

ALTO HEAVY DUTY ADVANCED GUARDRAIL TOWER Mobile Aluminium Access Tower



Instruction Manual EN 1298-IM-EN The ALTO HD AGR Tower is certified to BS EN 1004:2004

Advanced Guardrail Method



Lakeside Industries Ltd

www.altoaccess.com sales@altoaccess.com



Introduction

Please read these instructions carefully and ensure that you fully understand all of the information contained herein. All of the information in this document is vital for the safe utilisation of your Alto Heavy Duty Tower.

All Alto Access products are professional quality engineered equipment designed primarily with safety in mind and meet or exceed all standards, recommendations and guidelines. Used properly, Alto access equipment will keep you safe when working at height.

This manual contains all of the information necessary to correctly assemble your Alto Heavy Duty mobile access tower and incorporates all of the requirements of the PASMA Advanced Guardrail method of assembly as endorsed by the HSE.

This manual should be used in conjunction with your Risk Assessment and Method Statement and in line with the Work at Height Regulations 2005 which place an obligation on employers to eliminate or minimise risks. This manual must be made available to the user/assembler at all pertinent times.

Only competent and qualified personnel should undertake erection, dismantling or alteration, organisation, planning or supervision of mobile access towers. In the case of any doubt, sufficient relevant additional training must be given beforehand to ensure safe use. For further information on the use of mobile access towers consult PASMA (www.pasma.co.uk; Tel +44 (0) 845 230 4041). For any additional technical information or specific advice please contact the manufacturer Lakeside Industries Limited Tel: +44 1527 500577 or Email: sales@altoaccess.com.

Certifications

The Alto Heavy Duty Tower is a mobile access tower certified to EN 1004 Class 3. If the application is outside the scope of EN 1004, reference should be made to EN 1139 to ensure that the configuration of the equipment meets the relevant requirements. This tower is manufactured in our ISO 9001 accredited facility. This manual complies with EN 1298-IM-EN.

Maximum Safe Working Loads

The safe working load of the tower is 2,500kg including its own weight. The maximum safe working load of any individual platform is 324 kg evenly distributed. If the tower is to be used in an application outside the scope of EN1004, contact your supplier or the manufacturer - Lakeside Industries Limited, for advice on loadings. Tel: +44 1527 500577 or Email: sales@altoaccess.com.

Inspection Care & Maintenance

Alto Access equipment is designed and manufactured to the highest standards in the industry and is stronger, more robust and safer than any comparable competitor product. Properly cared for, it will give a long and productive service life.

- The equipment should be inspected and maintained as outlined in the "ALTO HD Tower Inspection Procedures". A free downloadable copy is available at www.altoaccess.com/downloads.
- Equipment should always be inspected before and after each use.
- Whilst Alto Access equipment is extremely robust, care should be exercised in loading, transporting and handling components to avoid damage or injury to either the equipment or persons.
- Repairs should only be carried out by Lakeside Industries Limited or their authorised repairers.
- In case of any doubt as to the integrity of any items of Alto Access equipment, the part should be withdrawn from use, quarantined and subject to detailed examination to determine whether repair or replacement is required. If returned to the factory, Lakeside Industries Limited will provide a free of charge evaluation of any damaged components.

Safety

Check that all of the necessary components and equipment for the particular tower configuration to be built are on site, undamaged & functioning correctly. Damaged/incorrect components must not be used.

- Check that the surface on which the tower is to be located is capable of supporting the tower and its payload.
- The safe working load of the tower is 2,500kg including its own weight. The maximum safe working load of any individual platform is 324 kg evenly distributed.
- If the tower is to be used in an application outside the scope of EN1004, contact your supplier or the manufacturer, Lakeside Industries Limited, for advice on loadings. Tel: +44 1527 500577 or Email: sales@altoaccess.com.
- Towers **must always** be climbed from the inside using the built in ladders (or Alto stair units if applicable). If the work carried out from the tower requires frequent carrying of equipment and materials up or down the tower, an Alto stair tower should be used in preference to a ladderspan tower.
- The tower must be levelled when erected using the adjustable jack or castor legs.
- Two or more persons are required for the safe erection and dismantling of a tower.
- It is recommended that the tower be tied in when left unattended.

- Always comply with the Work at Height Regulations 2005 when erecting, dismantling & using the tower.
- When lifting components, always use reliable lifting equipment and fastening methods and always lift from within the footprint of the tower structure to prevent risk of the tower overturning.
- See "Moving the Tower" below for safety guidelines affecting the relocation of the tower.
- Beware live electrical installations, cables, moving machinery or other obstructions when erecting, dismantling or using the tower. The tower is a conductive metallic structure.
- The maximum safe lateral force for a freestanding Alto Heavy Duty tower is 30kg.
- Do not use boxes, ladders or other items to gain additional height.
- Do not stand on guard rails for any reason.
- If the tower is to be used in connection with hoisting arrangements, this is outside the scope of EN1004 and requires specific advice from the manufacturer to ensure safety.
- Contact the manufacturer Lakeside Industries Limited for advice on loadings Tel: +44 1527 500577 or Email: sales@altoaccess.com.
- Fit guard rails to all Platforms.
- Fit toe boards to all working platforms.
- Intermediate (rest) platforms are installed every 2m.
- The tower is not designed to be sheeted. Sheeting massively increases wind loads on the structure.
 If sheeting is to be attached, contact the manufacturer Lakeside Industries Limited for advice on loadings Tel: +44 1527 500577 or Email: sales@altoaccess.com.
- The tower is not designed to be lifted or suspended.
- Every erected tower must be inspected at least every seven days and any tower which has been left unattended should be inspected before use to ensure that:
 - 1 no components have been removed or relocated incorrectly;
 - 2 the tower is still vertical; and
 - 3 no environmental or other factors have arisen which will influence safe use of the tower.
- Unattended towers should be tied in to a rigid structure.
- Stabilisers or outriggers and ballast shall always be fitted when specified.
- Where there is insufficient clearance to fit the specified stabilisers, contact your supplier or the manufacturer for specific advice. Where ballast or kentledge is used, it must be of solid material, placed on a platform on the lowest rung of the tower and secured against unauthorised removal.

Wind Speeds

Persons using or responsible for towers must beware of the effect of wind on the structure. Wherever possible, as a precaution, it is advisable to tie the tower in to a rigid structure if it is to be used where it is exposed to potential windy conditions. Users should beware the potential tunnelling effect of open ended or unclad buildings and narrow openings between buildings. We recommend that the use of the tower is discontinued in conditions where the wind speed is above 17mph (force 4).

WIND DESCRIPTION	BEAUFORT SCALE	AVERAGE SPEED	INFORMATION
Medium Breeze	4	13-17 mph	Safe to work on tower.
Strong Breeze	6	25-31 mph	Tie the tower to a solid structure. Do not work on tower.
Gale Force	8	39-46 mph	Towers must be dismantled. Towers must not be assembled.

Erecting & Dismantling the Tower

All Alto towers must be built and dismantled in accordance with the step by step instructions in the following pages corresponding to the particular tower configuration involved and having regard to the working at height regulations and Health & Safety legislation.

Moving the Tower

Before moving the tower, its overall height should be reduced to 4m working platform height or less. No persons, tools, equipment or materials shall be permitted to remain on the tower when it is being moved.

The tower should only be moved by pushing it by the lowest frames.

When moving the tower users are to be particularly careful of the following:

- obstructions, moving machinery or electrical cables and equipment
- not to move the tower in wind speeds of 18mph (force 5) or above
- the effect of rough, uneven or sloping ground on the stability of the tower
- locking and unlocking the castors to allow and prevent the tower moving at appropriate times
- after completing the movement, use a spirit level to ensure that the tower is vertical and safely supported on an appropriate surface
- after completing the movement check that the tower is correct and complete.

Frames

Frames **must** always be assembled with the offset conical head fitting pointing inwards towards the centre of the tower.

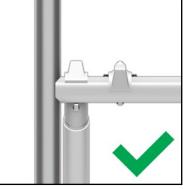


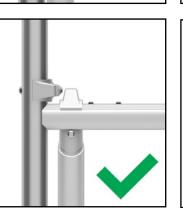


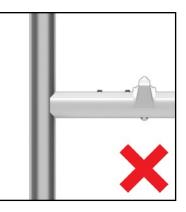
Braces

All braces are fitted with spring loaded pins that automatically lock the brace into position when attached to a tower. Brace hooks **must** be located either over the rung screw heads, between 2 screw heads or between the frame upright and a screw head to prevent lateral movement.

Diagonal braces **must** always be located with the claw opening facing down. Horizontal braces must be located with the claw facing either down (on the rung) or outwards (if on the upright).



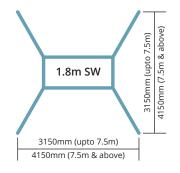


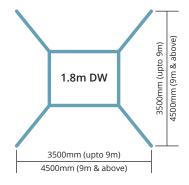




Stabilisers

Stabilisers should always be attached to the tower so as to maximise the base area of the tower structure. Set the stabilisers so they form a square around the tower as per the diagram below. The correct size stabilisers **must** always be used - see component schedule for details.





AGR Method Explained

The Advanced Guardrail (AGR) method is one of the two permitted ways of assembling a tower without the assembler being at risk of falling. This tower is an AGR tower.

An AGR tower uses prefabricated frames to derive the rigidity and structural integrity of the tower instead of horizontal and diagonal braces used in traditional 3T assembly methods. AGR frames lock into the tower frames to create a fully locked and rigid structure.

As each new level is added onto a tower, the operatives first install the AGR frames and tower frames from a safe guard railed position on the platforms below. Once the AGR frames are in place, platforms for the next level are installed such that the two uppermost horizontal bars on the AGR frames form guardrails at 0.5m and 1.0m above the deck level. This process repeats until the tower is at the required height.

The Alto AGR panels feature deep locating hooks on either end of the top horizontal bar and sprung couplers on either end of the bottom horizontal bar. This design positively locks the AGR frames into place, giving a rigid interface.

Tying In

Towers must be tied into a suitable rigid structure once they go beyond the freestanding working heights specified in EN 1004 2004 - 8m working platform height outdoors and 12m working platform height indoors - or if the tower is unstable or is in danger of being unstable.

Standard scaffold tubes and fittings can be used with the Alto Access products. Ties should be spaced at no more than 4m intervals. Ties must be rigid and be secured to both frame uprights. For further details regarding tying in, please contact your supplier or the manufacturer: Lakeside Industries Limited.

COMPONENT SCHEDULE

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1.8m Long x 0.8m Wide (Single Width) HD Advanced Guardrail (AGR) Tower

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∢ 4 4 299 4 7 7 m m r r r r v m 4 m 4 4 U •• 244 4 4 - m m - - - v m m o 4 മ \odot **NTERNAL & EXTERNAL USE** : 240 4 4 – m m \odot ∢ 235 4 4 - 0 0 - - - - 0 ^m m 0 4 \odot U 188 4 7 7 7 7 7 7 7 4 4 Μ മ 183 4 4 - 0 0 - - 0 ^w 0 4 4 \sim ∢ : 179 4 4 - - - - - - - 0 ^w v 4 4 J \sim 147 2.7 ~ മ 127 - - 0 * - 0 4 ∢ 4 4 - - -TOTAL SELF WEIGHT OF TOWER (kg) MAX No. WORKING LEVELS **BUILD METHOD** HD 0.8m 4 Rung Ladder Frame HD 0.8m 3 Rung Ladder Frame HD 0.8m 2 Rung Ladder Frame HD Adj. Alum Leg (silver collar) HD 1.8m x 1 Rung Brace (Red) 50mm Dia. Castor Wheel PART DESCRIPTION HD 1.8m S/W Toeboard HD 1.8m Trap Platform HD 0.8m Main Frame HD 0.8m 3/4 Frame HD 0.8m 1/2 Frame HD 1.8m AGR Unit HD Small Stabiliser HD Large Stabiliser HD 1.8m Brace CODE 2238 2240 2065 2016 2223 2018 2224 2019 1002 2056 2057 2225 2082 2040 2201

* Two 1.8m braces (2040) are required to form the tower structure. One temporary brace is included to aid the assembly procedure.

This is optional. The total self weight of the tower does not include the one temporary 1.8m brace.

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SINGLE WIDTH HD SPAN TOWER TO BS EN 1004:2004

Using the Advanced Guardrail assembly method

COMPONENT SCHEDULE

1.8m Long x 1.4m Wide (Double Width) HD Advanced Guardrail (AGR) Tower

536 12.2 4 4 - 0 0 4 \sim ∢ 530 11.7 1 4 - - - - - - - - 4 4 1 0 0 3^{*} - - - - - - - - 4 4 \sim U INTERNAL USE ONLY 466 4 4 - 0 0 - -3* 2 10 5 മ 4 \odot 460 4 4 - 0 0 $^{\circ}$ 4 ∢ : 454 J 4 \sim PLATFORM WORKING HEIGHT (m) 4 4 - 4 4 - - N ^w 4 4 ^o 4 : 383 \odot മ 377 8.2 4 4 - 4 4 \odot ∢ 371 \sim U ••• 4 4 - m m - - - v ^m m m m 4 307 $^{\circ}$ മ **NTERNAL & EXTERNAL USE** 4 6 W W 3 2 1 1 301 4 4 – m m \sim ∢ ···· 295 4 4 - 7 7 - - - 7 4 4 0 m m + - - - - 7 k \odot υ 232 4 4 - 0 0 - -4 4 2 2 3 4 \sim മ 226 4 4 - 0 0 - - 0 [%] 0 0 4 4 \sim ∢ 220 4 4 - - - - - - - 0 ^w v v 4 4 υ \sim 156 2.7 ~ - - 3* ~ 4 4 - - - - -4 <u>___</u> മ · • • 150 2.2 4 4 - - -- - 0 * - - 0 4 ∢ **MAX No. WORKING LEVELS** TOTAL SELF WEIGHT OF TOWER (kg) **BUILD METHOD** HD 1.4m 4 Rung Ladder Frame HD 1.4m 3 Rung Ladder Frame HD 1.4m 2 Rung Ladder Frame HD Adj. Alum Leg (silver collar) HD 1.8m x 1 Rung Brace (Red) PART DESCRIPTION 50mm Dia. Castor Wheel HD 1.8m D/W Toeboard HD 1.8m Trap Platform HD 1.4m Main Frame HD 1.4m 3/4 Frame HD 1.4m 1/2 Frame HD 1.8m AGRI Unit HD 1.8m Platform HD Small Stabiliser HD Large Stabiliser HD 1.8m Brace CODE 2238 2240 2066 2002 2213 2006 2214 2008 2215 2043 1002 2056 2057 2082 2040 2201

* Two 1.8m braces (2040) are required to form the tower structure. One temporary brace is included to aid the assembly procedure.

This is optional. The total self weight of the tower does not include the one temporary 1.8m brace.

DOUBLE WIDTH HD SPAN TOWER TO BS EN 1004:2004

Using the Advanced Guardrail assembly method

ASSEMBLY INSTRUCTIONS Build Method A 2.2m, 4.2m, 6.2m, 8.2m, 10.2m, 12.2m

When assembling a single width tower the same steps apply, but swap the frames and toeboards for the single width versions and omit the plain platforms.

<u>Step 1</u>

Insert the leg & castor assembly into the base of the 2 Rung Frame and 2 Rung Ladder Frame. When fully inserted, ensure the spring loaded pin is engaged into the hole in the side of the frames. Ensure all 4 wheels have the brakes applied.

<u>Step 2</u>

Connect 2 horizontal braces to the uprights of the frames in the area just above the bottom rung. Make sure that the braces are connected from the inside of the tower facing outwards. Make sure that the frame head fittings are pointing inwards into the tower.

<u>Step 3</u>

Connect the 2 diagonal braces to the frames as shown. Keep the diagonal braces as close to the frame uprights as possible. Ensure that they run in opposite directions to each other. Now level the tower. A temporary platform may be placed on the bottom rung of the tower to aid levelling if required.





<u>Step 4</u>

Install a 4 rung frame and a 4 rung ladder frame onto the 2 rung frames as shown. A **temporary** horizontal brace can be fitted onto the **frame uprights** if needed, to keep the 2 frames vertical. Install the brace onto one side of the tower only and make sure it is connected to the uprights and not the horizontals.

<u>Step 5</u>

Install the AGR units to the 4 rung frames in the positions shown. Locate the top hooks as close to the frame uprights as possible. Secure the clamps at the bottom of the unit to the frame uprights, ensuring the clamps are tight. If a temporary brace was used in step 4, fit the first AGR unit on the opposite side, then remove the temporary brace before fitting the 2nd AGR unit.

<u>Step 6</u>

Fit a trap platform and plain platform on the 3rd rung down from the top. Now connect 4 stabilisers to the corners. Fix the short arm to the lowest part of the tower, and the long arm to the upper part, ensuring the foot is firmly placed on the ground. Small vertical adjustments can be made to either arm to guarantee a sturdy placement.

Proceed to Step 7

ASSEMBLY INSTRUCTIONS Build Method B 2.7m, 4.7m, 6.7m, 8.7m, 10.7m

When assembling a single width tower the same steps apply, but swap the frames and toeboards for the single width versions and omit the plain platforms.

<u>Step 1</u>

Insert the leg & castor assembly into the base of the 3 Rung Frame and 3 Rung Ladder Frame. When fully inserted, ensure the spring loaded pin is engaged into the hole in the side of the frames. Ensure all 4 wheels have the brakes applied.

<u>Step 2</u>

Connect 2 horizontal braces to the uprights of the frames in the area just above the bottom rung. Make sure that the braces are connected from the inside of the tower facing outwards. Make sure that the frame head fittings are pointing inwards into the tower.

<u>Step 3</u>

Connect the 2 diagonal braces to the frames as shown. Keep the diagonal braces as close to the frame uprights as possible. Ensure that they run in opposite directions to each other. Now level the tower. A temporary platform may be placed on the bottom rung of the tower to aid levelling if required.





<u>Step 4</u>

Fit a 4 rung plain and 4 rung ladder frame onto the 3 rung frames as shown. A **temporary** horizontal brace can be fitted onto the **frame uprights** if needed, to keep the 2 frames vertical. Fit the brace onto one side of the tower only and make sure it is connected to the uprights and not the horizontals. A temporary platform can also be fitted to the 1st rung of the tower to aid install.

<u>Step 5</u>

Install the AGR units to the 4 rung frames in the positions shown. Locate the top hooks as close to the frame uprights as possible. Secure the clamps at the bottom of the unit to the frame uprights, ensuring the clamps are tight. If a temporary brace was used in step 4, fit the first AGR unit on the opposite side, then remove the temporary brace before fitting the 2nd AGR unit.

<u>Step 6</u>

Fit a trap platform and plain platform on the 3rd rung down from the top. Now connect 4 stabilisers to the corners. Fix the short arm to the lowest part of the tower, and the long arm to the upper part, ensuring the foot is firmly placed on the ground. Small vertical adjustments can be made to either arm to guarantee a sturdy placement.

Proceed to Step 7

ASSEMBLY INSTRUCTIONS Build Method C 3.7m, 5.7m, 7.7m, 9.7m, 11.7m

When assembling a single width tower the same steps apply, but swap the frames and toeboards for the single width versions and omit the plain platforms.

<u>Step 1</u>

Insert the leg & castor assembly into the base of the 2 Rung Frame and 2 Rung Ladder Frame. When fully inserted, ensure the spring loaded pin is engaged into the hole in the side of the frames. Ensure all 4 wheels have the brakes applied.

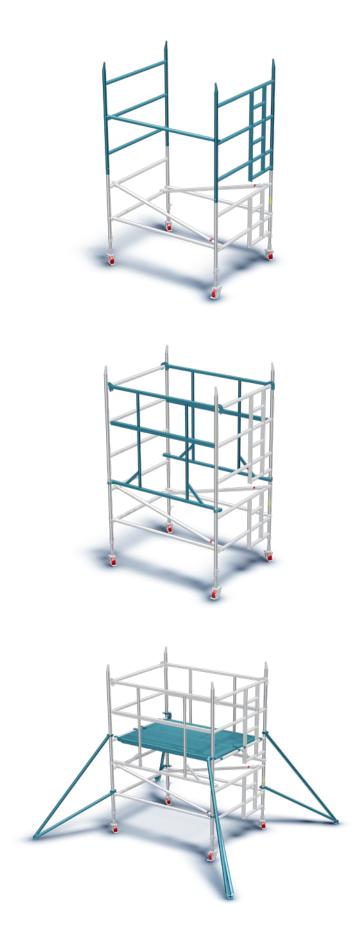
<u>Step 2</u>

Connect 2 horizontal braces to the uprights of the frames in the area just above the bottom rung. Make sure that the braces are connected from the inside of the tower facing outwards. Make sure that the frame head fittings are pointing inwards into the tower.

<u>Step 3</u>

Connect the 2 diagonal braces to the frames as shown. Keep the diagonal braces as close to the frame uprights as possible. Ensure that they run in opposite directions to each other. Now level the tower. A temporary platform may be placed on the bottom rung of the tower to aid levelling if required.





<u>Step 4</u>

Fit a 3 rung plain and 3 rung ladder frame onto the 2 rung frames as shown. A **temporary** horizontal brace can be fitted onto the **frame uprights** if needed, to keep the 2 frames vertical. Fit the brace onto one side of the tower only and make sure it is connected to the uprights and not the horizontals.

<u>Step 5</u>

Install the AGR units to the 3 rung frames in the positions shown. Locate the top hooks as close to the frame uprights as possible. Secure the clamps at the bottom of the unit to the frame uprights, ensuring the clamps are tight. If a temporary brace was used in step 4, fit the first AGR unit on the opposite side, then remove the temporary brace before fitting the 2nd AGR unit.

<u>Step 6</u>

Fit a trap platform and plain platform on the 3rd rung down from the top. Now connect 4 stabilisers to the corners. Fix the short arm to the lowest part of the tower, and the long arm to the upper part, ensuring the foot is firmly placed on the ground. Small vertical adjustments can be made to either arm to guarantee a sturdy placement.

Proceed to Step 7

All Platform Working Heights

When assembling a single width tower the same steps apply, but swap the frames and toeboards for the single width versions and omit the plain platforms.

<u>Step 7</u>

Working from the platform, install the next set of 4 rung frames, AGR units and the next set of platforms as described in steps 4, 5 and 6.

Repeat this assembly until the required platform working height is achieved.

<u>Step 8</u>

Finally, install a toeboard to the working platform, ensuring that the sides are hooked securely over the outside edge of both platforms.



DISMANTLING

The dismantling procedure requires a minimum of 2 operatives to complete the task safely. To dismantle the tower, the assembly sequence should be followed in reverse. When removing the AGR units, make sure that only the upper most set are removed first. Do not attempt to remove or loosen the clamps on any other AGR units units until the appropriate level of framework has been reached.

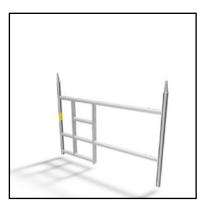
Double Width Tower Components



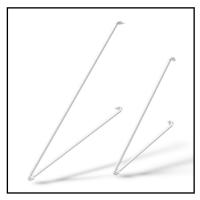
2238 - 150mm castor wheel **2240 -** HD Adj. Leg



2006 - HD 1.4m 3/4 Frame



2215 - HD 1.4m 2 Rung Ladder Frame



2056 - HD Small Stabiliser **2057 -** HD Large Stabiliser



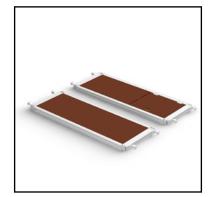
2002 - HD 1.4m Main Frame



2214 - HD 1.4m 3 Rung Ladder Frame



1002 - 1.8m AGR Unit



2201 - 1.8 Trap Platform **2043-** 1.8 Plain Platform



2213 - HD 1.4m 4 Rung Ladder Frame



2008 - HD 1.4m 1/2 Frame



2040 - 1.8m Brace **2082** - 1.8 x 1 rung Brace (red)



2066 - 1.8m D/W Toeboard

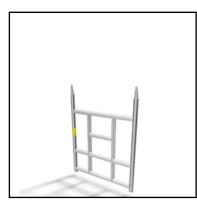
Single Width Tower Components



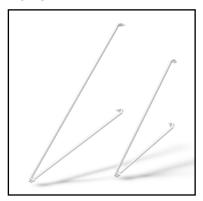
2238 - 150mm castor wheel **2240 -** HD Adj. Leg



2018 - HD 0.8m 3/4 Frame



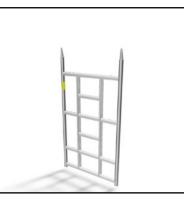
2225 - HD 0.8m 2 Rung Ladder Frame



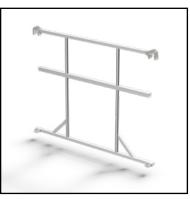
2056 - HD Small Stabiliser **2057 -** HD Large Stabiliser



2016 - HD 0.8m Main Frame



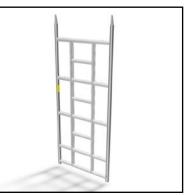
2224 - HD 0.8m 3 Rung Ladder Frame



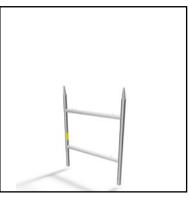
1002 - 1.8m AGR Unit



2201 - 1.8 Trap Platform



2223 - HD 0.8m 4 Rung Ladder Frame



2019 - HD 0.8m 1/2 Frame



2040 - 1.8m Brace **2082** - 1.8 x 1 rung Brace (red)



2065 - 1.8m S/W Toeboard

Notes



For further information regarding our range of access products and services, please get in touch with us:

Lakeside Industries Ltd Unit 19 Howard Road, Park Farm Industrial Estate Redditch, Worcestershire. B98 7SE. UK

t: +44(0)1527 500 577e: sales@altoaccess.comw: www.altoaccess.com



@altotowers

in lakeside-industries-ltd











Manufacturing Member

Lakeside Industries Ltd

Unit 19 Howard Road, Park Farm Industrial Estate, Redditch, Worcestershire. B98 7SE +44(0)1527 500577 | sales@altoaccess.com | www.altoaccess.com

