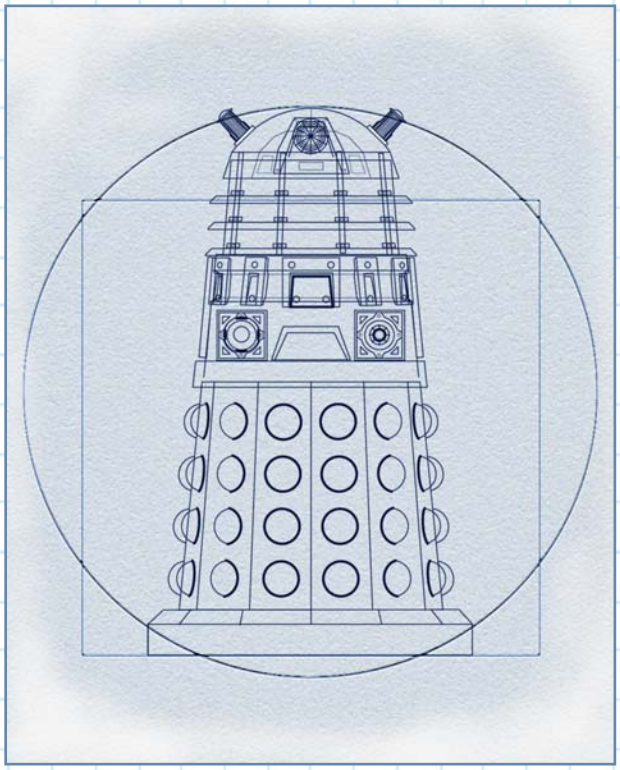
DALEK



THE 2005 DESIGN

www.projectdalek.co.uk

Version 3.1

Thanks to James Rossner for supplying so much invaluable information about these Daleks. Thanks also to John Surr for ironing out the skirt panel dimensions, saving me many hours of work.

Also, thanks to all on P.D.F for keeping me on my toes.

John Darley

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...INTRODUCTION...

Love it or hate it, the 2005 Dalek re-design was a massive success. It has been many years since so much interest, exposure and merchandise has surrounded the Doctor's arch enemies.

The design brief was simple: to make the Daleks look solid and brutal. This was achieved by borrowing elements from the many different Dalek designs of the past. Design cues from TV Daleks, Movie Daleks and comic strip Daleks all played a part in the creative process.

The skirt section is based on the classic 1960's design. As Dalek aficionados will spot immediately, the dome is a reworked version of those used in the 1980's on the Imperial Daleks. However, the new sections which have not been created from previous references are more difficult to assess.

There is a temptation to try and force the dimensions to comply with those set out in classic Dalek plans such as those for the MK1, MK3 and Movie Daleks. The most notable examples of this are the shoulder and neck sections. They should be looked upon as entirely new, unrelated parts. If you have previously studied 'classic' Dalek shapes you will no doubt question some of the new section shapes and their relationships to one another. Questioning is always a good thing but be aware that this is not a 'classic' Dalek. If you opt to use the 'classic' Dalek dimensions you will still end up with an acceptable result but it won't be an accurate 2005 Dalek replica.

For example: compared to 'classic' Daleks the neck rings are of a different diameter and also have unique spacing. This is not an error in the plans, it is a fact. I stress this point here because experienced builders may feel slightly perturbed at being moved out of their 'comfort zone'. If you are new to Dalek designs, taking the plans on face value is the best policy.

These plans were originally developed using photographic references. Known sizes were used to extrapolate sizes for other parts. The work was long and hard but since then a number of developments have taken place. The origins of the skirt sections used by the BBC have come to light and this has allowed the dimensions to be verified. The skirt section presented here is a 'cleaned up' version of the original, removing a small degree of asymmetry from the design. It is a fact that most people intending to build from these plans (be it full size or as a model), prefer a symmetrical skirt to a wonky one. If you are one of the few who would have preferred the raw asymmetrical version, I apologise. Presenting it here would have required some extremely complicated schematics which would have no doubt confused most people.

Since the first draft was released, a considerable number of measurements have been independently verified by reliable sources who have had access to, or taken the time to gather the required information. Much of this information relates to the shoulders, gun box assembly and neck section. Many of the original dimensions were spot on or within a few millimetres. Some were wildly incorrect. All known errors have now been corrected and very few of the revised measurements are solely the result of extrapolation.

A notable exception to this is the cutting claw. This is still under review and some small changes may appear in future versions of this booklet.

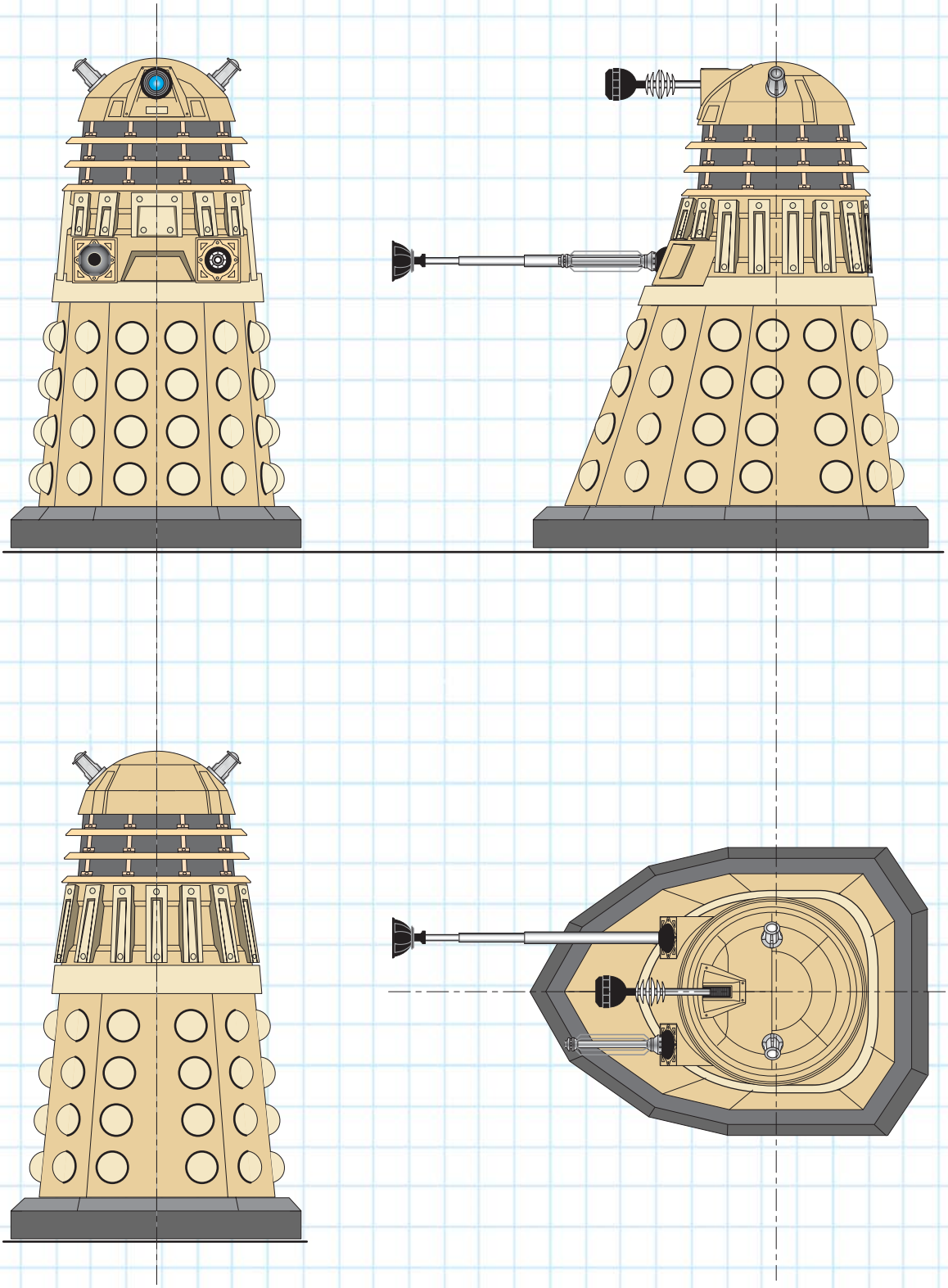
The gun and eye-stalk layouts have been expanded to include extra information. This new version also shows more detail on the plunger, which has been re-worked, along with the eye-ball to fit in more readily with known EMA (Model Supplies) part dimensions.

This latest Dalek variant has become known as the "New Series Dalek" or just the N.S.D. I have avoided that name here because the 2005 is no longer the new series. Hopefully we will see Daleks appear in Doctor Who again and again in the future.

All measurements here are in centimetres unless otherwise indicated. I have avoided imperial measurements so that the look of the plans is in keeping with the look of the Dalek, i.e. up-to-date.

John Darley, April 2007

...KNOW YOUR ENEMY...

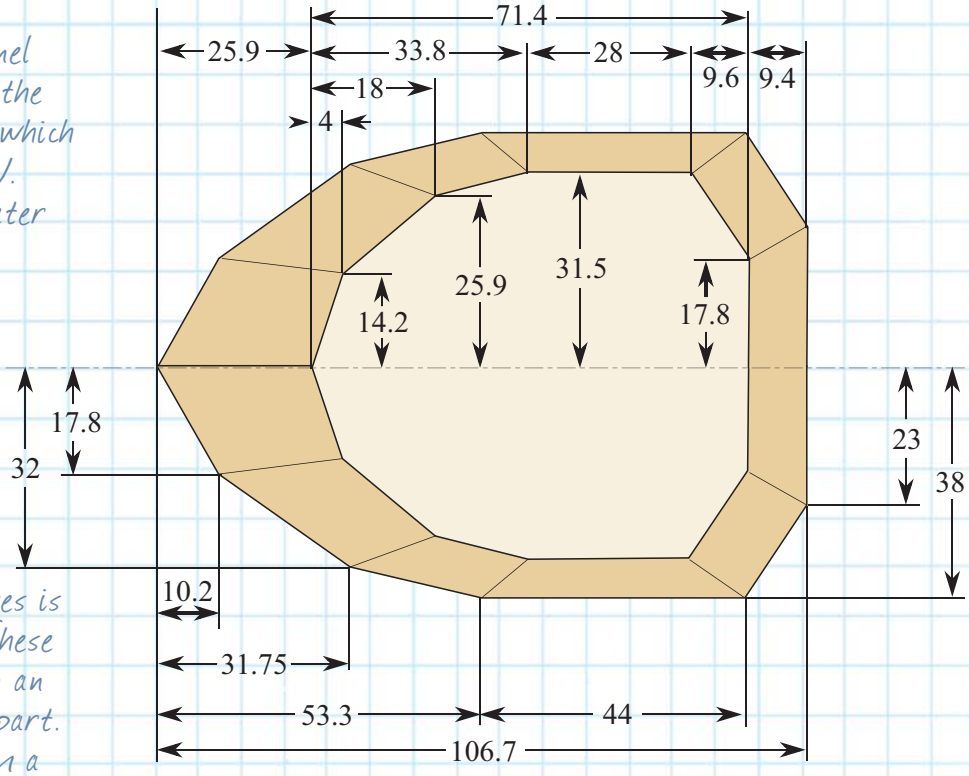


Design cues for the 2005 rebuild were taken from a multitude of Dalek sources. There is evidence of the Peter Cushing films and the TV21 comics in there as well as the TV series. . The dome lights and fender belong firmly in the movies while the skirt design links us directly back to the very earliest TV appearances.

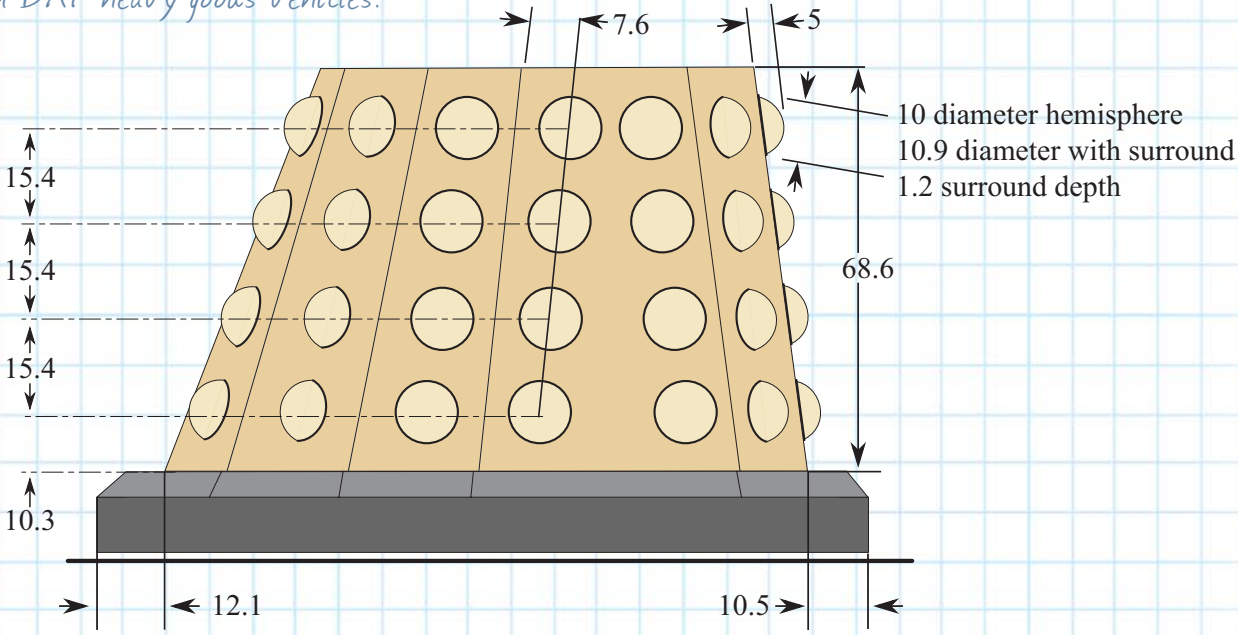
...THE SKIRT...

The skirt section is very much a 1960s design. This was an intentional design decision as the production team didn't feel that the more upright 80s skirts were appropriate.

The shape, height and panel layout is very similar to the original Shawcraft design which was used in the first T.V. stories and in the two Peter Cushing Dalek films.

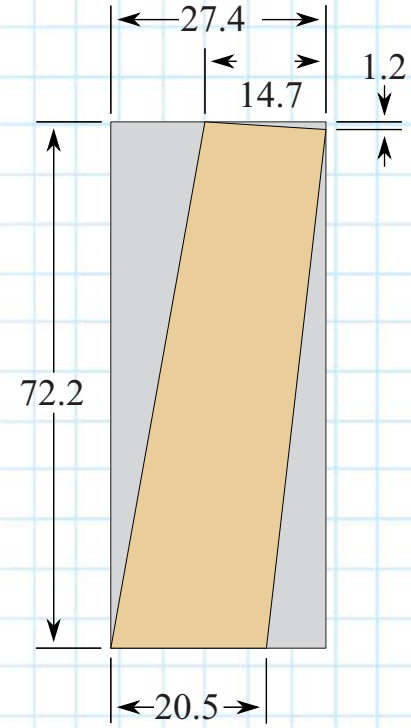


Each of the 56 hemispheres is framed by a black ring. These rings are actually based on an off-the-shelf automotive part. They are casts taken from a rotary shaft oil seal, as used on certain DAF heavy goods vehicles.

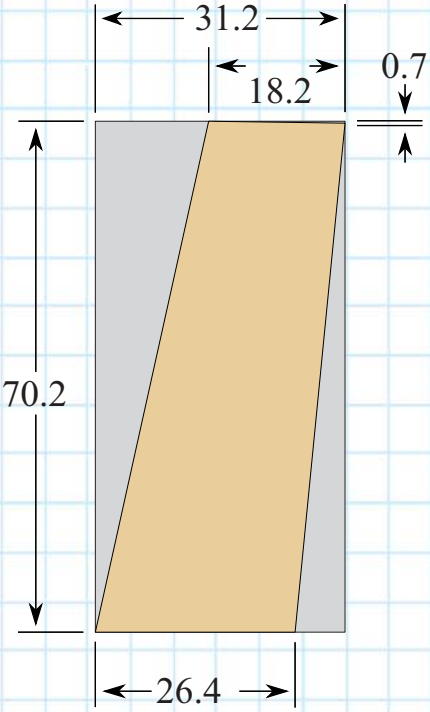


Like the originals, the skirts were of an all fibreglass construction. Unlike the originals, the hemispheres were attached from the outside, using bolts, not inserted through 56 holes as they were on the original props. The Daleks built for The Parting Of The Ways had base / skirt / shoulder sections which were cast in one piece rather than as individual sections. One or more of these single piece Daleks has now been split into sections.

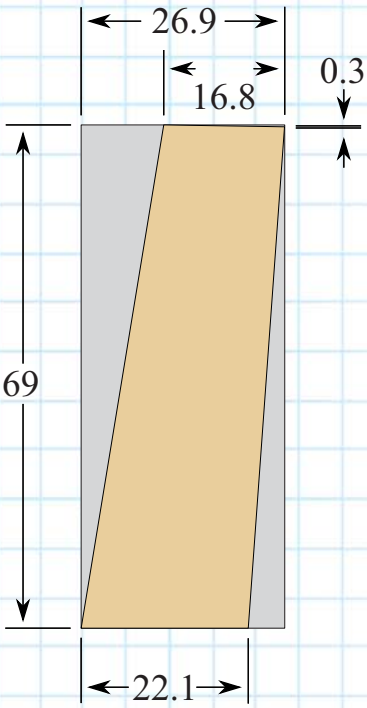
...THE SKIRT PANELS...



Panel 1 (front)

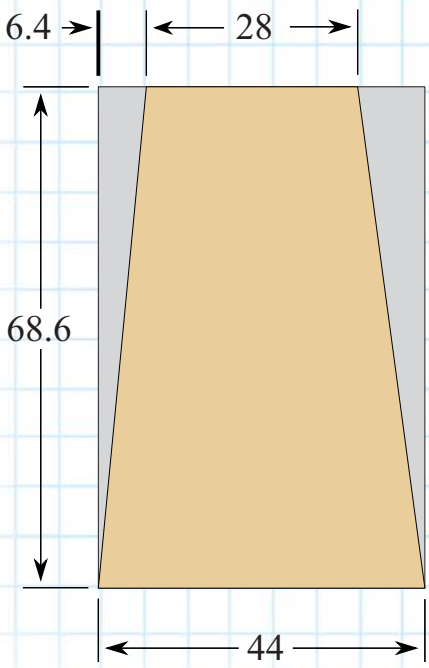


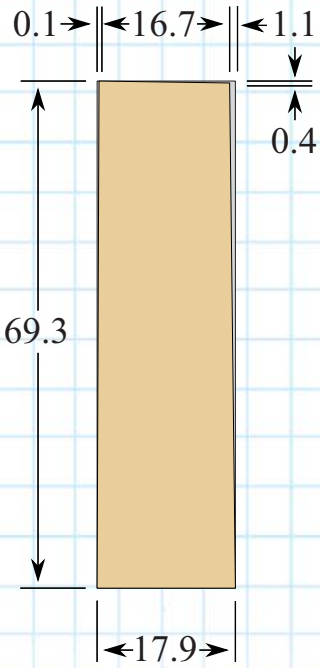
Panel 2

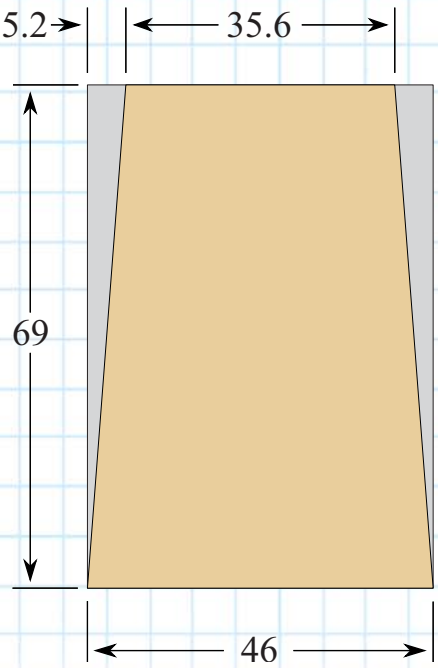


Panel 3

A small degree of asymmetry is evident in the genuine Dalek skirt panels meaning that the corresponding panels on the left and right sided did not match each other. This has been corrected here giving even panels which stand up better to close scrutiny

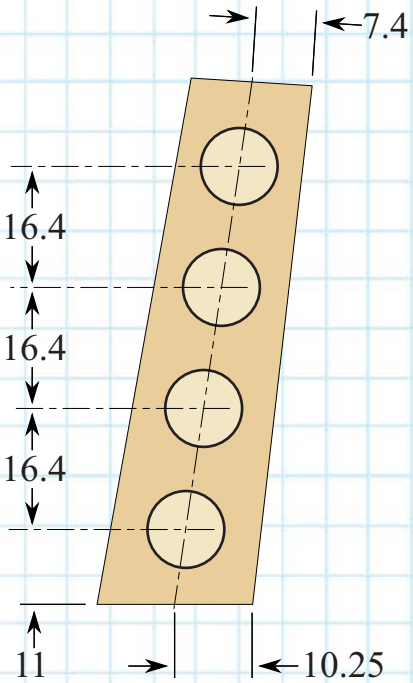




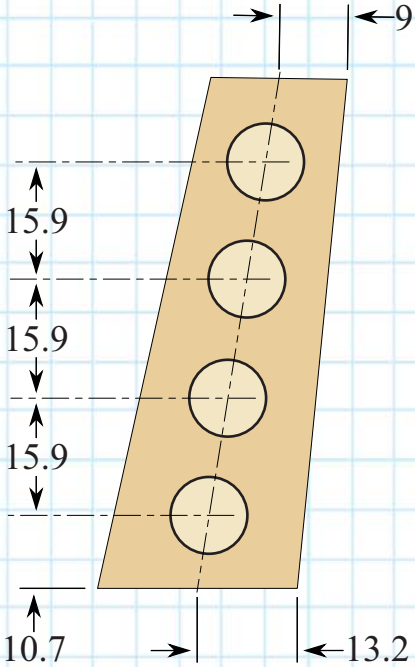


...HEMISPHERE POSITIONS...

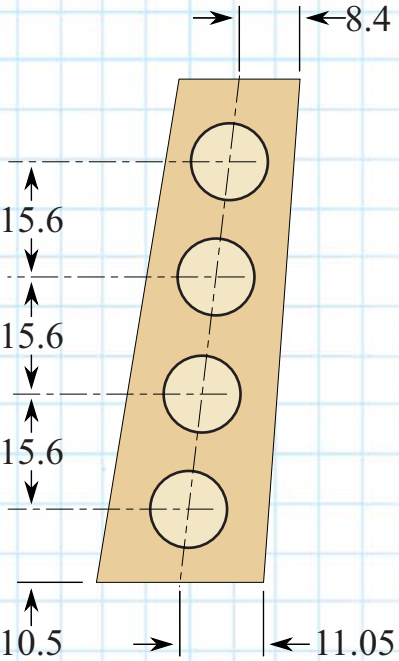
The measurements presented here represent the relative distances marked out on the flat panels, not the vertical distance from the base, on an assembled skirt where the panels slope.



Panel 1 (front)

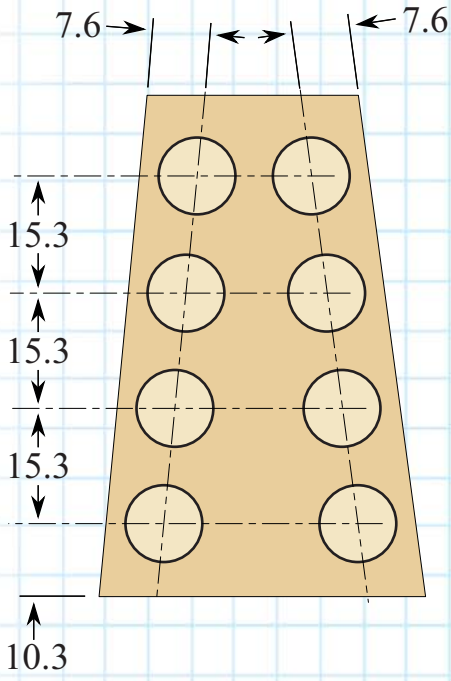


Panel 2

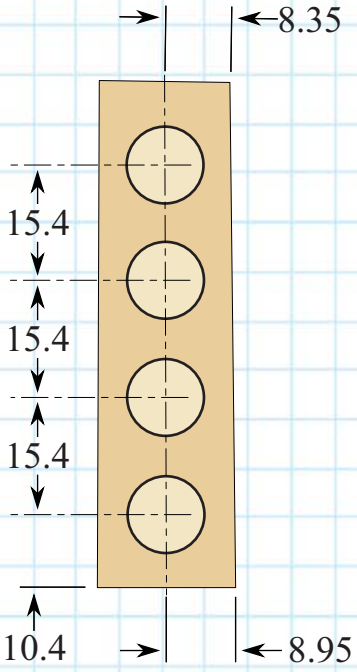


Panel 3

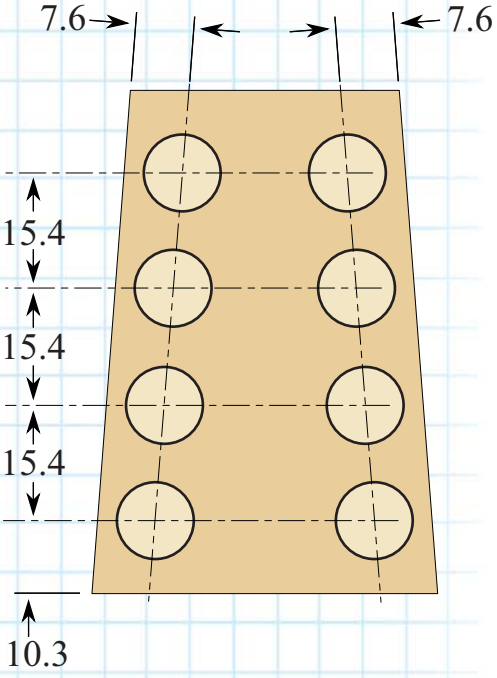
The 2005 series Dalek does not have a significant shoulder/skirt overlap, making the gap between the upper hemispheres and the lower shoulder collar appear larger than on most classic Daleks. The postions given here are from the original source skirt that was used to build the Mike Tucker Dalek. However, hemisphere positioning is part of the final look and it's up to the builder to study photos and adjust to the look and feel that they think is right.



Panel 4

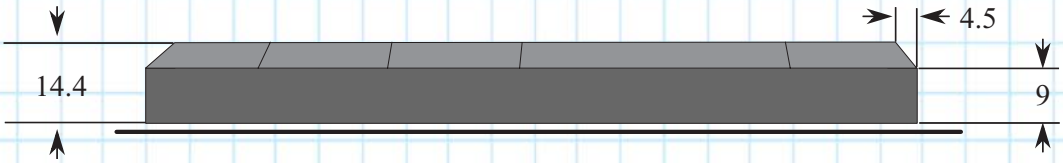


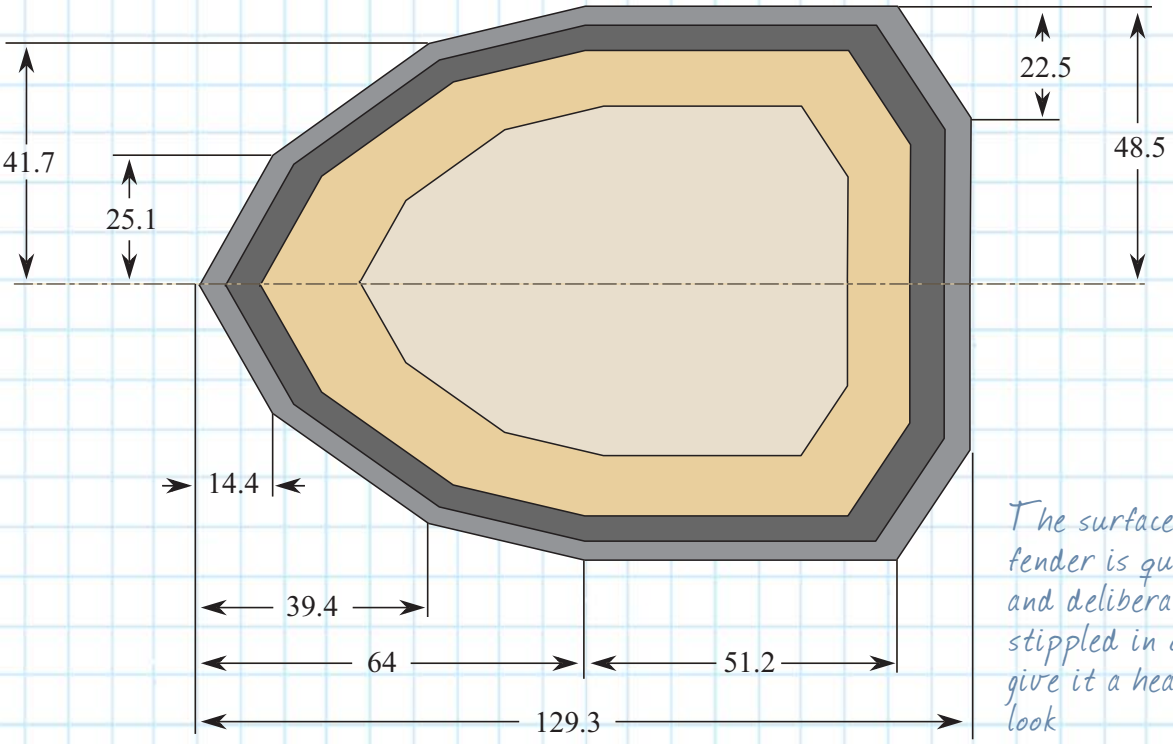
Panel 5



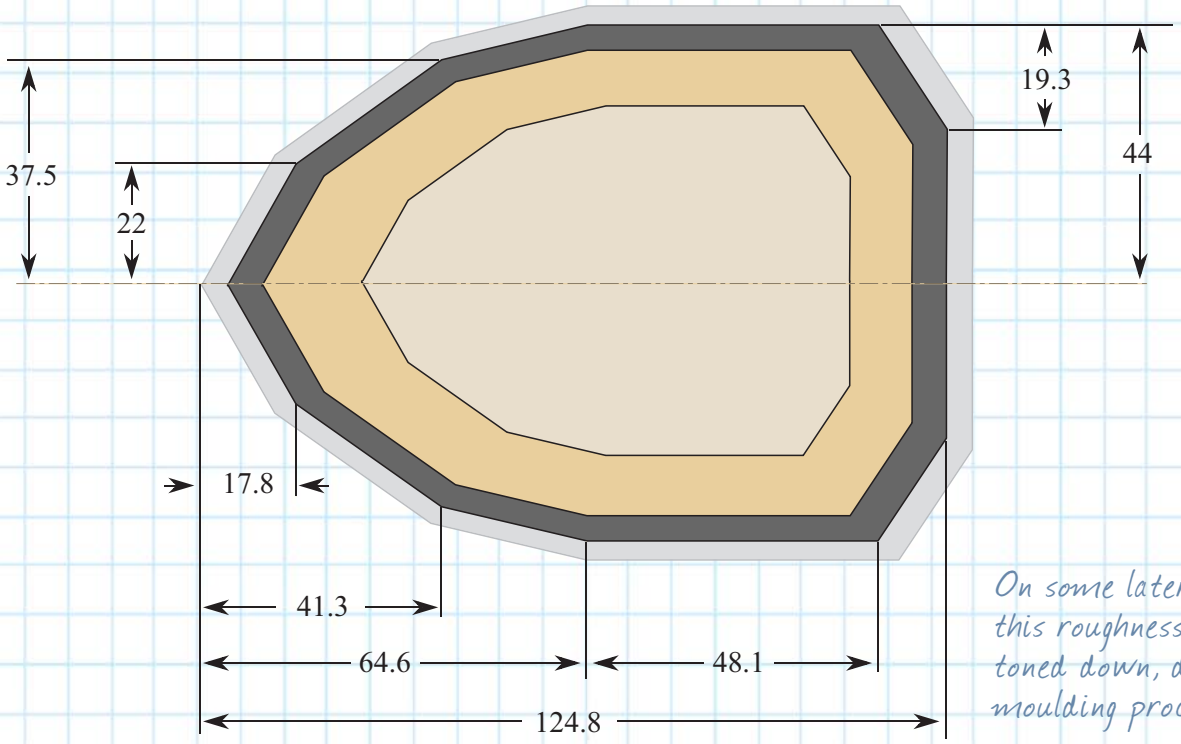
Panel 6

...THE FENDER BASE...





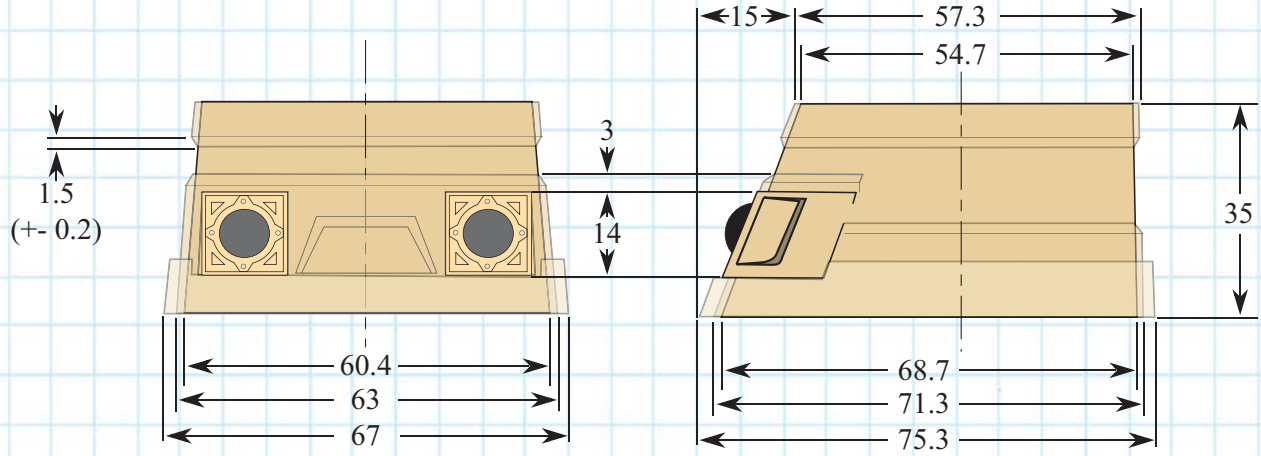
The surface of the fender is quite rough and deliberately stippled in order to give it a heavy duty look

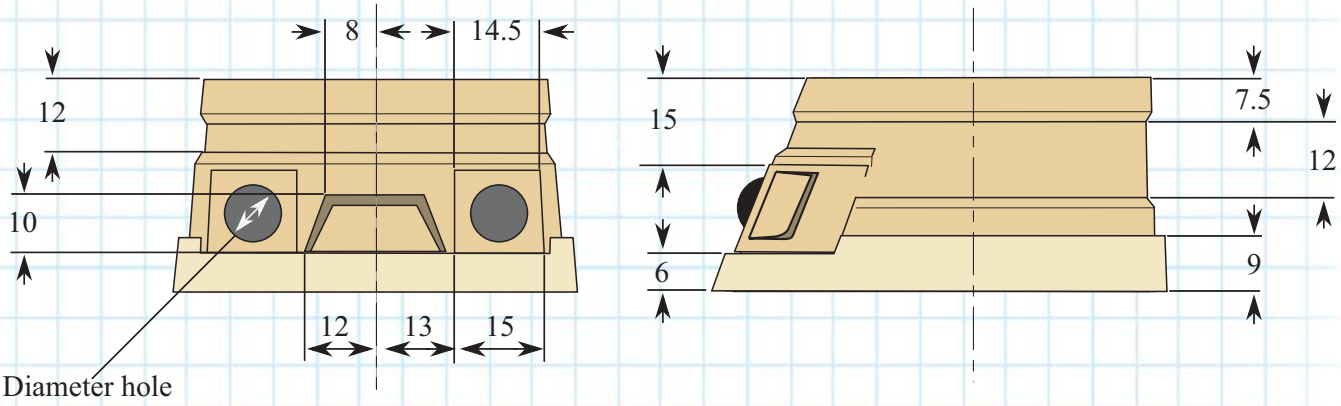


On some later Daleks, this roughness has been toned down, during the moulding process.

...THE SHOULDERS...

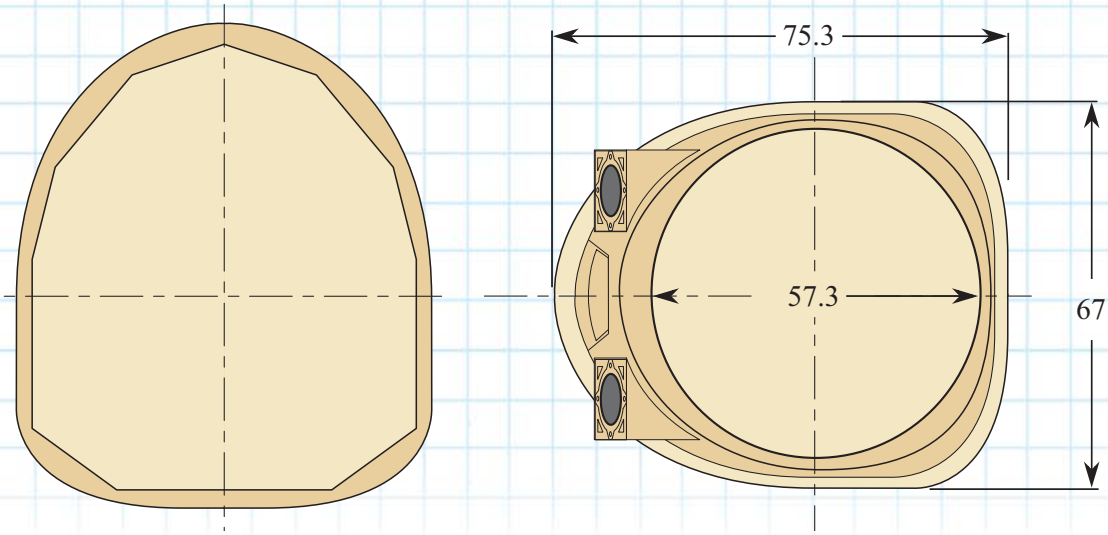
The shoulder section is a complete rebuild. A basic plug was constructed from wood and various foam materials. This was then used to create a master mould for the final shoulder section.





9.4 Diameter hole

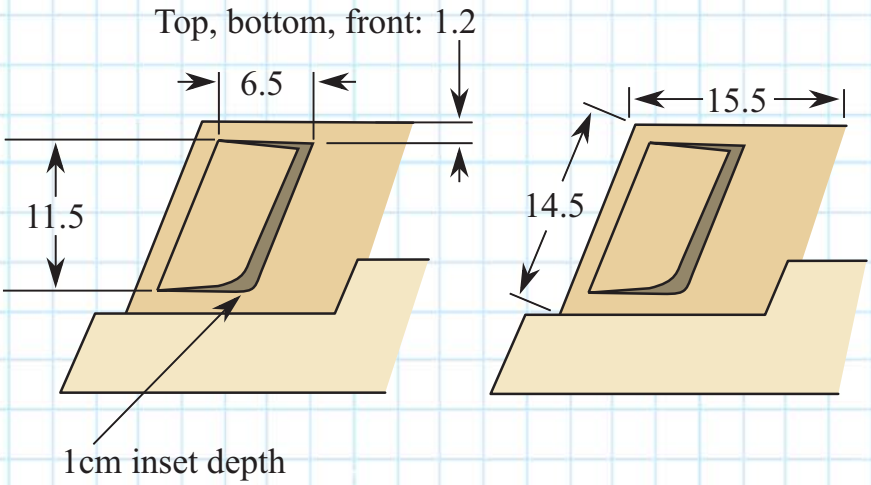
The detailing around the ball joints was created using separate castings which were fixed into position later. The lower collar is part of the shoulder moulding, just like the Daleks from the 1980s. This, combined with the length and width, makes the shoulders much longer and wider than previous versions. Later shoulder castings have rounded lower collar edges because putty was run into the mould to help with mould release.



...GUN BOX DETAIL...

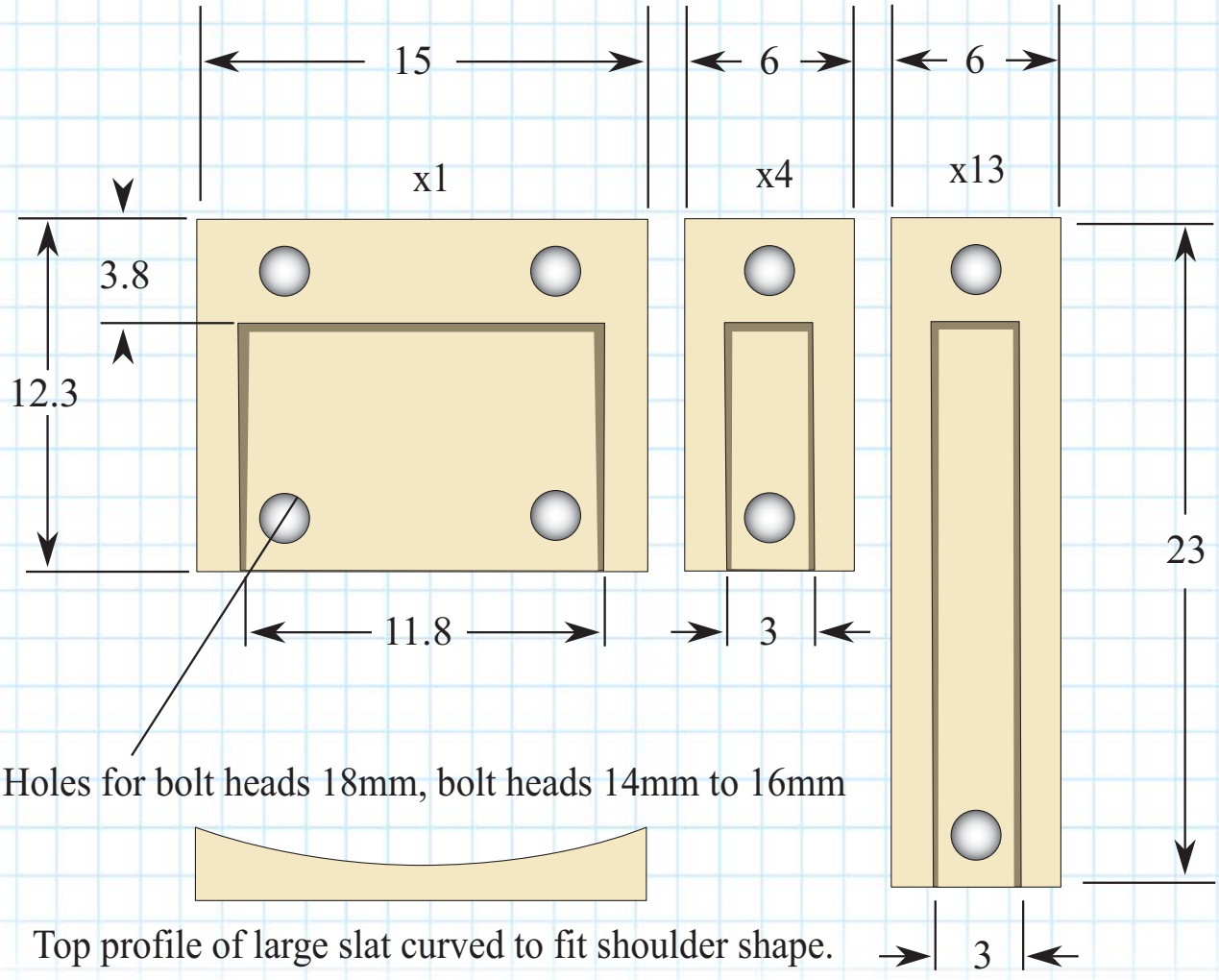
Angled indentations were added to the sides of the gun box.

The original master gun box was constructed from MDF then a fibreglass mould was produced.



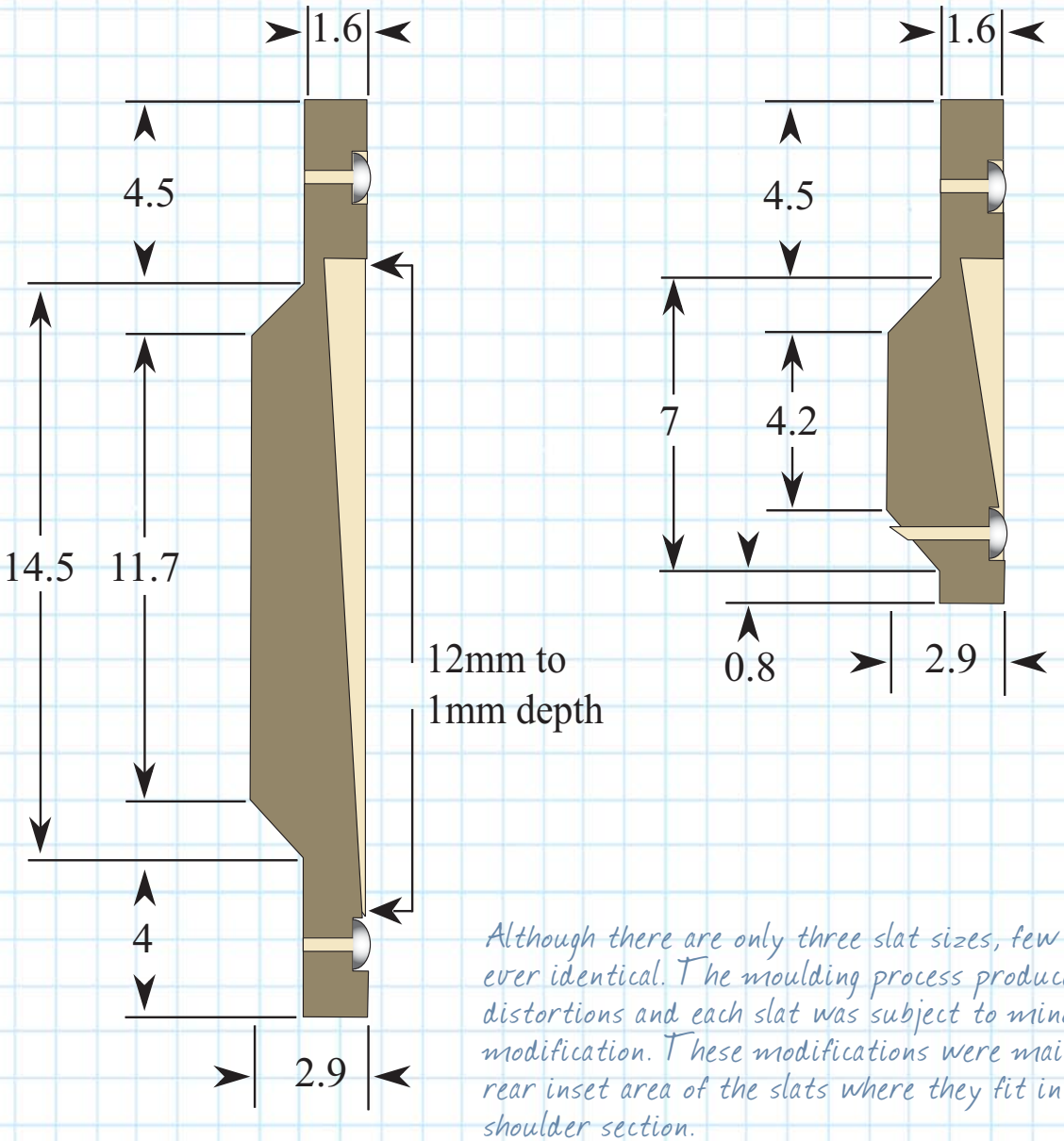
...THE SLATS...

The basic thin slats which have adorned Daleks since the 1960s have been replaced by much heavier versions. Designer Ed Thomas and concept designer Matt Savage wanted the Dalek to have a much tougher, heavier appearance. The slats go a long way to achieving this...



...SLAT PROFILES...

The bolt heads seen holding the slats in position are counterbored into the slats surface. These are not fake bolt heads but the real thing, holding the slats onto the shoulder section. Some later props used self tapping screws, masked by plastic covers. Screws were never used on the props which housed Dalek operators due to the risk of injury from the protruding screw tips.



Although there are only three slat sizes, few were ever identical. The moulding process produced distortions and each slat was subject to minor modification. These modifications were mainly to the rear inset area of the slats where they fit into the shoulder section.

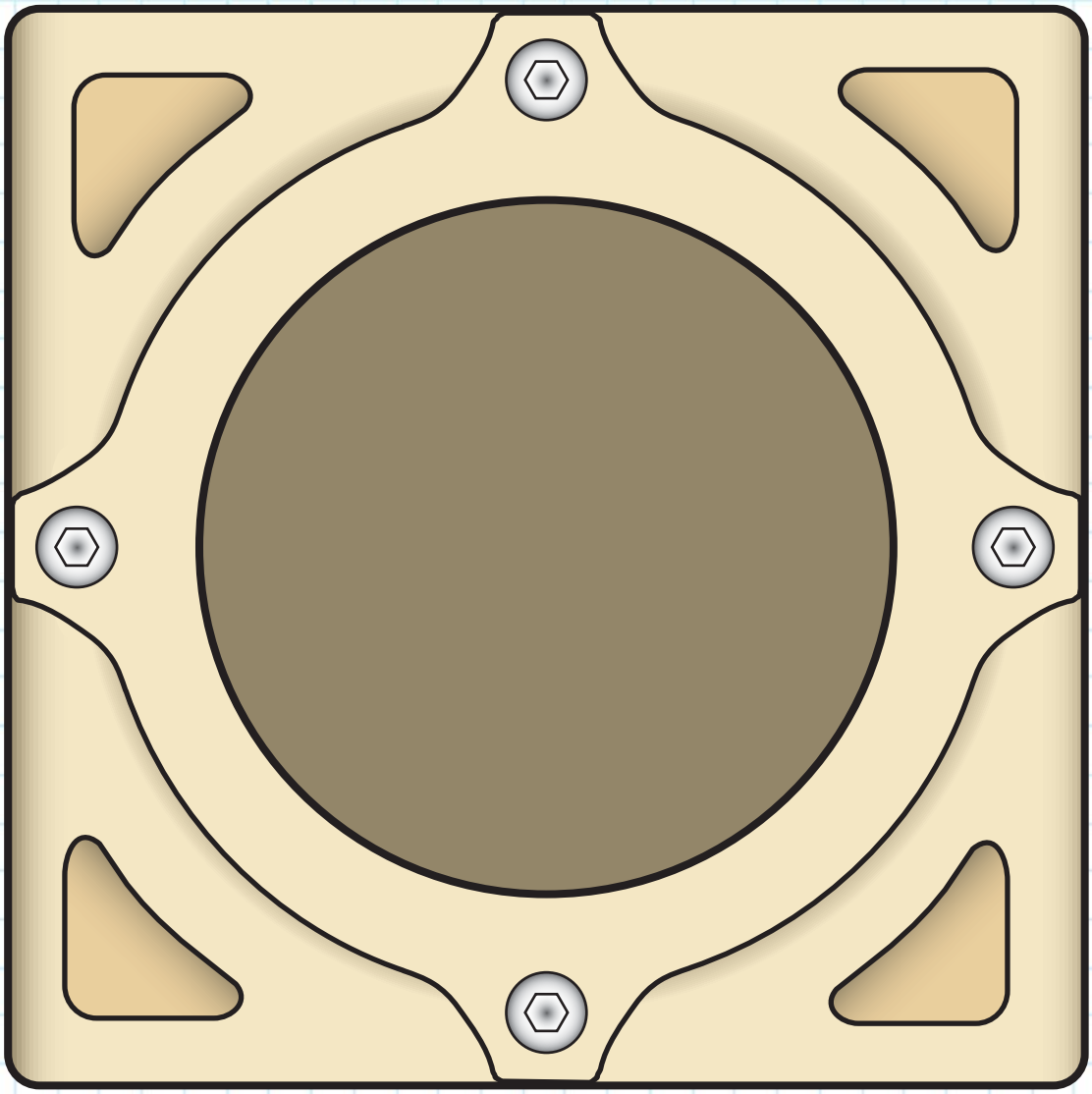
The variations in shoulder collar depth made it necessary to customize the slats to achieve a good fit. The large front slat was the last to be fitted to the original Mike Tucker designed Dalek.

...GUN BOX DETAIL...

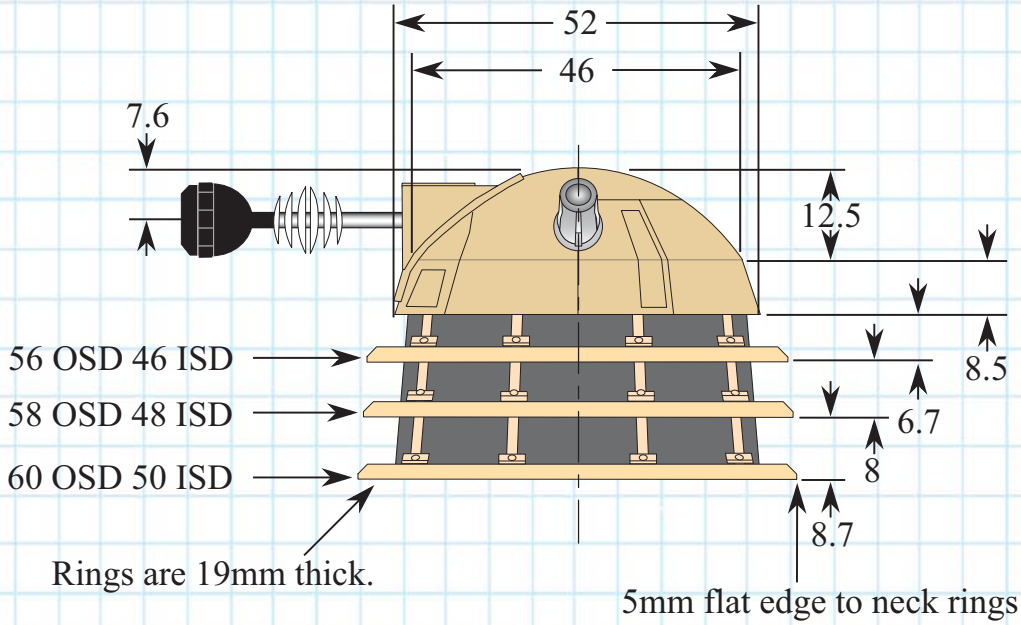
This is a representation of the detail around the gun and arm portals.Please feel free to use it as a template. It comprises of a raised relief screwed into position on the box fronts.

The square backing section is 3mm thick while the circular section containing the bolt holes is raised a further 3mm. The four triangles are holes exposing the plain box front beneath.

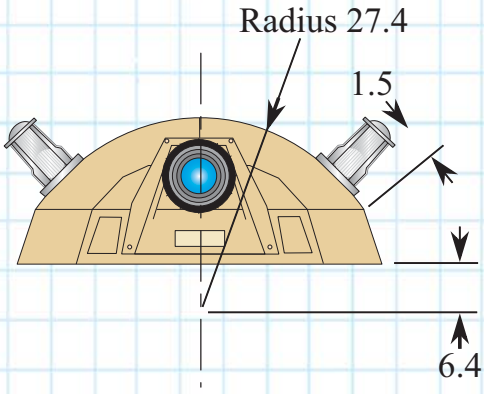
Just about every corner is rounded. The originals were produced using fast-cast resin poured into shallow moulds. Roughly finished, they can often be seen curling slightly at the edges.

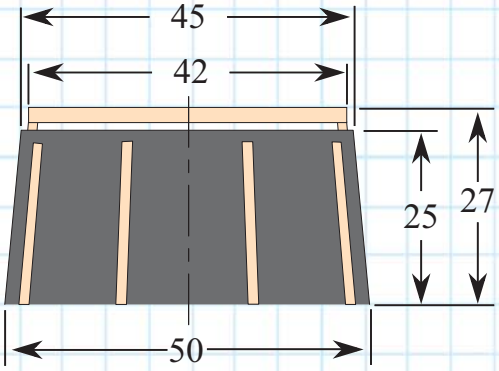


...THE DOME & NECK...



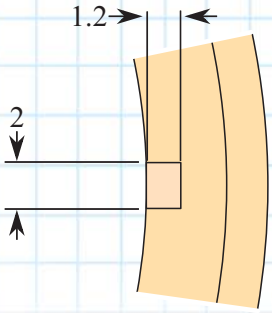
The dome has been heavily modified for this production run. While the basic shape can be traced right back to the 1960, the chamfer line is much crisper than that of the Shawcraft Daleks. This is because the re-vamped version was based on a 1980s dome. The basic design and shape, (without the etched lines) is identical to the dome design of the Imperial Daleks.



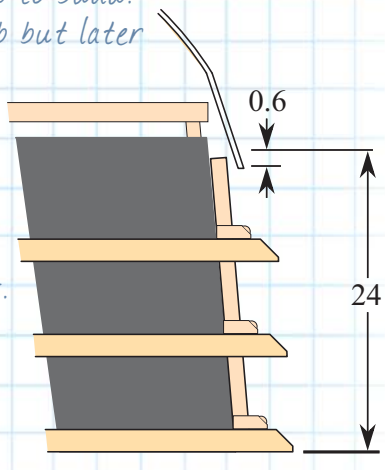


47 internal frame, 50 including mesh layers

The neck mesh was made up from a double layer of two separate materials. While the inner mesh is a standard wire type, the outer layer is actually black anti-slip matting, as used around swimming pools. The kind of matting used changed from build to build. The Mike Tucker Dalek seems to have used a matting called Heronrib but later builds show slightly different markings and rib styles suggesting that the prop builders used whatever matting was to hand.

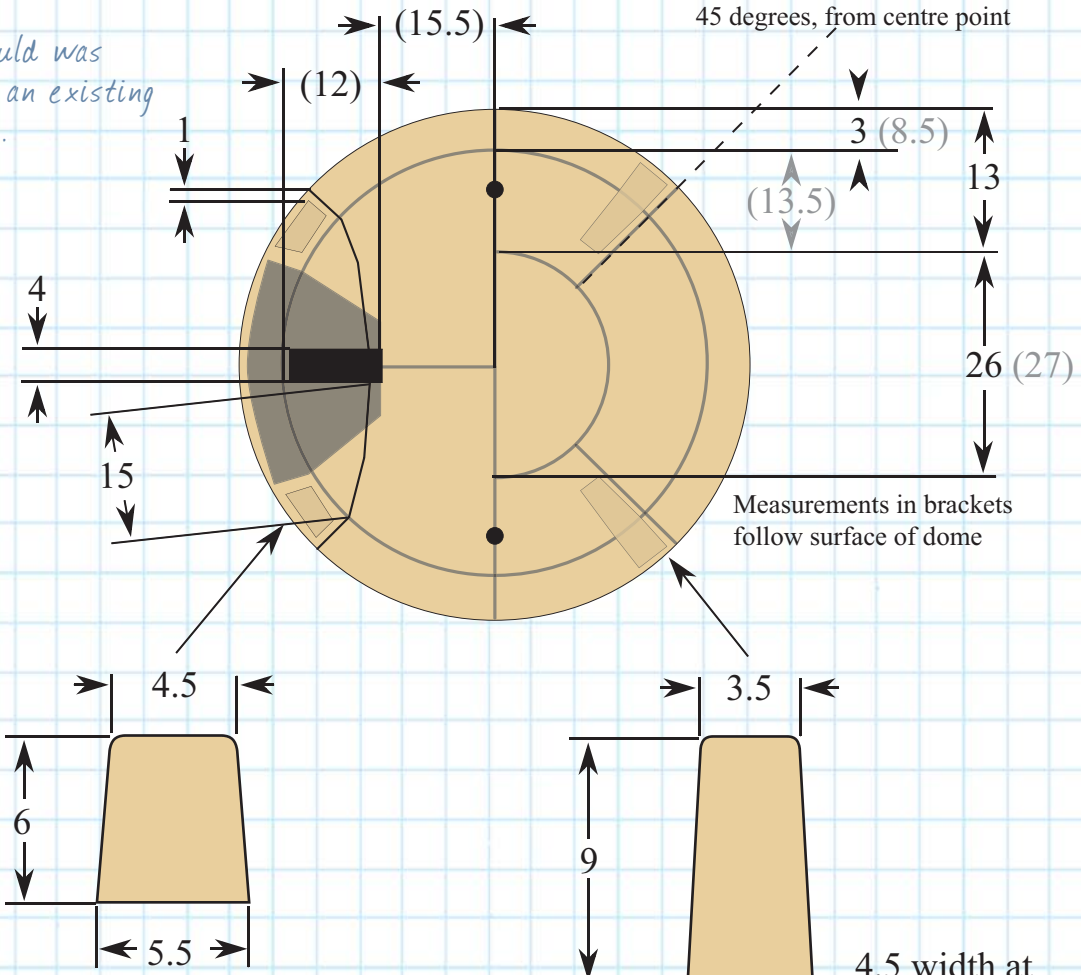


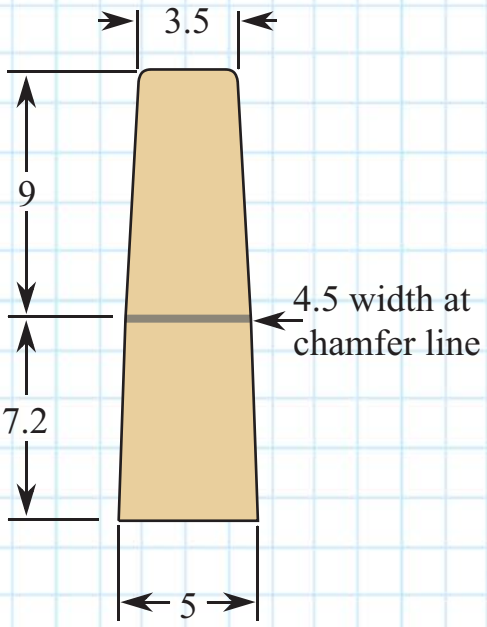
The neck section is a complete rebuild. The chamfered edges of the neck rings do not come to a point as they do on the classic Daleks. Instead there is a flat edge which adds to the general chunky look of the new design. The diameters differ from the standard Shawcraft Daleks. So does the spacing.



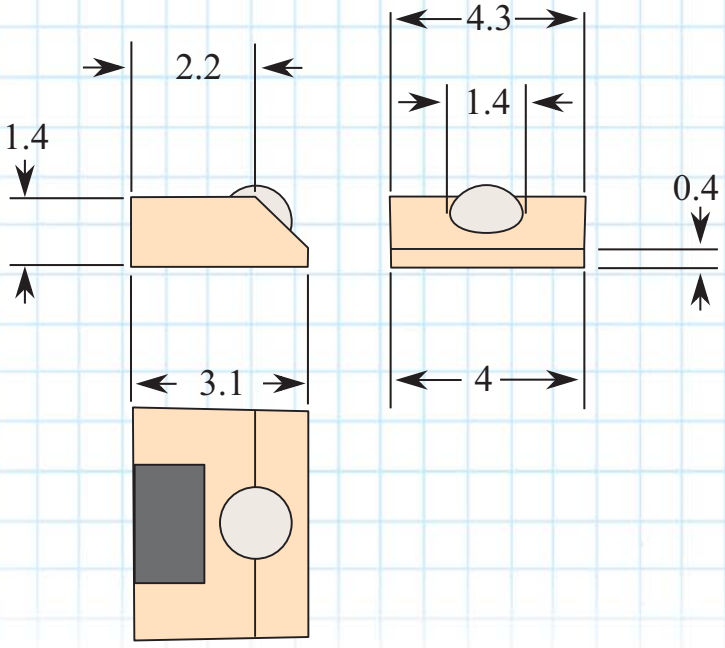
...DOME & NECK DETAILING...

A basic mould was taken from an existing Dalek dome.



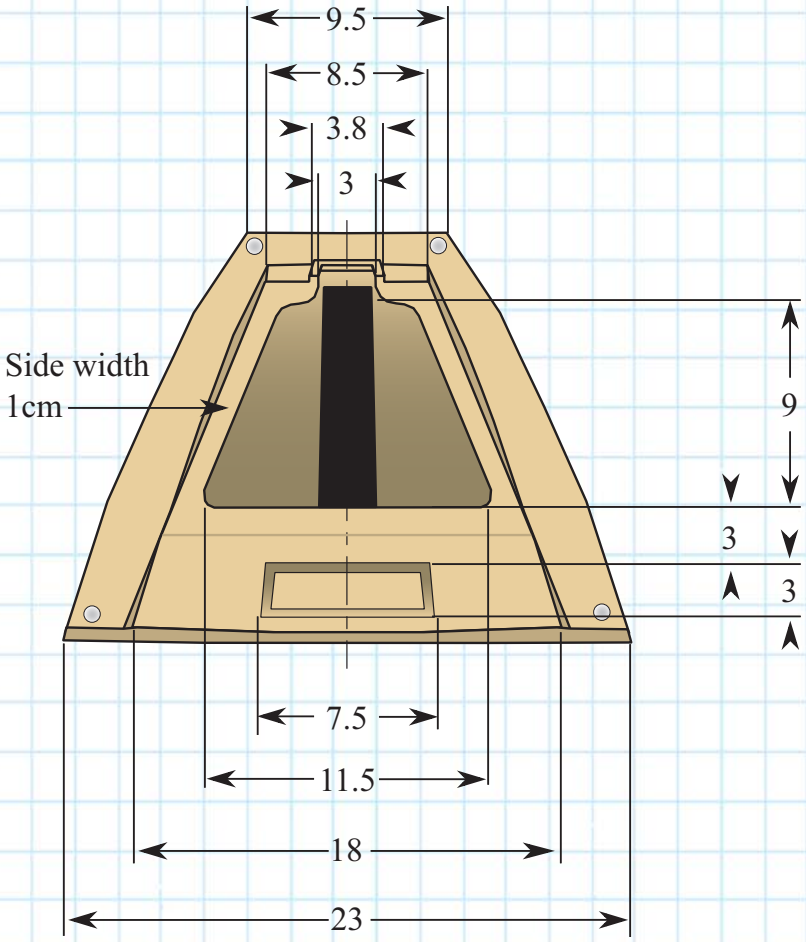


The grooves were created using strips of plastic, or rods, glued into place inside the dome mould. Further thin pieces of plastic were cut out and used to form the shallow recesses on the dome front and sides



The small blocks which adorn the neck rings are part of the design intention: to make the Dalek look chunkier. Evidence suggests that the first generation of these blocks were resin casts while later versions were created using a 3D computer printing process, the hemispheres being ball bearings countersunk into the block surface.

...THE DOME COWL...

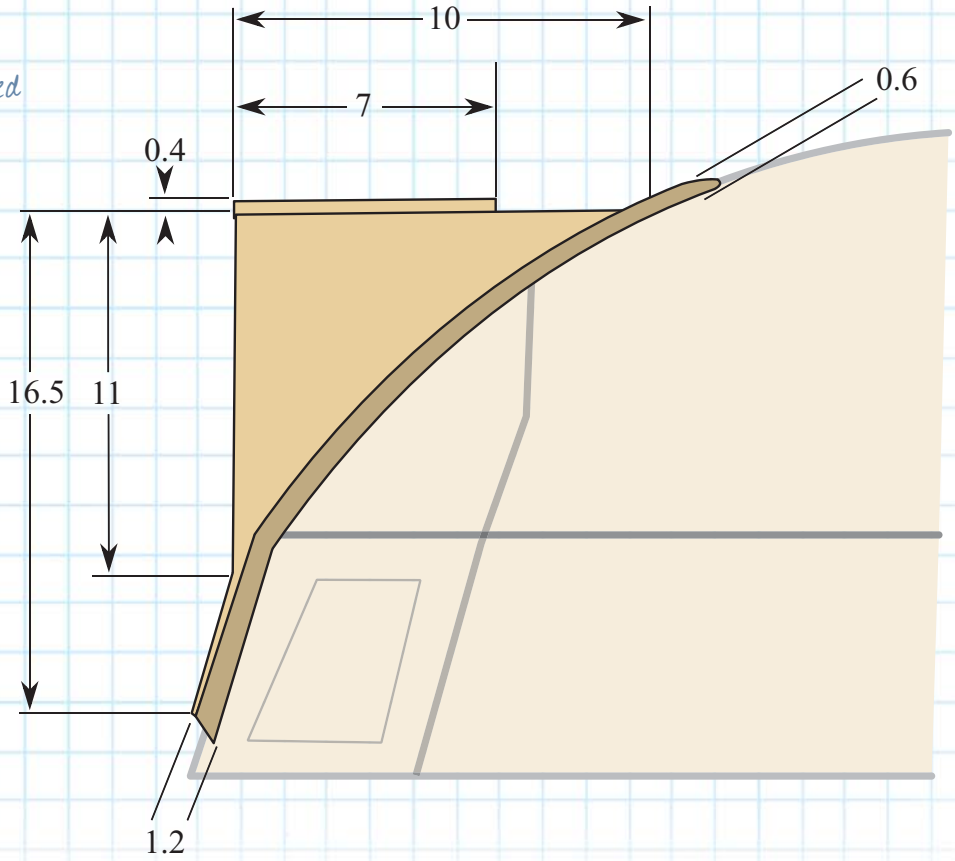


The cowl is an entirely new Dalek feature developed for the re-design. Constructed from fibreglass, this section was custom made to fit onto the surface of the dome.

The fit is quite loose on many of the props as the profile of the dome and the profile of the cowl dont match up too well.

It is possible that a classic dome was used as a base when the cowl was being sculpted, resulting in the slightly different profile.

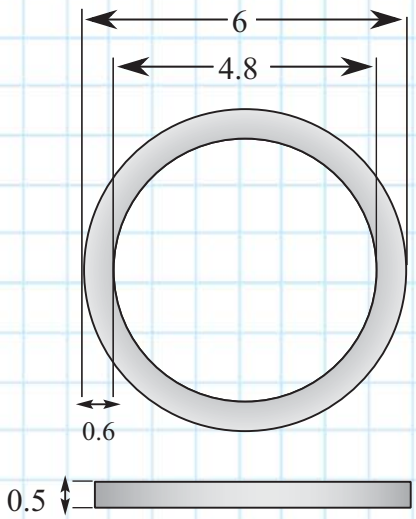
Each Dalek has its own individual I.D. icon painted in the lower recess under the eye stalk.

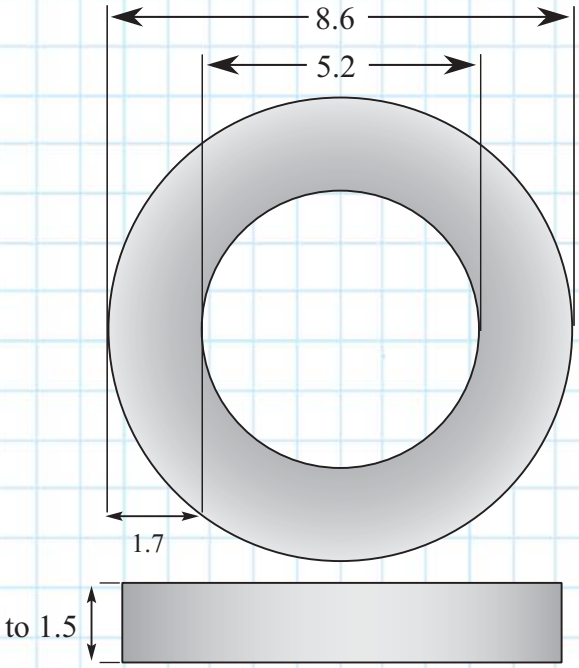


Note that while the dome is finished in the usual deep metallic bronze, the area behind the cowl is painted much darker, possibly even black in some cases.

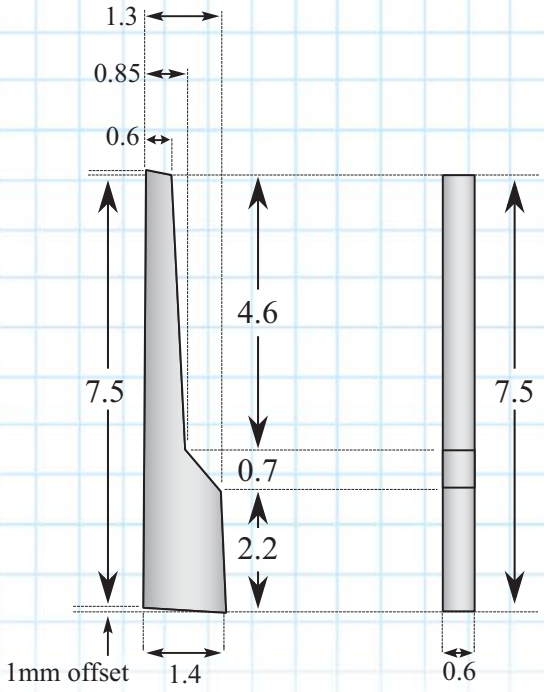
...THE DOME LIGHTS...

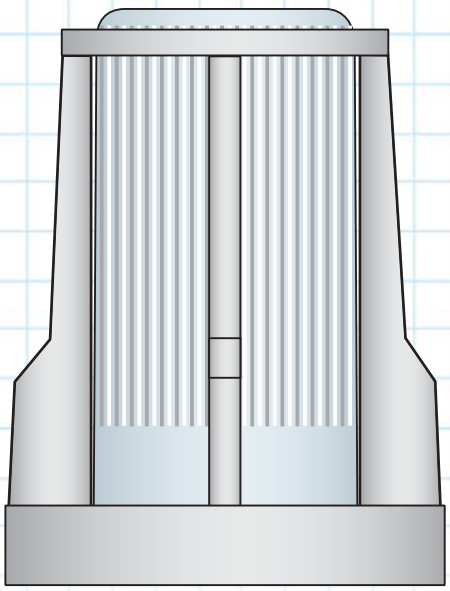
The new style dome lights have their heritage firmly in the Dalek movies. They consist of a pair of custom made cages surrounding a polycarbonate lens manufactured by a company called Moflash. The dimensions of the Moflash lenses is subject to change. It is strongly recommended that builders obtain a set of lenses before commencing with the manufacture of the light cages.





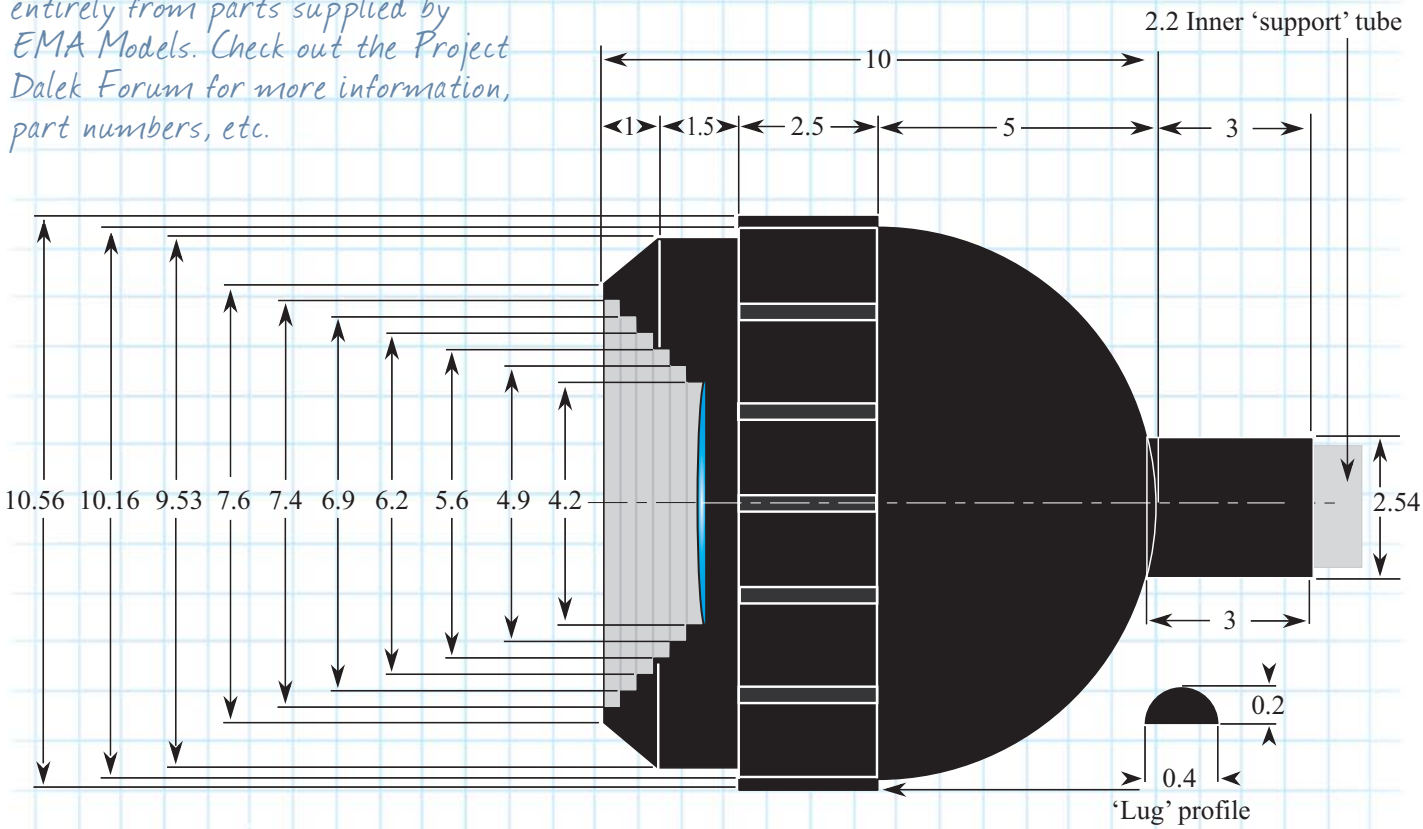
The bulbs are of the round golf ball type. These are a deliberate design reference to the original TV Daleks which also had round ping-pong-ball style dome lights. These bulbs are round, pearlised BA15D style units with bayonet fittings. Being 12v 24w, they are commonly used in garage hand lamps etc. The depth of the lower ring seems to vary. Earlier ones appear to be slightly shallower than the one measured for these plans.

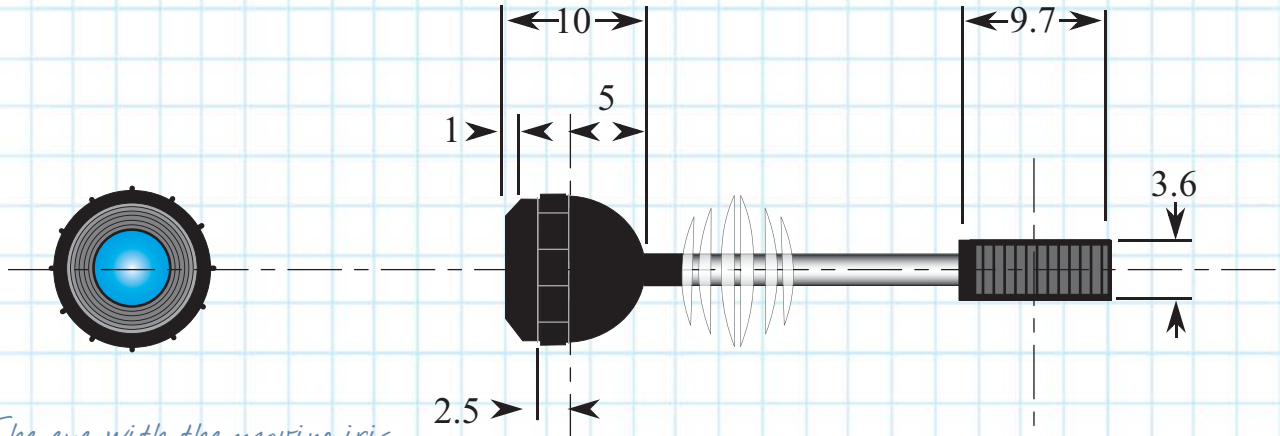




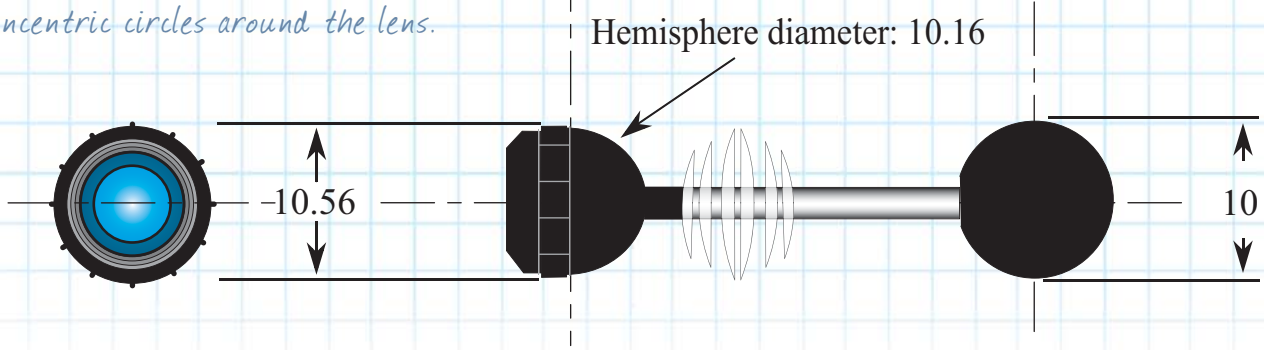
...THE EYE & PIVOT...

The original eye was produced almost entirely from parts supplied by EMA Models. Check out the Project Dalek Forum for more information, part numbers, etc.

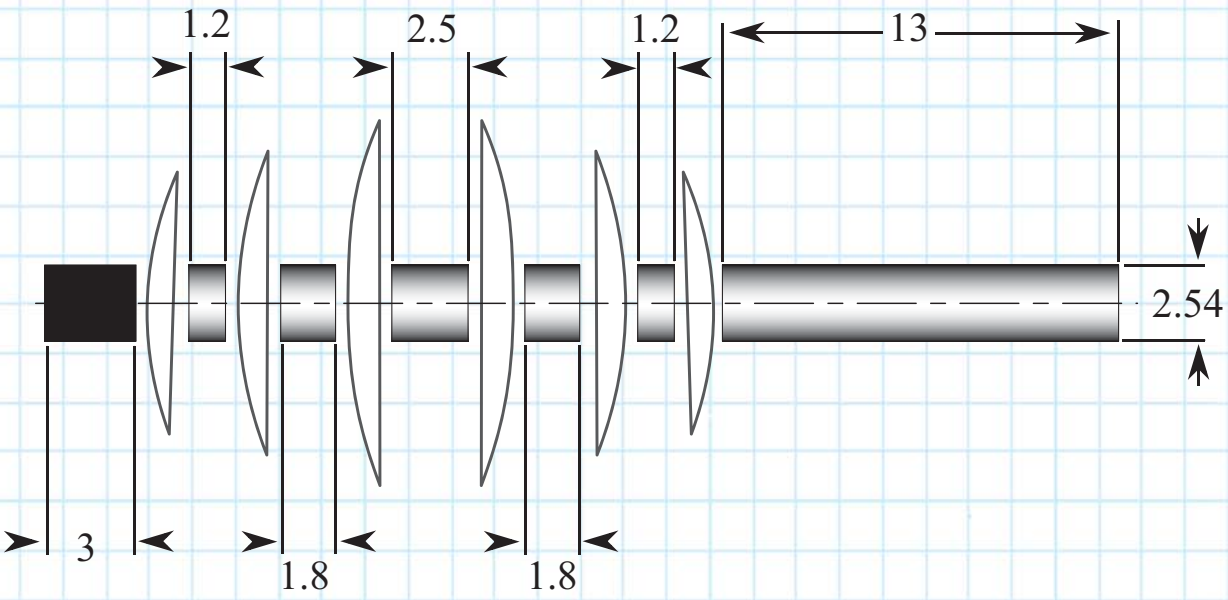




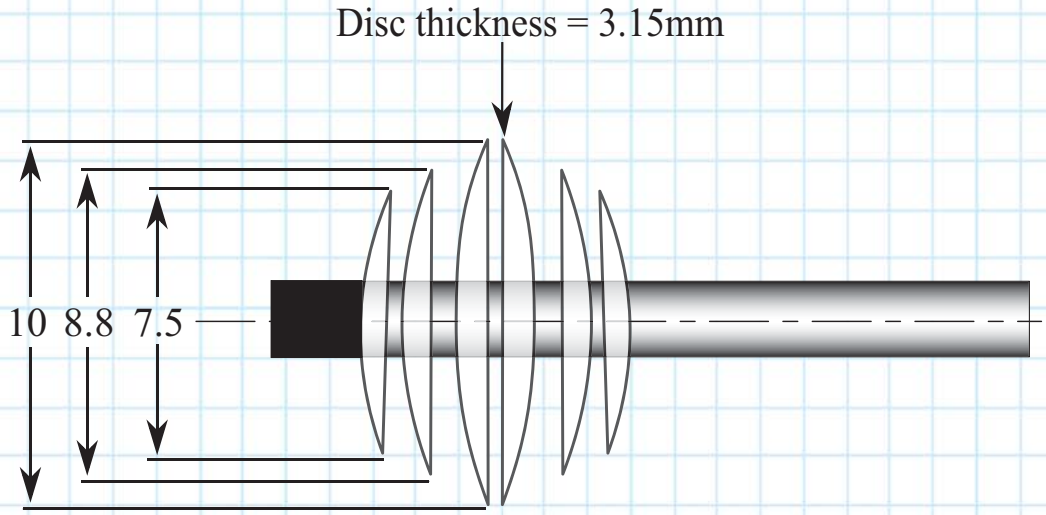
The eye with the moving iris (illustrated below) has a slightly different frontal design to the standard version. It has fewer concentric circles around the lens.



...THE EYE-STALK...

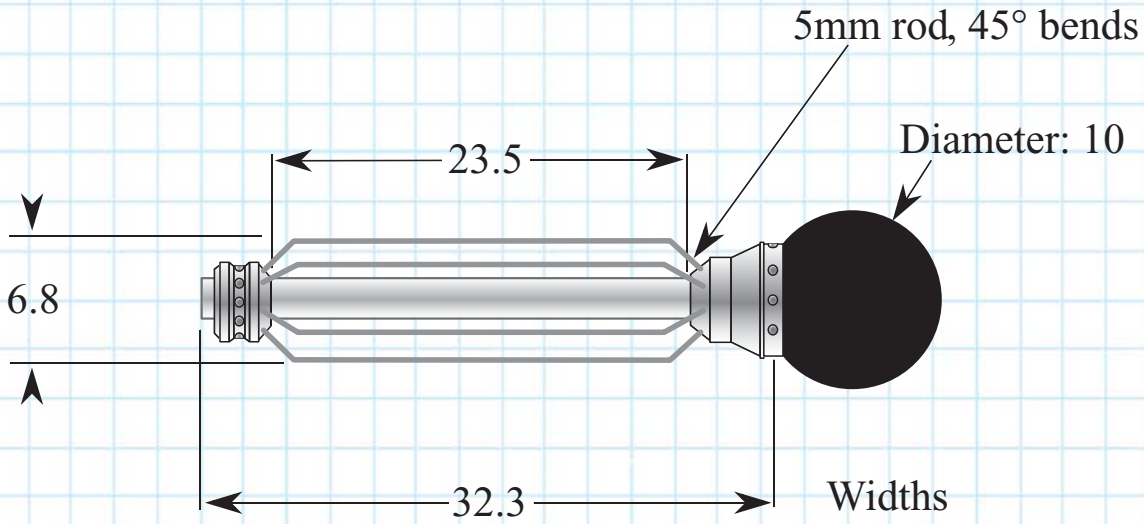


The eye-stalk components are assembled onto an inner tube which runs from the eye-stalk (from the black collar section) through to the pivot. Each disc and section of tubing is slid over the central tube creating the illusion of a single continuous outer tube.

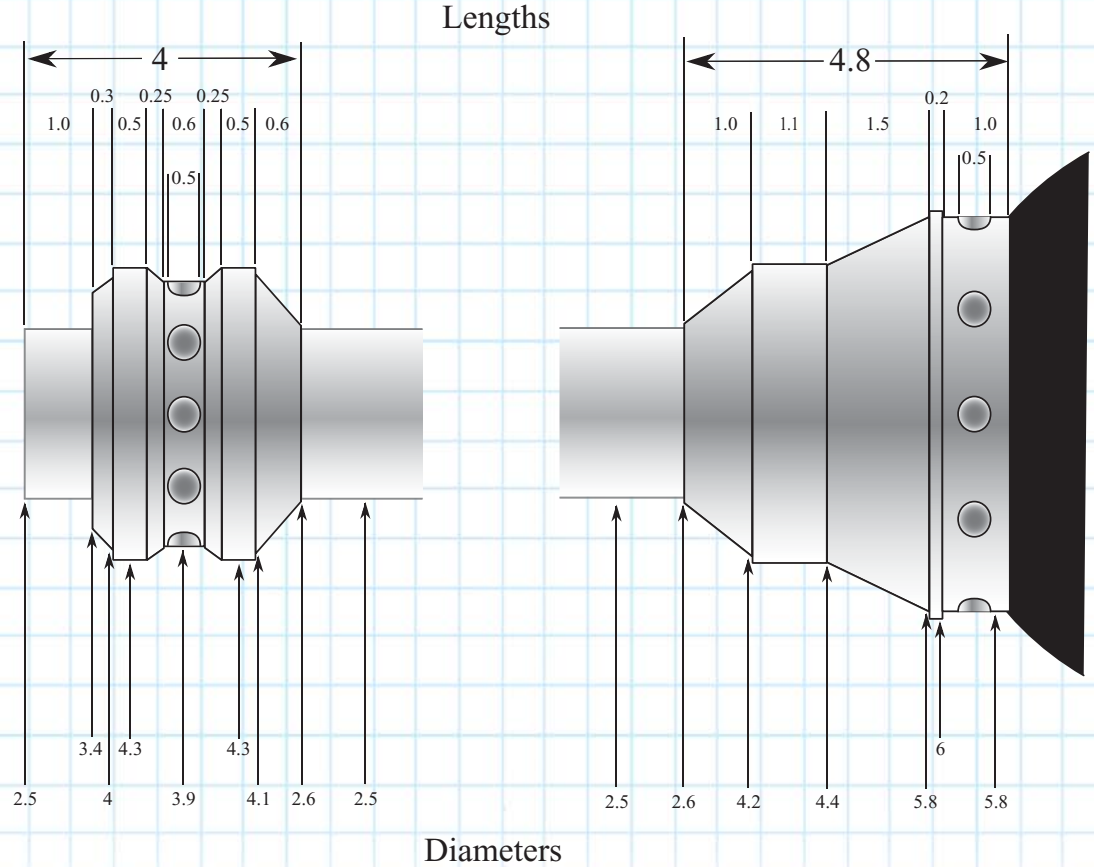


Based on the original design, the new eye stalk sports a chunkier pivot and curved discs behind the eye-ball, rather than the usual flat versions seen on classic Daleks. The discs were made from more EMA plastic components, spun down to size using a lathe.

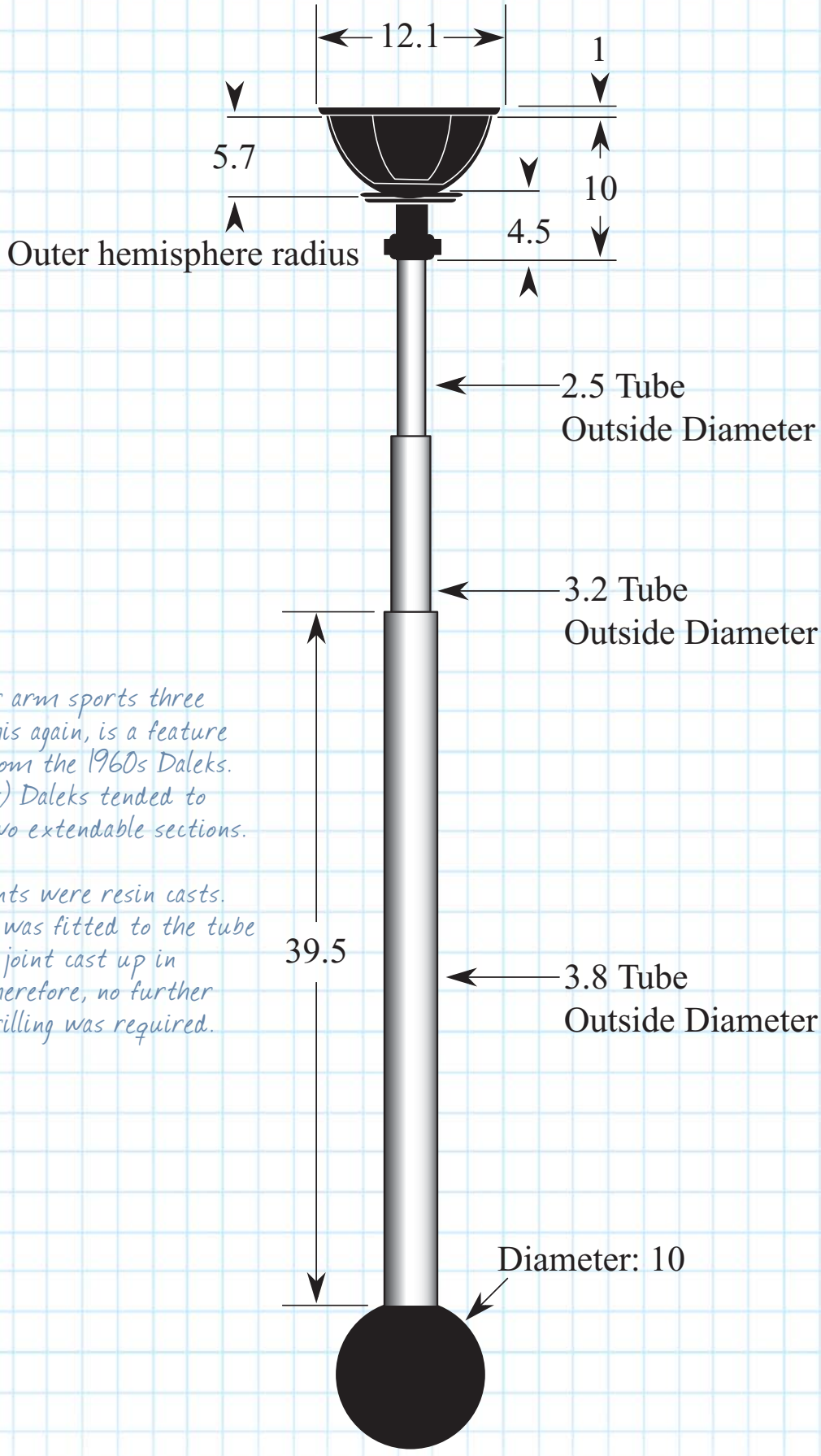
...THE GUN...



The gun was a custom made unit put together from machined parts. Although the basic design can be traced back to the classic Daleks, this gun bears a striking similarity to the one on the Product Enterprises remote control Dalek!



...THE PLUNGER ARM...



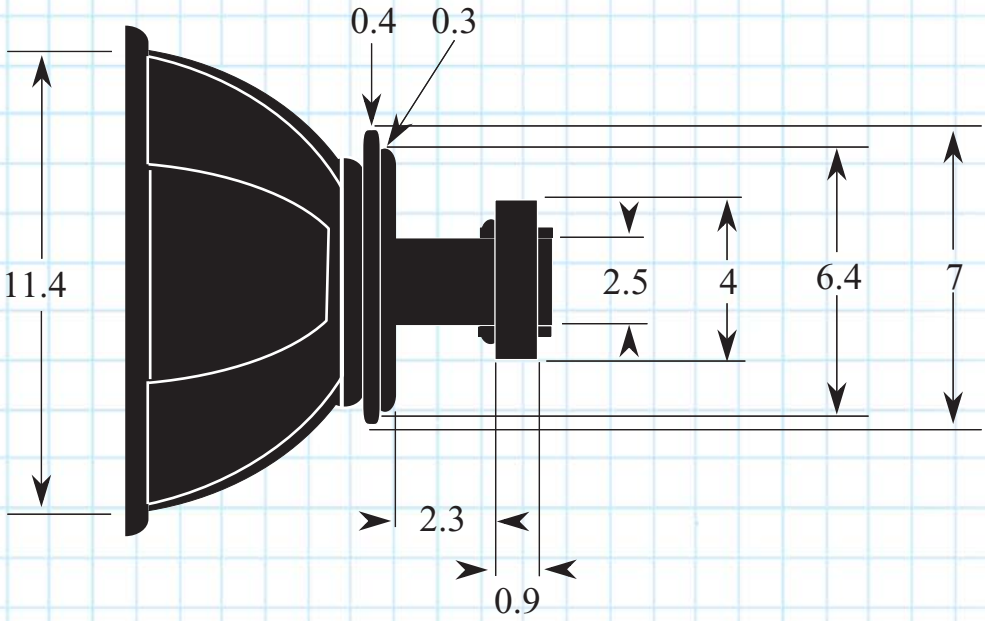
The plunger arm sports three sections. This again, is a feature borrowed from the 1960s Daleks. Later (1970s) Daleks tended to have only two extendable sections.

The ball joints were resin casts. The mould was fitted to the tube and the ball joint cast up in position. Therefore, no further fitting or drilling was required.

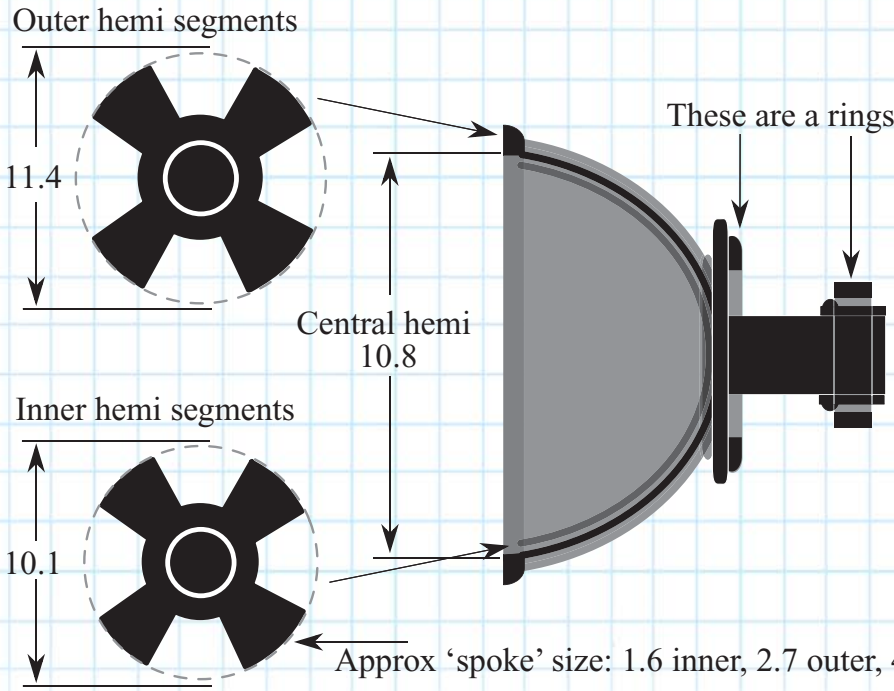
...THE PLUNGER...

The plunger isnt a plunger at all. It was made from components sourced from EMA Model Supplies who supply plastic components to the film industry.

Many other detail parts on this Dalek were also developed using EMA parts, including sections of the eye. Further details are available through the Project Dalek Forum.



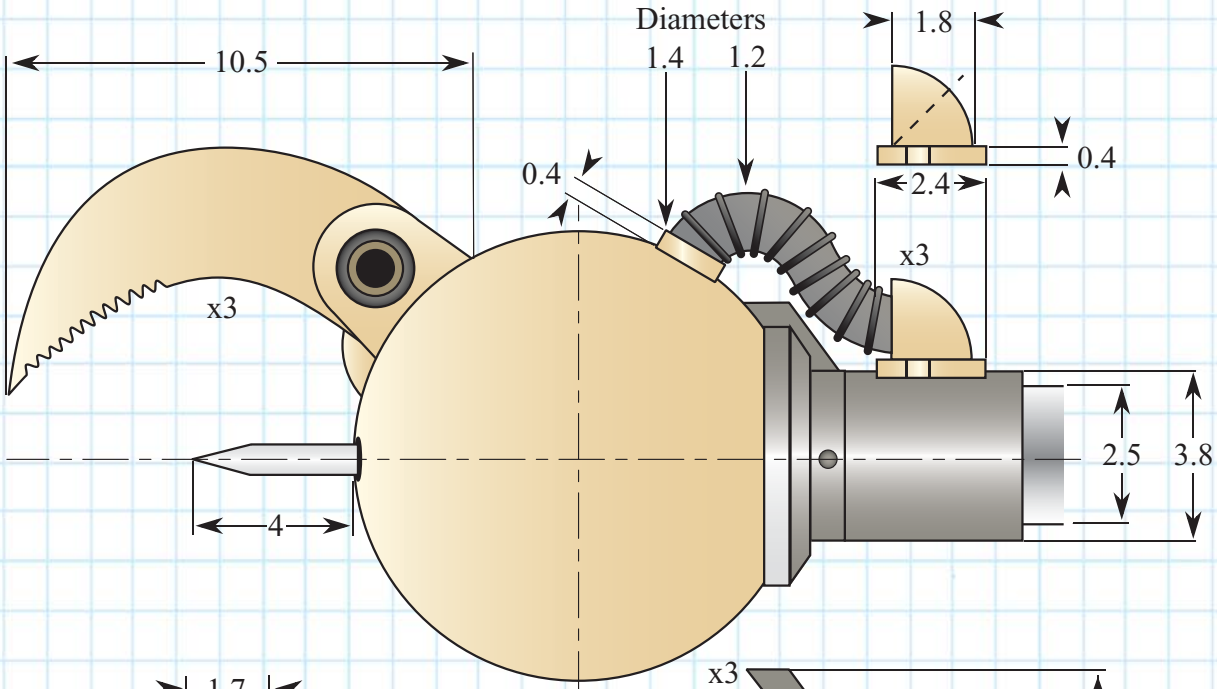
Subsequent versions of this plunger were produced by the 3D printing process also used on selected versions of the eyeball, light cages and neck section. This process involves scanning in the original part using lasers and then reproducing them on a special printer which builds the part up in thin layers of a plastic like material. Although the finished items are quite durable, they do require a certain degree of filling and finishing in order to make them presentable.

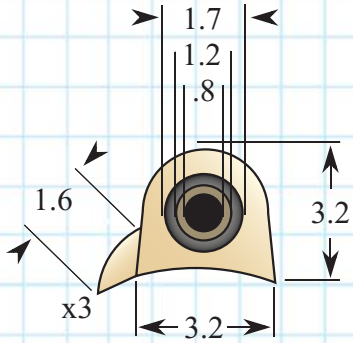


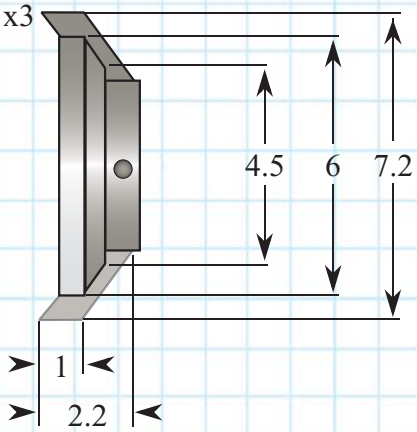
Later versions of the plunger had additional ribbing added to the 23mm long rear tube.

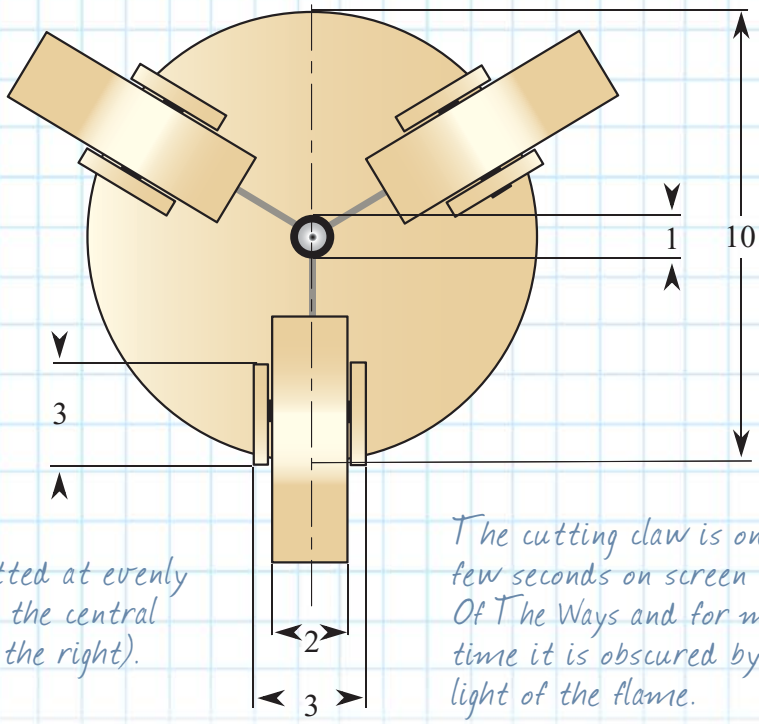
One theory is that these were added to give extra support because the front was prone to snapping off at this point.

...THE CUTTING CLAW...









For ease of use, the side profile (above) shows only one of the three pincers and its associated piping.

In reality three were fitted at evenly spaced intervals around the central globe, (as illustrated on the right).

The cutting claw is only seen for a few seconds on screen in The Parting Of The Ways and for much of that time it is obscured by the bright light of the flame.

If you have any comments or suggestion regarding these plans and their dimensions, please post your feedback on the Project Dalek Forum:

www.projectdalek.invisionzone.com

These plans have been produced for anyone wanting to build a Dalek for their own personal use. It is not this guide's intention to encourage any commercial activity regarding the selling of Daleks.

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