The relevant health and safety at work provisions state that handwheels must be attached to spindles such that they are not turned along together with the machine drive assembly. Safety clutch handwheels meet this requirement:

- If not in operation, the wheel is disengaged. Shifting it in axial direction (pushing or pulling) will intermesh two serrated bushings, engaging the wheel with the shaft.
- After releasing, the wheel will disengage again automatically.

A number of user notices for various design types are listed below. These notices are non-binding and given without liability. They do not constitute a warranty of proper function. The user must in any case determine whether the safety clutch handwheels are suitable for the intended purpose and use.

1. Handwheels with Safety Clutch Assembly GN 000.4 (Friction Bearing Type)

All coupling elements are housed in an enclosed component known as a safety clutch assembly. It is designed such that it can be installed in all current types of handwheels and also in other machine elements.

Optionally, the same safety clutch assembly can be mounted in the handwheel such that the axial movement for disengagement is either “pulling” or “pushing” for disengaging. The “pushing” version is safer in terms of health and safety at work because the risk of inadvertent engagement is lower.

Type **A** (**without** handle)

As there is no unbalance (handle), this handwheel will also turn along with the drive, but it can be stopped by hand.

With the wheel moving along, the bearing is not put under excessive strain, with the effect that this type is particularly suitable for continuous operation. At higher speeds, the unbalanced handwheel may cause vibrations, however. Also, the friction heat which develops when braking the wheel must be kept in mind.

Type **D** (**with** handle)

The handle (unbalance) causes the disengaged handwheel to stop while the shaft is turning. Owing to the type of construction and bearing design of these couplings, the use of these handwheels is usually limited to relatively slow-turning spindle speeds or spindle speeds running at higher speed for short periods. A high risk of dirt deposits (grinding dust) and dry-running can limit the user options even further.

If the handwheel and its handle are deliberately or inadvertently set in (concurrent) motion while the shaft is turning, bearing friction may cause the wheel to turn permanently. At higher speeds, this may cause vibrations and, considering the rotating mass of the handle, can result in injuries also if disengaged. This risk / operating status must therefore be avoided at all cost.

Safety Clutch Assemblies GN 000.4 → page 268

Handwheels with Safety Clutch Assembly GN 000.4 → page 266

2. Handwheels with Safety Clutch Assembly GN 000.5 (Needle Bearing Type)

The details given under 1. above apply in principle also to these safety clutch handwheels.

With their needle bearings, they have the advantage over friction bearings that they can be used for somewhat higher speeds due to their substantially lower friction, lower wear and tear and lower sensitivity to lubrication.

Owing to their larger construction length and lower friction (hardened contact surfaces) and finer intermeshing, these wheels are also easier to engage.

Safety Clutch Assemblies GN 000.5 → page 269

Handwheels with Safety Clutch Assembly GN 000.5 → page 266

3. Safety Clutch Handwheels with Cover Cap GN 321.6

These safety clutch handwheels are an advance development of the handwheels with safety clutch assembly GN 000.5 (needle bearing).

The coupling elements have been specially developed for this type of handwheel and are therefore not intended for general use. Also, they are only intended for the “pulling” mode of engagement.

The user notices listed under 1. and/or 2. above also apply here. Owing to their type of construction, especially the cap, these handwheels are largely protected from dirt.

Safety Clutch Handwheels GN 321.6 → www.jwwinco.com

4. Safety Clutch Handwheels with Fixed Bearing Flange GN 327

The safety clutch handwheels described under 1. to 3. above are characterized by the fact that they require no special machine-side measures for attaching. They are simply pushed over the shaft. However, the inevitable bearing friction generates a link between shaft and handwheel which needs to be kept in mind as specified above.

For applications with very high rotary speed, ultimate levels of safety at work and under continuous operation, the safety clutch handwheel with fixed bearing flange is the best possible solution. The separate bearing configuration means that the user notices given for types 1. to 3. do not apply.

However, this safety clutch handwheel is more complex, with a number of requirements to be met at the machine side.

Safety Clutch Handwheels GN 327 → page 270