0305P GETZNER VIBRATION SOLUTIONS FOUNDATION ISOLATION SYSTEMS

Branded worksection

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Worksection abstract

This branded worksection *Template* is applicable to GETZNER VIBRATION SOULTIONS for isolating building foundations and other building elements in contact with dynamically loaded ground/founding material. It includes side wall decoupling, and full surface, strip, discrete and steel reinforced bearing foundation isolation systems.

How to use this worksection

This worksection *Template* must be customised 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:

- *0301 Piling.*
- *0310 Concrete – combined.*

Documenting this and related work

You may document this and related work as follows:

- Indicate on the drawings the location and dimensions of the required foundation isolation system elements.

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

For example:

- Substrate draining requirements, before installation of the isolation system.
- Fire protection of isolation system.
- Fixing details for mounting brackets.

Specifying ESD

Refer to the NATSPEC TECHreport TR 01 on specifying ESD.

1 GENERAL

Getzner was the first company in the world to effectively solve vibration engineering challenges using polyurethane (PU) materials. The company, with headquarters in Austria, has been developing solutions based on PU for the isolation of undesirable vibrations and noise for close to 50 years. Its Sylomer, Sylodyn and Isotop products were all developed and manufactured at Getzner's own facility. They are used in the construction and industry sectors to effectively reduce vibrations and noise to create a higher standard of living.

1.1 RESPONSIBILITIES

General

Requirement: Provide GETZNER VIBRATION SOLUTIONS foundation isolation systems, as documented.

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

1.2 COMPANY CONTACTS

GETZNER VIBRATION SOLUTIONS technical contacts

Website: www.vibrationsolutions.com.au/contact-us.

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 MANUFACTURER'S DOCUMENTS

Technical manuals

Website: www.vibrationsolutions.com.au/data-sheets

1.5 TOLERANCES

Substrate flatness

Requirement: To the **Substrate flatness tolerance table,** using a straightedge placed anywhere on the surface in any direction, for the documented type.

Substrate flatness tolerance table

Type	Application	Measurement	Maximum deviation (mm)
Full surface mat bearings	Installed underneath a slab on ground	2 m straightedge	10 mm
Discrete and strip bearings	Installed on the top of, or under, a load bearing footing, column or wall	2 m straightedge	10 mm
Steel reinforced bearings	Steel plate reinforced discrete and strip bearings	1 m straightedge	2 mm

Consider removing any bearing types not being used from the table above.

Substrate roughness

Full surface mat, discrete and strip bearings: Maximum allowable height of surface protrusions:

- 12.5 mm bearing thickness: 1.5 mm.
- 25.0 mm bearing thickness: 3.0 mm.
- 37.5 mm or greater bearing thickness: 4.0 mm.

Steel reinforced bearings: 2.0 mm.

It is recommended that steel reinforced bearings are installed on top of a bituminous levelling layer to compensate for surface roughness.

1.6 SUBMISSIONS

Execution details

Installation: Submit details of any proposed changes to documented isolation systems.

Records

Requirement: Submit installation records to **COMPLETION, Records**.

Shop drawings

Requirement: Submit shop drawings showing the following:

- Location and extent of isolation system – Installation plan.
- Junctions at perimeters.
- Junctions with vertical surfaces.
- Joint details to form a mat.
- Corner details.
- Penetration details.
- Schedules for the isolation system components and assemblies.

Subcontractors
Installer: Submit evidence that proposed installer is approved by GETZNER VIBRATION SOLUTIONS to install the documented isolation system.

Installation by GETZNER VIBRATION SOLUTIONS approved installers only.

Substructure acceptance: Submit evidence of installers' acceptance of the substrate before starting installation.

Delete, if not required. The installer should notify the contractor of any substructure defects that require correction before starting application.

Warranties
Performance: Submit details of warranty covering both the product and the installation.

Discuss with GETZNER VIBRATION SOLUTIONS regarding warranty terms and conditions, as these can be tailored to suit each individual project. Edit, as required.

1.7 INSPECTION

Notice
Inspection: Give notice so that inspection may be made of the following:
- Prepared substrate before installation of isolation system.
- Completed installation before concealing to confirm the following are as documented:
  . Material types.
  . Bearing area.
  . Thickness.
  . Placement.
  . Connections/joints.

Amend to suit the project adding critical stage inspections required. See **SUBMISSIONS** for requirement for installer to accept substructure before application.

Hold points, if required, should be inserted here.

2 PRODUCTS

2.1 GENERAL

Product substitution
Other products: Conform to PRODUCTS, **GENERAL**, **Substitutions** in *0171 General requirements*.

The *0171 General requirements* clause 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
Requirement: To GETZNER VIBRATION SOLUTIONS' recommendations as follows:
- Transport and store in original packaging.
- Avoid damage during transportation.
- Immediately repair damaged packaging using plastic sheet and adhesive tape.
- Store rolls in an upright standing position.
- Store in a dry environment, protected from direct sunlight, within the temperature range of -20°C to +50°C.
- Where possible storage conditions to match installation conditions. In situation of large temperature difference between storage and installation area, acclimatise isolation system products in installation area for at least 24 hours before installation.

Getzner high-tech polyurethane materials are able to withstand extreme static and dynamic loads. However, these simple and efficient handling requirements allow ease of installation and the highest possible performance.

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.

2.2 FIRE PERFORMANCE

General

Requirement: If SYLOMER and SYLODYN products are not protected from exposure to fire by the concrete structure provide fire protection, as documented.

SYLOMER and SYLODYN products used for foundation isolation purposes do not contribute to the fire resistance of the structural element and if exposed must be protected from fire to achieve the required FRL of the structural element.

Protection can be achieved in a number of ways including the use of joint filling materials or fire resistant sheet or other material. Contact GETZNER and refer to their *Fire protection* document for further information, details and suggested products.

2.3 SYLOMER

General

Description: Mixed-cell polyurethane elastomer with spring and damping characteristics for use as a compression-loaded elastic support element.

There are ten types of Sylomer available as standard, each having a different degree of stiffness and loading capacity. The properties of the material can also be modified in order to meet specific requirements of the project.

Key Benefits:

- High elasticity, long service life.
- Load peaks up to 6.0 MPa.
- Very low amplitude dependence.
- Proven long-term behaviour.
- High fatigue strength.
- Finely graded range (10 standard types) for optimum system design.
- Ability to provide customer-specific modifications.
- Fire-retardant options available for other applications. Contact GETZNER VIBRATION SOLUTIONS for more information.

Contact GETZNER VIBRATION SOLUTIONS to provide a feasibility study, material selection and effectiveness calculations before final selection to make sure the most cost effective and economical system is selected.

Static load capacity: Up to 1.2 MPa.

Standard available thickness: 12.5 mm and 25 mm.

Custom thickness: Maximum 150 mm.

Custom thickness available upon request.

Standard maximum width: 1.5 m.

Custom width available upon request.

Standard maximum length: 5.0 m.

Custom length available upon request.

Warranties

Period: [complete/delete]

Discuss with GETZNER VIBRATION SOLUTIONS regarding warranty terms and conditions, as these can be tailored to suit each individual project.

2.4 SYLODYN

General

Description: Water resistant closed-cell polyurethane elastomer with spring and damping characteristics for use as a compression-loaded elastic support element.

There are five types of Sylodyn and three types of Sylodyn HRB HS available as standard, each having a different degree of stiffness and loading capacity. The properties of the material can also be modified in order to meet specific requirements of the project.

Key Benefits:

- Improved dynamic properties in comparison to SYLOMER.
- High dynamic load capacity.
- Static range of use for standard types from 75 kPa to 1.5 MPa, HRB HS types to 12.0 MPa.
- Load peaks up to 24.0 MPa.
- Very low amplitude dependence.
- Low creep tendency.
- Stiffening factor (Cdyn/Cstat) from 1.15 to 1.40.
- Proven long-term behaviour.
- Fatigue strength.
- Finely graded range (8 standard types) for optimum system design.
- Ability to provide customer-specific modifications.

Contact GETZNER VIBRATION SOLUTIONS to provide a feasibility study, material selection and effectiveness calculations before final selection to make sure the most cost effective and economical system is selected.

Standard available thickness: 12.5 mm and 25 mm.

Custom thickness: Maximum 150 mm.

Custom thickness available upon request.

Sylodyn product series

Static load capacity: Up to 1.5 MPa.

Standard maximum width: 1.5 m.

Custom width available upon request.

Standard maximum length: 5.0 m.

Custom length available upon request.

Sylodyn HRB HS product series

Static load capacity: Up to 12.0 MPa.

Standard maximum width: 1.2 m.

Custom width available upon request.

Standard maximum length: 1.5 m.

Custom length available upon request.

Warranties

Period: [complete/delete]

Discuss with GETZNER VIBRATION SOLUTIONS regarding warranty terms and conditions, as these can be tailored to suit each individual project.

2.5 ACCESSORIES

Adhesive

Description: Solvent free two component polyurethane curing adhesive for bonding isolation system to vertical or horizontal substrates.

Refer to GETZNER VIBRATION SOLUTIONS *General adhesive information Sylomer/Sylodyn* document for recommended product adhesives for different substrate types.

Joint sealing tape

Description: Tape used Water resistant textile adhesive tape for sealing joints in isolation system compatible with the documented isolation system.

Width: Minimum 50 mm.

Membrane

Description: Underlay material placed over the isolation system for additional protection during concreting.

Type: Plastic sheet or construction foil compatible with the documented isolation system.

Minimum thickness: 200 µm.

Mounting brackets
Description: For vertical or sloped (usually greater than 45 degrees) installation where adhesive bonding is not being used, use mounting brackets to hold the isolation system in place to the substrate.

Type: Plastic or galvanized steel.

Select product appropriate to assist in fixing vertically placed isolation panels to the specific substrate type.

Void former
Requirement: Material capable of maintaining rigidity and shape until the concrete has set, capable of withstanding construction loads and non-collapsible on absorption of moisture.

3 EXECUTION

3.1 GENERAL

Installation
Requirement: Conform to GETZNER VIBRATION SOLUTIONS installation recommendations, using GETZNER VIBRATION SOLUTIONS approved installers.

Isolation training: Installation training for Sylomer and Sylodyn is available upon request. Contact GETZNER VIBRATION SOLUTIONS for further information.

Accessories
Requirement: Install all accessories to the manufacturer's recommendations.

Includes adhesives, sealing tapes, mounting brackets and membrane protection systems.

3.2 PREPARATION

Substrate
Requirement: Conform to **TOLERANCES** and as follows:

- Concrete and rock: Remove any loose material and any sharp-edged projections above the plane surface, and fill any depressions.
- Graded prepared subgrade: Remove any loose material and blind with sand or concrete to create a smooth surface free from hard projections or depressions.

Cleaning: Substrate to be as follows:

- Clean from oil, grease and any debris.
- Dry (de-water/drain if required).
- Frost-free.

Onsite adhesive testing: Test a sample area of the documented adhesive on site before use. Test for each substrate type using a 100 mm x 100 mm bearing material test sample, which can be provided by GETZNER VIBRATION SOLUTIONS. Apply the adhesive to the manufacturer's recommendations and curing period, to confirm that required adhesion is achieved.

3.3 SYLOMER AND SYLODYN INSTALLATION

Horizontally placed full surface mat isolation systems
Placement: Unroll and place mats on the prepared substrate in conformance with the installation plan. Butt mats tightly to eliminate gaps between adjacent pieces.

Plan layout to minimise the number of joints.

Temperature: Do not install mats if the ambient air temperature is below 5°C.

Low temperatures can affect the bonding process.

On site cutting of mats: Use a single cutting utility knife or circular saw to cut mats to size.

Acclimatisation: Allow mats to acclimatise in position for a minimum of two hours before fixing and jointing, to allow the material to recover from compression and stretching caused by rolling and on-site handling.

Fixing mats: Adhesive fix mats to substrate and along joints, to adhesive manufacturer's application, and substrate preparation, recommendations.

GETZNER VIBRATION SOLUTIONS recommend adhesive fixing mats down to avoid displacements and to counter dimensional changes due to temperature variation. Particular attention should be given to the substrate surface roughness as a

rough surface could impede the bonding strength. Refer to the manufacturer's recommendations and list any further requirements. If not a project requirement, delete requirement.

Depending on the type and thickness of mats, depressions and slopes do not require any additional fixing measures. Slopes up to 45 degrees are no problem for the more flexible (softer material) mats. If additional fixing measures such as mounting brackets are required, document such requirements. Refer to **Vertically placed full surface mat isolation systems**.

Penetrations: Elastically decouple all penetrations by wrapping in SYLOMER or SYLODYN and fix with joint sealing tape.

GETZNER can advise on solutions for specific situations.

Joints and corners: Butt adjacent mats together, and seal joint with joint sealing tape. Offset joints in successive layers by 100 mm minimum.

Covering and sealing the joints avoids the penetration of concrete and slurry when casting the concrete over.

Vertically placed full surface mat isolation systems

Requirement: To **Horizontally placed full surface isolation systems**, fixed in position by one of the following methods:

- Adhesive bonding: Coat full surface of mat with adhesive using a notched trowel, to the manufacturer's recommendations. Install temporary diagonal bracing to support vertically placed mats until the adhesive has adequately set.

On-site materials such as timber or steel can be utilised to form a bracing system off the adjacent slab or ground to hold mats in place before the adhesive has set.

- Mounting brackets: Secure the top of each individual vertically placed mat to the substrate, fixed as documented.

Document the mounting bracket to be used and how the bracket will be fixed to the substrate and the mat.

Discrete and strip bearing isolation systems

Horizontal placement: To **Horizontally placed full surface isolation systems**.

Vertical placement: To **Vertically placed full surface mat isolation systems**.

Bearing pad position: Centre of pad to have a maximum 5% deviation from documented position in both directions (length and width).

Steel reinforced discrete bearings

Levelling layer: Provide a bituminous levelling layer to the substrate before placement of steel reinforced bearings. Conform to **TOLERANCES**.

Minimum gap between bearings: 30 mm.

Gap sealing between bearings: Seal gap with joint sealing tape. Do not fill the gap with a filling material.

3.4 COMPLETION

Cleaning

Requirement: Clean and remove any loose debris or rubble from the surface of the isolation system before installation of structure over.

Inspection

Joints: Visually check that all mat joints have been adequately sealed with joint sealing tape.

Protection

Reinforcement supports: Provide supports with a large bearing surface area to avoid isolated puncturing of the isolation system due to the weight of the reinforcement.

Avoid reinforcement supports such as steel bar chairs as they have pointed legs with minimal load distribution which may cause punctures.

Membrane: Provide a membrane protection over installed full surface bearing systems, as documented.

Consider the inclusion of this *Optional* style text by changing to *Normal* style text. As additional protection GETZNER VIBRATION SOLUTIONS recommend the installation of a membrane on top of the mat before placement of the concrete over.

Blinding: Apply a 50 mm thick concrete blinding layer over the installed horizontal mats before construction of the main concrete structure over.

Consider the inclusion of this *Optional* style text by changing to *Normal* style text if there is a risk of an extended period before the concrete slab over is to be constructed. The blinding layer is simply to protect the installed mats from mechanical damage due to construction loads and equipment and to protect from dimensional changes due to temperature variation.

Backfilling protection: Provide a construction protection mat or drainage mat over the installed vertical full surface bearing system, as documented.

If backfilling is required against vertical bearing mats consider the inclusion of this *Optional* style text by changing to *Normal* style text.

Structure over discrete or strip bearings

Void former: Where structure (column, wall or foundation) dimensions are wider or longer than the discrete or strip bearing dimensions, install void former to match dimensions of structure. Remove void former when structure over has been installed or has reached sufficient strength for removal.

Document the requirements for fire sealing the void upon removal of the void former, if required. Contact GETZNER for typical fire protection details.

Precast units:

- Install precast units evenly on bearing.
- Seal joints between bearing and precast elements with flexible sealant.
- Remove any sharp protrusions on the contact surface of the precast unit.

In-situ concrete: Formwork to be either:

- A lost formwork steel shutter on top of bearing.
- Formwork constructed around bearing.

In order to achieve constant distance between bearings temporary spacers may be required.

Records

Installation records: Photographically record the installation of the isolation system and document the following:

- Date of installation.
- Portion of work.
- Substrate preparation.
- Protection from construction traffic.
- Installed material is undamaged upon completion.

Personnel: Employ a GETZNER approved person to monitor the placing and protection of the isolation system and prepare a daily installation record.

If required, include this *Optional* style text by changing to *Normal* style text.

Warranties

Requirement: Cover materials and workmanship in the terms of the warranty in the form of interlocking warranties from the supplier and the installer.

- Form: Against failure of materials and execution under normal environment and use conditions.
- Period: As documented.

In order to qualify for an installation warranty, supervision of the isolation system must be undertaken taken by GETZNER VIBRATION SOLUTIONS. Contact GETZNER VIBRATION SOLUTIONS for the full terms and conditions of warranties available.

4 SELECTIONS

Schedules are a way of documenting a selection of proprietary or generic products or systems by their properties. Indicate their locations here and/or on the drawings. Refer to NATSPEC TECHnote GEN 024 for guidance on using and editing schedules.

4.1 PRODUCT

Isolation system schedule

Property	A	B	C
Product name			
Series range type			
Dead load (kN or kN/m)			
Live load (kN or kN/m)			

Property	A	B	C
Type of bearing			
Support length (mm)			
Support width (mm)			
Edge distance (mm in long dir.)			
Edge distance (mm in short dir.)			
Bearing length (mm)			
Bearing width (mm)			
Bearing area (m^2)			
Thickness (mm per layer)			
Layers			
Adhesive			
Joint sealing tape			
Membrane			
Mounting brackets			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit these codes in the **Schedule** to match those on drawings. For example, these can be edited to suit the support element reference which requires bearing isolation. E.g. CC1, CC2, etc. for concrete columns.

Product name: Sylomer or Sylodyn.

Series range type: Select from the following ranges:

Standard **Sylomer** range:

- SR 11 – Maximum static compression load 11 kPa – Yellow.
- SR 18 – Maximum static compression load 18 kPa – Orange.
- SR 28 – Maximum static compression load 28 kPa – Blue.
- SR 42 – Maximum static compression load 42 kPa – Pink.
- SR 55 – Maximum static compression load 55 kPa – Green.
- SR 110 – Maximum static compression load 110 kPa – Brown.
- SR 220 – Maximum static compression load 220 kPa – Red.
- SR 450 – Maximum static compression load 450 kPa – Grey.
- SR 850 – Maximum static compression load 850 kPa – Turquoise.
- SR 1200 – Maximum static compression load 1.2 MPa – Violet.

Standard **Sylodyn** range:

- NB – Maximum static compression load 75 kPa – Red.
- NC – Maximum static compression load 150 kPa – Yellow.
- ND – Maximum static compression load 350 kPa – Green.
- NE – Maximum static compression load 750 kPa – Blue.
- NF – Maximum static compression load 1.5 MPa – Violet.

Standard **Sylodyn HRB HS** range:

- HRB HS 3000 – Maximum static compression load 3.0 MPa – Dark Green.
- HRB HS 6000 – Maximum static compression load 6.0 MPa – Dark Blue.
- HRB HS 12000 – Maximum static compression load 12.0 MPa – Dark Brown.

Type of bearing: Discrete, strip, mat or vertical decoupling.

Support length (mm): Length of support, for example a rectangular column 700 mm long.

Support width (mm): Width of support, for example a rectangular column 300 mm wide.

Edge distance (mm in long dir.): Applies to a rectangular column long side. The edge distance is the set-back length from the external edge of the support used in determining bearing area under structural support.

Edge distance (mm in short dir.): Applies to a rectangular column short side. The edge distance is the set-back length from the external edge of the support used in determining bearing area under structural support.

Bearing length (mm): Overall length of the support minus the edge distance. For example a column with a length of 700 mm and edge distance of 25 mm would have a bearing length of 650 mm (700 – (2x25) = 650 mm). This equates to the length of the isolation material required.

Bearing width (mm): Overall width of the support minus the edge distance. For example a column with a width of 300 mm and edge distance of 25 mm would have a bearing length of 250 mm (300 – (2x25) = 250 mm). This equates to the width of the isolation material required.

Bearing area: Enter the total surface area of bearing (which is bearing length x bearing width).

Thickness (mm per layer): State the thickness of the layer in mm.

Layers: State the number of layers required for the isolation system.

Adhesive: Nominate the adhesive to be used. Refer to GETZNER VIBRATION SOLUTIONS *General adhesive information Sylomer/Sylodyn* document for recommended product adhesives for different substrate types.

Joint sealing tape: Nominate the joint sealing tape to be used.

Membrane: Nominate the membrane to be used, if required.

Mounting brackets: Nominate the mounting brackets to be used, if required. Document the fixing method on the drawings or other appropriate location.

REFERENCED DOCUMENTS

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

NATSPEC GEN 006	2015	Product specifying and substitution
NATSPEC GEN 024	2019	Using NATSPEC selections schedules
NATSPEC TR 01	2019	Specifying ESD