CHARLES W MEADOWS (LONDON) LTD

320-237 to 250 TORQUAY

DITE TELEPHONE 27551/2 DEVON TELEGRAMS MEADITE

GUIDANCE TO THE DRAFTING OF SPECIFICATIONS, DRAWINGS AND TOLERANCES FOR MOULDED RUBBER PRODUCTS

Because Rubber is a flexible material that has variable shrinkage after processing (moulding, extruding, etc.) and also because Rubber Mouldings are difficult to measure, dimensional tolerances that are commonly observed for Metal Parts cannot economically be applied to Rubber.

Our experience has shown that standard drawing forms have tolerances printed (sometimes as low as 0.005") which are quite unrealistic as regards Rubber. In the majority of cases, the unavoidable excess of these printed tolerances does not affect in any way the function performed by the moulding concerned. In isolated cases however, we have had rejections by zealous inspectors. Investigation would have shown, in many cases, however that :-

(a) Drawing was prepared on a standard form with tolerances intended for metal parts

(b) Mouldings, although slightly oversize, would have been perfectly satisfactory for the intended use and rejection was made on a technicality.

When absolutely necessary, as in the case of Oil Seals, "O" Rings, etc., dimensions can be held to tolerances as low as .005" on small parts (under 1" in overall size) but such mouldings require different Moulds (usually Transfer type instead of the usual Compression Mould), and furthermore, individual inspection would make it impossible to sell at the very competitive prices usually demanded. Where close dimensional tolerances are unimportant, + or - 0.015" to + or - 0.045" should be allowed. For precision components, depending on size. + or - 0.005" to + or - .020" are permissible.

Hardness: Shore Durometer Hardness - tolerance should be at least + or - 5°.

Trimming: Method of flash trimming depends on shape of article and can be hand trimming or punching. This has a bearing on our ability to hold close tolerances and our advice should be sought in cases where special trimming is thought necessary. A clear indication should be given if surface finish is important. Small mouldings can exceed drawing measurements at point where flash line(s) occur and if important, position and permissible thickness of flash lines should be indicated.

We hope the above information will be of help to customers, and particularly to draughtsmen inexperienced in Rubber manufacture who base details on drawings with their engineering experience in mind.

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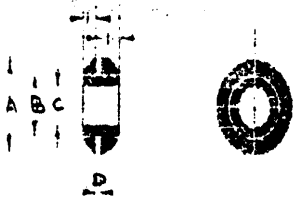
DITE TELEPHONE 27551/2 TELEGRAMS MEADITE

MOULDED BLACK NATURAL RUBBER GROMMETS



A = OUTSIDE DIAMETER
B = GROOVE DIAMETER (PANEL HOLE)
C = INSIDE DIAMETER (CABLE DIAMETER
D = GROOVE WIDTH (PANEL THICKNESS)
E = FLANGE THICKNESS
F = FLANGE THICKNESS

MOULD	A	B	C	D	E	F	100
M/1/H	3/8"	1/4"	5/32"	1/32"	1/16"	3/32"	0.45
M/17/H	7/16"	1/4"	3/16"	1/16"	3/32"	3/32"	0.35
M/3/H	3/8"	1/4"	5/32"	1/8"	3/32"	3/32"	0.26
M/4/H	3/8"	5/16"	5/32"	1/32"	3/32"	1/8"	0.21
M/29/H	7/16"	5/16"	3/16"	1/16"	3/16"	3/16"	0.41
M/14/H	7/16"	5/16"	7/32"	1/16"	3/32"	3/32"	0.36
M/31/H	1/2"	3/8"	3/16"	1/32"	3/32"	1/8"	0.44
M/34/H	9/16"	3/8"	1/4"	1/32"	3/32"	1/8"	0.45
M/55/H	5/8"	3/8"	5/16"	1/32"	3/32"	1/8"	0.53
RGB M/33/H	1/2"	3/8"	3/16"	1/16"	3/32"	3/32"	0.44
M/36/H	9/16"	3/8"	1/4"	1/16"	1/16"	1/8"	0.45
M/54/H	5/8"	3/8"	5/16"	1/16"	1/8"	1/8"	0.53
M/36/A	9/16"	3/8"	1/4"	1/8"	3/32"	3/32"	0.42
M/39/H	9/16"	7/16"	1/4"	1/16"	3/32"	3/32"	0.53
M/40/H	9/16"	1/2"	1/4"	1/32"	3/32"	1/8"	0.38
M/58/H	5/8"	1/2"	5/16"	1/32"	1/8"	5/32"	0.53
RGA M/60/H	5/8"	1/2"	5/16"	1/16"	1/8"	1/8"	0.60
M/61/H	11/16"	1/2"	3/8"	1/16"	1/8"	1/8"	0.59
M/62/H	11/16"	1/2"	3/8"	1/8"	1/8"	1/8"	0.44
M/63/H	11/16"	1/2"	3/8"	3/16"	1/8"	1/8"	0.38
M/64/H	13/16"	9/16"	3/8"	1/16"	1/8"	1/8"	0.36
M/69/H	3/4"	5/8"	7/16"	1/16"	1/8"	1/8"	0.42
M/71/H	7/8"	11/16"	9/16"	1/16"	1/8"	1/8"	0.57
M/73/H	7/8"	3/4"	9/16"	1/16"	1/8"	1/8"	0.53
M/74/H	7/8"	3/4"	9/16"	1/8"	1/8"	1/8"	0.60
M/75/H	1"	7/8"	11/16"	1/16"	1/8"	1/8"	0.72
M/77/H	1.1/4"	1"	13/16"	1/16"	1/8"	1/8"	0.78
M/78/H	1.1/4"	1"	13/16"	1/8"	1/8"	1/8"	0.81
M/79/H	1.1/2"	1.1/4"	1"	1/16"	1/8"	1/8"	0.78
M/80/H	1.1/2"	1.1/4"	1"	1/8"	1/8"	1/8"	1.28
M/81/H	2"	1.3/4"	1.1/2"	1/16"	1/8"	1/8"	0.90
M/82/H	2"	1.3/4"	1.1/2"	1/8"	1/8"	1/8"	1.35

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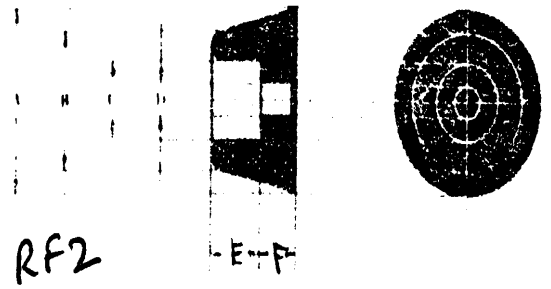
TELEPHONE 27551/2

TELEGRAMS MEADITE

MOULDED BLACK NATURAL RUBBER SCREW BUFFERS

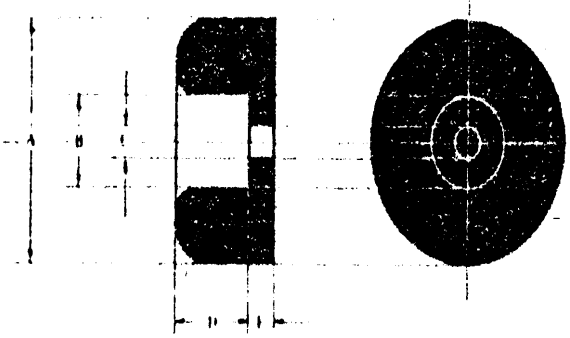


A = BASE DIAMETER
B = TOP DIAMETER
C = COUNTERSINK DIAMETER
D = HOLE DIAMETER
E = COUNTERSINK DEPTH
F = BASE DEPTH

RF2

MOULD	A	B	C	D	E	F	100
3100	3/4"	9/16"	5/16"	1/8"	1/4"	3/16"	0.78
13988	7/8"	11/16"	5/16"	1/8"	1/4"	3/16"	0.89

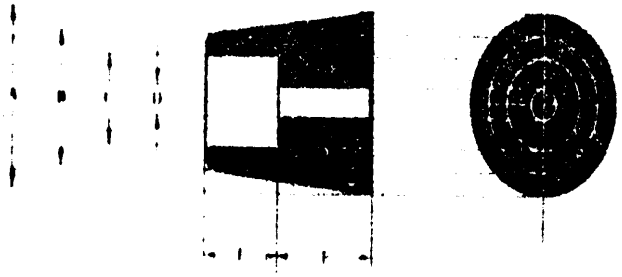
RF3. MOULDED BLACK NATURAL RUBBER SCREW BUFFERS



A = BASE DIAMETER
B = COUNTERSINK DIAMETER
C = HOLE DIAMETER
D = COUNTERSINK DEPTH
E = BASE DEPTH

MOULD	A	B	C	D	E	100
3095	1"	3/8"	1/8"	3/8"	1/8"	1.80
3099	1"	7/16"	3/16"	5/16"	1/8"	1.35

MOULDED BLACK NATURAL RUBBER SCREW BUFFERS



A = BASE DIAMETER
B = TOP DIAMETER
C = COUNTERSINK DIAMETER
D = HOLE DIAMETER
E = COUNTERSINK DEPTH
F = BASE DEPTH

MOULD	A	B	C	D	E	F	100
3091	3/4"	11/16"	3/8"	1/8"	3/8"	1/2"	1.43
3109	1.1/4"	13/16"	7/16"	1/4"	1/2"	1"	5.25

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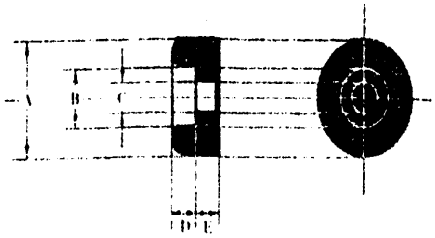
TELEPHONE 27551/2 TELEGRAMS MEADITE

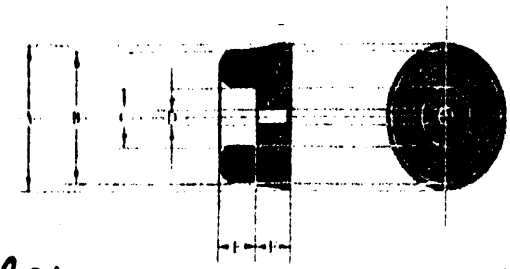
MOULDED BLACK, RED AND WHITE NATURAL RUBBER STANDARD SCREW BUFFERS



A = BASE DIAMETER
B = COUNTERSINK DIAMETER
C = HOLE DIAMETER
D = COUNTERSINK DEPTH
E = BASE DEPTH

MOULD	A	B	C	D	E	BLACK 100	RED 100	WHITE 100
3101	1/2"	1/4"	1/8"	1/8"	1/8"	0.68	0.83	0.83

MOULDED BLACK, RED AND WHITE NATURAL RUBBER STANDARD SCREW BUFFERS

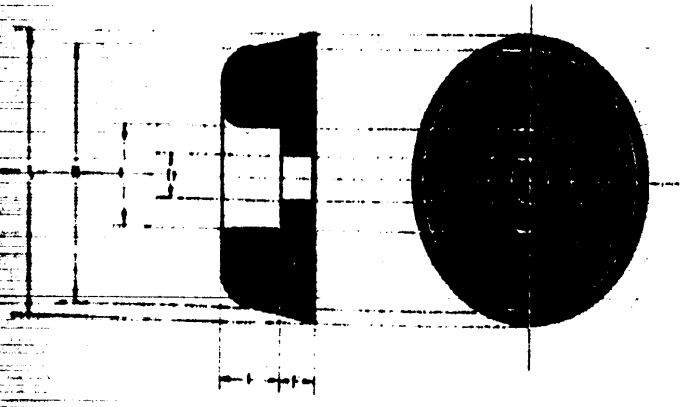


A = BASE DIAMETER
B = TOP DIAMETER
C = COUNTERSINK DIAMETER
D = HOLE DIAMETER
E = COUNTERSINK DEPTH
F = BASE DEPTH

RFI.

MOULD	A	B	C	D	E	F	BLACK 100	RED 100	WHITE 100
3094	5/8"	9/16"	1/4"	1/16"	3/16"	3/16"	0.75	0.90	0.90
3108	3/4"	5/8"	5/16"	5/32"	3/16"	1/8"	0.78	0.98	0.98
3106	7/8"	3/4"	5/16"	5/32"	1/8"	3/16"	0.89	1.05	1.05
3107	1"	7/8"	5/16"	5/32"	1/4"	1/8"	0.99	1.20	1.20

MOULDED BLACK, RED AND WHITE NATURAL RUBBER STANDARD SCREW BUFFERS



A = BASE DIAMETER
B = TOP DIAMETER
C = COUNTERSINK DIAMETER
D = HOLE DIAMETER
E = COUNTERSINK DEPTH
F = HEAD DEPTH

MOULD	A	B	C	D	E	F	BLACK 100	RED 100	WHITE 10
3098	1.1/4"	1.1/8"	7/16"	3/16"	5/16"	3/16"	2.48	3.00	3.00