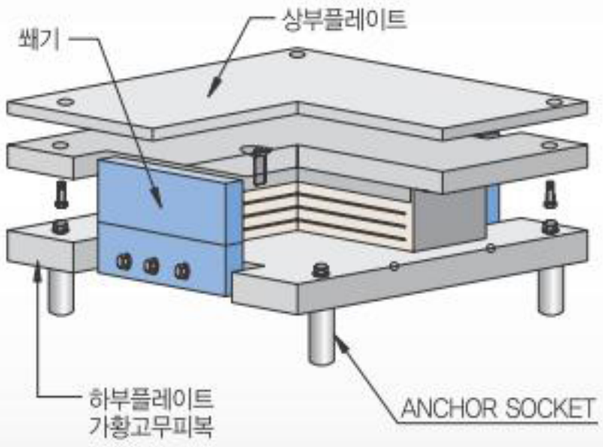
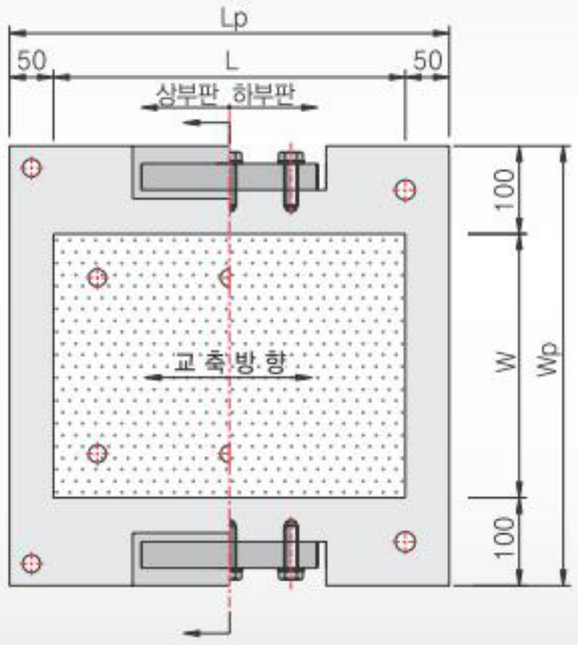


일체형 내진 탄성받침(ERB) 설계제원표(KS F 4220)

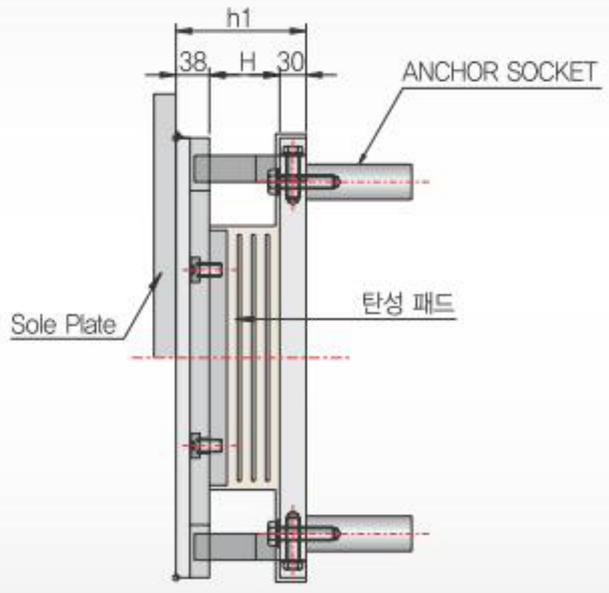
고정단

입체도





단면도



일체형 내진 탄성받침(ERB) 설계 제원표 (KS F 4420)

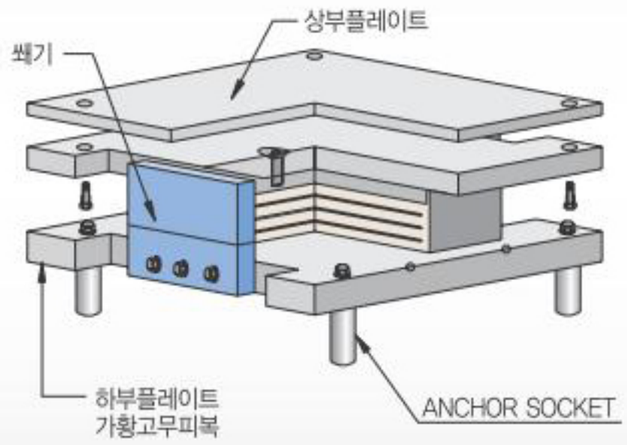
적용 하중 (kN)	탄성받침 치수(mm)			탄성고무층		전단탄성계수 (MPa)							±변위(mm)		상하부판 치수(나비, 길이), mm								소켓 제원 및 볼트 제원
						0.9MPa				1.15MPa					고정		일방향가동				양방향가동		
																	교축방향		교축직각방향				
	나비X길이 W L	높이 H	높이 h1	고무 층수	유효고무 두께(mm)	수평력(kN) 상시 70%	수평력(kN) 지진시 150%	압축 스프링계수 Kv(kN/m)	전단 스프링계수 Kh(kN/m)	수평력(kN) 상시 70%	수평력(kN) 지진시 150%	압축 스프링계수 Kv(kN/m)	전단 스프링계수 Kh(kN/m)	상시 70%	지진시 150%	Wp	Lp	Wp	Lp	Wp	Lp	Wp	Lp	
80	100X150	34	102	2	16	9.5	20.3	27,400	844	12.1	25.9	34,900	1,078	11.2	24	300	250	300	250	250	300	200	250	Ø30 ×100 (M12)
		45	113	3	24			18,300	563			23,200	719	16.8	36									
100	100X200	34	102	2	16	12.6	27.0	47,300	1,125	16.1	34.5	60,000	1,438	11.2	24	300	300	300	300	300	300	200	300	Ø30 ×100 (M12)
		45	113	3	24			31,500	750			40,000	959	16.8	36									
200	150X200	34	102	2	16	18.9	40.5	139,500	1,688	24.2	51.8	176,000	2,157	11.2	24	350	300	350	300	300	350	250	300	Ø30 ×100 (M12)
		45	113	3	24			93,000	1,125			117,300	1,438	16.8	36									
		56	124	4	32			69,800	844			88,000	1,078	22.4	48									
250	150X250	34	102	2	16	23.6	50.6	213,700	2,110	30.2	64.7	268,800	2,696	11.2	24	350	350	350	350	350	350	250	350	Ø30 ×100 (M12)
		45	113	3	24			142,500	1,407			179,200	1,797	16.8	36									
		56	124	4	32			106,900	1,055			134,400	1,348	22.4	48									
350	150X300	34	103	2	16	28.4	60.8	294,900	2,532	36.2	77.6	370,100	3,235	11.2	24	350	400	350	400	400	350	250	400	Ø30 ×100 (M12)
		45	113	3	24			196,600	1,688			246,700	2,157	16.8	36									
		56	124	4	32			147,400	1,266			185,100	1,618	22.4	48									
450	200X250	45	113	3	24	31.5	67.5	283,800	1,876	40.3	86.3	354,600	2,397	16.8	36	400	350	400	350	350	400	300	350	Ø35 ×120 (M12)
		56	124	4	32			212,900	1,407			265,900	1,797	22.4	48									
		67	135	5	40			170,300	1,125			212,700	1,438	28	60									
		78	146	6	48			141,900	938			177,300	1,198	33.6	72									
550	200X300	45	113	3	24	37.8	81.0	401,000	2,251	48.3	103.5	499,100	2,876	16.8	36	400	400	400	400	400	400	300	400	Ø35 ×120 (M12)
		56	124	4	32			300,700	1,688			374,300	2,157	22.4	48									
		67	135	5	40			240,600	1,350			299,500	1,725	28	60									
		78	146	6	48			200,500	1,125			249,600	1,438	33.6	72									
650	200X350	45	113	3	24	44.1	94.5	527,500	2,626	56.4	120.8	654,600	3,355	16.8	36	400	450	400	450	450	400	300	450	Ø35 ×120 (M12)
		56	124	4	32			395,600	1,969			490,900	2,516	22.4	48									
		67	135	5	40			316,500	1,575			392,800	2,013	28	60									
		78	146	6	48			263,700	1,313			327,300	1,678	33.6	72									
700	250X300	45	113	3	24	47.3	101.3	659,800	2,813	60.4	129.4	815,300	3,595	16.8	36	450	400	450	400	400	450	350	400	Ø40×120 (M12)
		56	124	4	32			494,900	2,110			611,500	2,696	22.4	48									
		67	135	5	40			395,900	1,688			489,200	2,157	28	60									
		78	146	6	48			329,900	1,407			407,600	1,797	33.6	72									
		89	157	7	56			282,800	1,206			349,400	1,541	39.2	84									
750	200X400	45	113	3	24	50.4	108.0	660,900	3,001	64.4	138	818,200	3,834	16.8	36	400	500	400	500	500	400	300	500	Ø40×120 (M12)
		56	124	4	32			495,700	2,251			613,600	2,876	22.4	48									
		67	135	5	40			396,600	1,801			490,900	2,301	28	60									
		78	146	6	48			330,500	1,500			409,100	1,917	33.6	72									

※ 탄성받침의 상시 전단 변형은 유효 고무 두께의 최대 70%이다.
※ Shim plate와 측면 피복의 두께는 KS F 4420 : 1998에 따른다.
※ 최대 · 최소 허용압축응력은 KS F 4420 : 1998에 따른다.
※ 상 · 하부의 플레이트와 탄성패드는 일체형으로 접합 제작한다.

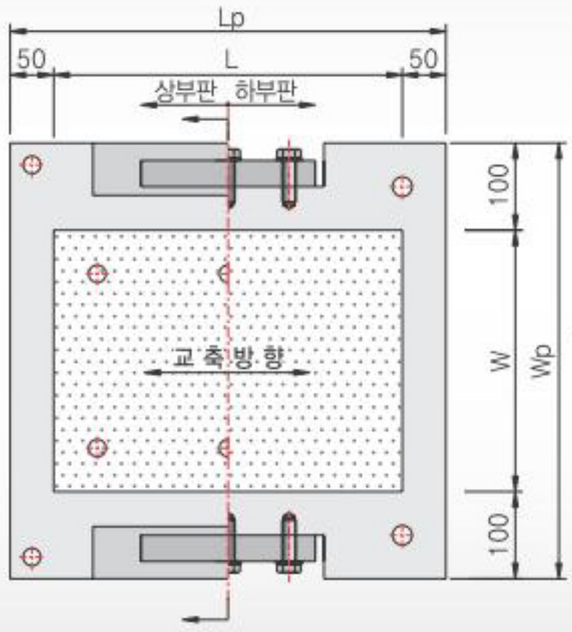


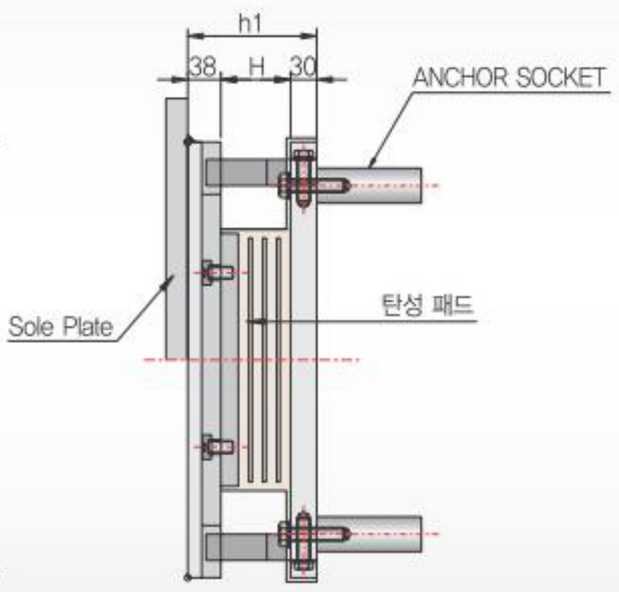
교축방향

입체도



단면도





일체형 내진 탄성받침(ERB) 설계 제원표 (KS F 4420)

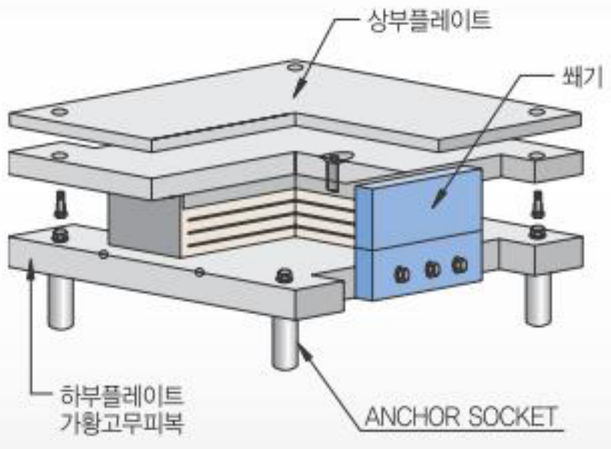
적용 하중 (kN)	탄성받침 치수(mm)			탄성고무층		전단탄성계수 (MPa)						±변위(mm)		상하부판 치수(나비, 길이), mm								소켓 제원 및 볼트 제원
						0.9MPa				1.15MPa				고정		일방향가동				양방향가동		
																교축방향		교축직각방향				
	나비X길이 W L	높이 H	h1	고무 층수	유효고무 두께(mm)	수평력(kN) 상시 70%	수평력(kN) 지진시 150%	압축 스프링계수 Kv(kN/m)	전단 스프링계수 Kh(kN/m)	수평력(kN) 상시 70%	수평력(kN) 지진시 150%	압축 스프링계수 Kv(kN/m)	전단 스프링계수 Kh(kN/m)	상시 70%	지진시 150%	Wp	Lp	Wp	Lp	Wp	Lp	Wp	Lp	
1000	250X400	45	113	3	24	63.0	135.0	1,113,600	3,751	80.5	172.5	1,364,900	4,793	16.8	36	450	500	450	500	500	450	350	500	Ø40 ×120 (M16)
		56	124	4	32			835,200	2,813			1,023,700	3,595	22.4	48									
		67	135	5	40			668,100	2,251			819,000	2,876	28	60									
		78	146	6	48			556,800	1,876			682,500	2,397	33.6	72									
		89	157	7	56			477,200	1,608			585,000	2,054	39.2	84									
		100	168	8	64			417,600	1,407			511,900	1,797	44.8	96									
		111	179	9	72			371,200	1,250			455,000	1,598	50.4	108									
1350	300X400	64	132	3	36	75.6	162.0	544,900	3,001	96.8	207.1	678,900	3,834	25.2	54	500	500	500	500	500	500	400	500	Ø40 ×150 (M16)
		80	148	4	48			408,700	2,251			509,200	2,876	33.6	72									
		96	164	5	60			327,000	1,801			407,400	2,301	42	90									
		112	180	6	72			272,500	1,500			339,500	1,917	50.4	108									
		128	196	7	84			233,500	1,286			291,000	1,643	58.8	126									
		144	212	8	96			204,400	1,125			254,600	1,438	67.2	144									
1750	300X500	64	132	3	36	94.5	202.6	813,100	3,751	120.8	258.8	1,008,400	4,793	25.2	54	500	600	500	600	600	500	500	600	Ø50 ×150 (M16)
		80	148	4	48			609,800	2,813			756,300	3,595	33.6	72									
		96	164	5	60			487,800	2,251			605,100	2,876	42	90									
		112	180	6	72			406,500	1,876			504,200	2,397	50.4	108									
		128	196	7	84			348,500	1,608			432,200	2,054	58.8	126									
		144	212	8	96			304,900	1,407			378,200	1,797	67.2	144									
1900	350X450	64	132	3	36	99.3	212.7	945,100	3,939	126.8	271.8	1,168,700	5,033	25.2	54	550	550	550	550	550	550	550	550	Ø50 ×150 (M16)
		80	148	4	48			708,800	2,954			876,500	3,774	33.6	72									
		96	164	5	60			567,100	2,363			701,200	3,020	42	90									
		112	180	6	72			472,600	1,969			584,400	2,516	50.4	108									
		128	196	7	84			405,000	1,688			500,900	2,157	58.8	126									
		144	212	8	96			354,400	1,477			438,300	1,887	67.2	144									
2000	300X600	64	132	3	36	113.4	243.1	1,103,400	4,501	144.9	310.6	1,363,000	5,752	25.2	54	500	700	500	700	700	500	500	700	Ø55 ×150 (M16)
		80	148	4	48			827,600	3,376			1,022,700	4,314	33.6	72									
		96	164	5	60			662,000	2,701			818,200	3,451	42	90									
		112	180	6	72			551,700	2,251			681,800	2,876	50.4	108									
		128	196	7	84			472,900	1,929			584,400	2,465	58.8	126									
		144	212	8	96			413,800	1,688			511,300	2,157	67.2	144									



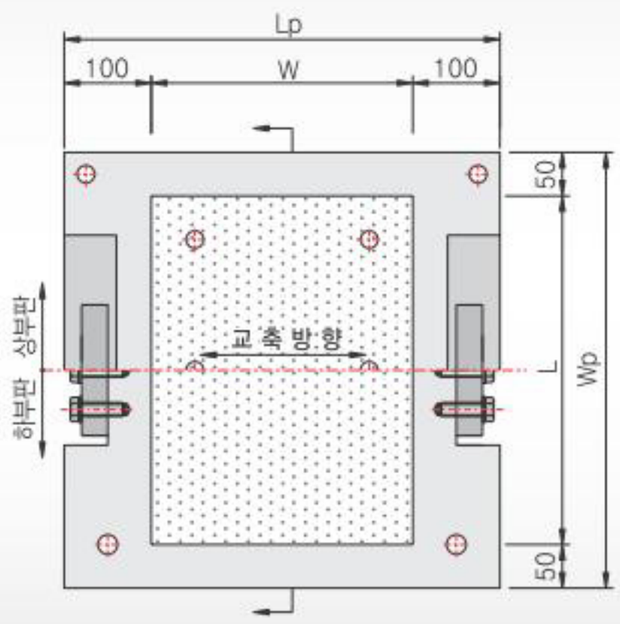
일체형 내진 탄성받침(ERB) 설계제원표(KS F 4220)

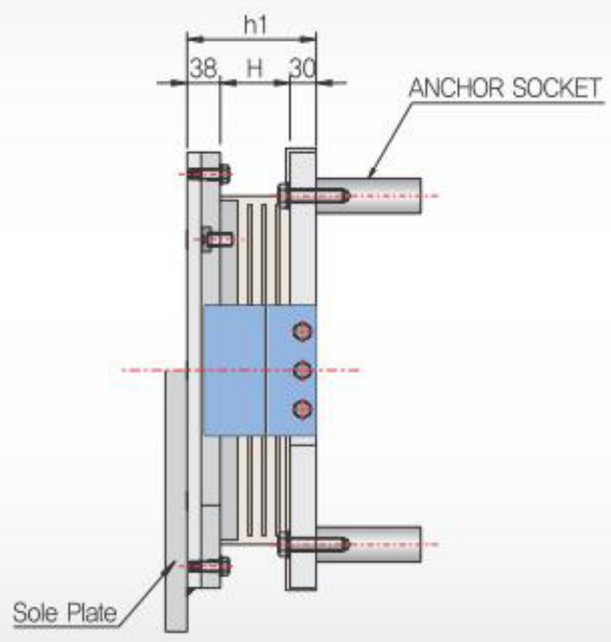
교축직각방향

입체도



단면도





일체형 내진 탄성받침(ERB) 설계 제원표 (KS F 4420)

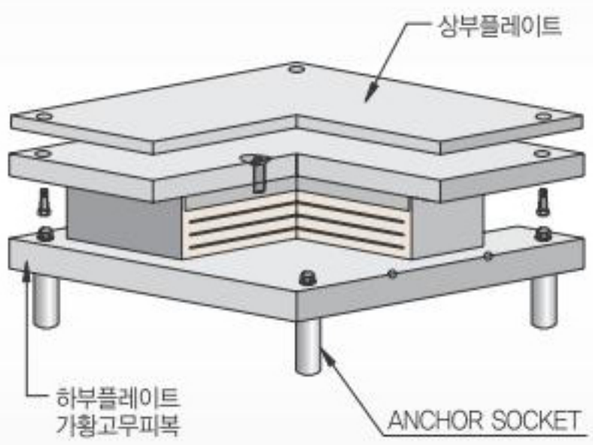
적용 하중 (kN)	탄성받침 치수(mm)			탄성고무층		전단탄성계수 (MPa)						수평변위(mm)		상하부판 치수(나비, 길이), mm								앵커볼트 제원 및 볼트 제원
						0.9MPa				1.15MPa				고정		일방향가동				양방향가동		
																교축방향		교축직각방향				
	나비X길이 W L	높이 H	높이 h1	고무 층수	유효 고무 두께 (mm)	수평력(kN) 상시 70%	수평력(kN) 지진시 150%	압축 스프링계수 Kv(kN/m)	전단 스프링계수 Kh(kN/m)	수평력(kN) 상시 70%	수평력(kN) 지진시 150%	압축 스프링계수 Kv(kN/m)	전단 스프링계수 Kh(kN/m)	상시 70%	지진시 150%	Wp	Lp	Wp	Lp	Wp	Lp	Wp	Lp	
2250	400X500	80	148	4	48	126.0	270.1	1,136,200	3,751	161	345.1	1,393,900	4,793	33.6	72	600	600	600	600	600	600	600	600	Ø55×150 (M18)
		96	164	5	60			908,900	3,001			1,115,100	3,824	42	90									
		112	180	6	72			757,400	2,501			929,300	3,195	50.4	108									
		128	196	7	84			649,200	2,143			796,500	2,739	58.8	126									
		144	212	8	96			568,100	1,876			697,000	2,397	67.2	144									
		160	228	9	108			505,000	1,667			619,500	2,130	75.6	162									
		176	244	10	120			454,500	1,500			557,600	1,917	84	180									
2800	400X600	80	148	4	48	151.2	324.1	1,568,400	4,501	193.3	414.1	1,913,300	5,752	33.6	72	600	700	600	700	700	600	600	700	Ø70×150 (M20)
		96	164	5	60			1,254,700	3,601			1,530,600	4,601	42	90									
		112	180	6	72			1,045,600	3,001			1,275,500	3,834	50.4	108									
		128	196	7	84			896,200	2,572			1,093,300	3,287	58.8	126									
		144	212	8	96			784,200	2,251			956,700	2,876	67.2	144									
		160	228	9	108			697,100	2,001			850,400	2,556	75.6	162									
		176	244	10	120			627,400	1,801			765,300	2,301	84	180									
3000	450X600	80	148	4	48	170.1	364.6	1,999,500	5,064	217.4	465.9	2,425,400	6,471	33.6	72	650	700	650	700	700	650	650	700	Ø70×150 (M20)
		96	164	5	60			1,599,600	4,051			1,940,300	5,176	42	90									
		112	180	6	72			1,333,000	3,376			1,616,900	4,314	50.4	108									
		128	196	7	84			1,142,600	2,894			1,385,900	3,697	58.8	126									
		144	212	8	96			999,800	2,532			1,212,700	3,235	67.2	144									
		160	228	9	108			888,700	2,251			1,077,900	2,876	75.6	162									
3500	500X600	80	148	4	48	189.1	405.1	2,462,900	5,627	241.6	517.6	2,971,800	7,190	33.6	72	700	700	700	700	700	700	700	700	Ø70×150 (M22)
		96	164	5	60			1,970,300	4,501			2,377,500	5,752	42	90									
		112	180	6	72			1,641,900	3,751			1,981,200	4,793	50.4	108									
		128	196	7	84			1,407,400	3,215			1,698,200	4,108	58.8	126									
		144	212	8	96			1,231,500	2,813			1,485,900	3,595	67.2	144									
		160	228	9	108			1,094,600	2,501			1,320,800	3,195	75.6	162									
		176	244	10	120			985,200	2,251			1,188,700	2,876	84	180									
4300	600X600	99	167	4	64	226.9	486.1	1,640,100	5,064	289.9	621.2	2,008,600	6,471	44.8	96	800	700	800	700	700	800	800	700	Ø70×150 (M24)
		120	188	5	80			1,312,100	4,051			1,606,900	5,176	56	120									
		141	209	6	96			1,093,400	3,376			1,339,100	4,314	67.2	144									
		162	230	7	112			937,200	2,894			1,147,800	3,697	78.4	168									
		183	251	8	128			820,000	2,532			1,004,300	3,235	89.6	192									
		204	272	9	144			728,900	2,251			892,700	2,876	100.8	216									

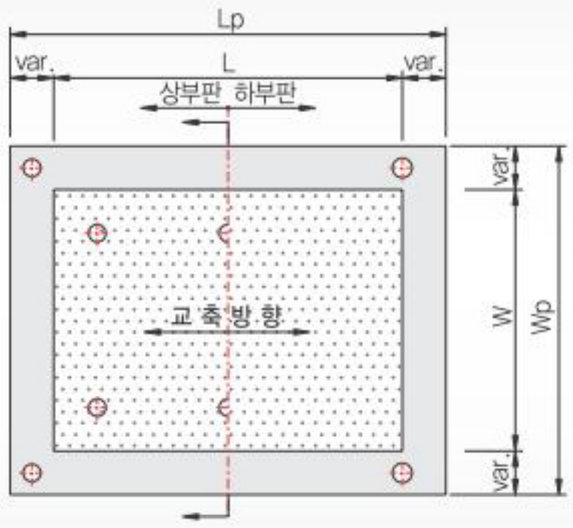
※ 탄성받침의 상시 전단 변형은 유효 고무 두께의 최대 70%이다.
※ Shim plate와 측면 피복의 두께는 KS F 4420 : 1998에 따른다.
※ 최대 · 최소 허용압축응력은 KS F 4420 : 1998에 따른다.
※ 상 · 하부의 플레이트와 탄성패드는 일체형으로 접합 제작한다.



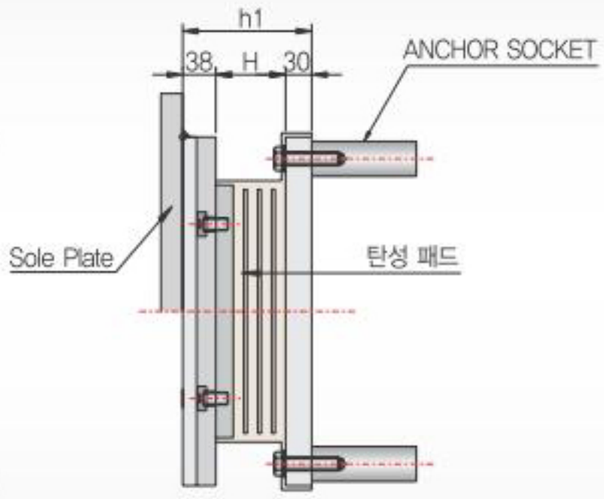
양방향

입 체 도





단 면 도



일체형 내진 탄성받침(ERB) 설계 제원표 (KS F 4420)

적용 하중 (kN)	탄성받침 치수(mm)			탄성고무층		전단탄성계수 (MPa)						±변위(mm)		상하부판 치수(나비, 길이), mm								소켓 제원 및 볼트 제원
						0.9MPa			1.15MPa					고정		일방향가동				양방향가동		
																교축방향		교축직각방향				
	나비X길이 W L	높이 H	h1	고무 층수	고무 두께 (mm)	수평력(kN) 상시 70%	수평력(kN) 지진시 150%	압축 스프링계수 Kv(kN/m)	전단 스프링계수 Kh(kN/m)	수평력(kN) 상시 70%	수평력(kN) 지진시 150%	압축 스프링계수 Kv(kN/m)	전단 스프링계수 Kh(kN/m)	상시 70%	지진시 150%	Wp	Lp	Wp	Lp	Wp	Lp	Wp	Lp	
5000	600X700	99	167	4	64	264.7	567.2	2,184,000	5,908	338.2	724.7	2,659,700	7,549	44.8	96	800	800	800	800	800	800	800	800	Ø70 ×170 (M24)
		120	188	5	80			1,747,200	4,726			2,127,800	6,039	56	120									
		141	209	6	96			1,456,000	3,939			1,773,200	5,033	67.2	144									
		162	230	7	112			1,248,000	3,376			1,519,800	4,314	78.4	168									
		183	251	8	128			1,092,000	2,954			1,329,900	3,774	89.6	192									
		204	272	9	144			970,600	2,626			1,182,100	3,355	100.8	216									
6000	700X700	99	167	4	64	308.8	661.7	2,927,700	6,893	394.6	845.5	3,541,700	8,807	44.8	96	900	800	900	800	800	900	900	800	Ø70 ×170 (M27)
		120	188	5	80			2,342,200	5,514			2,833,400	7,046	56	120									
		141	209	6	96			1,951,800	4,595			2,361,100	5,871	67.2	144									
		162	230	7	112			1,673,000	3,939			2,023,800	5,033	78.4	168									
		183	251	8	128			1,463,900	3,446			1,770,900	4,404	89.6	192									
		204	272	9	144			1,301,200	3,063			1,574,100	3,914	100.8	216									
		225	293	10	160			1,171,100	2,757			1,416,700	3,523	112	240									
7000	700X800	99	167	4	64	352.9	756.2	3,727,100	7,877	450.9	966.3	4,482,500	10,065	44.8	96	900	900	900	900	900	900	900	900	Ø70 ×170 (M30)
		120	188	5	80			2,981,700	6,302			3,586,000	8,052	56	120									
		141	209	6	96			2,484,700	5,251			2,988,300	6,710	67.2	144									
		162	230	7	112			2,129,800	4,501			2,561,400	5,752	78.4	168									
		183	251	8	128			1,863,600	3,939			2,241,300	5,033	89.6	192									
		204	272	9	144			1,656,500	3,501			1,992,200	4,473	100.8	216									
		225	293	10	160			1,490,800	3,151			1,793,000	4,026	112	240									
8000	800X800	115	183	4	80	403.3	864.2	2,680,800	7,202	515.3	1104.3	3,265,600	9,203	56	120	1000	900	1000	900	900	1000	1000	900	Ø70 ×230 (M30)
		140	208	5	100			2,144,600	5,762			2,612,500	7,362	70	150									
		165	233	6	120			1,787,200	4,801			2,177,100	6,135	84	180									
		190	258	7	140			1,531,900	4,115			1,866,100	5,259	98	210									
		215	283	8	160			1,340,400	3,601			1,632,800	4,601	112	240									
		240	308	9	180			1,191,500	3,201			1,451,400	4,090	126	270									
		265	333	10	200			1,072,300	2,881			1,306,200	3,681	140	300									
10000	900X900	115	183	4	80	510.4	1093.8	4,144,000	9,115	652.2	1397.6	4,998,000	11,647	56	120	1100	1000	1100	1000	1000	1100	1100	1000	Ø70 ×230 (M36)
		140	208	5	100			3,315,200	7,292			3,998,400	9,318	70	150									
		165	233	6	120			2,762,700	6,077			3,332,000	7,765	84	180									
		190	258	7	140			2,368,000	5,209			2,856,000	6,655	98	210									
		215	283	8	160			2,072,000	4,558			2,499,000	5,823	112	240									
		240	308	9	180			1,841,800	4,051			2,221,400	5,176	126	270									
		265	333	10	200			1,657,600	3,646			1,999,200	4,659	140	300									