480 INCLUDING SAG AND CUSHION
06H LOW	17	430 INCLUDING SAG AND CUSHION



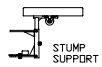
BACKREST HEIGHT - 430mm
MEASURED FROM SEAT TO TOP OF CANVAS AT FRAME

FOOTREST INFORMATION

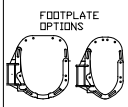


PRIMARY LEG TO SEAT RELATIONSHIPS

TYPES	LEG ANGLE	HEIGHT RANGE FROM SEAT(mm)
STANDARD	90° FIXED	-234 - -375

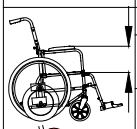


ELEV. LEG REST	120° - 180°	N/A
STUMP SUPPORT	180° FIXED	0 - +80

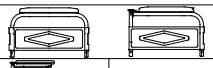
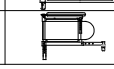


SWIVEL FOR SIDE TRANSFER
DETACHABLE FOR LIFTING

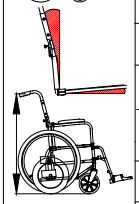
ARMREST INFORMATION



HEIGHT OF DETACHABLE ARMRESTS (mm)

UNIVERSAL AND TRAY			255
DESK ADJUSTABLE			HEIGHT RANGE 255 - 315

FRAME / SEAT ANGLE INFORMATION



BACKREST ANGLE FROM VERTICAL 5° TO 25° REARWARD

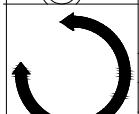
FRAME ANGLE FROM HORIZONTAL 5° TO 7° DEPENDANT ON WHEELBASE

06PA	925	 ADJUSTABLE OPTION	925 TO 1000
06PA LOW	875		875 TO 950

*UNIVERSAL BRACKET REINFORCED BRACE OPTION INCREASES CARRYING CAPACITY FROM 136Kg TO 146Kg

CORRIDOR WIDTH TURNING SPACE

WITH ATTENDANT BEHIND

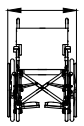


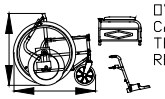
MODEL	THROUGH 180° BETWEEN WALLS
06H18 SP	1300
06H18 ATT	1200

DATA BASED ON ISO 7176 TESTS & MEASUREMENTS ON BASIC FACTORY BUILD SPECS. WITHOUT INCLUSION OF ANY ADAPTATION. INFORMATION GIVEN IS FOR COMPARISON AND GUIDANCE, NOT A MANUFACTURING STANDARD. USER TRIAL RECOMMENDED

WWW.REMPLOYHEALTHCARE.COM

OVERALL DIMENSIONS





OVER ALL DIMENSIONS CAN BE REDUCED FROM THESE FIGURES BY REMOVAL OF QD WHEELS

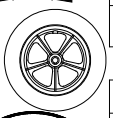
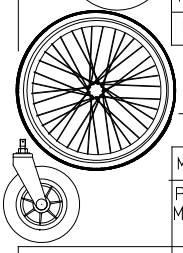
DESCRIPTION AND SEAT WIDTH REF.		CHAIR OPEN (mm)			CHAIR FOLDED (mm)		
		WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT
OCCUPANT MODELS	06H18	675	1040	940	280	785	690
	06H19	700	1040	940	280	785	705
	06H20	725	1040	940	280	785	720
	06H22	775	1040	940	280	785	750
	06H24	825	1040	940	280	785	780
OCCUPANT MODELS	06H18	675	995	940	240	660	690
	06H19	700	995	940	240	660	705
	06H20	725	995	940	240	660	720
	06H22	775	995	940	240	660	750
	06H24	825	995	940	240	660	780

WHEEL BASE CASTORS TRAILING

WHEELBASE RANGE ACROSS ALL MODELS 18"-24"

380mm SMALLEST ADULT TO
480mm LARGEST ADULT

REAR WHEEL INFORMATION

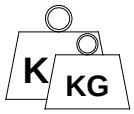
DIMENSION	Ø mm	WIDTH
ATTENDANT PROPELLED	315 ONLY	40
OCCUPANT PROPELLED	510 560 610	31 OR 25
TYRE	CHOICE- PUNCTURE FREE OR PNEUMATIC	

CASTOR INFORMATION

MOUNTING - FIXED M14 & TRYE - MCP PUNCTURE FREE

PLASTIC MOULDED FORK	Ø mm	190	200
	WIDTH	50	45

WEIGHT INFORMATION



MEASUREMENT	ATTENDANT	SP FIXED	SP DETACH
TOTAL WEIGHT	18.5Kg	20Kg	20Kg
LIFTING WEIGHT	14.5Kg	16Kg	11.5Kg

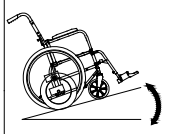
OBSTACLES AND ENVRIONMENTS

SAFE SLOPE FOR MANUAL CHAIRS IS BASED UPON ABILITY OF OCCUPANT OR ATTENDANT TO CONTROL THE CHAIR ON A SLOPE IN ALL DIRECTIONS. 8 DEGREES

ISO 7176 IMPACT STRENGTH & DYNAMIC TESTS

TRANSPORT COMPATIBLE
CRASH TESTED AT 48Kmph/30mph
APPROVED FOR USE WITH WEBBING TIE-DOWN & OCCUPANT RESTRAINT SYSTEM (WTORS) NOT CLAMPS

200,000 CYCLES TWO DRUM
6,666 CYCLES KERB DROP



STATIC STABILITY RANGE (BRAKES ON)

MODEL 06H18	FORWARDS	BACKWARDS	SIDEWAYS
ACCESS S/P	15° TO 12.5° SLIDES	9° TO 18°	18.5°
ACCESS ATT	15° TO 13° SLIDES	9° TO 18°	17.5°

DXP335-7

Positive Momentum

TECHNICAL INFORMATION CE

RANGE **ACCENT** ADULT MANUAL WHEELCHAIRS

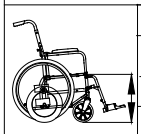
OCCUPANT WEIGHT RANGE 50Kg TO 127Kg

KG

GENERAL PURPOSE FOR ADULT OCCUPANTS CONFIGURABLE TO ATTENDANT OR OCCUPANT PROPULSION. FOR INDOOR AND OUTDOOR USE IN PUBLIC ACCESS AREAS. SUITABLE AS A TRANSPORT VEHICLE SEAT WITH APROVED RESTRAINTS

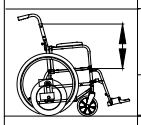
SEATING AREA DIMENSIONS

RANGE AND SEAT WIDTH REFERENCE NUMBER. COVERING ALL GENERIC CONFIGURATIONS	SERVICE FRAME REFERENCE inch		ISO 7176 EFFECTIVE MEASUREMENTS mm	
	WIDTH	DEPTH	WIDTH	DEPTH
□7A	17	19	490	515
□7A	18	19	490	515
□7A	19	19	515	515



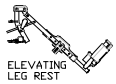
SEAT FRONT EDGE TO GROUND HEIGHT

CONFIG.	SERVICE (FRAME) REFERENCE (inch)	EFFECTIVE (CENTRE) MEASUREMENTS (mm)
□7A	19	450 INCLUDING SAG
□7A LOW	17	400 INCLUDING SAG



BACKREST HEIGHT - 430mm
MEASURED FROM SEAT TO TOP OF CANVAS AT FRAME

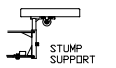
FOOTREST INFORMATION



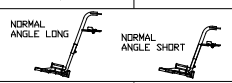
ELEVATING LEG REST

PRIMARY LEG TO SEAT RELATIONSHIPS

TYPES	LEG ANGLE	HEIGHT RANGE FROM SEAT(mm)
STANDARD	90° FIXED	-235 - -375

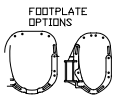


STUMP SUPPORT



NORMAL ANGLE LONG | NORMAL ANGLE SHORT | EXTERNAL CLAMP TYPE

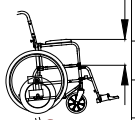
ELEV. LEG REST	120° - 180°	N/A
STUMP SUPPORT	180° FIXED	0 - +80



FOOTPLATE OPTIONS

SWIVEL FOR SIDE TRANSFER
DETACHABLE FOR LIFTING

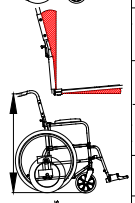
ARMREST INFORMATION



HEIGHT OF DETACHABLE ARMRESTS (mm)

UNIVERSAL AMD TRAY		255
DESK ADJUSTABLE		HEIGHT RANGE 255 - 315

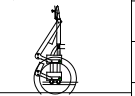
FRAME / SEAT ANGLE INFORMATION



BACKREST ANGLE FROM VERTICAL 5° TO 25° REARWARD

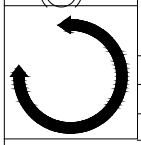
FRAME ANGLE FROM HORIZONTAL 5° TO 7° DEPENDANT ON WHEELBASE

07A	925	ADJUSTABLE OPTION	925 TO 1000
07A LOW	875		875 TO 950



CORRIDOR WIDTH TURNING SPACE

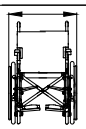
WITH ATTENDANT BEHIND



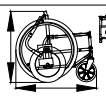
MODEL	THROUGH 180° BETWEEN WALLS
07A18 SP	1300
07A18 ATT	1200

DATA BASED ON ISO 7176 TESTS & MEASUREMENTS ON BASIC FACTORY BUILD SPECS. WITHOUT INCLUSION OF ANY ADAPTATION. INFORMATION GIVEN IS FOR COMPARISON AND GUIDANCE, NOT A MANUFACTURING STANDARD. USER TRIAL RECOMMENDED

WWW.REMPLOYHEALTHCARE.COM

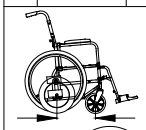


OVERALL DIMENSIONS



OVER ALL DIMENSIONS CAN BE REDUCED FROM THESE FIGURES BY REMOVAL OF QD WHEELS

	DESCRIPTION AND SEAT WIDTH REF.	CHAIR OPEN (mm)			CHAIR FOLDED (mm)		
		WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT
OCCUPANT MODELS	□7A17	650	1040	940	280	730	685
	□7A18	675	1040	940	280	730	685
	□7A19	700	1040	940	280	730	685
ATENDANT MODELS	□7A17	610	990	940	240	655	685
	□7A18	635	990	940	240	655	685
	□7A19	660	990	940	240	655	685

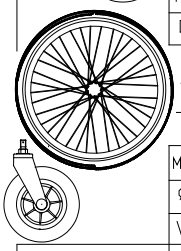


WHEEL BASE CASTORS TRAILING

WHEELBASE RANGE ACCROSS ALL MODELS 17"-19"

430mm SMALLEST ADULT
TO 530mm LARGEST ADULT

REAR WHEEL INFORMATION

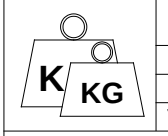


DIMENSION	Ø mm			WIDTH (mm)
ATTENDANT PROPELLED	315 ONLY			40
OCCUPANT PROPELLED	510	560	610	31 or 25
TYRE	CHOICE- PUNCTURE FREE OR PNEUMATIC			

CASTOR INFORMATION

MOUNTING - FIXED M14 & TYRE - MCP PUNCTURE FREE

Ø mm	125	LOW SEAT AND MODULAR	190	200	STANDARD SEAT AND MODULAR
WIDTH	40		25	32	



K KG

WEIGHT INFORMATION

MEASUREMENT	ATTENDANT	SP FIXED	SP DETACH
TOTAL WEIGHT	17.5Kg	19Kg	19Kg
WEIGHT FOR LIFTING	13.5Kg	15Kg	10.5Kg

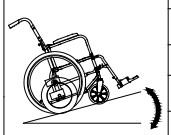
OBSTACLES AND ENVRIONMENTS

SAFE SLOPE FOR MANUAL CHAIRS IS BASED UPON ABILITY OF OCCUPANT OR ATTENDANT TO CONTROL THE CHAIR ON A SLOPE IN ALL DIRECTIONS. 8 DEGREES

ISO 7176 IMPACT STRENGTH & DYNAMIC TESTS

TRANSPORT COMPATIBLE
CRASH TESTED AT 48Kmph/30mph
APPROVED FOR USE WITH WEBBING TIE-DOWN & OCCUPANT RESTRAINT SYSTEM (WTORS) NOT CLAMPS

200,000 CYCLES TWO DRUM
6,666 CYCLES KERB DROP



STATIC STABILITY RANGE (BRAKES ON)

MODEL AND CONFIG.	FORWARDS	BACKWARDS	SIDEWAYS
ACCENT S/P MODEL 07A17	15° - 12.5° SLIDES	9° - 18°	18.5°
ACCENT ATT MODEL 07A17	15° - 13° SLIDES	9° - 18°	17.5°

DXP335-8

Positive Momentum

TECHNICAL INFORMATION CE

RANGE **ACCENT** HEAVY DUTY ADULT WHEELCHAIRS

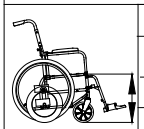
OCCUPANT WEIGHT RANGE 50Kg TO 146Kg*

KG

GENERAL PURPOSE FOR ADULT OCCUPANTS CONFIGURABLE TO ATTENDANT OR OCCUPANT PROPULSION. FOR INDOOR AND OUTDOOR USE IN PUBLIC ACCESS AREAS. SUITABLE AS A TRANSPORT VEHICLE SEAT WITH APROVED RESTRAINTS

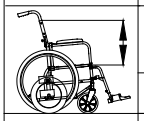
SEATING AREA DIMENSIONS

RANGE AND SEAT WIDTH REFERENCE NUMBER. COVERING ALL GENERIC CONFIGURATIONS	SERVICE FRAME REFERENCE inch		ISO 7176 EFFECTIVE MEASUREMENTS mm	
	WIDTH	DEPTH	WIDTH	DEPTH
□7H	18	19	490	515
□7H	19	19	515	515
□7H	20	19	540	515
□7H	22	19	590	515
□7H	24	19	645	515



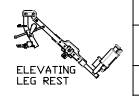
SEAT FRONT EDGE TO GROUND HEIGHT

CONFIG.	SERVICE (FRAME) REFERENCE (inch)	EFFECTIVE (CENTRE) MEASUREMENTS (mm)
□7H	19	450 INCLUDING SAG
□7H LOW	17	400 INCLUDING SAG



BACKREST HEIGHT - 430mm MEASURED FROM SEAT TO TOP OF CANVAS AT FRAME

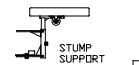
FOOTREST INFORMATION



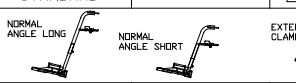
ELEVATING LEG REST

PRIMARY LEG TO SEAT RELATIONSHIPS

TYPES	LEG ANGLE	HEIGHT RANGE FROM SEAT(mm)
STANDARD	90° FIXED	-235 - -375

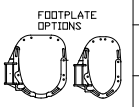


STUMP SUPPORT



NORMAL ANGLE LONG — NORMAL ANGLE SHORT — EXTERNAL CLAMP TYPE

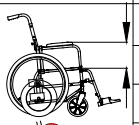
ELEV. LEG REST	120° - 180°	N/A
STUMP SUPPORT	180° FIXED	0 - +80



FOOTPLATE OPTIONS

SWIVEL FOR SIDE TRANSFER DETACHABLE FOR LIFTING

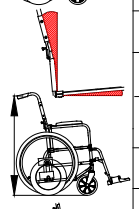
ARMREST INFORMATION



HEIGHT OF DETACHABLE ARMRESTS (mm)

UNIVERSAL AMD TRAY		255
DESK ADJUSTABLE		HEIGHT RANGE 255 - 315

FRAME / SEAT ANGLE INFORMATION



BACKREST ANGLE FROM VERTICAL 5° TO 25° REARWARD

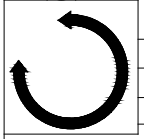
FRAME ANGLE FROM HORIZONTAL 5° TO 7° DEPENDANT ON WHEELBASE

□7H	925	ADJUSTABLE OPTION	925 TO 1000
□7H LOW	875		875 TO 950

*UNIVERSAL BRACKET REINFORCED BRACE OPTION INCREASES CARRYING CAPACITY FROM 136Kg TO 146Kg

CORRIDOR WIDTH TURNING SPACE

WITH ATTENDANT BEHIND

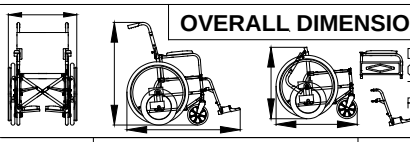


MODEL	THROUGH 180° BETWEEN WALLS
07H18 SP	1350
07H18 ATT	1250

DATA BASED ON ISO 7176 TESTS & MEASUREMENTS ON BASIC FACTORY BUILD SPECS. WITHOUT INCLUSION OF ANY ADAPTATION. INFORMATION GIVEN IS FOR COMPARISON AND GUIDANCE, NOT A MANUFACTURING STANDARD. USER TRIAL RECOMMENDED

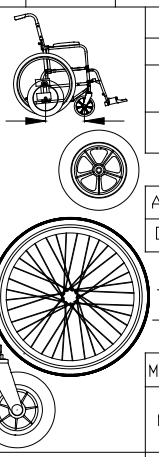
WWW.REMPLOYHEALTHCARE.COM

OVERALL DIMENSIONS



OVER ALL DIMENSIONS CAN BE REDUCED FROM THESE FIGURES BY REMOVAL OF QD WHEELS

DESCRIPTION AND SEAT WIDTH REF.		CHAIR OPEN (mm)			CHAIR FOLDED (mm)		
		WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT
OCCUPANT MODELS	□7H18	650	1040	940	280	785	690
	□7H19	675	1040	940	280	785	705
	□7H20	700	1040	940	280	785	720
	□7H22	775	1040	940	280	785	750
	□7H24	825	1040	940	280	785	780
ATENDANT MODELS	□7H18	675	995	940	240	660	690
	□7H19	700	995	940	240	660	705
	□7H20	725	995	940	240	660	720
	□7H22	775	995	940	240	660	750
	□7H24	825	995	940	240	660	780



WHEEL BASE CASTORS TRAILING

WHEELBASE RANGE ACCROSS ALL MODELS 18"-24"

430mm SMALLEST ADULT TO 530mm LARGEST ADULT

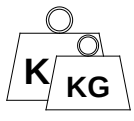
REAR WHEEL INFORMATION

DIMENSION	Ø mm			WIDTH (mm)
ATTENDANT PROPELLED	315 ONLY			40
OCCUPANT PROPELLED	510	560	610	31 or 25
TYRE	CHOICE- PUNCTURE FREE OR PNEUMATIC			

CASTOR INFORMATION

MOUNTING - FIXED M14 & TYRE - MCP PUNCTURE FREE

PLASTIC MOULDED FORK	Ø mm	190	200
	WIDTH	25	32



K KG

WEIGHT INFORMATION

MEASUREMENT	ATTENDANT	SP FIXED	SP DETACH
TOTAL WEIGHT	18.5Kg	20Kg	20Kg
WEIGHT FOR LIFTING	14.5Kg	16Kg	11.5Kg

OBSTACLES AND ENVRIONMENTS

SAFE SLOPE FOR MANUAL CHAIRS IS BASED UPON ABILITY OF OCCUPANT OR ATTENDANT TO CONTROL THE CHAIR ON A SLOPE IN ALL DIRECTIONS.	8 DEGREES

ISO 7176 IMPACT STRENGTH & DYNAMIC TESTS

TRANSPORT COMPATIBLE
CRASH TESTED AT 48Kmph/30mph
APPROVED FOR USE WITH WEBBING TIE-DOWN & OCCUPANT RESTRAINT SYSTEM (WTORS) NOT CLAMPS

200,000 CYCLES TWO DRUM
6,666 CYCLES KERB DROP

STATIC STABILITY RANGE (BRAKES ON)

MODEL AND CONFIG.	FORWARDS	BACKWARDS	SIDEWAYS
ACCENT S/P MODEL 07H17	15° - 12.5° SLIDES	9° - 18°	18.5°
ACCENT ATT MODEL 07H17	15° - 13° SLIDES	9° - 18°	17.5°

DXP335-9

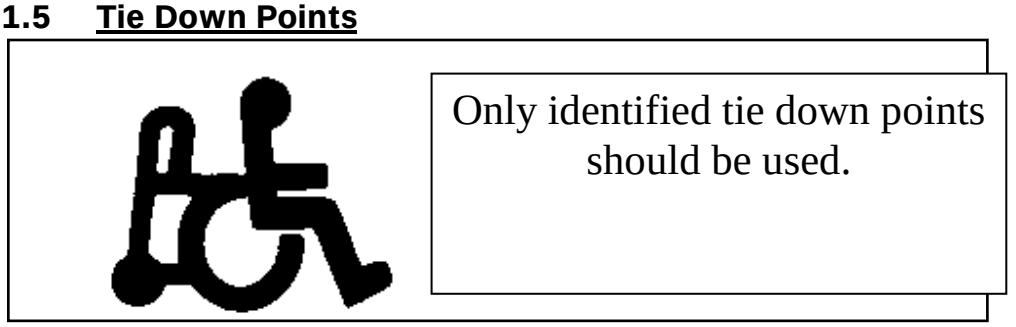
1.4 Packing and Handling

Packing, Handling and identification.
For protection during transit your manual wheelchair is packed in a polythene bag, or a cardboard carton when requested, together with the User Guidance Information. The packaged manual wheelchair contents weigh approximately 20 Kg. Care should always be taken when handling.

Each wheelchair has its own specific identification code (serial number), which is on a label at the back of the chair and on the outside on any packaging. This code should also be noted on the Wheelchair Service Record included in the information package supplied with the product. Take care that all information supplied is kept in a safe place for your future reference, with the Service Record available for the Approved Distributor to endorse at the recommended service interval.
Other cautionary information labels secured to the wheelchair are reminders for the user, not to be removed without reference to the Approved Distributor.

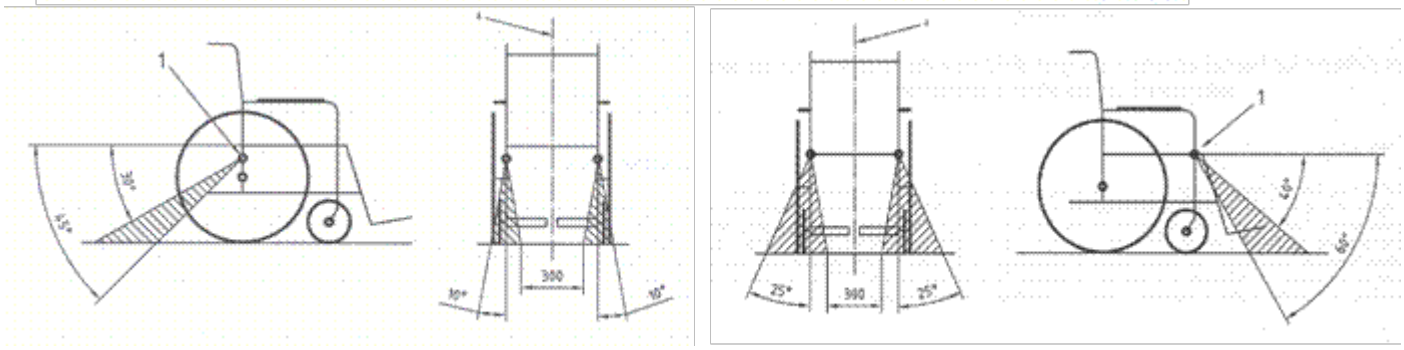
Packaging should be disposed of carefully and safely after initial period of use.

1.5 Tie Down Points



the side-view projected angle for the rear tiedown straps is between 30° and 45° from the horizo
the side-view projected angle for the front tiedown straps is between 40° and 60°,
the rear-view projected angle of the rear tiedown straps is within 10° of the wheelchair reference plane, and
the front-view-projected angle of the front tiedown straps is within 25° of the wheelchair reference plane, but angled so as to provide some lateral stability to the wheelchair.

Dimensions in millimetres



1.6 Clinical Assessment & Service Check Recommendations

The Ranger 9TRL, 8TRL, Access and Accent series are manual wheelchair and are intended to meet the needs of a clinical assessment. The tubular folding Steel frame, is available in various sizes and build configurations to meet the assessed needs of the user.
All versions of the 9TRL, 8TRL, Access and Accent wheelchair have transportation tie down points.

Please refer to user suitability guide for further guidance.

USER SUITABILITY 	• Occupant or Attendant wheelchairs suitable for people who cannot, or find it difficult to walk • Occupant or Attendant wheelchairs suitable for people with mobility issues requiring improved comfort levels • Occupant or Attendant wheelchairs suitable for trained confident users • Occupant or Attendant wheelchairs suitable for transportation (crash tested) in approved or adapted vehicles • Occupant or Attendant wheelchairs suitable for the use of lap straps in environments, where clinical assessment indicates a practical safe use for the benefit of the occupant • Occupant or Attendant wheelchairs suitable for use with spares or accessories, supplied by R Healthcare Ltd. Other adaptations may be suitable dependent upon clinical assessment • Occupant or Attendant wheelchairs suitable for people who require an elevating leg rest / stump support fitted to support the underside of the calf in a range of extended angular positions (please note: adaptations of this nature will affect the stability of the manual wheelchair), also during movement indoors there will be more restrictive limitation on turning or movement owing to the positioning of adaptations. • Attendant propelled wheelchairs are suitable for occupants with limited comprehension, a carer needs to be suitably trained and in control. • Attendant propelled wheelchairs suitable for occupants with visual impairment, where corrective vision is not optional, a carer needs to be suitably trained and in control. • Attendant propelled wheelchairs **Not** suitable for occupants to use on flights of steps without two competent and trained attendants available. • Occupant propelled wheelchairs **Not** suitable for occupants with limited comprehension. • Occupant or Attendant wheelchairs **Not** suitable for use on slopes greater than 8 degrees. • Occupant or Attendant wheelchairs **Not** suitable on soft, wet, uneven or bumpy surfaces. • Occupant or Attendant wheelchairs **Not** suitable for bi-lateral amputees above the knee. • Where powered assistance is required using items such as power packs these should only be fitted after a risk assessment and by qualified personal. • User weight must be suitable for rated carrying capacity of chair.

Service checks

Manual wheelchairs will require periodic service checks, at least every twelve months, or more frequently when the usage criteria is more complex.

Service review periods should be determined by the Clinical Assessment and Technical Service Team, as proposed for example, by using the recommended scoring procedures, or a similar objective method. By using this Wheelchair Service Guideline in conjunction with the critical component replacement schedule a sensible service schedule can be achieved.

WHEELCHAIR SERVICE GUIDELINES

Service Ref No.	

This assessment to be completed by Rehabilitation Specialist prior to issue of wheelchair to end user.
This form to be retained at distribution point for service reference.
A review of this information is recommended at least every two years

Client Name .....

Address.....

.....

Batch Code	Wheelchair Serial Number	Issue Date		Review Date

SCORES BELOW ARE GUIDELINES PATIENT NEEDS TAKE PRECEDENCE OVER THIS.

	ASSESSMENT CRITERIA		SCORE
OCCUPANT WEIGHT	**V.HEAVY (OVER 100Kg)**	**4**	
	HEAVY (75-100Kg)	**3**	
	MEDIUM (50 - 75Kg)	**2**	
	LIGHT (UNDER 50Kg)	**1**	
OCCUPANT/ USER ACTIVITY AND ENVIRONMENT	**ROUGH**	**4**	
	MEDIUM	**2**	
	LIGHT	**1**	
OCCUPANT LEVEL OF WHEELCHAIR DEPENDENCY	**HIGH**	**6**	
	MEDIUM	**2**	
	LOW	**NIL**	
OCCUPANT / USER SAFETY AWARENESS	**LOW**	**3**	
	HIGH	**1**	
	TOTAL SCORE		

GRADING RESULT		RECOMMENDED SERVICE INTERVAL
SCORES	**12 TO17**	**3 MONTHS**
SCORES	**9 TO 11**	**6 MONTHS**
SCORES	**7 TO 8**	**12 MONTHS**
SCORE	**5 TO 6**	**18 MONTHS**
SCORE	**3 TO 4**	**24 MONTHS**

R HEALTHCARE

A controlled service programme will improve safety and performance of wheelchairs.
Lack of maintenance may affect warranty.

Signed.....

Rehabilitation Specialist.

00 08 73 00. MAR 2003. Rev B

Top of Section

USER REFERENCE	SERIAL NUMBER OF WHEELCHAIR TYPE OF WHEELCHAIR

CRITICAL COMPONENT REPLACEMENT SCHEDULE FOR MANUAL WHEELCHAIR PREVENTIVE MAINTENANCE

PLANNED ECONOMIC WHEELCHAIR SERVICE LIFE OVER MAXIMUM OF FIVE YEARS

USER GUIDELINE SCORE	12 Months	18 Months	24 Months	30 Months	36 Months	42 Months	48 Months	54 Months	60 Months
12 to 17	CASTORS WHEELS BRAKES FUNCTION CHECK REVIEW	CASTORS WHEELS BRAKES UPHOLSTERY FUNCTION CHECK REVIEW	CASTORS WHEELS BRAKES FUNCTION CHECK REVIEW	REVIEW AND REPLACE WHEELCHAIR					
9 to 11		CASTORS WHEELS BRAKES UPHOLSTERY FUNCTION CHECK REVIEW		CASTORS WHEELS BRAKES UPHOLSTERY FUNCTION CHECK REVIEW	REVIEW AND REPLACE WHEELCHAIR IF REQUIRED				
7 to 8		CASTORS WHEELS BRAKES FUNCTION CHECK REVIEW		CASTORS WHEELS BRAKES UPHOLSTERY FUNCTION CHECK REVIEW	CASTORS WHEELS BRAKES FUNCTION CHECK REVIEW		REVIEW AND REPLACE WHEELCHAIR IF REQUIRED		
5 to 6			CASTORS WHEELS BRAKES FUNCTION CHECK REVIEW		CASTORS WHEELS BRAKES UPHOLSTERY FUNCTION CHECK REVIEW			REVIEW AND REPLACE WHEELCHAIR IF REQUIRED	
3 to 4					CASTORS WHEELS BRAKES UPHOLSTERY FUNCTION CHECK REVIEW				REVIEW AND REPLACE WHEELCHAIR

NOTES Function check review process may indicate replacement of wheelchair, or other component of wheelchair, or change to maintenance plan specific to a particular user

component replacement periods assume that general maintenance checks are carried out between times to assessed guideline criteria

when a wheelchair is recycled between users upholstery change and thorough cleaning is required

1.7 Introduction and Service Need Assessment

Economic Service Life
Recycling a wheelchair between users is a significant aspect of the NHS wheelchair service. The basic utility type wheelchair is capable of continual recycling over an economic life period.

For safety and economic reasons, it is recommended that the service life and requirement for spare parts is planned.

Service check and method of use
We recommend that wheelchairs and their method of use are service checked on a regular basis, irrespective of maintenance free features, because accidental damage can never be ruled out.

A scheduled preventive visit by a service technician may find a problem which would otherwise go unnoticed, preventative action by component replacement or repair is a reduction of potential risk to users.

Below is a general guide to assist Healthcare professionals inspect wheelchairs, with a view to Potential fault finding, it is best practice to change any damaged or suspect components with new parts.

Preservation and Storage
Where ever possible as a minimum store the wheelchair in garage type conditions, away from wet or damp areas.

During the course of general use, the wheelchair may become wet, due to rain and such events. When practical the wheelchair should be wiped down with a dry cloth, this is to reduce the risk of corrosion.

Where wheelchairs are stored in the back of cars and similar transportation vehicles, there are occasions especially in hotter climatic conditions such as summer, it is advisable to cover the wheelchair with a suitable cover. This will reduce the risk of the wheel becoming hot, having an effect on user or carer handling the chair out of the vehicle.

When a doubt exists, where the wheelchair has suffered constant miss use of storage, the wheelchair should be removed from the client, and disposed of.

Action – Aid to detection of defects
Stand at the rear of the chair, raise both **Push handles** and engage **thumb catches**. Ensure both push handles are secure, there is minimal movement, there are no signs of component damage and the push handles work as expected.
Visually check that both **Push handles** are correctly aligned front to rear and that both **Handgrips** are also correctly aligned (i.e. are not rotated around push handle) and are butted tightly against the end of the push handle.
Test that the **Handgrips** are securely fixed. (With one hand, grasp each handgrip in turn and try to rotate the grips around each push handle).
Visually check the **Back canvas** for splits in the material, shading of colour, excessive dust, grease or any other signs of staining. Check the stitching carefully, particularly for missed stitches. Replacement is advised on any damaged or contaminated canvas.
Visually check the **Seat canvas** for splits in the material, shading of colour, excessive dust, grease or any other signs of staining. Check the stitching carefully, particularly for missed stitches. Replacement is advised on any damaged or contaminated canvas.
Lightly run your fingertips along the tops of the **Seat canvas** and **Back Canvas** fixing screws to detect any sharp burrs caused by screwdriver slip. Visually check that there are no missing screws or cup washers. Test for loose screws by pushing each cup washer from the side using light pressure from a fingertip.
With the **Arm rests** in position, firmly grasp each **Arm pad** in turn and attempt to rock them from side-to-side. If movement is detected this will indicate that the arm pad screws need further tightening.
Check that the **Arm locks** are in the “engaged” position, grasp each arm in turn at the front, on the bend in the tube, and pull upwards to check that the arm locking mechanism is properly engaged.
Fully rotate both **Footrest** hangers to the front position and engage both latches, ensure both brakes are in the “off” position. Ensure both outriggers lock to position, with limited to no ‘’rattle’’, and that there is no sign of damage to fixings, such as latches, springs etc.
The **Footplates** and hangers should be latched in the forward operating position. Fold down both footplates and first test each footplate is securely clamped into the hangers by grasping each footplate in turn and with hand pressure attempt to rotate it forwards and rearwards. Looking vertically down at the footplates, ensure that they are in line at the front and square with each other. Test the operation of the folding up and down of the footplates by raising each one in turn to the vertical and just with a finger tip, tap the top of the plate several times until it is fully down. Neither plate during this test should drop down under its own weight.
Disengage the latch on each **Footrest** hanger in turn and whilst disengaged, “flick” the latch

several times. Now rotate the hanger to the front position and engage to the front frame. Check for full engagement between the two.

Fold the **Footplates** to the vertical. Tip the chair onto its back, until it is resting on its push handles.
Ensure the footplates are not damaged, and that there are no missing fixings, and that they are set to the correct height to meet the user needs.

Now conduct a general inspection of the following.

a) On each **Footrest** hanger, disengage the latch, rotate the hanger to the rear of the chair, check that the screws on the front frame are tight using fingers only.

Test both **Castors** by spinning each castor wheel in turn, and first listen to the sound of the needle bearings in the wheels for signs of dryness or grating.
Whilst the wheel is spinning, look for excess out of true running of both the periphery of the tyre (0.060" – 1,5mm total) and side-to-side run out of the tyre (0.030" – 0,75mm total).

Any damaged castor must be replaced, R Healthcare recommend these are replaced in pairs.

On each **Castor** in turn grip the wheel firmly through the spokes and attempt to rock the wheel on its bearings looking for excess movement of the wheel and also excess lateral movement of the wheel along its centre pivot bush. There should be no excess movement. Test both **castors** for any sign of head bearing rock by gripping the castor fork with both hands and rock the fork up and down. There should be no excess movement.
With one finger raise the wheel to 90 degrees then take the finger away. The castor should drop under its own weight – should the castor stall, tap the wheel sharply with one finger. If the castor still fails to drop, then the head bearings should be adjusted accordingly.
N.B. Visually check that the wheel centre bush and the castor fork inside faces are in contact with each other. If there is a gap between the two, this indicates that the wheel centre bolt is insufficiently tightened.

Any damaged castor must be replaced, R Healthcare recommend these are replaced in pairs.

Wheels. Test the tyre pressure on pneumatic tyres to ensure correct inflation pressure (correct pressure can normally be found moulded into the side wall of the tyre).
Now, using the push handle, lift the R.H. rear wheel off the ground, gently spin the wheel backwards and visually check that:

a) The wheel rim is running "true" in both planes.
b) The tyre is running "true" in both planes.
c) On S.P. chairs also check that the hand-rim is running "true" in both planes.

N.B.
315 dia. wheels should not deviate from true (side to side) by more than 1.5mm (.060").
and 24" wheels should not deviate from true (side to side) by more than 2.5mm (.100")

Check that **Hand-rims** are fixed firmly to the wheel rim especially with slotted cleats. Test each fixing by grasping the hand-rim adjacent to the cleat, brace thumb against sidewall of tyre and with the thumb pushing against the tyre, try to pull the hand-rim sideways. Repeat on all cleats on both

wheels. There must be no sharp edges or protrusions. There should be no paint chips, which can result from impact when going through doorways. Chipped hand-rims should be replaced in pairs.
Standing at the rear of the chair, lean forward and apply **Right Hand brake**. Grasping the hand-rim, push and pull hard on the rim to test brake effectiveness. If movement of the wheel is detected, adjust brake shoe towards the tyre until all movement of the wheel is eliminated. On Attendant Propelled, where no hand-rim is fitted to wheels, pull and push the wheels by grasping the tyre periphery. Leave brakes in the “on” position. Wheels must remain firm to position and not turn.
Repeat operations above on **Left Hand brake.**
Inspect between rear wheels and test that the tipping sleeves are securely fixed (grasp each sleeve firmly and try to rotate the sleeve).
Tip chair forward and visually check underneath, look for missing or loose nuts, paint damage, linkage fracture or dust.
Ensure any suspect or damaged parts are replaced. Ensure all service information is completed for ongoing service and maintenance information **This completes the defect detection checklist**

The economic service life of a wheelchair is dependent upon several factors, and the **Critical Component Replacement Schedule** included with this manual, suggests a Framework for management of this type of service plan.

The service life of a wheelchair is dependant upon frequency of use, environment and occupant characteristics as indicated in previous examples.

Preventive maintenance and repair to parts which become worn out by normal usage will ensure that the service life of the wheelchair is economically and safely extended over several years.

It is not uncommon for heavy or active users to require a replacement chair after 18 months hard use. The level of activity which such a chair has undergone may mean that recycling is not a viable or safe option.

During the lifetime of the chair, service and repair may take the form of a major parts replacement process, which involves a total rebuild and repainting. This work should be carried out in accordance with the recommendations of this manual and the original factory built product performance specification.

R Healthcare encourages the use of computer data as a means of improving the effectiveness of wheelchair service providers in keeping a track of wheelchairs and the users.

Comprehensive records of the service history of the wheelchair together with occupant information will allow more accurate planning of the economic service life.

Recycle or Replace
When deciding whether to recycle or replace with new, consideration should be given to the usage history of the chair. In the event of historical usage information not being available, or upon reaching the maximum service life of five years, wheelchairs should be replaced.

Recycling and Quality Standards
A full range of R Healthcare approved spare and accessories are available. Revised spares lists will continue to be issued, separate to this manual as we extend and improve what is available.

Approved spare parts
Approved spare parts specifications from R Healthcare incorporate continuous improvement and best practice developments were possible.

When R Healthcare Manufactured spare parts are fitted to R Healthcare chairs, R Healthcare fully support their function, quality, workmanship and reliability.

The fitting of third party (industry standard) spare parts should be authorised by qualified rehabilitation engineer and fitted to an authorised procedure. R Healthcare have no control on spares manufactured by outside organisations, and therefore cannot support the quality and reliability of third party spares.

We have made reference to functional checks on wheelchairs, which in a service workshop situation, are more practical than complex measurements which demand calibrated inspection equipment and detailed part drawings. Service departments and maintenance workshops carrying out repairs, adaptations and routine checks on wheelchairs, as outlined in this manual, are expected to have all the facilities required and a quality system in line with ISO 9000 2008.

Recycling and Repainting
Personnel involved in the service and repair of wheelchairs should be fully trained to use tools and workshop equipment and have an appreciation of the special needs of disabled people, together with technical knowledge to the equivalent trade standard.

Recycling – cleaning and use of PPE
The risk of infection from a contaminated wheelchair which is being recycled should be considered in the suitability of a wheelchair before the recycling process is implemented. We recommend that gloves are worn by operatives handling all wheelchairs received for recycling prior to them being thoroughly cleaned. Any component which shows signs of severe soiling, such as body fluids or long standing dirt residue should be disposed of, with due consideration to the environmental implications. Before anyone attempts to handle any wheelchair returned for recycling, the complete unit should be thoroughly steam cleaned or cleaned, in a controlled washing process with the use of detergent.

Paint Preparation
Preparation for high quality repainting of wheelchair Frames, as is required in a remanufacturing operation requires the removal of all previous paint.
R Healthcare have found that chemical stripping is the most successful method of paint removal, as this does not affect the structure and function of the substrate steel structure.

Surface blasting the old paintwork off is an acceptable alternative, but we recommend that this operation is only carried out once in the lifetime of the wheelchair, as the continuous abrasion of this process is not controllable, and its excessive use, weakens the structure.

Our assessment of risk has highlighted the potential of incorrect function of moving parts, which are safety critical, due to ingress of paint during a superficial cover up repair. Our recommendation is that the functional area of the wheelchair Frame should be fully disassembled for painting, degreased, dry, and drained free of chemical or dust residue.

Due to the high tolerances required when repainting a frame we recommend that painted sub-assemblies be sourced from R Healthcare.

Information

Stoving temperatures

Paint thickness should be a minimum of 25 microns, stoving time and temperature should be those recommended by the paint manufacture, for paint adhesion etc.

Crack detection spray

The use of crack detection spray on wheelchair Frame components which have been stripped prior to painting is recommended if there is any doubt about their suitability.

Frames which are found to have cracks should be disposed of, under no circumstances should attempts be made to bodge weld and recycle Frames or other wheelchair components which are found to have cracks.

Plating

Any plated components on R Healthcare chairs, should be masked during a Frame repaint. Frame pre-treatment with a sealer, followed by none toxic (TGIC and lead free) exterior quality polyester powder paint.

Nyloc nuts

Nyloc type nuts should not be subjected to paint stoving temperatures, and should be replaced along with other fasteners when the chair components are re assembled.

Transfer of wheelchair

When wheelchairs are recycled from one user to another, the second user should receive the same level of specification, and protection, as when the wheelchair was first supplied new.

Information and Labelling

Labelling which is applied to the product is intended to raise the safety awareness of users, and reduce the risk of misuse. Labels should not be removed.

If during a service check it is apparent that labels are damaged or missing, these should be replaced. A missing label may be an indication of careless use; any other indications of this should be checked and noted in the service report.

We also recommend that a service should include a check on the availability, and possible update, where appropriate, of instructions for use. The most recent and current available data is on the Internet at www.rhealthcare.co.uk

A component strip down and repaint may require the removal of caution and information labels.
R Healthcare have reduced direct chair labelling to a minimum for practical reasons, but as a result of our experiences of actual incidents in the field, we believe that some important permanent caution labelling to particular features of a wheelchair is still necessary to remind users of important safety aspects.

User Guides are available. These should be supplied with recycled chairs to reduce risk of user injury through lack of knowledge or experience, the R Healthcare website www.rhealthcare.co.uk has updated user information which can be downloaded and used as a reference. R Healthcare wheelchairs which have been reconditioned should still continue to be maintained and serviced according to the routines outlined in this manual.

Push handle grips
Of particular significance from a safety aspect is the replacement of push handle grips. Important information on the fitting of push handle grips is advised in section 11. of this manual.

Customised wheelchairs
As a general rule, a wheelchair which has been customised for the first user, by the removal of safety components, such as anti tip stabilisers, Armrests, brakes or spoke guards etc, and is then required for recycling, should be brought back to the original specification as when first supplied. Any exception to this should be through clinical assessment by the rehabilitation team, to determine an alternative build specification.

1.8 General Service and maintenance routines

The detailed information provided in the accompanying text contains practical advice for use by Technicians in Wheelchair Servicing Departments.
This should be followed when carrying out routine checks and replacement of damaged component parts. Particular advice given covers enhancements which will extend the service life of wheelchairs.

Wheelchair Service Record
The Wheelchair Service Checklist, detailed within the **User Guide,** provides an outline schedule of the areas on the wheelchair which require routine checks and attention. Required frequency of checks should be determined by assessment as described previously. Records of service work should be kept at the wheelchair service dept.

It is also recommended that the Wheelchair Service Record documentation is retained by the user who should take responsibility for ensuring that the wheelchair is available for service at the recommended interval.

Service interval review, attendant and occupant controlled
Most carers will be able to adapt to the correct use of an attendant controlled wheelchair, but occupant controlled models may require careful evaluation of user needs and abilities. If there is a doubt about this, we recommend a review period of three months from initial issue. At this stage, and prior to establishing the regular service interval, the wheelchair may be examined, and the user given the benefit of direct expert advice and training which could improve long term reliability and safety. Many standard service routines are applicable to all of R Healthcare wheelchair models, both Attendant and Occupant Controlled, and are detailed in this manual.

Moving parts or mechanisms
Typically, for moving pivots and mechanisms which require adjustment of a self locking nut to achieve operating clearance, the nut are to be tightened up and then backed off quarter a turn. This creates a joint clearance of 0.10mm.

Wheelchairs make frequent use of fasteners, e.g. 8mm and 6mm nyloc nuts. This type of fastener in particular should not be used again after a chair has been stripped down. It is recommended that all approved repair contractors maintain adequate replacement supplies of new nuts and fixings.
Our recommendation is that these are obtained from proprietary local fastener suppliers, in the local area concerned, who can maintain deliveries as demand requires.

Cleaning materials
When using proprietary cleaners, always read the instructions provided by the manufacturer. Do not use anything which may leave a residue and cause a problem for the user afterwards.

Tools & Equipment

The following list covers tools and spanner sizes for the standard routines.
For more specific information of when and how these are applicable, see the appropriate sections of the manual covering detailed servicing operations.
The use of regulated torque spanners is recommended to ensure that screw fixings are tightened to the specified figure on production assembly.

WHEELCHAIR ASSEMBLY TORQUES AND TOOLS

AREA OF WHEELCHAIR	TYPE OF WHEELCHAIR	NM	FT LBS	ADDITIONAL ASSY INFO	TOOLING REQUIRED
LUBRICATED MOVING PART ASSEMBLY	GENERAL FOLDING FEATURES	7	5	BACK OFF HALF TURN	VARIOUS SPANNERS TO SUIT
TYPICAL FIXED PART ASSEMBLY	GENERAL FRAME FITTINGS	7	5	NONE	VARIOUS SPANNERS TO SUIT
UPHOLSTERY AND ARMREST SCREWS	GENERAL	7	5	NONE	No 3 POZIDRIVE
UPHOLSTERY AND ARMREST SCREWS	GENERAL FROM JULY 2002	7	5	NONE	3mm A/F ALLEN KEY
WHEEL MOUNTING BLOCK TO FRAME	ACCESS, DASH LITE	7	5	NONE	4mm A/F ALLEN KEY
HANDRIM ATTACHMENT	GENERAL OCCUPANT PROPELLED	7	5	SHAKEPROOF WASHER	8mm A/F HEX SPANNER or POZI DRIVE
FOOTREST CLAMP TO STEM	GENERAL	10	7	NONE	10mm A/F HEX SPANNER
BRAKE CLAMP TO FRAME	ACCESS	10	7	NONE	10mm A/F HEX SPANNER
BRAKE CLAMP TO FRAME	DASH LITE	7	5	NONE	10mm A/F HEX SPANNER
BACKREST HINGE MOUNTING	DASH LIFE, DASH LITE	7	5	NONE	10mm A/F HEX SPANNER OR No 3 POZIDRIVE
FRAME STRUTS	DASH LIFE	7	5	NONE	4mm A/F ALLEN KEY
FRAME STRUTS	GENERAL	7	5	NONE	13mm A/F HEX APANNER
ADAPTOR TO MOUNTING BLOCK	ACCESS QUICK RELEASE ALL MODELS	30	22	SAFETY WASHER	22mm A/F HEX SOCKET
WHEEL TO MOUNTING BLOCK	127Kg, 140Kg, 160Kg MAXIMUM LOAD ACCESS FIXED WHEEL	30	22	SAFETY WASHER	19mm A/F HEX SPANNER
CASTOR WHEEL CENTRE BOLT	GENERAL	7	5	NONE	13mm A/F RING SPANNER x2
CASTOR HOUSING TO FRAME	DASH LIFE, DASH LITE, STOWAWAY	7	5	LOCTITE 245	4mm A/F ALLEN KEY
CASTOR HEAD PIVOT	DASH LIFE, DASH LITE, STOWAWAY	20	14	SET TO SUIT ROTATION	19mm A/F HEX SOCKET
CASTORS TO FRAME	MANUALLY PROPELLED BASIC FIXED	47	35	LOCTITE 270	24mm A/F HEX SOCKET

SECTION 3 : TECHNICAL AND SERVICE Top of Section

2.0 INTRODUCTION and SERVICE NEED ASSESSMENT.

Hemipleagic OAD Wheelchairs which are supplied as configurations of Access typically undergo a heavy usage pattern, with usage loads applied in a manner which increase stress locally, combined with a number of mechanical linkages, upon which the user is totally dependent. It follows that a OAD chair should be assessed as needing frequent service checks, and preventive maintenance through critical component replacement. Similarly an Access which has been set-up with a power assist kit or other complex adaptation should be considered as needing frequent service checks and preventive maintenance.

Modular Access can be built as Attendant Propelled or Occupant Propelled, and this inbuilt facility may be applied to offset some unknowns of service recycling. An Occupant Propelled Chair being recycled could be reconfigured to Attendant Propelled, with a new lower level of risk and service demand of occasional occupation and presence of an attendant to help in an emergency.

Basic Attendant Propelled Chairs, which are derived from tried and tested DHSS specifications, have been developed to the same test criteria as self propelled chairs and can withstand a high level of usage, but they may only be used occasionally.

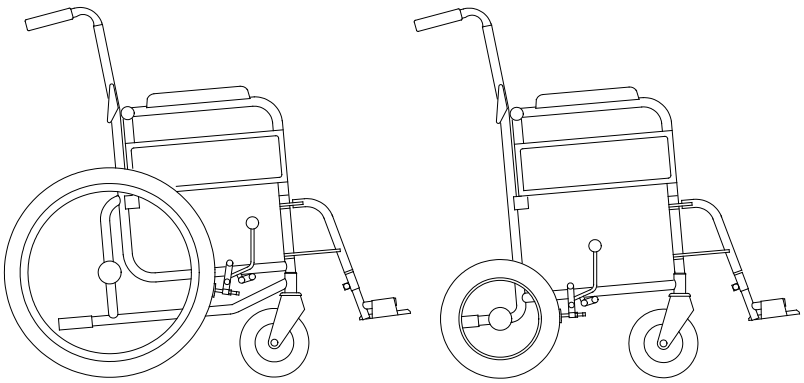
Prevention is better than cure and a Total Quality approach to design, and approval to ISO 9001:2008, ensures continual assessment of areas requiring frequent maintenance, building in reliability and designing out, where possible, expensive labour in servicing and cost. Recent developments in Modular Wheelchairs allow for the replacement of damaged components

We recommend that wheelchairs and their method of use, are service checked on a regular basis, irrespective of maintenance free features, because accidental damage can never be ruled out. A scheduled preventive visit by a service technician may find a problem which would otherwise go unnoticed, and a problem nipped in the bud by component replacement or repair is a reduction of potential risk to users.

GENERAL WHEELCHAIR INFORMATION Top of Section

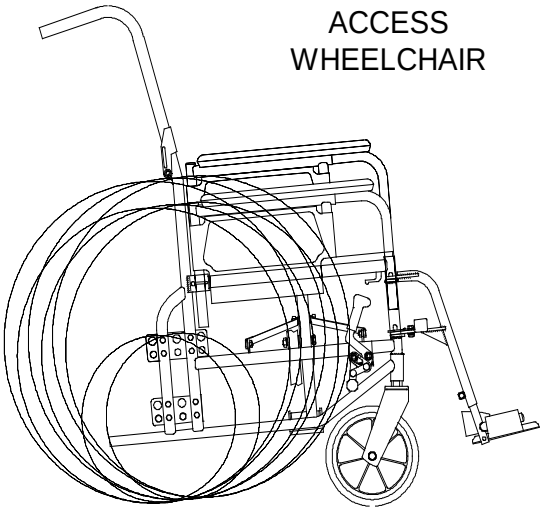
2.1 GENERAL SERVICE ROUTINES

The detailed information provided in the accompanying text contains practical advice for use by Technicians in Wheelchair Servicing Departments.
This should be followed when carrying out routine checks and replacement of damaged component parts. Particular advice given covers enhancements which will extend the service life of wheelchairs.



The Ranger 8TRL, 9TRL, AP100 & SP100 series of wheelchairs are derived from the original tried and tested pre 1991 DHSS specification.

ACCESS WHEELCHAIR



The ACCESS is a modular Ranger which provides a choice of adjustable wheel balance positions, wheel types, and seat to ground height dimensions.

The **Wheelchair Service Record** form, enclosed with the **User Guide,** provides an outline schedule of the areas on the wheelchair which require routine checks and attention. Required frequency of checks, should be determined by assessment as described previously. Records of service work should be kept at the wheelchair service dept.

It is also recommended that the **Wheelchair Service Record** form**,** is retained by the user who should take responsibility for ensuring that the wheelchair available for service at the recommended interval.

Most carers will be able to adapt to the correct use of an attendant controlled wheelchair, but occupant controlled models may require careful evaluation of user needs and abilities. If there is a doubt about this, we recommend a review period of three months from initial issue. At this stage, and prior to establishing the regular service interval, the wheelchair may be examined, and the user given the benefit of direct expert advice and training which could improve long term reliability and safety.

Many standard service routines are applicable to all of R HEALTHCARE wheelchair models, both Attendant and Occupant Controlled where a model requires specific or additional routines, as with ACCESS, these are covered in subsequent service sections of the manual.

When using proprietary cleaners, always read the instructions provided by the manufacturer. Do not use anything which may leave a residue and cause a problem for the user afterwards.

2.1.1 WHEELS & TYRES FOR OCCUPANT CONTROLLED CHAIRS : Continued

Pneumatic tyres pressurise the back of the spoke nipple, reducing the effect of vibration as the wheel rotates. With puncture free polyurethane tyres, the nipple heads on the inside of the wheel rim are not pressured from the inside, and are held in place against vibration by spoke tension only. In actual use, spoke tension changes constantly as the wheel rotates and occupant load is transferred from one spoke to the next. Over a period, the continual movement of stresses in the spokes, can have a loosening effect on the nipples, if not attended to, this will ultimately lead to wheel collapse. To reduce the risk of this occurring, we recommend regular service checks, in conjunction with puncture free polyurethane tyres, spoke nipple heads being additionally secured with self adhesive insulation tape wrapped around the inside of the wheel rim before the tyre is fitted.

Damaged spokes can be the first visible sign that a wheel is defective and requires attention. If a spoke is loose or defective, the remainder of the wheel will deteriorate quickly. We recommend that damaged spokes are replaced and the wheel is tensioned and trued to the factory build specification as advised previously.

Check for bearing damage by spinning the wheel. The result should be a free running motion. Judder or excessive noise is an indication bearing wear.

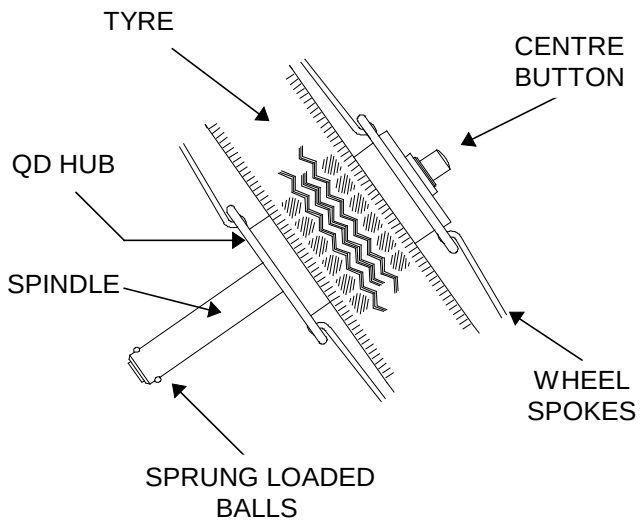
On fixed spindle wheels, a degree of end float measured at the tyre of up to 1.0mm wobble on new wheels, and 1.5mm wobble on wheels that have been in service for some time is quite acceptable. In service checks, the degree of this wobble should be considered in line with the usage requirements, and unless the demands on the chair are high, and the excess movement has occurred over a short period of use, we would not advise that movement above 1.5mm does not require an immediate replacement. Movement above 2.0mm indicates the need for wheel replacement.

On QD wheels, there can be a greater measured wobble than on fixed spindle wheels this due to the additional fitting tolerance of the removable spindle. This is due to manufacturing tolerances which though undesirable from a user feel aspect, is not an unsafe condition. Users of QD wheels should be advised of this compromise, and if necessary given the opportunity to have a fixed spindle hub as a replacement. Bearing related movement should be viewed in the same manner as with the fixed spindle wheel.

2.1.1 WHEELS & TYRES FOR OCCUPANT CONTROLLED CHAIRS : Continued

If there is evidence that the wheel has been run flat, there may also be damage to the rim itself and spinning in a rigid mounting fixture will identify this. Deviations of greater than 1.5mm out of concentricity from centre in all directions, will require that the wheel is re-trued, or replaced with an approved spare if wheel truing equipment is not available.

Wheels mounted in bushes on the frame, and secured with an M12 fixing nut on the inside. Secure the assembly against vibration by applying a thread locking compound on the spindle threads before fitting the nut. Care and effort will be required in loosening the nut until the initial adhesive joint is broke. Assembled wheels are to be tightened to a torque of 40Nm (30 lbs ft) and re-secured against vibration with thread locking compound.



Quickly Releasable wheels are mounted into the Wheel Mounting Unit in this instance a Locking Washer is used. Wheels are to be tightened to a torque of 40Nm (30 lbs ft) against the Locking Washer.

Quickly Detachable Wheel Models
The Q.D. Hub shown opposite works on the principle of a spring loaded ball release feature on the end of the wheel spindle.

By pressing a central button, the ball falls within the spindle diameter allowing it to pass through the Receiver Bush, or the Wheel Mounting Unit in the case of **ACCESS**, thus enabling detachment the wheel. This mechanism requires checking for correct adjustment, and wear of the receiver in the ball location area during routine service. The nut at the end of the QD spindle can be adjusted laterally. Care should be taken not to over adjust this in an attempt to reduce sideways axle movement, as this could prevent the locking ball from dropping into its retainer, and prevent correct and safe wheel retention.

The quick release wheel and mounting bush is a complete unit, when supplied as a spare

The diameter of quick release spindles has clearance in the receiver to allow ease of assembly and removal by the user, and greater degree of movement at the tyre rim is therefore inevitable, compared to the fixed spindle wheels.
Lubrication to the QD spindle improves the general operation.

GENERAL WHEELCHAIR INFORMATION

2.1.1 WHEELS & TYRES FOR OCCUPANT CONTROLLED CHAIRS : Continued

Service personnel should be aware that detachable wheels are more prone to spoke transit damage than those which remain on the chair, this is because of the increased possibility of users storing them differently in confined spaces, or against other objects, e.g. in a car.

On Ranger occupant propelled wheelchairs, i.e. models 8TRL and 8TRLJ all of which have fixed position wheels, the widest part of the wheelchair frame is usually the face of the armrest side panel. Clearance distance between this and the nearest part of the wheel, which is usually the edge of the tyre, is determined by a combination of build dimensions, as follows:

A the spindle location face to the centre of the tyre.
B the centre of tyre to centre of the hub (different from A if offset spoked)
C tyre profile
D the head thickness of the wheel mounting bush in the wheelchair frame.
E outer face of armrest side panel in relation to face of wheel mounting bush

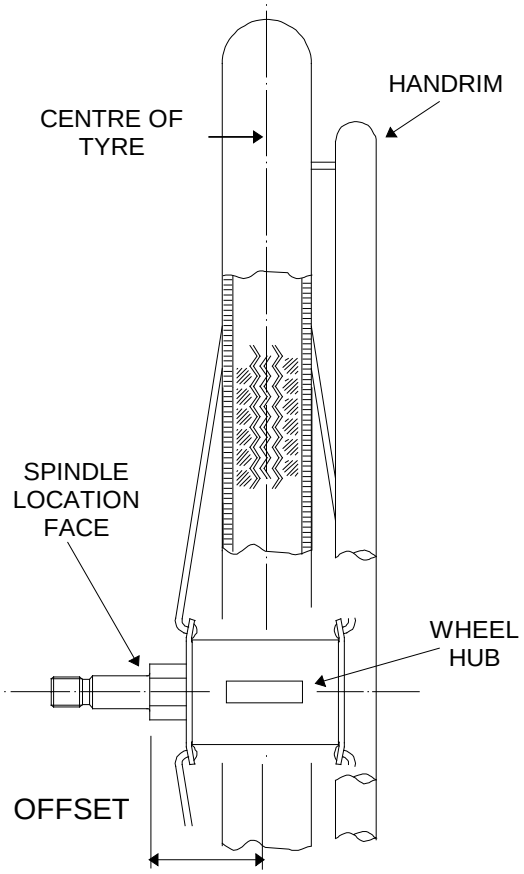
On R Healthcare Ranger wheelchairs, dimensions A and B are the same. For Occupant Controlled wheels this dimension is 46mm and for attendant controlled wheels it is 50mm. This is constant on all R Healthcare produced wheels.

Dimension C is maximum with a fully inflated pneumatic, but can be less with some puncture free tyres. By fixing dimensions D and E, dependent on model, a satisfactory working clearance between wheel and frame is achieved.

Because the wheel centre position is constant, wheel interchange ability between R Healthcare Ranger models is generally achieved.

This is in line with original DHS pre 1991 specifications, and is central with the brake shoe on frames produced with the optimum wheel toe in. (Nominally an angle of half of a degree relatively to the frame)

Occupant Controlled Wheel illustrated opposite.



50mm - 315mm Dia ATTENDANT WHEEL
46mm - OCCUPANT WHEELS

GENERAL WHEELCHAIR INFORMATION

2.1.1 WHEELS & TYRES FOR OCCUPANT CONTROLLED CHAIRS : Continued

Hub brake wheels

These are available in kit form for both attendant and occupant controlled chairs, and are supplied complete with operating levers and cable.
For attendant chairs the same wheel assembly will fit both LH and RH sides.
315mm dia (12 1/2 inch) R Healthcare ref. AWW169 complete chair set.
For self propelled chairs wheels are in pairs LH and RH :
560mm dia (22 inch) R Healthcare ref AWW 172/spare

Full details and illustrations are given in the brakes service section 3.2.4.

The standard mounting block configuration of the R Healthcare Access have improved the security and operation of the hub brake to such an extent that we can now advise that it is suitable for use as an attendant controlled retardation brake. This has affected the interchange ability of hub braked wheels available from R Healthcare, which are not suitable for Ranger 8L frames produced to the pre 1991 DHS dimensions, because the toggle action parking brake shoe, which should still remain an option for the user, does not align with the tyre centre. Access is unaffected by this re-alignment because the longer effective brake shoe length on these models accepts the increased tyre centre stand off distance from the frame.

Hub braked wheels require a degree of skill to operate, as they must be applied together in order to avoid a rapid change of chair direction, if one wheel stops whilst the other is still free to move. When a new kit is fitted, we recommend that the attendant has a trial downhill run, with a test occupant in the chair, to get a feel for the braking action, before the chair is used with the actual intended occupant.

Hemipleagic (OAD) operation.
The wheels used on OAD wheelchairs are part of a complete chair build specification, which includes special frame mountings and a cross link brake unit. This is covered separately and for complete details of hemipleagic (OAD) operation see service section 3.2.13.

SECTION : 3 TECHNICAL AND SERVICE
Top of Section

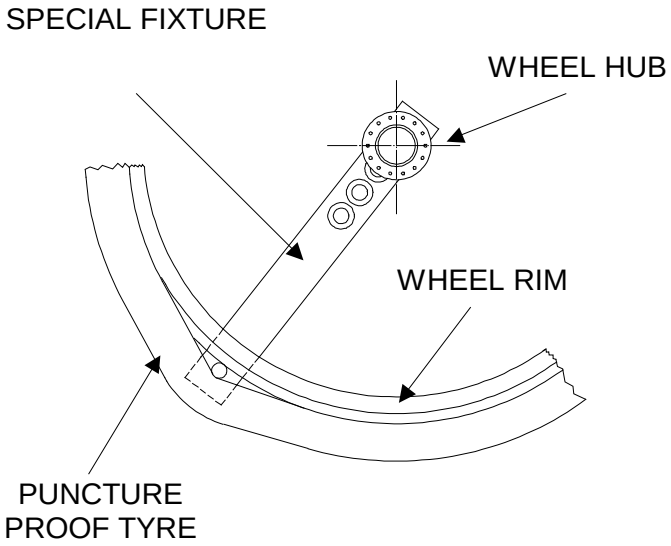
GENERAL WHEELCHAIR INFORMATION

2.1.1. WHEELS & TYRES FOR OCCUPANT CONTROLLED CHAIRS : Continued

The most common cause of the need for attention to wheels is tyre wear or puncture. The latter can normally be dealt with by patching the inner tube, although the inconvenience of doing this is heightened for a disabled user. Replacing the tyre requires the use of a suitable tyre lever, exercising care not to damage the rim. Correct inflation pressure is 3 BAR (45 psi).

.

MCP tyres on wheels of all sizes are now fitted as standard. This eliminates puncture, minimising tyre wear and damage, but replacement requires the wheel to be perfect, and built to a specification suitable for harder ride characteristics than a pneumatic.



Spares Reference:
AWW 1056 - Puncture Free Tyre 610mm (24”) Dia. x 1 3/8”
AWW 1055 - Puncture Free Tyre 560mm (22”) Dia. x 1 3/8”
AWW 1054 - Puncture Free Tyre 510mm (20”) Dia. x 1 3/8”

For details of other items and replacement Pneumatic Tyres and inner tubes see Spares Lists Section 4

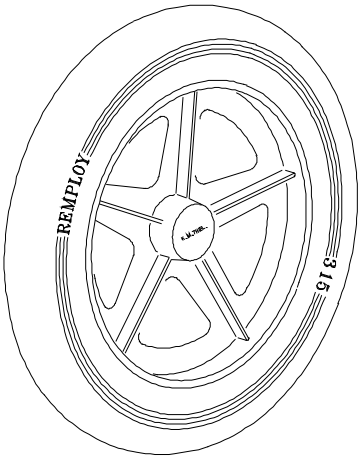
SECTION 3 ; TECHNICAL AND SERVICE

Top of Section

GENERAL WHEELCHAIR INFORMATION

2.1.2 WHEELS & TYRES FOR ATTENDANT CONTROLLED CHAIRS

REMPLOY MOULDED WHEEL
WITH INTEGRAL **MCP** TYRE



The moulded hub is produced in high impact performance polyamide. Wheel damage can be caused by a range of environmental and usage conditions. When these are combined the possibility of damage is increased, and this should be taken into account when carrying out service checks.

The change in weight distribution of a wheelchair with a heavy occupant on a sideways slope places high loads on the lower wheel. Increased use of wheelchairs in transportation using clamps or tie downs also places high loads on wheels.

When the wheelchair is stored in direct sunlight, for example in a hatchback car, the heat conditions can become intense. Injection moulded wheels used continually over a period of years in these conditions may become distorted. A sign of this is a kink in the moulded spoke. Wheelchairs, which have been in use for some time and are returned for recycling, should be checked for spoke distortion and damage, and the wheels replaced with an approved R Healthcare spare.

The pre-lubricated bearings in the hub are 12mm and 15mm respectively, mounted on a stepped spindle and should give similar free running and end float characteristics as the Self Propelled types. Prior to 2003 they were secured on the spindle by a circlip, protected by a moulded end cap that is a press fit in the hub centre. From this date the spindle on attendant propelled wheels is staked to secure the bearing hub assembly, and on occupant propelled wheels there is a lock nut.

GENERAL WHEELCHAIR INFORMATION

3.2.2 WHEELS & TYRES FOR ATTENDANT CONTROLLED CHAIRS (Cont) :

In the event of damage to the wheel bearings it is recommend that a new replacement wheel is fitted. When replacing wheels for wear, we recommend that they are always replaced in pairs.

All wheels fitted to basic attendant controlled chairs, are mounted in Receiving Bushes on the frame. **Access** wheels are mounted in moulded blocks which allow a range of wheel settings to suit the occupant and intended environment of use. All these wheels are secured with an M12 fixing nut on the inside.

The assembly is secured against vibration using thread locking compound on the spindle threads prior to nut assembly. Care and effort will be required in loosening the nut until the initial adhesive joint has been broken.

The security of the rear wheels into the frame is important. Care should be taken in re assembly of wheels. Wheels are to be tightened to a torque of 30Nm (22 lbs ft) and re-secured against vibration with thread locking compound. We have found that over tightening can cause damage to the fine M12 thread. The use of a nyloc type nut and standard M12 thread is an acceptable alternative to a fine M12 thread and thread locking compound, and in 2003, this specification is fitted to some basic attendant chair models.

With regard to **ACCESS**, the wheels are mounted into the Wheel Mounting Unit in this instance a Locking Washer is used. Wheels are to be tightened to a torque of 30Nm (22 lbs ft) against the Locking Washer. For further details reference Section 3.5.2

SECTION 3 : TECHNICAL AND SERVICE Top of Section

GENERAL WHEELCHAIR INFORMATION

2.1.3 HANDRIMS FOR OCCUPANT CONTROLLED CHAIRS :

Whilst being a relatively simple component, handrims are prone to damage when an occupant lacking in co-ordination or acting carelessly, causes the wheelchair to be rubbed against a door opening or down a wall etc. Where this is seen as a problem we recommend that consideration be given to the wearing of wheelchair gloves.

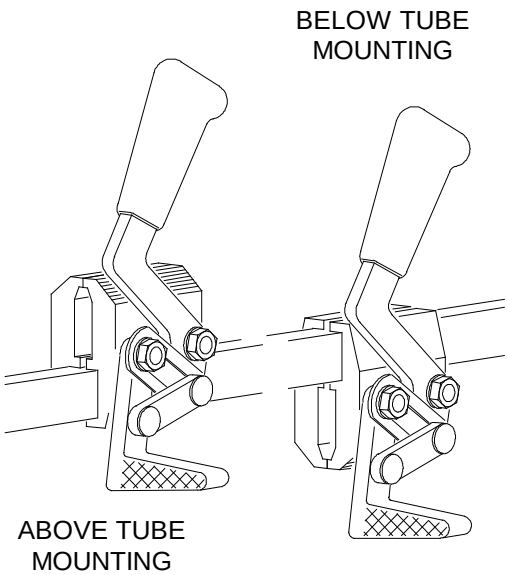
Handrims are attached to the wheel by M5 nuts and shake-proof washers with special large countersunk head screws, which require loosening for removal and replacement. It may be necessary to remove the tyre during this operation, in order to gain access to the internal screw head that may require holding with a pozidrive screwdriver from the inside to prevent it turning. The handrim clearance is normally 16mm from the wheel rim, this is best set using a spacer block, before tightening down the four securing nuts. Care must be taken not to over tighten these nuts, as this can strip the screw threads.

2.1.4 MODULAR CLAMP ON BRAKE:

Note!

This type of brake is used on ACCESS

The Modular Brake Assembly can be mounted above or below the mounting tube, above on the Occupant Controlled versions to provide optimum handle position.
Attendant Controlled versions will usually have them fitted below.
The Braking position is adjusted by sliding it the along the brake mounting tube, and clamping to the frame where required. On Attendant controlled versions the brake assembly is angled to provide a radial braking force.
The Brake assembly to be lubricated and set to provide easy handle operation. Nominally 6mm shoe distance from the tyre. Maximum torque setting for securing brake assembly to Wheelchair is 8Nm (6 lbf ft).



BRAKES should exert sufficient pressure on the tyres to hold the wheels from rotating on a 10 degree slope. When carrying out this test on downhill and sideways slopes the wheelchair will become unstable and slide before this test angle is actually reached.
Correct tyre pressure is important to correct brake operation

IF IN DOUBT ABOUT BRAKE SETTINGS CONTACT THE APPROVED DISTRIBUTOR

SECTION 3 : TECHNICAL AND SERVICE Top of Section

GENERAL WHEELCHAIR INFORMATION

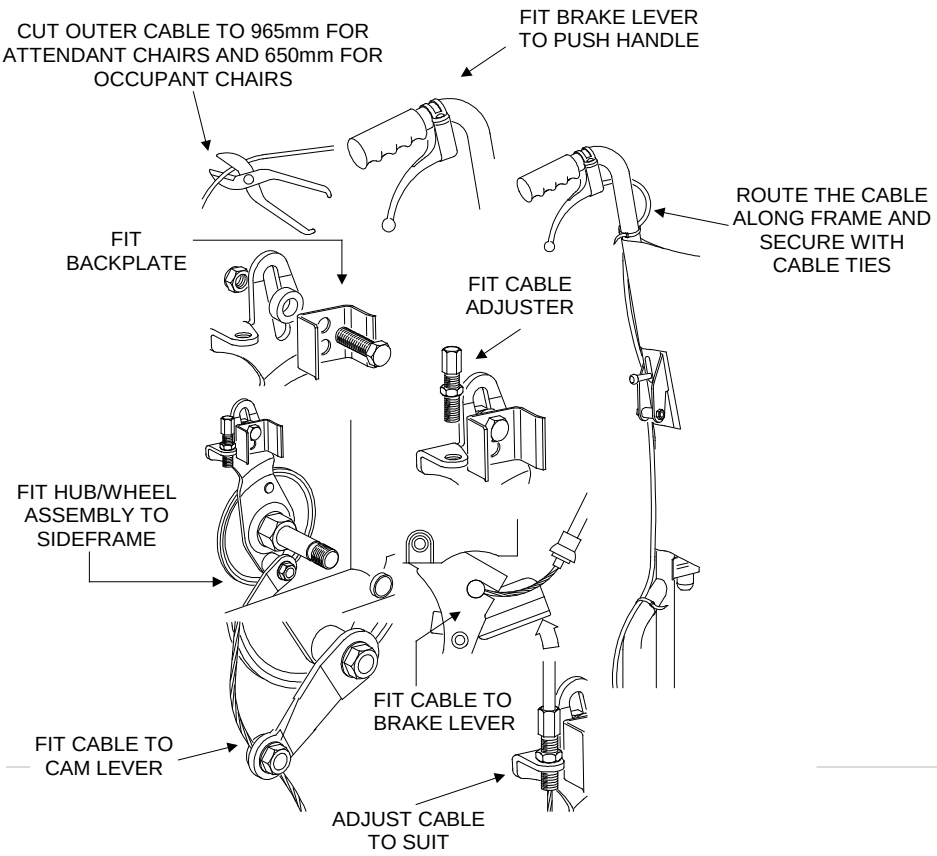
3.2.4 HUB BRAKES

Fitting of Hub Brakes Wheels.
Hub Brakes can be fitted to both attendant or occupant controlled chairs. However they are only available with pneumatic tyres. From 2000 onwards tyres on hub braked wheels fitted to R Healthcare wheelchairs are puncture sealed. The Hub Brake Kit is supplied complete with wheels incorporating the Hub Brake, cables and operating levers incorporating a standard type toggle lock for parking.

The procedure for installation Hub Brakes is as follows.
The wheels should be fitted as standard routine. The cables are directed to the push handle using cable ties, and should be routed to prevent it becoming snagged in moving parts of the chair.
Remove the hand grip and fit the brake lever to the push handle so that it can be operated by an attendant. Insert inner cable through Clamp Screw and secure with nut.

Adjust cable to make sure that the brakes holds the chair on a slope and that the toggle locks operate correctly.
Routine servicing should make sure that the brakes will hold the chair on a slope and that the toggle locks operate correctly.

These are available in kit form for both attendant and occupant controlled chairs, and are supplied complete with operating levers and cable.



GENERAL WHEELCHAIR INFORMATION

2.1.5 CASTORS

Castors General Build and Service

Correctly set up castors are an important part of controlling the motion of a wheelchair. There is little need for castor maintenance on wheelchairs, and it is strongly recommended that castors which show signs of excessive wear are completely replaced, rather than attempts made to rebuild, combine or cannibalise parts.

Injection moulded castors have been available from mid 1994. The shock absorbing properties of injection moulded castors has reduced problems of the previous vibration and noise which were typical of the earlier aluminium diecast models. R Healthcare approved castors are tested on our wheelchairs to meet the rated performance requirement. Castors are available from several manufacturing supply sources and R Healthcare fit alternatives in order to ensure flexible production supply. All wheelchairs must have castors of the same manufacture and design in both sideframes, and we recommend that when castors and wheels are changed, they are refitted to both sides of the wheelchair in pairs.

In the event of accidental tyre damage, or to remove carpet fibres tangled in the axle, castor wheels can be removed from the fork. The wheel spindle is secured by an M8 self locking nut, usually protected by a snap in cover. When replacing the Spindle it should be lubricated with none toxic grease and the nuts torqued to 7Nm (5 lbs ft), and checked for freedom of wheel rotation.

Castors for basic manual chairs are assembled into the frame by M14 screw fitting. On R Healthcare chairs from the end of 1999 onwards, security against high vibration and impact during heavy use is achieved by applying a bead of loctite 270 studloc adhesive to both spindle and frame boss hole, with castor head torqued as follows :-

47Nm (35 lbs ft) on 127Kg standard adult chairs.

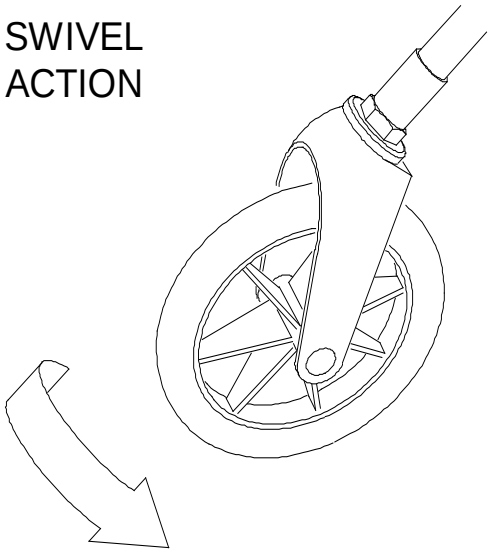
55 Nm (40 lbs ft) on 160Kg heavy duty wheelchairs.

GENERAL WHEELCHAIR INFORMATION

3.2.5 CASTORS Continued:

Castor Removal
When removing a Castor from the Frame, care and effort is required until the initial adhesive joint is weakened. Loctite 270 has a residual strength which resists turning out after the initial adhesive bond has been broken. It is most important that reassemble of castors into a frame is carried out according to the procedure mentioned previously.

Castor Head Assembly and Swivel Action
From 2003 onwards all castors fitted to R Healthcare basic wheelchairs incorporate features which provide support against damage by frontal impact with a preset swivel action. This reduces the risk of collapse, and absorbs some shock loads which may be encountered under abuse or crash conditions.



The ideal castor head swivel action setting allows the wheel to just move under its own weight when the wheelchair is tipped and rocked from the pushing handle, with the castors out of contact with any supporting surface and approximately pointing in the horizontal direction.

Swivel action is factory preset and lubricated. Castors on basic manual chairs can provide satisfactory service over may years without attention, until the tyres are worn.

Other damage apart from normal ware being due to adverse use. R Healthcare recommend that these castors be replaced according to degree of use and environment to a planned schedule.

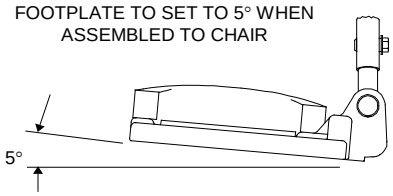
In a simple guide test covering castor head swivel and wheel running, a wheelchair and occupant, are pushed and released from walking speed over a measured distance of 5 metres. An acceptable deviation from the straight line is 0.5 metre. This test requires practice to achieve consistency. We recommend that it is carried out several times and over a measured course in both directions, to determine an average.

The directional, straight line performance of the wheelchair can also be affected by rear wheel alignment or frame distortion. Attendant propelled wheelchairs may be regarded as serviceable outside the 0.5 metre deviation, but we recommend that occupant controlled chairs are within this limit.

SECTION 3 : TECHNICAL AND SERVICE Top of Section

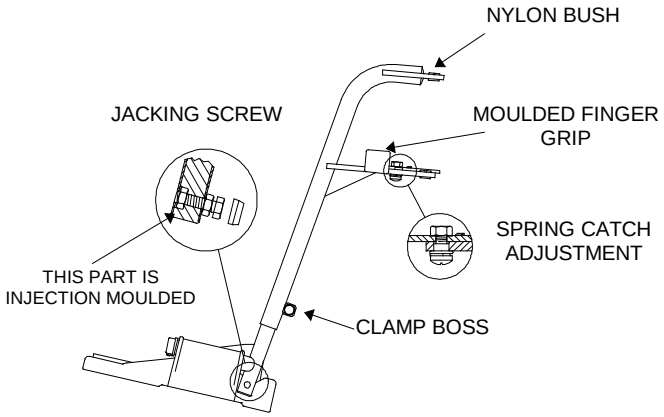
GENERAL WHEELCHAIR INFORMATION

2.1.6 FOOTRESTS - ALL WHEELCHAIR MODELS :



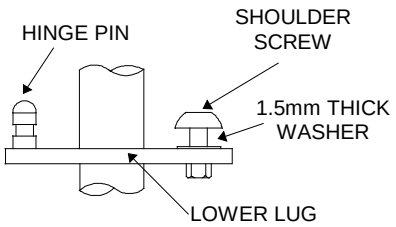
On all chairs footrests assemblies are swivel mounted and adjustable for footplate angle and height. They are located on nickel plated hinge pins at the front of the wheelchair frame and are prevented from becoming completely detached by a moulded retainer, which may be removed for footrest detachment.

The Footplates, heel out on an injection moulded M6 jacking screw assembly, at the end of the footrest stem. By releasing the locking nut, this can be moved in or out to provide an angular stop for the footplate.



Height adjustment of the footplate is achieved by an M6 threaded clamp boss and screw at the end of the mounting tube.

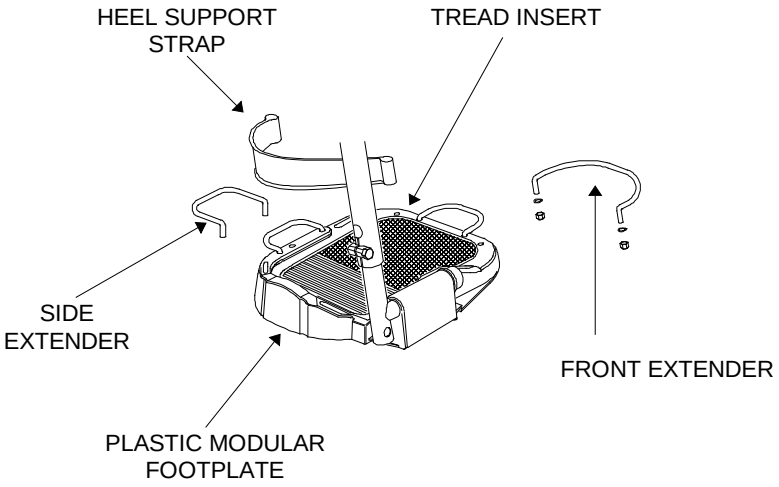
When in use, the footrest is located by a spring-loaded latch that nests behind a shoulder screw on the wheelchair frame.



This screw needs fitting with a 1.5mm thick washer under shoulder for use with R Healthcare Footrest Bracket fitted with nylon bushes.

Minor dimensional variations caused by paint build up, dirt ingress or transit damage, can cause incorrect operation of this component. Because of this, the R Healthcare latch is nickel plated and has an increased section at the critical location end to reduce the possibility of damage, but it is nevertheless very important that this area is checked and lubricated as a standard routine. Slight adjustment of the swivel clearance is possible by means of the M6 locking nut on the underside of the bracket.
A moulded finger grip is available on R Healthcare wheelchairs, to make footrest latch release easier when the occupant requires to swivel the bracket away for side transfer or to get out of the chair. This grip also provides a secondary stop feature, preventing over travel of the footrest latch and must not be removed.

2.1.6 FOOTRESTS Continued:

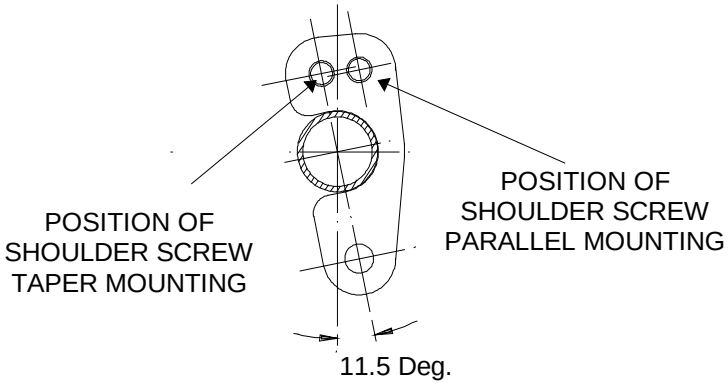


Injection Moulded Footplates
In response to the EEC Medical Device Directives, and comments from users. R Healthcare carried out a design review and from 1997 a modular plastic moulded Footrest with additional features allowing the fitting of extension supports, foot securing straps and a press in none slip tread insert.

To replace the Modular Footplate first remove the self-tapping screw and the Plastic End Cap then withdraw Footplate.

Replacement is the reversal of the above.

On Access and Accent frames a dual positioned Lower Footrest Lug for either taper or parallel mounted Footrest Brackets.



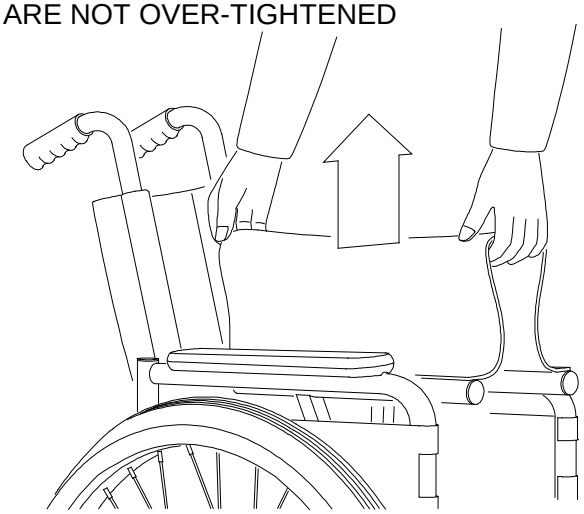
SECTION 3 : TECHNICAL AND SERVICE Top Of Section

GENERAL WHEELCHAIR INFORMATION

2.1.7 FRAME - GENERAL & FOLDING MODELS :

R Healthcare wheelchair frames are produced from high strength drawn tubing in all the important high stressed areas. Frame checks should be carried out as recommended in the service schedule, based upon user and environmental assessment and review.
Frame checks should include both structural and moving part functional inspections. When examining frames that have been in service for some time, particular attention should be paid to the joints around the front castor mounting areas and the footrest mounting points. Crack detection spray can be applied in areas where there is some doubt about the structure when the chair frame which has been stripped of paint.

PROCEDURE TO CHECK THAT FOLDING MECHANISM PIVOTS ARE NOT OVER-TIGHTENED



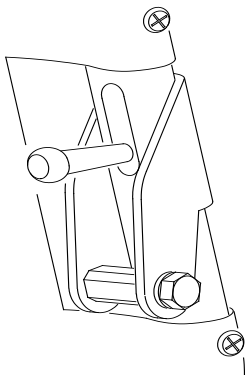
We recommend replacement of any corrosion affected fasteners and fittings. To improve resistance to corrosive environments, in November 1997 R Healthcare commenced implementation of a phased change affecting exposed fasteners and moving metal latch parts prone to wear, with increased use of nickel plate or chrome plate. We have found that the increased thickness of plating may have an effect on the applied torque required to tighten nuts down to the required setting. If in doubt about torque settings, service technicians are advised to check for correct function.

Although folding type wheelchairs have different frame structures they all function in similar manner. Therefore, service routines can be based upon the same principle.
The folding pivots are secured by bolts and self locking nuts allowing the folding motion to operate without restriction but without excessive clearance between the pivots. Excessive clearance will increase pivot wear and make the wheelchair frame structure too flexible, affecting straight line motion and general efficiency. As a guide, the pivot self locking nuts should be nipped up and then backed off half a turn, with lubrication of the moving joints using a none toxic, water repellent lubricant. A functional test to check that the wheelchair folding mechanism pivots are not over-tightened, is to lift the chair by the seat upholstery, holding in the centre as shown in the User Guidelines. In doing this, the two side frames should fold together under their own weight.

Folding mechanisms are an important functional aspect of the chair and affect most areas of performance and basic structural safety. A major defect in the folding

2.1.7 FRAME – GENERAL & FOLDING MODELS continued :

mechanism, is an indication that the wheelchair has had an extended amount of use and that other areas of the chair may be in a similar condition. R Healthcare advise that a defective folding mechanism requires replacement of the wheelchair, or an assessment within a formal Quality System before any re manufacturing work.



On wheelchairs with a folding backrest, the upper hinge area will require examination. The bracket connecting the push handle to the frame has been re-designed by R Healthcare for increased strength.

It is possible to replace the upper backrest with a replacement unit which should be fitted as a pair to both side of the frame.

When carrying out service checks and wheelchair recycling this area should be examined in detail. Damage to the boss on the lower frame is an indication that the wheelchair has been extensively used and needs replacement. In the case of Access a replacement backrest can be fitted if the rest of the chair is suitable for further use, on other chairs the wheelchair is unsuitable for further use and should be scrapped.

Clearance setting folding pivot is by nipping up and backing off half a turn, together with lubrication of locking plungers, for satisfactory operation.

The security of push handle grips is essential for wheelchair safety. Regular checks are important. They can be damaged in transit or by rough handling. Service Technicians should report when it appears that the method of use is causing grip damage. Action should be taken, and advice given to the user, to reduce the potential risk. There have been instances where an occupant has been injured due to the grip becoming insecure. Eg. when a transportation head restraint clamped onto the push handle grips has caused an insecure grip to be pulled off, resulting in occupant injury. Damaged push handles should be removed and replaced by a R Healthcare approved spare. Removal of damaged push handles will require them to be stripped off with a sharp knife. On basic chairs and Access, push handle grips and tipping lever grips are PVC mouldings They are a drive /shrink fit onto the wheelchair frame, initial fitting can be eased by first heating the grips in an oven at 60 degrees centigrade, in the field the fitting temperature can be achieved using hot water. Prior to 2003 these grips were also secured by contact adhesive, Bostic 1782. The adhesive application method is subject to variables, and from 2003 the R Healthcare approved grips have been changed to a new profile which does not require adhesive. We have tested this assembly for security to ISO 7176-8.

The paint work on R Healthcare wheelchairs has a stove enamel finish of a minimum 25 microns obtained by powder coating, depending on the specification required. Paint specifications meet BS 3900, and are lead and TGIC free. Whilst it is not possible to

2.1.7 FRAME – GENERAL & FOLDING MODELS continued :

duplicate this without having factory process equipment, minor paint work repairs in service operations can be made using a touch-up brush.

It is not recommended to attempt a complete or major paint repair without a controlled powder paint facility. When such work is necessary the wheelchair should be disassembled the frame stripped and repainted to the original performance and current safety product finish specification. Paint stripping using chemical is friendlier to the material structure than grit blasting. R Healthcare advise that grit blasting of a wheelchair frame for repainting is only carried out once in the lifetime of the chair. When processing frames for repainting, consideration should be given to the environmental issues.

2.1.7a PUSH HANDLE GRIPS

The security of push handle grips is essential for wheelchair safety. Regular checks and maintenance are important.

The following advice on hand grips is included in all user guides.

'These need to be secure. If grips are loose or damaged the wheelchair is unsafe and the grips must be replaced. Replacement grips and method of fitting must be to R Healthcare approved specification'.

Service personnel should be aware of the following revised procedures, arising from the changing environment of use.

Push handle grips can be damaged in adverse temperature conditions, transit or by rough handling. Service Technicians should report when it appears that the method of use is causing grip damage. There have been instances where an occupant has been injured due to the grip becoming insecure, when subject to an increasingly varied environment of use.

Adverse Incidents have occurred following service checks, when the condition of grips or fitting procedures have been ignored. Service agents should regard hand grip check and replacement as an important aspect of wheelchair safety. Action should be taken, and advice given to the user, to reduce the potential risk of occupant injury.

A typical example of an incident which could cause grip damage would be a transportation head restraint clamped onto the push handle causing an insecure grip to be pulled off, resulting in occupant injury. R Healthcare has reviewed through risk assessment the application and specification of push handle grips, following stringent testing, user feedback, and reported incidents.

Prior to 2003 hard PVC grips were secured by contact adhesive, Bostic 1782. The adhesive application method is subject to variables. From 2003 the R Healthcare approved grips have been changed to a new profile which does not require adhesive. We have tested this assembly for security to ISO 7176-8 and further environmental test simulations. Damaged push handle grips should be removed and replaced by a R Healthcare approved spare.

Reference MAAWM1116

Removal of damaged push handle grips will require them to be stripped off with a sharp knife. Push handle grips and tipping lever grips are plasticised PVC injection mouldings They are a drive /shrink fit onto the wheelchair frame, initial fitting can be eased by first heating the grips in an oven at 60 degrees centigrade, In the field, fitting temperature can be achieved using hot water.

Standard Operating Procedure as follows:-

Top Of Section

2.1.7a PUSH HANDLE GRIPS (Cont)

Do not attempt to apply a lubricant to push handle or internal surface of grip in order to make assembly easier, as this may affect future security.

Standard Operating Procedure as follows:-

- Remove existing hand grip and all traces of adhesive from wheelchair push handle.
- clean surface where grip is intended to fit, using white spirit.
- Prepare grip for fitting preferably by applying heat.
- Ease grip onto push handle with finger features underneath and press home, ensuring that push handle is entered all the way to the end.
- Check alignment of grip.
- Leave to cool for thirty minutes.
- Check security by holding and pulling hard.

This procedure applies to R Healthcare approved spare part assembly only, assembly of any other type of grip is not recommended.

GENERAL WHEELCHAIR INFORMATION

2.1.8 FRAME – ACCESS & ACCENT

These models have the Ranger 8L type folding mechanism, but the side frame construction has been adapted to include additional features. In the case of the Access, incorporate the adaptability to be assembled and re assembled in different functional build configurations to meet specific needs of users following a clinical assessment.

Plastic moulded seat support locations are fixed to the upper frame tube by means of pop rivets. When carrying out a repainting operation on the frame, the moulded seat support locations should be drilled out, and replaced by new spare parts when the frame is re assembled.

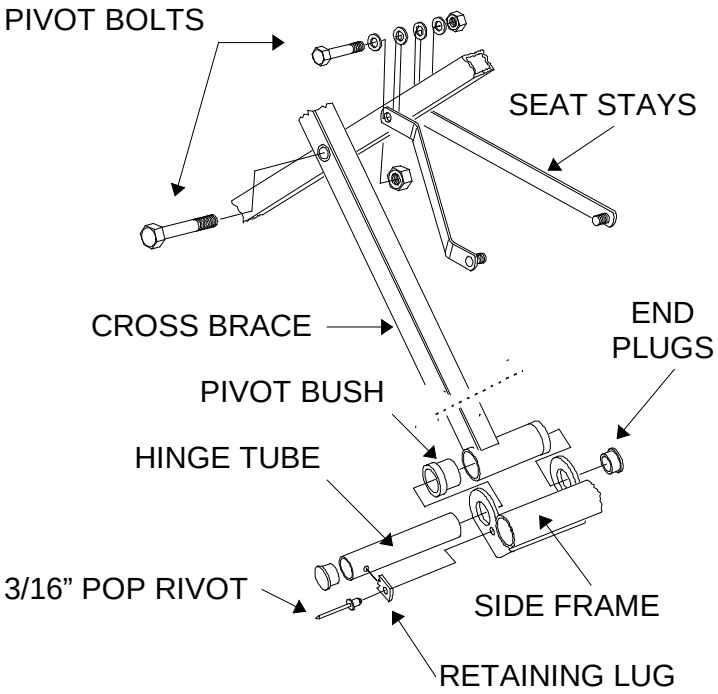
In January 1998 the thumb grip length of the catch was extended to improve operation, and old versions of this should be replaced when the chair is serviced.

In checking operation of this on wheelchairs being serviced, technical personnel should also note any deformation of the lock holes or pins. This may be an indication that the armrests are being used incorrectly to lift an occupant and wheelchair, which is not recommended, due to possibility of user and carer injury in lifting. If this is the case it should be reported, and advice action taken.

SECTION 3 : TECHNICAL AND SERVICE Top Of Section

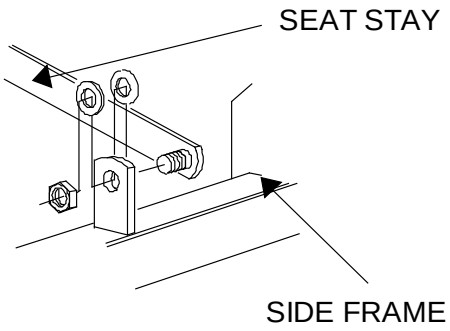
GENERAL WHEELCHAIR INFORMATION

2.1.8 FRAME - RANGER 8, ACCESS & ACCENT:



The folding mechanisms each have a square section main cross brace, pivoted in the centre by a M8 bolt and self locking nut.
Each brace is mounted into a bracket on the lower tube of the wheelchair side frame.
The seat mounting tube is rigidly attached to the upper end of each main cross brace.

Supporting links pivotally connect the cross brace to the side frames by means of M5 threaded fixings and self locking nuts. These are intended to maintain vertical folding alignment, and are not under load when the chair is occupied



Service checks should include examination for fatigue cracks at the joints between seat tube and main cross brace, and the area around the central and lower pivots. Crack detection spray can be useful in this check, but it is only possible to do this when carrying out a full remanufacturing process, when all the paint has been removed. If cracks are discovered, the wheelchair will require replacement.

The four supporting links should be checked for security at their pivot connections, any defective supporting links should be replaced with an approved spare. For all folding wheelchairs the correct location of the seat tubes in their location brackets is a useful check to determine if the frame is strained.

It is acceptable for the tubes to be up to 8 mm above their location when the chair is first opened. However, when the seat is occupied each seat tube should rest in its location bracket at the front and rear of each side frame. If not down fully, excessive load is being taken by the supporting braces and the frame is unstable, with the fixing joints overloaded. A wheelchair which is strained will not meet the accepted performance criteria, and will normally require frame replacement.

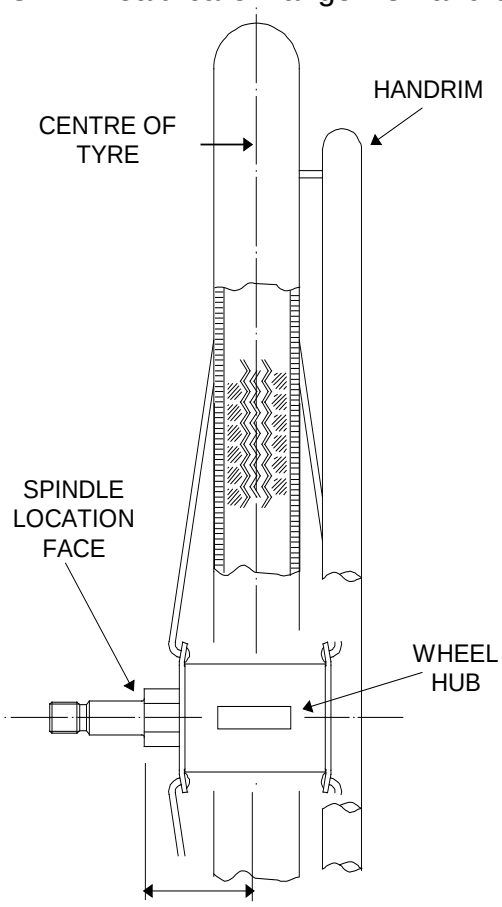
GENERAL WHEELCHAIR INFORMATION

2.1.8. FRAME RANGER 8L, ACCESS & ACCENT : Continued:

On Ranger occupant propelled wheelchairs, ie models 8TRL AND 8TRLJ all of which have fixed position wheels, the widest part of the wheelchair frame is usually the face of the armrest side panel. Clearance distance between this and the nearest part of the wheel, which is usually the edge of the tyre, is determined by a combination of build dimensions, as follows:

A the spindle location face to the centre of the tyre.
B the centre of tyre to centre of the hub (different from A if offset spoked)
C tyre profile
D the head thickness of the wheel mounting bush in the wheelchair frame.
E outer face of armrest side panel in relation to face of wheel mounting bush

On R Healthcare Ranger 8L and all other occupant propelled wheelchairs with fixed spindle wheels, dimensions A and B are the same.



50mm - 315mm Dia WHEEL
46mm - OCCUPANT WHEEL

This dimension is 46mm and for attendant controlled wheels it is 50mm, and this is constant on all R Healthcare produced wheels, and this achieves a satisfactory working clearance between wheel and frame, when chairs are used with a correct size occupant, Packing the wheel out with washers to clear the panel is not advised, because of safety reasons, wheel spindle threads do not protrude excessively beyond their fixing nut, and there is insufficient thread engagement length to allow a packing washer to be inserted.

This is in line with original DHS pre 1991 specifications, and is central with the brake shoe on frames produced with the optimum wheel toe in. (Nominally an angle of half of a degree relatively to the frame)

For more detailed information on wheels, including recent information regarding supply of hub braked wheels, see Section 3.2.1.

SECTION 3 : TECHNICAL AND SERVICE Top Of Section

GENERAL WHEELCHAIR INFORMATION

2.1.8 FRAME RANGER 9

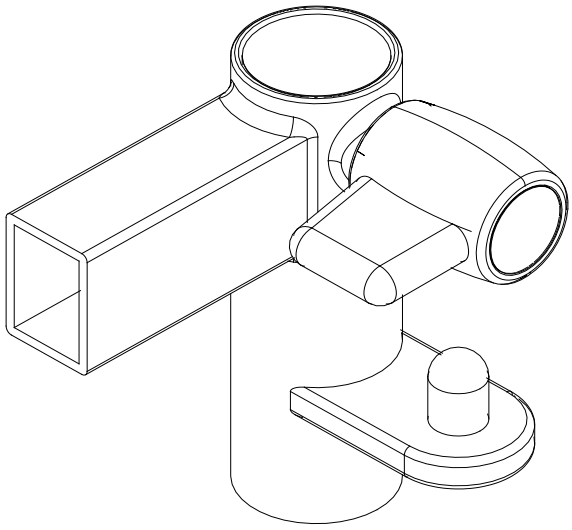
The **RANGER 9** folding mechanisms has a main cross brace, consisting of two flat links rigidly attached to each end of the seat mounting tube. These main links are pivoted in the centre and mounted into brackets on the lower tube of wheelchair side frame by M6 bolts and self lock nuts. Supporting links pivotally connect each cross brace to the side frames by means of M5 threaded fixings and self lock nuts. These maintain vertical folding and alignment. This double flat link construction is more restrictive than the single central pivoting type, being nearer the back of the occupant's legs, but it is stronger and less likely to suffer from fatigue failure.

Service checks are required to examine for security and wear in the linkages. Major damage to the folding mechanism, will require replacement of the wheelchair; defective supporting links should be replaced with an approved spare. The **RANGER 9TRL and 9TRLJ** frames are simpler in construction than the other models in the range and should not normally require a great deal of attention to keep them in a satisfactory working condition.

3.2.11 ARMRESTS - ALL MODELS :

RANGER, ACCESS & ACCENT wheelchairs have detachable armrests in a choice of types, wheelchairs that are suitable for use in transportation with WTORS can not be supplied with fixed armrest because these limit accessibility to the occupant restraints.

Detachable armrests are secured to the wheelchair by a cam-latch at the front corner of the frame. Moving the latch locking lever outwards disengages a plunger from its location hole in the armrest tube. A compression spring causes the plunger to return to its engaged position when the locking lever is released.



Operation of this latch should be checked with the armrest located in its two alternative positions, that is, tray fitting at the front, or reversed with the tube radius facing forward. Damage to the latch may necessitate the fitting of a replacement. Assembly is achieved by inserting the plunger through the front frame tube. The plunger is retained by a starlock push on fix, which grips the stem, and heels out, under pressure of the spring, against the back face of the lever.

GENERAL WHEELCHAIR INFORMATION

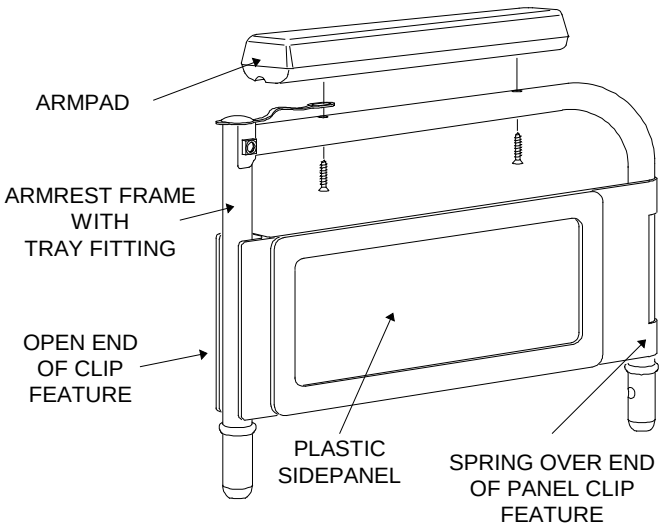
2.1.10 ARMRESTS - ALL MODELS :Continued

Carers and attendants are advised that they should not lift the occupied chair by gripping the armrests. This operation creates a safety risk to both occupant and attendants. The possibility of lifting injury being caused during attempts to lift a wheelchair and occupant by this type of manoeuvre is significant.

In applying risk assessment to this aspect of the wheelchair we believe that the front armrest lock on Ranger, Access & Accent models is satisfactory for the intended purpose.

When carrying out Service Checks on Ranger, Access & Accent wheelchairs, the front locking socket and mechanism should be checked for signs of strain. The armrest frame should be checked for distortion, which may be evident if the moulded side panel does not fit correctly. These are indications that the occupied wheelchair has been lifted by the armrests. It should be possible to adjust the chair back to give correct operation if the distortion is not to great.

In circumstances where it is evident that the chair has been misused in this way, the user and carer should be shown why lifting the wheelchair by the armrests is not advisable.



Side panels become accidentally damaged by rough handling and over optimistic storage, in a car boot for example with the injection moulded side panel, the replacement simply clips onto the armrest frame.

GENERAL WHEELCHAIR INFORMATION

2.1.10 ARMRESTS - ALL MODELS :continued

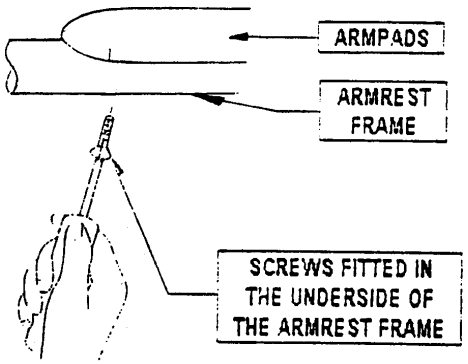
Wheelchairs restrained in vehicles for the transportation of disabled occupants require the removal of all loose fitting components and attachments. The reason for this is that in a crash situation flying objects may cause injury. This for example includes the armrest tray or anything fitted in the armrest frame socket. The plastic moulded armrest side panel, which is clipped position on the armrest frame also requires to be assembled with open end of the clip feature facing forwards and the spring end to the rear against the backrest. In this position the panel cannot be dislodged accidentally.

The armpads on R Healthcare wheelchairs are produced in a special polyurethane material that withstands normally expected knocks and also the nervous scratching associated with elderly patients.

Examination of armpads is necessary to ensure that the internal fixing plate is not exposed by damage caused by the above mentioned problems. Replacement armpads are available in several different styles, R Healthcare pads are styled with a soft feeling radius on the underside edge

Armpads are secured to the wheelchair, using two screws, from the underside of the armrest frame that can be accessed by a long pozidrive screwdriver.

The protective cap that fits into the tray fitting hole, has an integral retaining strap that is secured under the nearest armpad screw.



SECTION 3 : TECHNICAL AND SERVICE Top Of Section

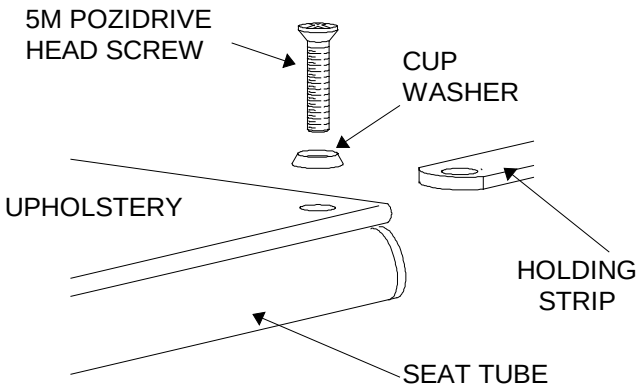
GENERAL WHEELCHAIR INFORMATION

2.1.11 UPHOLSTERY - ALL MODELS :

The type of heavy use that wheelchair upholstery is expected to meet has created a supply environment where durability and strength are the main requirement.

Materials used which meet this performance requirement are a basic PVC coated woven fabric of high warp and weft strength.

Damage to upholstery usually takes the form of cracking along edges or staining from body fluids and food spillage.
For reasons of hygiene care should be taken in handling upholstery that has suffered such treatment. We recommend a complete upholstery change for wheelchairs that are recycled from one user to another.



On basic models, M5 Pozidrive or allen head screws, located in cup washers, pass through holding strips sewn into the upholstery material and engage with threaded tube inserts. Screws should not be over tightened, as this damages the cup washer. A recommended torque of 8Nm (6 lbs ft) should normally apply.

When new seat canvases are fitted, they may require settling down to locate the seat rail in the support brackets. this requires the chair to be fully opened, and the seat frame forced outwards and downwards. A practical method of doing this, when necessary, is to kneel gently on the seat rails, facing backwards for a few seconds.

Care should be taken to avoid damaging threaded inserts, repairs usually require factory attention. In 2003 the 9TRL and 8TRL wheelchairs were uprated from occupant weight 112kg to occupant weight 127kg, for this improvement the backrest upholstery on both these models is specified as a wrap round construction. 9TLR specifications prior to this improvement were secured to the rear of the frame tubes. In line with the R Healthcare policy of spares replacement with current specification upgrades were possible replacement backrest canvases will be wrap round for both these models. Problems with upholstery fixing screw heads catching clothes are created if the pozidrive head is damaged with a protruding burr. From Mid 1997 R Healthcare changed from zinc plated screws to nickel plated screws which have improved abrasion and corrosion resistance, and in 2003 wheelchairs were introduced with an allen head driving feature to further improve against burring of the head on assembly.

GENERAL WHEELCHAIR INFORMATION

2.1.11 UPHOLSTERY - ALL MODELS Continued :

Fabric used for wheelchair upholstery is easily cleaned in-situ. However, as there are some substances that may affect the material, careful attention to regular cleaning will not only prolong life but will ensure that its appearance is maintained.

Seat and Back Canvas
A new canvas is to be fitted if any splitting is observed. In particular check the front of the seat canvas where the canvas is stitched down each side from front to back.

Cushions
R Healthcare cushions are provided for comfort and support, rather than pressure relief. They have a high grade polyurethane combustion modified foam inner. When checking cushions for serviceability, server soling or the possibility of contamination through ingress of body fluids will necessitate replacement. In addition to checking the integrity of covering material and stitching it is also important to check the serviceability of the foam. For comfort, it is acceptable for a degree of permanent set in the foam to have occurred over a period of use, however, if the permanent set is excessive, to the extent that “bottoming out” is possible, the cushion should be replaced. A cushion should last for at least two years before replacement, even in cases of heavy use. If service records show that the rate of deterioration of foam demands more frequent replacement, a deeper cushion or modified specification may be necessary, and we recommend that the occupant is re assessed by a seating specialist.

Resistance to Stains and Chemicals
The upholstery is resistant to most mild acids, alkalis and household stains. Some substances such as ball-point pen ink, lipstick, newsprint and food colourings may be absorbed by the vinyl and cause permanent staining. This can often be minimised by immediate cleaning with a damp, soapy cloth or sponge. To maintain its appearance, the fabric should be cleaned regularly to remove fatty substances in soiling, which may reduce its service life. Light soiling can be removed by adding a small amount of washing up liquid to some warm water and then applying to the fabric with a cloth. Rinse off with clean water before allowing to dry. If need be, a Mild solution of antiseptic can be applied to the fabric.

Do Not Use
Chemical bleaching materials, abrasive cleaners, wax polishes or aerosol spray polishes. The use of these substances is likely to be harmful to PVC laminates and repeated use can result in the removal of plasticiser from the PVC compound that will result in hardening and subsequent cracking of the surface.

GENERAL WHEELCHAIR INFORMATION

2.1.12 HEMIPLEAGIC (OAD) OPERATION

WHEELS:

OAD Operation is available on **ACCESS & ACCENT.** These units are all fitted with 610mm (24") QD wheels and in sizes between 15" and 19" seat widths.

For further details reference Section 3.5.2 for **ACCESS.**

The one arm drive system used by R Healthcare on Access was modified in 2005 by the replacement of the fixed wheel and cross linkage drive connection by a QD wheel and straight spring loaded shaft cross drive connection. The new 2005 one arm drive system fits onto the Access frame using the same securing points as before, to allow a smooth transition to the new 2005 one arm drive system. The information on both these systems is retained in this manual for service reference.

SECTION 3 : TECHNICAL AND SERVICE Top Of Section

GENERAL WHEELCHAIR INFORMATION

2.1.13 ATTACHMENTS, ADAPTATIONS & ANCILLIARY EQUIPMENT.

APPLICATIONS, EFFECTS & RESPONSIBILITIES

In its simplest form an attachment may be a factory built addition to a basic specification, as would be the case with rigidising bars added to some wheelchairs supplied to hospitals to prevent them folding, **or a standard range option, such as a backrest extension,** which may be added to a chair some time after initial supply, as a result of a later assessed user need. As the original equipment manufacturer **R Healthcare take responsibility for the use of these items within the context of the intended purpose, as outlined in this manual.** When fitted to an original configured product, this addition should be noted on the Wheelchair Service Record, in the User Guide which is intended to remain with the wheelchair throughout its life.

The retrospective fitting of subsequent attachments should be endorsed by the Rehabilitation Engineer. **If purpose made attachments or adaptations of other manufacture are fitted to R Healthcare wheelchairs, the attachment manufacturer takes full responsibility for its continued safety in use, application and net effect on the wheelchair.** Any retrospective change of specification should also be noted on the Wheelchair Service Record.

An attachment should not require a basic modification to the structure of the wheelchair, such as the welding on of brackets or the drilling of holes. Attachments should also not adversely affect the basic function and safety of the wheelchair with regard to its intended capability for carrying and distributing the stated occupant load. However, some changes in wheelchair stability or special requirements may occur as a result of the attachment or adaptation, and this will demand individual consideration. Typical examples of situations demanding professional assessment are :-

Evaluation of the effect of seating adaptations into a wheelchair, such that this does not modify the distribution of stress, to such an extent that high loads are concentrated into parts of a chair structure not designed to withstand them.

Evaluation of a complete modified wheelchair and occupant combination with regard to stability and manoeuvrability in the intended environment of use.

The Rehabilitation Engineer, or qualified professional, is responsible for risk assessment and safe application of attachments and adaptations. Installation being carried out by a competent and fully trained Technician.

2.1.13 ATTACHMENTS, ADAPTATIONS & ANCILLIARY EQUIPMENT.

Top Of Section

APPLICATIONS, EFFECTS & RESPONSIBILITIES (cont)

It is not possible for R Healthcare to provide test data for the overall effect of individual wheelchair customisations. The effect of an adaptation may need a re assessment of the service requirements of the total rehabilitation package. **Manufacturers of specialised attachments and adaptations should understand their products, and provide sufficient information to ensure basic and continued safety in use on the wheelchair models for which they are stated to be suitable.**

In the wider sense, assessment of the use of a combination of different equipment may reveal an incompatibility which has the potential to injure a patient or carer. These situations should not be ignored because previous practice did not highlight the safety risk, or because responsibility for equipment issue is with different departments.

Analysis of incidents shows that many injuries are not the result of defective products, but the result of inappropriate methods of use, **or incompatibility between the equipment used**. Documented reporting provides us with a means of analysing the circumstances in which situations have occurred, and the “best practice” approach requires us to learn and develop to improve products, methods and information to make things safer and more effective in the future. Whilst it may not be possible to put the world to rights, some solutions may be achievable, at a relatively small cost, if problems are brought out into the open. We recommend that the Rehabilitation team communicate potential safety issues to the issuing authorities concerned, the manufacturers of the products concerned, and the Medical Devices Agency, whose brief covers the whole spectrum of equipment safety.

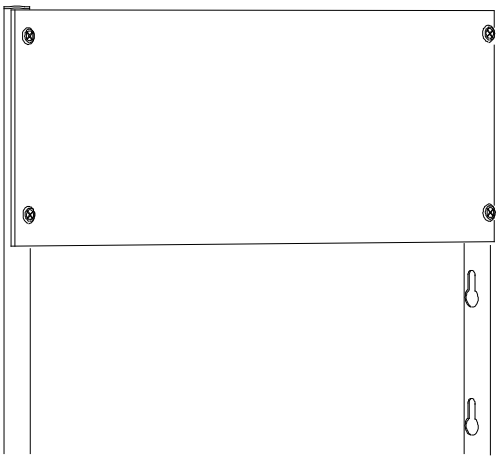
The possible implications of using an adaptation, attachment or ancillary piece of equipment, should not deter the Rehabilitation Engineer or Therapist from making use of whatever is available, if this improves the function and safety for a particular user in a difficult situation. Without prejudice, where possible, R Healthcare will provide technical advice for Rehabilitation Engineers and Therapists who are dealing with complex wheelchair application situations, but the overall responsibility for patient suitability must remain with the Clinical Team.

The spirit of these recommendations is to ensure that a degree of control is exercised over retrospective specification change, with the confidence that changes are carried out as close as possible to original manufacturer tested specification, and within an overall fitness for purpose context of the original product intended function. Statistical data should be made available for review. R Healthcare Customer Services Department should be informed of concerns in the field, arising out of adaptations, so that action can be taken to make appropriate improvements in either information or design.

Communication and feedback between all concerned will provide a framework for continual development of “Best Practice” in clinical application and manufacturing techniques, ultimately to the benefit of wheelchair users.

2.1.13 ATTACHMENTS continued :

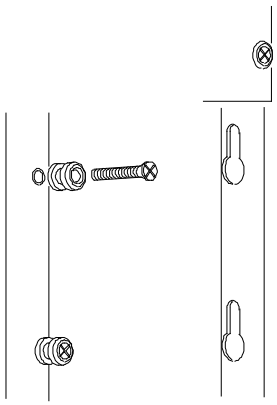
All **RANGER, ACCESS & ACCENT** wheelchairs can be fitted with a number of attachments which extend their application to meet more specific needs.



BACKREST EXTENSIONS

These are available in a range of height and width sizes, and are made for fitting into the upper backrest frame of all the above models using an adaptor kit.

The backrest extension itself comprises a pair of straight tubes to which a supporting canvas to suit the required chair width is secured by fixing screws to the face of the tubes, in the same manner that the seat canvas is secured to the chair frame.



DETAIL OF BOBBINS AND KEYHOLE SLOTS

The backrest adaptation kit has two bobbins for each side which should be screwed into the insert points in the outside of the frame. These bobbins remain a permanent feature on the chair frame to facilitate location of the backrest extension by means of the keyhole slots, which are cut into the inside face of each extension tube.

The keyhole slot feature allows easy assembly of the backrest extension or removal for storage of the chair by the attendant or carer. When the chair is fully open, the tension in the supporting canvas makes removal of the extension difficult, and when fitting or removing the extension, the chair should be in the closed position.

In the interests of effective supply and availability, from January 1998, R Healthcare are able to supply the canvas supporting materials for backrest extensions in the full range of upholstery finishes. The steel frames are all black.

GENERAL WHEELCHAIR INFORMATION

2.1.13 ATTACHMENTS: Continued

ARMREST TRAY MOUNTING POINT

Teaching and communication interfaces are becoming important for users, particularly children. The armrest socket, originally intended to locate a feeding tray, is a useful connection point for peripheral applications that can be designed to the needs of the occupant by a Rehabilitation Engineer.

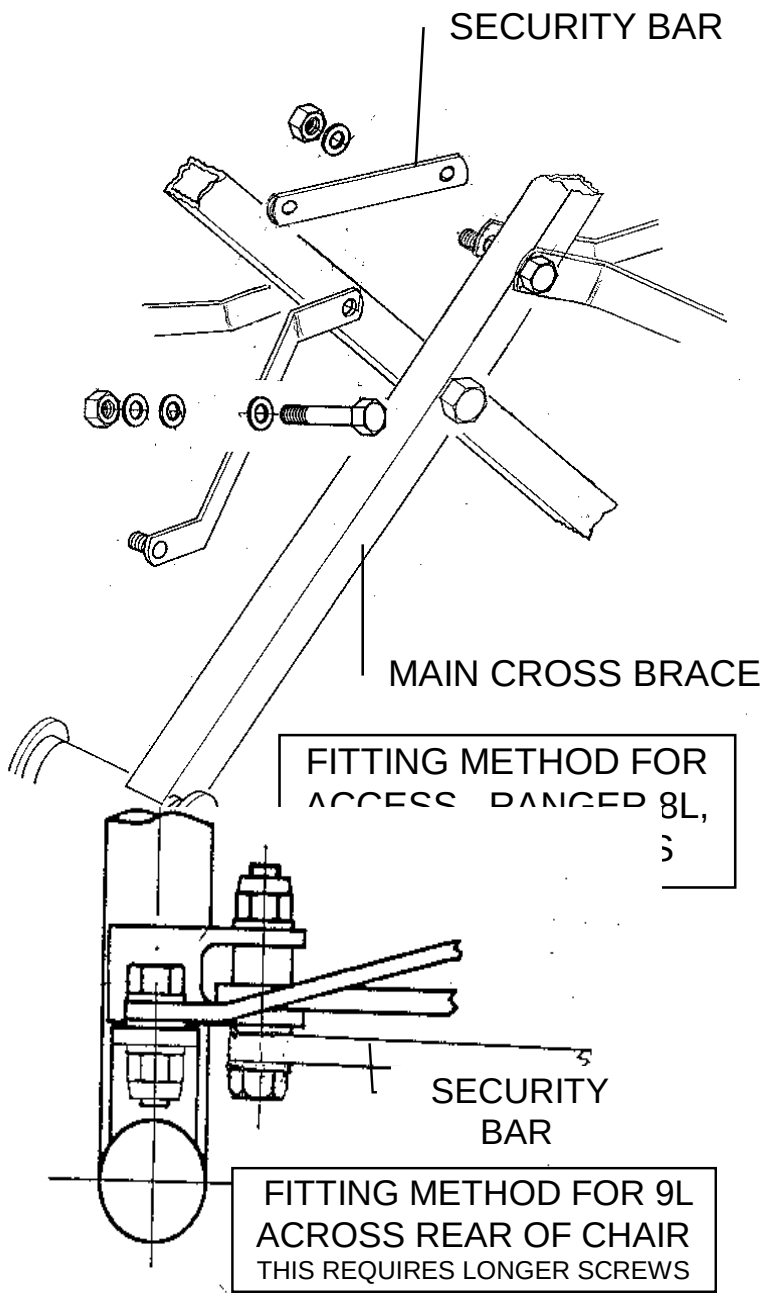
When fitting adaptations such as these, we advise that the user ond carer are made aware of the circumstances of intended use when the attachment must be removed. This would certainly be necessary in occupant transportation in a vehicle, and removal may be required during other outdoor activity where there is an adverse effect on performance eg stability on sloping ground, or climatic effects.

3.2.14 CONTINUES ON NEXT PAGE

GENERAL WHEELCHAIR INFORMATION

2.1.13 ATTACHMENTS Continued:

SECURITY FITTINGS



When folding frame wheelchairs are used as portering chairs in a hospital or similar environment where they may be occupied by many different people during the normal day, it may be intended that they are available to provide a service within that facility only, and not to be removed.

For this requirement, it is possible to fit a short rigidising security bar, across the frame pivots, preventing the chair from being folded. Security Bars can be fitted to wheelchairs when originally supplied, or as a special made to order spare.

The Access, security bar can be fitted using the existing folding frame link screws and self locking nuts.
Each chair width requires a different length bar.

The security bar for the Ranger 9L fits across the main crossbrace pivots at the rear of the chair, and requires longer screws.

GENERAL WHEELCHAIR INFORMATION

2.1.13 ATTACHMENTS Continued:

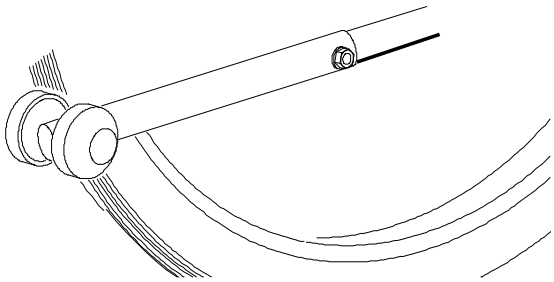
ANTI TIP STABILISERS

The possibility of an occupant injury through falling backwards out of a wheelchair must be recognised. There is a potential for serious injury to the back of the head if the occupant strikes the floor heavily.

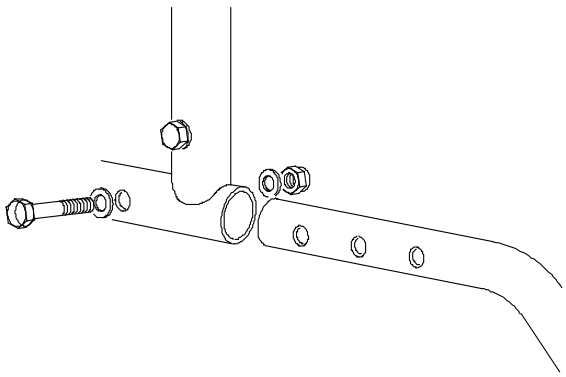
Users who understand how to fall out of the wheelchair, and can control balance by natural instinct will see this as a normal part of everyday life, and for them it is not a problem.

New occupants who are unfamiliar with wheelchairs are at the greatest risk in this respect.

All wheelchairs which have a possible rearward static stability measurement of less than 10 degrees must have the availability of anti tip stabilisers.



Whilst anti tip stabilisers are attachments, and can be adjusted or removed by unscrewing the securing nut and bolt, it is R Healthcare policy to always supply these on all Active User chairs, and allow subsequent assessment of occupant capability to control the chair balance to be carried out by the specialist clinical team, before adjustment or removal.



This aspect is dealt with in considerable detail in the particular sections describing actual product related features.

On R Healthcare chairs, the anti tip Stabilisers are secured to the lower frame tube by a self locking nut and bolt. They also have a series of holes to allow for adjustment when rear wheel is repositioned.

GENERAL WHEELCHAIR INFORMATION

2.1.13 ATTACHMENTS: Continued

POWER DRIVE ATTACHMENTS

A wide range of these adaptations is available for fitting to manual wheelchairs. They provide the attendant with assistance in pushing, and are very handy in hilly areas. Their use must be authorised by a Rehabilitation Engineer, or qualified professional, before they are fitted to any R Healthcare wheelchair.

The frames of Ranger and Access wheelchairs are produced from high strength materials, and from our current knowledge of power adaptations in the field, we are unaware of them causing problems through adversely affecting the wheelchair frame, provided that there attachment does not require the drilling of holes, or welding of brackets. TGA and Sampson Wheelchair Power Packs should come complete with integral clamps, making the modification of the frame not necessary.

The drive unit on these devices is usually in the centre of the chair at the rear , the drive wheel of the Power Pack should be near in line with the rear wheel of the wheelchair and slightly behind the rear wheel and in the normal walking stride area of an attendant carer. This makes it necessary for the attendant / carer to shorten their stride in order to avoid constantly hitting the front of the leg on the drive unit. The new height and depth adjustable push handle elevates this to some extent.

We believe that they are very much of a compromise, the responsibility of safe operation is in the hands of the attendant / carer. We strongly recommend that full acceptance and understanding of the usage compromises is necessary, by the attendant / carer in order to ensure the continued safe use of power adaptations.

Initial assessment and fitting should be authorised through a Rehabilitation Engineer or Wheelchair Expert, and should include consideration of appropriate adaptations to the wheelchair, as stated in the R Healthcare Wheelchair Information Manual. Fitting should be carried out by NHS or R Healthcare approved service personnel.

Provided the TGA or Sampson Wheelchair Power Pack is installed, used and maintained in accordance with the manufacturer’s instruction, each company will support its products, and normal warranty conditions will apply.

Responsibility for user and usage environment assessment rests with the Rehabilitation Engineering Dept or similar Assessment Centre.

Responsibility for the integrity of the wheelchair rests with R Healthcare Mobility.

GENERAL WHEELCHAIR INFORMATION

2.1.13 ATTACHMENTS: Continued

Responsibility for the integrity of the TGA Wheelchair Power Pack rests with TGA Electric Leisure Ltd.

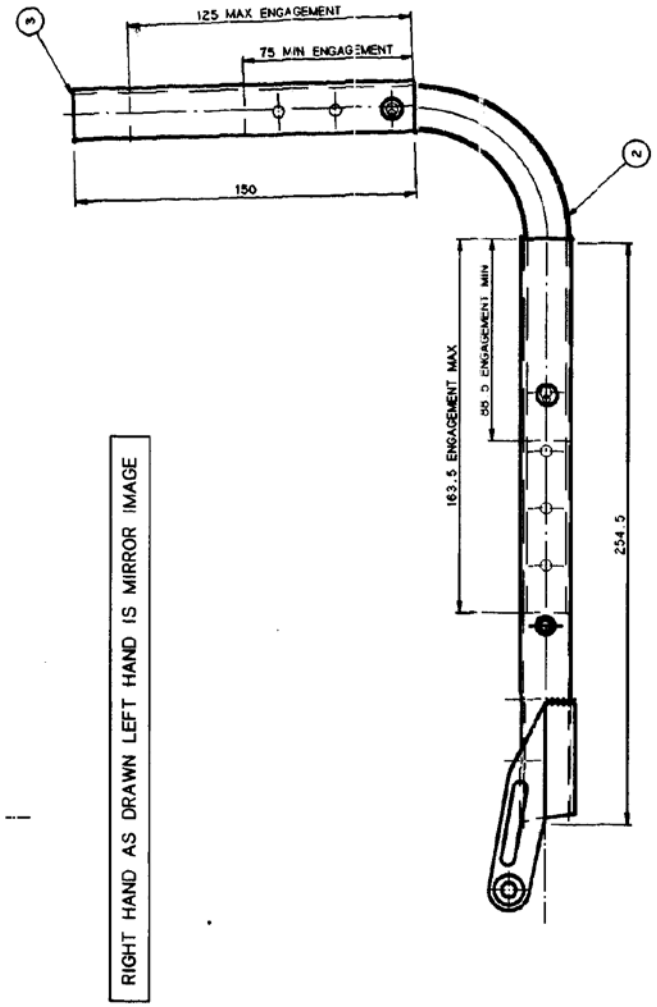
Responsibility for the integrity of the Sampson Wheelchair Power Pack rests with Sampson.

Each company holds a technical file in accordance with the Medical Device Directive 93/42 EEC, and both products are individually CE marked.

Feedback from rehabilitation engineers in the field would be most welcome with regard to power drive attachments. Please forward these via our Customer Services Department.

HEIGHT ADJUSTABLE PUSH HANDLE

The Height Adjustable Push Handle is designed for use on the Access & Accent model chairs. It allows for the increase of both the height and depth of the push handle. The height adjustable push handle replaces the existing push handle on the chair and is available as spare (part number AWM1108) in black only. The push handle can be used in any application the non-adjustable push handle can be used in but it also means that when used with a power pack the push handle can be extended to allow a greater distance between the attendant and the chair to allow for a more normal stride pattern. The adjustable push handle will also be useful for tall attendants who currently have to bend excessively.

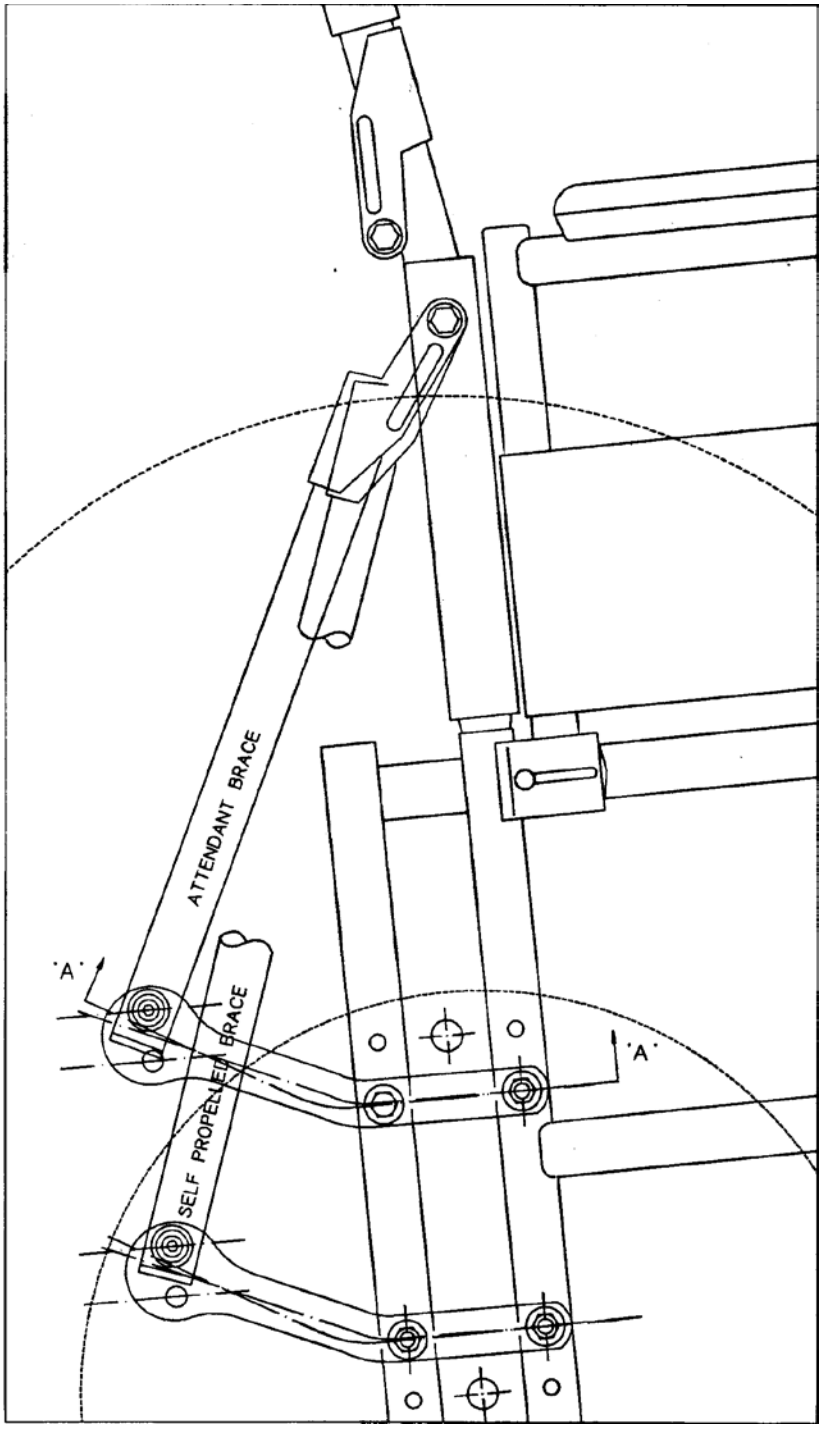


GENERAL WHEELCHAIR INFORMATION

2.1.13 ATTACHMENTS: Continued

BACKREST REINFORCEING BRACE

To give extra strength to the backrest when required, and especially when special seating arrangements are being used, the Backrest Reinforcing Brace for use with Access & Accent wheelchairs.



GENERAL WHEELCHAIR INFORMATION

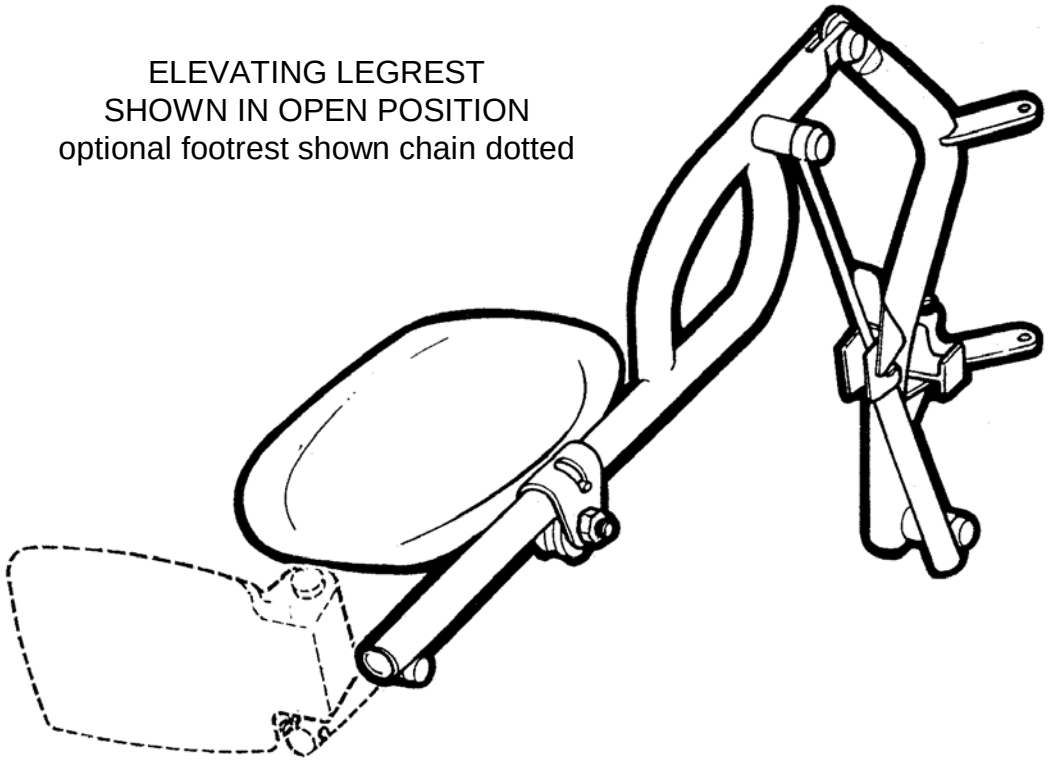
2.1.13 ATTACHMENTS: Continued

ELEVATING LEGREST

When these are fitted to a wheelchair, they provide support to the underside of the users calf, at a range of angular positions.

They fit into the standard footrest bracket swivel points at the front of the wheelchair, and can be released and swung away or removed during side transfer or other manoeuvres in the same way as the standard type footrest.

ELEVATING LEGREST
SHOWN IN OPEN POSITION
optional footrest shown chain dotted



The calf support pad can be swivelled through 90 degrees for sideways folding of the wheelchair. Users or carers should ensure that the locking latch is fully engaged the when refitting the Legrest or any similar adaptation prior to use.

Angular calf support adjustment is by means of a sprung release trigger, which locks along a fixing bar at any preferred position within the adjustment range. Operation of this requires a degree of finger strength, and it is recommended that this is carried out by a carer if required. Users are reminded that when the Elevating Legrest is adjusted to a high position, the swing away action requires greater space.

A spanner adjustable clinching feature to adjust footrest height is located at the end of the bracket.

SECTION 3 : TECHNICAL AND SERVICE Top Of Section

GENERAL WHEELCHAIR INFORMATION

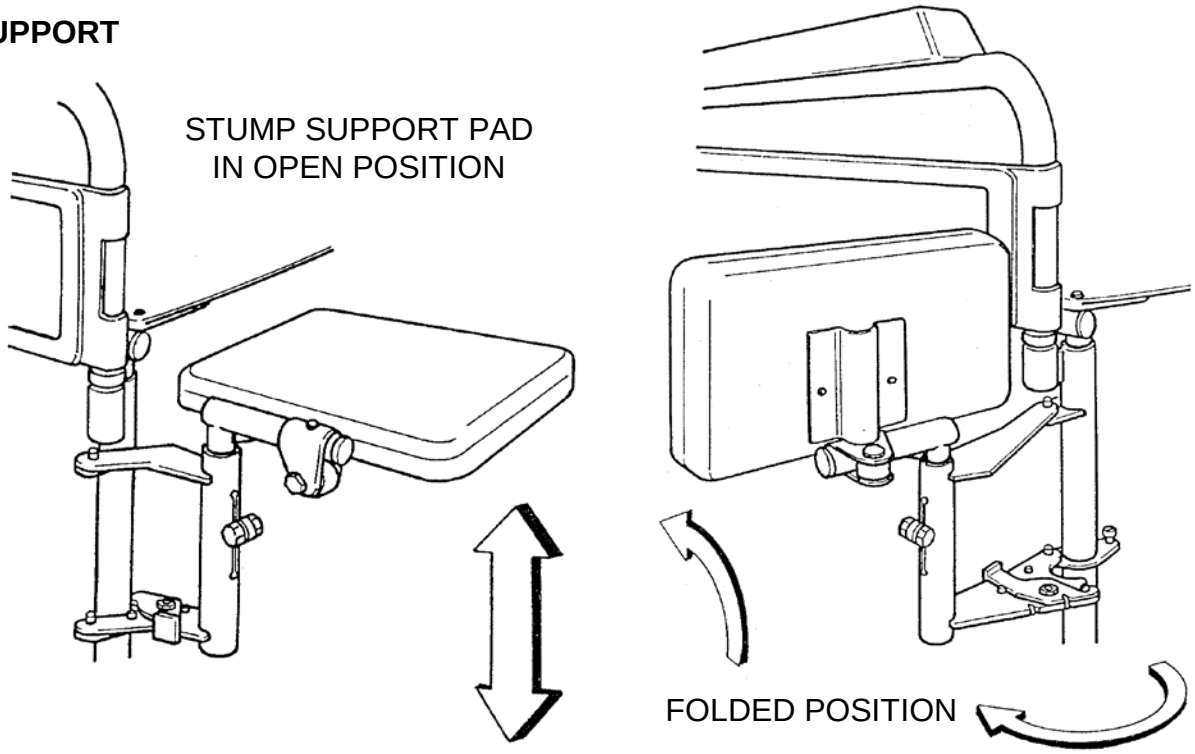
2.1.13 ATTACHMENTS: Continued

ELEVATING LEGREST (continued)

Note that the fitting and position of the Elevating Legrest can alter the balance of the chair. This is particularly significant when the Legrest is fully extended, and supporting a large heavy limb. In this position, weight distribution may be such that the wheelchair is balanced towards the front wheels, with the rear wheels taking only a nominal weight. This affects general chair control and also effectiveness of brakes.

When weight is on the front wheels, control of the wheelchair in an outdoor environment particularly going downhill can become impossible, and this should always be avoided. This is even more significant on Powered Wheelchairs, where all control is dependent on the rear driving wheels.

STUMP SUPPORT



Originally developed for post operative below knee amputee care where keeping the stump horizontal improves the natural healing process. This support also provides a comfortable long term option for some amputees who may continue to use a wheelchair for mobility, in some circumstances. The R Healthcare Stump Support fits into the front frame footrest swivel brackets. The support pad is on a height adjustable stem. Adjustment however should only be carried out by an authorised professional who understands the clinical requirements.

Users and occupants should note that leg and stump supports should not be used as seat extensions, or occupant transfer support.

2.1.13 ATTACHMENTS: Continued

IMPORTANT INFORMATION OF FITTING LAP (POSTURE) BELTS

The fitting of these should be considered in all circumstances where the chair is used outdoors, over a sloping surface or kerbs. Belts normally secure the occupant by means of a quick release buckle in the centre. In cases where the seatbelt is part of the postural/ clinically assessed needs, provision of a seatbelt will be covered by a clinical assessment.

A basic security seat belt may become required after a period of use, if the environment or method of use changes, or where the occupant feels a need for greater security in the wheelchair. These can be fitted retrospectively by an experienced wheelchair technician if not originally provided with the wheelchair.

A correctly fitted posture belt should fit over a users pelvis at approximately 45 degrees from the anchor without obstruction from any part of the wheelchair (e.g. skirt guard or armrest). The posture belt should be adjusted so as to fit snugly around the users pelvis to provide an appropriate sitting position. The belt adjustment should then be regularly checked to ensure that the required posture is maintained.

Inspection and maintenance of posture belts and their fittings should be included within the planned preventative maintenance programme for the wheelchair.

Future reviews of an individuals needs should include consideration of the appropriateness of the posture belt and its method of adjustment, fastening and release especially were a users' or carers' capabilities change over time.

Where the belt fitting is more specific, the alternative term posture belt can be a more appropriate description. More information is given in the product section of the User Guide.

Wheelchair seatbelts are not tested to meet the crash test standards required for occupant restraint in a vehicle, but we advise that they should remain in position during a journey to provide occupant security and support during normal traffic movements of sideways cornering and speed changes.

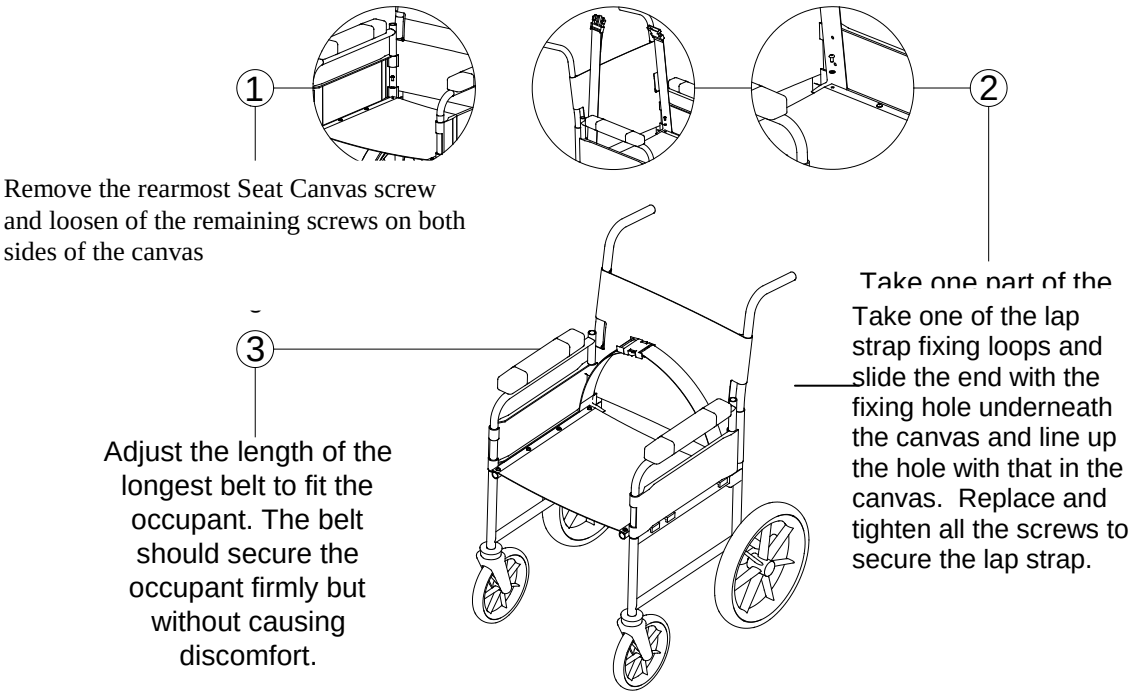
transportation crash tested restraints for both wheelchair and occupant are part of the actual vehicle equipment, and must be secured to the vehicle itself, as shown in Fig.11. See section 2.1.9. of this General Guide for more details.

SECTION 3 : TECHNICAL AND SERVICE Top Of Section

GENERAL WHEELCHAIR INFORMATION

2.1.13 ATTACHMENTS: Continued

IMPORTANT INFORMATION OF FITTING LAP (POSTURE) BELTS (CONT)

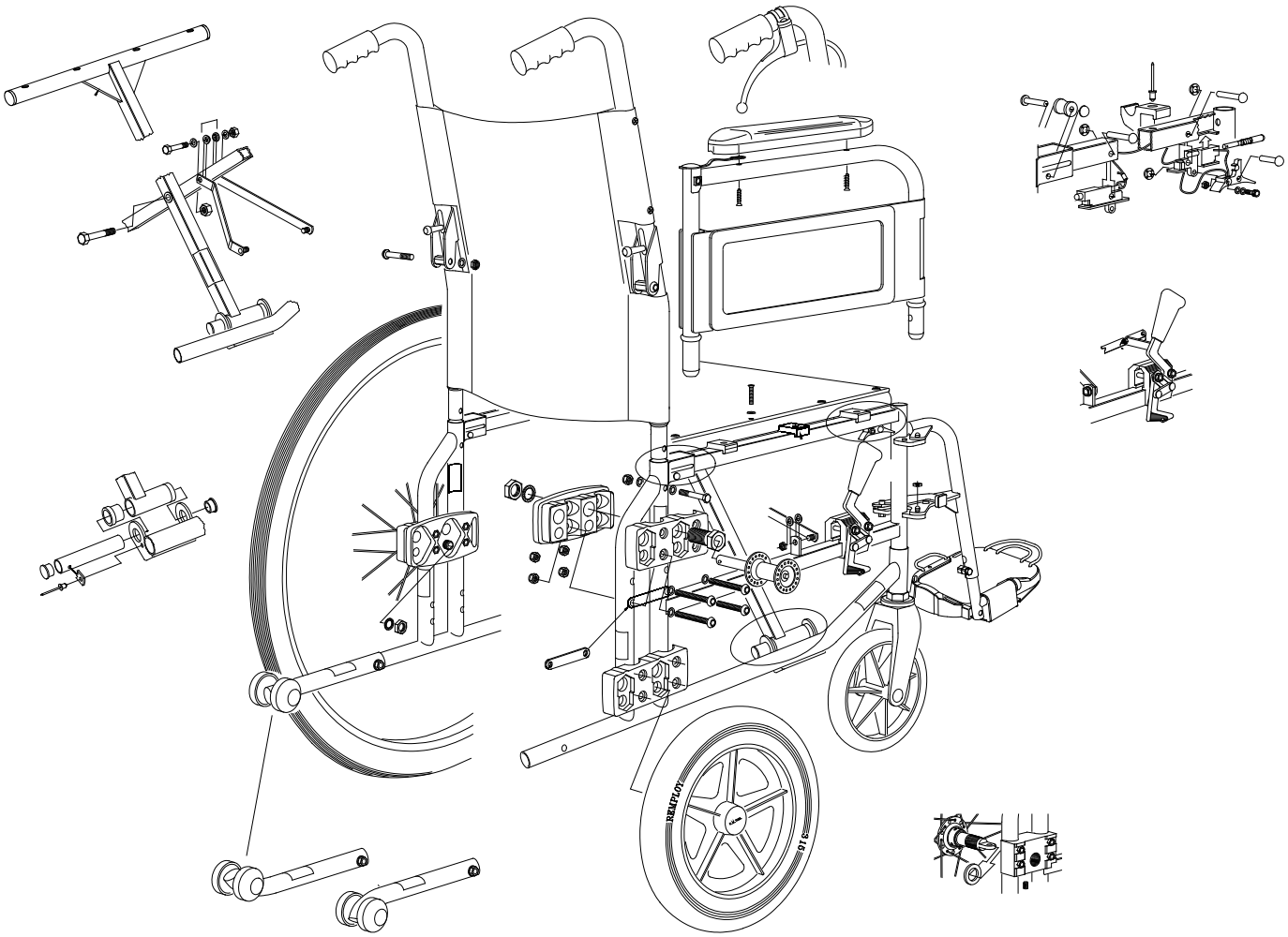


SECTION 3 : TECHNICAL AND SERVICE

Top of Section

R HEALTHCARE MODULAR WHEELCHAIR

3.1. INTRODUCTION



The R Healthcare Access Fully Modular and Accent Fully Modular wheelchairs are a refinement of the Ranger series 8L and 9L which originate from a background of DHSS specifications. Consequently the R Healthcare Modular range of wheelchairs have an extremely reliable service record. The frames are manufactured from alloy steel tubing, with high strength seamless drawn tube in the high load bearing areas.

Occupant and Attendant propelled chairs are both interchangeable and are mounted on a common side frame module.

The frame design has positive seat tube location features (fig.1) which are produced as injection mouldings with rounded edges, and spread the loading into the seat frame, reducing stress concentration points.

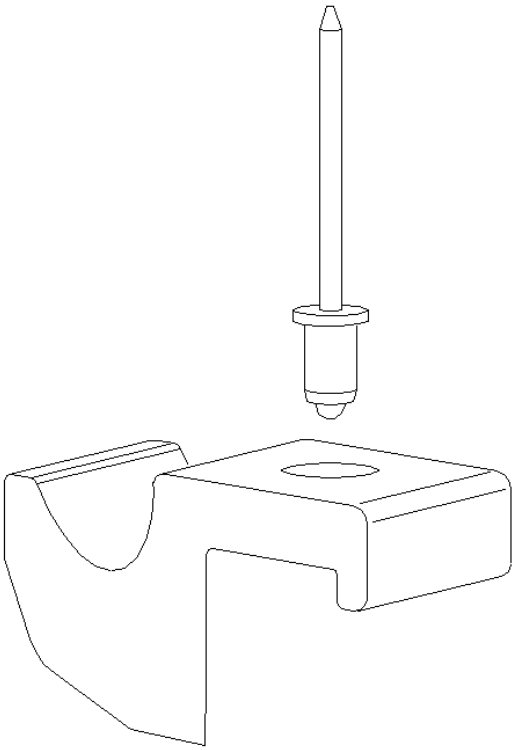


Figure 1 Seat Tube Location and Rivet

When crash testing was carried out these injection moulded seat locations were assessed as being non-invasive to the occupant area, where as the previous traditional hooked shaped steel lugs used on Department of Health chairs originating from pre 1992 designs where seen as a potentially dangerous protrusion.

In the event of frame re-painting these lugs should be removed and replaced prior to the chair being re-issued

R HEALTHCARE MODULAR WHEELCHAIR

3.1. INTRODUCTION (continued)

The R Healthcare Modular range covers occupant weights up to a maximum of 160Kg, and incorporates rear wheel position settings covering the needs of active user occupants, requiring energy efficient forward wheel mounting for ease of propulsion, or amputees requiring a rearward mounted wheel for increased stability.

It is possible to simultaneously recycle and reconfigure R Healthcare Modular wheelchairs to meet occupant and environment requirements. This provides a means of controlling the expected demands applied to the chair by a second user, such that the recycled wheelchair has a less rigorous pattern of use. An example of this would be a change from occupant to attendant propelled, where there is a second person available to deal with a situation which may arise. The risks associated with a reconditioned frame which may have received damage in an earlier usage period, not visible in the service inspection process, is therefore reduced.

Occupant propelled Access Fully Modular and Accent Modular chairs have a choice of wheel dia, 560mm (22inch) or 610mm (24 inch) which can be either fixed position, or quickly detachable. Low seat models take a 510mm (20 inch) wheel in conjunction with the 125mm front castor. Access Fully Modular can also be configured as an attendant propelled wheelchair with 315mm dia wheels.

The modular brake, adapts to all wheel positions with a choice of operating handle settings, provides the rehabilitation engineer with the possibility of fine tuning the final configuration to the particular needs of the user. see 3.5.2.

R Healthcare Modular includes safety features which have been developed to meet EC standards, footrest features which improve location and security of the occupant's foot. These are integrated into the design at the concept stage, and are therefore not intrusive or bolt on additions adding extra weight and cost.

The detailed information provided in the accompanying text contains practical advice for use by rehabilitation engineers and technicians in Wheelchair Servicing Departments. This information is important for both initial chair assessment and configuration and subsequent routine service checks and replacement of damaged component parts. Additional advice given covers enhancements which will reduce the whole life service cost of the R Healthcare Modular wheelchair.

3.1.1 WHEELS AND TYRES

Top of Section

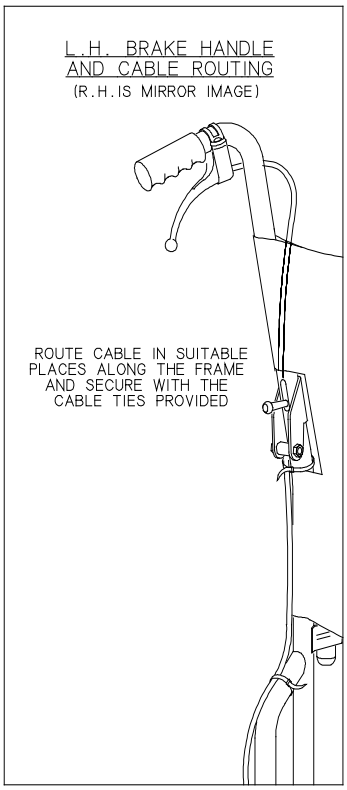
Trials with wheels of different build standards in conjunction with tyres from alternative sources of supply have increased our knowledge of wheel performance. The following recommendations will improve the reliability of wheelchairs in the field.

The Access Fully Modular and Accent Modular wheelchair is fitted with high load bearing wheels as standard. These have high tension spoke build specification, and can be fitted with either pneumatic or puncture free tyres for occupant weights up to 160 Kg.

A change of specification in service from pneumatic to puncture free polyurethane tyres requires the fitting of self adhesive tape to the back of the spoke nipples to provide extra security against the increased vibration imposed.

On attendant propelled R Healthcare Modular chairs to be used in a difficult environment, use of large diameter wheels should still be considered in the original wheelchair specification, because it is easier to push this type of wheel over obstacles and rough ground. This applies particularly where the attendant has advised of a difficulty in pushing.

For Heavy Duty models where occupant weight is up to 160 Kg pneumatic tyres absorb the additional weight better, improving comfort, and extending service life and wheel reliability. From 2000 onwards hub braked wheels will all be phased in with puncture sealed pneumatic tyres. For heavy duty attendant propelled Access Fully Modular and Accent Modular chairs the use of an attendant controlled hub brake is recommended to reduce the possibility of the chair running away downhill out of control. All attendant operated hub brakes can be used either as retardation brakes or parking brakes.

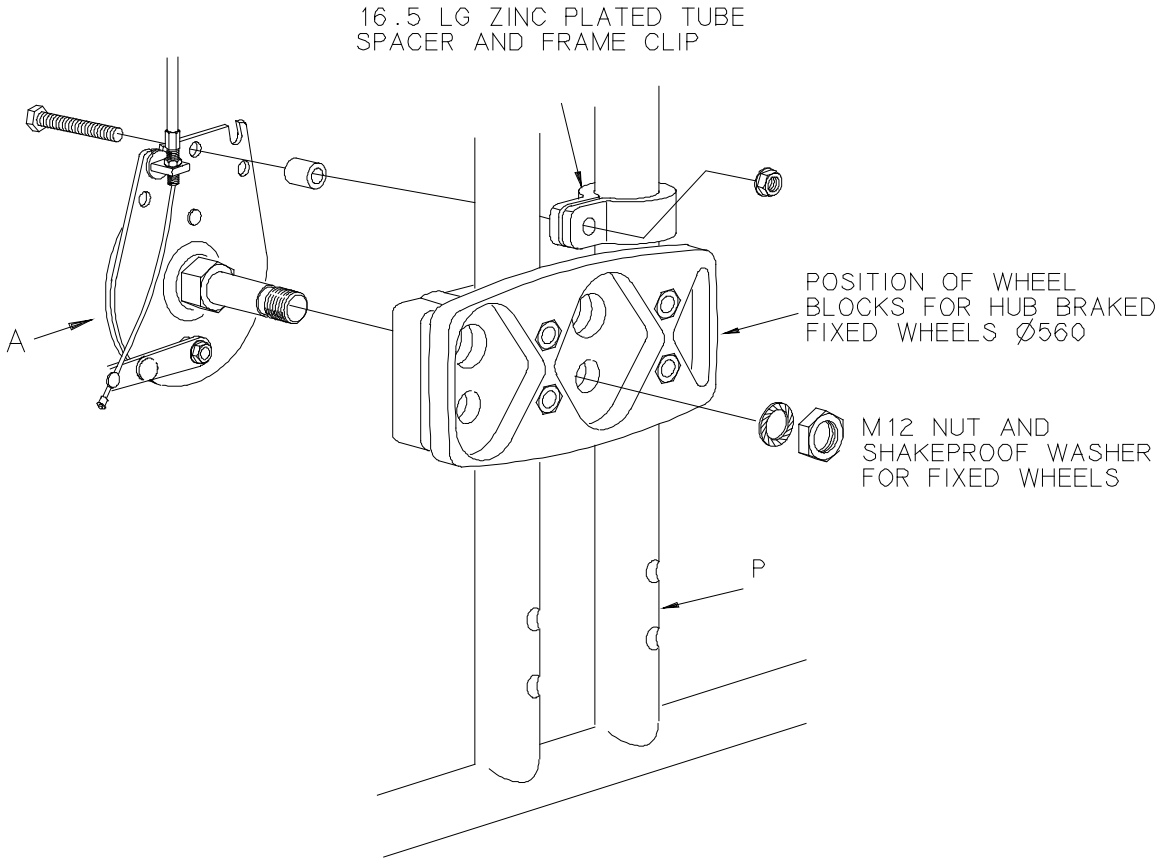


Retardation brake operation requires the attendant to have a degree of skill and practice before issue. Options of attendant brakes can be factory fitted, or purchased separately as spares for fitting to existing chairs.

Service requirements for hub operated brakes include the checking and adjustment of the cable, which can stretch in use, and the routing of the cables which should allow ease of operation, free from snags, with a generous radius at the lever end.

3.1.2 WHEEL MOUNTING UNIT

Top of Section



HUB BRAKE PARTS AND WHEEL BLOCK ASSEMBLY TO LEFT HAND SIDEFRAME

The Universal Wheel Mounting Unit is unique to the R HEALTHCARE MODULAR wheelchair and permits build options of wheels size, type and position. The moulded design incorporates nut location shapes on the internal face which simplify assembly, and shroud thread protrusions. From end of 1999, hub brake units can be accommodated by the moulded block as shown in the diagram, however a different mounting block is still required for hemiplegic, OAD wheel mounting. R Healthcare discontinued the use of a third block option for wheel camber in 1999. Both hub brakes and OAD mechanisms can be fitted to both Access and Accent wheelchairs, buy purchasing spare parts from R Healthcare. However this will cause the chair carrying weight to increase.

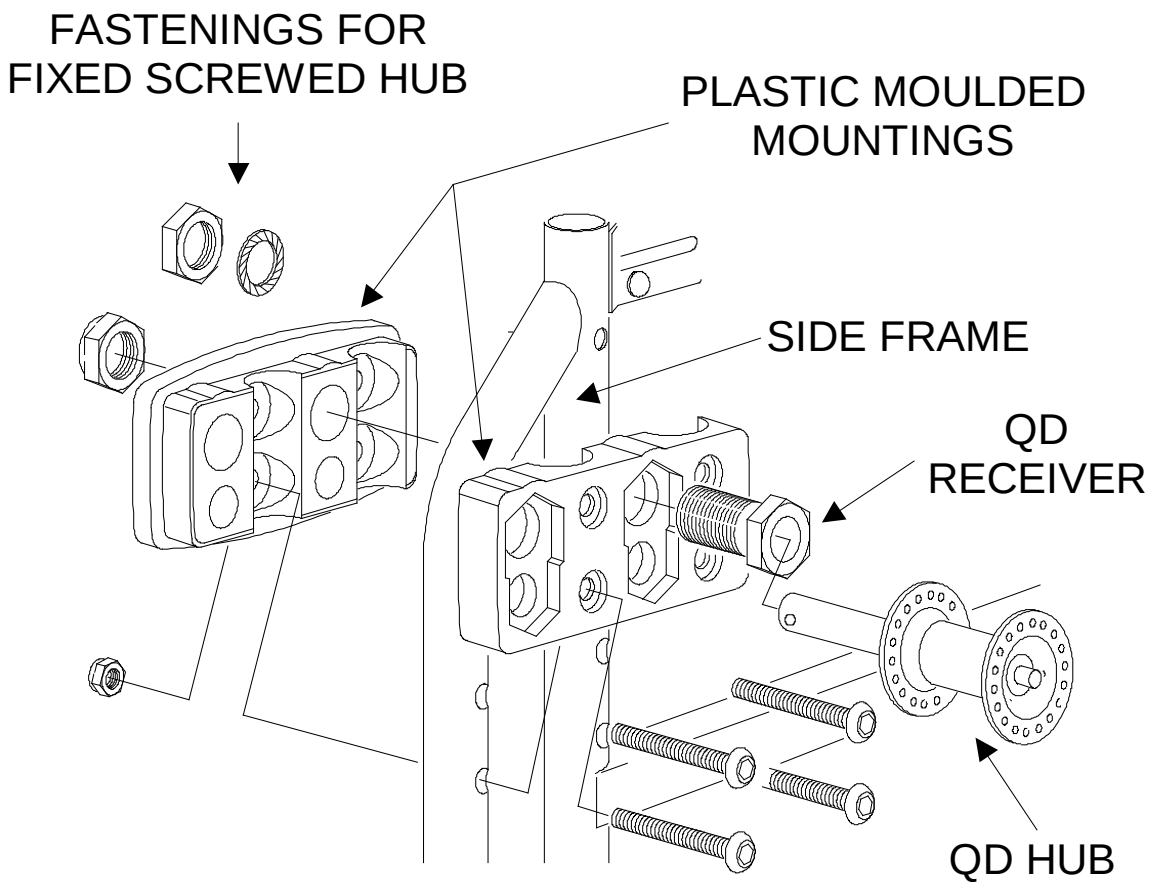
3.1.2 WHEEL MOUNTING UNIT Continued:

Top of Section

Wheel settings and specification will normally be based on clinical assessment at the prescription stage, however as needs change, it is possible to change the wheel set up and specification. The illustration is an exploded view of how the Universal Wheel Mounting Unit is fitted to the frame.

Wheels can be moved to alternative positions by releasing the retaining nuts, and refitting in the mounting block unit as required. This can be reversed, turned over, or refitted from one side of the chair to the other, as appropriate to suit wheel diameter and required location.

Wheels are initially tightened to a torque of 30Nm (22 ft lbs) against a toothed locking safety washer. After assembly, the torque reading will reduce slightly as the teeth of the safety washer bed into the surface of the softer plastic material of the moulded block. This is the intended effect, it is not necessary to retighten this assembly back to the initial assembly torque.



THE WHEELCHAIR IS SUPPLIED WITH WHEELS SET AS SPECIFIED DO NOT ADJUST PRIOR TO ENGINEER OR THERAPIST ASSESSMENT

R HEALTHCARE MODULAR WHEELCHAIR

3.1.2 WHEEL MOUNTING AND STABILITY - Continued:

The relative rear wheel position affects rearward stability. Rear wheels can be set back to achieve greater rearward stability, suitable for most amputees, but it should be noted that with wheels in this position the width to turn is increased, and more effort is required to propel and manoeuvre. Due to its increased seat depth Accent has a long wheelbase as standard. The Access Fully Modular Wheelchairs range of balance positions incorporates energy efficient to highly stable reward balance settings.

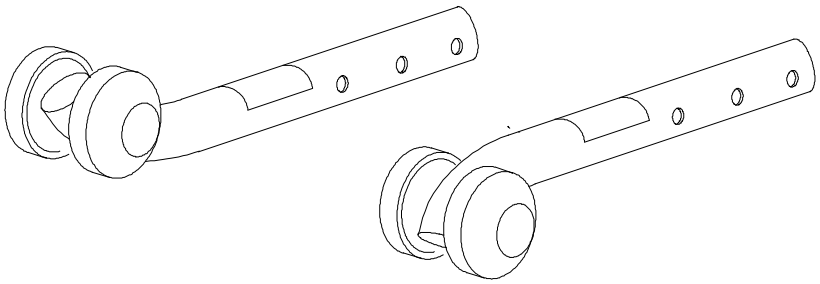
Users may request Service Personnel wheelchair to be set with the rear wheels forward, because this improves manoeuvrability. This should be only carried out following assessment by Rehabilitation Engineer or Wheelchair Therapist.

REARWARD TIP OUT CAN RESULT IN OCCUPANT SKULL FRACTURE.

Anti tip stabilisers are fitted to occupant propelled factory built chairs when the rear wheel is set in a forward position, ie where tested static stability is less than 10 degrees. These should also be fitted when clinical factors demand a specification which resisists backward angular movement, as may be the case with the retrospective fitting of a seating adaptation or other attachment which affects stability.

Stabiliser have wheels on the end to prevent the digging in effect when a chair is tipped backwards onto them, and three fitting holes along the length, for the fixing screws and nyloc nuts, which allow the acting position with the floor to be set to suit the wheelbase configuration of the chair, and the assessed occupant need.

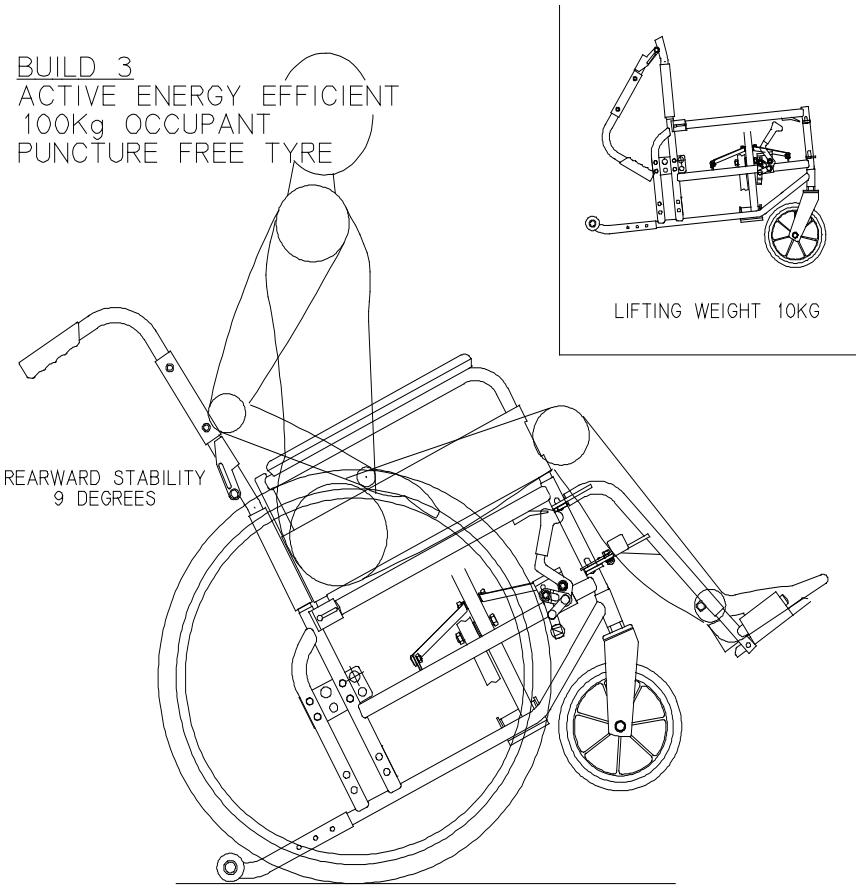
R HEALTHCARE MODULAR WHEELCHAIR



3.1.2 WHEEL MOUNTING AND STABILITY - Continued:

Curved stabiliser can be fitted with the wheel downwards and close to the floor, or upwards.

The application of stabilisers demands professional risk assessment of user and environment. When set in the downwards position the curved stabiliser is effective in limiting angular movement in the 24 inch rear wheel set back position. In the upwards position the curved stabiliser can be used with a 24inch wheel in a forward position, allowing a wheelie to be achieved by an occupant, yet preventing further angular movement rearwards on horizontal surfaces. This upward facing stabiliser position is therefore useful during wheelchair training for occupants who will benefit by more independence and optimised propulsion efficiency through a forward mounted wheel. Note that balance training should not be carried out on sloping ground, where stabilisers can be ineffective.



Anti tip stabilisers can protrude outside the wheelchair area, getting in the way for storage. There may be pressure on Service Personnel to remove or adapt them. Such changes first need professional assessment.

Replacement of fixed screws and nuts to removable clips, allowing stabiliser to be swivelled away to a none effective position creates potential risk, as the occupant may be unaware of adjustment being made, resulting in tip out.

Users with balance control skills may find it easier and safer to operate a wheelchair set with low rearward stability, as shown in Build 3. Note that the balance angle with brakes off is greater than the static stability angle with brakes on.

R HEALTHCARE MODULAR WHEELCHAIR

3.1.2 WHEEL MOUNTING AND STABILITY - Continued:

We recommend that potentially active users should be trained in operation of wheelchairs safely and responsibly, and be seen capable avoiding injury during occasional tip-outs, which are a part of normal life.

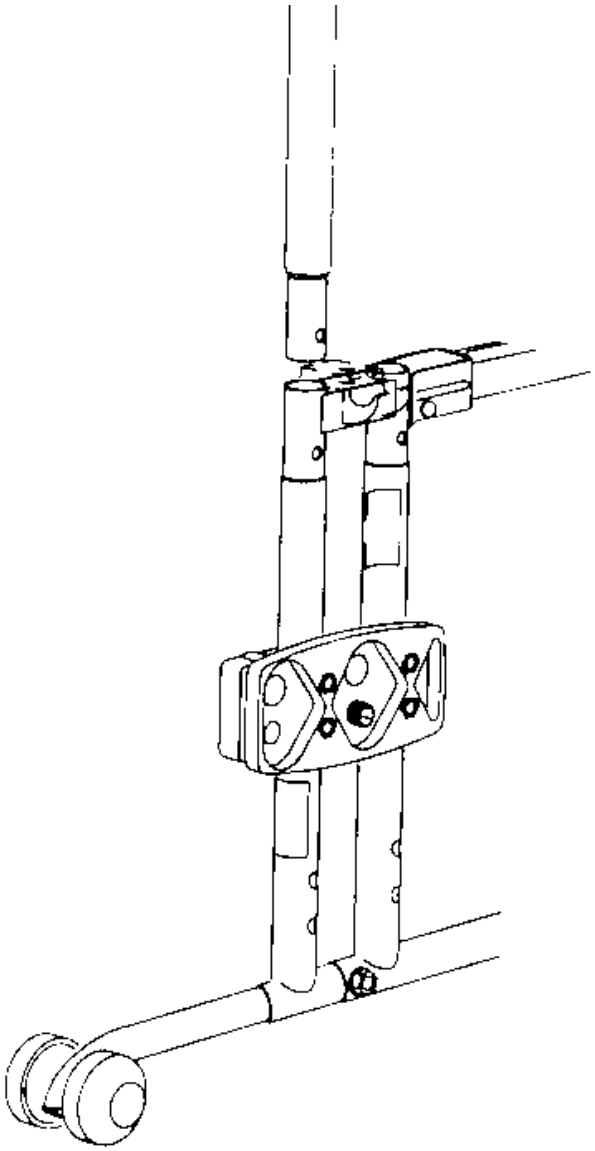
Service checks should include specific reference to the condition and use of anti tip stabilisers. Removal or adaptation of anti tips on wheelchairs, where the rear wheel mounting position is set for stability of less than 10 degrees, or greater if this is a significant aspect of user need, such as with an amputee, should only be undertaken with user knowledge and an understanding. A qualified Rehabilitation Engineer or Wheelchair Therapist should assess and inform the user accordingly.

Environment and pattern of use are important factors when considering the effect of changes in stability. An attachment such as a leg support, communication aid or tray mounted feature on the front of a wheelchair, whilst satisfactory indoors, may become a significant problem to safety, due to the reduced forward and lateral stability when the wheelchair is used outdoors on a downward slope. For example wheelchairs used by children and young people in education frequently require greater forward and lateral stability because of the fitting of attachments, and the increasing level of dynamic activity which the growing occupant is likely to demand.

The effect of combined chair and seated occupant should be individually measured for all adaptations. The final adapted specification should include a means of bringing static stability in all directions back within the originally specified figure on the R Healthcare Technical Data sheet, or at least within the assessed needs of the user.

In the case of specialised seating, both rear wheel position and the rearward inclination of an individual seat unit can be used to control the weight distribution and overall centre of gravity. An inclined seating position may also have other benefits in terms of the comfort and security of the occupant. The Accent was introduced in September 2000, which allows the backrest position to be fitted at an optional reward point creating room for a backrest cushion or similar feature, and can eliminate the requirement for improved forward stability through the use of castor extension units.

3.1.2 WHEEL MOUNTING AND STABILITY - Continued:

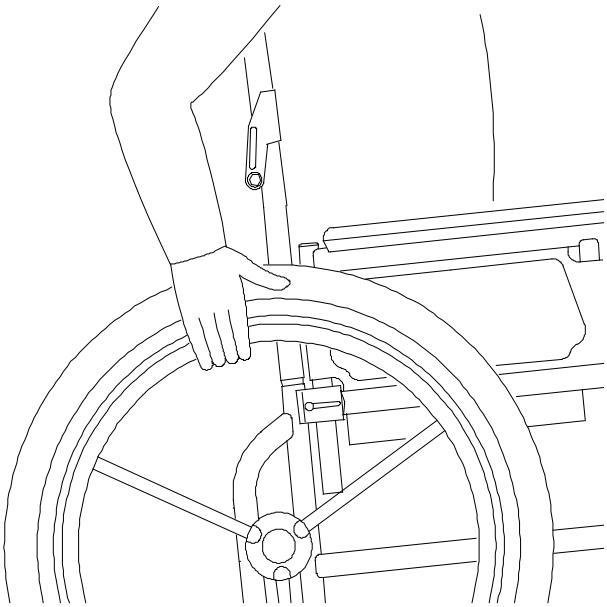


Accent

Accent is a modified specification of the standard Access Fully Modular frame which allows for the backrest position to be adjusted for a deeper seat depth. This facility is intended for applications were a back rest cushion or customised seating system is fitted. In such cases Accent may allow the occupant position to remain at the optimum for balance and propulsion with wheelchair forward and rearward stability to be maintained within the original specification, and eliminate the need for castor out rigged modifications or anti-tip stabilisers. When replacing bolts always retighten.

R HEALTHCARE MODULAR WHEELCHAIR

3.1.3 HEMIPLEAGIC OAD OPERATION



The R Healthcare Modular OAD can be factory built, the references for these builds is:-
Build 7 - 127g max occupant weight for chair widths 15 inch to 19 inch.
Build 12 -160Kg max occupant weight for chair widths 18 inch to 19 inch.

The effort to drive these chairs from one side is much greater than that required for two wheel propulsion.

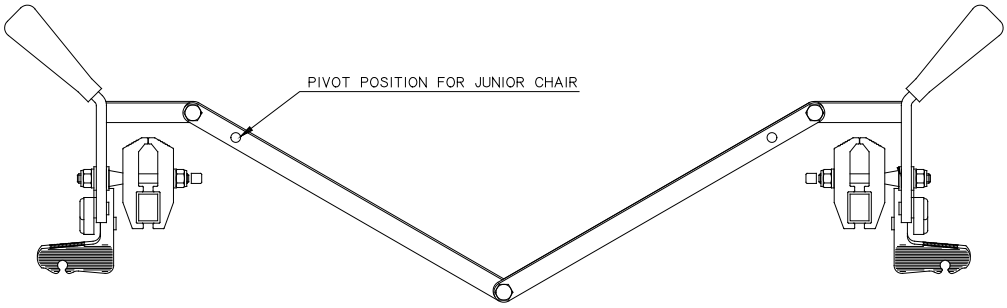
Alternative low seat to ground option shown on R HEALTHCARE MODULAR Build 8 can work as a less physically demanding means of prolusion for a hemiplegics.

It is important that the OAD cross chair linkage pivots are lubricated regularly.

Lost movement should be kept to a minimum consistent with free operation.

It is possible to convert a basic self propelled R HEALTHCARE MODULAR to OAD with a kit consisting of :-
drive wheels with a cross linkage, wheel mounting and cross link brake. One arm drive R Healthcare Modular is designed for assembly with the wheel in the central wheel mounting position. The assembly sequence for building the wheel unit into the frame is shown below

When considering conversions of the wider Heavy Duty 160 Kg occupant models in particular, it is recommended that the intended user is first assessed for arm strength by a rehabilitation engineer or wheelchair therapist prior to the conversion to a one sided wheel operation being fitted.

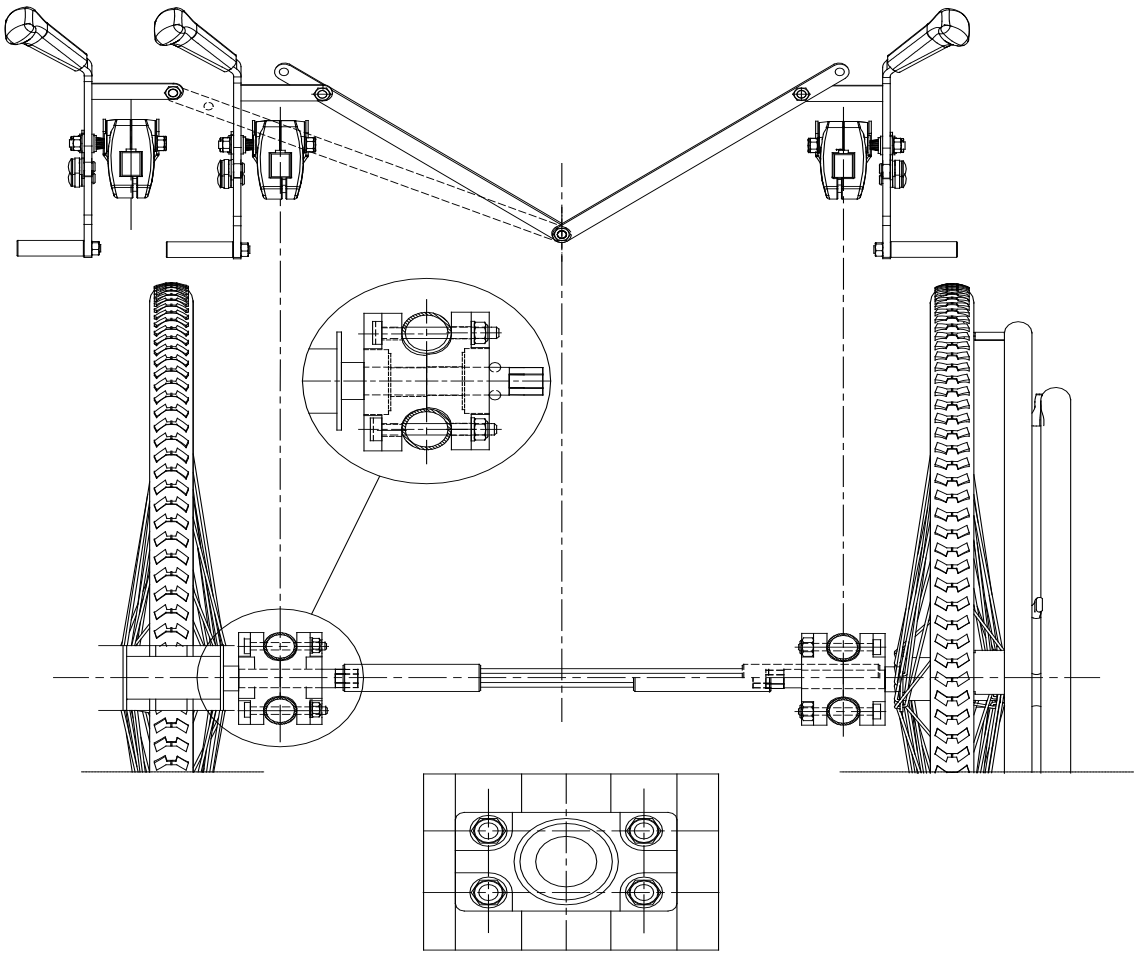


From mid 1999 the cross link brake is based upon the R HEALTHCARE MODULAR clamp on modular type with a specially adapted handle which has a bracket linkage mounting point.

The complete OAD conversion adds 3.4Kg to the lifting weight of an occupant controlled R HEALTHCARE MODULAR wheelchair.

The one arm drive system used by R Healthcare on Access was modified in 2005 by the replacement of the fixed wheel and cross linkage drive connection by a QD wheel and straight spring loaded shaft cross drive connection. The new 2005 one arm drive system fits onto the Access frame using the same securing points as before, to allow a smooth transition to the new 2005 one arm drive system. The information on both these systems is retained in this manual for service reference.

The illustration below shows the assembly and operation of the OAD features which are fitted to an Access frame on builds 7 and 12. These units are also available as spares.



R HEALTHCARE MODULAR WHEELCHAIR

3.1.3 HEMIPLEAGIC OAD OPERATION (continued)

The introduction of the straight OAD sprung loaded cross strut mechanism increases the distance between the drive assembly and the under side of the seat canvas when the more propulsion efficient 24" wheel is fitted. This is particularly important improvement for wheelchairs used by heavy occupants were the effect of seat canvas sag has previously resulted in contact of the diamond linkage mechanism with the underside of the seat.

The housing block which attaches the one arm drive unit to the frame incorporates deep groove ball bearings which are aligned to locate quickly detachable wheel spindles. The assembly and alignment of these wheel spindles requires a degree of care in order that the wheels can be removed from the chair and replaced as required, for transportation and reduced handling weight.

Lubrication of the spindle and its spring loaded release action should lightly lubricated for ease of operation

The driven wheel is connected to the propelling wheel by means of a spring loaded cross strut which is removable to allow the chair to fold. Service departments checks at a recommended 6 month interval should ensure general security of the bearing assembly to the frame, and that this component continues to locate easily on the driving features of the wheel axles, and engages in such a way that spring pressure continues to be excreted when the chair frame is in the open position.

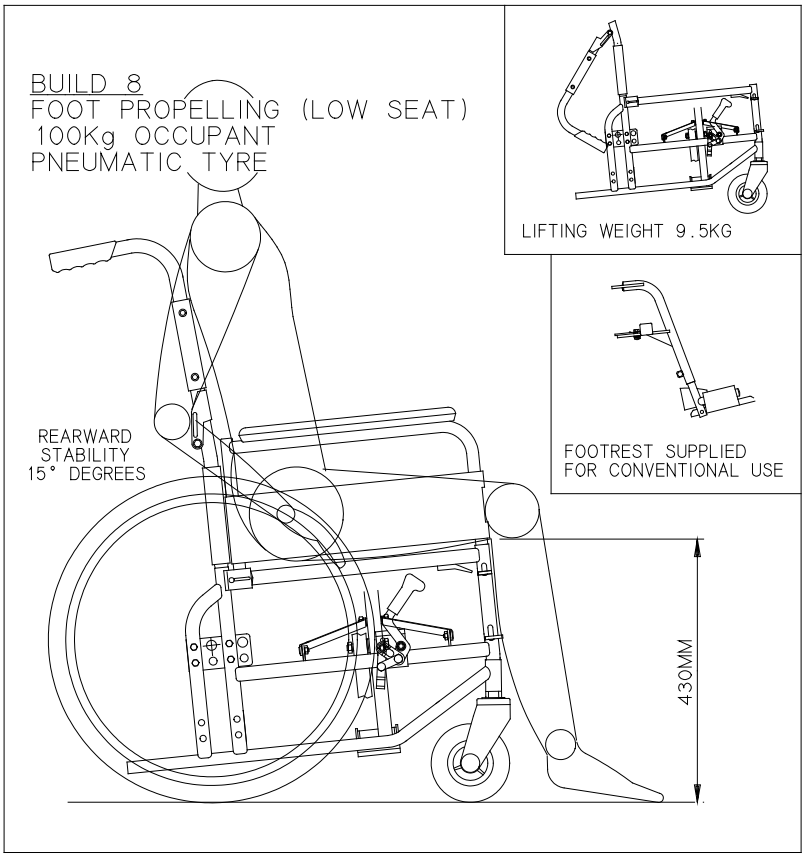
3.1.4 BRAKES

When R Healthcare Modular is built with the Junior frame, and the wheel is in the forward position, the brake should be mounted in the above tube configuration, with the fixed shoe. In this position, the space available around the hand grip is reduced, and operation requires a little dexterity.

When R Healthcare Modular is configured with the rear wheels in the extended high stability position for amputees, the cross brace mounting lug on the frame limits the movement of the brake clamp body.

The R Healthcare Modular brake body can be reversed with the open section fitting around the lug thus allowing effective positioning of the clamp body, under tube mounted, at any required point on the frame.

3.1.5 CASTORS



Castor size and features can be used to lower the seat to ground height of R HEALTHCARE MODULAR wheelchairs to meet the needs of some users. The short fork and small diameter 125mm castor, used in conjunction with a 20 inch wheel, are shown in Access Build 8, as illustrated below, and mentioned earlier in 3.5.3. This build allows the suitably assessed occupant to rest a foot on the ground to effect a propulsive force, which can complement the operation of a propelling handrim at one side of the wheelchair. Whilst not an efficient method of propulsion, this can work for some people where alternatives are not possible because of lack of strength or fitness, hemiplegics for example may find this set up useful in getting around the house.

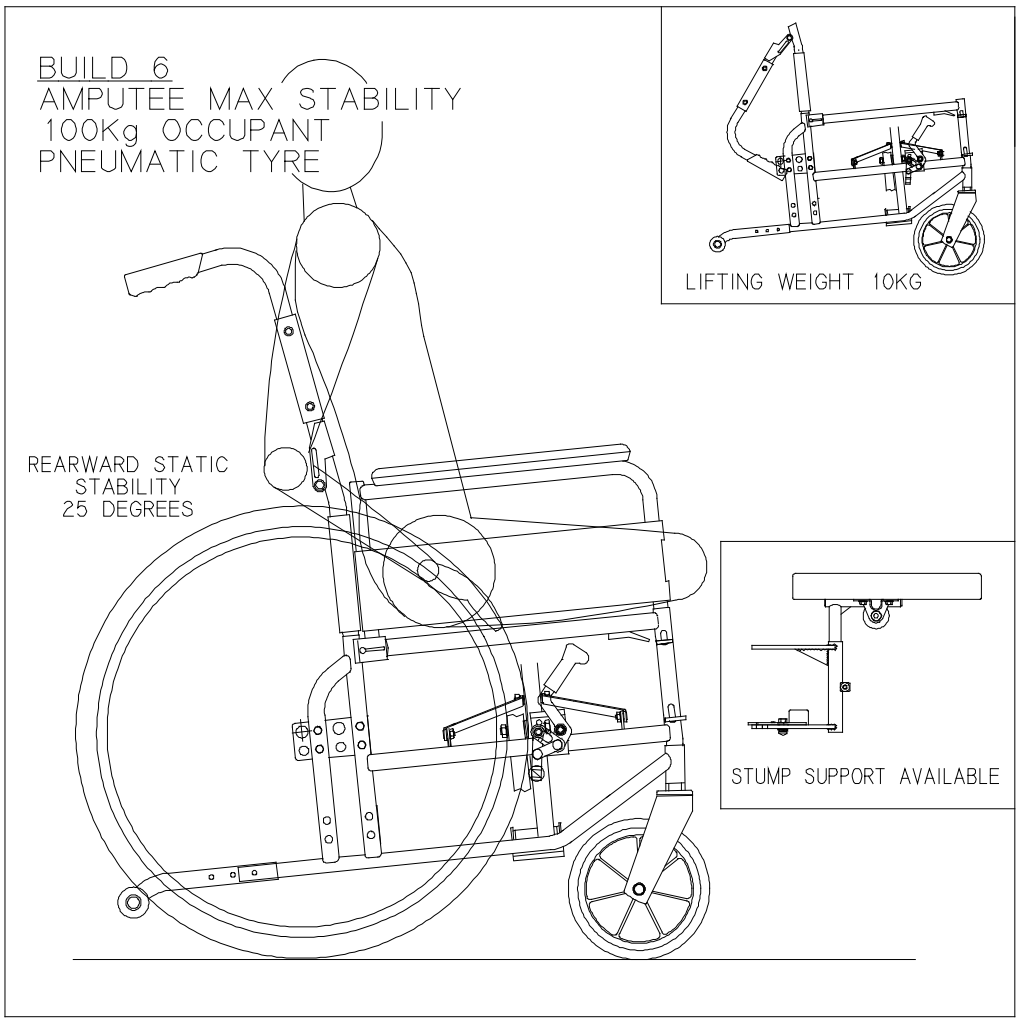
Top of Section

R HEALTHCARE MODULAR WHEELCHAIR

3.1.6 FOOTRESTS AND ALTERNATIVES

This section covers features unique to R HEALTHCARE MODULAR. Common footrest features applicable across the R Healthcare range are adequately covered in Section 3.2.6 of this manual.

When setting up a wheelchair, the gap between footrests should be as small, so that the possibility of occupant injury by a foot dropping through is reduced. EC standards designate a minimum gap figure of 40mm for this. R HEALTHCARE MODULAR frame and footrest build options can be configured to meet this standard. R HEALTHCARE MODULAR incorporates the possibility of increasing or decreasing the frame width in Service Departments by changing the cross brace assembly. The implications which this has on the gap between footrests should be taken into consideration. Adjustability of the tapered or straight line bracket setting, allows for a more compact position of the occupant foot. Some users who need a more tight space manoeuvrability may be accommodated by use of these features.



Top of Section

Foot and leg support options for R HEALTHCARE MODULAR include stump support and elevating legrest. R HEALTHCARE MODULAR Builds 6 and 11 are configured with wheels in the rearward stable amputee position. This allows for the specification of additional foot support options as shown.

3.1.7 FRAME

The unique modularity aspect of the R HEALTHCARE MODULAR frame is covered in this section. Common technical and service information relevant to both the R Healthcare Modular frame and Ranger is covered in Sections 3.2.7 to 3.2.10 of this manual.

The double Rear Wheel Mounting Tubes have sets of mounting holes in two areas, enabling the Wheel Mounting Unit to be fitted in either occupant or attendant controlled positions, reference Section 3.5.2. The plastic injection moulding for this unit reduces the possibility of surface damage in the event of removal for reconfiguring wheel position, but should this occur, it should be touched in with air drying paint to prevent the onset of corrosion.

Build flexibility allows a distribution centre to concentrate completed chair stock in popular sizes, yet retains the option of intermediate builds in the service workshop by stocking spare cross brace and upholstery assemblies.

The R Healthcare factory 19 build initiative also allows the wheelchair service to specify a complete combination of features for a particular user. This offers cost advantages with a variety of popular builds, without incurring repetitive costs of purchase and retrospective assembly. It is also possible to recycle the R HEALTHCARE MODULAR from one user to another, and change chair width. Stock flexibility is therefore permanent throughout the chair life.

R HEALTHCARE MODULAR WHEELCHAIR

3.1.7 FRAME (cont)

R HEALTHCARE MODULAR modularity makes it a popular basis for adaptation with special seating units. These can place additional loads on the frame structure, particularly the backrest. At the end of 1999 we discontinued use of the roll pin which had been included in the backrest assembly from 1996 as an additional location fitting., but which had the effect of increasing stress in this area. Also at the end of 1999 we developed a standard re enforcement bracket kit which bolts into the rear frame, as indicated for either occupant or attendant type chairs, without need to drill new holes, to strengthen the backrest for fitting of rigid seat units.

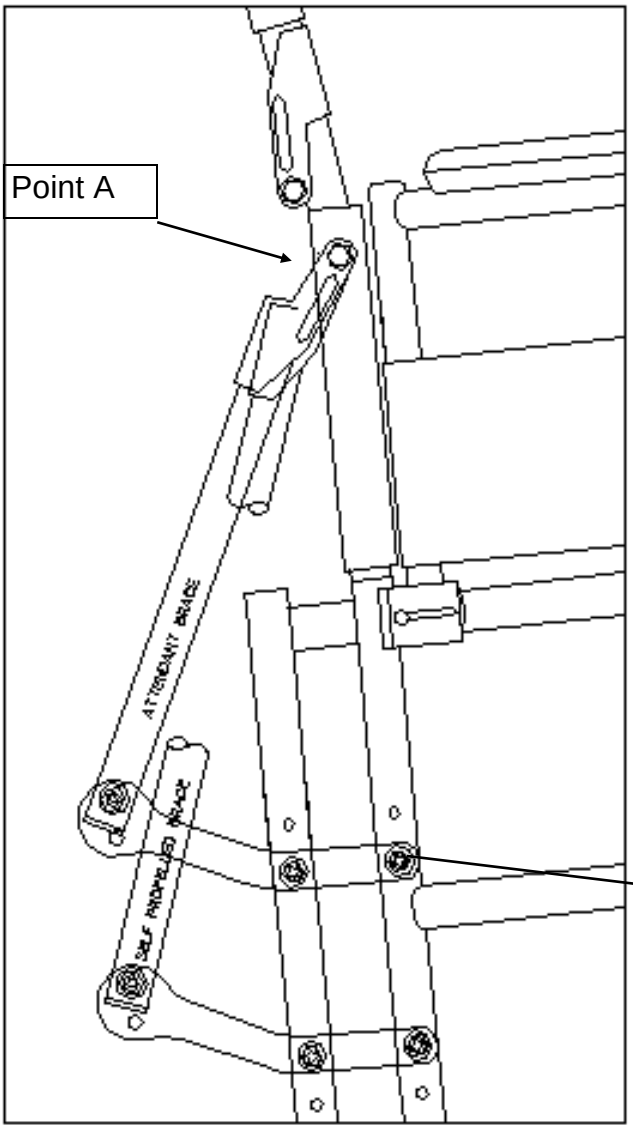


Figure 2 Brace Configuration

Spares supplied by R Healthcare no longer have a hole for the locating roll pin. When carrying out service work or reconfiguration of chairs produced between 1996 and end of 1999 it is not necessary to replace the roll pin at the bottom of the backrest.

The Seat Brace is attached to the rear of the chair by clamping the two links around both rear wheel mounting tubes on the R Healthcare Modular wheelchair, as shown in figure 5.

It will be necessary to cut the back canvas to fit the brace to the backrest bottom tube (point A).

The part number for the Brace is MAAWM249/SPARE

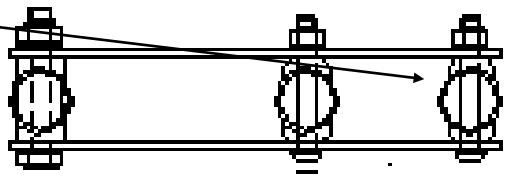
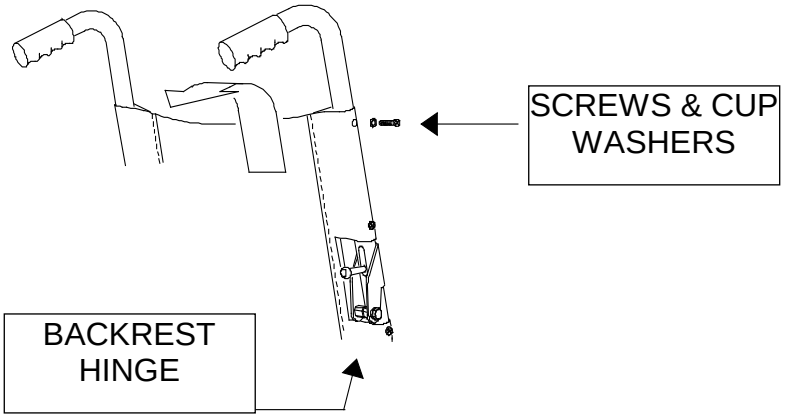


Figure 3 Brace Chair Attachment

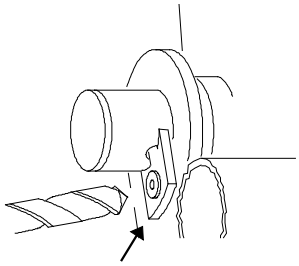
R HEALTHCARE MODULAR WHEELCHAIR

3.1.7 FRAME (continued)

The modularity of Access wheelchairs allows wheelchairs to be reconfigured and recycled in different sizes. Service centres should not attempt to convert Standard Adult rated chairs to Heavy Duty rated chairs. However, it is acceptable for Heavy Duty rated chairs to be changed in width down to Standard Adult dimensions. All size change operations should be fully documented in the chair service record, and new size labelling applied to the chair. Being of similar design to Access, the Accent can also be similarly built.

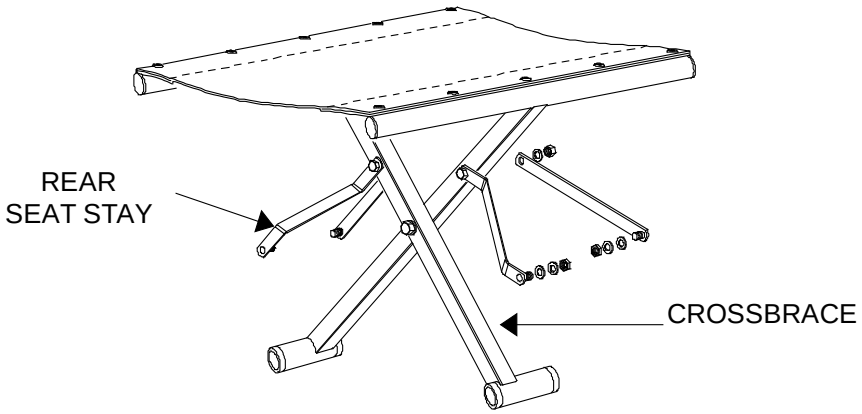


With the chair in the closed position unfasten screws and cup washers from canvas and split the backrest hinge. Remove the back canvas and push handles together. Note the upper half of the back canvas will have to be removed upwards over the push handles. Backrest canvas replacement operation is the reverse of this.



Removal of the cross brace asembly first requires the drilling out of the pop rivet on bottom crossbrace pivot bracket. This will then allow removal of the lower pivot tube retaining lug, which keys the assembly together

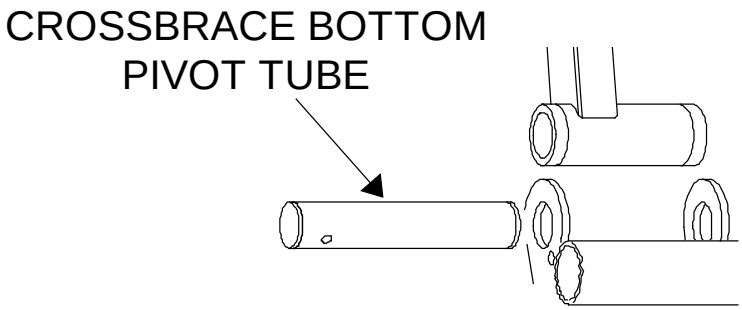
CROSSBRACE/SEAT ASSEMBLY



Remove retaining nut from outer end of rear seat stay and inner end of front seat stay.

R HEALTHCARE MODULAR WHEELCHAIR

3.1.7 FRAME (continued)



Using a suitable drift remove cross brace bottom pivot tube and tube end plugs. Detach cross brace/seat assembly.

Detach rear seat stay from new cross brace/seat stay assembly. Attach assembly to sideframe and replace rear seat stay.

Position lower end of cross brace into bottom pivot bracket. insert new bottom pivot tube and align the hole in the tube with the hole in bottom cross brace pivot bracket.
Secure bottom pivot tube retaining lug with a new pop rivet.

Fit replacement Seat Canvas as necessary, see 3.5.9.

R HEALTHCARE MODULAR WHEELCHAIR

3.1.8 ARMRESTS

R Healthcare Modular has the facility for armrest fittings in several types.
The default build on Access fully Modular is with a tray fitting half panel (injection moulded) type, which fits into the frame, and locks both at the front and at the rear.

Armrest types available range from a tray fitting, and modular designs settable height and length. All armrests for R Healthcare Modular require the locking holes to be in line with the frame, and this allows a degree of interchange ability with existing 8L type designs.

3.1.9 UPHOLSTERY

A single ply “canvas” construction comprising an upper surface of PVC coated Polyester material, which is suitable for basic chairs, being serviceable and easy to clean.

The fitting of a replacement seat and back unit is straightforward, but requires care to be taken. Always replace the screws and cup washers, and ensure that the screws pass through the holes in the securing canvas bars. Upholstery screws should be tightened to a nominal 7Nm using a regulated torque wrench. However, the materials being secured are compressible, and it is important that service personnel carrying out this operation develop a feel for the assembly.

Cushions options are produced from high quality combustion modified polyurethane foam, and should be regarded as consumables, particularly those used on Heavy Duty wheelchairs should be frequently checked for bottoming out, and replaced as required.

Where posture seat belts have been fitted, ensure that they are free from snags, and that their location on the wheelchair is adequate.

Care of the Upholstery is detailed in Section 3.2.12 of this manual.