



Part Number	<b>FR 453 M</b>
Type	Freewheel Clutch Insert Element
Spring	M (Meander)
With Hardened Steel Rings	Yes
With Inner Ring Keyway	No

#### Geometrical Data

Bore Diameter	d [mm]	40
Outer Diameter	D [mm]	58
Width	W [mm]	12
Weight	[kg]	0.10

#### Shaft & Housing Tolerances

Shaft Tolerance	h5
Housing Tolerance	H6
Shaft & Housing Chamfer	1mm x 15°

#### Ratings

Nominal Torque	[Nm]	321
Nominal Torque	[ft-lb]	236.8
Max. Indexing Frequency	[Hz]	60
Max. Speed <sup>2</sup>	[rpm]	3,400
Max. Operating Temperature <sup>3</sup>	[°C]	140

#### Notes:

1. The stated speed and torque ratings are contingent on utilizing specified tolerances, correct installation techniques, and an operating temperature below the specified maximums. If specific applications differ, please consult GMN USA engineers.
2. The stated RPM value is for the maximum freewheel rotational speed for the sprags, not the shaft or housing. High freewheel rotational speeds can produce centrifugal forces that can cause the sprags to lift off from frictional contact, therefore creating an opportunity for improper engagement and potential slip. The sprag RPM must be below the listed value before engagement occurs. The actual sprag freewheel speed is difficult to determine because the sprags are driven by frictional forces from the race(s) and lubrication. Theoretically there is no maximum rotational speed in the driving direction; the inner race, sprags, and outer race rotate as one unit unaffected by centrifugal forces. Please consult GMN USA engineers with high RPM applications that approach or exceed the stated RPM rating.
3. The stated temperature rating is for an injection molded cage. The maximum temperature rating is 170°C for a steel cage.