

0456P CAPRAL VENTUS LOUVRE WINDOWS

Branded worksection

This branded worksection *Template* has been developed by NATSPEC in conjunction with **Capral Aluminium** (the Product Partner) and may be used whilst the Product Partner is licensed to distribute it. The copyright remains with NATSPEC. As with all NATSPEC worksections, it is the responsibility of the user to make sure it is completed appropriately for the project. The user should also review its applicability for local conditions and regulations. Check www.natspec.com.au for the latest updated version.

Worksection abstract

This worksection *Template* is applicable to Capral Ventus louvre windows consisting of proprietary products, supplied as complete systems fabricated and assembled by specialist firms to their standard designs. It also includes ventilating louvre assemblies. Components include glass, metal, timber or plastic louvre blades, screens, security options and hardware, as well as installation accessories such as fasteners, flashings, sealants, joint sealing and weatherstripping, necessary for the satisfactory functioning of the whole system.

How to use this worksection

Customise this worksection *Template* for each project. See A guide to NATSPEC worksections (www.natspec.com.au) for information on *Template* structure, word styles, and completing a worksection.

Related material located elsewhere in NATSPEC

If a listed worksection is not part of your subscription package and you wish to purchase it, contact NATSPEC.

Related material may be found in other worksections. See for example:

- *0432 Curtain walls*, if the project contains windows and window-and-spandrel assemblies in addition to louvred windows.
- *0461 Glazing* for types of glass.
- *0462 Structural silicone glazing*, for adhesive fixed glazing.
- *0463 Glass blockwork*, if the project contains glass blockwork in addition to louvred windows.
- *0524 Partitions – glazed* for glazed internal partitions.
- *0671 Painting*.
- *0673 Powder coatings*.

Related branded worksections include:

- *0451p CAPRAL ALUMINIUM windows and doors*.

Documenting this and related work

You may document this and related work as follows:

- Schedule louvre windows to your office documentation policy.
- If documenting louvre windows in *0451 Windows and glazed doors*, delete this worksection.
- In bushfire-prone areas, document bushfire protection requirements to AS 3959 (2018) and the NCC. If documenting bushfire shutters, see AS 3959 (2018) clause 3.7 and *0457 External screens*. See NATSPEC TECHnote DES 018 on bushfire protection.
- For protection of openable windows conforming to BCA (2022) D3D29 and BCA (2022) H5D3, document a device to restrict the window opening, a screen with secure fittings or a barrier to the window, as required.
- Coordinate ventilating louvre assemblies with the mechanical consultant and requirements of the mechanical system, if any.
- See NATSPEC TECHnote PRO 006 for glass types used in buildings.
- For smoke and heat venting, see AS 2665 (2001), which is cited in the NCC.
- For information on the Window Energy Rating Scheme (WERS), see www.agwa.com.au.
- For information on the Australian Glass and Window Association (AGWA) Accreditation Program, see Accreditation Schemes (agwa.com.au).

The *Normal* style text of this worksection may refer to items as being documented elsewhere in the contract documentation. Make sure they are documented.

Search acumen.architecture.com.au, the Australian Institute of Architects' practice advisory subscription service, for notes on the following:

- Daylighting of buildings.
- Guarantees and warranties.
- Revisiting energy efficiency in commercial buildings.

- Site planning and design for bushfire.

Specifying ESD

The following may be specified by retaining default text:

- Louvre assemblies for natural ventilation.
- Window seals to minimise air leakage when louvres are shut.

The following may be specified by using included options:

- Thermal performance to reduce heating/cooling load by specifying the required Total system U-Value, Total system SHGC, frame material (e.g. metal has higher conductivity than timber).
- Glass and frame selection with an acceptable visible transmittance for natural lighting.
- High performance glass, e.g. Low-E.

The following may be specified by including additional text:

- Aluminium products using lower carbon aluminium.
- Re-use of salvaged louvres.
- Recycled material content, e.g. Aluminium frames.

Refer to NATSPEC TECHreport TR 01 on specifying ESD.

1 GENERAL

Capral Aluminium, established in 1936, is Australia's largest manufacturer and distributor of aluminium profiles. Our comprehensive range of commercial, residential, security and industrial products has an enviable reputation for quality, style and high performance. As a local systems designer, NATA-accredited testing authority, and with innovative R&D capabilities, we are well-positioned to take advantage of changing building regulations in Australia and technically support our brands, including Artisan Architectural, AGS Commercial, Urban Plus, Futureline Thermal and Amplimesh.

1.1 RESPONSIBILITIES

General

Requirement: Provide Capral Ventus louvre windows, as documented.

Documented is defined in *0171 General requirements* as meaning contained in the contract documents.

1.2 COMPANY CONTACTS

Capral Aluminium technical contacts

Website: www.capral.com.au/architectural-building-solutions/caprals-specification-team/.

1.3 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0171 General requirements*.

0171 General requirements contains umbrella requirements for all building and services worksections.

List the worksections cross referenced by this worksection. *0171 General requirements* references the *018 Common requirements* subgroup of worksections. It is not necessary to repeat them here. However, you may also wish to direct the contractor to other worksections where there may be work that is closely associated with this work.

NATSPEC uses generic worksection titles, whether or not there are branded equivalents. If you use a branded worksection, change the cross reference here.

1.4 STANDARDS

General

Selection and installation: To AS 2047 (2014).

AS 2047 (2014) does not cover fixed louvres.

Building classification: [complete/delete]

To use AS 2047 (2014), the building class needs to be nominated as follows:

- Housing: NCC Class 1 and 10.
- Residential: NCC Class 2, 3 and 4.
- Commercial: NCC Class 5, 6, 7, 8 and 9.

Glazing

Glass type and thickness: To AS 1288 (2021), if no glass type or thickness is nominated.

For glass type and minimum thickness refer to AS 1288 (2021) Table 4.1.

Glass thickness may be governed by human safety and other requirements – see AS 1288 (2021) Section 5. Maximum spans for various thicknesses of glass types subject to wind loading are shown in the figures of AS 1288 (2021) Section 4.

Nominate a thickness if:

- The glass is to be thicker than required by AS 1288 (2021) or applicable regulations.
- There are unusual conditions requiring detailed calculations for which the designer should be responsible.

In other cases, the determination of thickness is usually within the competence of the glazing contractor.

Where thickness is determined by loading from wind actions, the design wind pressure needs to be known in order to interpret the figures and tables of glass sizes and thicknesses in AS 1288 (2021).

See AS/NZS 1170.2 (2021) or AS 4055 (2021) as appropriate for design wind pressure.

Materials and installation: To AS 1288 (2021).

Quality requirements for cut-to-size and processed glass: To AS/NZS 4667 (2000).

The standard specifies requirements for the following:

- Cut sizes of flat, clear ordinary annealed and tinted heat-absorbing glass with glossy, apparently plane and smooth surfaces, which are used for general and architectural glazing or similar.
- Cut sizes of flat, clear ordinary annealed and tinted heat-absorbing processing glass used for Grade A safety requirements (i.e. toughened or laminated).
- Cut sizes of ordinary annealed, patterned and wired glass used in decorative and general glazing applications.
- Cut sizes of wired glass used for Grade B safety and general glazing applications.
- Processed laminated and toughened glass.

1.5 MANUFACTURER'S DOCUMENTS**Technical manuals**

Design manual: www.capral.com.au.

Technical drawings: www.capral.com.au/resources-downloads/technical-docs-drawings/.

1.6 INTERPRETATION**Abbreviations**

General: For the purposes of this worksection, the following abbreviations apply:

- AGWA: Australian Glass and Window Association.
- WERS: Window Energy Rating Scheme.

Edit the **Abbreviations** subclause to suit the project or delete if not required. List alphabetically.

Definitions

General: For the purposes of this worksection, the definitions given in AS/NZS 4668 (2000) and the following apply:

- Louvres - continuous: Louvres that run continuously past, and are supported by, concealed framing or brackets.
- Louvres - horizontal: Louvres that span horizontally between frame stiles, mullions or vertical supports.
- Louvres - vertical: Louvres that span vertically between frame heads and sills, or horizontal supports.
- Total system SHGC: Solar heat gain coefficient as defined by the NCC and tested in conformance with NFRC 200 (2023).
- Total system U-Value: Thermal transmittance as defined by the NCC and tested in conformance with NFRC 100 (2023).

Edit the **Definitions** subclause to suit the project or delete if not required. List alphabetically.

1.7 SUBMISSIONS**Certification**

Conformance: Submit evidence that the louvre windows conform to AS 2047 (2014).

See AS 2047 (2014) clause 8.3.

Protection of openable windows: Submit a certificate of on-site fall prevention testing.

On-site testing may not be required if type tests of window assemblies are available.

Operation and maintenance manuals

Requirement: Submit manual to **COMPLETION, Operation and maintenance manuals**.

Products and materials

Type tests: Submit results, as follows:

- Design wind pressures.
- Water penetration.

Capral Ventus louvres have been tested to AS 2047 (2014) in NATA Accredited Testing Laboratories for cyclonic conditions including an ultimate limit state wind pressure up to 8.0 kPa and water penetration resistance up to 300 Pa.

- Acoustic performance.

Test results for acoustic performance can be obtained from Capral.

- Protection of openable windows.

Edit as required.

Type tests are carried out off-site. However, submission of evidence of a successful type test may be called up here for requirements specified in SELECTIONS or PRODUCTS, when there are no SELECTIONS.

Evidence of delivery: Submit delivery docket as evidence of delivery of [complete/delete]

If evidence of delivery to site is required for particular products, consider including this *Optional* style text by changing to *Normal* style.

Samples

General: Submit samples of louvre window system components as follows:

- Manufacturer's standard hardware and accessories, including louvre holders and operators, locks, latches, handles, catches, anchor brackets and attachments, masonry anchors and weatherseals (pile or extruded).
- Colour samples of prefinished production materials, showing the limits of the range of variation in the documented colour.
- Frame member profiles and louvre materials.
- Frame member joining techniques.

Glazing: Submit samples of glazing materials, each at least 200 x 200 mm, showing the visual properties and range of variation, if any, for each of the following:

- Tinted or coloured glass.
- Patterned or obscured glass or glazing plastics.

Labelling: Label each sample with the series code reference and date of manufacture.

Edit as required.

Shop drawings

General: Submit shop drawings to a scale that best describes the detail, showing the following:

- Frame member profiles.
- Hardware, fittings and accessories including fixing details.

Louvre window manufacturers may provide standard type proprietary hardware capable of accepting keyed alike systems, construction keying and master key systems. If louvre windows are to be fitted with non-standard hardware supplied by others, make sure that the selected louvre window suites can accept the selected hardware. Document hardware in SELECTIONS.

- Junctions and trim to adjoining surfaces.
- Layout (sectional plan and elevation) of the window assembly.
- Methods of assembly.
- Methods of installation including fixing, joint sealing and flashing.
- Provision for vertical and horizontal expansion.

Subcontractors

General: Submit names and contact details of proposed installers.

Evidence of experience: [complete/delete]

Delete if installer details are not required.

Warranties

General: Submit warranties, as documented.

Describe the requirements of warranties in PRODUCTS or EXECUTION, as appropriate, and list the submissions required here.

1.8 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the following:

- Openings prepared to receive louvre windows.
- Fabricated louvre window assemblies at the factory ready for delivery to the site.
- Fabricated louvre window assemblies delivered to the site, before installation.
- Commencement of louvre window installation.

Amend to suit the project, adding critical stage inspections required.

Hold points, if required, should be inserted here.

2 PRODUCTS

2.1 GENERAL

Product substitution

Other products: Conform to **SUBSTITUTIONS** in 0171 *General requirements*.

SUBSTITUTIONS in 0171 *General requirements* sets out the submissions required if the contractor proposes alternative products. Refer also to NATSPEC TECHnote GEN 006 for more information on proprietary specification.

Storage and handling

Storage: Store in a clean, dry area unaffected by weather, to the manufacturer's recommendations. Protect from building materials and loose debris such as wet plaster, mortar, paint and welding splatter.

Acoustic performance

Louvre windows: Rating to AS/NZS ISO 717.1 (2004), as documented.

Document the required rating in the **Louvre window performance schedule**.

Protection of openable windows

Fall prevention: To BCA (2022) D3D29 and BCA (2022) H5D3.

Testing: To AS 5203 (2016).

Windows supplied as complete sets with security grilles and tested to AS 5041 (2003) are not required to be tested to AS 5203 (2016).

Product identification

General: Marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.

Edit the list to suit the project or delete if not required.

Marking

Louvre window assemblies: To AS 2047 (2014) Section 8.

Louvre window assemblies for housing must be labelled to AS 2047 (2014) clause 8.2. Timber louvre window assemblies for housing and louvre window assemblies other than for housing may conform to AS 2047 (2014) clause 8.2 or be provided with a certificate to AS 2047 (2014) clause 8.3.

2.2 CAPRAL VENTUS LOUVRE WINDOW ASSEMBLIES

Capral Ventus louvre window systems have been designed to be compatible with most timber and aluminium windows and match neatly with windows and doors from other brands.

Capral Ventus louvres

Requirement: Louvre blades mounted in a frame or subframe, able to withstand the ultimate limit state wind pressures for that location without failure or permanent distortion of members, and without louvre blade flutter.

Available louvre blade materials and sizes:

- Annealed glass: 102 mm or 152 mm.
- Toughened glass: 102 mm or 152 mm.
- Laminated glass: 102 mm or 152 mm.
- Flat aluminium: 152 mm.
- Elliptical aluminium: 102 mm or 152 mm.
- Timber: 102 mm or 152 mm.

Flat aluminium and elliptical aluminium louvre blades are available in Satin Black, Pearl White and Silver. Contact Capral for custom colours.

Urban Plus 393 louvre windows

Description: Aluminium framing system designed for use with Capral Ventus louvres.

Framing section (mm): 125 x 25 mm.

Maximum height (mm): 2700 mm.

Maximum width (mm): 900 mm.

Screen position: External.

Optional subframing and fixed lite bays are available.

Blade options: 102 mm or 152 mm.

Compatible with Capral Ventus automation, wind, light and rain sensors and key locks.

Capral Commercial Louvre Adaptor

Description: Aluminium adaptor designed to allow integration of Capral Ventus louvres into Capral commercial framing systems.

Framing sections (mm):

- 76 x 35 mm.
- 100 x 45 mm.
- 100 x 50 mm.
- 150 x 45 mm.
- 150 x 50 mm.
- 250 x 55 mm.

Screen position: External.

Refer to Capral technical data manual for layout details.

Optional subframing and fixed lite bays are available.

Blade options: 102 mm or 152 mm.

Compatible with Capral Ventus automation, wind, light and rain sensors and key locks.

Capral Twin Louvre secondary glazed louvre window system

Description: Secondary glazed component system for commercial applications.

This system combines the performance benefits of ventilation and secondary glazing using Capral Ventus louvres and Capral commercial framing system.

For use with Capral 150 mm Flushline commercial framing system.

Compatible with Ventus 'Plug & Play' automation hardware.

Capral Ventus louvre gallery sets

Description: Fully integrated louvre window system or component system for use with other manufacturers' framing systems.

For use with frames by other manufacturers, e.g. ALSPEC, G. JAMES and AWS.

Automated louvre galleries

Description: Automated operation control system with concealed motor for use with Capral Ventus louvres.

Motor and gearbox are concealed in the louvre jamb gallery, making for easy installation and future maintenance. Designed with 'Plug & Play' technology eliminating the requirement for an electrician to install. Suitable for out-of-reach locations or floor-to-ceiling feature windows. Control is possible via wall switches, remote control systems or integration into building management systems.

Blade options: 102 mm or 152 mm.

2.3 VENTILATING LOUVRE ASSEMBLIES

This clause refers to louvre assemblies used as part of the mechanical ventilation system. Coordinate with the mechanical consultant. Delete if documented as part of the mechanical services or if not required.

Ventilating louvre assemblies range from panels for insertion into window and door frames to major assemblies for air control and screening of plant rooms, substations, and mechanical air intakes and exhausts.

General

Requirement: Louvre blades mounted in a frame or subframe, able to withstand the ultimate design wind pressures for that location, without failure or permanent distortion of members, and without blade flutter.

Adjustable louvres

Requirement: Louvre blades clipped into blade holders pivoted to stiles or coupling mullions, linked together in banks, each bank operated by an operating handle incorporating a latching device, or by a locking bar.

Framed adjustable louvres

Requirement: Louvre blades beaded into steel blade surround frames (sash), pivoted to pressed steel main frames, linked together in banks, each bank controlled by a proprietary sash operator.

These are proprietary systems for industrial, rural and some commercial applications. The blade frame allows for large louvre sizes.

Screens

Requirement: Metallic-coated steel wire, stainless steel or PVC mesh screens behind louvres to prevent the entry of vermin, birds, rodents, and wind-blown leaves and papers.

AS/NZS 3666.1 (2011) clause 2.2.1 requires the prevention of entry of vermin, birds, rodents, and wind-blown matter such as leaves and paper.

2.4 SCREENS

Screens are usually installed to the external face of frame. Make sure the louvre assembly is located so that when fully opened the louvre blades are clear of screens and security grilles, or document an appropriate restricted opening to prevent interference between the clips and the screen.

Fixed screens

General: Fixed screens fitted to the window frames with a clipping device that allows for removal for cleaning.

Retractable screens

General: Proprietary retractable screens, comprising aluminium frames and fibreglass mesh, fitted between the guide channels incorporated in the frames, and a retraction system including tension spring, bearings, positive self-locking device and elastomeric sealing strip at sill.

Aluminium framed screens

General: Aluminium extruded or folded box frame sections with mesh fixing channel, mitred, staked and screwed at corners. If necessary to adapt to window opening gear, provide an extended frame section.

Mesh: Bead the mesh into the frame channel with a continuous resilient gasket, so that the mesh is taut and free of distortion.

Screens in bushfire-prone areas

General: Screen consisting of Amplimesh Type 316 stainless steel mesh with a maximum aperture of 2 mm, fixed taut into frame to AS 3959 (2018).

Refer to AS 3959 (2018) for details of construction requirements associated with the BAL of the site. See NATSPEC TECHnote DES 018 on bushfire protection.

2.5 SECURITY

This clause includes security provisions that may be used in combination with security screens.

Security window grilles

Requirement: Proprietary metal security grilles fixed to the building structure with tamper resistant fastenings.

Standard: To AS 5039 (2008).

AS 5039 (2008) acknowledges that the security window grilles described are not intruder proof. See the foreword to this standard. The dynamic impact, jemmy, pull, probe shear and knife shear tests scheduled for compliance in AS 5039 (2008) Table 1 are described in AS 5041 (2003).

Capral Ventus key lock

Description: Polypropylene louvre key lock that locks Capral Ventus louvre windows in the closed position.

External mounted key lock with internal locking mechanisms. Features a concealed key slot with key head colour coded to match the gallery clips. Not suitable for ring pull handle galleries.

Available finishes: Black, White, Silver and Monument.

2.6 GLAZING

Performance

Glass: Free from defects that detract from appearance or interfere with performance under normal conditions of use.

Glazing plastics: Free from surface abrasions and warranted by the manufacturer for 10 years against yellowing or other colour change, loss of strength and impact resistance, and general deterioration.

Safety glass

Standard: To AS/NZS 2208 (1996).

AS/NZS 2208 (1996) includes toughened, laminated, wired and organic-coated glass, and safety glazing plastics. See AS 1288 (2021) Section 5 for the required grade (A or B) for each application.

Type: Grade A to AS 1288 (2021).

Certification: Required.

- Certification provider: An organisation accredited by the Joint Accreditation System of Australia and New Zealand (JASANZ).

Marking: To AS 1288 (2021) clause 5.23.

2.7 GLAZING MATERIALS

If louvre window assemblies are selected as complete proprietary items, delete this clause.

General

Requirement: Putty, glazing compounds, sealants, gaskets, glazing tapes, spacing strips, spacing tapes, spacers, setting blocks and compression wedges appropriate for the conditions of application and required performance.

Jointing materials

Requirement: Provide jointing and pointing materials that are compatible with each other and the contact surfaces, and non-staining to finished surfaces to manufacturer's recommendations. Do not provide bituminous materials on absorbent surfaces.

Elastomeric sealants

Sealing compounds (polyurethane, polysulfide, acrylic): To ASTM C920 (2018) or ISO 11600 (2002).

Sealing compounds (silicone): To ASTM C920 (2018) or ISO 11600 (2002).

Sealing compounds (butyl): To ASTM C1311 (2022).

Primer

Compatibility: Apply the manufacturer's recommended primer to the surfaces in contact with sealant materials.

2.8 ALUMINIUM FRAME FINISHES

Delete finish not required.

Powder coatings

Service condition category to AS 3715 (2002): [complete/delete]

AS 3715 (2002) clause 1.4 describes service condition categories for powder coated aluminium architectural applications based on the severity of the environment. Select from the following atmospheric environments:

- Category 3 – Exterior mild to moderate.
- Category 4 – Tropical.
- Category 5 – Exterior severe.

Categories 1 and 2, applicable to interior environments, are not included in this standard. Refer to the documented project atmospheric corrosivity categories in 0171 *General requirements*. See NATSPEC TECHnote DES 010 for information on atmospheric corrosivity categories.

Coating performance: [complete/delete]

The AAMA standards represent the various warranty performances available and should be selected appropriate to the class of the project and the application. Select from:

- To AAMA 2603 (2022) or AS 3715 (2002). Applicable internal environments of all classes of the NCC or external environments of NCC to Class 1 and 10a buildings.
- To AAMA 2604 (2022). Applicable to all classes of the NCC.
- To AAMA 2605 (2022). Applicable to all classes of the NCC.

Coating type: [complete/delete]

Thermoset polyester powder coating or Thermoset fluoropolymer powder coating.

Polyester coating grade: [complete/delete]

General or Commercial. Delete if using fluoropolymer powder coating.

Colour: [complete/delete]

Consult the manufacturer's colour charts.

Gloss level: [complete/delete]

e.g. Texture, matt, satin or gloss. Not all gloss levels are available across the colour ranges

Anodised

Standard: To AS 1231 (2000).

Thickness: 20 microns.

25 micron thick anodising, recommended for severe industrial and coastal conditions, can be made available by some suppliers upon request.

Colour: [complete/delete]

Select from the manufacturer's available colour range.

2.9 ANCILLARY COMPONENTS AND FITTINGS**Fasteners**

Requirement: [complete/delete]

Comply with the louvre window manufacturer's recommendations for fastener requirements and AS 2047 (2014) (for residential and commercial buildings) or AS 4055 (2021) (for Class 1 and 10a buildings) for design wind loads.

Allow for the following to suit the fixing substrate:

- For aluminium, use aluminium or 300 series stainless steel fasteners.
- For galvanized steel, use hot-dipped galvanized steel or 300 series stainless steel fasteners.
- For stainless steel, use 300 series stainless steel fasteners.

Size and type: To suit louvre window unit size and wind loading conditions.

Extruded gaskets and seals

General: Provide seals, as documented.

Location or function: [complete/delete]

Materials: Non-cellular (solid) elastomeric seals as follows:

- Rubber products: Neoprene, ethylene propylene diene monomer (EPDM) or silicone rubber.

BS 4255-1 (1986) provides more specific product requirements for weather resistant rubber gaskets and seals.

- Flexible polyvinyl chloride (PVC): E type compounds, colourfastness grade B.

BS 2571 (1990) provides more specific requirements for PVC E type (extruded) products.

Flashings

General: Corrosion-resistant, compatible with the other materials in the installation, and coated with a non-staining compound where necessary.

Standard: To AS/NZS 2904 (1995).

Pile weatherstrips

Standard: To AAMA 701/702 (2023).

AAMA 701/702 (2023) is a guide to selecting pile weatherstrips and weatherseals used in windows and doors. It defines requirements to restrict air and water infiltration.

Location: [complete/delete]

Materials: Polypropylene or equivalent pile and backing, low friction silicone treated, ultraviolet stabilised, fixed to the frame to the manufacturer's recommendations.

3 EXECUTION

3.1 PRE-INSTALLATION

General

Timber reveals: Prime all surfaces of timber reveals that are to be painted before fixing to aluminium frames.

3.2 LOUVRE WINDOW ASSEMBLIES

General

Requirement: Install louvre windows frames, as follows:

- Plumb, level, straight and true within building tolerances.
- Fixed or anchored to the building structure in conformance with the wind action loading requirements.
- Isolated from any building loads, including loads caused by structural deflection or shortening.
- Allow for thermal movement.

Glazing

Requirement: Install the glass as follows:

- Permanently fix in place each piece of glass to withstand the normal loadings and ambient conditions at its location without distortion or damage to glass and glazing materials.
- No transfer of building movements to the glass.
- Watertight and airtight for external glass.

Temporary marking: Use a method that does not damage the glass. Remove marking on completion.

Toughened glass: Do not cut, drill, edge-work or permanently mark after toughening. Use installation methods that prevent the glass making direct contact with metals or other non-resilient materials.

Heat absorbing glass: In locations exposed to direct sunlight, provide wheel cut edges free from damage or blemishes, and with minimum feather.

Weatherproofing

Flashing and weatherings: Install flashings, weather bars, drips, storm moulds, joint sealant and pointing to prevent water penetrating the building between the window frame and the building structure under the prevailing service conditions, including normal structural movement of the building.

Fixing

General: Do not penetrate metal flashings with fixings.

Packing: Pack behind fixing points with durable full width packing.

Fasteners: Conceal fasteners.

Fastener spacing (nominal): 600 mm and maximum 150 mm from reveal ends.

Joints

General: Make accurately fitted tight joints so that fasteners or fixing devices such as pins, screws, adhesives and pressure indentations are not visible on exposed surfaces.

Sealants:

- If priming is recommended, prime surfaces in contact with jointing materials.
- If frames are powder coated, apply a neutral cure sealant.

Operation

General: Make sure moving parts operate freely and smoothly, without binding or sticking, at correct tensions or operating forces and are lubricated.

Protection

Removal: Remove temporary protection measures from the following:

- Contact mating surfaces before joining up.
- Exposed surfaces before completion of the works.

Temporary measures: [complete/delete]

State a particular method here, or delete to leave the choice of method to the contractor. For on-site care, see AS 2047 (2014) Appendix E (Informative).

Trim

General: Provide mouldings, architraves, reveal linings, and other internal trim using materials and finishes matching the window frames. Install to make neat and clean junctions between frames and the adjoining building surfaces.

3.3 VENTILATING LOUVRE ASSEMBLIES

General

Installation: Screw fix stiles and mullions to the building structure. Provide weatherstrips to heads and sills.

Expansion joints

Requirement: Provide for expansion and contraction in continuous sections, at spacings not exceeding those recommended by the manufacturer, or 6 m, whichever is the lesser.

Continuous sections include continuous louvres and interlocking mullions.

Framed adjustable louvres

Installation: Screw fix the main frame to the building structure with monel or stainless steel screws or masonry anchors of the type recommended by the louvre manufacturer.

3.4 SECURITY

Security window grilles

Installation: To AS 5040 (2003).

3.5 COMPLETION

Repair of finish

Polyester or fluoropolymer coatings: Contact supplier for approval to apply touch up products, otherwise replace damaged material.

Cleaning

Method: Clean with soft clean cloths and clean water, finishing with a clean squeegee. Do not use abrasive or alkaline materials.

Extent: All frames and glass surfaces internally and externally.

Operation and maintenance manuals

Requirement: Prepare a manual that includes the manufacturer's published instructions for operation, care and maintenance.

Compliance with this clause targets the Operations and Maintenance requirement within the Minimum Expectation level of the Verification and Handover credit in Green Star Buildings (2021).

Warranties

Louvre window assemblies: Provide the manufacturer's published product warranties.

Use only if warranties extending beyond the defects liability period are available for the documented system. Insert the required warranty period and terms, which should be negotiated beforehand. If the warranty is in the form of separate material and installation warranties, require the signatures of both manufacturer and installer.

The form(s) required should be provided as part of the contract documentation.

Warranty: Provide a warranty on [complete/delete]

- Form of warranty: [complete/delete]
- Minimum period: [complete/delete]

If documenting warranties, change this *Optional* style text to *Normal* style text.

Form of warranty: e.g. Against failure of materials and operation under normal environment and use conditions.

Minimum period: e.g. As offered by the manufacturer.

4 SELECTIONS

Schedules are a tool to specify properties required for products or systems. If the principal permits documentation of the product or system by proprietary name, some of the properties may be unnecessary and can be deleted. Document the product or system's location or application here and/or on the drawings with a matching project code. Refer to NATSPEC TECHnote GEN 024 for guidance on using and editing schedules.

4.1 PERFORMANCE

Louvre window performance schedule

	A	B	C
Total system U-Value (W/m ² .K)			
Total system SHGC			
Airborne sound insulation			
Visible transmittance (T _{vis})			
Reflectance (%)			
WERS Energy rating%: Heating			
WERS Energy rating%: Cooling			
AGWA Glass Compliance Certificate			
AGWA Window Compliance Certificate			
Water penetration resistance (Pa)			
Ultimate limit state (ULS) wind pressure (Pa)			
Serviceability limit state (SLS) wind pressure (Pa)			
Openable (free) area (m ²)			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Total system U-Value (W/m².K): Insert the thermal transmittance value used for determining NCC conformance and calculated to BCA (2022) Spec 37. These should be obtained from tests to NFRC 100 (2023). Select the product to fulfil design and compliance requirements. See NATSPEC TECHnote DES 015 on NCC energy efficiency.

Total system SHGC: Insert the solar heat gain coefficient value used for determining NCC compliance. These should be obtained from tests to NFRC 200 (2023). Select the product to fulfil design and compliance requirements.

Airborne sound insulation: State the required rating to AS/NZS ISO 717.1 (2004) for either the weighted sound reduction index (R_w) or weighted sound reduction index with spectrum adaptation (R_w + C_{tr}). This rating is for a building system e.g. partition wall, of which the building element is only one component. It may be better to provide the rating in the appropriate system schedule. It is advisable to obtain the advice of an acoustic consultant on the selection of an R_w or R_w + C_{tr} rating for airborne sound transmission reduction. Refer to NATSPEC TECHnote DES 032 for information.

Visible transmittance (T_{vis}): The visible light passing directly through the glass. The higher the T_{vis}, the more daylight.

Reflectance (%): A maximum value is often a council requirement. Refer to the ABCB Glazing calculator available from www.abcb.gov.au/resources. Delete if this requirement is more appropriately covered in the **Glass schedule**.

WERS Energy rating: Star rating system operated by AGWA.

AGWA Glass Compliance Certificate: Insert Required or Not required. The AGWA Glass Compliance Certificate will cover only products that conform to AS 1288 (2021).

AGWA Window Compliance Certificate: Insert Required or Not required. The AGWA Window Compliance Certificate will cover only products that conform to AS 1288 (2021) and AS 2047 (2014).

Water penetration resistance (Pa): e.g. 150 Pa.

Ultimate and serviceability limit state wind pressure (Pa): Nominate the design wind pressures for the project to AS/NZS 1170.2 (2021) (for residential and commercial buildings) or AS 4055 (2021) (for Class 1 and 10a buildings). AS 2047 (2014) Appendix A includes an informative guide to design wind pressure.

Openable (free) area (m²): State the openable area in m² to achieve NCC requirements for natural ventilation.

4.2 CAPRAL VENTUS LOUVRE WINDOW ASSEMBLIES

Capral Ventus louvre window schedule

	A	B	C
Frame: Product			
Frame: Finish			
Frame: Height and width (mm)			
Louvre blade: Material			
Louvre blade: Finish			
Louvre blade: Colour			
Louvre blade: Size (mm)			
Number of galleries (banks)			
Operation: Type			
Screen: Frame material			
Screen: Frame finish			
Screen: Mesh type			
Security window grilles			
Capral Ventus key lock			
Glazing			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Frame:

- Product: e.g. Urban Plus 393 louvre window, Capral commercial frame with Capral Commercial Louvre Adaptor, Capral commercial frame with Capral Twin Louvre secondary glazed louvre window system, or Selected manufacturer's frame with Capral Ventus louvre gallery sets.
- Finish: e.g. Powder coat, Anodised, Paint, Clear finish, No applied finish. Coordinate paint finishes using paint type designation from *0671 Painting*.
- Height and width (mm): Nominate the dimensions.

Louvre blade:

- Material: e.g. Annealed glass, toughened glass, laminated glass, flat aluminium, elliptical aluminium or timber.
- Finish: e.g. Powder coat, Anodised, Paint, Clear finish, No applied finish. Coordinate paint finishes using paint type designation from *0671 Painting*.
- Colour: Nominate the colour for aluminium blade options, e.g. Satin Black, Pearl White, Silver. Contact Capral for custom colours.
- Size (mm): 102 mm (glass or elliptical aluminium) or 152 mm (glass, elliptical aluminium or flat aluminium).

Number of galleries (banks): Indicate number here or show on drawings.

Operation: Type: Select from the following:

- Manual: Standard handle, Ring pull handle, Dual handle. The number required per window is dependent on the louvre type and width. Refer to the manufacturer's recommendations for the number of lever handles required.
- Automatic: Automated louvre galleries. Nominate the operation method, e.g. Wall switches, Remote controls, Integration with building management systems (central building control panel).

Screen: Document here or cross reference the **Screen schedule**. For bushfire-prone areas, refer to AS 3959 (2018) for details of construction requirements associated with the BAL of the site. AS 3959 (2018) calls for screens of aluminium, corrosion-resistant steel or bronze with a maximum aperture of 2 mm to buildings assessed as being in a BAL-12.5, BAL-19 or BAL-29 zone and corrosion-resistant steel or bronze in buildings assessed as being in a BAL-40 or BAL-FZ zone. Fibreglass mesh is excluded in all bushfire areas. Document bushfire shutters in *0457 External screens*. See NATSPEC TECHnote DES 018 on bushfire protection.

- Frame material: e.g. Aluminium, Timber or PVC-U.
- Frame finish: e.g. Powder coat, Anodised, Paint, Clear finish, No applied finish.
- Mesh type: e.g. Coated aluminium, Fibreglass, Corrosion-resistant steel or Bronze.

Security window grilles: Nominate material and finish. Document here or cross reference the **Security window grille schedule**. Delete if not required.

Capral Ventus key lock: Nominate finish, e.g. Black, White, Silver or Monument. Delete if not required.

Glazing: Document the glazing type and thickness in this schedule or cross reference the **Glass schedule**. Documenting glazing in this schedule is suitable for projects where the same glass is used for each window or glazed door type. It can be documented by description, e.g. 6.38 mm clear laminated glass, or by reference to a designated glass type in the **Glass schedule**. The latter approach may be more appropriate for projects with a large number of glazing types, or glazing that requires more detailed specification. Refer to the *Guidance* for the **Glass schedule** and NATSPEC TECHnote PRO 006 for guidance on glass types.

4.3 VENTILATING LOUVRE ASSEMBLIES

If the louvres are connected to the air conditioning or ventilation system, obtain the value required for the maximum pressure drop at 2.0 m/s face velocity from the consultant and include as a performance requirement.

Ventilating louvre assembly schedule

	A	B	C
Product			
Type			
Frame: Material			
Frame: Finish			
Frame: Height and width (mm)			
Louvre blade: Material			
Louvre blade: Profile			
Louvre blade: Finish			
Louvre blade: Height and width (mm)			
Operation			
Hardware			
Screen: Frame material			
Screen: Frame finish			
Screen: Mesh type			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Product: Delete if the selection is by generic performance.

Type: e.g. Horizontal, Continuous horizontal, Vertical.

Frame:

- Material: e.g. Aluminium, Timber.
- Finish: e.g. Powder coat, Anodised, Paint, Clear finish, No applied finish. Coordinate paint finishes using paint type designation from *0671 Painting*.
- Height and width (mm): Nominate the dimensions.

Louvre blade:

- Material: e.g. Aluminium, Timber.
- Profile: e.g. Z, throated, 1-stage, 2-stage.
- Finish: e.g. Powder coat, Anodised, Paint, Clear finish, No applied finish. Coordinate paint finishes using paint type designation from *0671 Painting*.
- Height and width (mm): Nominate the dimensions.

Operation: e.g. Fixed, Operable.

Hardware: Select proprietary or nominate hardware if not supplied as part of the louvre window assembly. Coordinate with your hardware schedule.

Screen: AS/NZS 3666.1 (2011) clause 2.2.1 requires the provision of screens behind air intake louvres. Document here or cross reference the **Screen schedule**.

- Frame material: e.g. Aluminium, Timber or PVC-U.
- Frame finish: e.g. Powder coat, Anodised, Paint, Clear finish, No applied finish.
- Mesh type: e.g. Coated aluminium, Fibreglass, Corrosion-resistant steel or Bronze.

4.4 SCREENS

Screen schedule

	A	B	C
Product			
Type			
Frame material			
Frame finish			
Mesh type			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Product: Delete if the selection is by generic performance.

Type: e.g. Flyscreen, Fall prevention screen, Bushfire screen. See BCA (2022) D3D29 and BCA (2022) H5D3 for openable windows requiring fall prevention devices, screens or barriers.

Frame material: e.g. Aluminium, Timber or PVC-U.

Frame finish: e.g. Powder coat, Anodised, Paint, Clear finish, No applied finish. Coordinate paint finishes using paint type designation from *0671 Painting*.

Mesh type: e.g. Aluminium, Fibreglass, or Stainless steel. Document here or in the **Capral Ventus louvre window schedule** or **Ventilating louvre assembly schedule**. For bushfire-prone areas, refer to AS 3959 (2018) for details of construction requirements associated with the BAL of the site. AS 3959 (2018) calls for screens of aluminium, corrosion-resistant steel or bronze with a maximum aperture of 2 mm to buildings assessed as being in a BAL-12.5, BAL-19 or BAL-29 zone and corrosion-resistant steel or bronze in buildings assessed as being in a BAL-40 or BAL-FZ zone. Fibreglass mesh is excluded in all bushfire areas. Document bushfire shutters in *0457 External screens*. See NATSPEC TECHnote DES 018 on bushfire protection.

4.5 SECURITY

Security window grille schedule

	A	B	C
Product			
Type to AS 5039 (2008)			
Material			
Finish			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Product: Delete if the selection is by generic performance.

Type to AS 5039 (2008): AS 5039 (2008) clause 5.2 describes the three window screen security classification types as follows:

- Type I prevents an arm from passing through.
- Type II allows an arm to pass through but prevents bodily entry.
- Type III prevents insects passing through.

Material: e.g. Steel, Stainless steel or Aluminium.

Finish: See AS 5039 (2008) clause 6.2 for corrosion protection finishes.

4.6 GLAZING

Glass schedule

	A	B	C
--	---	---	---

	A	B	C
Glass type			
Glass thickness (mm)			
Body tint colour			
Interlayer colour			
Surface coating: Description			
Surface coating: Colour			
Reflective coating: Colour			
Reflective coating: % reflectance			
Surface pattern			
Surface processing: Method			
Surface processing: Pattern			
Surface processing: Colour			
Edge processing			
Number of edges processed			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

This schedule can be used for projects where a large number of different glass types are used or if the glazing requires more detailed specification than it is appropriate to include in the **Capral Ventus louvre window schedule**. If this schedule is used, coordinate with the **Capral Ventus louvre window schedule** so that each glass type is associated with the relevant louvre window.

Glass type: Refer to NATSPEC TECHnote PRO 006 for guidance on glass types.

Glass thickness (mm): It is generally not necessary to document thickness. Nominate a thickness if:

- The glass is to be thicker than required by AS 1288 (2021) or applicable regulations.
- There are unusual conditions requiring detailed calculations for which the designer should be responsible.

In other cases, the determination of thickness is usually within the competence of the glazing contractor.

Body tint colour: e.g. Grey, Bronze, Green, Blue. Consult the manufacturer for colours available. Do not use body tinted wired glass (cast or polished) in locations exposed to the sun; fracture may result.

Interlayer colour: For laminated glasses only. Consult the manufacturer for colours available.

Surface coating:

- Description: Describe by coating function, e.g. Solar control, Low emission, Self-cleaning or Decorative, or by coating type, e.g. Pyrolytic hard coating, Vacuum sputtered or Ceramic. Coatings are best described by the manufacturer's brand name. Self-cleaning surface coatings are coatings applied to glazing that dissolve dirt (photoactive) and shed water (hydrophilic) using natural UV light and rain.
- Colour: e.g. Grey, Bronze, Green, Blue. Consult the manufacturer for colours available.

Reflective coating:

- Colour: e.g. Silver, Gold, Bronze. Consult the manufacturer for colours available. Reflective coatings may be available on either clear or body tinted float. Consult manufacturer.
- % reflectance: Consult the manufacturer for reflectances available. Delete if this requirement is more appropriately covered in the **Louvre window performance schedule**. The manufacturer's brand name is often the best way to identify tinted, reflective, and patterned glasses.

Surface pattern: For patterned glass only. Proprietary patterns are best described by the manufacturer's brand name. Patterns include diffuse reflection (picture glass).

Surface processing:

- Method: e.g. Screen printing with ceramic paint fused to the surface, Sandblasting, Acid etching.
- Pattern: Proprietary patterns are best described by the manufacturer's brand name.
- Colour: Applicable to screen printed patterns only.

Edge processing: Maximum width varies with thickness. Wired glass is restricted to rough arrised edges. Consult with processor. Refer also to NATSPEC TECHnote PRO 006 for more information on this topic. Common edge types and typical applications for each edge type are:

- None (clean cut, no processing).

- Flat ground: Silicone structural glazing with exposed edges.
- Flat polished: Silicone structural glazing where edge condition is critical for aesthetic purposes.
- Ground pencil edge: Mirrors, decorative furniture glass.
- Polished pencil edge: Mirrors, decorative furniture glass.
- Ground mitre: Silicone structural glazing.
- Bevelled: Mirrors, decorative furniture glass.
- Seamed edges: Normal edge treatment for heat-treated glass.

Number of edges processed: e.g. 1 long, 2 long, All.

REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

AS ISO 717		Acoustics - Rating of sound insulation in buildings and of building elements
AS/NZS ISO 717.1	2004	Airborne sound insulation
AS 1231	2000	Aluminium and aluminium alloys - Anodic oxidation coatings
AS 1288	2021	Glass in buildings - Selection and installation
AS 2047	2014	Windows and external glazed doors in buildings
AS/NZS 2208	1996	Safety glazing materials in buildings
AS/NZS 2904	1995	Damp-proof courses and flashings
AS 3715	2002	Metal finishing - Thermoset powder coating for architectural applications of aluminium and aluminium alloys
AS 3959	2018	Construction of buildings in bushfire-prone areas
AS/NZS 4667	2000	Quality requirements for cut-to-size and processed glass
AS/NZS 4668	2000	Glossary of terms used in the glass and glazing industry
AS 5039	2008	Security screen doors and security window grilles
AS 5040	2003	Installation of security screen doors and window grilles
AS 5203	2016	Protection of openable windows/ fall prevention – Test sequence and compliance method
BCA D3D29	2022	Access and egress - Construction of exits - Protection of openable windows
BCA H5D3	2022	Class 1 and 10 buildings - Safe movement and access - Barriers and handrails
AAMA 701/702	2023	Performance specification for pile weatherstrips (AAMA 701) and polymer weatherseals (AAMA 702)
ASTM C920	2018	Standard specification for elastomeric joint sealants
ASTM C1311	2022	Standard specification for solvent release sealants
NFRC 100	2023	Procedure for determining fenestration product U-factors
NFRC 200	2023	Procedure for determining fenestration product solar heat gain coefficient and visible transmittance at normal incidence
ISO 11600	2002	Building construction - Jointing products - Classification and requirements for sealants

The following documents are mentioned only in the **Guidance text**:

AS/NZS 1170		Structural design actions
AS/NZS 1170.2	2021	Wind actions
AS 2665	2001	Smoke/heat venting systems - Design, installation and commissioning
AS/NZS 3666		Air-handling and water systems of buildings - Microbial control
AS/NZS 3666.1	2011	Design, installation and commissioning
AS 4055	2021	Wind loads for housing
AS 5041	2003	Methods of test - Security screen doors and window grilles
BCA Spec 37	2022	Energy efficiency - Calculation of U-Value and solar admittance
GBCA Buildings	2021	Green Star Buildings
NATSPEC DES 010		Atmospheric corrosivity categories for ferrous products
NATSPEC DES 015		NCC - BCA Volume One Energy efficiency provisions
NATSPEC DES 018		Bushfire protection
NATSPEC DES 032		Airborne sound insulation
NATSPEC GEN 006		Product specifying and substitution
NATSPEC GEN 024		Using NATSPEC selections schedules
NATSPEC PRO 006		Glass types used in buildings
NATSPEC TR 01		Specifying ESD
BS 2571	1990	Specification for general-purpose flexible PVC compounds for moulding and extrusion
BS 4255		Rubber used in preformed gaskets for weather exclusion from buildings
BS 4255-1	1986	Specification for non-cellular gaskets
AAMA 2603	2022	Voluntary specification, performance requirements and test procedures for pigmented organic coatings on aluminum extrusions and panels (with coil coating appendix)
AAMA 2604	2022	Voluntary specification, performance requirements and test procedures for high performance organic coatings on aluminum extrusions and panels (with coil coating appendix)
AAMA 2605	2022	Voluntary specification, performance requirements and test procedures for superior performing organic coatings on aluminum extrusions and panels (with coil coating appendix)