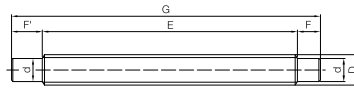
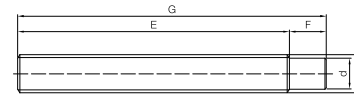




Specifications	
Gear teeth	Stub teeth
Pressure angle	20°
Material	S45C
Heat treatment	Thermal refined
Tooth hardness	200 to 270HB
Surface treatment	Black oxide coating



TA



TB



Catalog Number	Module	No. of teeth	Shape	Outside dia. D	Hub dia. d _{12.25} ^{12.25}	Face width E	Hub width (left) F'	Hub width (right) F	Total length G	Backlash (mm)	Weight (kg)
SV17-170	m1.667	8	TA	16.67	13	135	20	15	170	0.06~0.15	0.26
SV20-200		10	TA	19.67	15	165	—	15	200		0.43
SV25-250		13	TB	24.67	20	220	—	30	250		0.88
SV30-300		16	TB	29.67	25	270	—	30	300		1.55

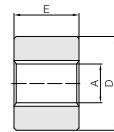
[Caution on Secondary Operations] ① When modifying the SV involute spline shaft with secondary operations, be careful not to crush the teeth or bend the shaft.

Characteristics of Involute Spline Shafts

- SV and SVI series are made according to the automotive involute spline standard, JIS B 1603: 1995 (Straight cylindrical involute splines, backlash 0.06 to 0.15).
- Involute spline shafts and bushings are thermal refined to have good abrasion-resistance.
- Spline bushings may be made in CAC (copper) type material as a special custom order item.



Specifications	
Gear teeth	Stub teeth
Pressure angle	20°
Material	S45C
Heat treatment	Thermal refined
Tooth hardness	200 to 270HB
Surface treatment	Black oxide coating



T1

Catalog Number	Module	No. of teeth	Shape	Outside dia.	Outside dia.	Face width	Allowable torque (N·m)	Allowable torque (kgf·m)	Backlash (mm)	Weight (kg)
				A	D	E	Surface durability	Surface durability		
SVI17-40	m1.667	8	T1	13.7	40	25	33.2	3.38	0.06~0.15	0.21
SVI20-45		10		16.7	45	30	59.6	6.08		0.31
SVI25-55		13		21.7	55	38	125	12.8		0.57
SVI30-65		16		26.7	65	45	222	22.6		0.93

[Caution on Product Characteristics] ① The allowable torque shown are reference values calculated from "Surface strength of splines" on Page 465.

- ② Lubrication is always required on the mating surface of the spline shaft and hub. To prevent "scoring", it is recommended to apply grease or solid lubricant in places where the use of oil should be avoided.

Surface Strength of Splines

The design concept of the spline surface strength is the same as that of a key. Here is the formula for the allowable transmission force F(N) of spline.

$$F = \eta z h_w l \sigma$$

And the formula of allowable torque T (N·m) of spline with respect to the surface strength.

$$T = \frac{F \cdot d_w}{2000}$$

In designing a spline shaft, besides considering the surface strength, we should take into account the torsional and bending stresses of the spline.

Where

η : Contact ratio of surface → 0.75 (assumed)

z : Number of teeth → number of teeth of spline from the table

h_w : Contact depth of tooth (mm) → 1.485

l : Contact length of spline → spline hub face width E from the table

σ : Allowable surface stress of spline → 19.61MPa (2kgf/mm²) (assumed)

d_w : Contact diameter (mm) → Tip diameter of spline shaft D - h_w