6.4. AR adapter with torque limiting coupling

Helical-bevel gear unit with AR adapter

SEW helical, parallel shaft helical, helical-bevel and helical-worm gear units are configured with an adapter and torque limiting coupling in order to protect the machine and the drive against overload. IEC standard motors of sizes 71 to 180 can be mounted.

The torque is transmitted through a non-positive engagement involving friction ring pads. The slip torque of the coupling is set using a setting nut and cup springs. Various slip torques are possible depending on the thickness and arrangement of the cup springs. In the event of an overload, the coupling slips and interrupts the powerflow between the motor and the gear unit. This prevents damage to the machine and the gear drive.

Multi-stage gear units with adapter and torque limiting coupling

When used in conjunction with multi-stage gear units, the best place to install the adapter and torque limiting coupling is between the two gear units. Please contact SEW if required.

Selection of the gear unit

The unit sizes of the AR adapter with torque limiting coupling are the same as the AM adapter for IEC motors.

As a result, the gear unit can be selected using the selection tables for AM adapters. In this case, substitute the unit designation AM with AR and ascertain the required slip torque.

Ascertaining the slip torque

The slip torque should be about 1.5 to 2 times the rated torque of the drive. When determining it, bear in mind the maximum permitted output torque of the gear unit as well as the variations in the slip torque of the coupling (±20 %) which are a feature of the design.

When you order a gear unit with an adapter and torque limiting coupling, the required slip torque of the coupling must be specified.

If no information is given in the order, the unit will be set to the maximum permitted output torque of the gear unit.

Torques, slip torques

Type	Pm[1] HP	T_R[2] lb-in	T_R[2] lb-in	T_R[2] lb-in
AR71	0.5	8.8 - 53	54 - 142	-
AR80	1.0	8.8 - 53	54 - 142	-
AR90	2.0	8.8 - 53	54 - 285	-
AR100	4.0	44 - 115	124 - 710	-
AR112	5.4	44 - 115	124 - 710	-
AR132S/M	10.0	133 - 285	290 - 1150	-
AR132ML	12.5	133 - 285	290 - 1150	-
AR160	20.0	133 - 285	290 - 1150	1160 - 1770
AR180	30.0	220 - 1150	1160 - 2660	-

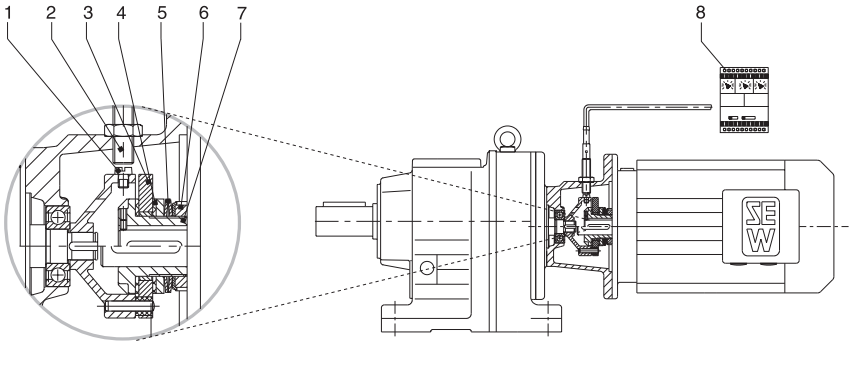
[1] Maximum rated power of the mounted standard electric motor at 1750 rpm
[2] Slip torque which can be set based on the cup springs installed

Option speed monitor /W

We recommend monitoring the speed of the coupling using a speed monitor in order to avoid uncontrolled slippage of the coupling and the associated wear of the friction ring pads.

The speed of the output end coupling half of the torque limiting coupling is monitored with a proximity-type method using a trip cam and an inductive encoder. The speed monitor compares the pulses against a defined reference speed. The output relay (either NC or NO contact) switches when the speed drops below the specified speed (overload). The monitor is equipped with a starting bypass to suppress fault messages during the starting phase. This can be set within a time window of 0.5 – 15 seconds.

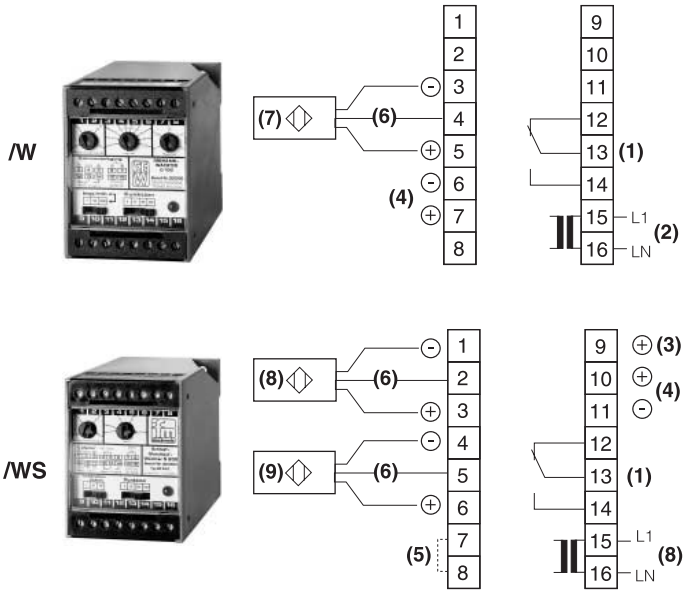
The reference speed, starting bypass and switching hysteresis can be set on the speed monitor.



1 Trip cam
2 Encoder (adapter)
3 Carrier disk
4 Friction ring pads
5 Cup spring
6 Slotted round nut
7 Friction hub
8 Speed monitor

Dimensions /W, /WS

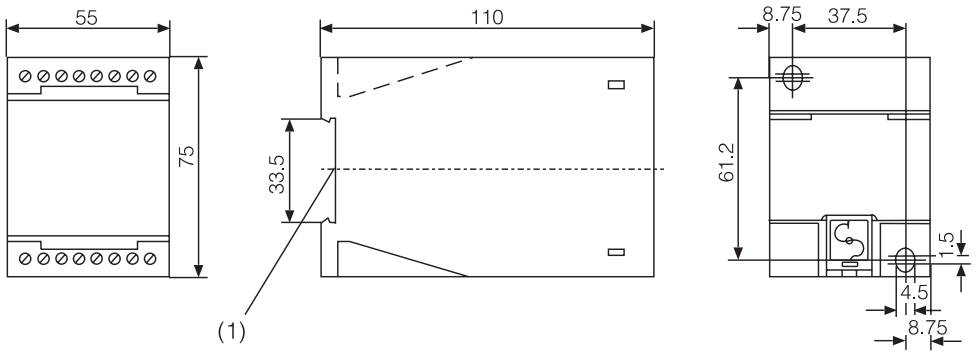
Terminal assignment



Terminal assignment

1 Relay output
2 Connection voltage 230 V_{AC} (47 – 63 Hz)
3 External slip reset
4 Connection voltage 24 V_{DC}
5 Jumper for synchronous operation monitoring
6 Signal
7 Encoder
8 Encoder 1
9 Encoder 2
/W Speed monitor
/WS Slip monitor

Dimensions



1 Mounting on DIN rail

Adapter with a torque limiting coupling and speed monitor /W