Authorized Distributors

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Starflex coupling

They are jaw couplings with a simple structure that has a buffering material called an element inserted between two hubs. Selections from 3 types of elements with 2 types of hardness and 2 types of fit as well as 3 types of hubs including prepared hole items are available.

■ High transmission torque
Power is transmitted via a polyurethane elastomer with elasticity of rubber, resulting in high absorption of vibrations and shocks.

■ No backlash by the perfect integrated construction
A perfect integral construction with a spiral slit in the round material.

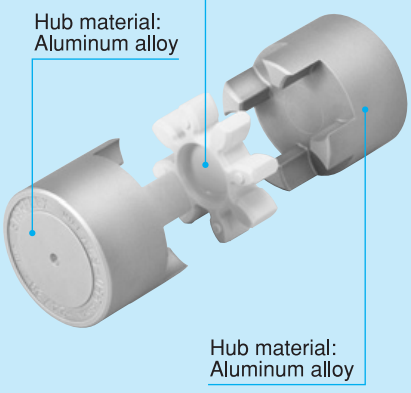
■ Absorbs vibrations and shocks
Power is transmitted via a polyurethane elastomer with elasticity of rubber, resulting in high absorption of vibrations and shocks.

■ Adapted to the RoHS
Adapted to the Restriction of Hazardous Substances that bans the use of 6 substances such as mercury or lead.

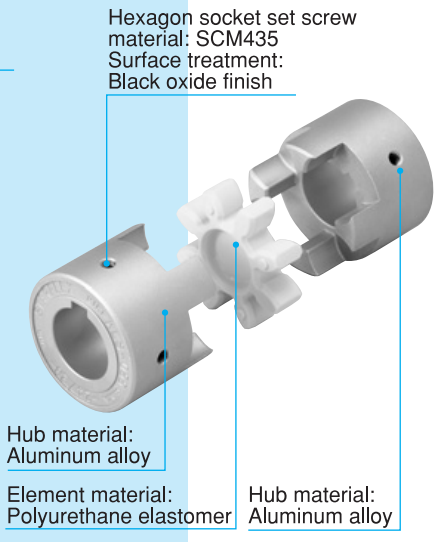
Type		ALS-Y	ALS-R	ALS-B
Normal operating torque [N·m]		1.2 ~ 190	2 ~ 325	60 ~ 325
Pilot bore/Additional machining range [mm]		φ3 ~ 45	φ3 ~ 45	φ15 ~ 45
Operational temp. [℃]		−30 ~ +80	−30 ~ +80	−30 ~ +80
Backlash		(Zero)	(Zero)	Yes
Max. permissible misalignment	Parallel offset [mm]	0.10 ~ 0.15	0.1	0.22 ~ 0.28
	Angular misalignment [°]	1	1	1
	Axial displacement [mm]	+0.6~+1.8	+0.6~+1.8	+1.8~−0.9

■ Structure and Material

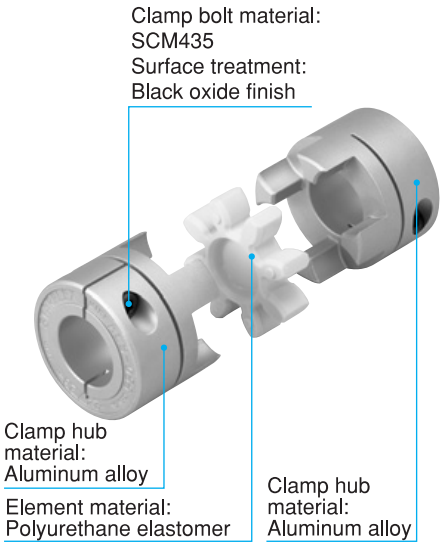
■ Pilot bore item



■ Key/set screw type

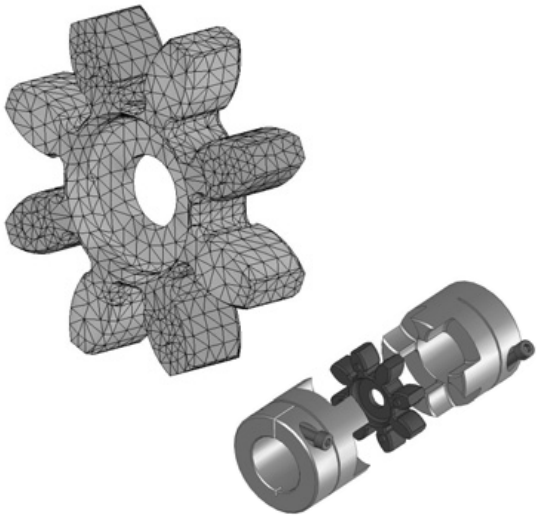


■ Clamp type



● Optimal design by 3D-CAD and FEM analysis

The advanced CAE system is utilized in the starting stage of design. Models are designed by using 3D-CAD. Shapes and strength design are optimized by using the advanced FEM (finite element method) analysis software.



● With optimally designed element shapes, higher torque transmission and reduced misalignment reaction force are realized.

High torque transmission that is more than double that of conventional company jaw couplings with respect to the outside diameter is achieved by modifying the shape of the torque transmitting part and selecting materials.

Undercut
(Design registration pending)

No backlash couplings (ALS-Y-R Type) that are easy on the target shafts are developed by placing undercuts to the inner diameter side to reduce the misalignment reaction force.

● Flexible combinations are available.

Hubs can be selected from three types; the type with pilot bores allowing flexible bore drilling, key/set screw type, and clamp type. Also, the key/set screw type and clamp type can be used in combination.

Three types are provided; tight fit that is designed so that preliminary compression is applied to the fit between the hub and element and loose fit that is designed to have loose fit for easy installation and removal.Proper elements can be selected depending on the response of torque transmission and the amount of misali

ALS-R
Element red
(Hardness 97
JIS A tight fit)

ALS-Y
Element yellow
(Hardness 90
JIS A tight fit)

ALS-B
Element blue
(Hardness 97
JIS A loose fit)

List of Models

Type	Shaft fastening	Element	Element fit	Hub material	Outer Diameter [mm]	Normal torque [N·m]	Torsional stiffness [N·m/rad]	Moment of inertia [kg·m²]
ALS-Y	key/set screw	Hardness90JIS A(Y)	Tight fit	Aluminum alloy	14～80	1.2～190	12～4000	1.91×10^{-7}～1.06×10^{-3}
	clamp	Hardness90JIS A(Y)	Tight fit	Aluminum alloy	14～80	0.31～190	12～4000	1.91×10^{-7}～1.06×10^{-3}
ALS-R	key/set screw	Hardness90JIS A(R)	Tight fit	Aluminum alloy	14～80	2～325	21～6000	1.98×10^{-7}～1.04×10^{-3}
	clamp	Hardness97JIS A(R)	Tight fit	Aluminum alloy	14～80	0.31～194	21～6000	1.98×10^{-7}～1.04×10^{-3}
ALS-B	key/set screw	Hardness97JIS A(B)	Loose fit	Aluminum alloy	55～80	60～325	—	1.66×10^{-4}～1.06×10^{-3}
	clamp	Hardness97JIS A(B)	Loose fit	Aluminum alloy	55～80	38～194	—	1.63×10^{-4}～1.04×10^{-3}

* The range of normal torque is partially restricted by the shaft fastening part of clamp hubs.

Key/set screw type

General-purpose motor | Stepping motor | Servo motor | Detector | Engine

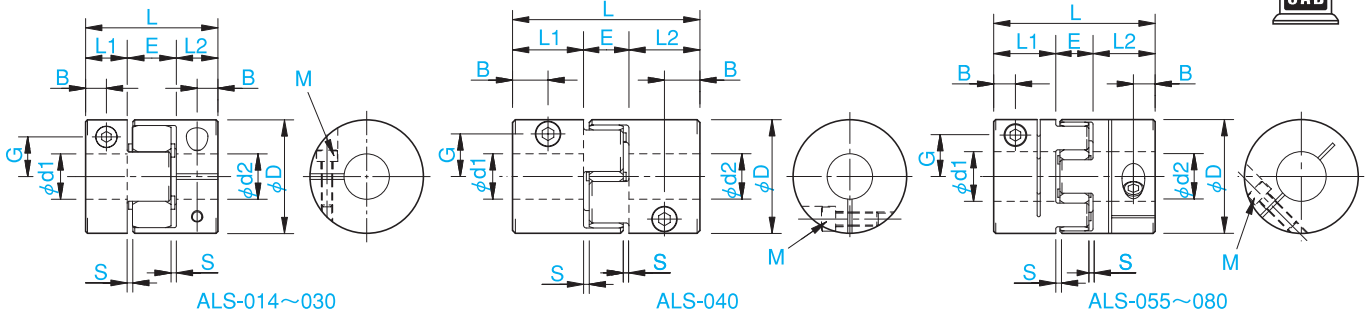
Specification

Model	Torque		Max. permissible misalignment			Max. rotation speed [min^{-1}]	Torsional stiffness [N·m/rad]	Radial displacement [N/mm]	Moment of inertia [kg·m^2]	Mass [kg]	Price
	Normal [N·m]	Max. [N·m]	Parallel offset [mm]	Angular misalignment [°]	Axial displacement [mm]						
ALS-014-Y	1.2	2.4	0.10	1	0～+0.6	34100	12	200	1.91×10^{-7}	0.007	—
ALS-020-Y	3	6	0.15	1	0～+0.8	23800	24	210	1.08×10^{-6}	0.018	—
ALS-030-Y	7.5	15	0.15	1	0～+1.0	15900	73	330	6.25×10^{-6}	0.047	—
ALS-040-Y	10	20	0.10	1	0～+1.2	11900	760	940	3.87×10^{-5}	0.15	—
ALS-055-Y	35	70	0.15	1	0～+1.4	8700	1400	1160	1.66×10^{-4}	0.35	—
ALS-065-Y	95	190	0.15	1	0～+1.5	7400	2100	1200	3.57×10^{-4}	0.51	—
ALS-080-Y	190	380	0.15	1	0～+1.8	6000	4000	1430	1.06×10^{-3}	1.01	—
ALS-014-R	2	4	0.1	1	0～+0.6	34100	21	380	1.91×10^{-7}	0.007	—
ALS-020-R	5	10	0.1	1	0～+0.8	23800	43	400	1.08×10^{-6}	0.018	—
ALS-030-R	12.5	25	0.1	1	0～+1.0	15900	136	650	6.25×10^{-6}	0.047	—
ALS-040-R	17	34	0.1	1	0～+1.2	11900	1550	1700	3.87×10^{-5}	0.15	—
ALS-055-R	60	120	0.1	1	0～+1.4	8700	2000	1350	1.66×10^{-4}	0.35	—
ALS-065-R	160	320	0.1	1	0～+1.5	7400	3100	1400	3.57×10^{-4}	0.51	—
ALS-080-R	325	650	0.1	1	0～+1.8	6000	6000	1710	1.06×10^{-3}	1.01	—
ALS-055-B	60	120	0.22	1	−0.2～+1.4	8700	—	—	1.66×10^{-4}	0.35	—
ALS-065-B	160	320	0.25	1	−0.6～+1.5	7400	—	—	3.57×10^{-4}	0.51	—
ALS-080-B	325	650	0.28	1	−0.9～+1.8	6000	—	—	1.06×10^{-3}	1.01	—

* The spring constant values are measured at 20 °C.
* The indicated values in the moment of inertia and mass are measured with the maximum bore diameter.
* Dynamic balance is not considered for the maximum rotation speed.
* ALS-Y-R type's minus axial displacements in the maximum permissible misalignment are not allowed.

Dimensions

CAD



Unit [mm]

Model	d1 · d2			D	L	L1 · L2	E	S	C	CAD file No.
	Pilot bore	Min.	Max.							
ALS-014	3	3	6.5	14	22	7	8	1	3.5	ALS-HH1
ALS-020	4	4	9.6	20	30	10	10	1	5	ALS-HH2
ALS-030	5	6	14	30	35	11	13	1.5	5.5	ALS-HH3
ALS-040	5	8	22	40	66	25	16	2	12.5	ALS-HH4
ALS-055	5	10	28	55	78	30	18	2	15	ALS-HH5
ALS-065	5	14	38	65	90	35	20	2.5	17.5	ALS-HH6
ALS-080	10	19	45	80	114	45	24	3	22.5	ALS-HH7

* Pilot bore indicate center processing.

Ordering Information

ALS - 040 - Y - 14 N - 15 H

- Size: 040
- Element type: Y
  - Y: Yellow (Hardness 90 JIS A Tight fit)
  - R: Red (Hardness 97 JIS A Tight fit)
  - B: Blue (Hardness 97 JIS A Loose fit)
- Bore dia.: d1-d2 — Blank: Pilot bore: 14 N
- Bore specification: 15 H
  - Blank: Previous edition JIS (Class 2) compliant
  - H: New JIS compliant
  - N: New standard motor compatible

Standard bore diameter and bore drilling standard for the key/set screw type

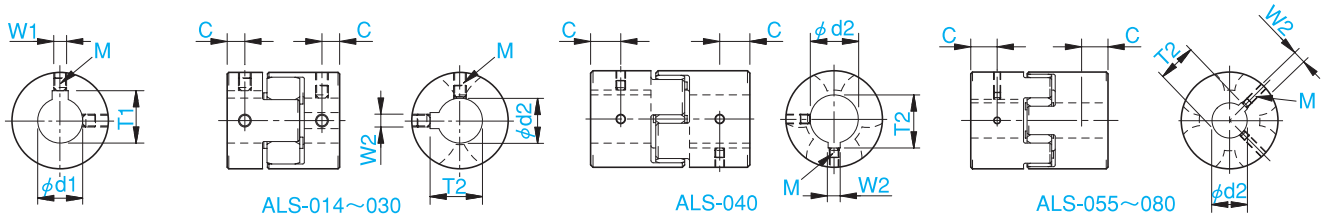
Standard bore diameter

Model	Standard bore diameter d1・d2 [mm]																										
	3	4	5	6	6.35	8	9	9.525	10	11	12	14	15	16	18	19	20	24	25	28	30	32	35	38	40	42	45
ALS-014	●	●	●	●	●																						
ALS-020			●	●	●	●	●	●																			
ALS-030						●	●	●	●	●	●	●															
ALS-040										●	●	●	●	●	●	●	●										
ALS-055													●	●	●	●	●	●	●	●							
ALS-065																	●	●	●	●	●	●	●				
ALS-080																					●	●	●	●	●	●	●

* The bore diameters with ● are supported as standard bore diameters. Bore drilling of the standard bore diameter complies with the bore drilling standard as shown in the table below.
* Processing with the no key slot is available for ϕ11 or smaller, and processing for the former JIS, new JIS, and new standard motor is available for ϕ11 or larger.
* The range of bore diameters that can be supported is from the minimum diameter to the maximum diameter in the table. For bore diameters other than the above, processing can be done according to the bore drilling standard in the table below.

Bore drilling standard

- For any bore diameter other than the standard bore diameter, processing is available according to the standard shown in the table below.
- For any standard other than the table below, contact our distributor.



Unit [mm]

Previous JIS (2nd class) correspondence					New JIS correspondence					New standard motor correspondence				
Nominal bore dia.	Bore diameter (d1-d2)	Keyway width (W1·W2)	Keyway height (T1·T2)	Set screw bore (M)	Nominal bore dia.	Bore diameter (d1-d2)	Keyway width (W1·W2)	Keyway height (T1·T2)	Set screw bore (M)	Nominal bore dia.	Bore diameter (d1-d2)	Keyway width (W1·W2)	Keyway height (T1·T2)	Set screw bore (M)
Tolerance	H7, H8	E9	$^{+0.3}_{0}$	—	Tolerance	H7	H9	$^{+0.3}_{0}$	—	Tolerance	G7, F7	H9	$^{+0.3}_{0}$	—
3	3 $^{+0.018}_{0}$	—	—	1-M3	—	—	—	—	—	—	—	—	—	—
4	4 $^{+0.018}_{0}$	—	—	2-M3	—	—	—	—	—	—	—	—	—	—
5	5 $^{+0.018}_{0}$	—	—	2-M3	—	—	—	—	—	—	—	—	—	—
6	6 $^{+0.018}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
6.35	6.35 $^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
7	7 $^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
8	8 $^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
9	9 $^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
9.525	9.525 $^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
10	10 $^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
11	11 $^{+0.018}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
12	12 $^{+0.018}_{0}$	4 $^{+0.050}_{+0.020}$	13.5	2-M4	12H	12 $^{+0.018}_{0}$	4 $^{+0.030}_{0}$	13.8	2-M4	—	—	—	—	—
14	14 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	16.0	2-M4	14H	14 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	16.3	2-M4	14N	14 $^{+0.024}_{+0.006}$	5 $^{+0.030}_{0}$	16.3	2-M4
15	15 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	17.0	2-M4	15H	15 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	17.3	2-M4	—	—	—	—	—
16	16 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	18.0	2-M4	16H	16 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	18.3	2-M4	—	—	—	—	—
17	17 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	19.0	2-M4	17H	17 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	19.3	2-M4	—	—	—	—	—
18	18 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	20.0	2-M4	18H	18 $^{+0.018}_{0}$	6 $^{+0.030}_{0}$	20.8	2-M5	—	—	—	—	—
19	19 $^{+0.021}_{0}$	5 $^{+0.050}_{+0.020}$	21.0	2-M4	19H	19 $^{+0.021}_{0}$	6 $^{+0.030}_{0}$	21.8	2-M5	19N	19 $^{+0.028}_{+0.007}$	6 $^{+0.030}_{0}$	21.8	2-M5
20	20 $^{+0.021}_{0}$	5 $^{+0.050}_{+0.020}$	22.0	2-M4	20H	20 $^{+0.021}_{0}$	6 $^{+0.030}_{0}$	22.8	2-M5	—	—	—	—	—
22	22 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	25.0	2-M6	22H	22 $^{+0.021}_{0}$	6 $^{+0.030}_{0}$	24.8	2-M5	—	—	—	—	—
24	24 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	27.0	2-M6	24H	24 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	27.3	2-M6	24N	24 $^{+0.028}_{+0.007}$	8 $^{+0.036}_{0}$	27.3	2-M6
25	25 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	28.0	2-M6	25H	25 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	28.3	2-M6	—	—	—	—	—
28	28 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	31.0	2-M6	28H	28 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	31.3	2-M6	28N	28 $^{+0.028}_{+0.007}$	8 $^{+0.036}_{0}$	31.3	2-M6
30	30 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	33.0	2-M6	30H	30 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	33.3	2-M6	—	—	—	—	—
32	32 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	35.5	2-M8	32H	32 $^{+0.025}_{0}$	10 $^{+0.036}_{0}$	35.3	2-M8	—	—	—	—	—
35	35 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	38.5	2-M8	35H	35 $^{+0.025}_{0}$	10 $^{+0.036}_{0}$	38.3	2-M8	—	—	—	—	—
38	38 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	41.5	2-M8	38H	38 $^{+0.025}_{0}$	10 $^{+0.036}_{0}$	41.3	2-M8	38N	38 $^{+0.050}_{+0.025}$	10 $^{+0.036}_{0}$	41.3	2-M8
40	40 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	43.5	2-M8	40H	40 $^{+0.025}_{0}$	12 $^{+0.043}_{0}$	43.3	2-M8	—	—	—	—	—
42	42 $^{+0.025}_{0}$	12 $^{+0.075}_{+0.032}$	45.5	2-M8	42H	42 $^{+0.025}_{0}$	12 $^{+0.043}_{0}$	45.3	2-M8	42N	42 $^{+0.050}_{+0.025}$	12 $^{+0.043}_{0}$	45.3	2-M8
45	45 $^{+0.025}_{0}$	12 $^{+0.075}_{+0.032}$	48.5	2-M8	45H	45 $^{+0.025}_{0}$	14 $^{+0.043}_{0}$	48.8	2-M10	—	—	—	—	—

* The bore diameters smaller than ϕ10 have H8 class tolerance.
* For ALS-014, the size of the set screw is M3.
* The right and left positions of the set screw and key slot are not on the same plane.

Clamp type

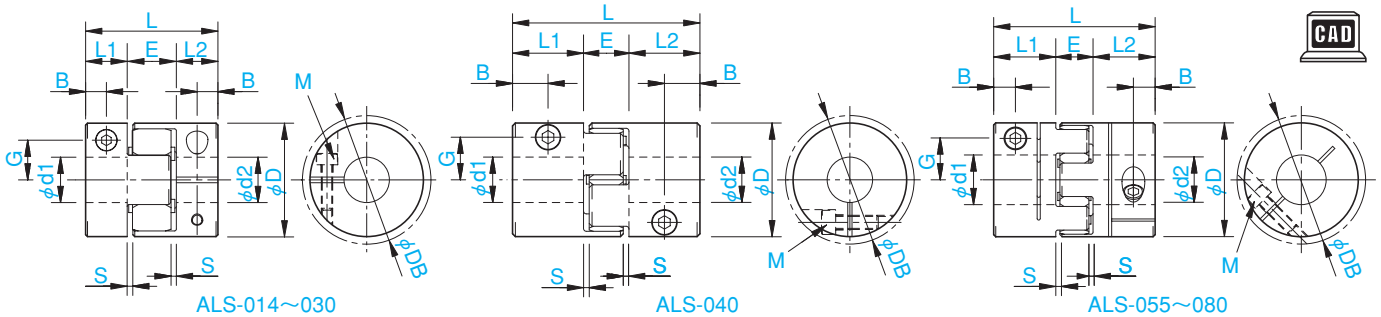
General-purpose motor | Stepping motor | Servo motor | Detector | Engine

Specification

Model	Torque		Max. permissible misalignment			Max. rotation speed [min⁻¹]	Torsional stiffness [N·m/rad]	Radial displacement [N/mm]	Moment of inertia [kg·m²]	Mass [kg]	Price
	Normal [N·m]	Max. [N·m]	Parallel offset [mm]	Angular misalignment [°]	Axial displacement [mm]						
ALS-014-Y	1.2	2.4	0.10	1	0~+0.6	10000	12	200	1.98×10^{-7}	0.007	—
ALS-020-Y	3	6	0.15	1	0~+0.8	10000	24	210	1.09×10^{-6}	0.019	—
ALS-030-Y	7.5	15	0.15	1	0~+1.0	10000	73	330	6.19×10^{-6}	0.045	—
ALS-040-Y	10	20	0.10	1	0~+1.2	10000	760	940	4.01×10^{-5}	0.16	—
ALS-055-Y	35	70	0.15	1	0~+1.4	7000	1400	1160	1.63×10^{-4}	0.34	—
ALS-065-Y	95	190	0.15	1	0~+1.5	5900	2100	1200	3.69×10^{-4}	0.54	—
ALS-080-Y	190	380	0.15	1	0~+1.8	4800	4000	1430	1.04×10^{-3}	1.00	—
ALS-014-R	2	4	0.1	1	0~+0.6	10000	21	380	1.98×10^{-7}	0.007	—
ALS-020-R	5	10	0.1	1	0~+0.8	10000	43	400	1.09×10^{-6}	0.019	—
ALS-030-R	12.5	25	0.1	1	0~+1.0	10000	136	650	6.19×10^{-6}	0.045	—
ALS-040-R	17	34	0.1	1	0~+1.2	10000	1550	1700	4.01×10^{-5}	0.16	—
ALS-055-R	60	120	0.1	1	0~+1.4	7000	2000	1350	1.63×10^{-4}	0.34	—
ALS-065-R	160	320	0.1	1	0~+1.5	5900	3100	1400	3.69×10^{-4}	0.54	—
ALS-080-R	325	650	0.1	1	0~+1.8	4800	6000	1710	1.04×10^{-3}	1.00	—
ALS-055-B	60	120	0.22	1	−0.2~+1.4	7000	—	—	1.63×10^{-4}	0.34	—
ALS-065-B	160	320	0.25	1	−0.6~+1.5	5900	—	—	3.69×10^{-4}	0.54	—
ALS-080-B	325	650	0.28	1	−0.9~+1.8	4800	—	—	1.04×10^{-3}	1.00	—

* The spring constant values are measured at 20 °C.
* The indicated values in the moment of inertia and mass are measured with the maximum bore diameter.
* Dynamic balance is not considered for the maximum rotation speed.
* ALS-Y-R type's minus axial displacements in the maximum permissible misalignment are not allowed.
* The allowable transmission torque of the clamp type may be restricted by the hole diameter. Refer to "Standard hole diameter and allowable transmission torque" on page 60.

Dimensions



Model	d1 · d2		D	DB	L	L1 · L2	E	S	B	G	M	Tightening torque [N·m]	CAD file No.
	Min.	Max.											
ALS-014	3	6	14	16.1	22	7	8	1	3.5	4.8	M2	0.4	ALS-BB1
ALS-020	4	8	20	20	30	10	10	1	5	6.5	M2.5	1	ALS-BB2
ALS-030	6	14	30	30	35	11	13	1.5	5.5	10.5	M3	1.5	ALS-BB3
ALS-040	8	20	40	43.2	66	25	16	2	12.5	15	M5	7	ALS-BB4
ALS-055	10	28	55	55	78	30	18	2	10.5	20	M6	14	ALS-BB5
ALS-065	14	35	65	69.8	90	35	20	2.5	11.5	24.5	M8	30	ALS-BB6
ALS-080	19	45	80	80	114	45	24	3	11.5	30	M8	30	ALS-BB7

The DB dimension is applicable when the head of the clamp bolt is larger than the hub outer diameter.

Ordering Information

ALS - 040 - R - 14 B - 15 B

- Size: 040
- Element type: R
  - Y: Yellow (Hardness 90 JIS A Tight fit)
  - R: Red (Hardness 97 JIS A Tight fit)
  - B: Blue (Hardness 97 JIS A Loose fit)
- Bore diameter: d1-d2: 14 B - 15 B
- Bore specification: B
  - B: Clamp type

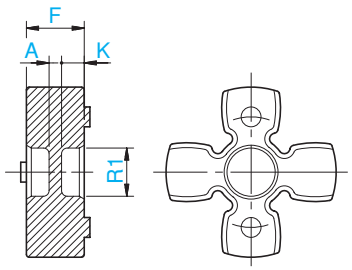
Standard bore diameter and permissible transmission torque for the clamp type

Model	Standard bore diameter d1-d2 [mm] permissible transmission torque [N·m]																						
	3	4	5	6	6.35	7	8	10	11	12	14	15	16	18	19	20	22	24	25	28	30	35	42
ALS-014	0.31	0.42	0.54	0.65																			
ALS-020		1.2	1.6	2.1	2.2	2.6	3.0																
ALS-030				2.0	2.2		3.4	4.7	5.4	6.0	7.4												
ALS-040							8	16		23	31	34	34		34								
ALS-055												38	41	48	51	54	61	67	71	80			
ALS-065																61	68	75	79	89	96	114	
ALS-080																				108	121	151	194

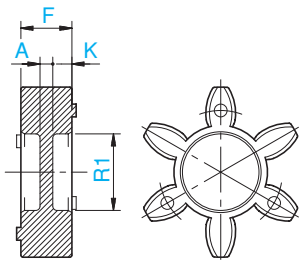
* The bore diameters with a value are supported as standard bore diameters.
* The permissible transmission torque of the shaft diameter with a value is limited by the holding power at the shaft fixing mechanism. The value indicates the permissible transmission torque [N・m].
* The range of bore diameters that can be supported is from the minimum diameter to the maximum diameter in the table. For bore diameters other than above, contact us for separate arrangement.

Element

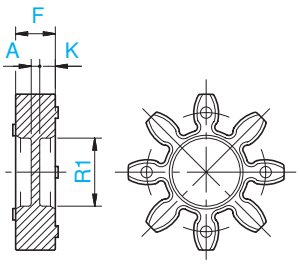
Dimensions



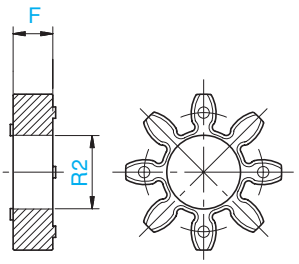
ALS-014～030-Y・R



ALS-040-Y・R



ALS-055～080-Y・R



ALS-055～080-B

Unit［mm］

Model	F	R1	R2	K	A	Price	CAD file No.
ALS-014-□-EL	6.2	3.5	—	2.5	1.2	—	—
ALS-020-□-EL	8.2	6.2	—	3.4	1.4	—	—
ALS-030-□-EL	10.2	8.5	—	4	2.2	—	—
ALS-040-□-EL	12	18	—	4.5	3	—	—
ALS-055-□-EL	14	24	27.5	5.5	3	—	—
ALS-065-□-EL	15	30	32	4	4	—	—
ALS-080-□-EL	18	37	41	7	4	—	—

* The element of the ALS-B type has penetration with the bore diameter of R2.

Ordering Information

ALS - 040 - Y - EL

- 040: Size
- Y: Element type
  - Y: Yellow (Hardness 90 JIS A Tight fit)
  - R: Red (Hardness 97 JIS A Tight fit)
  - B: Blue (Hardness 97 JIS A Loose fit)
- EL: Element only

Design check items

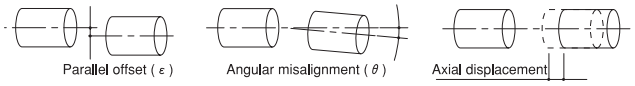
Installation location and operating environment

- Use under direct sunlight may result in a shorter element life. Use an appropriate cover.
- It is water-resistant and oil-resistant. However, excessive water or oil should be avoided because they may cause deterioration.
- Avoid corrosive gases and chemicals.
- Avoid high temperature and high humidity. The recommended operating atmospheric temperature is -30 to +80 °C.

Installation (general)

- Before installation, make sure the main power of the device is turned off so as to avoid operating the motor by mistake and to ensure safety.
- Remove the dust, dirt, and oil accumulated on the target shaft and coupling bore diameter.
- To achieve maximum performance of the coupling, perform installation within the range of the maximum permissible misalignment shown in the tables below. The misalignments in the tables below are the maximum values when they occur independently. Therefore, the permissible values in the case of combined errors are half or less.
- Check the centering at two points about 90 degrees away by applying a straight edge to the circumference of the main body. The life of the element is significantly affected by the centering accuracy. For centering of the left and right installation shafts, centering location alignment is recommended.
- After installation of this product, affix a safety cover. Touching this product during operation may cause injury.

●Max. permissible misalignment



● Table of max. permissible misalignments

Model	Parallel offset ε [mm]	Angular misalignment θ [°]	Axial displacement δ [mm]
ALS-014-Y	0.10	1	0～+0.6
ALS-020-Y	0.15	1	0～+0.8
ALS-030-Y	0.15	1	0～+1.0
ALS-040-Y	0.10	1	0～+1.2
ALS-055-Y	0.15	1	0～+1.4
ALS-065-Y	0.15	1	0～+1.5
ALS-080-Y	0.15	1	0～+1.8

Model	Parallel offset ε [mm]	Angular misalignment θ [°]	Axial displacement δ [mm]
ALS-014-R	0.1	1	0～+0.6
ALS-020-R	0.1	1	0～+0.8
ALS-030-R	0.1	1	0～+1.0
ALS-040-R	0.1	1	0～+1.2
ALS-055-R	0.1	1	0～+1.4
ALS-065-R	0.1	1	0～+1.5
ALS-080-R	0.1	1	0～+1.8

Model	Parallel offset ε [mm]	Angular misalignment θ [°]	Axial displacement δ [mm]
ALS-055-B	0.22	1	−0.2～+1.4
ALS-065-B	0.25	1	−0.6～+1.5
ALS-080-B	0.28	1	−0.9～+1.8

* ALS-Y-R type's negative axial displacements are not allowed.

Installation (clamp type)

- The recommended dimensional tolerance of the target shaft is h7. (However, for a shaft diameter of ϕ35, the tolerance is $^{+0.010}_{-0.025}$.)
- Do not tighten the clamp bolt before inserting the target shaft.
- Remove the dust, dirt, and oil accumulated on the target shaft and coupling bore diameter. Especially, if molybdenum disulfide grease or extreme-pressure grease that greatly affect the friction coefficient are accumulated, completely remove them by degreasing, etc.
- To fix the hub to the shaft, install it so that the entire length of the clamp hub is in contact with each of the target shafts.
- Tighten the clamp bolt by using a calibrated torque wrench by using the clamp bolt tightening torque value in the table below.
- Use the clamp bolt specified by Miki Pulley. Do not apply any liquid such as oil, grease, or screw fixing agent.

●Tightening torque for set screws and clamp bolts

Size	Set screw [N·m]	Clamp bolt [N·m]
M2	—	0.4
M2.5	—	1.0
M3	0.7	1.5
M4	1.7	—
M5	3.6	7.0
M6	6.0	14.0
M8	14.5	30.0
M10	28.0	—

Selection

Selection Procedure 1: General use

❶Calculate torque Ta applied to the coupling based on the motor output P and coupling operating rotation speed n.

$$Ta\ [N\cdot m] = 9550 \times \frac{P[kW]}{n[min^{-1}]}$$

❷Calculate corrected torque Td applied to the coupling after deciding the service factor K (1, 2, 3 and 4).

$$Td\ [N\cdot m] = Ta \cdot K1 \cdot K2 \cdot K3 \cdot K4$$

K1: Operating coefficient by load character
K2: Corrected coefficient by operating hours
K3: Corrected coefficient by misalignment
K4: Corrected coefficient by ambient temperature

❸Select the size in order that the coupling permissible torque Tn becomes greater than the corrected torque Td.

$$Tn \geqq Td$$

❹Select the size in order that the maximum torque of the coupling Tm becomes greater than the peak torque Ts generated by the motor or driven machine, or both. Maximum torque is defined as torque which can be temporarily applied. For 8-hour operating time per day, it is about 10 times.

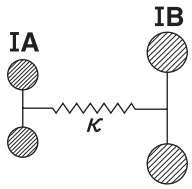
$$Tm \geqq Ts \times K4$$

❺If the required shaft diameter is over the maximum bore diameter of the selected size, select a coupling suiting it.

❻When using with machines whose load torque fluctuates drastically on periodic basis, a study of torsional vibration is necessary in addition to the procedure mentioned above. Make sure that frequency of torque fluctuations does not coincide with the resonance frequency fe of the shaft system. Generally, eigenfrequency fe is calculated by approximating the shaft system as shown below.

$$fe = \frac{60}{2\pi}\sqrt{\kappa\left(\frac{1}{I_A}+\frac{1}{I_B}\right)}\ [cpm]$$

κ: Dynamic torsional spring constant of coupling [N·m/rad]
IA: Inertial moment of driving side [kg·m²]
IB: Inertial moment of driven side [kg·m²]



Selection Procedure 2: Use with no backlash

To use ALS-Y・R type with no backlash, a torque that is sufficiently low with respect to the normal torque of the coupling must be used. For this reason, selection must be made to satisfy the following conditions.(The ALS-B type cannot be used with no backlash.)

❶Calculate torque Ta applied to the coupling based on the motor output P and coupling operating rotation speed n.

$$Ta\ [N\cdot m] = 9550 \times \frac{P[kW]}{n[min^{-1}]}$$

❷Calculate corrected torque Td applied to the coupling after deciding the service factor K (1, 2, 3 and 4).

$$Td\ [N\cdot m] = Ta \cdot K1 \cdot K2 \cdot K3 \cdot K4$$

K1: Operating coefficient by load character
K2: Corrected coefficient by operating hours
K3: Corrected coefficient by misalignment
K4: Corrected coefficient by ambient temperature

* For use with no backlash, K1>=4.

❸Perform selection so that the peak torque Ts generated by the motor, driven machine, or both is less than or equal to the normal torque of the coupling Tn.

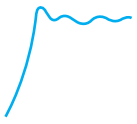
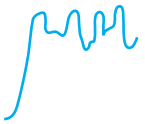
$$Tn \geqq Ts \times K4$$

❹If the required shaft diameter exceeds the maximum bore diameter of the selected size, select the size of coupling correspondingly. When a clamp hub is used, torque transmission may be limited depending on the bore diameter. Therefore, make sure that the clamp hub holding power for the selected coupling size is greater than or equal to the peak torque Ts applied to the coupling.

Because of the structure of the coupling, no backlash occurs while preliminary compression is applied to the element. However, backlash may occur as it is used over time. When use with no backlash for a long period is considered, it is recommended that the service factor K1 be greater.
If high precision control and positioning are required for a long period, our metal plate spring couplings "Servoflex Series" are recommended.

Service factor

●Operating coefficient by load character: K1

Load character			
Constant	Fluctuations: small	Fluctuations: medium	Fluctuations: large
			
1.0	1.25	1.75	2.25

●Corrected coefficient by operating hours: K2

Hours/ per day	～8	～16	～24
K2	1.0	1.12	1.25

●Corrected coefficient by starting/Breaking frequency: K3

Times/ per hour	～10	～30	～60	～120	～240	Over 240
K3	1.0	1.1	1.3	1.5	2.0	2.5≦

●Corrected coefficient by ambient temperature: K4

Temp. [℃]	−30～+30	～+40	～+60	～+80
K4	1.0	1.2	1.4	1.8

Table of general motor specification and simplified selection

Motor		50Hz : 3000min^{-1} / 60Hz : 3600min^{-1}				50Hz : 1500min^{-1} / 60Hz : 1800min^{-1}				50Hz : 1000min^{-1} / 60Hz : 1200min^{-1}			
		Bipola motor		Starflex		Quadrupolar motor		Starflex		Sextupolar motor		Starflex	
Output [kW]	Frequency [Hz]	Shaft dia. [mm]	Torque [N·m]	Model	Nominal bore dia.	Shaft dia. [mm]	Torque [N·m]	Model	Nominal bore dia.	Shaft dia. [mm]	Torque [N·m]	Model	Nominal bore dia.
0.1	50	—	—	—	—	11	0.7	ALS-030	11	—	—	—	—
	60	—	—	—	—	11	0.5	ALS-030	11	—	—	—	—
0.2	50	11	0.7	ALS-030	11	11	1.3	ALS-030	11	—	—	—	—
	60	11	0.5	ALS-030	11	11	1.1	ALS-030	11	—	—	—	—
0.4	50	14	1.3	ALS-030	14N	14	2.6	ALS-030	14N	19	3.9	ALS-040	19N
	60	14	1.1	ALS-030	14N	14	2.2	ALS-030	14N	19	3.2	ALS-040	19N
0.75	50	19	2.4	ALS-040	19N	19	4.9	ALS-040	19N	24	7.3	ALS-055	24N
	60	19	2	ALS-040	19N	19	4.1	ALS-040	19N	24	6.1	ALS-055	24N
1.5	50	24	4.9	ALS-055	24N	24	9.7	ALS-055	24N	28	15	ALS-055	28N
	60	24	4.1	ALS-055	24N	24	8.1	ALS-055	24N	28	12	ALS-055	28N
2.2	50	24	7.1	ALS-055	24N	28	14	ALS-055	28N	28	21	ALS-065	28N
	60	24	6	ALS-055	24N	28	12	ALS-055	28N	28	18	ALS-065	28N
3.7	50	28	12	ALS-055	28N	28	24	ALS-065	28N	38	36	ALS-065	38N
	60	28	10	ALS-055	28N	28	20	ALS-065	28N	38	30	ALS-065	38N
5.5	50	38	18	ALS-065	38N	38	36	ALS-065	38N	38	54	ALS-080	38N
	60	38	15	ALS-065	38N	38	30	ALS-065	38N	38	45	ALS-065	38N
7.5	50	38	24	ALS-065	38N	38	49	ALS-065	38N	42	72	ALS-080	42N
	60	38	20	ALS-065	38N	38	41	ALS-065	38N	42	60	ALS-080	42N
11	50	42	36	ALS-080	42N	42	71	ALS-080	42N	42	108	ALS-080-R	42N
	60	42	30	ALS-080	42N	42	59	ALS-080	42N	42	90	ALS-080	42N
15	50	42	49	ALS-080	42N	42	97	ALS-080	42N	—	—	—	—
	60	42	41	ALS-080	42N	42	81	ALS-080	42N	—	—	—	—
18.5	50	42	65	ALS-080	42N	—	—	—	—	—	—	—	—
	60	42	50	ALS-080	42N	—	—	—	—	—	—	—	—

* The table above shows the applicable sizes for the key/set screw type when generally used for a generic motor driving unit. It is not selection for the no backlash specification.
* The motor revolution and output torque are calculated values (reference values).

Table of servo motor specification and simplified selection

Servo motor specification					Corresponding coupling specification	
Rated output [kW]	Rated rotation speed [min^{-1}]	Rated torque [N·m]	Max. torque [N·m]	Shaft dia. [mm]	Model ALS-□-R	Max. bore dia. [mm]
0.05	3000	0.16	0.48	8	ALS-020-R	8
0.1	3000	0.32	0.95	8	ALS-020-R	8
0.2	3000	0.64	1.9	14	ALS-030-R	14
0.4	3000	1.30	3.8	14	ALS-030-R	14
0.5	2000	2.39	7.16	24	ALS-055-R	28
0.5	3000	1.59	4.77	24	ALS-055-R	28
0.75	2000	3.58	10.7	22	ALS-055-R	28
0.75	3000	2.40	7.2	19	ALS-040-R	20
0.85	1000	8.12	24.4	24	ALS-055-R	28
1	2000	4.78	14.4	24	ALS-055-R	28
1	3000	3.18	9.55	24	ALS-055-R	28
1.2	1000	11.50	34.4	35	ALS-065-R	35
1.5	2000	7.16	21.6	28	ALS-055-R	28
1.5	3000	4.78	14.3	24	ALS-055-R	28
2	2000	9.55	28.5	35	ALS-065-R	35
2	3000	6.37	15.9	24	ALS-055-R	28
3	1000	28.60	85.9	35	ALS-065-R	35
3.5	2000	16.70	50.1	35	ALS-065-R	35
3.5	3000	11.10	27.9	28	ALS-055-R	28
5	2000	23.90	71.6	35	ALS-065-R	35
5	3000	15.90	39.7	28	ALS-055-R	28
7	2000	33.40	100	35	ALS-065-R	35

* The table above shows simplified setting depending on the clamp type based on the supported servo motor shaft diameter and permissible torque transmission of the coupling. Use with no backlash is not guaranteed.
* The table above shows the specifications of general servo motors. The torque characteristics of the servo motor vary depending on the manufacturer of the servo motor. Ultimately, select the coupling size by checking the specifications listed in the manufacturer's catalog.