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Derby, Burton & District Panel
Serving Derbyshire & East Staffordshire

Editor: Maurice Elliot e-mail remapderby@virginmedia.com



For several years we have watched the development of 3D printers, thinking that they might be useful for some of our projects. We considered whether to obtain one but it was concluded not worthwhile as well as the effort needed to acquire the programming file skills necessary to operate such a printer. However a new panel member – Bernard Kileen who is well versed in the techniques and has suitable software and a 3D printer volunteered to carry out any such work for the panel.

The referral described below, DB-009-18, was the first application that he helped with. It was very successful and we can envisage more referrals to benefit from this technique in the future..

DB-009-18 by Chris Morison/Bernard Kileen

As can be seen, the position and attitude of this elderly MS sufferer's shower chair brakes meant that he found it difficult to reach them and risked over balancing. He had actually fallen out of chair on one occasion.



The shower chair company was contacted but was unable to come up with any workable solutions. The chair belonged to Mediquip so no irreversible modifications could be made to it.

New red plastic brake levers were designed and made by Bernard Kileen using Alibre Design 3D CAD software and printed on a fused deposition 3D printer. The design incorporated a pinch screw, provision for the original cover and embedded strengthening rods.



DB-024-18, Mike Banks

A girl with severe bilateral talipes (clubfoot) needed an aid to relieve pain in her foot when she stood for any length of time including when she was bellringing.

During the process of ringing a bell full circle, a loop is formed periodically in the rope under the ringer's hands which is then pulled with considerable force upwards by the inertia of the rotating bell. For this reason, any aid to reduce the weight on the ringer's feet must not ever be caught in this loop.

A support was made for her that comprised a lady's cycle saddle adjustably fixed on to the top of a vertical tube which in turn was attached to a base. The base was two horizontal rubber-tired wheels joined by a short steel chassis faced in rubber to grip the floor but was curved to avoid being caught in a rope loop. The vertical tube was fixed on top of the chassis using an offset hinge which allowed the ringer, if necessary, to step backwards away from the rope without lifting the front of the base off the floor and avoided it to being caught in a rope loop.

The saddle was attached so the ringer's centre of gravity lay in a normally stable position in front of the hinge point.



Note that the lady demonstrating the use of the device was the girl's mother as she was too shy.

In the risk assessment, this aid has been classified as "at medium" risk since the ringer must be aware that stepping backwards moves the aid to an unstable position.

Dealing with this situation was an important part of the training sessions. The client was able to cope with this aspect as she was a competent ringer. The operating instructions also detailed the saddle height settings and positioning of the feet for safe operation.

DB-131-17 by Vic Brown

This lady used a kitchen trolley for support as she was unable to stand upright without help. A previous referral – DB-083-17 that was carried out for her resulted in special supports for her arms as she bore down on the trolley frame. However these supports did not last long. Although she found them very comfortable, the way she walked with her weight concentrated on the rear right hand corner of the armrest, caused the plastic liner to crack.

This new referral was made to improve on the previous one. New arm supports were made basically to the original design but with an extended wider rear support steel cradle on which the plastic liners were attached.



DB-118-17, James Wong

This man had a commercial hoist to load his powered 4 wheeled wheelchair into the back of his big car. He had a problem because, as it operated, a piece of metal kept getting bent as it snagged on the safety cut-out of his new car wheelchair hoist.

Our engineer's first visit confirmed that two metallic parts involved in the horizontal rotation of the hoist were badly bent. Also the client had removed a 10mm dia. connection pin thus rendering the hoist non-operational.

The hoist suppliers were contacted and they sent replacement parts by post together with information for installation. They were fitted and the hoist checked for correct operation.

The client was also instructed on how to use the hoist correctly.



DB-030-18, Mike Banks

This client has been confined for much of her life to sitting on the side of her bed permanently attached to a humidifier and ventilator to aid her breathing.

In 2015 Malcolm Logan made a device so that when she was transferred to a wheelchair her mains powered humidifier continued to operate using a pure sine wave inverter powered by a 12 volt battery on the wheelchair. This device was featured in the June 2015 newsletter – DB-016-15.

One of her few pleasures in life was to draw using her iPad but she had reduced strength in her arms and hands and so could not hold her iPad for any length of time. Remap was asked to design and make a support for it that could be clamped to the metal frame of her bed.

A highly adjustable support was made using an old camera mount as its basis. The legs were removed from the camera mount and replaced by a central tubular column which was supported in a specially made clamp attached to the bed frame. A cranked horizontal arm supported the iPad via a commercially available spring-loaded plastic clamp mounted on an adjustable ball joint.

The arm had adjustment for length and angular position in both the vertical and horizontal planes. The overall height could be adjusted using a winding handle that operated a rack and pinion device within the vertical post.

All settings could be locked in position.

In order to provide easy access when making her bed, the whole assembly could be removed from the bed-mounted clamp by releasing a locking thumb screw.

