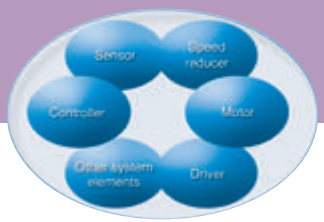


HarmonicDrive®

Hollow Structure Full Unit Type

SHF-11-50-2UH
SHF-11-100-2UH

The smallest model SHF-11 has been newly added in the lineup of HarmonicDrive® SHF-2UH series/unit type.

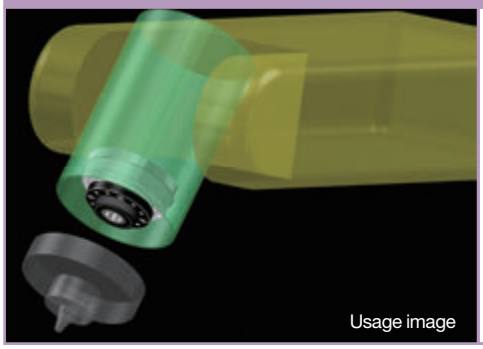
The smallest model SHF-11 has been newly developed, which features structure of larger hollow opening diameter. Accordingly, the lineup of HarmonicDrive® SHF-2UH series/full unit type has been enhanced. Securing hollow opening diameter ϕ14mm same as the previously smallest model SHF-14-2UH, we introduce this new model that can offer wider range of use. The smallest model SHF-11 can meet customer's versatile needs, such as air piping, electric wiring, penetration of optical fiber cable, combination with ball screw, and other usages.

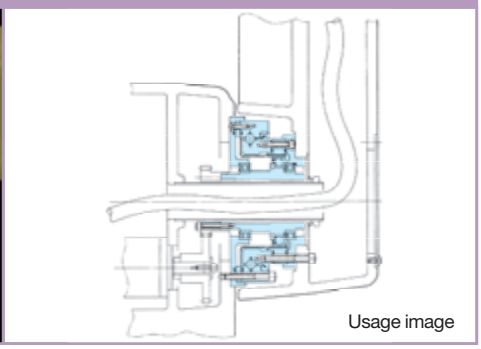
Main Market

Industrial Robot

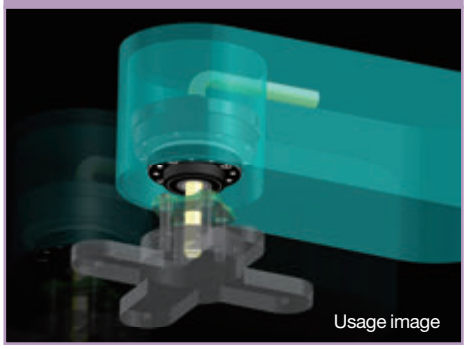
Semiconductor Manufacturing Equipment

Vertical Articulated Robot


Usage image


Usage image

Wafer absorption carrier equipment


Usage image

■ SHF-11-XXX-2UH Specification

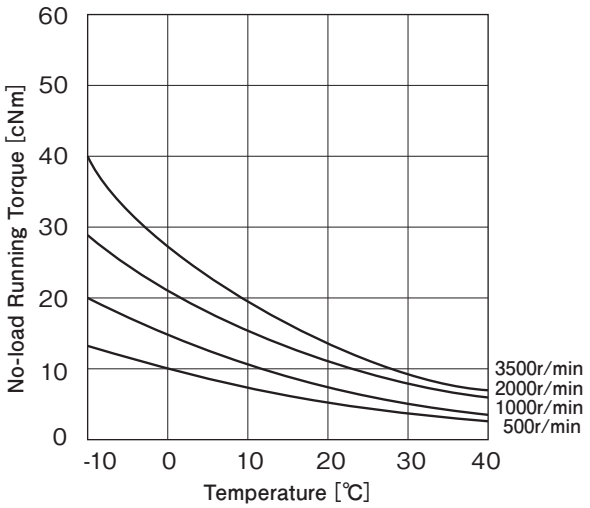
Features		Unit	Reduction Ratio	
			50	100
Rated Toque in 2000r/min Input		Nm	3.5	5
		kgfm	0.36	0.51
Permissible Peak Torque in Starting or Stopping		Nm	8.3	11
		kgfm	0.85	1.12
Permissible Maximum Value of Average Load Torque		Nm	5.5	8.9
		kgfm	0.56	0.91
Momentary Permissible Maximum Torque		Nm	17	25
		kgfm	1.73	2.55
Permissible Max. Input Rotational Speed	Grease Lubrication	r/min	8500	8500
Permissible Ave. Input Rotational Speed	Grease Lubrication	r/min	3500	3500
Angular Transmission Accuracy		$x10^{-3}$rad	0.58	0.44
		arc min	2	1.5
Hysteresis Loss		$x10^{-4}$rad	5.8	5.8
		arc min	2.0	2.0
Starting Torque		cNm	7.1	5.9
Speed-up Starting Torque		Nm	4.6	7.6
Stiffness	T1	Nm	0.8	
		kgfm	0.082	
	T2	Nm	2.0	
		kgfm	0.20	
	K1	$x10^{4}$Nm/rad	0.22	0.27
		kgfm/arc min	0.066	0.080
	K2	$x10^{4}$Nm/rad	0.30	0.34
		kgfm/arc min	0.090	0.10
	K3	$x10^{4}$Nm/rad	0.32	0.44
		kgfm/arc min	0.096	0.13
	θ1	$x10^{-4}$rad	3.6	3.0
		arc min	1.2	1.0
	θ2	$x10^{-4}$rad	8.0	6.0
		arc min	2.6	2.2
Ratcheting Torque		Nm	34	43
Buckling Torque		Nm	90	
Mass		kg	0.53	
Moment of Inertia	I	$x10^{-4}kgm^2$	0.008	
	J	$x10^{-5}kgfms^2$	0.082	

■ Main Shaft Bearing Specification

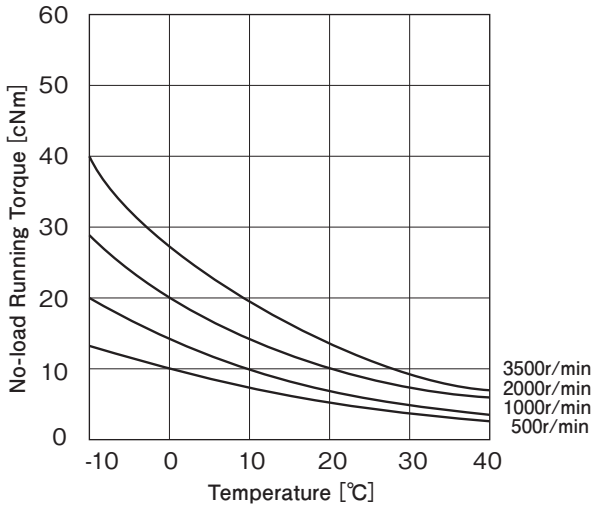
Features		Unit	
Pitch Circle Diameter of Roller	dp	m	0.043
Offset Amount	R	m	0.018
Basic Load Rating	Basic Dynamic Load Rating C	$x10^{2}$N	52.9
		kgf	540
	Basic Static Load Rating Co	$x10^{2}$N	75.5
		kgf	770
Permissible Moment Load Mc		Nm	74
		kgfm	7.6
Moment Stiffness Km	$x10^{4}$Nm/rad		6.5
	kgfm/arc min		1.8

No-load Running Torque

■ SHF-11-50-2UH



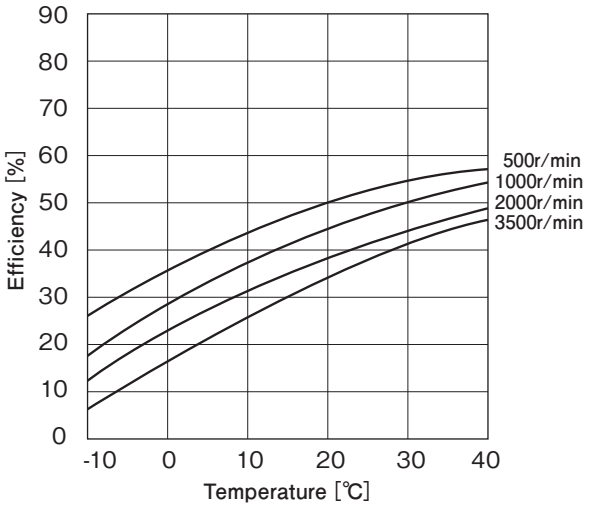
■ SHF-11-100-2UH



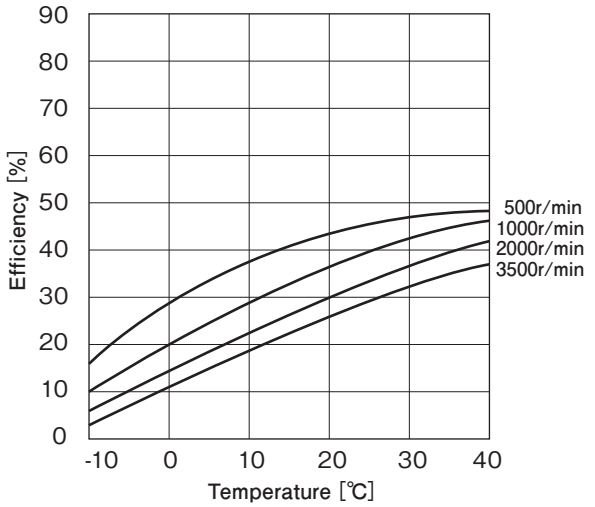
* The above graphs are based on calculated values. * Lubrication Grease: Harmonic Grease SK-2

Efficiency

■ SHF-11-50-2UH



■ SHF-11-100-2UH

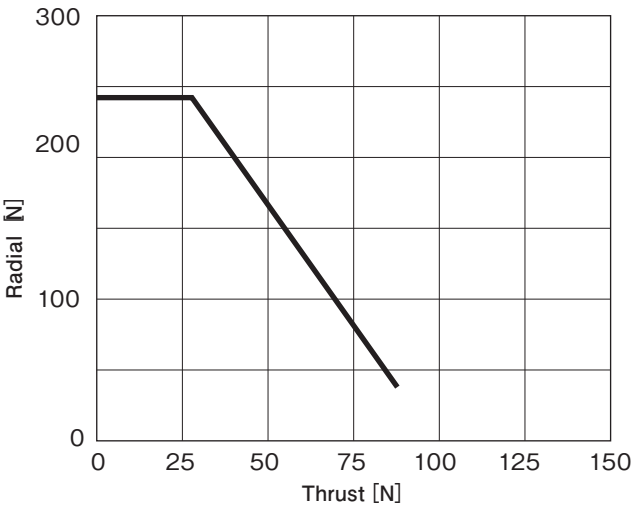


* The above graphs are based on calculated values. * Lubrication Grease: Harmonic Grease SK-2

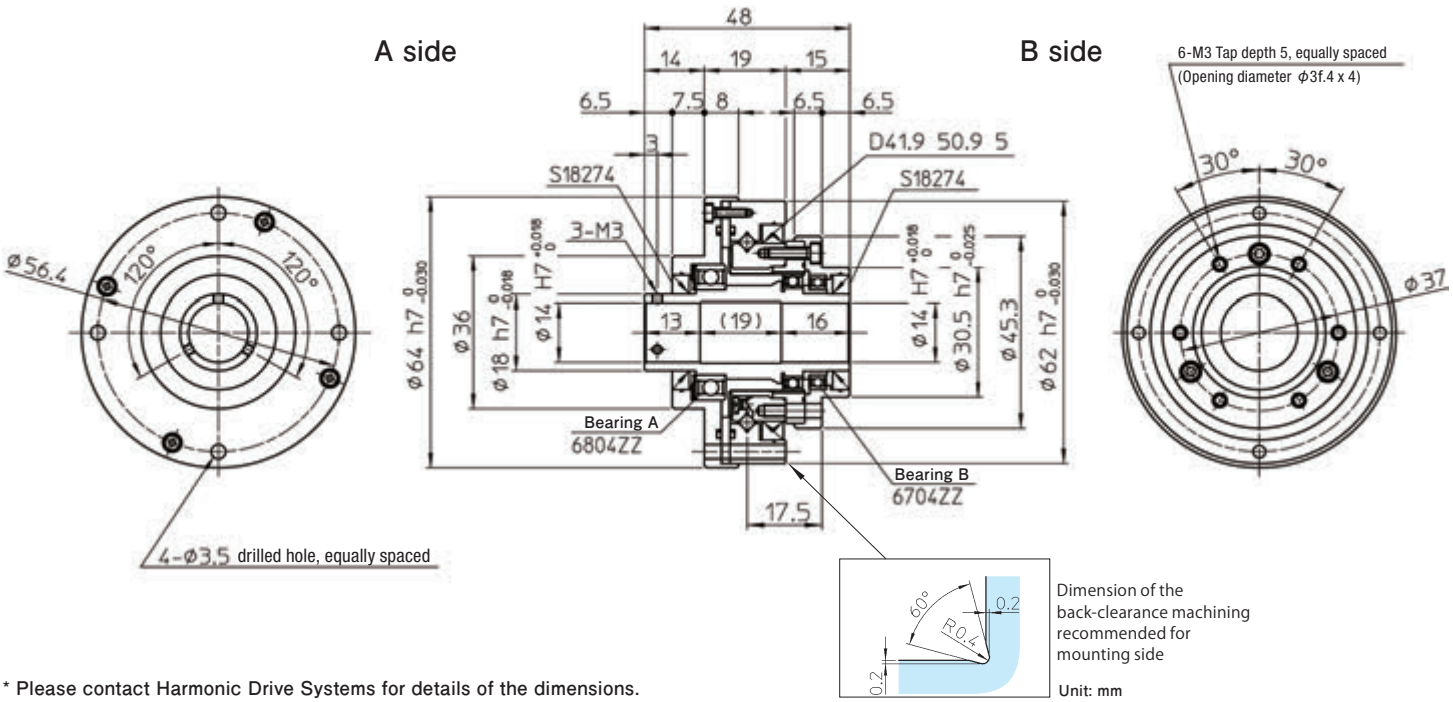
Permissible Load of Input Parts

Bearing		A	B
Nominal Number		6804ZZ	6704ZZ
Basic Dynamic Load Rating	Cr[N]	4000	1400
Basic Static Load Rating	Cor[N]	2470	720
Radial Load and Distance from Approaching Brg	[mm]	15.5	
Distance between Brgs	[mm]	25.7	

■ SHF-11-2UH



Dimensions



* Please contact Harmonic Drive Systems for details of the dimensions.

Mounting and Transmission Torque

Mounting Part		A side	B side
Applicable Bolt Size		M3	M3
Number of Bolt	Number	4	6
Bolt Mounting PCD	mm	56.4	37
Bolt Tightening Torque	Nm	2	2
	kgf-m	0.2	0.2
Bolt Transmission Torque	Nm	47	46
	kgf-m	4.7	4.6

Mounting Oil Seal Peripheral Part

Mount an oil seal to the mounting surface of the destination with 1mm or more clearance to prevent interfering each other.

Rotational Direction and Reduction Ratio

In unit type, rotational direction and reduction ratio varies depending on the flange to be fixed. Therefore, please check them before using.

1. Flex Spline Fixing

Input: Wave generator
Output: Circular spline
Fixing: Flex spline

Output rotational direction:
Same as that of input

Reduction ratio: $(i) : i = \frac{1}{R+1}$

2. Circular Spline Fixing

Input: Wave generator
Output: Flex spline
Fixing: Circular spline

Output rotational direction:
Reverse direction as that of input

Reduction ratio: $(i) : i = \frac{-1}{R}$

* Please contact Harmonic Drive Systems for details.

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