



SCHÜTZ ECOBULK WITH IMPELLER

Operating manual

Version 1.4 | March 2024



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INFORMATION FOR EMPTIERS

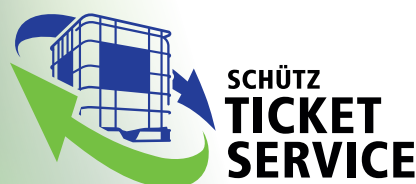
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SCHÜTZ IBCs with stirrer

The system consists of an ECOBULK MX/SX or HX with an IMPELLER, and it has been specially developed for filling products that require stirring or homogenisation in the supply chain.

The one-way stirrer is available for 1,000 and 1,250 litre ECOBULK containers with DN 150 and DN 225 openings. The IMPELLER is supplied by SCHÜTZ in the IBC and can be connected to all standard agitator drives. The SCHÜTZ IMPELLER means that external stirrers are not required, and after filling the container can remain securely closed throughout the stirring process until emptying. This completely rules out any risk of contamination due to product residues or when the stirrers are exchanged.

After emptying the entire system is collected by the SCHÜTZ TICKET SERVICE and is reused or recycled.



System components

ECOBULK

- Filling opening with DN 150 or DN 225 screw cap and IMPELLER
- **Optional** additional 2" filling opening in the bottle (S56x4 thread) with a seal cap
- Outlet valve DN 50/DN 80 with optional camlock adapter



IMPELLER

- Seal cap
- Screw cap to fit filling opening DN 150 or DN 225
- Shaft (hollow, to take the steel shaft that fits the drive)
- Folding wings





Drive

The SCHÜTZ IMPELLER can be attached to practically every standard transverse or gantry-mounted agitator drive, allowing most existing drive systems to be used:

- As a rule, but depending on the product, speeds of up to 200 rev/min should be used in a bucket agitator. If necessary, the SCHÜTZ IMPELLER can be used at speeds of up to 350 rev/min. However, this speed and a maximum torque of 100 Nm should never be exceeded. Please ask your drive manufacturer to provide details of the torques that can occur on the shaft for your specific drive and ascertain whether you may need a friction or safety clutch.
- For stirring processes with flammable liquids with a flashpoint of $\leq 60^\circ\text{C}$ or in EX zones the IMPELLER must be earthed through the drive shaft and the drive. Compliance with the ATEX and machinery directives must be ensured. Depending on the application, zone separation must be observed. Please discuss any safety issues with the manufacturer of the drive you are using. You can obtain all the necessary certificates from the drive manufacturer.

The drive is supplied by the user.

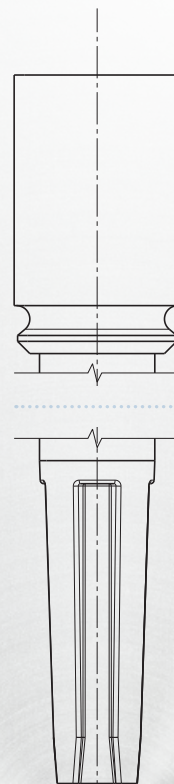
For the purposes of illustrating how the IMPELLER works, in this manual we have used a transverse agitator with a drive coupling.

Steel shaft

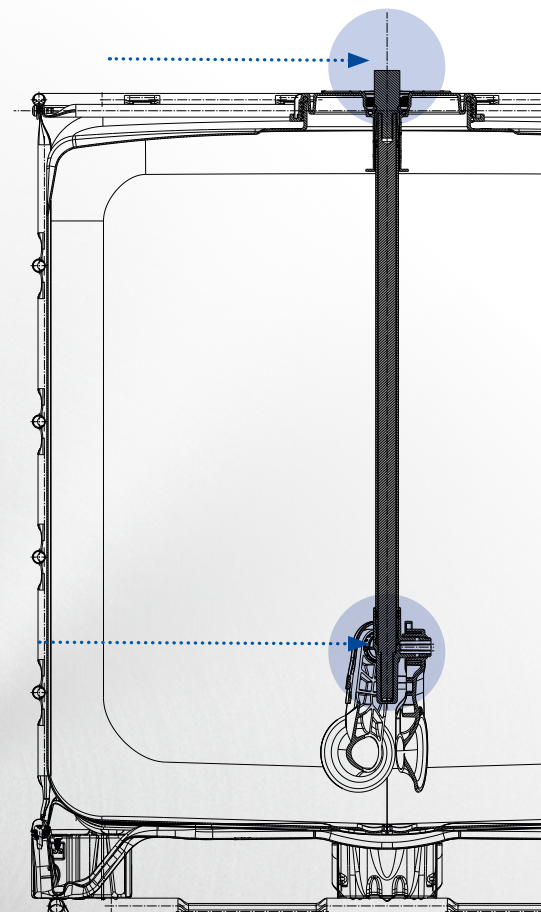
The IMPELLER is connected to the agitator drive with a steel shaft; the length and adapter of this shaft must be configured to fit the drive that is being used:

- The top adapter and the overall length of the steel shaft are defined by the specifications of the drive that is being used. If you have any questions, contact the manufacturer of the drive for precise specifications.
- The geometry of the connector at the bottom of the shaft is defined by SCHÜTZ. A detailed technical drawing can be supplied on request.
- The conductivity of the steel shaft is essential to earth this component and earth the IMPELLER in stirring processes with flammable liquids with a flash-point of $\leq 60^{\circ}\text{C}$ or in EX zones.

Top connector



Bottom connector



Where to obtain a steel shaft

The manufacturer of your drive unit can produce a steel shaft for the drive and coupling system in accordance with SCHÜTZ's specifications.

Alternatively: tell us the required length and top geometry for the drive and SCHÜTZ will be happy to manufacture a suitable steel shaft for you.

Delivery condition

SCHÜTZ supplies the IMPELLER ex-works in a ECOBULK model MX/SX/HX:

- Depending on requirements and container configuration the IMPELLER is packaged or unpackaged. Please refer to the assembly instructions.

Filling

Through the screw cap

The IMPELLER is delivered wrapped in foil inside the IBC!

1. Completely unscrew the screw cap. Lift the screw cap and pull the IMPELLER, which is packaged in a plastic bag, out of the opening.
2. Fill the IBC as usual.
3. Remove the protective bag around the IMPELLER.

Please handle the IMPELLER carefully; when removing the plastic bag please avoid contaminations (clean production environment, protective gloves should be worn, please ensure that all surfaces are clean if placing the IMPELLER down on a surface.)

4. Re-insert the IMPELLER and close the screw cap tightly with the correct torque and seal if necessary (DN 150: 75 Nm, DN 225: 105 Nm).



Filling

Filling using the optional 2" opening

The IMPELLER is delivered unwrapped inside the IBC!

1. The screw cap on the opening with the installed IMPELLER is sealed ex-works and remains unopened.
2. Remove the sealing cap of the separate 2" filling opening on the front upper side of the IBC, unscrew the plug, remove it and fill the IBC through this opening. *Do not inadvertently open the 2" plug in the middle of the screw cap. This plug is not used for filling; its purpose is to close the hollow space in the shaft into which the steel shaft is later inserted.*
3. Ideally, the filling hose should be inserted so that it sits on the base of the IBC, and the IBC should be filled from the bottom up.
4. Screw the plug back on with the right amount of torque (25 Nm) and close with the seal cap.



Transport

The filled IBC should be filled and loaded in accordance with standard procedures. The IMPELLER is safely protected against damage and has no influence on how the container is transported. Provided the filling opening of the container is securely closed, no additional safety procedures are required. This applies to both NON-UN and UN filling products.

Attaching the drive

Before using the IMPELLER the steel shaft must be attached to the drive by pushing it into the PE shaft. The length of the IMPELLER shaft has been designed so that it reaches the lowest point in the inner bottle in either the ECOBULK 1,000 or 1,250 litre version. This ensures optimum stirring results and minimal residual contents.

1. Remove the seal cap on top of the screw cap.
2. Screw off the 2" plug.
The IMPELLER may bob up.
3. Remove the seal.
4. Insert the steel shaft in the PE shaft of the IMPELLER.
Turn the steel shaft until it clicks into place and then insert it as far as it will go. The IMPELLER is held at the lip of the steel shaft.
5. Position the drive above the steel shaft.
6. Set the outer conductor/phase of the drive to clockwise rotation.
7. Lift the IMPELLER with the steel shaft approx. 35 mm and connect it to the drive.
The shaft has a top and a bottom stopper. The steel shaft must be lifted with the IMPELLER so that the top and bottom stopper hang freely. The screw cap is not touched and there is no friction.
8. The IMPELLER is ready to use.

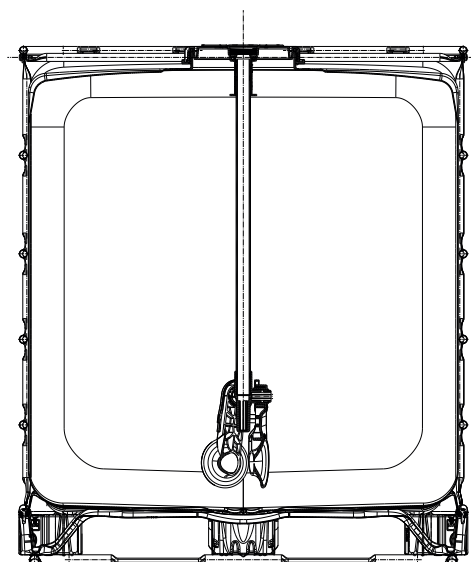


Use in EX zones

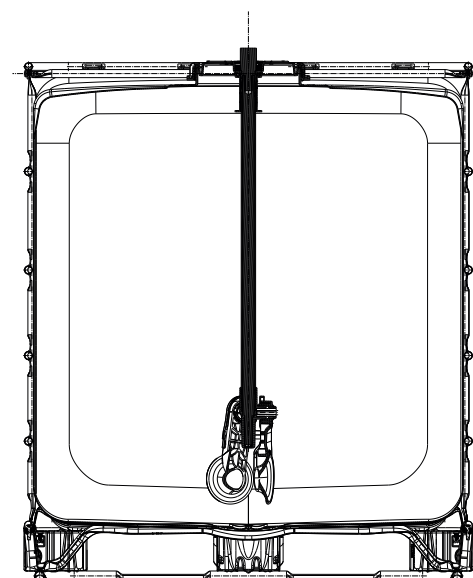
When using the IMPELLER with an EX-IBC or in EX zones, please ensure compliance with IEC TS 60079-32-1:2013.

- The IBC must be earthed.
- Employees handling the IBC must be wearing conductive shoes/gloves to ensure that they are earthed.

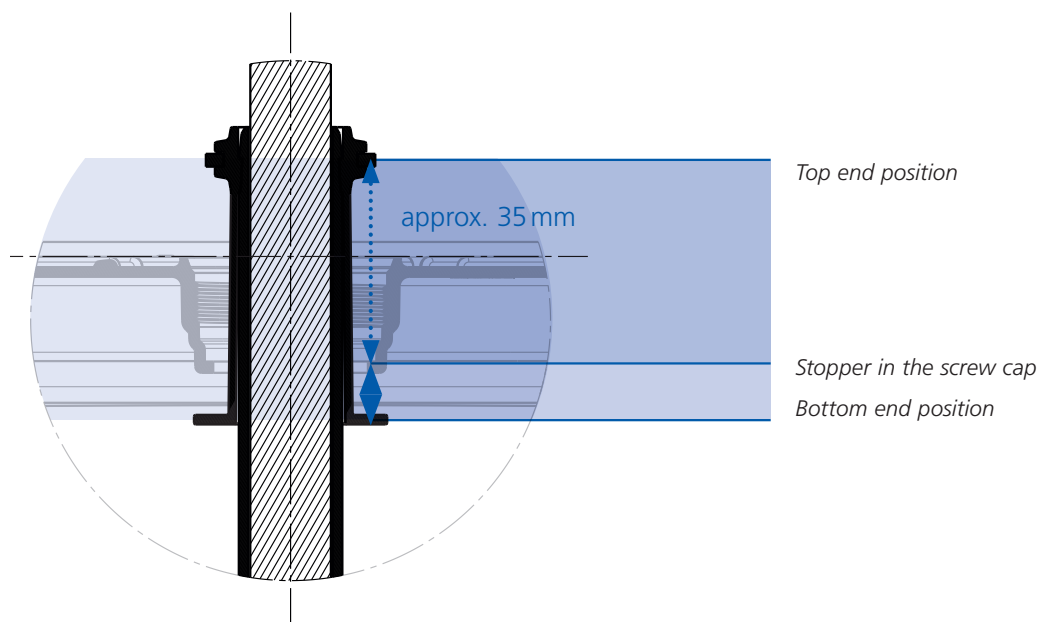




Without steel shaft



With inserted steel shaft



Safety instructions

During handling there is always the risk that body parts can get caught; there is a particular risk of injury to hands and fingers by the rotating shaft. Hair and loose items of clothing can get caught, leading to severe injury. The safety instructions concerning work clothes and protective clothing must be observed.

Stirring

The specific viscosity and other properties of the filling product determine the speed and duration of the stirring process. The optimum speed for each product must be determined by the user; alternatively, ask the maker of the drive for guidance.

The process data (speed and duration) recorded during stirring with a similar steel stirrer can be used as a rough guideline.

General instructions:

- The drive should be switched on only when the IMPELLER is fully immersed.
- After switching on the drive, increase the speed gradually and continuously until the required speed has been reached.
- Depending on the product, the IMPELLER will open even at low speeds of 60 to 80 rev/min after a short time due to the drive forces generated by the stirring process.
- As a rule, but depending on the product, speeds of up to 200 rev/min should be used in a bucket agitator. If necessary, the SCHÜTZ IMPELLER can be used at speeds of up to 350 rev/min. This speed and a maximum torque of 100 Nm should not be exceeded under any circumstances (see page 4 for further information on the drive).
- Once the stirring process has been completed the steel shaft can be removed by pulling it out with a firm tug, and it can be used for the next application.

Stirring processes with flammable liquids with a flashpoint of $\leq 60^{\circ}\text{C}$ or in EX zones.



Although IBCs are not constructed to be used as mixing vessels or reaction containers it may be necessary to homogenize the contents by stirring before filling or emptying the IBC. As these processes are likely to cause powerful charging the following precautions should be taken:

- Only use an EX zone compliant IBC.
- Only use an explosion-protected drive unit.
- Only use a conductive, original SCHÜTZ IMPELLER.
- Ensure that the IBC, the drive and the immersed IMPELLER are earthed.
- The rotation speed of the IMPELLER must be limited to 200 rev/min.

- In case of multi-phase liquids the conductivity of the continuous liquid phase has to exceed 10.000pS/m. NOTE: Water soluble liquid phases usually fulfil this requirement.
- Multi-phase insulating liquids with a conductivity of the continuous liquid phase less than 10.000pS/m must not be stirred without protective measures, such as inerting.

In compliance with the safety instructions detailed in IEC TS 60079-32-1:2013 the following liquids can be stirred:

- All single-phase liquids.
- All conductive liquids and suspensions, e.g. water-soluble coatings and water-soluble suspensions.
- Hydrocarbon-based coatings and suspensions, if they contain at least 10 % alcohol or if the liquid phase has sufficient conductivity is ensured in another way.
- For all other liquids and suspensions, with the exception of carbon disulphide, please ensure that stirring takes place at least 10°C below the flashpoint or that the IBC is safely rendered inert.

Please also read the safety instructions on the IBC.



Discharge

When discharging the filling product, care must be taken that the container is sufficiently ventilated.

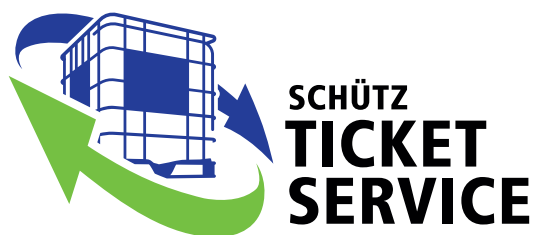
1. If the product is being discharged at the stirring point with the IMPELLER up in the air, then there is sufficient ventilation.
2. Otherwise, the screw cap must be opened or the optionally available 2" plug in the inner bottle must be opened to ensure adequate ventilation.



Returns

Empty ECOBULK containers with used IMPELLERs are collected by the SCHÜTZ TICKET SERVICE and are reconditioned or recycled in an environmentally-friendly process:

- Prepare empty containers for collection.
- Tightly close the IBC; the IMPELLER remains inside the IBC.
- Order the collection by the SCHÜTZ TICKET SERVICE – all details at **www.schuetz.net/ticket**
- The container/s will be collected free of charge within a few days; the collection terms and conditions apply.



Do you have further questions about the SCHÜTZ IMPELLER and how it is used?
We will be happy to help: +49 2626 77 0 !