



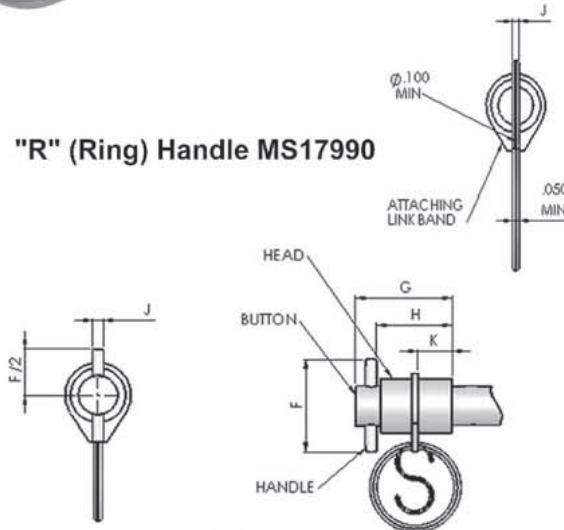
MADE TO ORDER

## Ball Lock Pins MS Series

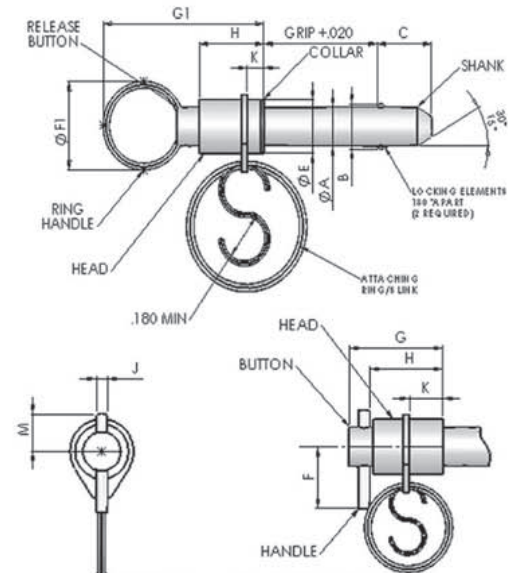
Stainless steel double-acting ball lock pin. Positive locking until released by pushing or pulling the plunger to allow the locking balls to retract.

See page 42 for part number callout.

"R" (Ring) Handle MS17990



"T" Handle MS17988



"L" Handle MS17989

Nom Dia	ØA		B ±0.05	C	ØE		F		ØF1	
	Max	Min			Max	Min	Max	Min	Max	Min
3/16	0.1885	0.1870	0.220	0.410	0.450	0.360	1.125	1.000	1.750	1.200
1/4	0.2485	0.2470	0.289	0.410	0.450	0.360	1.125	1.000	1.750	1.200
5/16	0.3110	0.3095	0.375	0.440	0.505	0.390	1.125	1.000	1.750	1.200
3/8	0.3735	0.3720	0.440	0.510	0.630	0.510	1.125	1.000	2.000	1.375
7/16	0.4360	0.4345	0.509	0.510	0.630	0.510	1.125	1.000	2.000	1.375
1/2	0.4985	0.4970	0.594	0.590	0.755	0.640	1.125	1.000	2.250	1.530
9/16	0.5610	0.5595	0.666	0.660	0.755	0.640	1.125	1.000	2.250	1.530
5/8	0.6235	0.6220	0.750	0.750	0.870	0.805	1.500	1.312	2.500	1.685
3/4	0.7485	0.7470	0.887	0.790	0.960	0.890	1.500	1.312	2.500	1.685
7/8	0.8735	0.8720	1.045	0.950	1.150	1.070	1.500	1.312	2.870	2.125
1	0.9985	0.9970	1.219	1.100	1.280	1.200	1.500	1.312	2.870	2.125

Nom Dia	G Max	G1 Max	H Min	J Min	K		M Max	Double Shear Min	Tensile Strength Min	Recommended Hole Dia	
					Max	Min				Max	Min
3/16	1.030	1.945	0.780	0.080	0.480	0.415	0.275	5.150	200	0.194	0.190
1/4	1.030	1.945	0.780	0.080	0.480	0.415	0.275	9.200	230	0.254	0.250
5/16	1.030	1.945	0.780	0.080	0.480	0.415	0.300	14.400	510	0.3165	0.3125
3/8	1.090	2.025	0.830	0.080	0.540	0.445	0.353	20.600	575	0.379	0.375
7/16	1.090	2.025	0.830	0.080	0.540	0.445	0.363	28.000	710	0.4425	0.4375
1/2	1.270	2.200	0.880	0.080	0.540	0.445	0.425	36.000	1,160	0.505	0.500
9/16	1.270	2.200	0.880	0.080	0.540	0.445	0.425	46.000	1,420	0.5675	0.5625
5/8	1.465	2.690	1.000	0.120	0.575	0.510	0.485	57.500	2,070	0.630	0.625
3/4	1.465	2.690	1.000	0.120	0.595	0.530	0.530	82.500	2,950	0.757	0.750
7/8	1.640	2.860	1.180	0.120	0.730	0.685	0.625	112.500	3,900	0.882	0.875
1	1.830	3.010	1.320	0.120	0.865	0.800	0.690	147.000	5,480	1.010	1.000

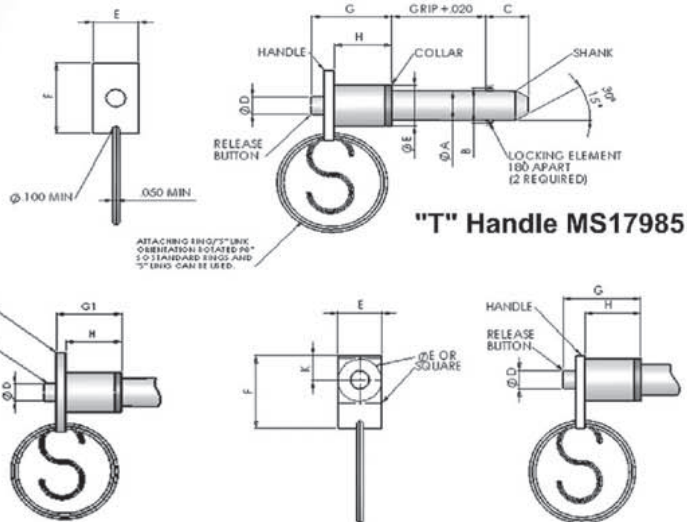


MADE TO ORDER

## Ball Lock Pins MS Series Cont'd

Stainless steel single-acting ball lock pin.  
Positive locking until released by pushing the plunger to allow the locking balls to retract.

See page 42 for part number callout.



Button Handle MS17984

"L" Handle MS17986

MS 17987 "R" (Ring) Handle Pin - please call sales office for details

Nom Dia	ØA		B +0.005 -0.005	C +0.00 0-0.040	ØD		ØE		F	
	Max	Min			Max	Min	Max	Min	Max	Min
3/16	0.1885	0.1870	0.220	0.260	0.310	0.250	0.500	0.310	1.800	1.750
1/4	0.2485	0.2470	0.289	0.290	0.310	0.250	0.500	0.310	1.800	1.750
5/16	0.3110	0.3095	0.375	0.330	0.310	0.250	0.500	0.410	1.800	1.750
3/8	0.3735	0.3720	0.440	0.365	0.390	0.300	0.625	0.450	2.030	1.935
7/16	0.4360	0.4345	0.509	0.380	0.390	0.300	0.625	0.550	2.030	1.935
1/2	0.4985	0.4970	0.594	0.460	0.565	0.435	0.800	0.600	2.360	2.220
9/16	0.5610	0.5595	0.666	0.510	0.565	0.435	0.800	0.680	2.360	2.220
5/8	0.6235	0.6220	0.750	0.580	0.580	0.450	0.975	0.750	3.070	2.250
3/4	0.7485	0.7470	0.887	0.670	0.700	0.570	1.000	0.865	3.070	2.500
7/8	0.8735	0.8720	1.045	0.760	0.840	0.700	1.320	0.980	3.700	2.750
1	0.9985	0.9970	1.219	0.890	0.950	0.750	1.320	1.175	3.700	2.750

Nom Dia	ØF1		G Max	G1 Max	H Min	K Min	Double Shear Min	Tensile Strength Min	Recommended Hole Diameter	
	Max	Min							Max	Min
3/16	0.800	0.720	1.270	0.830	0.480	0.340	5.150	200	0.194	0.190
1/4	0.800	0.720	1.270	0.890	0.480	0.340	9.200	230	0.254	0.250
5/16	1.135	0.810	1.270	0.930	0.480	0.340	14.400	510	0.3165	0.3125
3/8	1.135	0.875	1.450	1.040	0.620	0.390	20.600	575	0.379	0.375
7/16	1.400	0.940	1.470	1.160	0.620	0.390	28.000	710	0.4425	0.4375
1/2	1.400	1.300	1.600	1.190	0.720	0.500	36.000	1.160	0.505	0.500
9/16	1.650	1.340	1.600	1.410	0.950	0.500	46.000	1.420	0.5675	0.5625
5/8	1.700	1.530	1.700	1.500	0.950	0.600	57.500	2.070	0.630	0.625
3/4	1.900	1.790	1.720	1.680	1.140	0.600	82.500	2.950	0.757	0.750
7/8	2.250	2.120	2.170	1.985	1.270	0.800	112.500	3.900	0.882	0.875
1	2.250	2.120	2.170	2.140	1.490	0.800	147.000	5.480	1.010	1.000

## Ball Lock Pins MS Series Cont'd

### Grip Length - Dash Numbers

Grip Length	Nominal Diameter						Grip Length	Nominal Diameter					
	3/16	1/4	5/16	3/8	7/16	1/2		3/16	1/4	5/16	3/8	7/16	1/2
0.3	C303	C403	C503	C603			5.6	C356	C456	C556	C656	C756	C856
0.4	C304	C404	C504	C604			5.7	C357	C457	C557	C657	C757	C857
0.5	C305	C405	C505	C605	C705	C805	5.8	C358	C458	C558	C658	C758	C858
0.6	C306	C406	C506	C606	C706	C806	5.9	C359	C459	C559	C659	C759	C859
0.7	C307	C407	C507	C607	C707	C807	6.0	C360	C460	C560	C660	C760	C860
0.8	C308	C408	C508	C608	C708	C808	6.1	C361	C461	C561	C661	C761	C861
0.9	C309	C409	C509	C609	C709	C809	6.2	C362	C462	C562	C662	C762	C862
1.0	C310	C410	C510	C610	C710	C810	6.3	C363	C463	C563	C663	C763	C863
1.1	C311	C411	C511	C611	C711	C811	6.4	C364	C464	C564	C664	C764	C864
1.2	C312	C412	C512	C612	C712	C812	6.5	C365	C465	C565	C665	C765	C865
1.3	C313	C413	C513	C613	C713	C813	6.6	C366	C466	C566	C666	C766	C866
1.4	C314	C414	C514	C614	C714	C814	6.7	C367	C467	C567	C667	C767	C867
1.5	C315	C415	C515	C615	C715	C815	6.8	C368	C468	C568	C668	C768	C868
1.6	C316	C416	C516	C616	C716	C816	6.9	C369	C469	C569	C669	C769	C869
1.7	C317	C417	C517	C617	C717	C817	7.0	C370	C470	C570	C670	C770	C870
1.8	C318	C418	C518	C618	C718	C818	7.1	C371	C471	C571	C671	C771	C871
1.9	C319	C419	C519	C619	C719	C819	7.2	C372	C472	C572	C672	C772	C872
2.0	C320	C420	C520	C620	C720	C820	7.3	C373	C473	C573	C673	C773	C873
2.1	C321	C421	C521	C621	C721	C821	7.4	C374	C474	C574	C674	C774	C874
2.2	C322	C422	C522	C622	C722	C822	7.5	C375	C475	C575	C675	C775	C875
2.3	C323	C423	C523	C623	C723	C823	7.6	C376	C476	C576	C676	C776	C876
2.4	C324	C424	C524	C624	C724	C824	7.7	C377	C477	C577	C677	C777	C877
2.5	C325	C425	C525	C625	C725	C825	7.8	C378	C478	C578	C678	C778	C878
2.6	C326	C426	C526	C626	C726	C826	7.9	C379	C479	C579	C679	C779	C879
2.7	C327	C427	C527	C627	C727	C827	8.0	C380	C480	C580	C680	C780	C880
2.8	C328	C428	C528	C628	C728	C828	8.1	C381	C481	C581	C681	C781	C881
2.9	C329	C429	C529	C629	C729	C829	8.2	C382	C482	C582	C682	C782	C882
3.0	C330	C430	C530	C630	C730	C830	8.3	C383	C483	C583	C683	C783	C883
3.1	C331	C431	C531	C631	C731	C831	8.4	C384	C484	C584	C684	C784	C884
3.2	C332	C432	C532	C632	C732	C832	8.5	C385	C485	C585	C685	C785	C885
3.3	C333	C433	C533	C633	C733	C833	8.6	C386	C486	C586	C686	C786	C886
3.4	C334	C434	C534	C634	C734	C834	8.7	C387	C487	C587	C687	C787	C887
3.5	C335	C435	C535	C635	C735	C835	8.8	C388	C488	C588	C688	C788	C888
3.6	C336	C436	C536	C636	C736	C836	8.9	C389	C489	C589	C689	C789	C889
3.7	C337	C437	C537	C637	C737	C837	9.0	C390	C490	C590	C690	C790	C890
3.8	C338	C438	C538	C638	C738	C838	9.1	C391	C491	C591	C691	C791	C891
3.9	C339	C439	C539	C639	C739	C839	9.2	C392	C492	C592	C692	C792	C892
4.0	C340	C440	C540	C640	C740	C840	9.3	C393	C493	C593	C693	C793	C893
4.1	C341	C441	C541	C641	C741	C841	9.4	C394	C494	C594	C694	C794	C894
4.2	C342	C442	C542	C642	C742	C842	9.5	C395	C495	C595	C695	C795	C895
4.3	C343	C443	C543	C643	C743	C843	9.6	C396	C496	C596	C696	C796	C896
4.4	C344	C444	C544	C644	C744	C844	9.7	C397	C497	C597	C697	C797	C897
4.5	C345	C445	C545	C645	C745	C845	9.8	C398	C498	C598	C698	C798	C898
4.6	C346	C446	C546	C646	C746	C846	9.9	C399	C499	C599	C699	C799	C899
4.7	C347	C447	C547	C647	C747	C847							
4.8	C348	C448	C548	C648	C748	C848							
4.9	C349	C449	C549	C649	C749	C849							
5.0	C350	C450	C550	C650	C750	C850							
5.1	C351	C451	C551	C651	C751	C851							
5.2	C352	C452	C552	C652	C752	C852							
5.3	C353	C453	C553	C653	C753	C853							
5.4	C354	C454	C554	C654	C754	C854							
5.5	C355	C455	C555	C655	C755	C855							

## Ball Lock Pins MS Series Cont'd

### Grip Length - Dash Numbers

Grip Length	Nominal Diameter					Grip Length	Nominal Diameter				
	9/16	5/8	3/4	7/8	1		9/16	5/8	3/4	7/8	1
0.7	C907					5.6	C956	C1056	C1256	C1456	C1656
0.8	C908					5.7	C957	C1057	C1257	C1457	C1657
0.9	C909	C1009	C1209			5.8	C958	C1058	C1258	C1458	C1658
1.0	C910	C1010	C1210	C1410	C1610	5.9	C959	C1059	C1259	C1459	C1659
1.1	C911	C1011	C1211	C1411	C1611	6.0	C960	C1060	C1260	C1460	C1660
1.2	C912	C1012	C1212	C1412	C1612	6.1	C961	C1061	C1261	C1461	C1661
1.3	C913	C1013	C1213	C1413	C1613	6.2	C962	C1062	C1262	C1462	C1662
1.4	C914	C1014	C1214	C1414	C1614	6.3	C963	C1063	C1263	C1463	C1663
1.5	C915	C1015	C1215	C1415	C1615	6.4	C964	C1064	C1264	C1464	C1664
1.6	C916	C1016	C1216	C1416	C1616	6.5	C965	C1065	C1265	C1465	C1665
1.7	C917	C1017	C1217	C1417	C1617	6.6	C966	C1066	C1266	C1466	C1666
1.8	C918	C1018	C1218	C1418	C1618	6.7	C967	C1067	C1267	C1467	C1667
1.9	C919	C1019	C1219	C1419	C1619	6.8	C968	C1068	C1268	C1468	C1668
2.0	C920	C1020	C1220	C1420	C1620	6.9	C969	C1069	C1269	C1469	C1669
2.1	C921	C1021	C1221	C1421	C1621	7.0	C970	C1070	C1270	C1470	C1670
2.2	C922	C1022	C1222	C1422	C1622	7.1	C971	C1071	C1271	C1471	C1671
2.3	C923	C1023	C1223	C1423	C1623	7.2	C972	C1072	C1272	C1472	C1672
2.4	C924	C1024	C1224	C1424	C1624	7.3	C973	C1073	C1273	C1473	C1673
2.5	C925	C1025	C1225	C1425	C1625	7.4	C974	C1074	C1274	C1474	C1674
2.6	C926	C1026	C1226	C1426	C1626	7.5	C975	C1075	C1275	C1475	C1675
2.7	C927	C1027	C1227	C1427	C1627	7.6	C976	C1076	C1276	C1476	C1676
2.8	C928	C1028	C1228	C1428	C1628	7.7	C977	C1077	C1277	C1477	C1677
2.9	C929	C1029	C1229	C1429	C1629	7.8	C978	C1078	C1278	C1478	C1678
3.0	C930	C1030	C1230	C1430	C1630	7.9	C979	C1079	C1279	C1479	C1679
3.1	C931	C1031	C1231	C1431	C1631	8.0	C980	C1080	C1280	C1480	C1680
3.2	C932	C1032	C1232	C1432	C1632	8.1	C981	C1081	C1281	C1481	C1681
3.3	C933	C1033	C1233	C1433	C1633	8.2	C982	C1082	C1282	C1482	C1682
3.4	C934	C1034	C1234	C1434	C1634	8.3	C983	C1083	C1283	C1483	C1683
3.5	C935	C1035	C1235	C1435	C1635	8.4	C984	C1084	C1284	C1484	C1684
3.6	C936	C1036	C1236	C1436	C1636	8.5	C985	C1085	C1285	C1485	C1685
3.7	C937	C1037	C1237	C1437	C1637	8.6	C986	C1086	C1286	C1486	C1686
3.8	C938	C1038	C1238	C1438	C1638	8.7	C987	C1087	C1287	C1487	C1687
3.9	C939	C1039	C1239	C1439	C1639	8.8	C988	C1088	C1288	C1488	C1688
4.0	C940	C1040	C1240	C1440	C1640	8.9	C989	C1089	C1289	C1489	C1689
4.1	C941	C1041	C1241	C1441	C1641	9.0	C990	C1090	C1290	C1490	C1690
4.2	C942	C1042	C1242	C1442	C1642	9.1	C991	C1091	C1291	C1491	C1691
4.3	C943	C1043	C1243	C1443	C1643	9.2	C992	C1092	C1292	C1492	C1692
4.4	C944	C1044	C1244	C1444	C1644	9.3	C993	C1093	C1293	C1493	C1693
4.5	C945	C1045	C1245	C1445	C1645	9.4	C994	C1094	C1294	C1494	C1694
4.6	C946	C1046	C1246	C1446	C1646	9.5	C995	C1095	C1295	C1495	C1695
4.7	C947	C1047	C1247	C1447	C1647	9.6	C996	C1096	C1296	C1496	C1696
4.8	C948	C1048	C1248	C1448	C1648	9.7	C997	C1097	C1297	C1497	C1697
4.9	C949	C1049	C1249	C1449	C1649	9.8	C998	C1098	C1298	C1498	C1698
5.0	C950	C1050	C1250	C1450	C1650	9.9	C999	C1099	C1299	C1499	C1699
5.1	C951	C1051	C1251	C1451	C1651						
5.2	C952	C1052	C1252	C1452	C1652						
5.3	C953	C1053	C1253	C1453	C1653						
5.4	C954	C1054	C1254	C1454	C1654						
5.5	C955	C1055	C1255	C1455	C1655						

## Ball Lock Pins MS Series Cont'd

### 1. MATERIAL:

#### ATTACHING LINK OR RING:

CRES 17-7PH (UNS S17700) PER AMS 5678 OR  
 CRES 302 (UNS S30200) PER ASTM A313.

#### ATTACHING LINK BAND:

CRES 302 (UNS S30200) OR  
 CRES 303 (UNS S30300) PER 00-P-766

#### HANDLE AND HEAD:

CRES 302 (UNS S30200) PER 00-S 763 OR  
 CRES 303 (UNS S30300) PER ASTM A484 OR ASTM A582

#### BUTTONS:

ALUMINUM ALLOY 2017 (UNS A92017) PER 00-A 225/5  
 ALUMINUM ALLOY 2024 (UNS A92024) PER 00-A 225/6  
 CRES 302 (UNS S30200) PER 00-S 763 OR  
 CRES 303 (UNS S30300) PER ASTM A484 OR ASTM A582

#### LOCKING ELEMENTS:

CRES CL440C (UNS S44004) PER AMS 5630, AMS 5880, OR  
 00-S-763

#### SHANK AND SPINDLE:

CRES 17-4PH (UNS S17400) PER ASM 5678 OR  
 PH15-7MO (UNS S15700) PER AMS 5520 OR AMS 5657

#### SPRING:

CRES 17-7PH (UNS S17700) PER AMS 5678 OR  
 CRES 302 (UNS S30200) CLASS 1 PER ASTM A313.

### 2. HEAT TREATMENT:

SHANK AND SPINDLE PER MIL-H-6875, CONDITION H-900 FOR CRES 17-4PH, AND  
 CONDITION CH-900 FOR PH15-7MO, ROCKWELL C40 MINIMUM,  
 LOCKING ELEMENTS AND SPRING PER MIL-H-6875.

### 3. SURFACE TREATMENT:

CRES PARTS – PASSIVATE PER 00-P-35.  
 ALLUMINUM ALLOY PARTS – ANNODIZE PER MIL-A-8625. TYPE I OR II, CLASS 2 OR  
 CHEMICAL FILM PER MIL – C 5541, CLASS 1A. HANDLES MUST BE BLACK.

### 4. EXAMPLE OF PART IDENTIFYING NUMBER (PIN):

