
Innovative Power Transmission

RENK-MAAG

Synchronous Clutch
Coupling type MS

...your compact engine translator!
MS Clutch – Automatic clutch engagement at any synchronous speed

Synchronous clutch couplings type MS engage automatically at synchronous speed between driving and driven machine and also disengage again automatically if the driver falls below the speed of the driven machine or torque becomes negative – this happens at any speed within the machine’s speed range. Due to the fact that all parts are hydrodynamically lubricated, the clutch is wear-free. The RENK-MAAG MS Clutch understands everything in the range of 0.5 to well over 200 MW!

RENK-MAAG Synchronous Clutch Couplings are used in a wide range of applications

- **Marine applications**
  - Combined propulsion systems such as CODOG, COGOG, CODAG, COGAG, CODAD, etc.
  - Efficiency booster drives for diesel engine propulsion systems

- **Power generation**
  - Peaking power station
    - Condensing plant
    - Power discharge
  - Combined cycle power plants (CCPP)
  - Combined heat and power (CHP) plants
  - Compressed air energy storage (CAES)

- **Energy recovery, combined cycle technologies, cogeneration and others**
  - Connecting expander turbines to main drives in petrochemical plants or steel manufacturing (blast furnaces)
  - Blower drives in nuclear power stations for use during starting sequence
  - Starting device for gas turbines
  - Automatic turning gears

RENK-MAAG Synchronous Clutch Coupling type MS consists of two main elements

- Gear coupling: axial, radial and angular displacement
- Synchronizing mechanism: automatic engagement/disengagement
**Design versions**

**Between flanges**
- *Standard solution*
- Easy assembly due to bolted connection
- Also available as semi-rigid version

**Shrink-fitted hubs with spacer**
- Hydraulically fitted conical hubs
  - shaft end with hydraulic connection for more convenient assembly
- Cylindrical hubs with fitted key and safety nut
  - also convenient for assembly (slight heating)
- Cylindrical hub without fitted key
  - stronger thermal shrink fit (more heating)
  - more demanding assembly

**Quill-shaft mounted**
- Special space-saving solution
- Proven application in marine arrangements
- Used in all kinds of applications: industry, power generation and energy recovery.

**Train arrangements – compact solution, space saving, shortest train possible!**

**Standard solution with and without GT-Flex-Set**
- Very compact shaft train
- No Flex-Coupling
- 1 bearing less means higher efficiency

**Quill-shaft arrangement with and without GT-Flex-Set**
- Very compact shaft train
- No Flex-Coupling
- 1 bearing less means higher efficiency
- MS fully integrated in gear box casing

**Summary**

More than 50 years of experience within RENK-MAAG! Over 450 Synchronous Clutch Couplings sold!

- Automatic engagement/disengagement
- Engaging at any synchronous speed
- Flexible with integrated gear coupling
- Compact, long-lived and wear-free
- Retrofittable into existing plants
- Suitable for high torque and high speed
- Wide range of application
- Tailored for customer requirements
Product portfolio

RENK-MAAG provides new products, services, inspections, repairs and spare parts (incl. complete couplings) for all types of MAAG/RENK-MAAG couplings.

**Non-shiftable**

Various types used as flexible couplings.

*RENK-MAAG supplies services and spare parts for all MAAG couplings. RENK Rheine specializes in non-shiftable gear couplings.*

**Shiftable**

**Synchronous Clutch Coupling**

- **MS**
  - Automatically synchronizing
  - • flexible with integrated gear coupling
  - • engaging at any synchronous speed
  - • disengaging at any speed with negative torque
  - • various additional features
  - • small drag when disengaged
  - • e.g. Combined cycle power plants (CCPP)

- **HS**
  - Engaging on demand
  - • flexible with integrated gear coupling
  - • pure gear coupling when engaged which allows full positive and negative torque
  - • engaging at low speeds
  - • very small drag when disengaged
  - • e.g. GT – Generator: Peak Power/Synchronous Condenser Operation

- **ZD**
  - Completely disengageable
  - • flexible with integrated gear coupling
  - • pure gear coupling when engaged which allows full positive and negative torque
  - • engaging at standstill
  - • disengaging at no load
  - • no drag when disengaged
  - • e.g. Combined heat and power (CHP) plants

**Additional features**

- **M** Mechanical automatic disengagement/engagement
- **H** Hydraulically operated
- **S** Synchronous clutch coupling
- **Z** Gear coupling (Zahnkupplung)
- **D** Disengageable

**Basic design**

- **MS**
  - 39
  - Additional features:
    - e.g. 390 mm pitch diameter of gear coupling, quill-shaft arrangement

- **HS**
  - 88
  - Additional features:
    - e.g. 880 mm pitch diameter of gear coupling, encased

- **ZD**
  - 50
  - Additional features:
    - e.g. 500 mm pitch diameter of gear coupling, hydraulically activated

**Additional features**

- **A** for starter drives
- **E** encased
- **F** isolating device (pawl free)
- **H** hydraulically activated
- **L** lever activated (manually)
- **N** engagement at low speed
- **Q** quill-shaft arrangement
- **R** locking mechanism
- **T** for turning gears

More features on request!
### MS standard (flange mounted)

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<th>$A_{min}$ [mm]</th>
<th>$B$ [mm]</th>
<th>$C$ [mm]</th>
<th>$D$ [mm]</th>
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* max continuous