

**Silos**  
**County Range**

**PRODUCT**  
**FILE**

**CE**

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## 1. Disclaimer

The original, authoritative version of this manual is the English version produced by Collinson plc. Subsequent changes to any manual made by any third party have not been reviewed nor authenticated by Collinson. Such changes may include, but are not limited to, translation into languages other than English, and additions to or deletions from the original content. Collinson disclaims responsibility for any and all damages, injuries, warranty claims and/or any other claims associated with such changes, inasmuch as such changes result in content that is different from the authoritative version.

Every care has been taken to ensure that the contents of this publication are accurate but Collinson do not accept responsibility for errors or information which is found to be misleading, should you observe any questionable content in any manual, please notify Collinson immediately.

## 2. General Information

Thank you for choosing a Collinson silo, in order to get the best results from your silo we strongly recommend you read the contents of this Product File.

Products manufactured by us are safe and without risk provided they are installed, used and maintained in good working order in accordance with our instructions and recommendations.

Important!

1. Read all the instructions.
2. Retain the Product File for later use.
3. In the event of the change of ownership pass on the Product File with the silo.
4. Collinson cannot be held responsible for any damage caused by improper, incorrect or unreasonable use of the silo.

### 2.1 Intended Use

This product has been designed and manufactured for the storage of free flowing products for use in agriculture.

The silo should not be used for anything other than the intended use; any alternative use will be at the responsibility of the end user.

### 2.2 Base Construction

Before taking delivery of your silo it is your responsibility to prepare a suitable base to our precise requirements. The dimensions for your specific silo can be found on the sales documents.

### 2.3 Delivery and Installation

Your silo will be delivered and erected by our specialist vehicles, which are fitted with hydraulic tipping gear. Once in position the Collinson engineer will secure the silo to the base, when completed the silo is ready for your use.

### 2.4 Materials

- The silo has been designed to store free flowing materials less than 750 kg/m<sup>3</sup> in density.
- The capacity stated for your model of silo is the true volume of the silo. To accommodate free space as a general rule loads should be 20% less than the stated model capacity.
- Silos are not designed to store warm materials; all material should be cooled prior to storage in this silo.
- After filling the silo we recommend drawing off some material as soon as possible, this ensures the material becomes de-layered after the filling process.
- Silos should be fully emptied at least every six months and inspected to ensure material is not bridging or stagnating anywhere in the system.

## 2.5 Cleaning

We advise to clean your silo, in between material changes or on an annual basis; the SafetyClean panel is designed to enable internal inspection and cleaning in a safe manner.

Always ensure that the silo is completely dry before replacing the SafetyClean panel and refilling your silo.

## 2.6 Health & Safety Notes

Silos of any type should be treated with caution, if undertaking any action it is the responsibility of the person in charge of this silo to provide a suitable risk assessment, method statement and training of all staff employed in both the operation and maintenance.

Your safety policy should include a regular inspection of silos to ensure their structural integrity.

All Silos carry personnel hazard notices concerning safe filling procedures and access – see signage section.

## 2.7 Liability and Warranty

If the silo is operated in line with our recommendations and no modifications take place, the silo is guaranteed against material and manufacturing defects for 12 months from the date of purchase invoice. Collinson will not be responsible for any consequential loss due to negligence caused by failure to adhere to guidelines laid out in product file.

## 2.8 Customer Service

Our dedicated Customer Service Team can offer help and advice, spare parts or arrange a service visit. It is always helpful if you can provide your silo serial number which can be found on the serial plate located on the silo support structure. You can contact the team on 01995 606451

Monday – Thursday	8.30am – 5pm
Friday	8.30am – 4pm

## 2.9 Precautions and Recommendations

### Do's

- Prepare the base to Collinson specification – Section 3.6
- Allow sufficient time for the concrete to cure – Section 3.6
- Undertake a regular maintenance regime – Section 2.11
- Earth your silo – Section 3.12
- Enjoy the ease of use of your new silo

### Do Not

- Modify the silo in any way – Section 3.8
- Restrict the exhaust – Section 3.11
- Fill the silo with warm product- Section 3.14
- Overfill the silo – Section 3.11, 3.13
- Store corrosive materials in your silo - Section 3.14
- Enter the silo without undertaking a risk assessment

## 2.10 Safety

All Collinson silos are CE marked which means they are designed and manufactured to comply with stringent European standards. CE Marking on a product is a manufacturer's declaration that the product complies with the essential requirements of the relevant European health, safety and environmental protection legislation. Not all manufacturers adhere to these guidelines, so here are some of the features that make Collinson stand out from the crowd.

- The silo support is designed to Eurocode 1, parts 1-4, design calculations have been undertaken for the complete range of Collinson silos.
- Clear visual signage include important user guidance, more detailed information can then be referenced in this Product File.
- Following the removal of the securing nuts the SafetyClean provides the ability to safely inspect/clean the silo from ground level.
- Collinson silos incorporate independent filler and exhaust pipes, which are utilised for their primary use. Some manufactures utilise these features as part of the support structure, wear and tear in these items can potentially compromise the silo's structural integrity.
- In addition to aiding biosecurity by preventing product from settling on the silo roof during filling the autovent valve ensures that the silo cannot be damaged by vacuum pressure while being unloaded should the fill/vent pipes become unintentionally blocked.
- Incorporated into the AutoVent valve is a pressure relief valve; the PRV will prevent structural damage to the silo shell in the event of over pressurization.
- Catastrophic Failure – there is no guarantee against human error; over filling or over pressurisation of the silo, on some makes of silo this could result in complete structure failure and worse case scenario fatality. Collinson silos incorporate safety features such as the AutoVent and PRV to protect against individual incidents however as a final safety measure these key features; AutoVent and the PRV together with the top housing dome are designed to undertake a structured, step by step failure, which should human error persist, in order to prevent a major catastrophic disaster the Collinson system protects equipment and more importantly, personnel.

## 2.11 Maintenance

To maintain optimum material storage conditions and product longevity it is important to incorporate the silo into your maintenance regime, actions for consideration are;

Item	Action	Frequency	Reference Section
Materials	Is the silo discharging quality material freely	Daily	3.14
Construction	The silo has not been damaged	Daily	3.8
Exhaust	The exhaust is not blocked or obstructed with anything other than a Collinson Cyclone Dust Collector	Pre Fill	3.11
Cyclone	If a Cyclone is fitted, the collection unit should be emptied prior to every delivery	Pre Fill	
Venting	The silo is venting freely and the PRV has not been activated due to over filling	Daily	3.11
Earthing	The tanker driver earths the silo prior to delivery	Delivery	3.12
Filling	Draw some material off as soon as possible post delivery	Post Fill	3.16
Anchoring	Ensure the fixing bolts are secure	Monthly	4.2
Emptying	Entirely empty the silo	Material change or 6 Monthly	3.16
Cleaning	Clean the silo internally	Material Change or Annually	3.13

## 2.12 Frequently Asked Questions

### 1. How much will my silo hold?

The capacity of your silo body can be found on the order acknowledgement and also the serial plate on the silo structure, we use average product density; meal – 577kg/m<sup>3</sup>, pellets – 650 kg/m<sup>3</sup> and grain – 693 kg/m<sup>3</sup> to calculate the tonnage.

### 2. I can't get the advertised amount of material into the silo – why is this?

The silo capacity stated is the true volume of the entire shell. As detailed on datasheets prior to your purchase, extra capacity should be allowed in the silo to accommodate:

- a) variations in product density due to aeration of product during pneumatic filling
- b) variable density of the product due to manufacturing specification
- c) extra spare capacity.

As a general rule we recommend you choose a silo with a minimum additional capacity of 20% over and above the size of loads you are planning to have delivered.

### 3. Why is there dust coming out of the seams of the silo?

The silo is designed with seam overlap for water run off, seams are sealed during manufacture, however during a first fill it is not unusual for material dust to be omitted from the seams, this will then self seal and is not for concern.

### 4. What products can I store in my silo?

Collinson silos are designed to accommodate free flowing material with a density of less than 750kg/m, your silo is specified at the time of purchase with product storage being dependent upon the cone discharge selected. We offer three different discharge cones, two centres and a side. The centre discharge 60° cone is suitable for nuts, pellets and wholegrains, the steeper 67° centre discharge and side discharge cone are a more universal silo which offer a good mass material flow for meals and blends as well as grain and pellets.

### 5. Can I change the type of material I store in my silo?

You can change your material type at any time, so long as your selected model discharge will accommodate the new material type. It is advised to clean the silo in between material changes to ensure traceability and product quality.

### 6. Do I need to clean my silo out?

For silo longevity and product quality it is recommended to clean the silo out as part of a good maintenance regime.



#### **7. Why is my material sticking/coming out in clumps/mouldy?**

If material is delivered in an excessively warm condition it creates a significant rise in temperature within the free or space inside the silo, if this can not be vented successfully the moisture held in the atmosphere forms condensation above the material line, over time the organic material begins to decompose. As decomposition occurs at the top of the material level it can be a number of weeks before the damaged material is discharged, often in the form of mouldy, clumped material this is the result of a condensation event. More detailed information, required action and preventative measures can be found in Section 3.13.

#### **8. Is a metal silo more likely to condensate?**

No, a condensation event can occur in ANY type of un-insulated silo irrespective of the material used in construction. It should be noted that no agricultural silos are insulated.

#### **9. Can I discharge manually if I have a conveyor connected?**

This all depends on the specification of your SafetyClean panel at the time of purchase, if material is discharged via a conveyor and your SafetyClean does not incorporate a discharge this can be upgraded to a SafetyClean plus which incorporates an extra discharge for bagging off within the panel, the panels can easily be exchanged when your silo is empty.

#### **10. Can the filler pipe be extended? If so, how far?**

Filler pipes can be easily extended, whatever the reason; one central delivery point or moving the delivery point to certain place for welfare requirements, this can be done at the time of installation or as a retro fit. If at the time of build it is considered the filler pipes may be extended at a later date let us know, we can advise as to the best plan of action to accommodate future extensions.

If you have queries with regard to the required length we advise that you speak to your material supplier to ensure they are happy to blow the material over the required distance.

#### **11. Can I replace filler pipe bends?**

When filling the silo the top bend is the first point of impact for your material, our heavy duty 5mm walled filler bend protects against the wear and tear of the more abrasive material types, maximising longevity of your filler pipe. The bend is designed as sectional so, after years of use, it can easily be replaced and renewed.

#### **12. Why can't I tie a sack around the exhaust to capture any dust created during filling?**

The exhaust is designed to be free venting, air flow must not be restricted in any way by attaching bags, sacks or similar. Removal of the anti tamper plate will void any warranty on your silo. A Collinson Cyclone Dust Collector is available to separate dust generated during filling from the exhaust air, this simple dust collection system will keep your silo base clean and vermin free.

#### **13. Can I move the silo once it has been bolted down?**

Once the silo is bolted down by our personnel it is secure and ready to use, we do not recommend moving it.

#### 14. **Can I retrofit load cells?**













Load cells must not be retro fitted to a Collinson silo without written authority from Collinson plc.

Any modifications to the leg structure without authority from Collinson plc will invalidate any warranty and the responsibility for ensuring that any such modification is compliant with the relevant design standards lies solely with the company or customer undertaking those works. Should serious damage or injury be sustained following unauthorised modification of a silo structure the person undertaking those modifications would be wholly liable.

## 2.13 Signage

Visual signage is displayed on the silo to identify risk; detailed information can be found within the Product File.

**It is Important that these instructions must be read and understood by the user**

	Prohibited		See manual
	No open flame; fire, open ignition source and smoking prohibited		Connect an earth terminal to the ground
	Do not walk or stand on here		Wear a mask
	Toxic materials		Keep locked
	Falling objects		Allowed
	Moving machinery		Not allowed

## 2.14 End of Life

At the end of a very long working life, if required, your silo can be recycled. It is the responsibility of the owner to dispose of the silo responsibly and in accordance with current environmental regulations.

## 2.15 EC Declaration of Conformity

The Collinson County Range Silo is CE marked, designed and manufactured to comply with stringent European standards. CE marking is the manufacture's declaration that the product complies with the essential requirements of the relevant European health, safety and environmental protection legislation.

A copy of the certificate of declaration is available on request from Collinson.

## 3. Technical Information

### 3.1 General Design of County Range Silos

Silos refer to all vessels or containers for the storage of large quantities of granular bulk materials. Silos may variously be referred to as feed bins, bunkers, hoppers or tanks.

Silo Structure includes silo, supporting frame and concrete base. A silo shell consists of roof, vertical barrel and cone. Special design is needed to assure the integrity and serviceability of each silo structure.

### 3.2 Silo Specification

Each silo specification is site specific; here is an example of the various components.



## Parts List

Item	Description
1	Floview SafetyClean
2	Top dome housing, Autovent and Pressure Relief Valve (PRV)
3	Exhaust pipe
4	Crane strap guides
5	Filler pipe
6	Cyclone
7	Outlet aperture

### 3.3 General Specification

<b>Roof Angle</b>	30°
<b>Cone Angle</b>	Range S1/T1- 60°; range S3/T3 - 67°; range S5 - 50°/90°; range S4 60° or 67°
<b>Legs</b>	Straight
<b>Close Riveted Seams</b>	Rivets at max spacing 80mm, min spacing 50mm
<b>Level Indicators</b>	0.6m interval – dependent on model specification
<b>Outlet Aperture</b>	0.4m diameter
Dimensions pertinent to individual silo models are supplied on customer sales documents	

### 3.4 Design Calculations

- Overturning safety is ensured by checking that force exerted by the wind is less than the resistance afforded by the self weight of the silo and the concrete base.
- The silo support structure is designed to Eurocode 1 parts 1-4, ensuring that the silo is protected against basic wind speeds of up to 26m/s at 250m above sea level and 1km from the sea.
- A minimum bearing pressure from the soil foundation of 150 kN/m<sup>2</sup> is necessary in line with EN1997-1. If you are in any doubt about the strength of the ground selected for the silo you should consult a qualified structural engineer who will be able to carry out tests to ascertain the ground strength.
- It is assumed that the silo base is to be located on level ground.

### 3.5 Design Loading

This silo has been designed to store materials with a bulk density not exceeding 750 kilograms per cubic metre (750kg/m<sup>3</sup>). The cubic capacity of your silo model is included on the sales documents; the maximum allowable tonnage can be calculated by multiplying the capacity by product density.

If your material is of greater density than 750kg/m<sup>3</sup> please contact Collinson for advice.

Silo capacity indicated is the true volume of the entire shell of the silo. Please allow extra capacity in the silo you chose to allow for:

- a) Variations in product density due to aeration of product during pneumatic silo filling.
- b) Variable density of the product due to manufacturing specification.
- c) Extra spare capacity.

As a general rule we recommend you chose a silo with a minimum additional capacity of 20% over and above the size of loads you are planning to have delivered.

### 3.6 Base Construction

- **Standard Base Design**

When deciding if you can use a standard base design you should firstly ensure that your chosen site falls within the parameters set out in Section 3.4; if it does then follow the rules below:-

- Select the correct base dimensions for your silo model; this is shown on the sale document.
- Specify concrete with grade C30, conforming to BS EN 206-1:2000.
- Workmanship on the base must comply with BS8000-2-2:1990, we recommend it is cured in temperatures above 5°C and that protective measures are taken should the temperature fall below this level. Generally, weather dependent, this will have cured enough to accept a silo delivery anywhere from 7-14 days; however you should be aware it will not reach its compressive design strength of 30 N/mm<sup>2</sup> until 28 days.
- If you wish to achieve a faster curing time please speak to your ready mix supplier who can add accelerators or supply a higher grade of concrete such as C40.
- Ensure the base is made up of one continuous slab of concrete, with a fall of no greater than 5mm per metre between legs; the silo will be positioned centrally on the base with a minimum of 300mm from the edge of the concrete to the outer edge of the leg.

Please Note: Adding extra concrete on top or at the side of an existing base to make the overall dimensions comply **WILL NOT** meet our minimum specification.

- If you wish to modify an existing base to meet our minimum specification you should consult a qualified structural engineer.
- Do not use any steel reinforcement – if you do we may not be able to drill the base; if this occurs it will be your responsibility to complete the bolting down process.



The Engineer will drill the concrete base and bolt the silo into position using expansion type anchor bolts which will be tightened to 50Nm (Newton metres) or 37ft lbs (foot pounds).

If the Engineer can not achieve the desired 50Nm torque on the holding down bolts this will be because the base does not meet our minimum specification. You will at this point be asked if you would prefer us to abort the delivery or sign a [disclaimer](#), if you sign the disclaimer you will be advised to fill the silo as soon as possible and re-tighten the bolts periodically until the 50Nm torque is achieved.

Non compliance of our guidelines may affect the structural integrity and/or safety of the silo, dependent upon the reason for non compliance you will be given the option to abort the delivery or sign a disclaimer, See Appendix 7.4.

If delivery is rescheduled a charge will be incurred to return to site once the base conforms to guidelines.

If you have any concerns about your base please contact Collinson.

- **Non Standard Base Design**

If your chosen site falls outside any one of the parameters set out in Section 3.4 then to ensure compliance with building regulations you should consult a qualified structural engineer. An engineer will be able to provide a suitable design for a concrete base to meet your specific requirements; to enable the engineer to complete the base design, ensure that this silo Product File complete with design data in Appendix 7.1 is given to the engineer.

The engineer should ensure that the base: -

- Conforms to EN1991-1.
- Has no steel reinforcement in the areas upon which the silo feet are to be situated, to ensure that we can drill the base.

### **3.7 Base Location and Access for Services**

The concrete base must be easily accessible with a firm approach clear of all obstructions, overhead wires, trees, etc. For single silo delivery the vehicle and its load is approximately 10.5m long, 3.5m wide and 4.8m high.

Care must be taken when selecting a silo site close to overhead electricity cables, 1m is usually sufficient for low voltage cables. If you believe the cable to be high voltage cables you may need permission from the electricity company, if in doubt ask the electricity company.

### **3.8 Silo Construction**

Collinson County Range silos are constructed so the silo body/shell and any interconnecting components are both weathertight. This ensures that under normal operation material stored within the silo is kept suitably protected from ambient water/moisture ingress.

Please note that Collinson defines moisture ingress as moisture derived from rainwater and ambient air acting on the exterior of the silo. As the silo is free venting and Collinson is not in control of the weather conditions, material moisture content or temperature, we can not guarantee the total prevention of moisture build up on the internal wall and roof surfaces as a result of condensation events.

Plasteel™ and Galvanised steel have been selected as materials of construction for their extreme resistance to atmospheric corrosion. Plasteel™ is polyester coated galvanised steel; the steel substrate is hot dipped galvanised to BS EN 10142 prior to coating.

The silo shell is designed to BS5950-1: 2000 to ensure it is safe in both normal service conditions and extreme conditions e.g. over pressurisation.

## Support Structure

The silo support structure, which incorporates the base as part of the overall support structure, is designed to Eurocode 1, Part 1-4. As the base falls outside our scope of supply Collinson provide a minimum base size and specification to ensure it provides the necessary ballast and compressive strength for the silo and support structure to withstand any combination of loads imposed by the silo contents, wind or snow, See Section 3.5 for details.

All parts of the supporting frame including columns, braces and bolts are designed and checked to EN1993-1-1 & EN1993-1-3 to ensure they are all safe in normal service conditions and extreme conditions.

The support structure of this silo **MUST NOT** be modified in any way; modifications will invalidate any warranty.

If the silo is sited in proximity to vehicular traffic then suitable anti-collision bollards must be positioned to prevent damage to the silo structure.

## Damage

Should the silo suffer damage or become unserviceable in any way then a survey should be carried out by a qualified person immediately; the silo should be emptied as soon as possible and not re-filled until the structure is deemed safe by a qualified person.

## Silo Specification

- 1. Legs** – High tensile galvanised pressed steel section.
- 2. Horizontal Struts** - High tensile galvanised pressed steel channel.
- 3. Diagonal Leg Bracings** - High tensile galvanised rolled steel angle.
- 4. Bolts** - M12 bolts 8.8 grade galvanised, nuts grade 8 grade galvanised.
- 5. Anchor Bolts** - loose bolt shield anchors, zinc plated and yellow passivated min 5µm, shield diameter 20mm, thread diameter M12, tensile load 15.1 kN shear load 31.3 kN to EN1993-1-1.

Anchor bolts are used to mount silos to C30 concrete bases and the design loads are checked to EN1993-1-1, EN1993-1-3, and EN1993-1-8 as follows:

- Pure tension: tensile force  $R_V \leq$  tensile resistance  $N_{rec}$
- Pure shear:  $\leq$  shear force  $R_H \leq$  shear resistance  $V_{rec}$
- Combined tension and shear:  $R_V/N_{rec} + R_H/V_{rec} \leq 1.4$
- Number of anchor bolts varies according to silo model

**6. Collar and Pin Rivets** - Manufactured from grade 5.8 carbon steel, zinc electroplated with a finishing coat of chromate passivate. Shear and tensile strengths for the various diameters are as follows:

Diameter	Shear	Tensile	Type
4.8mm	7.6kN	7.3kN	Seam rivets
8.0mm	21.0kN	20.1kN	Leg/body rivets
10.0mm	30.3kN	28.9kN	Leg/body rivets

**7. Level Indicators** - 3mm polycarbonate with neoprene gasket and backing plate.

**8. Filler Pipe** - 100mm diameter 1mm lock seam galvanised tube with heavy duty 5mm top swept bend with 500mm  $\phi$  radius and 3.6mm second bend with 300mm  $\phi$  radius.

**9. Exhaust Pipe** - 150mm diameter 0.8mm spiral wound galvanised pipe.

All parts of the supporting frame including columns, braces and bolts are designed and checked to EN1993-1-3 & EN1993-1-1 to make sure they are all safe in normal service conditions and extreme conditions e.g. explosion as follows:

- Tension: tensile force  $FT \leq$  tensile resistance PT
- Compression: compressive force  $FC \leq$  compressive resistance PC
- Bending: bending moments  $Mx$  &  $My \leq$  moment resistances  $Mcx$  &  $Mcy$
- Flexural buckling

### 3.9 Delivery and Installation

#### Standard Delivery

A standard delivery can only be achieved if the Collinson vehicle can access (reversing) the proposed base without any difficulty.

Collinson County range Silos are delivered & erected by vehicles fitted with hydraulic tipping gear which places the Silo vertically on the concrete base.

The Method Statement & delivery process are detailed for your information on the Silo Pre Delivery datasheet.

#### Deliveries Requiring a Crane Lift

If for any reason the silo cannot be placed on the base as described above then usually a crane lift is required. There are two options here as follows:

**Contract Lift:** This is where the customer arranges his own lift with a competent crane hire company who will take full responsibility for the lifting process. When the lift is completed the Collinson Engineer will then complete the installation.

Note:- Lifting points are provided at the top of each leg for shackles. However a protective plate to deter bird nesting must be removed first.

**Collinson Lift:** In this situation the customer agrees to authorise the Collinson Team to organise the lift. In doing so, Collinson plc., take full responsibility for the activity.

## Fixing to Base

For this work to be carried out efficiently and safely it is essential that the Silo base is sited and constructed in accordance with the recommended specification (see section 3.6).

The Engineer will drill the concrete base and bolt the silo into position using expansion type anchor bolts which will be tightened to 50Nm (Newton meters) or 37ft lbs (foot pounds).

If the Engineer can not achieve the desired 50Nm torque on the holding down bolts this will be because the base does not meet our minimum specification. See section 3.6.

## Fixing Maintenance

The fixings are securely fastened to the specified torque by our trained personnel, due to the external siting and exposure to the elements we recommend that the torque of the fixings is checked periodically to ensure the integrity of the fixing. See Appendix 4.2, points 8 and 9.

If a loose fixing is identified please notify Collinson immediately for advice.

**WARNING:** In adverse weather conditions a loose fixing could result in the silo coming free from the base possibly causing damage to the silo, surrounding buildings or personnel.

## 3.10 Load Cells

Load cells can be fitted to a new Collinson silo utilising a Collinson load cell mounting frame, see notes below and contact the Collinson Sales Team for further advice.

Load cells must not be retro fitted to a Collinson silo without written authority from Collinson plc.

### Important

If a Collinson silo leg structure is modified in any way without authority from Collinson the responsibility for ensuring that any such modification is compliant with the relevant design standards lies solely with the company or customer undertaking those works. Should serious damage or injury be sustained following unauthorised modification of a silo structure the person undertaking those modifications would be wholly liable.

### Load Cells Installed Beneath a Silo Leg

The standard leg structure on Collinson silos is designed on the basis that they will be bolted to a suitable concrete base; the base provides two important design elements:

- a) Vertical forces protection.
- b) Horizontal bracing to prevent the legs moving laterally.

The standard silo foot is designed to provide:

- a) The correct number of holding down bolts to be fixed into the base to prevent uplift for a given silo model, this will range from one, two or three M12 bolts per foot.
- b) To prevent any lateral movement of the silo leg.

The standard foot and leg are not designed for use with load cells unless the chosen load cell mounting system replaces the structural elements of the concrete base. Most load cell mounting systems do not provide the correct structural elements.

### **Load Cells Bolted Directly To Silo Legs**

Some suppliers of load cells countenance cutting completely through a silo leg and bolting a load cell directly to the leg; this must never be done to a Collinson silo.

Collinson only recommends fitting load cells beneath silo legs; these must be complete with propriety mounting system that provides sufficient uplift protection and must be used in conjunction with a Collinson load cell mounting frame, these are available for most Collinson silos, specifically any fitted with straight legs of either the hot rolled angle or current pressed steel section design.

The Collinson load cell mounting frame is designed to replace the structural elements lost from connection to the concrete base and to provide a stable base for the load cell system. The mounting frame can be supplied to suit most types of load cell.

Before fitting any load cell to a Collinson silo please contact our customer service department with full details of the proposed load cell and mounting system. Collinson will then provide advice on the correct type of frame and cost.

We recommend that all load cell mounting units should affix to the base by way of a substantial base plate c/w 4 x 25mm diameter holes so as to allow the silo to be finally positioned and levelled prior to drilling and installing the expansion type holding down bolts, the 25mm diameter holes allow for the correct size of drill for the anchor bolt shell.

### **Load Cell Installation**

When delivering a new silo complete with a load cell frame, so long as the silo delivery vehicle can back into the correct position, the delivery driver will assist your fitter to attach the load cells onto the support frame and lower the silo into position and secure.

Collinson silos can be retrofitted with load cells utilising our specialist jacking equipment whilst the frame and cells are installed, a crane is not required for this procedure.

### **Health and Safety for Fitting of Load Cells**

Before undertaking works to any equipment with a structural element such as a silo the end user must ensure that the proposed solution meets all design requirements and will be safe in all respects.

Before commencing work a risk assessment must be undertaken and a method statement completed.

### 3.11 Exhaust Pipe, AutoVent and Pressure Relief Valve (PRV)

**IMPORTANT:** Do not block the exhaust pipe or fit any dust collection bag/sack/filter as this may result in damage and invalidates any warranties. Removal of the anti-bag-fit bracket also voids warranty.

- This exhaust comprises a 150mm diameter ducting system manufactured from 0.8mm spiral wound galvanised pipe which ducts air from the roof area of the silo to ground level.
- The Autovent Valve is situated at the top of the silo; this valve allows slightly warm air, in most climatic conditions, within the silo to vent to atmosphere, minimising internal temperatures and humidity which can lead to condensation.
- The Autovent closes automatically when the silo is being filled pneumatically, forcing excess air to be released via the silo exhaust pipe; this prevents material dust being deposited onto the silo roof.
- Additionally the valve ensures that the silo cannot be damaged by vacuum pressure while being unloaded should the fill/vent pipes become unintentionally blocked.
- To ensure that the Autovent valve is venting correctly it can be tested by releasing smoke pellets into the silo when empty; this should be done with the discharge open to create a through draught, smoke should be seen exiting the Autovent. Smoke pellets can usually be obtained from a plumbers' merchant.
- Incorporated into the AutoVent valve is a pressure relief valve; this is to prevent structural damage to the silo shell caused by over pressurization a pressure relief valve (PRV) is fitted at the top of this silo, designed to relieve pressure at 0.09 Bar ( $\pm 0.005$  Bar).
- The PRV will only be activated if the silo exhaust pipe is blocked during pneumatic filling, causing the silo internal pressure to rise above 0.09 Bar; a blockage is usually caused by overfilling the silo or poor maintenance, unless the exhaust pipe has been blocked intentionally.
- When overfilling occurs the silo exhaust pipe can become blocked either inside the silo, or if a dust collection cyclone or other form of filtration device is fitted to the outlet of the exhaust pipe, this may become blocked by excess material or by incorrect / inadequate maintenance.
- In the event of a PRV activation material may be vented through the PRV to be deposited on the silo roof and surrounding area.

Additionally, in some circumstances material may remain trapped in the PRV seal; the following procedure must be carried out to ensure a dust tight seal is regained:

#### PRV re-setting procedure

1. Remove approximately 250kg of material from the silo.
2. Start the vehicle blower without delivering any material.
3. Ensure that the filling air is being fully vented from the silo exhaust pipe.
4. Block the silo exhaust pipe for about 3 seconds to cause the PRV to open.
5. Repeat this operation twice more to ensure any material has been cleared from the PRV seal.

Collinson are not liable for any costs incurred due to the PRV seal not re-setting correctly following activation.

Under normal operating conditions the PRV should not need any maintenance.

### 3.12 Earthing

As the silo is a conductor it should be earthed in accordance with IEE regulations. An earth bonding point is provided by any of the leg bracing bolts and can be identified with the earthing sticker.

Earthing is advised to ensure safe dissipation of static electricity in all situations, requirements vary dependent upon the sites earthing arrangement, work should be carried out in accordance with the current BS7671.

### 3.13 Filling, Pneumatic Filler Pipe (PFP)

**IMPORTANT;** Prior to filling it must be checked that the Exhaust pipe is not be restricted in any way; damage caused by fitting any type of restriction other than a Collinson Cyclone c/w a pressure relief valve will void all warranty on this silo.

Ensure hot material is not blown into the silo, material with latent heat may cause any or all of the following issues; a condensation event, mould and lumpy material and/or a high level bridge drop. See Section 3.14, Materials.

To prevent overfilling always ensure that the delivery driver is directed to fill the correct silo and that there is sufficient capacity to accept the delivery.

As standard Collinson silos are fitted with a lockable 100mm steel pipe coupling for clamping flexible/rigid delivery hose/pipe to, please note this will typically not provide electrical bonding between the delivery hose/pipe and the silo.

To ensure that the correct silo is filled the PFP lock should be used at all times; if the site has more than one silo the silos should be clearly identified.

If the silo is to be filled with a potentially explosive material then it is advised that the operator is present at each fill to ensure correct procedures are adhered to.

Ensure that during filling the maximum amount of material is delivered with the minimum amount of conveying air to minimise product degradation and separation, which can generate dust clouds.

Always ensure the delivery driver has earthed the wagon/pipe/hose to the silo to prevent electrostatic discharge/arcing, which is a known ignition source.

Dependent upon the product being stored in the silo it is recommended that the silo discharge aperture is inspected on a regular basis and cleaned as required.

### 3.14 Materials

Silo capacity indicated is the true volume of the entire shell of the silo. Allow for variations in product material. (See section 3.5).

This silo has been designed to store free flowing materials only; materials prone to 'bridging' should be avoided.

Material bridging as a result of material coagulation in silos can be caused by one or more of the following material quality/usage issues:

- Non free flowing
- Material delivered with latent heat
- Material with a high moisture content
- Sticky or tacky materials such as those that contain molasses
- Low material usage/throughput

Any of these reasons may cause material coagulation causing a "bridge" or "hang up" at a high level or off-centre loading creating the potential for serious structural damage to occur should the material freefall en masse, usually in the form of inward buckling of the silo shell.

Such forces fall outside the structural design limits of the silo. Any structural failure or damage caused by the above will void all warranty claims, to avoid this we recommend operating and maintaining your silo as follows:

- **Product Characteristics** - Ensure that the material specified by your supplier does not have any of the above properties.
- **Keeping Material Fresh** - Your silo should only be filled so that the entire contents will be discharged within a four week period or the maximum use by date provided by your material supplier.
- **Maintaining Optimum Condition** - Silos should be emptied to within 10% of its total capacity and inspected prior to delivery of new material to ensure new material is not delivered on top of non flowing material which that has not been discharged.
- **Hygiene** - Silos should be fully emptied at least every six months and inspected to ensure material is not bridging or stagnating anywhere in the system.

#### Material Delivery Condition

Animal material, and pelleted material in particular, should be fully cooled prior to despatch from the material mill; this is normally the case. Nominal amounts of residual manufacturing heat still present in material when delivered into a silo will not normally cause a problem when vented to atmosphere via an effective roof mounted vent such as the Collinson AutoVent.

County range silos are not designed to store warm materials; all material must be fully cooled prior to storage in this silo; warm material will;

- a) Generate excessive amounts of heat/moisture which the silos AutoVent system is not designed to cope with
- b) Lead to particles of material tending to stick together
- c) Cause flow problems



## Ventilation problems

Silos must have a roof mounted ventilator to release small amounts of latent manufacturing heat, generated by the silos contents, and also to release any warm air inside the empty section of the silo caused by solar pickup.

All Collinson silos are fitted with an AutoVent as standard equipment; you should periodically test the vent to ensure it is working effectively.

## Condensation Event

Silos discharging damaged material – If wet or mouldy material is discharged from a silo it is often assumed that the silo must have a leak; in rare cases this may be the reason, however it is more likely that a 'condensation event' will be the cause.

If material is delivered in an excessively warm condition due to the manner in which it has been manufactured, the considerable latent heat given off by the load in the silo cannot be fully dissipated by either conduction through the silo wall or convection to atmosphere via the ventilator. In these rare cases there can be a 'condensation event'; this takes place in two parts, 'primary' and 'secondary'; this type of event can cause serious damage to both the silo contents, and the silo if left unresolved.

**The primary condensation event** occurs when the excessive heat present in a load causes a significant rise in temperature and humidity inside the silo's free air space; if this cannot be vented successfully then the moisture held in the atmosphere is released when it comes into contact with the cold silo wall, forming condensate above the material line.

This condensate then runs down the circumference of the silo shell and causes material to become wet around the silo wall/load intersection, the top central area of the stored material also becomes damp from drips of condensation falling from the silo roof.

It should be noted that this primary effect can occur in any type of un-insulated silo irrespective of the material used in its construction; it should be further noted that no agricultural silos are insulated.

**The secondary phase of a condensation event** begins when material that has been affected by dampness during the primary phase starts to deteriorate. As the material being stored is usually organic, decomposition rapidly starts to occur, especially in the warm damp conditions.

Organic material which is decomposing generates a substantial amount of heat; this secondary source of heat then causes yet more condensation and a cycle develops, which can accelerate. It should be noted that if the silo's contents are left undisturbed, large amounts of the stored material can become affected.

These events usually go unobserved until the load is slowly emptied, when material affected by the composting action starts to dislodge and travel downwards to be discharged alongside unaffected material; in many cases the entire load can become contaminated. If the damaged material is not detected by the silo operator and is fed to livestock, this semi-decomposed/mouldy material which contains toxins can/will cause severe health problems.

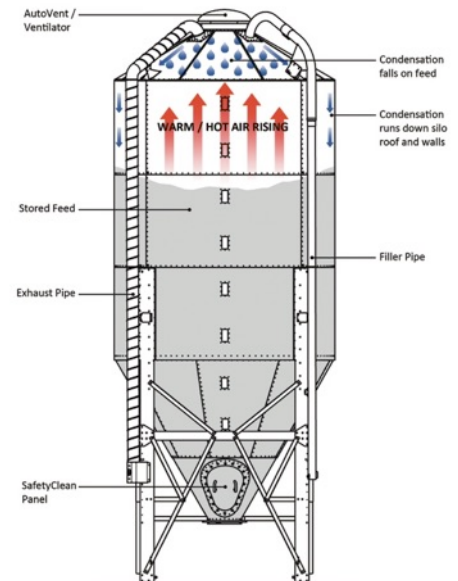
Following a condensation event the material company should be informed, and the silo should be thoroughly cleaned and fumigated. See section on cleaning.

## What causes condensation?

There are only two causes of condensation damage in a silo:

1. The silo's roof mounted ventilator is working incorrectly
2. The silo has been subjected to misuse by filling it with warm/hot material.

It should be noted that leaks in silos cannot cause a major condensation event; leaks are generally very small and consequently only affect a very small amount of the material stored adjacent to, or directly below the leak. Although this small mass may decompose it never generates sufficient heat to create a condensation event.



## I have noticed damaged/spoiled material being discharged from a silo, what should I do?

Firstly determine the cause of the damage.

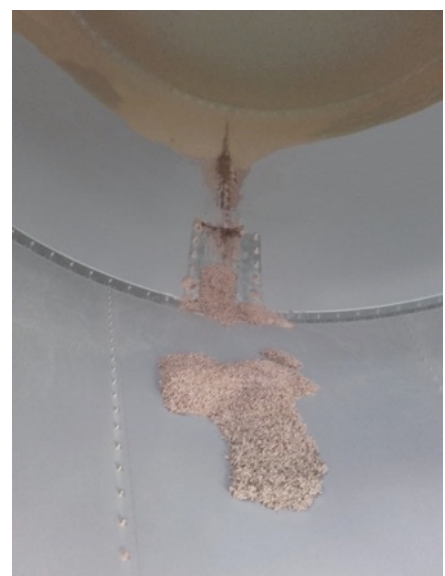
If wet or mouldy material is discharged from a silo it is often assumed that the silo must have a leak; in rare cases this may be the reason, however it is far more likely that a 'condensation event' will be the cause.

To discover the cause of your silo discharging damaged/spoiled material:

1. Completely empty your silo, ensuring to segregate all damaged material.
2. Isolate all electrical equipment and remove the SafetyClean panel.
3. Carefully inspect the interior using good illumination.
4. Compare the symptoms below to establish the likely cause;

### Symptoms of a leak

- A mass of wet material or an obvious stained patch in a specific position.
- The mark is localised, it may expand downwards and outwards slightly.
- The stain never completely encircles the silo shell.
- Water marks may be apparent running down the silo wall above the stain.



## Symptoms of a condensation event

- A clearly defined mark (“ring”) around the circumference of the silo, usually at the highest level that the material reached when the silo was last filled.
- Remnants of material adhering to the silo perimeter at the load level when the condensation event occurred.
- Mould growth/staining above the load line which usually covers the entire silo shell.



## What should I do if there has been a condensation event?

Firstly discover the cause of the event.

1. Test the roof ventilator to ensure it is working effectively; please study the Silo Product File.

If the ventilator is working satisfactorily then almost certainly the problem has been caused by a specific load of warm/hot material, at this point you should contact your material supplier and inform them of the situation, the silo should then be thoroughly cleaned and fumigated.

## What should I do if there has been a leak?

By observing the location of the staining on the inside it is generally quite easy to discover where the silo is leaking; it will be necessary to seal the point that is leaking on the exterior of the shell using silicon mastic.

## How should I clean the silo following a leak or a condensation event?

Our recommendation is that before the silo is refilled it should be thoroughly power washed via the cleaning panel (if fitted) and left to dry completely; this can be hastened by using an industrial gas powered warm air heater blowing into the silo.

Following this cleaning procedure the silo should be fumigated to ensure any fungal contamination is completely cleared. Your material company may also recommend the use of a mould inhibitor.

### **What causes warm material to be delivered?**

All pelleted material is heated to around 70 degrees centigrade prior to being pelleted, as the pellets descend from the pelleting press they are generally cooled by being passed through a stream of ambient air. Mostly this ensures that the pellets are sufficiently cooled.

The problem tends to occur most during autumn months when days can be warm and nights cool. For example, if the pellets were produced when the ambient air temperature at the production mill was say 25C and were then delivered promptly into a farm silo in the late afternoon, then the silo shell becomes cold overnight then ideal conditions are there for a condensation event to occur. The latent heat within the material produces heated, moisture laden air which then condenses on the silo shell, if sufficient condensation is produced then it's likely that a condensation event is ongoing.

### 3.15 Filling Pressure

This silo shell has been designed to operate with a maximum safe working internal pressure of 0.1 Bar. It can be filled by road delivery tankers fitted with a positive displacement Roots type blower capable of delivering a maximum of 2500 m<sup>3</sup> of air per hour. During normal filling operations i.e. with the silo exhaust pipe unobstructed the internal pressure within the silo should not exceed 0.01 Bar.

### 3.16 Emptying

After filling the silo we recommend drawing off some material as soon as possible, this ensures the material becomes de-layered after the filling process. Material that is prone to caking or setting should be removed on a regular basis.

All silos should be completely emptied periodically to ensure that they are smooth and clean. When a single conveyor is connected to 2 or more silos in series it is essential that cut off slides are used to ensure only 1 silo is being emptied at once to ensure the discharge system is not overloaded.

### 3.17 Cleaning

#### Cleaning Technique

Collinson County range silos are constructed so the silo body/shell and any interconnecting components are weathertight. This ensures that under normal operation material stored within the silo is kept suitably protected from ambient water/moisture ingress.

Rainwater falling at any angle up to 60° from the vertical shall have no harmful effect, however whilst cleaning water must not be projected by a nozzle greater than 60° against the silo body/shell or interconnecting components as this may lead to minor localised water ingress.

It is recommended that all interior and exterior cleaning be done whilst the silo is empty and following our guidelines as above.

The SafetyClean panel is a standard feature in the cone of all Collinson silos; it is designed to enable internal inspection and cleaning in a safe manner. Cleaning can normally be performed without entering the silo using a high pressure hose followed by fumigation pellets if required. Ensure that the silo is completely dry before replacing the SafetyClean panel.

#### Health and Safety when Cleaning

Silos should be treated with caution: the following notes are for guidance only. It is the responsibility of the silo owner to incorporate a risk assessment into their Health and Safety policy and to ensure that all operators are trained in safe working practices. We recommend that a copy of BS7885 'Safe entry into Silos' is obtained for reference.

## Prior to Removing the SafetyClean Panel

- Ensure that any unloading equipment is electrically isolated.
- Ensure that any other electrical equipment fixed to the silo is isolated. e.g. vibrators.
- Wear suitable personal protective equipment.
- Cautiously check that the silo is completely empty and that there are no materials bridged at high level that may fall and injure the operator.
- Open the manual discharge chute, if fitted, and release any residual material.

## Prior to Inspection / Cleaning

The SafetyClean is designed to accommodate complete routine inspections and cleaning without entry into the silo. If the silo is to be entered for what ever reason, then in addition to completing a suitable and sufficient risk assessment, all precautions must be taken as provided by the Confined Space Regulations 1997.

- Unauthorised persons must never open the Inspection Panel.
- Cordon the area off and keep all personnel away from the working space.
- Smoking, fires or naked flames is strictly prohibited during the inspection/cleaning process.
- If a conveyor is incorporated in the system there is a danger of injury from movable parts. Ensure this has been electrically isolated.

## After Cleaning

- Allow the silo to dry completely.
- Ensure that the panel gaskets are clean and dry.
- Replace the panel securely prior to refilling the silo.
- Filling procedures should be carried out in accordance to the instructions of the pellet suppliers.

## 3.18 Standards

- All Collinson products are accredited with the quality standard UKAS ISO 9001.
- The County Range silos are CE marked.

## 3.19 Health & Safety Notes

Silos of any type should be treated with caution; the following health and safety notes are for guidance only; it is the responsibility of the person in charge of this silo to provide a suitable risk assessment, method statement and training of all staff employed in both the operation and maintenance of this silo.

Again we strongly recommend that a copy of BS7885:1997 – ‘Safe Entry into Silos’ is obtained and incorporated into your Health and Safety policy.

Your safety policy should have provision for regular inspection & cleaning of the silo to ensure the serviceability of the equipment.

All Silos carry visual signage on the silo to identify risk, see Section 2.13; detailed information can be found within the relevant section of the Product File.

Contact Collinson’s Health and Safety manager for further advice.

### 3.20 Explosion Risk

During the filling process some materials may give rise to a dusty atmosphere within the silo, also known as a dust cloud. As the silo itself does not have its own ignition source there is no risk of explosion from the silo itself. Any other sources of ignition during use should be either eliminated or minimised.

It is the responsibility of the operator to undertake a risk assessment (RA) of the proposed silo installation including any ancillary equipment supplied by Collinson or others. Following a RA the operator must ensure all suppliers have sufficient information to ensure that they can specify appropriate equipment.

If the RA indicates that there is an explosion risk then the equipment falls under the design and operational requirements of ATEX and DSEAR. Appendix 7.3 provides pointers to areas which should be considered when undertaking the RA. It further aims to set out general system design which Collinson believes to be best practice.

### 3.21 Guarantees

The silo is guaranteed against material and manufacturing defects for 12 months.

The structural integrity of the silos is guaranteed for 10 years with the exceptions of damage caused by:

- Overfilling i.e. working pressure has exceeded 0.03barg
- Overloading i.e. storage of materials over 750Kg/m<sup>3</sup>
- Positive pressurisation caused by over pressure events as a result of the exhaust system being compromised; i.e. blocked or restricted
- Negative pressurisation caused by under pressure events as a result of material drops and the associated vacuum
- Material drops caused by poor flowing materials hanging up/bridging
- Wear to the filler pipe system
- Internal corrosion as a result of: lack of maintenance/cleaning
- A condensation event
- Storing corrosive materials
- Any modification to the silo
- Explosion panels bursting by whatever cause

The guarantee period commences from the date the silo was invoiced to the purchaser.

### 3.22 Consequential Loss

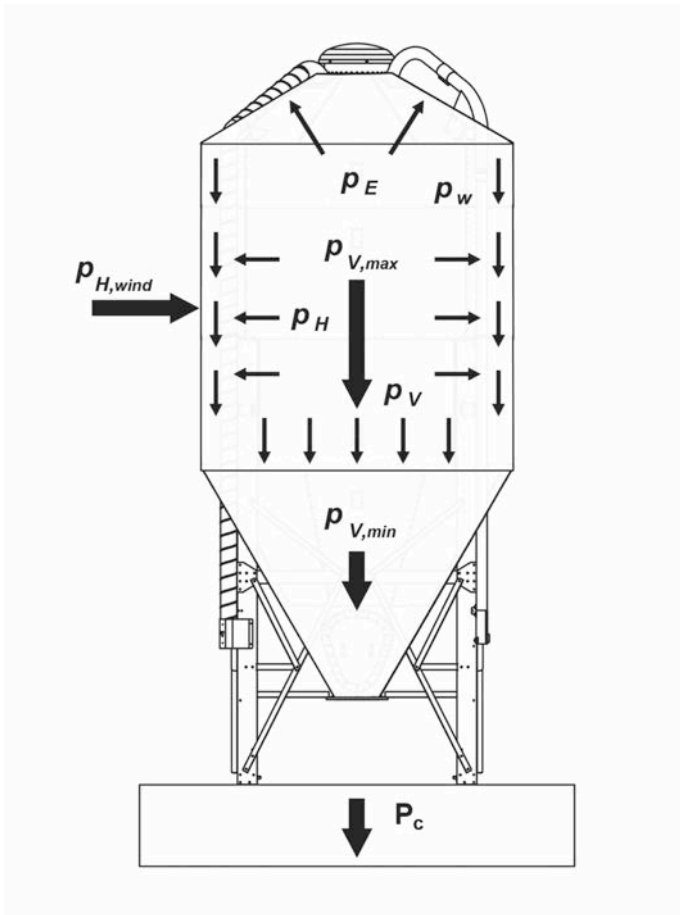
Collinson plc shall not be liable for loss caused to stored material or due to negligence caused by failure to maintain, clean and inspect the silo after each load has been excluded.

Collinson plc shall not be liable for any loss of profit or expenditure incurred due to negligence caused by failure to adhere to guidelines laid out in the Product File.



## 4 Technical Appendices

### 4.1 Appendix: Design Loads



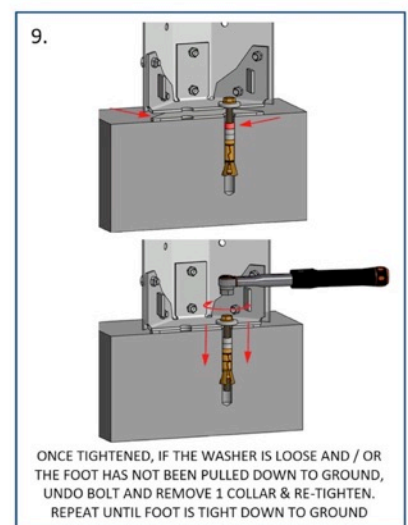
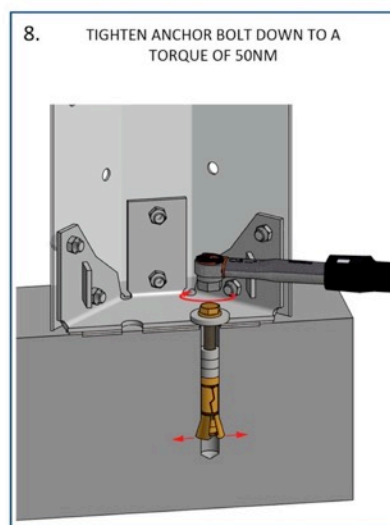
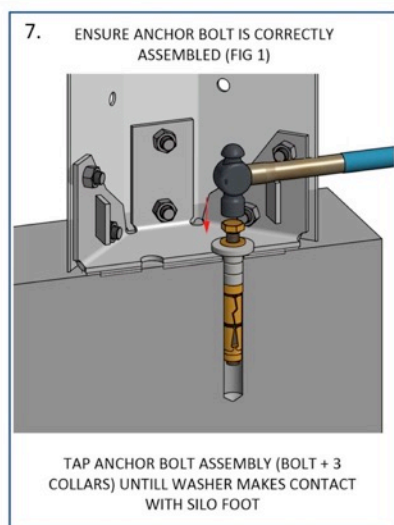
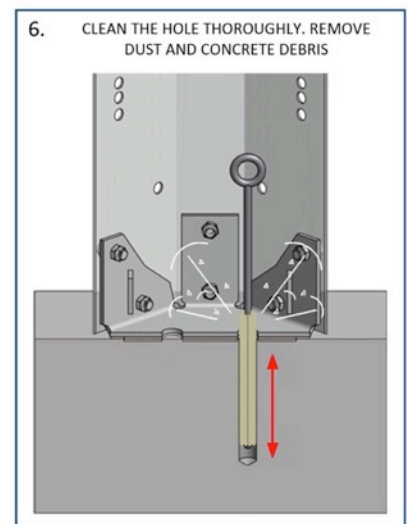
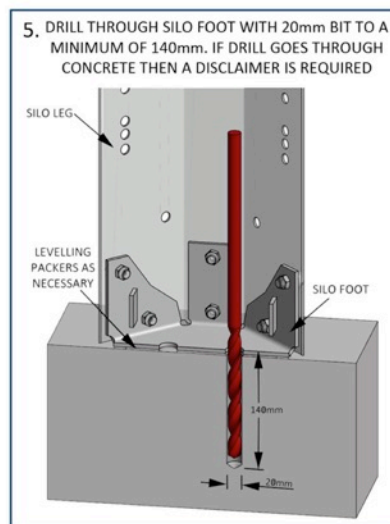
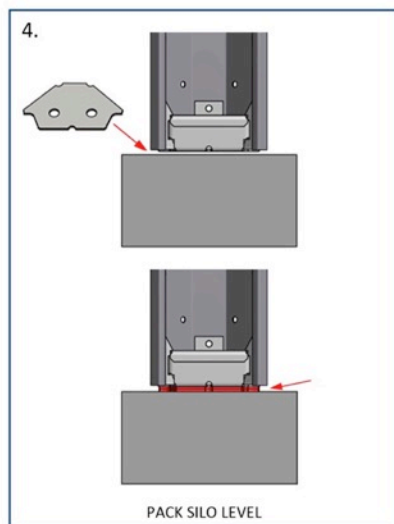
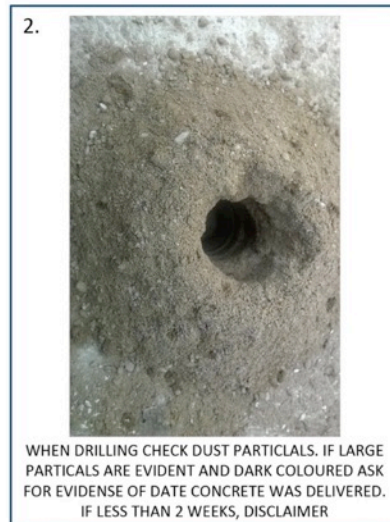
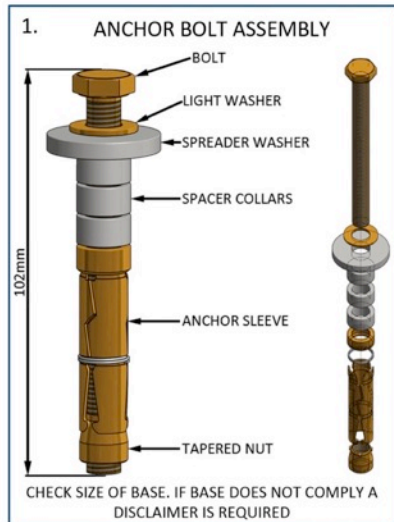
Structural calculations are undertaken for all Collinson silos, in silo design, the following design loads are considered:

- Minimum vertical load  $P_V, \min$  (dead load or self weight).  
Imposed vertical load  $P_V, \text{imp}$  (stored bulk materials): a constant bulk density of  $750 \text{ kg/m}^3$  is adopted.
- Maximum vertical load  $P_V, \text{max} = P_V, \min + P_V, \text{imp}$ .
- Horizontal wind load  $P_H, \text{wind}$ : Here, the site location and altitude, wind direction, season factor, occurrence probability and geometric dimensions of the silo are considered to EN1991-1-4. Basic wind speeds of up to 26 m/s at 250 metres above sea level and 1km from (or to) sea are used for calculating wind loads.
- Internal pressures  $p$ : Here, vertical pressure  $p_V$ , horizontal pressure  $p_H$  and wall friction pressure  $p_W$  caused by stored bulk material are considered to Din1055-6: 1987, and uniform explosion pressure  $p_E$  to ENV1993-1-6: 1999.

The loading factors and pressure limit are used based on EN1990:2002



## 4.2 Appendix: Anchor Bolt Assembly and Fixing Method



### 4.3 Appendix: Explosion Risk

During the filling process some materials may give rise to a dusty atmosphere within the silo, also known as a dust cloud. As the silo itself does not have its own ignition source there is no risk of explosion from the silo itself. All sources of ignition during use should be either eliminated or minimised.

- It is the responsibility of the operator to undertake a risk assessment (RA) of the proposed silo installation including any ancillary equipment supplied by Collinson or others. Following a RA the operator must ensure all suppliers have sufficient information to ensure that they can specify appropriate equipment.
- If the RA indicates that there is an explosion risk then the equipment falls under the design and operational requirements of ATEX and DSEAR. The following notes provide pointers to areas which should be considered when undertaking the RA. It further aims to set out general system design which Collinson believes to be best practice.
- The explosivity of a dust cloud generated during transportation is given values known as the Kst and Pmax values. Once known these are used to ensure the storage silo/s, vessel/s and associated material handling systems are designed and operated in such a way to minimise the risk of an explosion and if an explosion does occur that the equipment used will not cause injury or collateral damage.
- Your material supplier should be able to provide you with the Kst and Pmax values for the product being offered. If this vital information is not available Collinson can offer to test a sample of the proposed fuel on your behalf or advise you of companies who will.
- It is the responsibility of the operator to undertake a risk assessment (RA) for use by operators of the equipment once it has been commissioned, importantly with consideration being given to use during filling. Tramp metal fragments within the material striking elements of the silo/vessel as they are blown in; as always the source of such items can be difficult to trace, but it does occur.
- As above but with metal parts possibly very hot originating from the bulk delivery vehicles pneumatic blower. In the rare event of it suffering a catastrophic breakdown during the filling process.
  - Static discharges
  - Faulty electrical equipment
  - Lightning strikes

Your RA may derive one of the following assessments of the risks posed by an explosion propagating via one of the above sources.

- It is the responsibility of the operator to undertake a risk assessment (RA) for use by operators of the equipment once it has been commissioned, importantly with consideration being given to use during filling. Tramp metal fragments within the material striking elements of the silo/vessel as they are blown in; as always the source of such items can be difficult to trace, but it does occur.

- It can be argued that the risk is so low it is negligible and can be ignored, and/or that as the silo is situated outside and a safe distance from pedestrians and property that even in the event of an explosion the chance of injury or damage would be very low; on that basis no explosion protection is required.
- It can also be argued that whilst the risk may be statistically quite low, that if there is a simple solution which eliminates the risk 100% then it is prudent to do so. In the case of closed silos or vessels the remedy is to specify and install passive explosion panels, these burst open milliseconds after an explosion occurs thus allowing the hot gasses to vent without damage to the silo/vessel.
- Where a risk is identified for most installations Collinson concurs with the assessment and as such will always make the offer to supply explosion panels on the primary storage silos as an optional item.
- Collinson storage silos fitted with explosion protection have the burst panel/s fitted to the roof which is inclined at 30°, due to their position and orientation hot gasses generated during an explosion vent upwards which is generally considered to be a safe area.
- Ideally the panels should be fitted with a burst detection device; this sends a signal back to the primary control panel to alert the operator that the panel has burst. This could be due to an explosion, but more likely over-pressure events caused by either over filling or by the silo exhaust system becoming blocked. Apart from the obvious reason of alerting the user that the panel has burst due to an explosion, the detector also ensures that the contents of the silo are not damaged by the ingress of rain water should the panel be damaged through misuse; specifically pressurisation.
- The safe working pressure of the explosion panel/s fitted to Collinson silos is 0.03 bar g. The exhaust pipe must never have a sack or filter attached to capture dust during filling. This is regarded as an obstruction in the exhaust system and as a result the silo can experience excessive positive pressure which may fatigue the panel and reduce the safe working pressure or burst the panel. If dust is a problem on the site we recommend fitting a Collinson cyclone dust collector which, if correctly maintained will ensure the silo is correctly vented during normal use.
- Specifying Explosion Panels; If panels are to be fitted then they must be correctly sized to match the specific silo; the sizing of panels also takes account of: -
  - Kst – Value supplied by the client or default average from Collinson; if no alternative notification of KST is taken as customer acceptance of the default value.
  - Pmax – Value supplied by the client or default average from Collinson; if default used client to confirm acceptance of the default value.
  - Pred – This is the strength of the weakest element of the silo; the roof of most silos (including Collinson) is generally the weakest element; this varies dependent upon the specific silo model/diameter and is given in the County Silo Product File as the 'Pe' figure.
  - Pstat – This is the pressure at which the explosion panels will burst; Collinson uses panels with a Pstat of 0.1 barg.
- Vent efficiency – Collinson uses panels with a 100% rating.

Once we have all the information from a client we calculate the specific area of panel/s that will be required for a specific size of silo.

This calculation also takes account of the silo's diameter, vertical shell height, cone height and outlet diameter; to enable us to provide this we need to know the silos storage capacity.

- Overfill Protection; silos should be protected against overfilling especially when fitted with explosion panels as these will burst and need replacing if the silo is overfilled. The high level position signal will be provided via a high level rotary sensor and control unit. Once triggered the control system sounds a visual and audible alarm for 30 seconds to alert the bulk delivery driver to stop the filling process. The control unit allows a shut down period of 30 seconds from the alarm being triggered to allow the driver to stop filling and empty his fill lines.

*From experience we recommend that the system should be augmented with a pneumatic pinch valve which closes off the filler pipe after the 30 second alarm period to ensure the silo is not overfilled. This secondary system is a failsafe and prevents bulk delivery drivers from ignoring the audio/visual alarms and over pressurising the silo; this is generally a result of bulk deliveries being greater than the free capacity of the silo. In this event there is the temptation to carry on filling to empty the full load; this inevitably leads to silo damage.*



## 4.4 Appendix: Non Compliance with Base Construction Disclaimer

### FORMAL NOTIFICATION FOR BASES NOT MEETING SPECIFICATION



File No: \_\_\_\_\_ Date: \_\_\_\_\_ Name: \_\_\_\_\_

Address: \_\_\_\_\_

Our silo support structure, which incorporates the base as part of the overall structure, is designed to Eurocode 1, Part 1-4. To meet requirements Collinson provide a minimum base size and specification, It has been established that your base does not meet these guidelines, you have advised us to proceed with securing the silo to the base. Please read and sign this disclaimer to confirm your understanding of this document and state that you are fully aware Collinson plc does not accept any responsibility for any damage or losses caused by this inadequate base.

The concrete base does not meet the minimum required dimensions of ..... for the model of silo delivered today.

You have advised our engineer to leave the silo un-bolted. Please Note: Any silo left un-bolted is susceptible to overturning from wind, and should be secured in line with our guidelines as soon as possible to prevent damage to property or personnel. Collinson can bolt the silo to a temporary base for safety however the disclaimer must be signed for the non compliant base.

You have advised our Engineer to install the silo closer to the edge of the base which is below our recommended minimum edge distance of 300mm.

After drilling your concrete base and having a preliminary examination our engineer has concluded that the base depth does not comply with our minimum base size recommendations.

Our engineer cannot achieve the 50Nm (Newton meters) or 37ft lbs (foot pounds) required to tighten the holding down bolts sufficiently, this is due to the base not being fully cured or concrete mix not meeting our minimum specification of grade C30 conforming to BS EN 206-1:2000. We advise you to fill the silo as soon as possible and re-tighten the bolts periodically until the 50Nm torque is achieved.

The silo location is over 250m (820ft) above sea level or less than 1km (0.62miles) from the sea and falls outside the scope of the support structures design safety factor which complies with Eurocode 1, parts 1-4, which ensures the silo is protected against basic wind speeds of up to 26m/s below 250m above sea level and more than 1km from the sea.

The silo base is not level and/or has a fall greater than 5mm per metre between adjacent or opposite legs.

The base is not made up of one continuous slab of concrete.

Other

.....  
 .....  
 .....

I am aware that any of the above conditions may affect the structural integrity and safety of the silo and Collinson plc does not accept any responsibility for damage or losses due to non compliance of the base requirement guidelines.

I have read and fully understand this notification and I have the authority to instruct Collinson plc to proceed with securing a silo to this base.

Please return one signed copy to our driver and retain one copy for your records.

Signature ..... Position .....

Print Name ..... Date .....

Form No:	FM43-001	Revision	New	Issue Date	11/6/15	Owner		Title	
Last Change	First Issue							Linked Process	

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## 5. General Terms and Conditions

### 1. INTERPRETATION & GENERAL APPLICATION

- 1.1. Unless expressly agreed in writing by a Director of the Company, all Goods and Services are sold upon these terms and conditions (the Conditions) and no agent or representative of the Company has any authority to vary or omit the Conditions or any of them.
- 1.2. All acceptances contracts orders and quotations are subject to these Conditions alone which supersede and exclude any arrangements, agreements, statements, or negotiations, terms, conditions, warranties and representations whether written or oral express or implied made between the Buyer and the Company and no variations of the Conditions will be valid unless agreed upon in writing signed by a Director of the Company.
- 1.3. The Buyer accepts that the Conditions will govern all its relations with the Company to the exclusion of any terms and conditions contained in any of the Buyer's documents even if the same purport to provide that the Buyer's own or some other terms shall prevail.
- 1.4. Each clause in the Conditions shall where the context allows be read separately and if any clause shall be adjudged to be void as going beyond what is reasonable but would be valid if part of the wording were deleted, modified or replaced then the clause shall apply with such modifications as may be necessary to make it/ them valid and effective.
- 1.5. Headings in the Conditions have been inserted for convenience only and shall not affect their interpretation or construction in any way.
- 1.6. Waiver by the Company of any of its rights hereunder or any breach of such rights shall not constitute waiver of any other right or of any continued breach. No delay or allowance of time by the Company in enforcing any of its rights shall preclude the subsequent enforcement of these rights or of any other rights.

### 2. DEFINITIONS

- 2.1. In the Conditions the following words and expressions shall have the following meanings:-
  - 2.1.1. The Company shall mean Collinson plc of Riverside Industrial Park, Catterall, Preston, PR3 OHP registered in England and Wales with company number 03267051.
  - 2.1.2. The Buyer shall mean the Company or person which has addressed any requests or Order for the supply of goods or services by the Company and shall include his agent where the context so admits.
  - 2.1.3. The Goods and/or Products shall mean all goods, whether raw material or finished products, or systems, forming the subject matter of a contract between the Company and the Buyer or to be delivered by the Company to the Buyer or collected by the Buyer from the Company under the Order. Where the Order includes provision for the supply of services "the Goods" shall, where the context permits, include the services which the Company has contracted to supply.
  - 2.1.4. The Order shall mean the order placed by the Buyer with the Company for the supply of the Goods by the Company to the Buyer.
  - 2.1.5. The Acceptance shall mean the acknowledgement in writing by which the Company accepts the Buyer's offer to buy the Goods subject to the Conditions and other provisions set out in the Acceptance.
  - 2.1.6. Due Date shall mean the date when payment is due calculated by reference to the terms contained or referred to in the Acceptance or if none clauses 4.1 & 4.2 of the Conditions
  - 2.1.7. The Price shall mean the price agreed for the Goods as determined by reference to the Acceptance.
  - 2.1.8. The Additional Cost shall mean the increased contract prices to cover materials, labour or services or any exchange rate fluctuations, costs or expenses of any kind incurred by the Company in respect of manufacture, loading, unloading, reloading and transport costs and expenses and cost of storage and insurance.
  - 2.1.9. Posting shall mean when sending by mail putting into a post box, when sending by fax despatch of the transmission or when sending by email at the time of transmission.
  - 2.1.10 Contract shall mean the contract between the Company and the Buyer for the supply of Goods in accordance with these Conditions.
  - 2.1.11 Conditions shall mean these terms and conditions as amended from time to time in accordance with clause 1.2.
  - 2.1.12 Distributor and/or Dealer and/or Material Company shall mean any third party organisation, which the Company may use to supply all or some of the Company's Goods, or any third party organisation which may use the Company to provide Goods, as the context requires.

### 3. ORDERS

- 3.1. Any quotations and estimates given by the Company are invitations to treat open for a period of 30 days unless previously withdrawn.
- 3.2. All prices exclude Vat, packing, packaging, shipping and insurance unless otherwise indicated in writing, and the Company reserves the right at any time prior to Delivery to adjust the Price to take account of any increase in the costs to it of materials, labour or services or any exchange rate fluctuations or to increase contract prices to cover any Additional Cost or expenses of any kind incurred by the Company in respect of or consequent upon any suspension or delay of, or in despatch of, or work on, the Goods or through the Buyer's instructions or caused by or resulting from lack of instructions (including but not limited to loading, unloading, reloading and transport costs and expenses and cost of storage and insurance).
- 3.3. The Order of the Buyer is an offer to buy the Goods subject to the Conditions. The Order shall only be deemed to be accepted upon the Company Posting the Acceptance at which point these Conditions become binding only the Buyer and the Company.
- 3.4. Any Order of the Buyer made orally must be confirmed (by either party) in writing save;
  - 3.4.1. In the case of an emergency supply required by the Buyer, or
  - 3.4.2. Items costing under £500.00When in each case the transaction will be subject to the Conditions but the Buyer shall pay by credit card and acceptance will be effected

when the Company receives a transaction confirmation from the payer.

#### 4. PAYMENT

- 4.1. Payment shall be due to the Company in pounds sterling in the amount stated or referred to in the Acceptance. If the Acceptance is silent as to payment terms, payment is due on Delivery (the Due Date).
- 4.1.1. In any oral agreement or where items cost less than £500.00 payment shall be effected by credit card payment, and
- 4.1.2. Will otherwise be as set out in the Acceptance, unless
- 4.1.3. The Buyer is also a Distributor or Dealer and has a separate Agreement when the payment terms set out in that agreement will apply.
- 4.2. Time for payment shall be of the essence.
- 4.3. Without prejudice to any of its rights or remedies, if any sums due to the Company are not received by the Due Date it shall be entitled to charge interest at 6% over the base rate from time to time of Lloyds Bank plc from the Due Date until payment is received, whether before or after any judgement and such interest shall become payable immediately upon Posting by the Company of an invoice for the amount of interest charged.
- 4.4. Payment made otherwise than in cash shall be deemed to be made when cleared funds are available to the Company.
- 4.5. The Company shall be entitled to present to the Buyer an invoice for the Price of the Goods on or before Delivery.
- 4.6. A dated invoice addressed to the Buyer's address as supplied shall be conclusive evidence that the invoice was Posted to the Buyer on the date shown.
- 4.7. Orders made under the Conditions and accepted by the Company are not subject to changes or cancellation by the Buyer except with the Company's written consent. If the sale involves Goods which are manufactured altered or adapted for the Buyer and a change or cancellation is made the Buyer shall take all completed Goods at full price, work in progress at cost plus pro-rata profit and the Buyer shall reimburse the Company for materials purchased and any liability under a contract which may have been entered into by the Company to assist in fulfilling the Order.
- 4.8. The Company shall be entitled to withhold Delivery or Despatch of any Goods or treat the contract as terminated if the Buyer fails to pay to the Company any sum due from the Buyer (or from any individual, firm or company with which the Buyer is, in the opinion of the Company, associated) by the Due Date whether such sum is due under that contract or some earlier contract between the Company and the Buyer, and the Company shall incur no liability in respect of such withholding of Delivery, Despatch or stoppage.
- 4.9. Upon termination of any contract between the parties by the Company the Buyer shall be liable to pay any damages due to the Company for breach of contract in the sums determined by the Company in accordance with clause 4.7 of the Conditions together with any Additional Costs.
- 4.10. The Company shall be entitled to appropriate any payments made by the Buyer in settlement of such invoices or accounts as the Company may in its absolute discretion think fit notwithstanding any purported appropriation to the contrary by the Buyer and the Company may set off against any sums it owes the Buyer any sums due from the Buyer to the Company.
- 4.11. The Buyer shall have no right of deduction counterclaim or set-off statutory or otherwise or in any way reduce the sums to be paid to the Company on the Due Date.
- 4.12. The Buyer agrees to indemnify the Company against any legal fees incurred by the Company in obtaining payment for the Goods as a result of the Buyer's failure to comply with clause 4.1.
- 4.13. Payment made by credit card may be subject to a 3% charge.
- 4.14. The Company reserve the right to obtain a credit report of business account holders from credit reference agencies at any time and without prior notification. This credit report shall be recorded and the information contained within it may be shared with other businesses to determine payment performance.
- 4.15. The Company reserve the right to revoke credit terms on any account which has been inactive for a 12 month period.

#### 5. DELIVERY

- 5.1. All risk in the Goods shall pass to the Buyer upon Delivery before Despatch or loading. Any return of the Goods or part thereof from the Buyer's premises to the Company's premises shall be at the risk of the Buyer unless such Goods are carried by the Company or its agent.
- 5.2. "Delivery" will be deemed to have been effected when the Company notifies the Buyer that the Goods are ready for collection or ready for Despatch or are prepared and ready to leave the Company's premises or when accompanied by services to be provided by the Company when provision of those services are signed off as complete by the Company or its agent.
- 5.3. "Despatch" is when the Goods leave the Company's premises for shipping by the Company or its agents or, where the Goods are to be collected by the Buyer or its agents, Despatch shall be when the Goods are loaded on to the delivery vehicle or otherwise collected by the Buyer or its agents.
- 5.4. Estimates of Delivery and Despatch are subject to revision when ordering information which is complete to the satisfaction of the Company is received by the Company. Any times and dates quoted for Delivery or Despatch shall be estimates only. Accordingly, time of Delivery or Despatch shall not be of the essence.
- 5.5. The Company shall not be liable for any loss whatsoever or howsoever arising caused by non-Delivery or non-Despatch of the Goods or by failure to Deliver Goods on the date stated by or on behalf of the Company.
- 5.6. The Company reserves the right to make Delivery and Despatch by instalments and to tender a separate invoice in respect of each such instalment. Delay in any one or more of the instalments will not entitle the Buyer to treat the contract as repudiated or to damages.
- 5.7. Deviations in quantity of Goods Delivered representing not more than 10% by value from that contained or referred to in the Acceptance shall not entitle the Buyer to reject the Goods or any Instalment or to claim damages and the Buyer shall be obliged to accept and pay at the contract rate for the quantity of Goods Delivered.

5.8. The Company reserves the right to withhold Delivery or Despatch of part or all of the Goods:

5.8.1. If at the time when Delivery is due there shall be any outstanding invoice issued by the Company to the Buyer which has not been paid in full in accordance with the provisions of clause 4.1; or

5.8.2. Upon the happening of any of the events referred to in clause 7.5.4.

5.9. Delivery or Despatch may be wholly or partially suspended and the time of such suspension added to the time for performance in the original contract in the event of stoppage, delay or interruption of work in the establishment of either the Company or Buyer during the Delivery period as a result of an event beyond the reasonable control of the Company including but not limited to strikes, lockouts, trade disputes, breakdown, accident, inability to obtain material, equipment or transportation, failure of a utility service or transport network, act of God, war, riot, civil commotion, malicious damage, compliance with any law or governmental order, rule, regulation or direction, accident, breakdown of plant or machinery, fire, flood, storm or default of suppliers or subcontractors. In the event of an outbreak of hostilities (whether war is declared or not) in which the United Kingdom is involved, or in the event of a National Emergency or in the event that the Company's works should become either directly or indirectly so engaged on Government orders or orders of priority as to prevent or delay work on other orders, the Company shall be entitled at any time, on notice to the Buyer, to make partial deliveries only or to determine the Contract, without prejudice in any case to rights accrued in respect of deliveries already made.

5.10. If the Buyer is unable to collect or accept Delivery of the Goods for whatever reason or shall fail to give shipping instructions within 14 days of Delivery (and in this respect time shall be of the essence) the Company shall be entitled to payment from the Buyer as if the Goods had been Delivered, and when it has been agreed that the Goods are to be supplied by instalments to the buyer, risk in the Goods shall pass to the Buyer and the Company shall be entitled to invoice the Buyer on each instalment as if the Goods had been Delivered;

5.11. The Company shall be responsible for the replacement of Goods which are items or parts omitted from a Delivery or damaged during transit by the Company or its agent. In the event that it is not possible to replace the Goods for any reason, the Company shall reimburse the Buyer any payments made for the Goods and the relevant contract shall be terminated. The Company shall not be liable to compensate the Buyer or any third party claimant through the Buyer for any further or consequential loss by reason of loss or damage caused by the omission or damage in transit;

5.12. The Company's liability as aforesaid is in every case contingent upon the Buyer giving to the Company due notice in writing within 7 days of receipt by the Buyer of Goods which have omitted parts or items or are damaged during transit.

## 6. INSURANCE

From the moment of Delivery the Buyer shall promptly effect and maintain in the joint names of the Buyer and the Seller comprehensive insurance cover on the Goods for their full invoice price until payment has been made in accordance with clause 4.1.

## 7. PASSING OF TITLE

7.1. Notwithstanding the passing of risk in accordance with clause 5.1 title in the Goods shall not pass to the Buyer until payment in full has been received by the Company on all accounts with the Buyer whatsoever and until such payment is made the Goods and all other Goods supplied to the Buyer by the Company shall remain the legal and equitable property of the Company.

7.2. The Buyer shall keep and maintain the Goods in good order and condition insure the Goods at their full replacement value against all risks with reputable insurers and be responsible for any loss or damage to the Goods howsoever caused.

7.3. The Buyer shall be deemed not to have paid the Company for Goods in possession of the Company at any time unless the Buyer can prove that payment in cleared funds has been received by the Company

7.4. The Buyer is hereby licensed by the Company to use or to agree to sell the Goods subject to the express conditions that:

7.4.1. Any sale by the Buyer of the Goods whether or not incorporated into other goods shall be made by way of sale in the ordinary course of the Buyer's business.

7.4.2. The percentage of the proceeds of any sale made pursuant to clause 7.4.1 which is equivalent to the Company's invoice price of the Goods sold shall be paid into a separate bank account and held in trust for the Company and shall not be mixed with other moneys or paid into an overdrawn bank account and shall at all times be identifiable as the Company's money.

7.5. Until title to the Goods passes:

7.5.1. The Buyer will hold the Goods in a fiduciary capacity and as bailee for the Company,

7.5.2. Subject to clause 7.4 the Goods shall be kept separate and distinct from all other property of the Buyer or of any third party and shall be stored in such a way as to be clearly identifiable as belonging to the Company;

7.5.3. The Company may at any time revoke the power of sale and use contained in clause 7.4 by notice to the Buyer if the Buyer is in default for longer than 14 days in the payment of any sum whatsoever due to the Company in respect of any Goods supplied at any time by it to the Buyer or if the Company has bona fide doubts as to the solvency of the Buyer;

7.5.4. The Buyer's power of sale and use contained in clause 7.4 shall automatically cease and any subsisting Contracts shall be deemed to have been determined without prejudice to any claim or right the Company may otherwise make or exercise if the Buyer has a petition presented for its winding-up or passes a resolution for voluntary winding-up, otherwise than for purposes of a bona fide amalgamation or reconstruction, or compounds with its creditors or has a Receiver or Administrator appointed of all or any part of its assets, becomes bankrupt or insolvent or enters into any arrangements with creditors or suffers any similar action in consequences of debts or carries out or undergoes any analogous act or proceedings under foreign law.

7.5.5. The Buyer shall notify the Company immediately if it becomes subject to any of the events listed in clause 7.5.4, above and upon determination of the Buyer's power of sale and use pursuant to clauses 7.5.3 or 7.5.4 the Buyer shall place any unsold Goods in its possession or under its control at the disposal of the Company and the Buyer hereby authorises the Company, using such force as may be reasonably necessary, to enter upon any premises of or used by the Buyer for the purpose of removing such Goods for re-sale or otherwise.

7.5.6. In the event of the Buyer contravening any of the foregoing provisions of this Clause 7 the Buyer shall hold the entire proceeds of sale, or any products produced therefrom on trust for the Company in a separate bank account which monies shall not be mixed with



any other monies but shall always be identifiable as the Company's monies. The Buyer hereby declares that he will be the trustee of the Company for such monies and acknowledges that he shall account for the same on demand. In the event that the Buyer has not received the proceeds of any such sale, disposal or parting with possession he will if called upon to do so by the Company, within 7 days assign to the Company all rights against the person, persons, or company to whom the Buyer has supplied the Goods.

7.5.7. If the Goods are mixed with goods which are not the property of the Buyer or the Company or are processed with or incorporated therein and such Goods are not distinguishable, the product thereof shall be deemed to be owned in common with that other person according to the value of their respective shares.

7.5.8. The Company reserves the right to maintain an action for the price of the Goods notwithstanding that property may not have passed to the Buyer.

7.5.9. The Buyer hereby agrees and by the signing hereof or of the Acceptance or other evidence of acceptance effects 30 days after the Due Date an assignment of the benefit of and in any contract it has with its customer known to the Company who has been supplied with Goods and payment in full has not been received by the Company 30 days after the Due Date.

7.5.10. Should the Company have cause to enter upon land to repossess the Goods it will do so as the licensee of the Buyer which licence is hereby granted and continues to subsist and shall not be revoked unless and until all monies due the Company have been paid or all Goods returned or repossessed and the Company shall be entitled to enter, with or without transport, upon any land or premises of or occupied by the Buyer for the purpose of removing the Goods, and any new products created therefrom, such rights to include the right to sever the Goods and any such new products where necessary from real property.

7.5.11. In the event that the Goods are stored with other goods or are used to store other goods, the Company can, and the Buyer hereby authorises the Company to, deposit those other goods on the land from which the Goods were removed, and the Company is under no obligation to make them safe or watertight, and the Buyer hereby agrees that it shall be solely liable, to the exclusion of the Company for, and shall indemnify the Company against, any claim or any entitlement of the Buyer itself or any third party claiming under it to any compensation damages or other monetary claim whatsoever.

7.5.12. The Company may (without prejudice to any of its other rights) dispose of Goods removed in accordance with 7.5.10 above as the Company thinks fit and may apply the proceeds of disposal (after deduction of all expenses) in discharge of all amounts unpaid by the Buyer.

## **8. ACCEPTANCE OF THE GOODS**

8.1. Subject to clause 8.3 below the Buyer shall carry out a thorough inspection of the Goods immediately on Despatch or if that is effected by the Company or its agent upon receipt and shall within 48 hours of that event give notice in writing to the Company of any shortage or defect in the Goods delivered which a reasonable examination would have revealed or of any matter or thing by reason whereof the Buyer alleges that the Goods are not in accordance with the Order.

8.2. If the Buyer shall fail to give notice in accordance with clause 8.1 above the Goods shall be deemed in all respects to be in accordance with the Order and the Buyer shall be bound to accept and pay for the same accordingly.

8.3. The Company shall not be under any liability because the Goods could not be examined on Despatch unless the carriers note or such other note as appropriate is marked "not examined" and the 7 day time limit will then be applied from the date on which the Buyer first had a reasonable opportunity to examine them.

## **9. CANCELLATION OF ORDERS AND RETURN OF GOODS**

9.1. An accepted Order may only be cancelled or varied by the Buyer with the Company's written consent, which consent may be granted on payment of such cancellation or other charge as the Company shall in its sole discretion decide and such consent shall not in any way prejudice the Company's right to recover from the Buyer full compensation for any loss or expense arising from such cancellation or variation.

9.2. In no circumstances will the Company entertain any complaint made by the Buyer which is received by the Company more than 19 days after the date of Despatch.

9.3. Nothing in this clause shall prejudice any disclaimer of liability by the Company elsewhere in the Conditions.

## **10. WARRANTY AND LIMITATION OF LIABILITY**

10.1. The Company warrants that it shall, as soon as it is reasonably able to do so, replace or, at its option, repair any complete item or part item purchased by the Buyer as an integral part of and at the same time as the purchase of a complete item in which defects appear under normal use within 12 months of Delivery where such defects are solely attributable to the Company's faulty design, material or workmanship, where the Buyer purchased the Goods new. The Company may from time to time provide a 10 year warranty in relation to the integrity of the structure of some of the Goods supplied but such warranty will apply only if it is strictly referred to in a separate document or by way of manufacturer's guarantee as set out in clause 12.

10.2. The warranties in 10.1 above shall be subject to each of the conditions set out below:-

(a) That a claim by the Buyer is not attributable to fair wear and tear or any fault or damage arising from modification, inappropriate use or treatment, incorrect handling or exposure or corrosive substances or substances otherwise injurious to the Goods; (b) That the Company's (or its suppliers') recommendations for application, maintenance, storage and use in respect of the Goods have been complied with; (c) That no repair, interference or attempted repair or interference has been made to or with the Goods by the Buyer or any third party; (d) that the defect does not arise as a result of the Company following any drawing, design or specification supplied by the Buyer; and (e) that the Customer does not make any further use of such Goods after giving a notice of the defect.

10.3. No warranties or conditions express or implied, in relation to the Goods shall be deemed to be incorporated in any contract except in those cases where there is an absolute prohibition against exclusion or restriction of liability contained in any Act, Regulation or bye law and any liability for loss or damage caused as a result of breaches of contract by manufacturers or suppliers of Goods to the Company shall be limited to the compensation or damages obtained by the Company from any manufacturer or supplier.

10.4. The damages for which the Company may be liable (except where the absolute prohibition applies) whether for breach of any terms of the contract (however fundamental) or as a result of any default, act, omission or signed statement in connection with or in relation to the Goods by a director of the Company or the Company Secretary shall in respect of any one such breach default, act, omission or statement (a series of events or accidents arising therefrom being treated together for the purposes of this provision as one such default, act or omission) not exceed a sum equal to the net price for the Goods which has been received by the Company.

10.5. The Company's entire liability and the Buyer's sole remedy against the Company shall be as set out in these conditions and shall be strictly limited to damages which shall be subject to the limitations of amount and types set out in this clause. This clause shall not confer any rights or remedies on the Buyer to which it would not otherwise be entitled and shall not affect the Buyer's duty to mitigate any loss.

10.6. Save as aforesaid, the Company excludes all liability of whatsoever nature and howsoever arising for loss of or damage arising out of any defects in the Goods except where loss or damage is caused by the Company's negligence in the handling or storing of the Goods

10.7. Where the Goods comprise machinery or equipment:

10.7.1. All Goods are on a sold "as seen" and "as is" unless otherwise agreed in writing by the Company. The Buyer is under a duty to carry out whatever tests and inspections it deems necessary in order to ascertain whether the Goods are in a condition satisfactory to the Buyer prior to making an offer to purchase.

10.7.2. The Company gives no undertaking whatsoever as to the suitability of the Goods for the purposes of the Buyer and it is incumbent upon the Buyer to ascertain in advance of making an offer to purchase that the Goods will meet its needs. The Buyer must take particular care when intending to use the Goods for a purpose other than that for which it was originally manufactured that it will be both safe and feasible to do so. In such cases the original manufacturer or distributor should always be consulted.

10.7.3. The Buyer should be aware that the Goods may have been modified from its/their original specification and the Buyer should therefore conduct a thorough examination of the Goods to ensure that the Goods are fit for the intended purpose.

#### **11. CONSEQUENTIAL LOSS**

The Company shall not be liable for loss of profit, damage to plant, the cost of carriage, freight or other services, expenditure incurred on the Goods supplied, or for any indirect or consequential loss or damage sustained by the Buyer by reason of any breach of contract or negligence on the part of the Company or its agents.

#### **12. ASSIGNMENT OF GUARANTEE**

Subject to the Buyer's compliance with his obligations in clause 4.1, the Company shall on request pass to the Buyer the benefit of any guarantee it has from the manufacturer of the Goods.

#### **13. FORCE MAJEURE AND FRUSTRATION OF CONTRACT**

The Company shall not be liable to the Buyer for any loss or damage including consequential loss as a result of manufacture or delivery of all or some of the Goods being delayed or prevented by circumstances outside the reasonable control of the Company including but not limited to delays by the Company's suppliers, labour shortages, strikes, lockouts or labour disputes of any kind, fires, floods, accidents or breakdowns of machinery or equipment, shipping, dock strikes, railway or transport, accident, war, riot, civil commotion, Government intervention, declaration of national emergency, act of God, inability to obtain raw materials, cancellation or shortage of supplies, breach of contract by their own manufacturers or suppliers, difficulty or impossibility of complying with import regulations or obtaining import licences. In any such circumstances the Company shall be entitled at any time without prejudice to its other rights to cancel the contract or as its option to effect partial delivery or performance without incurring any liability whatsoever to the Buyer. In circumstances where the Goods have been specially obtained for the Buyer and there is no readily available market for them, the Company shall be entitled to charge the Buyer reasonable costs and expenses incurred in respect of the Goods.

#### **14. ASSIGNMENT AND SUB-CONTRACTS**

14.1. The Company reserves the right to assign or transfer to any other person any of its rights, or to sub-contract all or any part of its obligations under any Contract.

14.2. The Buyer shall not assign or transfer to any other person any of its rights under any Contract.

#### **15. TERMINATION OF CONTRACT**

15.1. If the Buyer shall fail for any reason to make any payment which may be due under any contract with the Company or be in breach or anticipated breach of any of the Buyer's obligations to the Company or if any distress or execution shall be levied upon the property or assets of the Buyer or if the Buyer shall make or offer to make any arrangement or composition with or for the benefit of his creditors or commit any act of bankruptcy or if any petition or receiving order in bankruptcy shall be presented or made against the Buyer, being an individual, or if any resolution to wind-up the Buyer being a limited company shall be passed (save for the purposes of reconstruction or amalgamation) or if a petition is presented to wind-up the Buyer or if a receiver of the Buyer's undertaking property or assets or of any part thereto shall be appointed, the Company shall have the right forthwith to determine the whole or any unfulfilled part of any contract by written notice posted by the Company to the last known address of the Buyer or in the case of a company to its registered office. Such determination shall be without prejudice to any claims or rights the Company may have against the Buyer in respect of any contract. In the event of determination pursuant to this Clause:- (a) the Company shall not be under any obligation to supply any further Goods under any contract; (b) the Buyer shall indemnify the Company against all loss (including loss of profit) costs (including costs of labour and materials) and all expenses suffered by the Company by reason of such determination; (c) the Company shall be entitled to resell any of the Goods for which the full price has not been paid by the Buyer to the Company without further notice to the Buyer.

## **16. PATENTS AND COPYRIGHTS**

16.1. Where the Goods are manufactured under any letters patent, copyright or registered design, the Buyer shall not do any act or thing which will infringe any such letters patent.

16.2. The Buyer shall inform the Company forthwith in writing of any claim or action made or threatened or issued by a third party that the Goods infringe any letters patent copyright or registered design and shall make no admission in respect of the alleged infringement.

The Buyer shall permit the Company to have sole control of the defence of any such claim or action and all related settlement negotiations and provided no admission in respect of the alleged infringement is made by the Buyer, the Company will indemnify the Buyer against any costs and damages awarded against the Buyer in any such action, the defence of which is controlled by the Company.

16.3. The Company shall be entitled to replace or modify any of the Goods, which infringe or which it reasonably considers might infringe any patent copyright or registered design so as to end or avoid such infringement.

16.4. The Company shall be under no liability in respect of any such claim or action for infringement which arises by reason of the combination operation or use of the Goods with other goods not supplied by the Company or by reason of alteration of the Goods or the Company complying in the manufacture, treatment or repair of the Goods with a design or instruction supplied by the Buyer.

16.5. The Company shall retain the copyright in all drawings and specifications supplied to the Buyer, which may not be reproduced in whole or in part without the written consent of a Director of the Company or the Company Secretary.

## **17. USER WARNINGS**

17.1. Any advertisement, consumer information or labelling ("Literature") supplied by the Company relating to the Goods, has been prepared to comply with statutory regulations (if any) relating to the Goods and with a view to providing information to users as to the physical characteristics of the Goods and precautions to be taken with regard to their use and the copyright in such Literature remains with the Company.

17.2. The Buyer agrees not to remove from the Goods prior to re-sale any Literature supplied with the Goods by the Company;

17.3. The Buyer agrees not to supply the Goods on re-sale without Literature as supplied by the Company;

17.4. The Buyer agrees not to make any statement, representation to claim or give any warranty to any person in respect of the Goods save as in the Company's literature or as specifically authorised by the Company;

17.5. The Buyer agrees not to use or knowingly permit to be used the Goods outside the purpose described by the Company;

## **18. DRAWINGS AND MEASUREMENTS**

18.1. Whilst every effort is made by the Company to ensure that all drawings, plans, specifications and other documents prepared and/or supplied are accurate the Company shall not be liable for any loss arising from any error or inaccuracy therein.

18.2. Pursuant to its policy of continuing improvement the Company reserves the right without notice to alter or add to any drawings, plans, specification and other documents prepared to and/or supplied to the Buyer.

18.3. The Company makes no warranty that any drawings, plans, specifications and other documents supplied by the Company will be adequate and the Buyer shall satisfy itself as to whether the site in question will bear and withstand the necessary loading.

## **19. TECHNICAL ASSISTANCE**

19.1. Unless otherwise stated, any technical assistance whatsoever given by the Company or its servants or agents to the Buyer or to any buyer or potential buyer from the Buyer, whether in connection with any project of the Buyer or of such buyer or potential buyer, including assistance with designing systems and continuing specifications required to be met by the Buyer and/or offered by the Company or its servants or agents, is given gratuitously and without any liability whether to the Buyer or to any person, firm or company dealing with the Buyer.

## **20. HEALTH, SAFETY AND ENVIRONMENTAL CONSIDERATIONS**

20.1. The Buyer undertakes to ensure, as required by the terms of the Health and Safety At Work Act 1974 or any equivalent or additional legislation concerning Health, Safety or Environmental considerations which shall be enacted in the United Kingdom or elsewhere, that the Goods will at all times be operated, used and maintained in full accordance with such legislation and with good engineering practice and with any operating and maintenance instructions relating to the Goods as issued by the Company from time to time. Further, the Buyer shall indemnify and keep indemnified the Company from and against any costs, damages, liabilities and expenses whatsoever for which the Company may become liable as a result of any failure by the Buyer to comply with this undertaking.

## **21. CONDITIONS REASONABLE IN THE CIRCUMSTANCES**

21.1. The Buyer warrants that these conditions are freely accepted on its part in the knowledge and on the basis that:-  
The price charged would be higher if the Company were under any liability or potential liability other than as set out in these conditions. Any liability or potential liability upon the Company other than as set out in these conditions would be disproportionate to the price for the Goods.

## **22. PROPER LAW**

22.1. The proper law of these conditions and any contract between the Company and the Buyer including, where applicable, any contract with a Buyer in the EU, shall be the Law of England, and the English courts shall have exclusive jurisdiction to settle any difference or dispute arising between the Company and the Buyer, and in the case of a Buyer in the EU the High Court shall have such Jurisdiction.

COLLINSON plc (the Company) SUPPLEMENTARY TERMS AND CONDITIONS OF SALE (UK) 2006

APPLICABLE TO DEALERS AND MATERIAL COMPANIES

#### **1. WHEREAS**

1.1 Collinson manufactures and / or supplies the Products, and the Dealer/ Material Company wishes to purchase the Products for re-sale.

1.2 Collinson is willing to supply the Products to the order of Dealer / Material Company on the terms and conditions hereinafter set out.

#### **2. ORDERS**

2.1. Orders for the Products shall be made by the Dealer / Material Company to Collinson at Collinson premises at Riverside Industrial Park, Catterall, Preston, PR3 OHP

2.2. Collinson will endeavour to fulfil the orders of Dealer / Material Company for the Products which will at all times be subject to the Collinson Standard Terms and Conditions as attached.

2.3. Dealer / Material Company will, in purchasing the Products, be bound by Collinson Terms and Conditions as from time to time in force and any modification thereto either generally or in respect of any particular purchase.

2.4. Dealer / Material Company shall pay for all quantities of the Products delivered to it or to its order thirty (30) days from the invoice date (invoice date being delivery date) where products are delivered to or to the order of Dealer / Material Company, and Collinson shall be entitled to charge interest at a rate of two percentage points above the prevailing National Westminster Bank plc base lending rate on all monies payable by Dealer / Material Company which are not received by Collinson by the due date.

2.5. Payment for the Products shall be made by Dealer / Material Company to Collinson at any banking institution in the United Kingdom nominated by Collinson, in Pounds Sterling.

2.6. Collinson hereby agrees that it will supply the Products to Dealer / Material Company at the prices quoted.

2.7. Unless otherwise stated all Prices quoted in respect of the Products to be supplied are exclusive of Value Added Tax (which will be charged at the appropriate rate) freight, insurance, sales or value added taxes and excise, import and export duties, which shall where appropriate be payable by Dealer / Material Company in addition, and all Prices relate to delivery of the Products in the United Kingdom.

2.8. Nothing in these terms shall constitute or be deemed to constitute a partnership between the parties hereto, or constitute or be deemed to constitute either party an agent for the other, and neither party shall have authority or power to bind the other or to contract in the name of or create a liability against the other in any way or for any purpose.

## TERMS AND CONDITIONS OF PURCHASE

Collinson plc ("the Company") Terms and conditions of purchase 2013

We, the Company, only purchase goods, rights and services ("Deliverables") on these terms and conditions ("the Terms"). If you accept our order it will be on these Terms and no other standard terms. If you act in a manner calculated to appear as an acceptance of our order, that will act as an acceptance and you will be bound by our Terms, regardless of any inconsistency in your own small print. If you wish to reject our order and make a counter-offer you MUST therefore reply to our order in words explicitly and clearly indicating rejection. Equally, if you make a counter-offer which is not clearly labelled as such (or as a rejection of our order) no subsequent behaviour of ours, in accepting Performance, can be taken to imply any acceptance by us of that counter-offer. These Terms can only be changed, or other terms agreed, in written correspondence signed by a director or other senior officer of the Company. These Terms are important and should be studied carefully.

## THE CONTRACT

1.1. Our contract with you, our supplier, will comprise our express written order, these Terms, anything else we expressly agree under section 1.2, any content imposed by law, but nothing else.

1.2. If you want us to accept a term of yours, or accept a particular responsibility, or if you wish to rely on a representation we have made, you must therefore obtain our express agreement to that. That means express written agreement, signed by a director or other senior officer of the Company and referring expressly to these Terms. We will deal with you in reliance on these Terms, so be aware that our acceptance of contractual performance by you does not imply acceptance of any terms that are different to our Terms. You must indemnify us against any consequence of your seeking to rely on any contractual terms, or any statement, understanding or representation which is not contractually agreed as set out in this section 1. For the purposes of this section, written agreement can be communicated by pre-paid post, fax or e-mail, save that we never accept small print terms communicated by fax, on grounds of uncertain legibility.

1.3. If any of the terms of the contract conflict with or contradict each other those terms will over-ride each other in the following order of priority: (1) any express written agreement from us; (2) our order; (3) these Terms.

1.4. We are not contractually bound until we place a formal order and then only to the extent of the issues specifically covered by that order or in writing signed by a director. We will only be contractually bound to you when you accept our order with a formal order acknowledgement in writing or (if later) when we accept Performance by you (see below).

## PRICE

2.1 The price of the Deliverables will be as stated in our order and, unless otherwise stated, will be:

2.1.1 exclusive of any applicable VAT (which will be payable by us subject to receipt of a valid VAT invoice);

2.1.2. Inclusive of all charges for packaging, packing, shipping, carriage, insurance and delivery, commissioning or performance of Deliverables to or at the delivery address, and of any duties or levies other than VAT;

2.1.3. Payable in pounds sterling; and

2.1.4. Fixed for the duration of the Contract.

2.2. We will be entitled to any discount for prompt payment, bulk purchase or the like normally granted by you in comparable circumstances.

2.3. If we will be reliant on you for any supplies of maintenance, training, spare parts, consumables or other goods, rights or services to benefit fully from the Deliverables ("Follow-on Deliverables") then you will provide those Follow-on Deliverables or procure them to be provided, for at least 36 months following full Performance, at fair and reasonable prices which take no advantage of our dependence on you for their supply.

## PAYMENT

3.1. Invoices for the Deliverables may be sent to us on, or after, completion of Performance (as defined in section 4.1). Each invoice must quote the number of our order. No sum may be invoiced more than six months late.

3.2. Unless otherwise stated in the order, we will pay the contract price within 30 days of the end of month in which we receive the invoice.

3.3 We will be entitled to set off against the price any money owed to us by you.

## SPECIFICATIONS

4.1 If we order goods, then unless otherwise stated the order is deemed to include the supply of all relevant documentation and certification, and of any commissioning of those goods, necessary to enable the Company to use them for their intended purposes. If we order services then, unless otherwise stated, our order includes the complete performance of those services including any employee instruction, manuals, explanations or certifications necessary to enable the Company to benefit from them for their intended purposes. If we order goods or services then, unless otherwise stated, our order includes any legal rights necessary to use those goods or services for their intended purposes. As for those intended purposes, see section 6.3. References in these Terms to "Performance" are to complete performance of all your contract obligations as described in these Terms.

4.2. The quantity, quality and description of Deliverables will be as specified in our order and these Terms or as agreed by us in writing, subject to which then in full accordance with your representations (see section 6.1).

4.3. You have sole responsibility for complying with all applicable regulations and other legal and regulatory requirements concerning performance of the contract, and for ensuring that we can, in compliance likewise, fully utilise the Deliverables for their intended purposes

4.4. We will be allowed to inspect any contract goods during (and your premises for) manufacture and storage so long as we request an inspection by reasonable notice. If, as a result of the inspection, we are not satisfied that the quality of the goods or the standards of their manufacture, storage or handling conforms with the contract, you will take such steps as are necessary to ensure compliance. If,

after that, we are still not satisfied we can cancel the contract without penalty.

4.5. If, before Performance has occurred in the relevant respect, we notify you in writing of any change in desired specification (including as to quality and time frame) you will respond as follows. We appreciate that a change may affect the contract price, or may even be unachievable. If the change would reduce your costs, the contract price will reduce to fairly reflect that saving. If the change would increase your costs you may notify us promptly in writing, of a proposed revision of the contract price fairly and proportionately reflecting any unavoidable such increased cost: you and we will then use our reasonable efforts to agree the revised terms in full, including as to price, pending which the contract variation will not take effect. If the change would for any reason be unachievable you may notify us of that promptly and in writing, with reasons: again, both parties will then use reasonable efforts to reach a mutually acceptable contract variation. Failing notice under one of the two preceding sentences in the timescale allowed our proposed change will be deemed to have been accepted, and the contract will be deemed to have been varied with immediate effect to reflect the requested specification change with no price increase. What amounts to "prompt" notice for this purpose will depend on feasibility for you and urgency for us, but not in any case later than 48 hours (excluding hours of days which are Saturdays, Sundays or are recognised bank holidays in England) from our notice of proposed change. In no event, agreed or not, will we be liable to you in respect of any contract variation for more than a reasonable and proportionate reflection of such increased costs as you could not reasonably have been expected to avoid. The contract price will not in any circumstance increase except with our express written agreement under, or referring explicitly to, this sub-section.

4.6. To protect our business we may need, sometimes urgently, information as to precisely how Deliverables were performed, and as to all relevant activities of any suppliers or sub-contractors of yours. You will meet any reasonable such request as soon as reasonably possible, and will keep records adequate for that purpose for at least two years after completion of Performance. Without limitation, these records must provide full traceability for all goods comprised in, or used in making, any contract goods which are in any respect safety-critical. They must also demonstrate compliance of the contract work with all legal or regulatory requirements and with all contractually binding quality and Performance standards.

4.7. You will comply with any reasonable requirements we may have as regards the packaging and packing of any contract goods, and as to information to be displayed on packaging or included on dispatch documentation and bills of lading. Subject to that, you will ensure that all packaging, packing, labelling and documentation is such as to ensure full compliance with legal requirements throughout the scheduled delivery process.

#### **DELIVERY AND RISK**

5.1. Any goods will be delivered to, and any services performed at, the address and on the date stated in the order, or else under section 5.2, during usual business hours. If no address is specified, then delivery will be at our usual premises.

5.2. If we specify the date or delivery address after ordering, we will give you reasonable notice of the details. Failing a date, supply will be as soon as reasonably possible.

5.3. The date of delivery of any goods or rights, and the performance of any services, will be of the essence of this contract.

5.4. A packing note quoting the number of the order must accompany each delivery or consignment of goods and must be displayed prominently.

5.5. Where Deliverables are to be supplied in instalments, the contract is still to be treated as a single contract. If you fail to deliver or perform any instalment we may treat the whole contract as repudiated.

5.6. We may reject any Deliverables which are not fully in accordance with the contract. Acceptance does not occur until we have had a reasonable time to inspect or consider the relevant Deliverables following supply and, in the case of latent defect, a reasonable time after the defect becomes apparent.

5.7. We will not be bound to return to you any packaging or packing material, but if any relevant requirement for packaging recycling applies, you will take materials back free of charge on request.

5.8. If any Deliverables are not supplied on or by the agreed date then, in addition to any other remedies available to us, we will be entitled to deduct 1% of the overall contract price for those Deliverables, for every week's delay.

5.9. Risk of damage to or loss of any goods passes to us on delivery, which shall be deemed to have occurred after the goods or Deliverables have been unloaded at the correct delivery address.

5.10. Property and ownership of any goods will pass to us on delivery unless we have paid in whole or in part for the goods in advance. In that case it will pass to us as soon as the goods have (or, if goods are being assembled for us, each successive component of the goods has) been appropriated to the contract.

5.11. If we supply any articles to you, e.g. for modification or copying, they stay our property at all times. Those articles must be kept confidential and secure and we can enter your premises at any time on reasonable notice to ensure that this is so. While those articles are in your custody you must not use them, copy them or disseminate them, electronically or otherwise, except in the performance of our contract. We retain copyright and any other available intellectual property rights in any plans, design drawings, computer programs, compilations of data, specifications or the like which we supply to you. You must indemnify us against any loss caused to us, and account to us for any profit which you make, through breach of this provision.

5.12. If any Performance occurs on our premises this sub-section will apply. You will ensure that best industry standards are adopted for the health and safety both of your personnel and of any other individuals affected by your actions. We may refuse or terminate access to any individual whom we reasonably consider undesirable to have on our premises. Your personnel must, while on our premises, comply with our reasonable requirements as to security, health and safety routines, times and areas of access, and otherwise. You will be responsible to us on a full indemnity basis for all damage and injury caused by your staff.

5.13. If the contract terms refer to terms such as F.O.B and C. & F. which bear defined meanings in the current edition of Incoterms, those defined meanings will apply unless expressly stated otherwise.



5.14. Any goods provided by us to you on a free issue basis will remain our absolute property throughout, and will be at your risk while the goods are, or are supposed to be, in your possession. You are not to part with possession (save to us) unless with our express prior consent.

#### **FORCE MAJEURE**

6.1. For the purpose of the contract the terms Force Majeure shall mean:

- a. War and other hostilities (whether war be declared or not), invasion, act of foreign enemies, mobilisation, requisition or embargo
- b. Rebellion, revolution, insurrection, military or usurped power or civil war
- c. Riot, commotion or disorder except where solely restricted to employees of the supplier or its subcontractors or sub suppliers
- d. Earthquake, flood, fire or other natural physical disasters except to the extent that any such disaster is caused by, or its effects contributed to by, the party claiming Force Majeure
- e. A general industrial dispute not limited to the employees of the supplier or the employees of any of its subcontractors or sub suppliers.

6.2. If either party considers that any circumstance of Force Majeure has occurred which may affect materially the performance of its obligations then he shall forthwith notify the other in writing to that effect giving full details of the circumstances giving rise to the Force Majeure event.

6.3. Neither party shall be considered to be in default of its obligations under the contract to the extent that it can establish that the performance of such obligations is prevented by any circumstance of Force Majeure which arises after the date of the contract and which was not foreseeable at the date of the contract.

6.4. If the performance of the obligations of either party under the contract is so prevented by circumstances of Force Majeure and shall continue to be so prevented for a period less than 30 days then during that period the contract shall be considered as suspended. Upon the ending of the Force Majeure event the contractual obligations of the parties shall be reinstated with such reasonable modifications to take account of the consequences of the Force Majeure event as may be agreed between the parties. Notwithstanding such suspension you shall use your best endeavours to assist us in Performance.

6.5. If performance of the obligations of either party under the contract is so prevented by circumstances of Force Majeure and shall continue to be so prevented for a period in excess of 30 days then the contract shall be terminated by mutual consent and, subject to Clause 9 below neither party shall be liable to the other as a result of such termination.

6.6. If the contract is so terminated then subject to the transfer to us of the benefit referred to in clause 6.7. Below we shall pay you such reasonable sum as may be agreed us in respect of costs incurred and commitments already entered into by you at the date of Force Majeure notice, less the amount of any payments already made to you at the date of the Force Majeure notice. If the amount of such advance payments made to you exceeds the sum due to you under this sub clause then you shall repay the balance to us.

6.7. You shall transfer to us the benefit of all work done by you or your sub contractors and sub suppliers in the performance of the contract up to the date of the Force Majeure notice, and if applicable it shall include the rights in any licensed and developed software and licensed firmware so far as the rights in the same have accrued to us prior to the Force Majeure notice or will do so on payment under sub clause 6.6 above

#### **WARRANTIES AND LIABILITY**

7.1. You promise that:

7.1.1. The quantity, quality, description and specification for the Deliverables will be those set out in our order, apart from which then of the best standards reasonably to be expected in the market for that kind of Deliverable; and

7.1.2. Any goods will be free from defects in materials and workmanship; and

7.1.3. Any Deliverables will comply with all statutory requirements and regulations, and with all normally applicable quality standards, relating to their sale or supply; and

7.1.4. All claims made by you about any Deliverables, and all apparently serious claims in your advertising and promotional material, are correct and can be relied upon; and

7.1.5. Any services will be performed by appropriately qualified and trained personnel; and

7.1.6. Neither the sale and supply of any Deliverable, nor its proper use by us for an intended purpose, will breach any property rights in or about that Deliverable, including intellectual property rights, of any other person.

7.2. All warranties, conditions and other terms implied by statute or common law in our favour will apply to any Deliverables bought from you.

7.3. It is your responsibility to find out from us the purposes that we intend the Deliverables to be put to (including any applicable deadline affecting us). You promise that they will be suitable for those intended purposes, save only for any unsuitability which you have, as soon as might reasonably have been expected of you (and in any case before starting Performance), expressly notified to us.

7.4. You will indemnify us and keep us indemnified immediately upon our written demand against any cost, claim, expense or liability arising from any risk for which you are responsible under this contract.

7.5. If you fail to comply with any obligation under the contract we will be entitled, at our discretion, to reject any Deliverable and you will not be entitled to receive payment for that Deliverable.

7.6. If any contract goods do not comply with all contract requirements we can demand that you repair them or supply replacement goods within seven days or, at our sole discretion, we can reject the goods and demand the repayment of any sum already paid for them.

7.7. We will not be liable to you for any delay or failure to perform any of our obligations under this contract if the delay or failure was due to a cause beyond our reasonable control.

7.8. If any contract goods or rights were bought or obtained by you from a third party then any benefits or indemnities that you hold from that other party, in respect of those items, will be held on trust for us.

7.9. You will insure yourselves, and keep insured until Performance is complete, against all normal insurance risks relevant to your work

for or with us, on terms and for amounts consistent with normal business prudence. You will demonstrate to us the terms and currency of any such insurance on request.

#### **RIGHTS**

8.1. If you carry out any development work at our request and wholly or primarily at our expense we will own all intellectual property rights generated by that work, and section 7.3 will apply to those rights.

8.2. You will do anything reasonably required by us, during or after Performance, to perfect any transfer or licence of rights to us under this section or to assist us in registering or authenticating (but not at your cost enforcing or defending) those rights.

#### **TERMINATION**

9.1. If goods have been offered by you as, or if they are, standard or stock items we can, by notice to you, at any time up to delivery cancel our commitment to buy them. Any other commitment of ours to receive and pay for Deliverables may be cancelled by us as follows. We will be bound to reimburse you for all irrecoverable costs incurred, or unavoidably committed, by you up to the point of cancellation. By "costs" we mean for this purpose the direct costs to you of Performance, to an aggregate amount not exceeding 80% of the purchase price for the cancelled commitment. We will be entitled, if we wish it, to the benefit of the part-finished Deliverables in question.

9.2. We may suspend performance of, or cancel, or suspend and then at any subsequent time cancel, the contract without any liability to you if you breach its terms, or if your business fails.

9.3. Your business will be treated for this purpose as having failed if:

9.3.1. You make any voluntary arrangement with your creditors;

9.3.2. (being an individual or firm) you become bankrupt;

9.3.3. (being a company) you become subject to an administration order or go into liquidation;

9.3.4. Any third party takes possession of, or enforces rights over, any of your property or assets under any form of security;

9.3.5. You stop or threaten to stop carrying on business;

9.3.6. You suffer any process equivalent to any of these, in any jurisdiction; or

9.3.7. We reasonably believe that any of the events mentioned above is about to occur and we notify you accordingly.

9.4. Any right of cancellation or suspension under this section is additional to any rights available to us under the law of any relevant jurisdiction.

#### **ENFORCEMENT**

10.1. You will keep strictly confidential all information which you learn about us or our customers, and use that information only for the performance, in good faith, of your contractual obligations to us. By way of illustration only, you may not use such information to help our competitors, poach our staff or disparage our reputation. This restriction will apply until the fifth anniversary of the contract date, and does not apply to information which was demonstrably public knowledge at the time of usage by you.

10.2. Our relationship is as independent contractors only, not as partners or as principal and agent. The contract is non-assignable by you. It is assignable by us only to a group company, that is a company in the same ultimate beneficial ownership. You may sub-contract or delegate Performance in particular respects but not generally and not as regards your responsibility to us, nor your direct contact with us, in any respect.

10.3. You will procure that none of your associates behaves in a way which, had the behaviour been yours, would have breached the contract. We hold the contract on trust for ourselves and all associates of ours, and the contract is made for the benefit of all of them so that you will be liable for damage caused to our associates as well as ourselves. Our respective associates for this purpose are any parent company or ultimate controlling shareholder and any company owned by either.

10.4. No waiver by us of any breach of contract by you will be considered as a waiver of any subsequent breach of the same or any other provision, or as a release of the provision which you breached. No delay by us in enforcement, and no toleration shown by us, is to imply any waiver or compromise of our rights.

10.5. If any provision of these Terms is held by competent authority to be invalid or unenforceable in whole or in part the validity of the other Terms and of the remainder of the provision in question will not be affected. Every provision is severable from every other. Any invalid or unenforceable provision shall be deemed modified to the minimum extent necessary to make it valid, legal and enforceable. If such modification is not possible, the relevant provision or part-provision shall be deemed deleted. Any modification to or deletion of a provision or part-provision under this clause shall not affect the validity and enforceability of the rest of the contract.

10.6. Any written notice under these Terms will be deemed to have been sufficiently served if posted by pre-paid official postal service, or if sent by fax then on receipt of successful answerback, or if sent by e-mail (but in this case only on evidence of successful transmission and only if the parties have regularly communicated on contract matters by that e-mail route).

10.7. The contract will be governed by the law of England, and you submit to the exclusive jurisdiction of the English courts.

10.8. Except as provided in these Terms, a person who is not a party to the Contract shall not have any rights to enforce its terms.



Authorised dealer

