	<p style="text-align: center;"><b>Using Make-Up Calculators</b></p>	<p style="text-align: center;"><b>Date:</b> 11 Aug. 2022</p>	<p style="text-align: center;"><b>Rev:</b> 2</p>	<p style="text-align: center;"><b>Page:</b> Page 1 of 4</p>	<p style="text-align: center;"><b>Document No:</b> OPI 136 <b>Approved by:</b> Senior Product Engineer, Technical</p>
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**REASON FOR UPDATE:** Revision of Existing Procedure, updated example and responsibility

**ASSOCIATED DOCUMENTS:** n/a

**1. PURPOSE**

**1.1** To provide a procedure for using Make-Up Calculators. The make-up calculators have been developed to help operations staff with creating make-up details for certain family products. These calculators are based on the JW & Co Company Standards so while the details provided can be regarded as a starting point it is expected that exact make-up details are confirmed through production, and that these are recorded on the DJ paperwork. It is important that some details such as number of plies are subject to set tolerances so no change outside these tolerances should be made without consulting the Technical department.

**2. SCOPE**

**2.1** This document applies to all Make-Up Calculators for moulded seals.

**3. RESPONSIBILITY**

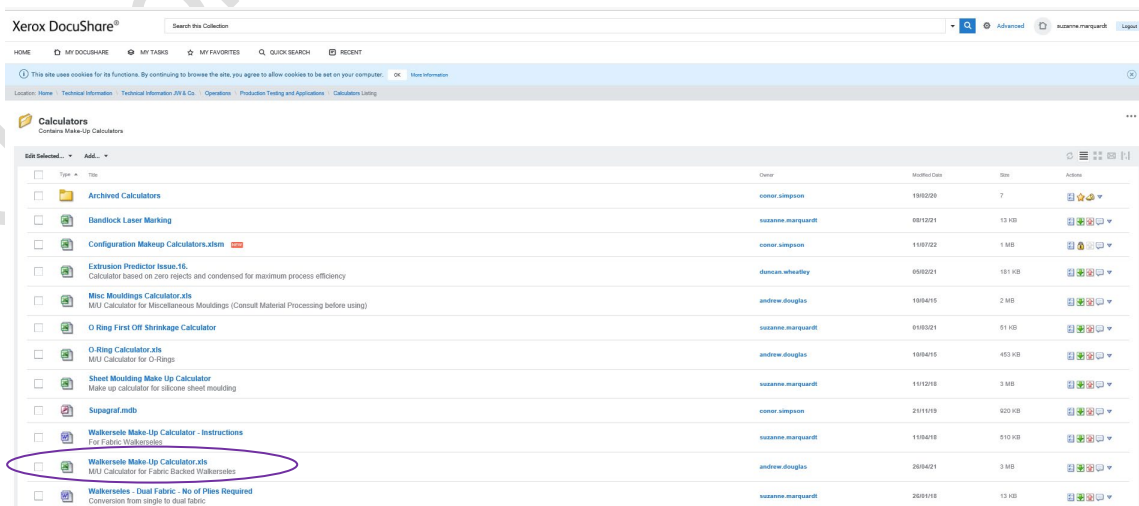
**3.1** The Technical Support Team (part of the Elastomers Technical Team) is responsible for maintaining the tools, the Make-Up Calculators. It is the responsibility of each product Stream Manager, through their network of Team and Shift Leaders to enforce the implementation of this procedure. The calculators are only to be used by those who have been trained on them. This will include, but not be limited to, Product Stream Configurators, Shift Leaders and Team Leaders.

**4. PROCEDURE**

**4.1** Navigation - The make-up calculators are location on the company's LionShare system in the following location and are available to all. You can set these up as favourites on your LionShare but you SHOULD NOT copy to your desktop.

[Home](#) » [Technical Information](#) » [Technical Information JW & Co.](#) » [Operations](#) » [Production Testing and Applications](#) » [Calculators](#)

**4.2** Select the appropriate calculator for your product. If a calculator does not exist, consult your production team leader. This example uses a Walkersele D6.



The electronic format is the official master version. Verify hard copies against the electronic version.

Figure 1: Location of Make-Up Calculators

4.3 Enter the rubber material grade of the item using the drop down list "Select Rubber", for the rubber material grade see the part description or drawing. Repeat for "Select Fabric". and/or any design features of the item.

Walkersele Make-Up Calculator, V15-

Item No:  JW Drawing No:

Seal Profile:

Select Rubber:

Select Fabric:

Dual Fabric (M1 only):

Nominal ID, mm:

Nominal OD, mm:

Nominal DP, mm:

Section, mm:

MakeUp Volume, mm<sup>3</sup>:

Annular Groove:  No groove

Mould Flash Groove:

Long Lip:

Shallowback:

Special:

MakeUp Volume from Calculator, mm<sup>3</sup>:

Fill in the Production combined weight boxes taking combined weights from previous DJ or APEX - if replacement mould, or - have a working combined weight (from a seal)

Production Combined Weight, grams:  min  max

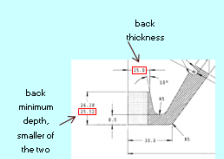
Ticked any of above?  
1. Enter Back Minimum Depth, mm

2. Enter Back Thickness, mm

3. Enter MakeUp Volume (box on far left)

Calculated N number:

N number from drg if different:



**Fabric Details**

Fabric	No of Plies	Cut, mm	Weight, g
GHNFCI6259	MainCur	14 (+Z-0)	21.5
Machine: Large Collar Roller			
Measure, mm	1145		
Mandrel, mm	368		
Clock Number	46000		
Rolled OD, mm	381.0 to 382.0		
Fabric Back Weight, g	187.2 to 204.2		

**Rubber Details - from Calculator**

Rubber	NMS9-74/80
Extrusion Reference Number	13
Non Stock Item	
Calculator Selected Extrusion	
Part Number	RMPE1020650
Die	19*12
Extrusion Weight, g per 300mm	75.0 to 80.0
Extrusion Height, mm	18.4
Extrusion Width, mm	11.1
Extrusion MU Length, mm	1150
Rubber MU Weight, g	255.1 to 285.5
Excess Rubber to be removed	--- to ---
Combined MU Weight, g	450.8 to 472.7

**Rubber Details - using Production Combined Weight**

Rubber	NMS9-74/80
Production Combined Weight, g	
Extrusion required to achieve Production Combined Weight	
Part Number	
Die	
Extrusion Weight, g per 300mm	to
Rubber MU Height, mm	
Rubber MU Width, mm	
Rubber MU Length, mm	
Target Rubber MU Weight	to
Excess Rubber to be removed	to
Combined MU Weight, g (from Production Info)	to

Figure 2: Enter Item Material and Design Details

4.4 Enter the nominal dimensions from the item description or the drawing into the green boxes; do not use the actual dimensions from the drawing. The Nominal Section will be automatically calculated.

Walkersele Make-Up Calculator, V15-

Item No:  JW Drawing No:

Seal Profile:

Select Rubber:

Select Fabric:

Dual Fabric (M1 only):

Nominal ID, mm:

Nominal OD, mm:

Nominal DP, mm:

Section, mm:

MakeUp Volume, mm<sup>3</sup>:

Annular Groove:  No groove

Mould Flash Groove:

Long Lip:

Shallowback:

Special:

MakeUp Volume from Calculator, mm<sup>3</sup>:

Fill in the Production combined weight boxes taking combined weights from previous DJ or APEX - if replacement mould, or - have a working combined weight (from a seal)

Production Combined Weight, grams:  min  max

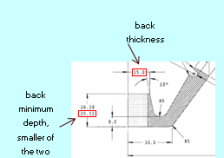
Ticked any of above?  
1. Enter Back Minimum Depth, mm

2. Enter Back Thickness, mm

3. Enter MakeUp Volume (box on far left)

Calculated N number:

N number from drg if different:



**Fabric Details**

Fabric	No of Plies	Cut, mm	Weight, g
GHNFCI6259	MainCur	14 (+Z-0)	21.5
Machine: Large Collar Roller			
Measure, mm	1145		
Mandrel, mm	368		
Clock Number	46000		
Rolled OD, mm	381.0 to 382.0		
Fabric Back Weight, g	187.2 to 204.2		

**Rubber Details - from Calculator**

Rubber	NMS9-74/80
Extrusion Reference Number	13
Non Stock Item	
Calculator Selected Extrusion	
Part Number	RMPE1020650
Die	19*12
Extrusion Weight, g per 300mm	75.0 to 80.0
Extrusion Height, mm	18.4
Extrusion Width, mm	11.1
Extrusion MU Length, mm	1150
Rubber MU Weight, g	255.1 to 285.5
Excess Rubber to be removed	--- to ---
Combined MU Weight, g	450.8 to 472.7

**Rubber Details - using Production Combined Weight**

Rubber	NMS9-74/80
Production Combined Weight, g	
Extrusion required to achieve Production Combined Weight	
Part Number	
Die	
Extrusion Weight, g per 300mm	to
Rubber MU Height, mm	
Rubber MU Width, mm	
Rubber MU Length, mm	
Target Rubber MU Weight	to
Excess Rubber to be removed	to
Combined MU Weight, g (from Production Info)	to

Figure 3: Enter Nominal Dimensions

4.3 Select design features of the item.

**Walkersele Make-Up Calculator, V15-**    Item No     JW Drawing No

Seal Profile:

Select Rubber:

Select Fabric:

Dual Fabric (M1 only):

Nominal ID, mm:

Nominal OD, mm:

Nominal DP, mm:

Section, mm:

MakeUp Volume, mm<sup>3</sup>:

Annular Groove:  No groove

Mould Flash Groove:  Yes

Fill in the Production combined weight boxes taking combined weights from previous DJ or APEX - if replacement mould, or - have a working combined weight (from a seal)

Production Combined Weight, grams:  min  max

Long Lip:

Shallowback:

Special:

Ticked any of above?  
 1. Enter Back Minimum Depth, mm   
 2. Enter Back Thickness, mm   
 3. Enter MakeUp Volume (box on far left)

Calculated N number:   
 N number from drg if different:

---

**Fabric Details**

Fabric		No of Plies	Cut, mm	Weight, g
GHNFC/6259	Main Cur	14 (+2/-0)	21.5	196

Machine	Large Collar Roller
Measure, mm	1145
Mandrel, mm	368
Clock Number	46000
Rolled OD, mm	381.0 to 382.0
Fabric Back Weight, g	187.2 to 204.2

**Rubber Details - from Calculator**

Rubber	NM59-74/80
Extrusion Reference Number	13
Non Stock Item	
Calculator Selected Extrusion	
Part Number	RMPE1020650
Die	19*12
Extrusion Weight, g per 300mm	75.0 to 80.0
Extrusion Height, mm	18.4
Extrusion Width, mm	11.1
Extrusion MIU Length, mm	1150
Rubber MIU Weight, g	255.1 to 285.5
Excess Rubber to be removed	--- to ---
<b>Combined MIU Weight, g</b>	<b>450.8 to 472.7</b>

**Rubber Details - using Production Combined Weight**

Rubber	NM59-74/80
Production Combined Weight, g	
Extrusion required to achieve Production Combined Weight	
Part Number	
Die	
Extrusion Weight, g per 300mm	to
Rubber MIU Height, mm	
Rubber MIU Width, mm	
Rubber MIU Length, mm	
Target Rubber MIU Weight	to
Excess Rubber to be removed	to
<b>Combined MIU Weight, g (from Production Info)</b>	<b>to</b>

Figure 4: Enter Design and Mould Features

4.5 If warning messages are displayed, firstly double check the dimensions, materials and designs you have entered, then secondly consult the Technical Team BEFORE issuing to the shop floor.

**Walkersele Make-Up Calculator, V15-**    Item No     JW Drawing No

Seal Profile:

Select Rubber:

Select Fabric:

Dual Fabric (M1 only):

Nominal ID, mm:

Nominal OD, mm:

Nominal DP, mm:

Section, mm:

MakeUp Volume, mm<sup>3</sup>:

Annular Groove:  No groove

Mould Flash Groove:  Yes

Fill in the Production combined weight boxes taking combined weights from previous DJ or APEX - if replacement mould, or - have a working combined weight (from a seal)

Production Combined Weight, grams:  min  max

Long Lip:

Shallowback:

Special:

Ticked any of above?  
 1. Enter Back Minimum Depth, mm   
 2. Enter Back Thickness, mm   
 3. Enter MakeUp Volume (box on far left)

Calculated N number:   
 N number from drg if different:

---

**Fabric Details**

Fabric		No of Plies	Cut, mm	Weight, g
GHNFC/6259	Main Cur	14 (+2/-0)	21.5	196

Machine	Large Collar Roller
Measure, mm	1145
Mandrel, mm	368
Clock Number	46000
Rolled OD, mm	381.0 to 382.0
Fabric Back Weight, g	187.2 to 204.2

**Rubber Details - from Calculator**

Rubber	NM59-74/80
Extrusion Reference Number	13
Non Stock Item	
Calculator Selected Extrusion	
Part Number	RMPE1020650
Die	19*12
Extrusion Weight, g per 300mm	75.0 to 80.0
Extrusion Height, mm	18.4
Extrusion Width, mm	11.1
Extrusion MIU Length, mm	1150
Rubber MIU Weight, g	255.1 to 285.5
Excess Rubber to be removed	--- to ---
<b>Combined MIU Weight, g</b>	<b>450.8 to 472.7</b>

**Rubber Details - using Production Combined Weight**

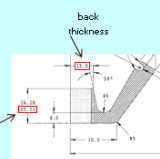
Rubber	NM59-74/80
Production Combined Weight, g	
Extrusion required to achieve Production Combined Weight	
Part Number	
Die	
Extrusion Weight, g per 300mm	to
Rubber MIU Height, mm	
Rubber MIU Width, mm	
Rubber MIU Length, mm	
Target Rubber MIU Weight	to
Excess Rubber to be removed	to
<b>Combined MIU Weight, g (from Production Info)</b>	<b>to</b>

Figure 4: Change the Extrusion Ref & Watch Out for Warning Messages

4.6 If you intend to print this document enter the drawing number and item number.

**Walkersele Make-Up Calculator, V15-** Item No:  JW Drawing No:

Seal Profile:  Mould Flash Groove:   Long Lip  Shallowback  Special

Select Rubber:  MakeUp Volume from Calculator, mm<sup>3</sup>:  

Select Fabric:  Fill in the Production combined weight boxes taking combined weights from previous DJ or APEX - if replacement mould, or - have a working combined weight (from a seal)

Dual Fabric (M1 only):  Ticked any of above? 1. Enter Back Minimum Depth, mm  2. Enter Back Thickness, mm  3. Enter MakeUp Volume (box on far left)

Nominal ID, mm:  Production Combined Weight, grams:  min  max

Nominal OD, mm:  Calculated N number:  N number from drg if different:

Nominal DP, mm:  Annular Groove:  No groove

Section, mm:  **Fabric Details**

Fabric	No of Piles	Cut, mm	Weight, g
GHNFC/6259	Main Cut: 14 (+2/-0)	21.5	196

Machine:  **Rubber Details - from Calculator**

Rubber	NMS9-74/80
Extrusion Reference Number	13
Non Stock Item	
Calculator Selected Extrusion	
Part Number	RMPE1020650
Die	19"12
Extrusion Weight, g per 300mm	75.0 to 80.0
Extrusion Height, mm	18.4
Extrusion Width, mm	11.1
Extrusion MIU Length, mm	1150
Rubber MIU Weight, g	255.1 to 285.5
Excess Rubber to be removed	-- to --
Combined MIU Weight, g	450.8 to 472.7

Rolled OD, mm:  to  **Rubber Details - using Production Combined Weight**

Rubber	NMS9-74/80
Production Combined Weight, g	
Extrusion required to achieve Production Combined Weight	
Part Number	
Die	
Extrusion Weight, g per 300mm	to
Rubber MIU Height, mm	
Rubber MIU Width, mm	
Rubber MIU Length, mm	
Target Rubber MIU Weight	to
Excess Rubber to be removed	to
Combined MIU Weight, g (from Production Info)	to

Fabric Back Weight, g:  to

Figure 5: Enter Item Number and JW Drawing Number