

Spring Unit for Cam Return [Overview]

Cam Slide Components

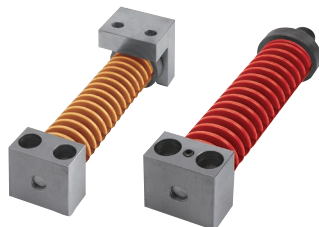
Types and Features of Spring Unit For Cam Return

Standard initial pressure
and final pressure type
SHSU series



P.199~P.204

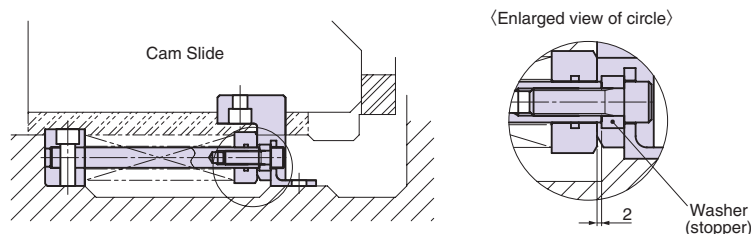
Selective initial pressure
and final pressure type
CRUV/CRFV series



P.191~P.198

(1) Standard initial pressure and final pressure type SHSU series

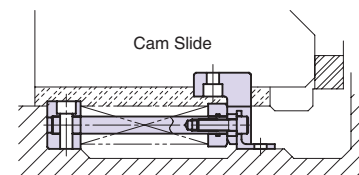
Initial pressure and final pressure are determined as the standard. The appropriate type can be selected by confirming that the specified travel meets the mass (x safety factor) and the final pressure ($\geq$ stopper force) of the cam slider (including cutting tool). Assemble the unit so that the spring holder may stop 2 mm before the stopper (washer) at the final return position.



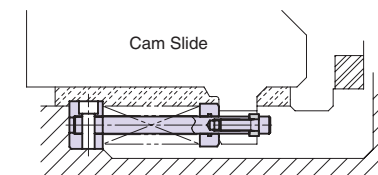
(2) Selective initial pressure and final pressure type CRUV series/CRFV series

Both initial pressure and final pressure can be determined according to the cam type. This part gives high degree of freedom in design. Two types of both side fixing and one side fixing are available.

● Status without initial pressure



● Status with initial pressure



〈Procedures to determine part〉

- ① Determine the initial pressure, travel and final load for one unit.
- ② Determine the coil spring outer diameter (D) and free length (FL) of the coil spring satisfying ① and other conditions.
- ③ Obtain the length of the spring guide pin from the calculation formula in the table.

The procedures to determine the part are now completed.

Determination of basic spring unit conditions

① Calculation of cam slider return force

$$\text{Cam return force (N)} = \text{Cam slide weight (kg)} \times \alpha + \text{Stripping force (N)}$$

$$\text{Stripping force (N)} = \text{Stamping force (N)} \times \beta$$

Customer should determine α and β values according to the stamping conditions.

(α : Wear coefficient, β : 3~5%)

② Calculate the spring compression from the travel required for the cam slide.

$$\text{Effective cam travel (mm)} = \text{Panel thickness} + \text{Flange length at cam} + \text{Allowance}$$

Allow the distance required for replacement of the punch.

$$\text{Spring compression (mm)} = \text{Effective travel length (mm)} + 2 \text{ mm (for preload)}$$

③ Select the spring unit suitable for conditions from ① and ②.

If the load is large and an appropriate spring is not available, consider use of 2 or 3 sets of springs in parallel.

Spring Unit for Cam Return [Overview]

Selection Method

Cam Slide Components

For spring unit CRUV and CRFV series, customer can determine parameters such as return force according to the die specification.

The table on the following page shows L size and final pressure (return force) of the spring guide pin for a standard travel. Please refer to this table for using the unit.

■Simplified Chart



Example

Initial Load : 150 kg (1470 N)

Travel : 50 mm

From 300,000 strokes in the table, find the type that gives 1470 N or more for initial pressure. Then, find the type that gives the travel of 50 mm. The applicable name of the spring unit, free length FL and spring guide pin L can be obtained.

CRUVL

D	Free Length FL	Spring Constant N/mm	Standard Travel S	Reference Value for Standard Travel (300,000 strokes) Free Length x40%			
				Compression	L	Initial Load N	Final Load N
	90	91.98	20	36.0	89	1472	3310
	100	82.78	25	40.0	100	1242	
	125	66.22	30	50.0	120	1324	
	150	55.19	35	60.0	140	1380	
	175	47.30	40	70.0	160	1419	
50	200	41.39	45	80.0	180	1449	
	225	36.79	50	90.0	200	1472	
	250	33.11	55	100.0	220	1490	
	275	30.10	60	110.0	240	1505	
	300	27.59	70	120.0	265	1380	
	350	23.65	80	140.0	305	1419	

CRUVL50-225-200 meets the requirements in this example.

CRUVF

D	Free Length FL	Spring Constant N/mm	Standard Travel S	Reference Value for Standard Travel (1,000,000 strokes) Free Length x40%				Reference Value for Standard Travel (500,000 strokes) Free Length x45%				Reference Value for Standard Travel (300,000 strokes) Free Length x50%			
				Compression	L	Initial Load N	Final Load N	Compression	L	Initial Load N	Final Load N	Compression	L	Initial Load N	Final Load N
40	90	27.85	20	36.0	89	446		40.5	85	571		45.0	80	696	
	100	25.07	25	40.0	100	376		45.0	95	501		50.0	90	627	
	125	20.05	30	50.0	120	401		56.3	114	527		62.5	108	652	
	150	16.71	35	60.0	140	418		67.5	133	543		75.0	125	668	
	175	14.32	40	70.0	160	430		78.8	151	556		87.5	143	680	
	200	12.53	45	80.0	180	439		90.0	170	564		100.0	160	689	
	225	11.14	50	90.0	200	446		101.3	189	571		112.5	178	696	
	250	10.03	55	100.0	220	451		112.5	208	577		125.0	195	702	
	275	9.12	65	110.0	245	410		123.8	231	536		137.5	218	661	
	300	8.36	70	120.0	265	418		135.0	250	543		150.0	235	669	
50	100	39.22	20	40.0	95	784		45.0	90	981		50.0	85	1177	
	125	31.38	25	50.0	115	785		56.3	109	982		62.5	103	1177	
	150	26.15	30	60.0	135	785		67.5	128	981		75.0	120	1177	
	175	22.41	35	70.0	155	784		78.8	146	982		87.5	138	1177	
	200	19.61	40	80.0	175	784		90.0	165	981		100.0	155	1177	
	225	17.43	45	90.0	195	784		101.3	184	981		112.5	173	1177	
	250	15.69	50	100.0	215	785		112.5	203	981		125.0	190	1177	
	275	14.26	55	110.0	235	784		123.8	221	981		137.5	208	1176	
	300	13.07	60	120.0	255	784		135.0	240	980		150.0	225	1176	
	350	11.21	70	140.0	295	785		157.5	278	981		175.0	260	1177	
60	100	9.81	80	160.0	335	785		180.0	315	981		200.0	295	1177	
	125	56.44	20	40.0	95	1129		45.0	90	1411		50.0	85	1693	
	150	45.16	25	50.0	115	1129		56.3	109	1414		62.5	103	1694	
	175	37.63	30	60.0	135	1129		67.5	128	1411		75.0	120	1693	
	200	32.25	35	70.0	155	1129		78.8	146	1413		87.5	138	1693	
	225	28.22	40	80.0	175	1129		90.0	165	1411		100.0	155	1693	
	250	25.09	45	90.0	195	1129		101.3	184	1413		112.5	173	1694	
	275	22.58	50	100.0	215	1129		112.5	203	1411		125.0	190	1694	
	300	20.53	55	110.0	235	1129		123.8	221	1412		137.5	208	1694	
	350	18.81	60	120.0	255	1129		135.0	240	1411		150.0	225	1693	

CRUVL

D	Free Length FL	Spring Constant N/mm	Standard Travel S	Reference Value for Standard Travel (1,000,000 strokes) Free Length x32%				Reference Value for Standard Travel (500,000 strokes) Free Length x36%				Reference Value for Standard Travel (300,000 strokes) Free Length x40%			
				Compression	L	Initial Load N	Final Load N	Compression	L	Initial Load N	Final Load N	Compression	L	Initial Load N	Final Load N
40	90	58.73	20	28.8	96.0	517		32.4	93	728		36.0	89	940	
	100	52.86	25	32.0	108	370		36.0	104	581		40.0	100	793	
	125	42.29	30	40.0	130	423		45.0	125	634		50.0	120	846	
	150	35.24	35	48.0	152	458		54.0	146	670		60.0	140	881	
	175	30.21	40	56.0	174	483		63.0	167	695		70.0	160	906	
	200	26.43	45	64.0	196	502		72.0	188	714		80.0	180	925	
	225	23.49	50	72.0	218	517		81.0	209	728		90.0	200	940	
	250	21.14	55	80.0	240	529		90.0	230	740		100.0	220	951	
	275	19.22	65	88.0	267	442		99.0	256	653		110.0	245	865	
	300	17.62	70	96.0	289	458		108.0	277	670		120.0	265	881	
50	90	91.98	20	28.8	96	809		32.4	93	1141		36.0	89	1472	
	100	82.78	25	32.0	108	579		36.0	104	911		40.0	100	1242	
	125	66.22	30	40.0	130	662		45.0	125	993		50.0	120	1324	
	150	55.19	35	48.0	152	717		54.0	146	1049		60.0	140	1380	
	175	47.30	40	56.0	174	757		63.0	167	1088		70.0	160	1419	
	200	41.39	45	64.0	196	786		72.0	188	1118		80.0	180	1449	
	225	36.79	50	72.0	218	809		81.0	209	1140		90.0	200	1472	
	250	33.11	55	80.0	240	828		90.0	230	1159		100.0	220	1490	
	275	30.10	60	88.0	262	843		99.0	251	1174		110.0	240	1505	
	300	27.59	70	96.0	289	717		108.0	277	1048		120.0	265	1380	
60	90	132.41	20	28.8	96	1165		32.4	93	1642		36.0	89	2119	
	100	119.17	25	32.0	108	834		36.0	104	1311		40.0	100	1788	
	125	95.33	30	40.0	130	953		45.0	125	1430		50.0	120	1907	
	150	79.44	35	48.0	152	1033		54.0	146	1509		60.0	140	1986	
	175	68.10	40	56.0	174	1090		63.0	167	1566		70.0	160	2043	
	200	59.58	45	64.0	196	1132		72.0	188	1609		80.0	180	2085	
	225	52.96	50	72.0	218	1165		81.0	209	1642		90.0	200	2118	
	250	47.67	60	80.0	245	953		90.0	235	1430		100.0	225	1907	
	275	43.33	65	88.0	267	997		99.0	256	1473		110.0	245	1950	
	300	39.72	70	96.0	289	1033		108.0	277	1509		120.0	265	1986	

Spring Unit for Cam Return [Overview]

Selection Method

Cam Slide Components

CRUVM

D	Free Length FL	Spring Constant N/mm	Standard Travel S	Reference Value for Standard Travel (1,000,000 strokes) Free Length x25.6%				Reference Value for Standard Travel (500,000 strokes) Free Length x28.8%				Reference Value for Standard Travel (300,000 strokes) Free Length x32%			
				Compression	L	Initial Load N	Final Load N	Compression	L	Initial Load N	Final Load N	Compression	L	Initial Load N	Final Load N
40	100	97.92	20	25.6	109	548		28.8	106	862		32.0	103	1175	
	125	78.33	25	32.0	133	548		36.0	129	862		40.0	125	1175	
	150	65.28	30	38.4	157	548		43.2	152	862		48.0	147	1175	
	175	55.95	35	44.8	180	548		50.4	175	862		56.0	169	1175	
	200	48.96	40	51.2	204	548	2510	57.6	197	862	2820	64.0	191	1175	3140
	225	43.52	45	57.6	227	548		64.8	220	862		72.0	213	1175	
	250	39.17	50	64.0	251	548		72.0	243	862		80.0	235	1175	
	275	35.61	60	70.4	280	370		79.2	271	684		88.0	262	997	
	300	32.64	70	76.8	308	222		86.4	299	535		96.0	289	849	
	100	153.13	20	25.6	109	858		28.8	106	1348		32.0	103	1838	
50	125	122.50	25	32.0	133	858		36.0	129	1348		40.0	125	1838	
	150	102.08	30	38.4	157	857		43.2	152	1347		48.0	147	1837	
	175	87.50	35	44.8	180	858		50.4	175	1348		56.0	169	1838	
	200	76.56	40	51.2	204	857	3920	57.6	197	1347	4410	64.0	191	1837	4900
	225	68.06	45	57.6	227	858		64.8	220	1348		72.0	213	1838	
	250	61.25	50	64.0	251	858		72.0	243	1348		80.0	235	1838	
	275	55.68	55	70.4	275	857		79.2	266	1347		88.0	257	1837	
	300	51.04	60	76.8	298	857		86.4	289	1347		96.0	279	1837	
	350	43.75	70	89.6	345	858		100.8	334	1348		112.0	323	1838	
	100	220.49	20	25.6	109	1235		28.8	106	1940		32.0	103	2646	
60	125	176.39	25	32.0	133	1235		36.0	129	1940		40.0	125	2646	
	150	146.99	30	38.4	157	1235		43.2	152	1940		48.0	147	2646	
	175	125.99	35	44.8	180	1235		50.4	175	1940		56.0	169	2646	
	200	110.24	40	51.2	204	1235	5640	57.6	197	1940	6350	64.0	191	2646	7060
	225	97.99	45	57.6	227	1235		64.8	220	1940		72.0	213	2646	
	250	88.19	50	64.0	251	1235		72.0	243	1940		80.0	235	2646	
	275	80.18	55	70.4	275	1235		79.2	266	1940		88.0	257	2646	
	300	73.50	60	76.8	298	1235		86.4	289	1940		96.0	279	2646	
	350	63.00	70	89.6	345	1235		100.8	334	1940		112.0	323	2646	

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CRUVH

D	Free Length FL	Spring Constant N/mm	Standard Travel S	Reference Value for Standard Travel (1,000,000 strokes) Free Length x19.2%				Reference Value for Standard Travel (500,000 strokes) Free Length x21.6%				Reference Value for Standard Travel (300,000 strokes) Free Length x24%			
				Compression	L	Initial Load N	Final Load N	Compression	L	Initial Load N	Final Load N	Compression	L	Initial Load N	Final Load N
40	100	196.30	20	19.2				21.6	113	314		24.0	111	785	
	125	157.04	25	24.0				27.0	138	314		30.0	135	785	
	150	130.86	30	28.8				32.4	163	314		36.0	159	785	
	175	112.17	35	33.6				37.8	187	314		42.0	183	785	
	200	98.15	40	38.4			3770	43.2	212	314	4240	48.0	207	785	4710
	225	87.24	45	43.2				48.6	236	314		54.0	231	785	
	250	78.52	50	48.0				54.0	261	314		60.0	255	785	
	275	71.38	55	52.8				59.4	286	314		66.0	279	785	
	300	65.43	60	57.6				64.8	310	314		72.0	303	785	
	100	306.48	20	19.2				21.6	113	490		24.0	111	1226	
50	125	245.19	25	24.0				27.0	138	490		30.0	135	1226	
	150	204.32	30	28.8				32.4	163	490		36.0	159	1226	
	175	175.13	35	33.6				37.8	187	490		42.0	183	1226	
	200	153.24	40	38.4			5880	43.2	212	490	6620	48.0	207	1226	7360
	225	136.21	45	43.2				48.6	236	490		54.0	231	1226	
	250	122.59	50	48.0				54.0	261	490		60.0	255	1226	
	275	111.45	55	52.8				59.4	286	490		66.0	279	1226	
	300	102.16	60	57.6				64.8	310	490		72.0	303	1226	
	350	87.57	70	67.2				75.6	359	490		84.0	351	1226	
	100	441.67	20	19.2				21.6	113	707		24.0	111	1767	
60	125	353.33	25	24.0				27.0	138	707		30.0	135	1767	
	150	294.44	30	28.8				32.4	163	707		36.0	159	1767	
	175	252.38	35	33.6				37.8	187	707		42.0	183	1767	
	200	220.83	40	38.4			8470	43.2	212	707	9540	48.0	207	1767	10590
	225	196.30	45	43.2				48.6	236	707		54.0	231	1767	
	250	176.67	50	48.0				54.0	261	707		60.0	255	1767	
	275	160.61	55	52.8				59.4	286	707		66.0	279	1767	
	300	147.22	60	57.6				64.8	310	707		72.0	303	1767	
	350	126.19	70	67.2				75.6	359	707		84.0	351	1767	

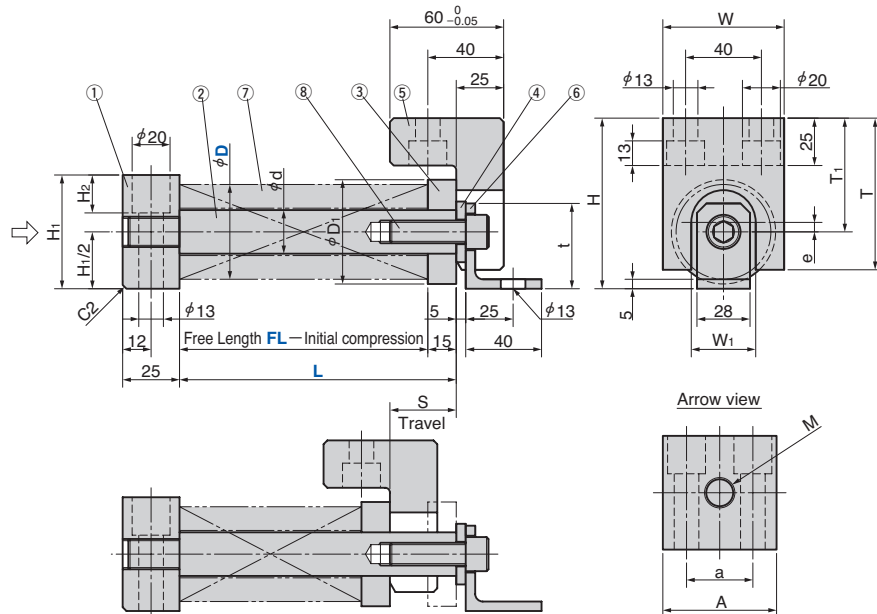
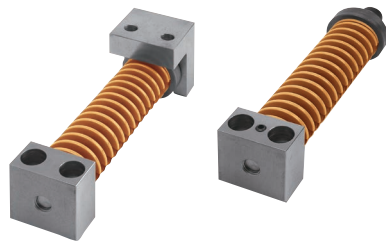
Spring Unit for Cam Return

Selective Pressure and Final Pressure Type

Cam Slide Components

CRUVF

CRFVF (Type without ⑤ and ⑥)



No.	Description	Qty	Material and Remark
1	Spring Block	1	Steel
2	Spring Guide Pin	1	Steel
3	Spring Retainer	1	Cast Iron
4	Washer	1	Steel

No.	Description	Qty	Material and Remark
5	Return Plate	1	Steel (Only CRUVF)
6	Angle	1	Steel (Only CRUVF)
7	Coil Spring	1	TF by TOHATSU
8	Hexagon Socket Head Bolt	1	M12x40

D	d	D1	H1	H2	t	A	a	M	W	W1	H	T	T1	e
40	18	45	50	15	40	55	30	M12	64	34	80	75	55	2.5
50	23	55	60	20	45	60	35	M16			90	80	60	5
60	28	65	70	25	50	70	40	M20	74	39	100	85	65	

● Coil spring TF load table and reference value for standard travel (Standard value: 500,000 strokes)

D	Free Length FL	Spring Constant N/mm	Free Length x40% (1,000,000 strokes)		Free Length x45% (500,000 strokes)		Free Length x50% (300,000 strokes)		Reference Value for Standard Travel (500,000 strokes)			
			Compression	Load N	Compression	Load N	Compression	Load N	S	L	Initial Load N	Final Load N
40	90	27.85	36.0		40.5		45.0		20	85	571	
	100	25.07	40.0		45.0		50.0		25	95	501	
	125	20.05	50.0		56.3		62.5		30	114	527	
	150	16.71	60.0		67.5		75.0		35	133	543	
	175	14.32	70.0		78.8		87.5		40	151	556	
	200	12.53	80.0	1000	90.0	1128	100.0	1255	45	170	564	1128
	225	11.14	90.0		101.3		112.5		50	189	571	
	250	10.03	100.0		112.5		125.0		55	208	577	
	275	9.12	110.0		123.8		137.5		65	231	536	
	300	8.36	120.0		135.0		150.0		70	250	543	
50	100	39.22	40.0		45.0		50.0		20	90	981	
	125	31.38	50.0		56.3		62.5		25	109	982	
	150	26.15	60.0		67.5		75.0		30	128	981	
	175	22.41	70.0		78.8		87.5		35	146	982	
	200	19.61	80.0		90.0		100.0		40	165	981	
	225	17.43	90.0	1569	101.3	1765	112.5	1961	45	184	981	1765
	250	15.69	100.0		112.5		125.0		50	203	981	
	275	14.26	110.0		123.8		137.5		55	221	981	
	300	13.07	120.0		135.0		150.0		60	240	980	
	350	11.21	140.0		157.5		175.0		70	278	981	
60	400	9.81	160.0		180.0		200.0		80	315	981	
	100	56.44	40.0		45.0		50.0		20	90	1411	
	125	45.16	50.0		56.3		62.5		25	109	1414	
	150	37.63	60.0		67.5		75.0		30	128	1411	
	175	32.25	70.0		78.8		87.5		35	146	1413	
	200	28.22	80.0		90.0		100.0		40	165	1411	
	225	25.09	90.0	2260	101.3	2540	112.5	2820	45	184	1413	2540
	250	22.58	100.0		112.5		125.0		50	203	1411	
	275	20.53	110.0		123.8		137.5		55	221	1412	
	300	18.81	120.0		135.0		150.0		60	240	1411	
	350	16.13	140.0		157.5		175.0		70	278	1411	
	400	14.11	160.0		180.0		200.0		80	315	1411	

Catalog No.	D	Free Length FL	Spring Guide Pin L (1 mm increments, Fractions to be rounded)
CRUVF CRFVF	40	Select the value from the table above.	
	50	Note) Please note, a size not in the table may be specified.	FL — Initial compression + 15
	60		



Catalog No.	D	FL	L
CRUVF	40	125	114
CRFVF	40	125	114

For your order

Determine the specification with the steps below:

- Determine the Initial Load, travel and Final Load per unit.
- Select the outer diameter (D) and the free length (FL) of the coil spring satisfying ① and other conditions.
- With the calculation formula in L of the table, obtain the length of the spring guide pin.

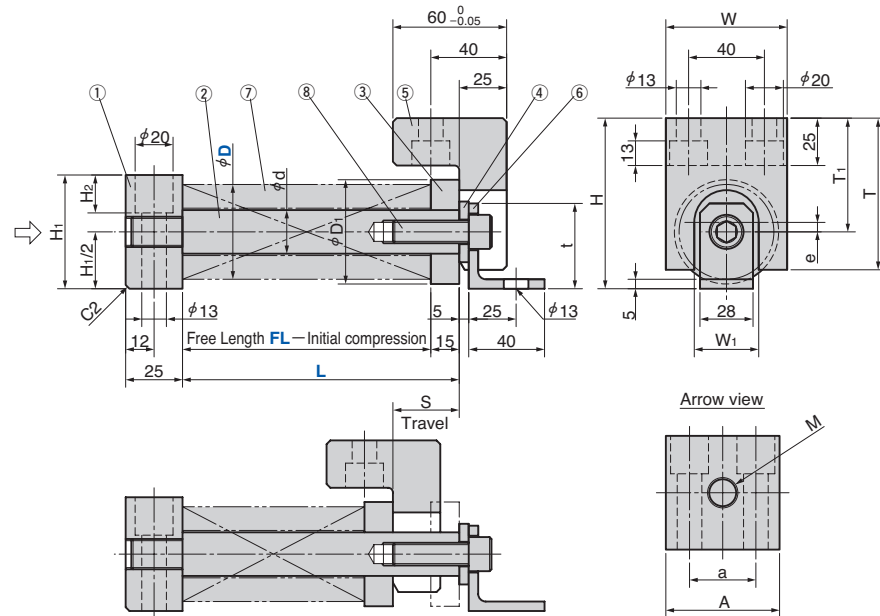
Now, the steps for the specification are completed. The order codes are determined by ② and ③.

Spring Unit for Cam Return

Selective Pressure and Final Pressure Type

Cam Slide Components

CRUVL
CRFVL (Type without ⑤ and ⑥)



No.	Description	Qty	Material and Remark
1	Spring Block	1	Steel
2	Spring Guide Pin	1	Steel
3	Spring Retainer	1	Cast Iron
4	Washer	1	Steel

No.	Description	Qty	Material and Remark
5	Return Plate	1	Steel (Only CRUVL)
6	Angle	1	Steel (Only CRUVL)
7	Coil Spring	1	TL by TOHATSU
8	Hexagon Socket Head Bolt	1	M12x40

D	d	D1	H1	H2	t	A	a	M	W	W1	H	T	T1	e
40	18	45	50	15	40	55	30	M12	64	34	80	75	55	2.5
50	23	55	60	20	45	60	35	M16			90	80	60	5
60	28	65	70	25	50	70	40	M20	74	39	100	85	65	

● Coil spring TL load table and reference value for standard travel (Standard value: 500,000 strokes)

D	Free Length FL	Spring Constant N/mm	Free Length x32% (1,000,000 strokes)		Free Length x36% (500,000 strokes)		Free Length x40% (300,000 strokes)		Reference Value for Standard Travel (500,000 strokes)			
			Compression	Load N	Compression	Load N	Compression	Load N	S	L	Initial Load N	Final Load N
40	90	58.73	28.8		32.4		36.0		20	93	728	
	100	52.86	32.0		36.0		40.0		25	104	581	
	125	42.29	40.0		45.0		50.0		30	125	634	
	150	35.24	48.0		54.0		60.0		35	146	670	
	175	30.21	56.0		63.0	1903	70.0	2120	40	167	695	1903
	200	26.43	64.0	1697	72.0		80.0		45	188	714	
	225	23.49	72.0		81.0		90.0		50	209	728	
	250	21.14	80.0		90.0		100.0		55	230	740	
	275	19.22	88.0		99.0		110.0		65	256	653	
	300	17.62	96.0		108.0		120.0		70	277	670	
50	90	91.98	28.8		32.4		36.0		20	93	1141	
	100	82.78	32.0		36.0		40.0		25	104	911	
	125	66.22	40.0		45.0		50.0		30	125	993	
	150	55.19	48.0		54.0		60.0		35	146	1049	
	175	47.30	56.0		63.0	2980	70.0	3310	40	167	1088	2980
	200	41.39	64.0	2650	72.0		80.0		45	188	1118	
	225	36.79	72.0		81.0		90.0		50	209	1140	
	250	33.11	80.0		90.0		100.0		55	230	1159	
	275	30.10	88.0		99.0		110.0		60	251	1174	
	300	27.59	96.0		108.0		120.0		70	277	1048	
60	90	132.41	28.8		32.4		36.0		20	93	1642	
	100	119.17	32.0		36.0		40.0		25	104	1311	
	125	95.33	40.0		45.0		50.0		30	125	1430	
	150	79.44	48.0		54.0		60.0		35	146	1509	
	175	68.10	56.0		63.0	4290	70.0	4770	40	167	1566	4290
	200	59.58	64.0	3810	72.0		80.0		45	188	1609	
	225	52.96	72.0		81.0		90.0		50	209	1642	
	250	47.67	80.0		90.0		100.0		60	235	1430	
	275	43.33	88.0		99.0		110.0		65	256	1473	
	300	39.72	96.0		108.0		120.0		70	277	1509	
	350	34.05	112.0		126.0		140.0		80	319	1088	
	90	132.41	28.8		32.4		36.0		20	93	1642	
	100	119.17	32.0		36.0		40.0		25	104	1311	
	125	95.33	40.0		45.0		50.0		30	125	1430	
	150	79.44	48.0		54.0		60.0		35	146	1509	
	175	68.10	56.0		63.0		70.0		40	167	1566	
	200	59.58	64.0		72.0		80.0		45	188	1609	
	225	52.96	72.0		81.0		90.0		50	209	1642	
	250	47.67	80.0		90.0		100.0		60	235	1430	
	275	43.33	88.0		99.0		110.0		65	256	1473	
	300	39.72	96.0		108.0		120.0		70	277	1509	
	350	34.05	112.0		126.0		140.0		80	319	1566	

Catalog No.	D	Free Length FL	Spring Guide Pin L (1 mm increments, Fractions to be rounded)
CRUVL CRFVL	40	Select the value from the table above.	
	50	Note) Please note, a size not in the table may be specified.	FL — Initial compression +15
	60		



Catalog No.	D	FL	L
CRUVL	50	175	167
CRFVL	50	175	167

For your order

Determine the specification with the steps below:

- Determine the Initial Load, travel and Final Load per unit.
- Select the outer diameter (D) and the free length (FL) of the coil spring satisfying ① and other conditions.
- With the calculation formula in L of the table, obtain the length of the spring guide pin.

Now, the steps for the specification are completed. The order codes are determined by ② and ③.

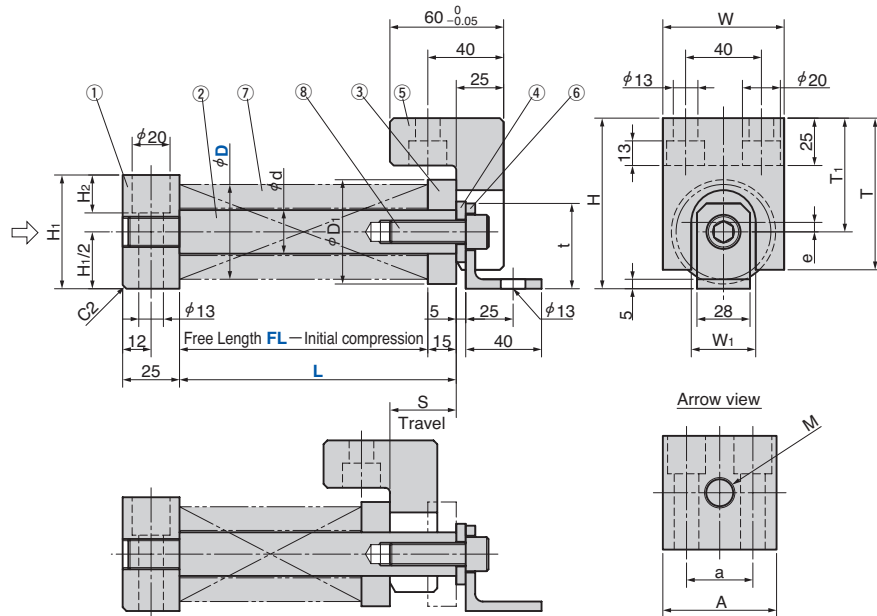
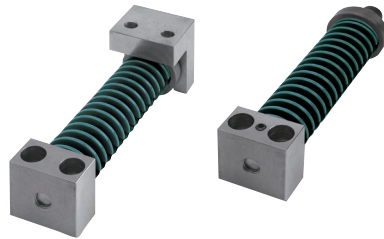
Spring Unit for Cam Return

Selective Pressure and Final Pressure Type

Cam Slide Components

CRUVH

CRFVH (Type without ⑤ and ⑥)



No.	Description	Qty	Material and Remark
1	Spring Block	1	Steel
2	Spring Guide Pin	1	Steel
3	Spring Retainer	1	Cast Iron
4	Washer	1	Steel

No.	Description	Qty	Material and Remark
5	Return Plate	1	Steel (Only CRUVH)
6	Angle	1	Steel (Only CRUVH)
7	Coil Spring	1	TH by TOHATSU
8	Hexagon Socket Head Bolt	1	M12x40

D	d	D1	H1	H2	t	A	a	M	W	W1	H	T	T1	e
40	18	45	50	15	40	55	30	M12	64	34	80	75	55	2.5
50	23	55	60	20	45	60	35	M16			90	80	60	5
60	28	65	70	25	50	70	40	M20	74	39	100	85	65	

● Coil spring TH load table and reference value for standard travel (Standard value: 300,000 strokes)

D	Free Length FL	Spring Constant N/mm	Free Length x19.2% (1,000,000 strokes)		Free Length x21.6% (500,000 strokes)		Free Length x24% (300,000 strokes)		Reference Value for Standard Travel (300,000 strokes)			
			Compression	Load N	Compression	Load N	Compression	Load N	S	L	Initial Load N	Final Load N
40	100	196.30	19.2		21.6		24.0		20	111	785	
	125	157.04	24.0		27.0		30.0		25	135	785	
	150	130.86	28.8		32.4		36.0		30	159	785	
	175	112.17	33.6		37.8		42.0		35	183	785	
	200	98.15	38.4	3770	43.2	4240	48.0	4710	40	207	785	4710
	225	87.24	43.2		48.6		54.0		45	231	785	
	250	78.52	48.0		54.0		60.0		50	255	785	
	275	71.38	52.8		59.4		66.0		55	279	785	
	300	65.43	57.6		64.8		72.0		60	303	785	
	100	306.48	19.2		21.6		24.0		20	111	1226	
50	125	245.19	24.0		27.0		30.0		25	135	1226	
	150	204.32	28.8		32.4		36.0		30	159	1226	
	175	175.13	33.6		37.8		42.0		35	183	1226	
	200	153.24	38.4		43.2		48.0		40	207	1226	
	225	136.21	43.2	5880	48.6	6620	54.0	7360	45	231	1226	7360
	250	122.59	48.0		54.0		60.0		50	255	1226	
	275	111.45	52.8		59.4		66.0		55	279	1226	
	300	102.16	57.6		64.8		72.0		60	303	1226	
	350	87.57	67.2		75.6		84.0		70	351	1226	
	100	441.67	19.2		21.6		24.0		20	111	1767	
60	125	353.33	24.0		27.0		30.0		25	135	1767	
	150	294.44	28.8		32.4		36.0		30	159	1767	
	175	252.38	33.6		37.8		42.0		35	183	1767	
	200	220.83	38.4		43.2		48.0		40	207	1767	
	225	196.30	43.2	8470	48.6	9540	54.0	10590	45	231	1767	10590
	250	176.67	48.0		54.0		60.0		50	255	1767	
	275	160.61	52.8		59.4		66.0		55	279	1767	
	300	147.22	57.6		64.8		72.0		60	303	1767	
	350	126.19	67.2		75.6		84.0		70	351	1767	

Catalog No.	D	Free Length FL	Spring Guide Pin L (1 mm increments, Fractions to be rounded)
CRUVH CRFVH	40	Select the value from the table above.	
	50	Note) Please note, a size not in the table may be specified.	FL — Initial compression +15
	60		



Catalog No.	D	FL	L
CRUVH	60	200	207
CRFVH	60	200	207

For your order

Determine the specification with the steps below:

- Determine the Initial Load, travel and Final Load per unit.
- Select the outer diameter (D) and the free length (FL) of the coil spring satisfying ① and other conditions.
- With the calculation formula in L of the table, obtain the length of the spring guide pin.

Now, the steps for the specification are completed. The order codes are determined by ② and ③.