

WSC Series Clutches

Mechanically Activated, Basic Wrap Spring Clutch Design

WSC Series wrap spring clutches are mechanically actuated, eliminating the need for external electrical control devices. These simple, trouble free, easy-to-install clutches feature a high torque capacity in a small, compact package.

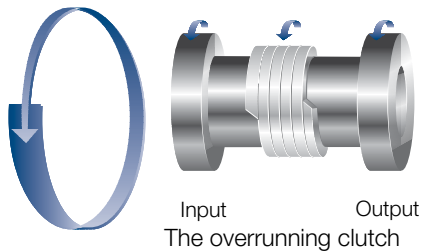
A choice of three different operating styles is available.

Features

- Five standard sizes
- Standard bore sizes from 1/4" to 1-1/2"
- Static torque rating from 25 lb.in. to 2500 lb.in.
- Mechanically actuated
- Choice of hub or shaft input
- 1, 2 or 4 stop collars standard
- Overtravel stop – Special
- Anti-overrun – Special
- Adjustable stop feature – Special
- Self-lubricating, no maintenance
- Simple mechanical actuation
- Easy-to-machine hubs readily adapt to application needs
- Single stop collars for single revolution operation
multistops for less than one turn



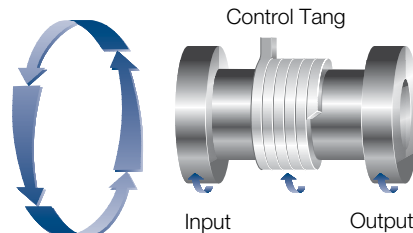
Overrunning/One-Way (Model O)



(Model O) transmits torque up to the rated value in the positive direction, when disengaged it only transmits some drag torque in the reverse direction. Major applications for this unit are anti-overrun protection and anti-backup devices.

The load is allowed to overrun the input, should the load speed exceed the input speed. In reverse it acts as a one-way clutch, preventing reverse rotation.

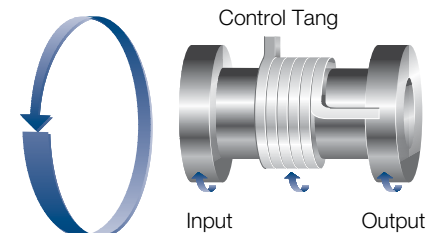
Start/Coast-To-Stop (Model SS)



The start/coast-to-stop clutch (Model SS) accelerates the load just after the control collar has been released, thus the collar is free to rotate allowing the spring to grip both hubs together. To disconnect the clutch, the collar has to be restrained, stopping the collar from rotating via the stop face. The spring will then be opened and the clutch will be disengaged. The output is free to rotate and will be stopped by system friction and clutch drag torque.

The start/coast-to-stop clutch is engaged until the collar is stopped, which disengages the clutch allowing the load to coast to a stop.

Single Revolution (Model S)



The single revolution clutch (Model S) accelerates in the same manner as the model SS. The deceleration starts when the collar is restrained, and the spring is opened, disengaging the clutch.

For Model S, the brake torque capability is limited to 10% of the rated torque.

All WSC Series clutches are easy to install. The shaft can be pinned or, on larger units, delivered with keyways, a simple solution for applications requiring accurate positioning. One, two or four stop per revolution collars are available.

WSC Series Clutches

Specifications	WSC-2	WSC-4	WSC-5	WSC-6	WSC-8
Static Torque (lb.in.)	25	120	250	500	2500
Inertia, shaft input rotating parts (lb.in. ²)	0.006	0.015	0.059	0.570	4.99
Inertia, hub input rotating parts (lb.in. ²)	0.008	0.023	0.069	0.73 (0.75" Bore) 0.68 (1.00" Bore)	11.91 (1.25" Bore) 11.60 (1.50" Bore)
Maximum radial bearing load at maximum speed (lbs.)	6.75	13.5	31.5	63.0	300.0
Maximum operating speed (RPM)	1800	1200	750	500	300
Weight (lbs.)	0.13	0.22	0.62	2.60	8.25

See page 36 for Minimum Inertia Requirements.
See page 8 for Mounting Examples.

Optional Multiple Stop Collars



The WSC Series clutches feature a choice of collars with one, two or four stops as standard. Other stop collar configurations are available on special order.

Basic Selection

See pages 6–7 for basic product selection guidelines.

For complete Application Engineering information see pages 36–38.

How to Order

Order by part number (see chart on dimensions page) or specify as follows.

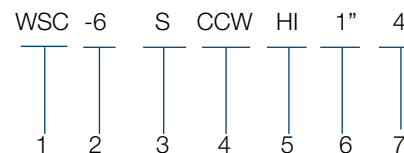
Specify:

1. WSC Series
2. Size: WSC-2, WSC-4, WSC-5, WSC-6, or WSC-8
3. Type of Operation:
S—Single revolution
SS—Start/Coast-To-Stop
O—Overrunning
4. Direction of rotation:
CW Clockwise
CCW Counterclockwise
(Direction of rotation is determined from the perspective of the input end.)
5. Hub input (HI) or shaft input (SI)
6. Standard Bore size:
WSC-2 = 1/4"
WSC-4 = 3/8"
WSC-5 = 1/2"
WSC-6 = 3/4" or 1"
WSC-8 = 1 1/4" or 1 1/2"

7. Stop collar:

Standard Stops: 1, 2 or 4

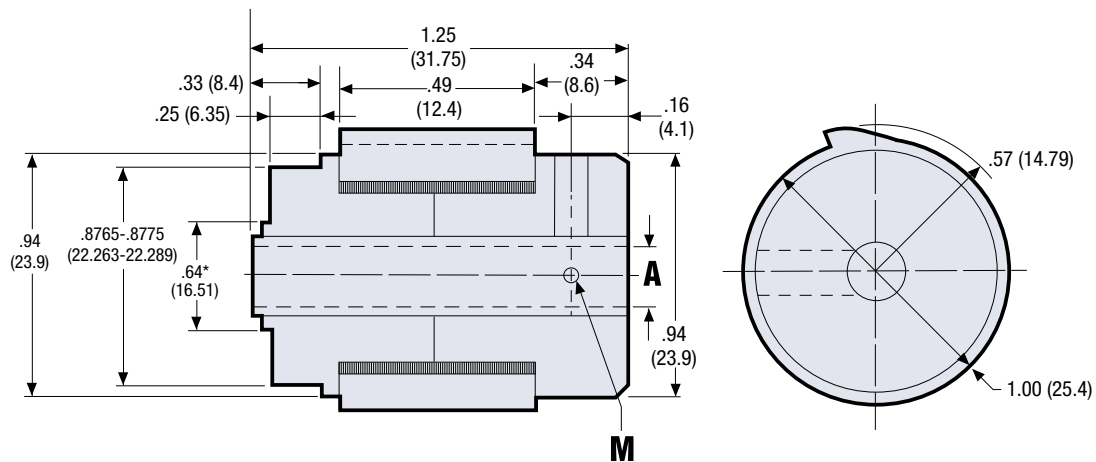
Example: WSC-6, S, CCW, HI, 1" bore, 4 stop collar.



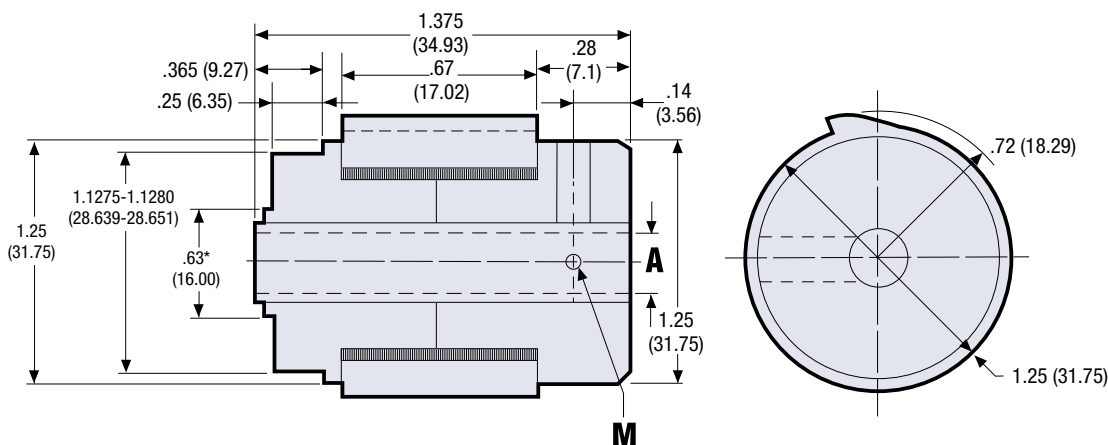
WSC-2, WSC-4, WSC-5 Clutches

Dimensions in. (mm)

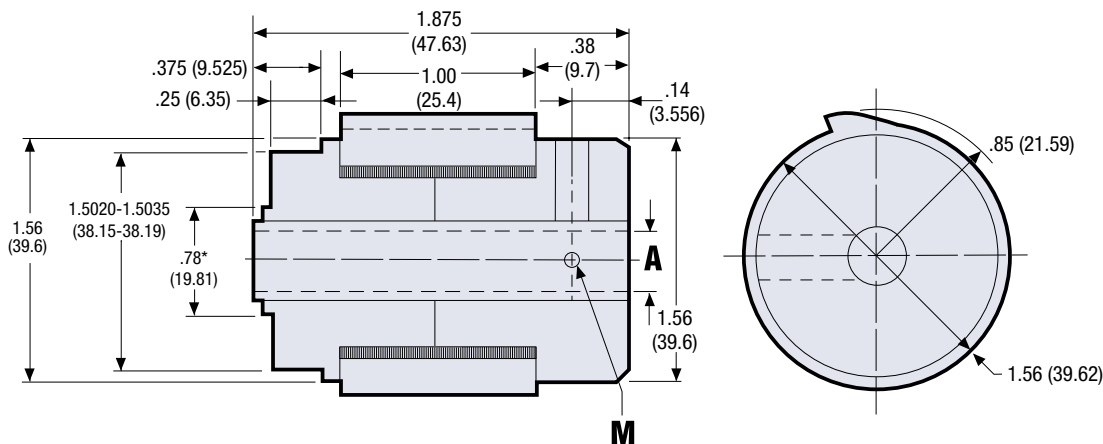
WSC-2



WSC-4



WSC-5



*Retaining ring clearance diameter

WSC-2, WSC-4, WSC-5 Clutches

WSC Part Numbers

WSC-2

Bore Size	Operation	Rotation	Input	Stops			
				None	1	2	4
0.25"	S (start/stop)	CW	Hub	—	202-10-016	202-10-009	202-10-020
		CCW		—	202-20-016	202-20-015	202-20-017
0.25"	S (start/stop)	CW	Shaft	—	202-30-011	202-30-007	202-30-015
		CCW		—	202-40-014	202-40-008	202-40-017
0.25"	O (overrunning)	CW	Hub/Shaft	202-10-018	—	—	—
		CCW		202-20-019	—	—	—

These are the most commonly requested parts. Other units offering overrunning or start/coast-to-stop operation are available.

WSC-4

Bore Size	Operation	Rotation	Input	Stops			
				None	1	2	4
0.375"	S (start/stop)	CW	Hub	—	204-10-001	204-10-016	204-10-010
		CCW		—	204-20-004	204-20-008	204-20-016
0.375"	S (start/stop)	CW	Shaft	—	204-30-001	204-30-007	204-30-009
		CCW		—	204-40-001	204-40-006	204-40-012
0.375"	O (overrunning)	CW	Hub/Shaft	204-10-003	—	—	—
		CCW		204-20-003	—	—	—

These are the most commonly requested parts. Other units offering overrunning or start/coast-to-stop operation are available.

WSC-5

Bore Size	Operation	Rotation	Input	Stops			
				None	1	2	4
0.5"	S (start/stop)	CW	Hub	—	205-10-001	205-10-014	205-10-017
		CCW		—	205-20-001	205-20-006	205-20-011
0.5"	S (start/stop)	CW	Shaft	—	205-30-001	205-30-014	205-30-016
		CCW		—	205-40-004	205-40-016	205-40-007
0.5"	O (overrunning)	CW	Hub/Shaft	205-10-003	—	—	—
		CCW		205-20-003	—	—	—

These are the most commonly requested parts. Other units offering overrunning or start/coast-to-stop operation are available.

Bore Data

Model	Bore	
	A	M
WSC-2	.2505-.2530	#8-32
	(6.363-6.426)	
WSC-4	.376-.378	.125 dia.
	(9.551-9.601)	(3.175 dia.)
WSC-5	.501-.504	.187 dia.
	(12.726-12.802)	(4.75 dia.)

Specifications

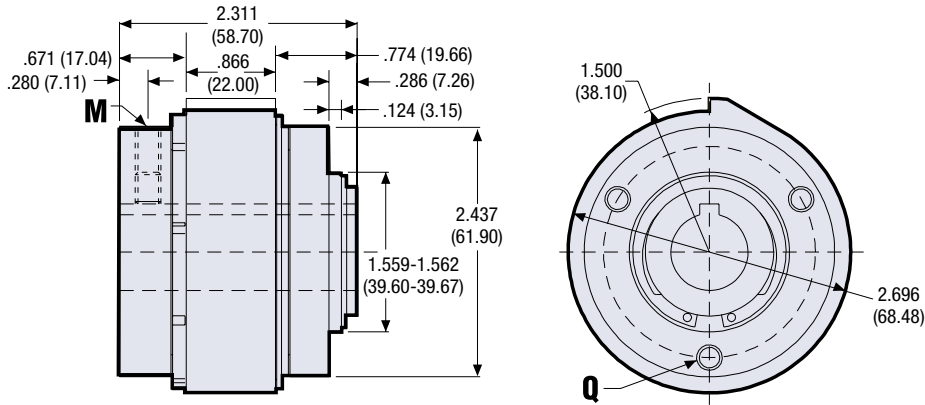
	WSC-2	WSC-4	WSC-5
Static Torque (lb.in.)	25	120	250
Inertia, shaft input rotating parts (lb.in. ²)	0.006	0.015	0.059
Inertia, hub input rotating parts (lb.in. ²)	0.008	0.023	0.069
Maximum radial bearing load at maximum speed (lbs.)	6.75	13.5	31.5
Maximum operating speed (RPM)	1500	1200	750
Weight (lbs.)	0.13	0.22	0.62

All dimensions are nominal unless otherwise noted.

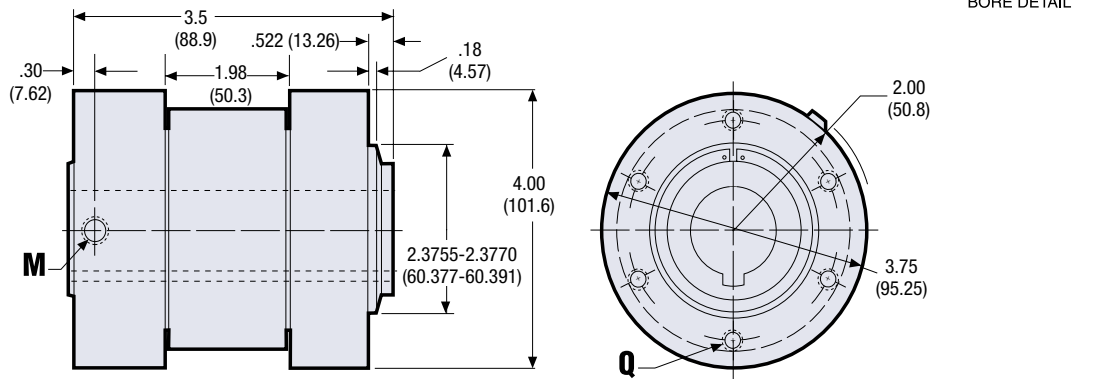
WSC-6, WSC-8 Clutches

Dimensions in. (mm)

WSC-6



WSC-8



Bore & Keyway Sizes

	Bore A	Keyway Width B	Keyway Height C	M	Q
WSC-6	.7510-.7525 (19.076-19.114)	.1885 (4.788)	.09375 (2.381)	#1/4-20 Tap	3x #1/4-20 Tap on 2.062 (52.375) BC Max. Thread Engagement .310 (7.87)
WSC-6	1.0010-1.0025 (25.426-25.464)	—	—	#1/4-20 Tap	3x #1/4-20 Tap on 2.062 (52.375) BC Max. Thread Engagement .310 (7.87)
WSC-8	1.2510-1.2525 (31.776-31.814)	.3125 (7.9375)	.15625 (3.9688)	#3/8-16 Tap	6x 5/16-18 on 3.375 (85.725) BC Max. Thread Engagement .375 (9.53)
WSC-8	1.5010-1.5025 (38.126-38.164)	.375 (9.525)	.125 (3.175)	#3/8-16 Tap	6x 5/16-18 on 3.375 (85.725) BC Max. Thread Engagement .375 (9.53)

All dimensions are nominal unless otherwise noted.

WSC-6, WSC-8 Clutches

Part Numbers

WSC-6

Bore Size	Operation	Rotation	Input	Stops			
				None	1	2	4
0.75"	S (start/stop)	CW	Hub	—	206-10-002	206-10-062	206-10-064
		CCW		—	206-20-002	206-20-023	206-20-058
0.75"	S (start/stop)	CW	Shaft	—	206-30-011	206-30-052	206-30-025
		CCW		—	206-40-002	206-40-014	206-40-020
0.75"	O (overrunning)	CW	Hub/Shaft	206-10-008	—	—	—
		CCW		206-20-008	—	—	—
1.0"	S (start/stop)	CW	Hub	—	206-10-003	206-10-057	206-10-059
		CCW		—	206-20-003	206-20-060	206-20-013
1.0"	S (start/stop)	CW	Shaft	—	206-30-003	206-30-051	206-30-056
		CCW		—	206-40-013	206-40-023	206-40-025
1.0"	O (overrunning)	CW	Hub/Shaft	206-10-009	—	—	—
		CCW		206-20-009	—	—	—

These are the most commonly requested parts. Other units offering overrunning or start/coast-to-stop operation are available.

WSC-8

Bore Size	Operation	Rotation	Input	Stops			
				None	1	2	4
1.25"	S (start/stop)	CW	Hub	—	208-10-004	208-10-027	208-10-028
		CCW		—	208-20-001	208-20-028	208-20-030
1.25"	S (start/stop)	CW	Shaft	—	208-30-001	208-30-021	—
		CCW		—	208-40-013	208-40-015	208-40-017
1.25"	O (overrunning)	CW	Hub/Shaft	208-10-006	—	—	—
		CCW		208-20-007	—	—	—
1.50"	S (start/stop)	CW	Hub	—	208-10-007	208-10-025	208-10-030
		CCW		—	208-20-003	208-20-032	208-20-021
1.50"	S (start/stop)	CW	Shaft	—	208-30-003	208-30-025	208-30-027
		CCW		—	208-40-003	208-40-020	208-40-022
1.50"	O (overrunning)	CW	Hub/Shaft	208-10-009	—	—	—
		CCW		208-20-009	—	—	—

These are the most commonly requested parts. Other units offering overrunning or start/coast-to-stop operation are available.

Specifications

	WSC-6	WSC-8
Static Torque (lb.in.)	500	2500
Inertia, shaft input rotating parts (lb.in. ²)	0.570	4.99
Inertia, hub input rotating parts (lb.in. ²)	0.73 (0.75" Bore) 0.68 (1.00" Bore)	11.91 (1.25" Bore) 11.60 (1.50" Bore)
Maximum radial bearing load at maximum speed (lbs.)	63	300
Maximum operating speed (RPM)	500	300
Weight (lbs.)	2.60	8.25