



Residential Roof  
Purlins – 40mm



# Every advantage, all under one roof



## Choose a roof that is buckle-proof

As a direct replacement for timber purlins, RFS DS40 40mm Residential Roof Purlins offer a number of distinct advantages. At just 0.965 kg per metre, they are light, dimensionally stable, accurate and straight. Because they expand and contract at the same rate as other steel roofing products in extreme temperatures, they do not produce the buckling ridge.

## Flexibility

DS40 Purlins are ideal for steel or timber framed homes, buildings and carports. They can be fitted to both timber and steel trusses with screws, or nailed directly to timber trusses.

With spans of 1200mm at 900mm spacings they can be used in extra high wind zones and where snow loads are present. Lengths are available from stock or you can choose to have them run cut-to-length of up to 12m to reduce waste onsite. For larger spans, check out our Tophat Purlin range.

## Made to last and last

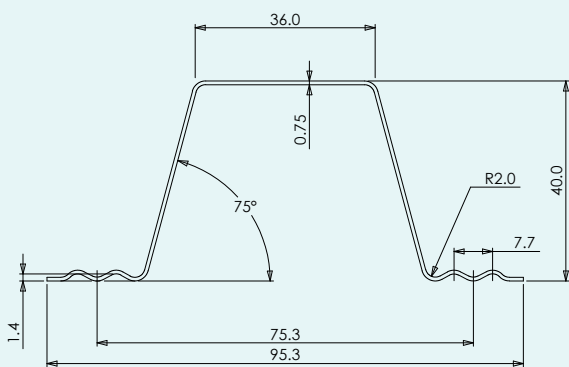
DS40 Purlins are manufactured from hot dipped, galvanised G550 Z275 steel at thicknesses of 0.75mm, 0.95mm or 1.15mm. The coating weight of 275 gram/sqm is in line with other lightweight steel structural building products, providing good protection in most exposed internal environments.

The product is finished to meet durability requirements and backed by the [New Zealand Steel Durability Statement](#). The E2 requirement stated on the PS1 for fifty-year life is based on their use within the building envelope for non-exposed environments.

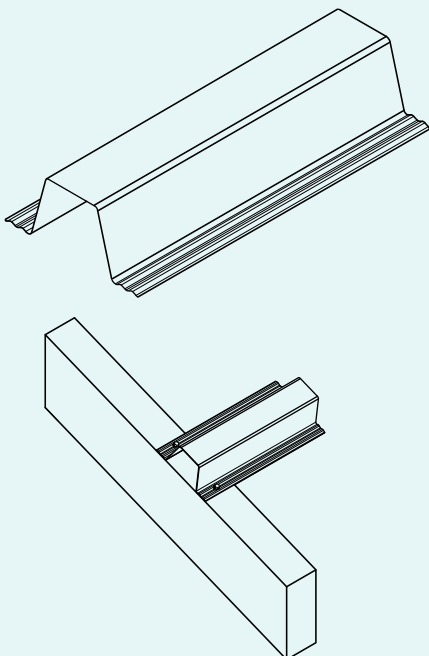
## Storage, handling and cutting

Steel roof purlins must be kept dry as any water present between close stacked sections will cause premature corrosion. If they become wet, the purlins should be separated and stacked openly to allow for ventilation to dry the surface. Any run off from, or contact with, materials which are incompatible with zinc should be avoided.

Cutting is preferably done by shear or hacksaw. When using abrasive disc blades, care must be taken to ensure the swarf produced does not affect other materials and the burred edge should be cleaned off at the completion of cutting. Finish the cut end with a galv spray for added protection.



| Product                          | Lengths Available      | Bundle Qty | Kg per m |
|----------------------------------|------------------------|------------|----------|
| DS40 x 0.55mm G550 Tophat Purlin | Run to order           | 50 Lengths | 1.2      |
| DS40 x 0.75mm G550 Tophat Purlin | 4.8, 6.0, run to order | 50 Lengths | 1.2      |
| DS40 x 0.95mm G550 Tophat Purlin | Run to order           | 50 Lengths | 1.2      |



Engineering Tables for screw connections to wood/steel truss or structure

- Ex light gauge steel cold rolled sections as purlins
- 40 Tophat as supplied by Rollforming Services
- Span purlin continuous over minimum two supports
- Max cantilever overhang for soffit take 40% max supported span.
- Profiled metal roofings with wind loads
- Table of max span vs spacings as noted or 0.25 LL whichever worst case
- Pressure Factor Combinations kCpmax = + or - 2.0

40mm battens for roof and wall cladding

DS40x0.55mm G550 Z275 Galv Tophat

| For connections to min 0.55 ga steel, connect with min 1-10 guage screw for up to 0.5kN/m, 2 per 1.0kN/m, 3 per 1.5kN/m, and 4 per 2.0kN/m | 300 Spacings |         |                        |        | 600 Spacings |         |        | 900 Spacings |         |                        |        |
|--------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------|------------------------|--------|--------------|---------|--------|--------------|---------|------------------------|--------|
|                                                                                                                                            | Max Span     | Max UDL | Fixing to Truss/Rafter |        | Max Span     | Max UDL |        | Max Span     | Max UDL | Fixing to Truss/Rafter |        |
|                                                                                                                                            | (m)          | (kN/m)  | Timber                 | Steel  | (m)          | (kN/m)  | Steel  | (m)          | (kN/m)  | Timber                 | Steel  |
| Medium wind 37m/s 0.821KpA                                                                                                                 | 1.2          | 0.44    | Type A                 | Type A | 1.2          | 0.44    | Type B | 1.1          | 0.66    | Type A                 | Type B |
| High wind 44m/s 1.160KpA                                                                                                                   | 1.2          | 0.63    | Type A                 | Type A | 1.2          | 0.63    | Type B | 1            | 0.95    | Type A                 | Type B |
| Very high wind 50m/s 1.500KpA                                                                                                              | 1.2          | 0.81    | Type A                 | Type B | 1.1          | 0.81    | Type B | 0.9          | 1.22    | Type A                 | Type B |
| Extra high wind 55m/s 1.815KpA                                                                                                             | 1.2          | 0.98    | Type A                 | Type B | 1            | 0.98    | Type B | 0.8          | 1.47    | Type B                 | Type C |
| Snow, Regions (N2,N3,N4,N5)<150m                                                                                                           | 1.2          | 0.98    | Type A                 | Type B | 1            | 0.98    | Type B | 0.8          | 0.66    | Type B                 | Type B |
| Snow, Regions N2>200m                                                                                                                      | 1.2          | 0.98    | Type A                 | Type B | 1            | 0.98    | Type B | 0.8          | 0.66    | Type B                 | Type B |
| Snow, Alpine Regions>900m                                                                                                                  | 1.2          | 0.98    | Type A                 | Type B | 1            | 0.98    | Type B | 0.8          | 0.95    | Type B                 | Type B |

DS40x0.75mm G550 Z275 Galv Tophat

| For connections to wood substrate, refer NZS3604:2011 for wind loadings. For connections to min 0.75 ga steel, connect with min 1-10 gauge screw for up to 0.50 kN/m, 2 per 1.0kN/m, 3 per 1.5kN/m, and 4 per 2.0kN/m | 300 Spacings |                        |        | 600 Spacings |                        |        | 900 Spacings |                        |        | 1200 Spacings |                        |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------|--------|--------------|------------------------|--------|--------------|------------------------|--------|---------------|------------------------|--------|
|                                                                                                                                                                                                                       | Max Span     | Fixing to Truss/Rafter |        | Max Span     | Fixing to Truss/Rafter |        | Max Span     | Fixing to Truss/Rafter |        | Max Span      | Fixing to Truss/Rafter |        |
|                                                                                                                                                                                                                       | (m)          | Timber                 | Steel  | (m)          | Timber                 | Steel  | (m)          | Timber                 | Steel  | (m)           | Timber                 | Steel  |
| Medium wind 37m/s 0.821KpA                                                                                                                                                                                            | 1.2          | Type A                 | Type A | 1.2          | Type A                 | Type B | 1.2          | Type B                 | Type B | 1.2           | Type B                 | Type C |
| High wind 44m/s 1.160KpA                                                                                                                                                                                              | 1.2          | Type A                 | Type A | 1.2          | Type A                 | Type B | 1.2          | Type B                 | Type C | 1.1           | Type B                 | Type C |
| Very high wind 50m/s 1.500KpA                                                                                                                                                                                         | 1.2          | Type A                 | Type B | 1.2          | Type B                 | Type C | 1.1          | Type B                 | Type C | 1.0           | Type B                 | Type C |
| Extra high wind 55m/s 1.815KpA                                                                                                                                                                                        | 1.2          | Type A                 | Type B | 1.1          | Type B                 | Type C | 1.0          | Type B                 | Type C | 0.9           | Type C                 | Type C |
| Snow, Regions (N2,N3,N4,N5)<150m                                                                                                                                                                                      | 1.2          | Type A                 | Type B | 1.1          | Type B                 | Type C | 1.0          | Type B                 | Type C | 0.9           | Type C                 | Type C |
| Snow, Regions N2>200m                                                                                                                                                                                                 | 1.2          | Type A                 | Type B | 1.1          | Type B                 | Type C | 1.0          | Type B                 | Type C | 0.9           | Type C                 | Type C |
| Snow, Alpine Regions>900m                                                                                                                                                                                             | 1.2          | Type A                 | Type B | 1.1          | Type B                 | Type C | 0.9          | Type B                 | Type C | 0.9           | Type C                 | Type C |

DS40x0.95mm G550 Z275 Galv Tophat

| For connections to wood substrate, refer NZS3604:2011 for wind loadings. For connections to min 0.75 ga steel, connect with min 1-10 gauge screw for up to 0.50 kN/m, 2 per 1.0kN/m, 3 per 1.5kN/m, and 4 per 2.0kN/m | 300 Spacings |                        |        | 600 Spacings |                        |        | 900 Spacings |                        |        | 1200 Spacings |                        |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------|--------|--------------|------------------------|--------|--------------|------------------------|--------|---------------|------------------------|--------|
|                                                                                                                                                                                                                       | Max Span     | Fixing to Truss/Rafter |        | Max Span     | Fixing to Truss/Rafter |        | Max Span     | Fixing to Truss/Rafter |        | Max Span      | Fixing to Truss/Rafter |        |
|                                                                                                                                                                                                                       | (m)          | Timber                 | Steel  | (m)          | Timber                 | Steel  | (m)          | Timber                 | Steel  | (m)           | Timber                 | Steel  |
| Medium wind 37m/s 0.821KpA                                                                                                                                                                                            | 1.2          | Type A                 | Type A | 1.2          | Type A                 | Type B | 1.2          | Type B                 | Type B | 1.2           | Type B                 | Type C |
| High wind 44m/s 1.160KpA                                                                                                                                                                                              | 1.2          | Type A                 | Type A | 1.2          | Type A                 | Type B | 1.2          | Type B                 | Type C | 1.2           | Type B                 | Type C |
| Very high wind 50m/s 1.500KpA                                                                                                                                                                                         | 1.2          | Type A                 | Type B | 1.2          | Type B                 | Type C | 1.2          | Type B                 | Type C | 1.1           | Type B                 | Type C |
| Extra high wind 55m/s 1.815KpA                                                                                                                                                                                        | 1.2          | Type A                 | Type B | 1.2          | Type B                 | Type C | 1.1          | Type B                 | Type C | 1.0           | Type C                 | Type C |
| Snow, Regions (N2,N3,N4,N5)<150m                                                                                                                                                                                      | 1.2          | Type A                 | Type B | 1.2          | Type B                 | Type C | 1.1          | Type B                 | Type C | 1.0           | Type C                 | Type C |
| Snow, Regions N2>200m                                                                                                                                                                                                 | 1.2          | Type A                 | Type B | 1.2          | Type B                 | Type C | 1.1          | Type B                 | Type C | 1.0           | Type C                 | Type C |
| Snow, Alpine Regions>900m                                                                                                                                                                                             | 1.2          | Type A                 | Type B | 1.2          | Type B                 | Type C | 1.1          | Type B                 | Type C | 1.0           | Type C                 | Type C |

Fasteners

For fasteners use a Type A, B, C as noted, minimum number of fasteners required to fix batten to the rafter or truss/batten location.

Type A - 1 x Screw - Type Buildex 12 - 11 x 40 Hex Head BattenZips® Climaseal® 3, or equivalent from other suppliers

Type B - 2 x Screw - Type Buildex 12 - 11 x 40 Hex Head BattenZips® Climaseal® 3, or equivalent from other suppliers

Type C - 3 x Screw - Type Buildex 12 - 11 x 40 Hex Head BattenZips® Climaseal® 3, or equivalent from other suppliers

Design notes

These tables are based on section properties for Tophat sections outlined in the data provided by Rollforming Services. 55 gauge Tophats are not recommended to be used for greater than 900mm spacings. These tables and associated documents demonstrate compliance with the provisions of the NASH Standards for low rise steel framing. Battens are specifically designed to meet the loadings as stated in NZ Building Code NZS3604:2011. For wind loadings the pressure factor combinations comply with a local pressure

factor kCp=+-2.0. For snow loadings the maximum span may be reduced to comply with maximum span for extra high wind loading if this loading controls.

**Certification**

The tables are based on the provisions of the Engineers PS1 for work to meet the NZ Building Code for design. The E2 requirement stated on the PS1 for fifty-year life is based on their use within the building envelop for non-exposed environment. The product is finished to meet the requirements of durability as per the attached durability statement.

## Engineering Tables for direct nailing to wood/steel truss or structure

- Ex light gauge steel cold rolled sections as purlins
- 40 Tophat as supplied by Rollforming Services
- Span purlin continuous over minimum two supports
- Max cantilever overhang for soffit take 40% max supported span
- Profiled metal roofings with wind loads as noted or 0.25 LL whichever worst case
- For connections to wood substrate, refer NZS3604:2011 for wind loadings

### 40mm battens for roof and wall cladding

#### 40x73x0.55 Tophat section

| Pressure Factor Combinations<br>kCpmax = + or - 2.0. For connections<br>to wood substrate.<br>Refer to NZS3604:2011 for wind loadings. | 300 Spacings    |                        |        | 600 Spacings    |                        |        | 900 Spacings    |                        |        | 1200 Spacings   |                        |       |
|----------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------|--------|-----------------|------------------------|--------|-----------------|------------------------|--------|-----------------|------------------------|-------|
|                                                                                                                                        | Max Span<br>(m) | Fixing to Truss/Rafter |        | Max Span<br>(m) | Fixing to Truss/Rafter |        | Max Span<br>(m) | Fixing to Truss/Rafter |        | Max Span<br>(m) | Fixing to Truss/Rafter |       |
|                                                                                                                                        |                 | Timber                 | Steel  |                 | Timber                 | Steel  |                 | Timber                 | Steel  |                 | Timber                 | Steel |
| Medium wind 37m/s 0.821KpA                                                                                                             | 1.2             | Type A                 | Type A | 1.2             | Type A                 | Type B | 1.2             | Type A                 | Type B | 1.2             | Type A                 | -     |
| High wind 44m/s 1.160KpA                                                                                                               | 1.2             | Type A                 | Type A | 1.2             | Type A                 | Type B | 1.2             | Type A                 | -      | 1.1             | Type A                 | -     |
| Very high wind 50m/s 1.500KpA                                                                                                          | 1.2             | Type A                 | Type A | 1.2             | Type B                 | Type B | 1.2             | Type A                 | -      | 1.0             | Type B                 | -     |
| Extra high wind 55m/s 1.815KpA                                                                                                         | 1.2             | Type A                 | Type B | 1.1             | Type B                 | -      | 1.2             | Type B                 | -      | 0.9             | Type B                 | -     |
| Snow, Regions (N2,N3,N4,N5)<150m                                                                                                       | 1.2             | Type A                 | Type B | 1.1             | Type B                 | -      | 1.2             | Type B                 | -      | 0.9             | Type B                 | -     |
| Snow, Regions N2>200m                                                                                                                  | 1.2             | Type A                 | Type B | 1.1             | Type B                 | -      | 1.2             | Type B                 | -      | 0.9             | Type B                 | -     |
| Snow, Alpine Regions>900m                                                                                                              | 1.2             | Type A                 | Type B | 1.1             | Type B                 | -      | 1.2             | Type B                 | -      | 0.9             | Type B                 | -     |

#### 40x73x0.75 Tophat section

| Pressure Factor Combinations<br>kCpmax = + or - 2.0. For connections<br>to wood substrate.<br>Refer to NZS3604:2011 for wind loadings. | 300 Spacings    |                        |        | 600 Spacings    |                        |        | 900 Spacings    |                        |        | 1200 Spacings   |                        |        |
|----------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------|--------|-----------------|------------------------|--------|-----------------|------------------------|--------|-----------------|------------------------|--------|
|                                                                                                                                        | Max Span<br>(m) | Fixing to Truss/Rafter |        | Max Span<br>(m) | Fixing to Truss/Rafter |        | Max Span<br>(m) | Fixing to Truss/Rafter |        | Max Span<br>(m) | Fixing to Truss/Rafter |        |
|                                                                                                                                        |                 | Timber                 | Steel  |                 | Timber                 | Steel  |                 | Timber                 | Steel  |                 | Timber                 | Steel  |
| Medium wind 37m/s 0.821KpA                                                                                                             | 1.2             | Type A                 | Type A | 1.2             | Type A                 | Type A | 1.2             | Type A                 | Type B | 1.2             | Type A                 | Type B |
| High wind 44m/s 1.160KpA                                                                                                               | 1.2             | Type A                 | Type A | 1.2             | Type A                 | Type A | 1.2             | Type A                 | Type B | 1.2             | Type A                 | Type B |
| Very high wind 50m/s 1.500KpA                                                                                                          | 1.2             | Type A                 | Type A | 1.2             | Type A                 | Type B | 1.2             | Type A                 | Type B | 1.2             | Type B                 | -      |
| Extra high wind 55m/s 1.815KpA                                                                                                         | 1.2             | Type A                 | Type A | 1.2             | Type A                 | Type B | 1.2             | Type B                 | -      | 1.2             | Type B                 | -      |
| Snow, Regions (N2,N3,N4,N5)<150m                                                                                                       | 1.2             | Type A                 | Type A | 1.2             | Type A                 | Type B | 1.2             | Type B                 | -      | 1.2             | Type B                 | -      |
| Snow, Regions N2>200m                                                                                                                  | 1.2             | Type A                 | Type A | 1.2             | Type A                 | Type B | 1.2             | Type B                 | -      | 1.2             | Type B                 | -      |
| Snow, Alpine Regions>900m                                                                                                              | 1.2             | Type A                 | Type A | 1.2             | Type A                 | Type B | 1.2             | Type B                 | -      | 1.2             | Type B                 | -      |

#### 40x73x0.95 Tophat section

| Pressure Factor Combinations<br>kCpmax = + or - 2.0. For connections<br>to wood substrate.<br>Refer to NZS3604:2011 for wind loadings. | 300 Spacings    |                        |        | 600 Spacings    |                        |        | 900 Spacings    |                        |        | 1200 Spacings   |                        |        |
|----------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------|--------|-----------------|------------------------|--------|-----------------|------------------------|--------|-----------------|------------------------|--------|
|                                                                                                                                        | Max Span<br>(m) | Fixing to Truss/Rafter |        | Max Span<br>(m) | Fixing to Truss/Rafter |        | Max Span<br>(m) | Fixing to Truss/Rafter |        | Max Span<br>(m) | Fixing to Truss/Rafter |        |
|                                                                                                                                        |                 | Timber                 | Steel  |                 | Timber                 | Steel  |                 | Timber                 | Steel  |                 | Timber                 | Steel  |
| Medium wind 37m/s 0.821KpA                                                                                                             | 1.2             | Type A                 | Type A | 1.2             | Type A                 | Type A | 1.2             | Type A                 | Type A | 1.2             | Type A                 | Type B |
| High wind 44m/s 1.160KpA                                                                                                               | 1.2             | Type A                 | Type A | 1.2             | Type A                 | Type A | 1.2             | Type A                 | Type B | 1.2             | Type A                 | Type B |
| Very high wind 50m/s 1.500KpA                                                                                                          | 1.2             | Type A                 | Type A | 1.2             | Type B                 | Type B | 1.2             | Type A                 | Type B | 1.1             | Type B                 | -      |
| Extra high wind 55m/s 1.815KpA                                                                                                         | 1.2             | Type A                 | Type A | 1.2             | Type B                 | Type B | 1.1             | Type B                 | Type B | 1.0             | Type B                 | -      |
| Snow, Regions (N2,N3,N4,N5)<150m                                                                                                       | 1.2             | Type A                 | Type A | 1.2             | Type B                 | Type B | 1.1             | Type B                 | Type B | 1.0             | Type B                 | -      |
| Snow, Regions N2>200m                                                                                                                  | 1.2             | Type A                 | Type A | 1.2             | Type B                 | Type B | 1.1             | Type B                 | Type B | 1.0             | Type B                 | -      |
| Snow, Alpine Regions>900m                                                                                                              | 1.2             | Type A                 | Type A | 1.2             | Type B                 | Type B | 1.1             | Type B                 | Type B | 1.0             | Type B                 | -      |

### Fasteners

| For fasteners use a Type A, B, as noted. Minimum number of fasteners required to fix batten to the rafter or truss at truss/batten location: |                                                       |                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------|
| Type A                                                                                                                                       | 2 x Nails                                             | B20558 Paslode Nails or equivalent from other suppliers |
| Type B                                                                                                                                       | 4 x Nails                                             | B20558 Paslode Nails or equivalent from other suppliers |
| -                                                                                                                                            | Nail fasteners not recommended. Refer to screw table. |                                                         |

### Design notes

The tables are based on section properties for Tophat sections outlined in the data provided by Rollforming Services. These tables and associated documents demonstrate compliance with the provisions of the NASH Standards for low rise steel framing. Battens are specifically designed meet the loadings as stated in NZ

Building Code NZS3604:2011. For wind loadings the pressure factor combinations comply with a local pressure factor kCp=+2.0.

For snow loadings the maximum span may be reduced to comply with maximum span for extra high wind loading if this loading controls.

### Certification

The tables are based on the provisions of attached Engineers PS1 for work to meet the NZ Building Code for design.

The E2 requirement stated on the PS1 for fifty year life is based on their use within the building envelop for non-exposed environment.

The product is finished to meet the requirements of durability as per the attached durability statement.

