

Penberthy™ Minimum Centers Guide



Gauge and Gaugecock Assembly Specification Guide
Dimensional information for end and side connected gauge
to gaugecock configurations.



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End Connected

Series	Connection	Material	Gaugecock Series	Page
Reflex Series: RL, RM, RMR, RH, RHR and RLC	1/2 NPT	Carbon steel and Stainless steel	130, 230, 330, 430 120, 220, 320, 420	Page 19
Transparent Series: TL, TM, TMR, TH, THR and TLC			530, 730 520, 720	Page 20
Reflex Series: RL, RM, RH and RLC	3/4 NPT	Carbon steel and Stainless steel	130, 230, 330, 430 120, 220, 320, 420	Page 21
Transparent Series: TL, TM, TH and TLC			530, 730 520, 720	Page 22
Reflex Series: RM and RMR	1/2 and 3/4 NPT	Carbon steel and Stainless steel	780 1/2 NPT x 3/4 O.D. Adapter 3/4 NPT x 3/4 O.D. Adapter	Page 23
Transparent Series: TM and TMR using 3 in. Long Stuffing Adapters			N2 and K2 1/2 NPT x 5/8 O.D. Adapter 1/2 NPT x 3/4 O.D. Adapter 3/4 NPT x 3/4 O.D. Adapter	
Reflex Series: RMR and RHR	3/4 NPT	Carbon steel and Stainless steel	130, 230, 330, 430 120, 220, 320, 420	Page 24
Transparent Series: TMR and THR			530, 730 520, 720	Page 25
Transparent Series: TU	1/2 and 3/4 NPT	Carbon steel and Stainless steel	630 1/2 and 3/4 NPT (F) Rigid	Page 26

Side Connected

Series	Connection	Material	Gauge and Gaugecock Series	Page
Reflex Series: RL and RLC Transparent Series: TL and TLC	1/2 NPTM	Carbon steel and Stainless steel	RL and TL, 120 and 220 320 and 420 RLC and TLC, 120 and 220 320 and 420	Page 27
Reflex Series: RM, RMR, RH and RHR Transparent Series: TM, TMR, TH and THR	1/2 NPTM	Carbon steel and Stainless steel	RM and RH / TM and TH 120 and 220 320 and 420 RMR and RHR / TMR and THR 120 and 220 320 and 420	Page 29
Reflex Series: RL and RLC Transparent Series: TL and TLC	3/4 NPTM	Carbon steel and Stainless steel	RL and TL, 120 and 220 320 and 420 RLC and TLC, 120 and 220 320 and 420	Page 31
Reflex Series: RM, RMR, RH and RHR Transparent Series: TM, TMR, TH and THR	3/4 NPTM	Carbon steel and Stainless steel	RM and RH / TM and TH 120 and 220 320 and 420 RMR and RHR / TMR and THR 120 and 220 320 and 420	Page 33
Reflex Series: RM, RMR, RH and RHR Transparent Series: TM, TMR, TH and THR	1/2 NPTM	Carbon steel and Stainless steel	RM and RH / TM and TH 520 and 720 520 and 720	Page 35
Reflex Series: RLC Transparent Series: TLC	1/2 and 3/4 NPTM	Carbon steel and Stainless steel	RLC and TLC 520 and 720	Page 37

Side Connected

Series	Connection	Material	Gauge and Gaugecock Series	Page
Reflex Series: RM, RMR, RH and RHR Transparent Series: TM, TMR, TH and THR	3/4 NPTM	Carbon steel and Stainless steel	RM and RH / TM and TH 520 and 720 520 and 720 RMR and RHR / TMR and THR 520 and 720 520 and 720	Page 38
Transparent Series: TU	1/2 and 3/4 NPT	Carbon steel and Stainless steel	630 Gaugecock Series: 1/2 or 3/4 NPT (F) Rigid	Page 40

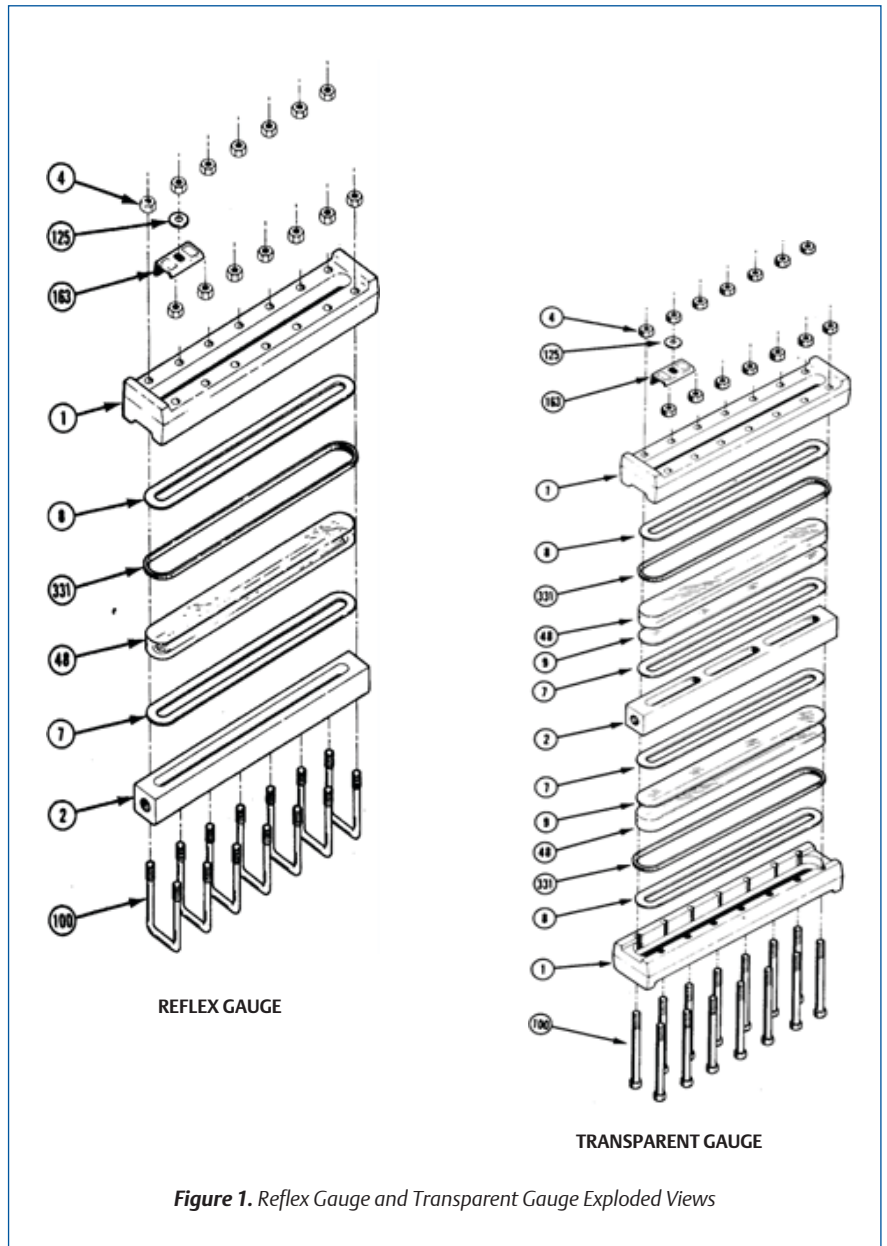
Parts List

Reflex Gauge

- 1 Cover
- 2 Chamber
- 4 Nut
- 48 Glass
- 7 Gasket
- 8 Cushion
- 100 Bolt/U-Bolt
- 125 Washer
- 163 Nameplate
- 331 Band

Transparent Gauge

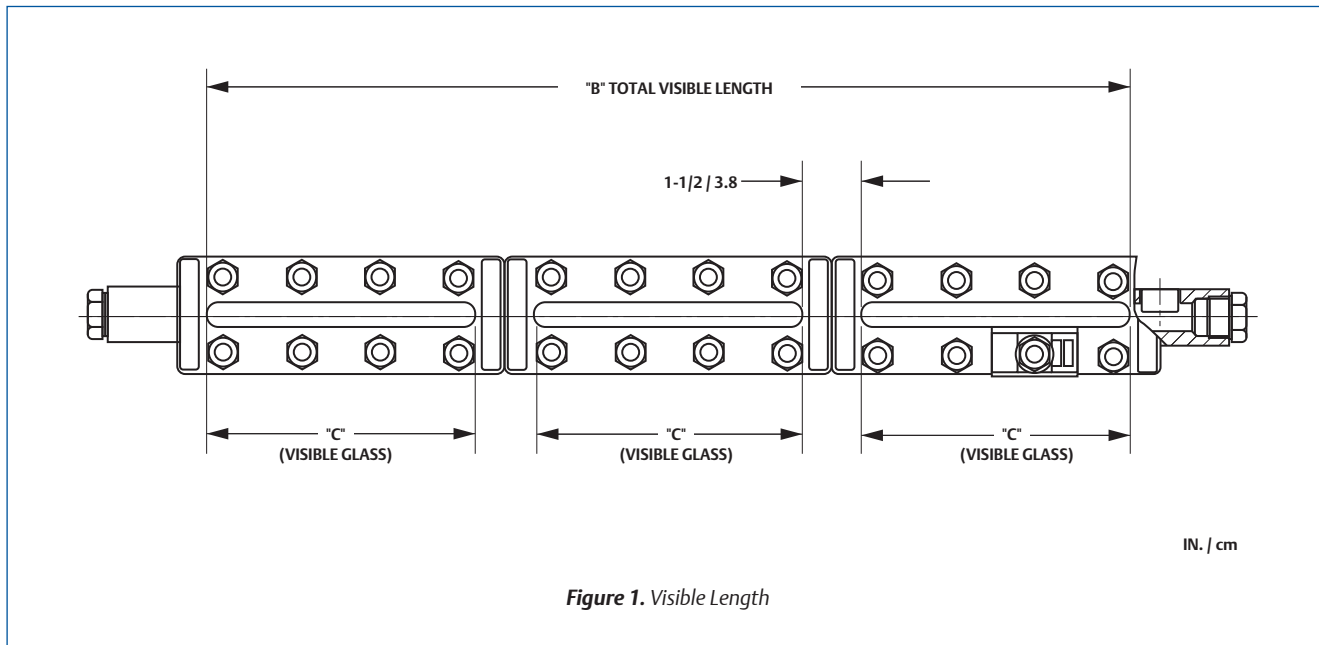
- 1 Cover
- 2 Chamber
- 4 Nut
- 48 Glass
- 7 Gasket
- 8 Cushion
- 9 Shield
- 100 Bolt/U-Bolt
- 125 Washer
- 163 Nameplate
- 331 Band



Pressure Temperature Ratings

Total Visible Length of Gauge

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Total Visible Length of Gauges

Total visible length and total visible glass are sometimes confused.

The term Total Visible Length for liquid level gauges is used to describe the maximum distance between two points a level can be observed in a gauge. Total visible length for the gauge shown on Figure 1 would be 3 times C + 3.000 (1.5 in x 2 in.).

The Total Visible Glass is dimension C times the number of sections in the gauge. Total visible glass for the gauge shown on Figure 1 would be 3 times C.

Table 1. Pressure Temperature Ratings

GAUGE	MODEL	RATINGS
Low Pressure*	RL	up to 16,550 kPa @ 38°C to 12,270 kPa @ 316°C
	TL	up to 13,790 kPa @ 38°C to 10,200 kPa @ 316°C
Medium Pressure*	RM	up to 20,680 kPa @ 38°C to 15,310 kPa @ 316°C
	TM	up to 17,240 kPa @ 38°C to 12,760 kPa @ 316°C
High Pressure	RH	up to 27,580 kPa @ 38°C to 21,240 kPa @ 316°C
	TH	up to 20,680 kPa @ 38°C to 15,930 kPa @ 316°C
Ultra High Pressure	Not Available	Not Available
	TU	up to 41,370 kPa @ 38°C to 41,370 kPa @ 260°C
Large Chamber	RLC	up to 16,550 kPa @ 38°C to 12,690 kPa @ 316°C
	TLC	up to 10,890 kPa @ 38°C to 8410 kPa @ 316°C
Weld Pad*	RMW	up to 13,790 kPa @ 38°C to 10,200 kPa @ 316°C
	TMW	up to 13,790 kPa @ 38°C to 10,200 kPa @ 316°C

*Ratings given are for glass size 1. Pressure ratings will decrease as glass size increases up to size 9.
 1. Ratings given are for standard carbon steel construction.
 2. Ratings will vary based on alternate materials of construction.

Table 2. Gaugecock Model Selection

PATTERN	BONNET	GAUGE CONNECTION	MODEL
Offset	Integral	Union	320
		Rigid	330
	Union	Union	420
		Rigid	430
	OS and Y	Union	720
		Rigid	730
Straight	Integral	Union	120
		Rigid	130
	Union	Union	220
		Rigid	230
	OS and Y	Union	520
		Rigid	530

Table 3. Connection

STANDARD CONNECTION	VESSEL	GAUGE	VENT/DRAIN
320 420 120 220	3/4" NPTM Union	1/2" NPTF Union	1/2" NPTF
720 520	3/4" NPTM Solid Shank	1/2" NPTF Union	1/2" NPTF
330 430 130 230	3/4" NPTM Union	1/2" NPTF Rigid	1/2" NPTF
730 530	3/4" NPTM Solid Shank	1/2" NPTF Rigid	1/2" NPTF
780	3/4" NPTM Solid Shank	3/4" Stuffing Box	1/2" NPTF

Pressure Temperature Ratings

Flat Glass Reflex Gauge

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Table 1. Pressure and Temperature Ratings Using Standard Gasket Material

SERIES	GLASS SIZE	MAXIMUM WORKING PRESSURE, psig / kPA AT TEMPERATURES UP TO:						
		100°F / 38°C	200°F / 93°C	250°F / 121°C	300°F / 149°C	400°F / 204°C	500°F / 260°C	600°F / 316°C
RL All materials	1	2400 / 16,550	2320 / 16,000	2280 / 15,720	2240 / 15,440	2150 / 14,820	2000 / 13,790	1780 / 12,270
	2	2335 / 16,000	2250 / 15,510	2210 / 15,240	2170 / 14,960	2080 / 14,340	1940 / 13,380	1720 / 11,860
	3	2250 / 15,510	2180 / 15,030	2140 / 14,750	2100 / 14,480	2020 / 13,930	1880 / 12,960	1670 / 11,510
	4	2175 / 15,000	2100 / 14,480	2060 / 14,200	2020 / 13,930	1940 / 13,380	1820 / 12,550	1600 / 11,030
	5	2100 / 14,480	2030 / 14,000	1995 / 13,750	1960 / 13,510	1880 / 12,960	1750 / 12,070	1550 / 10,690
	6	2025 / 13,960	1950 / 13,440	1920 / 13,240	1890 / 13,030	1810 / 12,480	1680 / 11,580	1500 / 10,340
	7	1950 / 13,440	1890 / 13,030	1855 / 12,790	1820 / 12,550	1750 / 12,070	1630 / 11,240	1440 / 9930
	8	1875 / 12,930	1820 / 12,550	1785 / 12,310	1750 / 12,070	1680 / 11,580	1560 / 10,760	1390 / 9580
	9	1800 / 12,410	1740 / 12,000	1710 / 11,790	1680 / 11,580	1620 / 11,170	1510 / 10,410	1340 / 9240
RM and RMR All materials	1	3000 / 20,680	2900 / 19,990	2850 / 19,650	2800 / 19,310	2690 / 18,550	2500 / 17,240	2220 / 15,310
	2	2910 / 20,060	2820 / 19,440	2770 / 19,100	2720 / 18,750	2600 / 17,930	2420 / 16,690	2150 / 14,820
	3	2820 / 19,440	2720 / 18,750	2675 / 18,440	2625 / 18,100	2530 / 17,440	2350 / 16,200	2080 / 14,340
	4	2725 / 18,790	2640 / 18,200	2600 / 17,930	2560 / 17,650	2460 / 16,960	2270 / 15,650	2040 / 14,070
	5	2630 / 18,130	2540 / 17,510	2500 / 17,240	2460 / 16,960	2360 / 16,270	2190 / 15,100	1950 / 13,440
	6	2535 / 17,480	2450 / 16,890	2405 / 16,580	2360 / 16,270	2270 / 15,650	2110 / 14,550	1875 / 12,930
	7	2440 / 16,820	2360 / 16,270	2320 / 16,000	2280 / 15,720	2190 / 15,100	2030 / 14,000	1805 / 12,440
	8	2345 / 16,170	2270 / 15,650	2230 / 15,380	2190 / 15,100	2110 / 14,550	1960 / 13,510	1740 / 12,000
	9	2250 / 15,510	2180 / 15,030	2140 / 14,750	2100 / 14,480	2020 / 13,930	1870 / 12,890	1660 / 11,450
RH and RHR All materials	4 to 9	4000 / 27,580	3890 / 26,820	3840 / 26,480	3790 / 26,130	3700 / 25,510	3470 / 23,920	3080 / 21,240
RLC All materials	4 to 9	2400 / 16,550	2330 / 16,060	2305 / 15,890	2280 / 15,720	2220 / 15,310	2080 / 14,340	1840 / 12,690
RMW All materials	1	2000 / 13,790	1925 / 13,270	1890 / 13,030	1850 / 12,760	1790 / 12,340	1665 / 11,480	1480 / 10,200
	2	1850 / 12,760	1785 / 12,310	1755 / 12,100	1725 / 11,890	1670 / 11,510	1540 / 10,620	1375 / 9480
	3	1700 / 11,720	1640 / 11,310	1610 / 11,100	1575 / 10,860	1525 / 10,510	1420 / 9790	1260 / 8690
	4	1550 / 10,690	1490 / 10,270	1465 / 10,100	1435 / 9890	1390 / 9580	1290 / 8890	1145 / 7890
	5	1400 / 9650	1350 / 9310	1325 / 9140	1300 / 8960	1255 / 8650	1165 / 8030	1035 / 7140
	6	1250 / 8620	1200 / 8270	1180 / 8140	1160 / 8000	1120 / 7720	1045 / 7200	925 / 6380
	7	1100 / 7580	1060 / 7310	1040 / 7170	1020 / 7030	980 / 6760	910 / 6270	810 / 5580
	8	950 / 6550	920 / 6340	900 / 6210	880 / 6070	850 / 5860	795 / 5480	700 / 4830
	9	800 / 5520	770 / 5310	755 / 5210	740 / 5100	715 / 4930	665 / 4580	590 / 4070

NOTE:

1. Optional gasket material may result in a derated maximum pressure for the gauge.



Table 2. Pressure and Temperature Ratings Using Standard Gasket Material and Steel MR0175/MR0103 NACE Bolting

SERIES	GLASS SIZE	MAXIMUM WORKING PRESSURE, psig / kPA AT TEMPERATURES UP TO:						
		100°F / 38°C	200°F / 93°C	250°F / 121°C	300°F / 149°C	400°F / 204°C	500°F / 260°C	600°F / 316°C
RL ⁽²⁾ All materials	1	2160 / 14890	2090 / 14410	2050 / 14130	2015 / 13890	1935 / 13340	1800 / 12410	1600 / 11030
	2	2100 / 14480	2025 / 13960	1990 / 13720	1955 / 13480	1870 / 12890	1745 / 12030	1550 / 10690
	3	2025 / 13960	1960 / 13510	1925 / 13270	1890 / 13030	1820 / 12550	1690 / 11650	1505 / 10380
	4	1960 / 13510	1890 / 13030	1855 / 12790	1820 / 12550	1745 / 12030	1640 / 11310	1440 / 9930
	5	1890 / 13030	1825 / 12580	1795 / 12380	1765 / 12170	1690 / 11650	1575 / 10860	1395 / 9620
	6	1825 / 12580	1755 / 12100	1730 / 11930	1700 / 11720	1630 / 11240	1510 / 10410	1350 / 9310
	7	1755 / 12100	1700 / 11720	1670 / 11510	1640 / 11310	1575 / 10860	1465 / 10100	1295 / 8930
	8	1690 / 11650	1640 / 11310	1605 / 11070	1575 / 10860	1510 / 10410	1405 / 9690	1250 / 8620
	9	1620 / 11170	1565 / 10790	1540 / 10620	1510 / 10410	1460 / 10070	1360 / 9380	1205 / 8310
RM and RMR All materials	1	2700 / 18620	2610 / 18000	2565 / 17680	2520 / 17370	2420 / 16690	2250 / 15510	2000 / 13790
	2	2620 / 18060	2540 / 17510	2495 / 17200	2450 / 16890	2340 / 16130	2180 / 15030	1935 / 13340
	3	2540 / 17510	2450 / 16890	2410 / 16620	2365 / 16310	2275 / 15690	2115 / 14580	1870 / 12890
	4	2455 / 16930	2375 / 16370	2340 / 16130	2305 / 15890	2215 / 15270	2045 / 14100	1835 / 12650
	5	2365 / 16310	2285 / 15750	2250 / 15510	2215 / 15270	2125 / 14650	1970 / 13580	1755 / 12100
	6	2280 / 15720	2205 / 15200	2165 / 14930	2125 / 14650	2045 / 14100	1900 / 13100	1690 / 11650
	7	2195 / 15130	2125 / 14650	2090 / 14410	2050 / 14130	1970 / 13580	1825 / 12580	1625 / 11200
	8	2110 / 14550	2045 / 14100	2005 / 13820	1970 / 13580	1900 / 13100	1765 / 12170	1565 / 10790
	9	2025 / 13960	1960 / 13510	1925 / 13270	1890 / 13030	1820 / 12550	1685 / 11620	1495 / 10310
RH and RHR All materials	4 to 9	3600 / 24820	3500 / 24130	3455 / 23820	3410 / 23510	3330 / 22960	3125 / 21550	2770 / 19100
RLC All materials	4 to 9	2160 / 14890	2095 / 14440	2075 / 14310	2050 / 14130	2000 / 13790	1870 / 12890	1655 / 11410
RMW All materials	1	1800 / 12410	1735 / 11960	1700 / 11720	1665 / 11480	1610 / 11100	1500 / 10340	1330 / 9170
	2	1665 / 11480	1605 / 11070	1580 / 10890	1555 / 10720	1505 / 10380	1385 / 9550	1240 / 8550
	3	1530 / 10550	1475 / 10170	1450 / 10000	1420 / 9790	1375 / 9480	1280 / 8830	1135 / 7830
	4	1395 / 9620	1340 / 9240	1320 / 9100	1290 / 8890	1250 / 8620	1160 / 8000	1030 / 7100
	5	1260 / 8690	1215 / 8380	1195 / 8240	1170 / 8070	1130 / 7790	1050 / 7240	930 / 6410
	6	1125 / 7760	1080 / 7450	1060 / 7310	1045 / 7200	1010 / 6960	940 / 6480	835 / 5760
	7	990 / 6830	955 / 6580	935 / 6450	920 / 6340	880 / 6070	820 / 5650	730 / 5030
	8	855 / 5890	830 / 5720	810 / 5580	790 / 5450	765 / 5270	715 / 4930	630 / 4340
	9	720 / 4960	695 / 4790	680 / 4690	665 / 4580	645 / 4450	600 / 4140	530 / 3650

NOTE:

- Optional gasket material may result in a derated maximum pressure for the gauge.
- Not to be used for environmental NACE applications.

Pressure Temperature Ratings

Flat Glass Reflex Gauge

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Table 3. Pressure and Temperature Ratings Using Standard Gasket Material and Stainless steel MR0175/MR0103 NACE Bolting

SERIES	GLASS SIZE	MAXIMUM WORKING PRESSURE, psig / kPA AT TEMPERATURES UP TO 100°F / 38°C
RL ⁽²⁾ All materials	1	1930 / 13,310
	2	1560 / 10,760
	3	1730 / 11,930
	4	1860 / 12,820
	5	1605 / 11,070
	6	1670 / 11,510
	7	1745 / 12,030
	8	1515 / 10,450
	9	1630 / 11,240
RM and RMR All materials	1	1930 / 13,310
	2	1550 / 10,690
	3	1730 / 11,930
	4	1485 / 10,240
	5	1605 / 11,070
	6	1670 / 11,510
	7	1495 / 10,310
	8	1515 / 10,450
	9	1425 / 9820
RH and RHR All materials	4	1620 / 11,170
	5	1750 / 12,070
	6	1825 / 12,580
	7	1635 / 11,270
	8	1655 / 11,410
	9	1560 / 10,760
RLC All materials	4	1275 / 8790
	5	1380 / 9510
	6	1440 / 9930
	7	1295 / 8930
	8	1310 / 9030
	9	1235 / 8510
RMW All materials	1	1880 / 12,960
	2	1510 / 10,410
	3	1685 / 11,620
	4	1450 / 10,000
	5	1400 / 9650
	6	1250 / 8620
	7	1100 / 7580
	8	950 / 6550
	9	800 / 5520

NOTE:

1. Optional gasket material may result in a derated maximum pressure for the gauge.
2. Not to be used for environmental NACE applications.



Table 4. Pressure and Temperature Ratings Using Standard Gasket Material

SERIES	GLASS SIZE	MAXIMUM WORKING PRESSURE, psig / kPA AT TEMPERATURES UP TO:						
		100°F / 38°C	200°F / 93°C	250°F / 121°C	300°F / 149°C	400°F / 204°C	500°F / 260°C	600°F / 316°C
TL All materials	1	2000 / 13790	1930 / 13310	1900 / 13100	1870 / 12890	1790 / 12340	1660 / 11450	1480 / 10200
	2	1815 / 12510	1750 / 12070	1720 / 11860	1690 / 11650	1620 / 11170	1510 / 10410	1340 / 9240
	3	1630 / 11240	1580 / 10890	1550 / 10690	1520 / 10480	1460 / 10070	1360 / 9380	1210 / 8340
	4	1440 / 9930	1390 / 9580	1365 / 9410	1340 / 9240	1290 / 8890	1200 / 8270	1060 / 7310
	5	1250 / 8620	1210 / 8340	1190 / 8200	1170 / 8070	1120 / 7720	1040 / 7170	920 / 6340
	6	1065 / 7340	1030 / 7100	1015 / 7000	995 / 6860	950 / 6550	890 / 6140	790 / 5450
	7	875 / 6030	845 / 5830	830 / 5720	815 / 5620	785 / 5410	730 / 5030	645 / 4450
	8	690 / 4760	665 / 4580	655 / 4520	645 / 4450	620 / 4270	575 / 3960	510 / 3520
	9	500 / 3450	480 / 3310	475 / 3270	465 / 3210	445 / 3070	415 / 2860	370 / 2550
TM and TMR All materials	1	2500 / 17240	2420 / 16690	2380 / 16410	2340 / 16130	2240 / 15440	2080 / 14340	1850 / 12760
	2	2315 / 15960	2250 / 15510	2210 / 15240	2170 / 14960	2090 / 14410	1940 / 13380	1720 / 11860
	3	2130 / 14690	2060 / 14200	2025 / 13960	1990 / 13720	1910 / 13170	1770 / 12200	1575 / 10860
	4	1940 / 13380	1875 / 12930	1845 / 12720	1810 / 12480	1740 / 12000	1620 / 11170	1435 / 9890
	5	1750 / 12070	1690 / 11650	1660 / 11450	1630 / 11240	1570 / 10820	1460 / 10070	1295 / 8930
	6	1565 / 10790	1510 / 10410	1485 / 10240	1460 / 10070	1400 / 9650	1305 / 9000	1160 / 8000
	7	1375 / 9480	1330 / 9170	1305 / 9000	1280 / 8830	1230 / 8480	1145 / 7890	1015 / 7000
	8	1190 / 8200	1150 / 7930	1130 / 7790	1110 / 7650	1065 / 7340	990 / 6830	880 / 6070
	9	1000 / 6890	970 / 6690	955 / 6580	935 / 6450	895 / 6170	835 / 5760	740 / 5100
TH and THR All materials	4 to 9	3000 / 20680	2920 / 20130	2885 / 19890	2850 / 19650	2780 / 19170	2600 / 17930	2310 / 15930
TH and THR Stainless steel Covers	4 to 9	1610 / 11100	1610 / 11100	1550 / 10690	1490 / 10270	1240 / 8550	1130 / 7790	1040 / 7170
TLC All materials	4 to 9	1580 / 10890	1540 / 10620	1520 / 10480	1500 / 10340	1460 / 10070	1370 / 9450	1220 / 8410
TMW All materials	1	2000 / 13790	1925 / 13270	1890 / 13030	1850 / 12760	1790 / 12340	1665 / 11480	1480 / 10200
	2	1850 / 12760	1785 / 12310	1755 / 12100	1725 / 11890	1670 / 11510	1540 / 10620	1375 / 9480
	3	1700 / 11720	1640 / 11310	1610 / 11100	1575 / 10860	1525 / 10510	1420 / 9790	1260 / 8690
	4	1550 / 10690	1490 / 10270	1465 / 10100	1435 / 9890	1390 / 9580	1290 / 8890	1145 / 7890
	5	1400 / 9650	1350 / 9310	1325 / 9140	1300 / 8960	1255 / 8650	1165 / 8030	1035 / 7140
	6	1250 / 8620	1200 / 8270	1180 / 8140	1160 / 8000	1120 / 7720	1045 / 7200	925 / 6380
	7	1100 / 7580	1060 / 7310	1040 / 7170	1020 / 7030	980 / 6760	910 / 6270	810 / 5580
	8	950 / 6550	920 / 6340	900 / 6210	880 / 6070	850 / 5860	795 / 5480	700 / 4830
	9	800 / 5520	770 / 5310	755 / 5210	740 / 5100	715 / 4930	665 / 4580	590 / 4070
TU All materials	All	6000 / 41370	6000 / 41370	6000 / 41370	6000 / 41370	6000 / 41370	6000 / 41370	----

NOTE:

1. Optional gasket material may result in a derated maximum pressure for the gauge.

Pressure Temperature Ratings

Flat Glass Transparent Gauge

PENBERTHY™

Table 5. Pressure and Temperature Ratings Using Standard Gasket Material and Aluminosilicate Glass

SERIES	GLASS SIZE	MAXIMUM WORKING PRESSURE, psig / kPA AT TEMPERATURES UP TO:		
		600°F / 316°C	750°F / 399°C	800°F / 427°C
TL All materials	1	1480 / 10,200	N/A	N/A
	2	1340 / 9240	N/A	N/A
	3	1210 / 8340	N/A	N/A
	4	1060 / 7310	N/A	N/A
	5	920 / 6340	N/A	N/A
	6	790 / 5450	N/A	N/A
	7	645 / 4450	N/A	N/A
	8	510 / 3520	N/A	N/A
	9	370 / 2550	N/A	N/A
TM and TMR All materials	1	1850 / 12,760	1420 / 9790	1280 / 8830
	2	1720 / 11,860	1325 / 9140	1190 / 8200
	3	1575 / 10,860	1210 / 8340	1085 / 7480
	4	1435 / 9890	1100 / 7580	990 / 6830
	5	1295 / 8930	995 / 6860	890 / 6140
	6	1160 / 8000	885 / 6100	795 / 5480
	7	1015 / 7000	780 / 5380	700 / 4830
	8	880 / 6070	675 / 4650	605 / 4170
	9	740 / 5100	565 / 3900	505 / 3480
TH and THR All materials	4 to 9	2310 / 15,930	1875 / 12,930	1730 / 11,930
TH and THR Stainless steel	4 to 9	1040 / 7170	905 / 6240	860 / 5930
TLC All materials	4 to 9	1220 / 8410	995 / 6860	920 / 6340
TMW All materials	1	1480 / 10,200	1135 / 7830	1020 / 7030
	2	1375 / 9480	1055 / 7270	950 / 6550
	3	1260 / 8690	960 / 6620	860 / 5930
	4	1145 / 7890	880 / 6070	790 / 5450
	5	1035 / 7140	785 / 5410	700 / 4830
	6	925 / 6380	705 / 4860	630 / 4340
	7	810 / 5580	615 / 4240	550 / 3790
	8	700 / 4830	540 / 3720	485 / 3340
	9	590 / 4070	450 / 3100	400 / 2760

NOTE:

1. Optional gasket material may result in a derated maximum pressure for the gauge.



Table 6. Pressure and Temperature Ratings Using Standard Gasket Material and Steel MR0175/MR0103 NACE Bolting

SERIES	GLASS SIZE	MAXIMUM WORKING PRESSURE, psig / kPA AT TEMPERATURES UP TO:						
		100°F / 38°C	200°F / 93°C	250°F / 121°C	300°F / 149°C	400°F / 204°C	500°F / 260°C	600°F / 316°C
TL ⁽²⁾ All materials	1	1800 / 12,410	1735 / 11,960	1710 / 11,790	1685 / 11,620	1610 / 11,100	1495 / 10,310	1330 / 9170
	2	1635 / 11,270	1575 / 10,860	1550 / 10,690	1520 / 10,480	1460 / 10,070	1360 / 9380	1205 / 8310
	3	1465 / 10,100	1420 / 9790	1395 / 9620	1370 / 9450	1315 / 9070	1225 / 8450	1090 / 7520
	4	1295 / 8930	1250 / 8620	1230 / 8480	1205 / 8310	1160 / 8000	1080 / 7450	955 / 6580
	5	1125 / 7760	1090 / 7520	1070 / 7380	1055 / 7270	1010 / 6960	935 / 6450	830 / 5720
	6	960 / 6620	925 / 6380	915 / 6310	895 / 6170	855 / 5890	800 / 5520	710 / 4900
	7	790 / 5450	760 / 5240	745 / 5140	735 / 5070	705 / 4860	655 / 4520	580 / 4000
	8	620 / 4270	600 / 4140	590 / 4070	580 / 4000	560 / 3860	520 / 3590	460 / 3170
	9	450 / 3100	430 / 2960	425 / 2930	420 / 2900	400 / 2760	375 / 2590	335 / 2310
TM and TMR All materials	1	2250 / 15,510	2180 / 15,030	2140 / 14,750	2105 / 14,510	2015 / 13,890	1870 / 12,890	1665 / 11,480
	2	2085 / 14,380	2025 / 13,960	1990 / 13,720	1955 / 13,480	1880 / 12,960	1745 / 12,030	1550 / 10,690
	3	1915 / 13,200	1855 / 12,790	1825 / 12,580	1790 / 12,340	1720 / 11,860	1595 / 11,000	1420 / 9790
	4	1745 / 12,030	1690 / 11,650	1660 / 11,450	1630 / 11,240	1565 / 10,790	1460 / 10,070	1290 / 8890
	5	1575 / 10,860	1520 / 10,480	1495 / 10,310	1465 / 10,100	1415 / 9760	1315 / 9070	1165 / 8030
	6	1410 / 9720	1360 / 9380	1335 / 9200	1315 / 9070	1260 / 8690	1175 / 8100	1045 / 7200
	7	1240 / 8550	1195 / 8240	1175 / 8100	1150 / 7930	1105 / 7620	1030 / 7100	915 / 6310
	8	1070 / 7380	1035 / 7140	1015 / 7000	1000 / 6890	960 / 6620	890 / 6140	790 / 5450
	9	900 / 6210	875 / 6030	860 / 5930	840 / 5790	805 / 5550	750 / 5170	665 / 4580
TH and THR All materials	4 to 9	2700 / 18,620	2630 / 18,130	2595 / 17,890	2565 / 17,680	2500 / 17,240	2340 / 16,130	2080 / 14,340
TH and THR Stainless steel	4 to 9	1450 / 10,000	1450 / 10,000	1395 / 9620	1340 / 9240	1115 / 7690	1015 / 7000	935 / 6450
TLC All materials	4 to 9	1420 / 9790	1385 / 9550	1370 / 9450	1350 / 9310	1315 / 9070	1235 / 8510	1100 / 7580
TMW All materials	1	1800 / 12,410	1735 / 11,960	1700 / 11,720	1665 / 11,480	1610 / 11,100	1500 / 10,340	1330 / 9170
	2	1665 / 11,480	1605 / 11,070	1580 / 10,890	1555 / 10,720	1505 / 10,380	1385 / 9550	1240 / 8550
	3	1530 / 10,550	1475 / 10,170	1450 / 10,000	1420 / 9790	1375 / 9480	1280 / 8830	1135 / 7830
	4	1395 / 9620	1340 / 9240	1320 / 9100	1290 / 8890	1250 / 8620	1160 / 8000	1030 / 7100
	5	1260 / 8690	1215 / 8380	1195 / 8240	1170 / 8070	1130 / 7790	1050 / 7240	930 / 6410
	6	1125 / 7760	1080 / 7450	1060 / 7310	1045 / 7200	1010 / 6960	940 / 6480	835 / 5760
	7	990 / 6830	955 / 6580	935 / 6450	920 / 6340	880 / 6070	820 / 5650	730 / 5030
	8	855 / 5890	830 / 5720	810 / 5580	790 / 5450	765 / 5270	715 / 4930	630 / 4340
	9	720 / 4960	695 / 4790	680 / 4690	665 / 4580	645 / 4450	600 / 4140	530 / 3650
TU All materials	All	5400 / 37,230	5400 / 37,230	5400 / 37,230	5400 / 37,230	5400 / 37,230	5400 / 37,230	----

NOTE:

1. Optional gasket material may result in a derated maximum pressure for the gauge.
2. Not to be used for environmental NACE applications.

Pressure Temperature Ratings

Flat Glass Transparent Gauge

PENBERTHY™

Table 7. Pressure and Temperature Ratings Using Standard Gasket Material and Stainless Steel MR0175/MR0103 NACE Bolting

SERIES	GLASS SIZE	MAXIMUM WORKING PRESSURE, psig / kPA AT TEMPERATURES UP TO 100°F / 38°C
TL ⁽²⁾ All materials	1	1880 / 12,960
	2	1510 / 10,410
	3	1630 / 11,240
	4	1440 / 9930
	5	1250 / 8620
	6	1065 / 7340
	7	875 / 6030
	8	690 / 4760
	9	500 / 3450
TM and TMR All materials	1	1880 / 12,960
	2	1510 / 10,410
	3	1685 / 11,620
	4	1450 / 10,000
	5	1565 / 10,790
	6	1565 / 10,790
	7	1375 / 9480
	8	1190 / 8200
	9	1000 / 6890
TH and THR All materials	4	1475 / 10,170
	5	1595 / 11,000
	6	1665 / 11,480
	7	1490 / 10,270
	8	1505 / 10,380
TH and THR Stainless steel	9	1420 / 9790
	4	795 / 5480
	5	855 / 5890
	6	895 / 6170
	7	800 / 5520
	8	810 / 5580
TLC All materials	9	760 / 5240
	4	1240 / 8550
	5	1345 / 9270
	6	1405 / 9690
	7	1260 / 8690
	8	1275 / 8790
TU All materials	9	1200 / 8270
	1	6000 / 41,370
	3	5830 / 40,200
	4	4950 / 34,130
	5	5295 / 36,510
TMW All materials	7	3300 / 22,750
	1	1880 / 12,960
	2	1510 / 10,410
	3	1685 / 11,620
	4	1450 / 10,000
	5	1400 / 9650
	6	1250 / 8620
	7	1100 / 7580
	8	950 / 6550
9	800 / 5520	

NOTE:

- Optional gasket material may result in a derated maximum pressure for the gauge.
- Not to be used for environmental NACE applications.



Table 1. 100, 200, 300 and 400 Series Gaugecocks

MATERIAL OF CONSTRUCTION	MAXIMUM WORKING PRESSURE, PSIG / KPA AT TEMPERATURES UP TO:									
	300°F / -184°C	-150°F / -101°C	-20°F / -29°C	100°F / 38°C	200°F / 93°C	300°F / 149°C	400°F / 204°C	500°F / 260°C	550°F / 288°C	750°F / 399°C
Forged steel	----	---	4000 / 27,580	4000 / 27,580	3900 / 26,890	3815 / 26,300	3730 / 25,720	3525 / 24,300	3355 / 23,130	2620 / 18,060
Stainless steel	4000 / 27,580	4000 / 27,580	4000 / 27,580	4000 / 27,580	3900 / 26,890	3815 / 26,300	3730 / 25,720	3525 / 24,300	3355 / 23,130	2755 / 18,990

Table 2. 520, 530, 720 and 730 Series Gaugecocks

MATERIAL OF CONSTRUCTION	MAXIMUM WORKING PRESSURE, PSIG / KPA AT TEMPERATURES UP TO:							
	-20°F / -29°C	100°F / 38°C	200°F / 93°C	300°F / 149°C	400°F / 204°C	500°F / 260°C	550°F / 288°C	750°F / 399°C
Forged steel	4000 / 27,580	4000 / 27,580	3900 / 26,890	3815 / 26,300	3730 / 25,720	3525 / 24,300	3355 / 23,130	2620 / 18,060
Stainless steel	4000 / 27,580	4000 / 27,580	3900 / 26,890	3815 / 26,300	3730 / 25,720	3525 / 24,300	3355 / 23,130	2755 / 18,990
Wetted								

Table 3. 630 Series Gaugecocks

MATERIAL OF CONSTRUCTION	MAXIMUM WORKING PRESSURE, PSIG / KPA AT TEMPERATURES UP TO:		
	-20°F / -29°C	100°F / 38°C	250°F / 121°C
Forged steel	6000 / 41,370	6000 / 41,370	6000 / 41,370
Stainless steel	6000 / 41,370	6000 / 41,370	6000 / 41,370

Table 4. 550 and 750 Series Gaugecocks

MATERIAL OF CONSTRUCTION	MAXIMUM WORKING PRESSURE, PSIG / KPA AT TEMPERATURES UP TO:				
	-20°F / -29°C	100°F / 38°C	200°F / 93°C	300°F / 149°C	400°F / 204°C
Forged steel	4000 / 27,580	4000 / 27,580	3900 / 26,890	3815 / 26,300	3730 / 25,720
Stainless steel	4000 / 27,580	4000 / 27,580	3900 / 26,890	3815 / 26,300	3730 / 25,720
Wetted					

Table 5. 780 Series Gaugecocks

MATERIAL OF CONSTRUCTION	MAXIMUM WORKING PRESSURE, PSIG / KPA AT TEMPERATURES UP TO:							
	-20°F / -29°C	100°F / 38°C	200°F / 93°C	300°F / 149°C	400°F / 204°C	500°F / 260°C	550°F / 288°C	750°F / 399°C
Forged steel	850 / 5860	850 / 5860	850 / 5860	850 / 5860	850 / 5860	850 / 5860	850 / 5860	850 / 5860
Stainless steel	850 / 5860	850 / 5860	850 / 5860	850 / 5860	850 / 5860	850 / 5860	850 / 5860	850 / 5860
Wetted								
Forged steel with Locking Collar	1800 / 12,410	1800 / 12,410	1800 / 12,410	1800 / 12,410	1800 / 12,410	1800 / 12,410	1800 / 12,410	1800 / 12,410
Stainless steel								
Wetted with Locking Collar								

NOTE:

1. Optional packing material may result in a derated maximum pressure for the gaugecock.

Pressure Temperature Ratings

Flat Glass Gaugecock with Standard Packing Material

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Table 6. N2A and K2A Series Gaugecocks

MATERIAL OF CONSTRUCTION	MAXIMUM WORKING PRESSURE, PSIG / KPA AT TEMPERATURES UP TO:						
	-300°F / -184°C	-20°F / -29°C	100°F / 38°C	300°F / 149°C	400°F / 204°C	500°F / 260°C	750°F / 399°C
Steel	675 / 4650	675 / 4650	675 / 4650	610 / 4200	590 / 4070	555 / 3830	400 / 2760
316 SST	675 / 4650	675 / 4650	675 / 4650	610 / 4200	590 / 4070	555 / 3830	400 / 2760

Table 7. N2B,C and K2B,C Series Gaugecocks

MATERIAL OF CONSTRUCTION	MAXIMUM WORKING PRESSURE, PSIG / KPA AT TEMPERATURES UP TO:						
	-300°F / -184°C	-20°F / -29°C	100°F / 38°C	300°F / 149°C	400°F / 204°C	500°F / 260°C	750°F / 399°C
Steel	750 / 5170	750 / 5170	750 / 5170	675 / 4650	655 / 4520	610 / 4210	450 / 3100
316 SST	750 / 5170	750 / 5170	750 / 5170	675 / 4650	655 / 4520	610 / 4210	450 / 3100

Table 8. K3 Series Gaugecocks

GAUGECK MODEL	MAXIMUM WORKING PRESSURE, PSIG / KPA AT TEMPERATURES UP TO:							Maximum Steam Pressure
	-20°F / -29°C	100°F / 38°C	200°F / 93°C	300°F / 149°C	400°F / 204°C	500°F / 260°C	550°F / 288°C	
K3A	225 / 1550	225 / 1550	215 / 1480	190 / 1310	170 / 1170	150 / 1030	----	175 / 1210
K3B	500 / 3450	500 / 3450	475 / 3270	425 / 2930	375 / 2580	325 / 2240	300 / 2070	360 / 2480

Table 9. N6A Series Gaugecocks

GAUGECK MODEL	MAXIMUM WORKING PRESSURE, PSIG / KPA AT TEMPERATURES UP TO:						Maximum Steam Pressure
	-20°F / -29°C	100°F / 38°C	200°F / 93°C	300°F / 149°C	400°F / 204°C		
N6A	200 / 1380 ⁽¹⁾	200 / 1380 ⁽¹⁾	190 / 1310 ⁽¹⁾	165 / 1100 ⁽¹⁾	125 / 860 ⁽²⁾		125 / 860

1. With standard Neoprene (CR) glass packing.
2. Optional Teflon glass packing.

NOTE:

- Optional packing material may result in a derated maximum pressure for the gaugecock.
- All ratings are subject to limitations of tubular glass.



Table 10. N6A Series Gaugecocks

GAUGECK MODEL	MAXIMUM WORKING PRESSURE, PSIG / KPA AT TEMPERATURES UP TO:							Maximum Steam Pressure
	-20°F / -29°C	100°F / 38°C	200°F / 93°C	300°F / 149°C	400°F / 204°C	450°F / 232°C	500°F / 260°C	
N7A, Bronze	200 / 1380 ⁽¹⁾	200 / 1380 ⁽¹⁾	190 / 1310 ⁽¹⁾	165 / 1140 ⁽¹⁾	125 / 860 ⁽²⁾	----	----	125 / 860
N7B, Bronze	400 / 2800 ⁽¹⁾	400 / 2800 ⁽¹⁾	385 / 2700 ⁽¹⁾	335 / 2300 ⁽¹⁾	250 / 1700 ⁽²⁾	----	----	250 / 1700
N7A, Iron	500 / 3450 ⁽¹⁾	500 / 3450 ⁽¹⁾	460 / 3170 ⁽¹⁾	375 / 2580 ⁽¹⁾	290 / 2000 ⁽²⁾	250 / 1720 ⁽²⁾	----	350 / 2410
N7B, Iron	500 / 3450 ⁽¹⁾	500 / 3450 ⁽¹⁾	460 / 3170 ⁽¹⁾	375 / 2580 ⁽¹⁾	290 / 2000 ⁽²⁾	250 / 1720 ⁽²⁾	----	350 / 2410
N7A and N7B, Steel and Stainless steel	500 / 3450 ⁽¹⁾	500 / 3450 ⁽¹⁾	500 / 3450 ⁽¹⁾	500 / 3450 ⁽¹⁾	500 / 3450 ⁽²⁾	500 / 3450 ⁽²⁾	500 / 3450 ⁽²⁾	350 / 2410

1. With standard Neoprene (CR) glass packing.
2. Optional Teflon glass packing.

Table 11. Glass Union

MATERIAL OF CONSTRUCTION	MAXIMUM WORKING PRESSURE, PSIG / KPA AT TEMPERATURES UP TO:				
	-325°F / -198°C	-20°F / -29°C	100°F / 38°C	400°F / 204°C	500°F / 260°C
Carbon steel	----	500 / 3450	500 / 3450	500 / 3450	500 / 3450
316 SST	500 / 3450	500 / 3450	500 / 3450	500 / 3450	500 / 3450
Brass, 5/8 in.	200 / 1380	200 / 1380	200 / 1380	125 / 860	----
Brass, 3/4 in.	400 / 2760	400 / 2760	400 / 2760	250 / 1720	----

Table 12. Hydraulic Adapter

MATERIAL OF CONSTRUCTION	MAXIMUM WORKING PRESSURE, PSIG / KPA AT TEMPERATURES UP TO:				
	-325°F / -198°C	-20°F / -29°C	100°F / 38°C	400°F / 204°C	500°F / 260°C
Carbon steel	----	500 / 3450	500 / 3450	500 / 3450	500 / 3450
316 SST	500 / 3450	500 / 3450	500 / 3450	500 / 3450	500 / 3450
Brass, 5/8 in.	200 / 1380	200 / 1380	200 / 1380	125 / 860	----
Brass, 3/4 in.	400 / 2760	400 / 2760	400 / 2760	250 / 1720	----

NOTE:

- Optional packing material may result in a derated maximum pressure for the gaugecock.
- All ratings are subject to limitations of tubular glass.

Pressure Temperature Ratings

Low Temperature

PENBERTHY™

Low Temperature Material Selection

Some materials, particularly ferritic steels, change from tough to brittle behavior with a decrease in temperature. The transition temperatures and the levels of notch toughness vary with different materials. When materials are used under conditions where brittle behavior may occur, there is a danger that minor internal flaws, which would be considered non-hazardous if the material were tough, may propagate to failure. (See ASTM A352 supplements for more information.)

Materials suggested for RL, TL, RM, TM, TMR, RH, TH, RHR, THR, RMW, TMW, RLC and TLC series flat glass gauges for low temperature applications.

Table 1. Gauge

MODEL	TEMPERATURE RANGE	SUGGESTED MATERIALS			
		Cover	Chamber	Bolts	Nuts
RLC/TLC	Up to -20°F / -29°C	ASTM A105 Forged Carbon steel or ASTM A216 Gr. WCB Cast Carbon steel	ASTM A106 Gr. B Carbon Steel	ASTM A193 Gr. B7	ASTM A194 Gr. 2 or 2H Carbon steel
RMW/TMW			SA-515 Gr. 70 Carbon steel		
RM/TM, RMR/TMR, RH/TH and RHR/THR			ASTM A105 Forged Carbon steel		
RL/TL	Up to -50°F / -46°C	ASTM A395 Ductile iron	SA-240 316/316L Stainless steel	ASTM A320 Gr. L7 Steel	ASTM A194 Gr. 8M 316 STS
RLC/TLC		ASTM A350 Gr. LF2 Cl. 1 Forged Carbon steel	ASTM A516 Gr. 70/S5 -50° F Carbon steel		
RMW/TMW, RM/TM, RMR/TMR, RH/TH and RHR/THR					
RMW/TMW	Up to -150°F / -101°C	ASTM A351 Gr. CF3M Cast 316/316L Stainless steel	SA-240 316/316L Stainless steel	ASTM A320 Gr. L7 Alloy steel	ASTM A194 Gr. 8M 316 Stainless steel
RLC/TLC			ASTM A312 316/316L Stainless steel		
RM/TM, RMR/TMR, RH/TH and RHR/THR			ASTM A276 316/316L Stainless steel		
RMW/TMW	Up to -325°F / -198°C	ASTM A351 Gr. CF3M Cast 316/316L Stainless steel	SA-240 316/316L Stainless steel	ASTM A193 Gr. B8M Cl. 2 316 Stainless steel	ASTM A194 Gr. 8M 316 Stainless steel
RLC/TLC			ASTM A312 316/316L Stainless steel		
RM/TM, RMR/TMR, RH/TH and RHR/THR			ASTM A276 316/316L Stainless steel		

Table 2. Gaugecocks

SERIES	TEMPERATURE RANGE	SUGGESTED MATERIALS																			
		Body	Tailpipe(s)	Trim	Ball Retainer	Coupling Nut	Bonnet														
100 200 300 400	Up to -20°F / -29°C	ASTM A105 Forged Carbon steel	ASTM A108 Gr. 1018 Carbon steel	ASTM A276 316, 410 or 416 Stainless steel	ASTM A313 316 Stainless steel	ASTM A576 (12L14) Steel	ASTM A108 Gr. 1018 Carbon steel														
100 200 300 400								Up to -50°F / -46°C	ASTM A350 Gr. LF2 Cl. 1 Forged Carbon steel	ASTM A350 Gr. LF2 Cl. 1 Forged Carbon Steel	ASTM A276 316, 410 or 416 Stainless steel	ASTM A313 316 Stainless steel	ASTM A108 Gr. 1018 Austenitized steel	ASTM A350 Gr. LF2 Cl. 1 Forged Carbon steel							
100 200 300 400															Up to -325°F / -198°C	ASTM A351 Gr. CF3M Cast 316/316L Stainless steel	ASTM A276 316/316L Stainless steel	ASTM A276 316, 410 or 416 Stainless steel	ASTM A313 316 Stainless steel	ASTM A276 316/316L Stainless steel	ASTM A276 316/316L Stainless steel

Table 3. OS and Y Gaugecocks

SERIES	TEMPERATURE RANGE	SUGGESTED MATERIALS				
		Body	Tailpipe	Trim	Coupling Nut	Yoke Follower
500 700	Up to -20°F / -29°C	ASTM A105 Forged Carbon steel	ASTM A108 Gr. 1018 Carbon steel	ASTM A276 316, 410 or 416 Stainless steel	ASTM A576 (12L14) Steel	ASTM A105 Forged Carbon Steel
500 700						
500 700	Up to -325°F / -198°C	ASTM A351 Gr. CF3M Cast 316/316L Stainless steel	ASTM A276 316/316L Stainless steel	ASTM A276 316, 410 or 416 Stainless steel	ASTM A276 316/316L Stainless steel	ASTM A351 Gr. CF3M Cast 316/316L Stainless steel



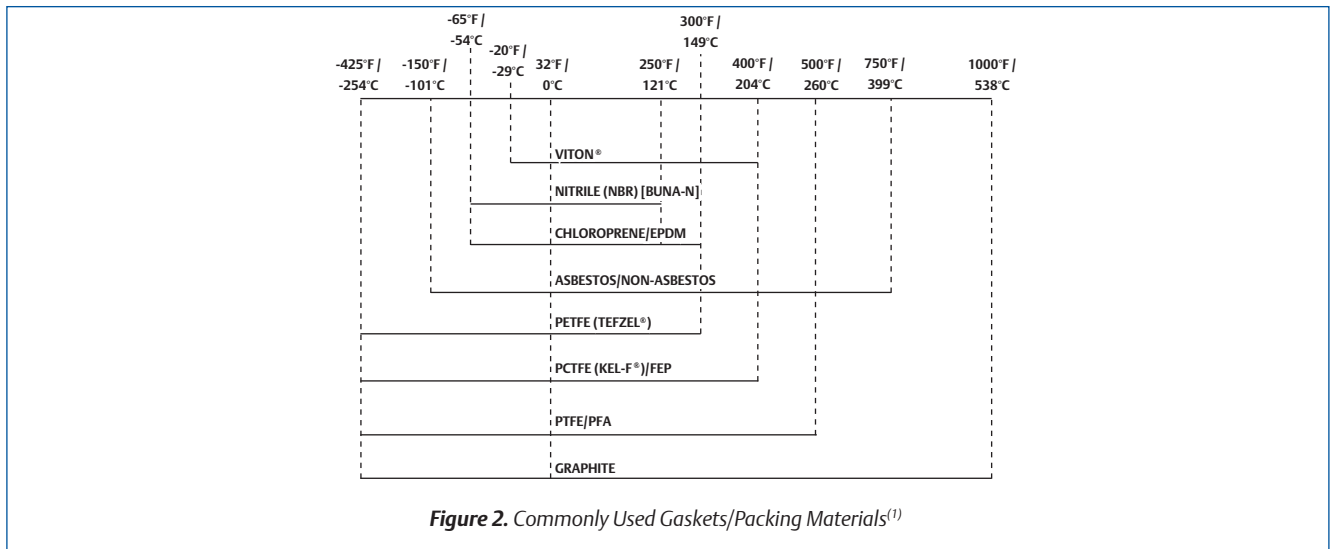
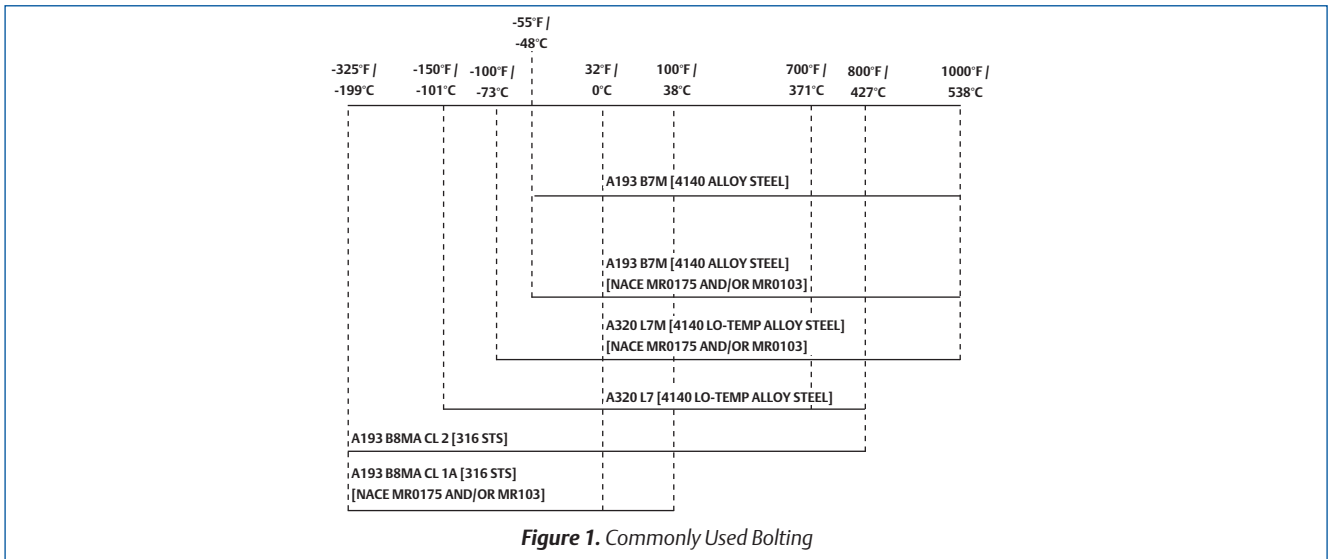


Table 1. Pressure/Temperature De-Rating for Material Other than Standard					
GASKET MATERIAL	MAXIMUM PRESSURE AT SPECIFIED TEMPERATURE, psig / kPa				
	100°F / 38°C	250°F / 121°C	300°F / 149°C	400°F / 204°C	500°F / 260°C
Buna-N	300 / 2070	225 / 1550	----	----	----
EPDM	300 / 2070	225 / 1550	210 / 1450	----	----
Neoprene (CR)	300 / 2070	225 / 1550	210 / 1450	----	----
Viton® (FKM)	300 / 2070	225 / 1550	210 / 1450	180 / 1240	----
Daikin® (PCTFE)	300 / 2070	225 / 1550	210 / 1450	180 / 1240	----
Teflon® (PTFE)	300 / 2070	225 / 1550	210 / 1450	180 / 1240	150 / 1030

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1. Absolute range depends upon specific condition, form, filler, etc.

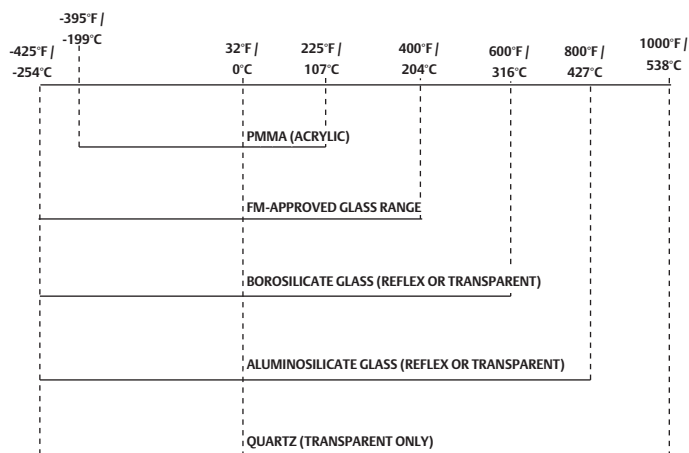


Figure 3. Optical Materials

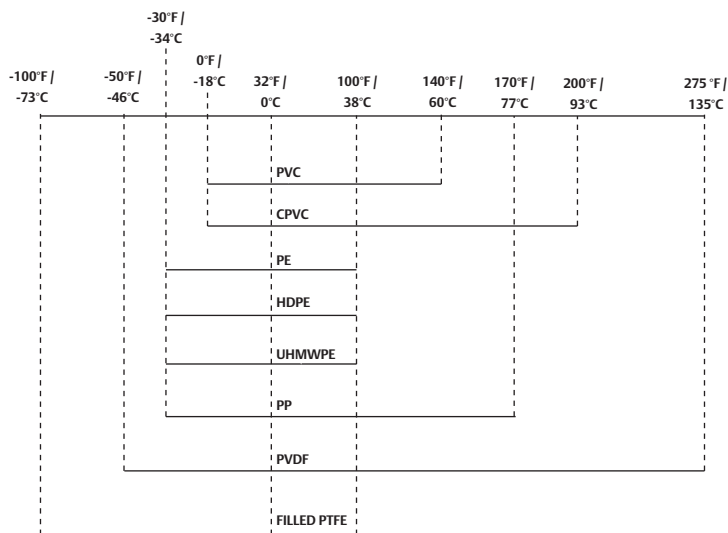
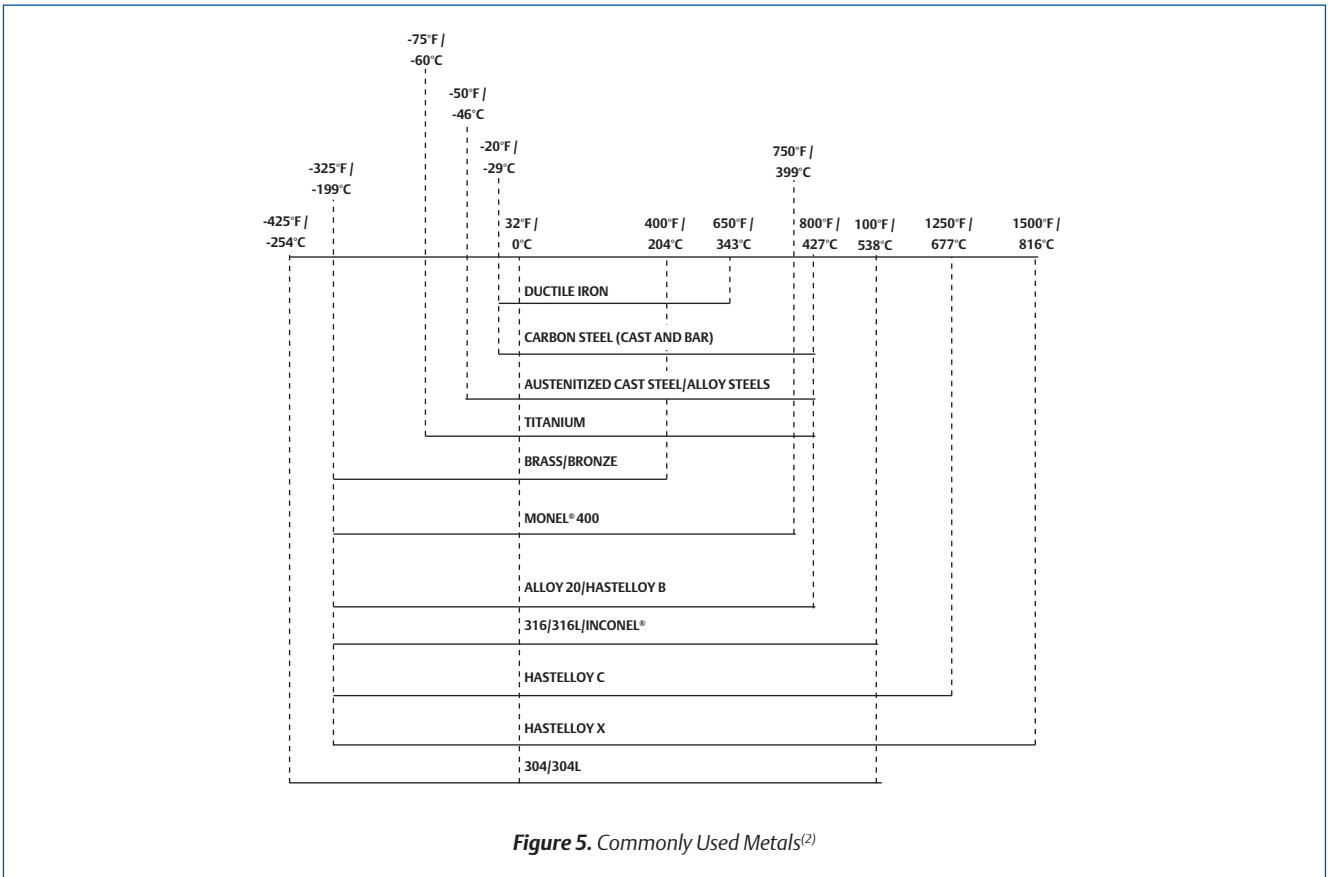


Figure 4. Commonly Used Structural Polymers⁽¹⁾

1. Absolute range depends upon specific grade, fillers, plasticizers, antioxidants, etc.
 2. Absolute range depends upon specific alloy, form, condition, heat treatment, etc.



1. Absolute range depends upon specific grade, fillers, plasticizers, antioxidants, etc.
 2. Absolute range depends upon specific alloy, form, condition, heat treatment, etc.

Pressure Temperature Ratings

Steam/Water Gauges

PENBERTHY™

Table 1. Nipple Ended Gauge Configuration

MAXIMUM ALLOWABLE PRESSURE AT SATURATED TEMPERATURE	GAUGE	GAUGE/COCK	CONNECTION	NOTES
350 psig / 2.41 MPag at 434°F / 223°C	RM/RMR	300/400/700	Threaded Nipple	1, 2, 3, 4
	RM/RMR	780R	3/4 in. Stuffing Box	1, 2, 3

1. Grafoil® gaskets with 316 Stainless steel inserts required at additional cost.
2. Belleville washers are highly recommended at additional cost to reduce thermal effects on clamping pressures.
3. With ball checks omitted (320J / 330J / 420P / 430P / 720R / 730R / 780R / 4000T / 4000S) or with horizontal leaky ball seat upper and vertically rising ball check lower (320J / 420P / 720R / 780R / 4000T / 4000S) at additional cost for ASME boiler service (end connected only).
4. The recommended gaugecock type is 700.

Table 1. Nipple Ended Gauge Configuration (continued)

MAXIMUM RECOMMENDED PRESSURE AT SATURATED TEMPERATURE	GAUGE	GAUGE/COCK	CONNECTION	NOTES
650 psig / 4.48 MPag at 497°F / 258°C	TSL	780R 4000T/4000S	3/4 in. Stuffing Box	1, 4
850 psig / 5.86 MPag at 526°F / 274°C	TSM	780R 4000T/4000S	3/4 in. Stuffing Box	1, 4
1500 psig / 10.34 MPag at 596°F / 313°C	TSM	780R 4000T/4000S	3/4 in. Stuffing Box	1, 2, 4
1800 psig / 12.41 MPag at 621°F / 327°C	Colorport-4511N	780R 4000T/4000S	3/4 in. Stuffing Box	2, 3, 4

1. Grafoil® gaskets with 316 Stainless steel inserts, mica shields and belleville washers are standard.
2. Spacer (collar) is required at additional cost at pressures above 850 psig [5.86 MPag] on upper stuffing box nipple to prevent gage disengagement.
3. Mica shields, formed graphite gasket and belleville washers (part of port assembly) are standard.
4. With ball checks omitted (320J / 330J / 420P / 430P / 720R / 730R / 780R / 4000T / 4000S) or with horizontal leaky ball seat upper and vertically rising ball check lower (320J / 420P / 720R / 780R / 4000T / 4000S) at additional cost for ASME boiler service (end connected only).

Table 2. Flanged Expansion Loop Gauge Configuration

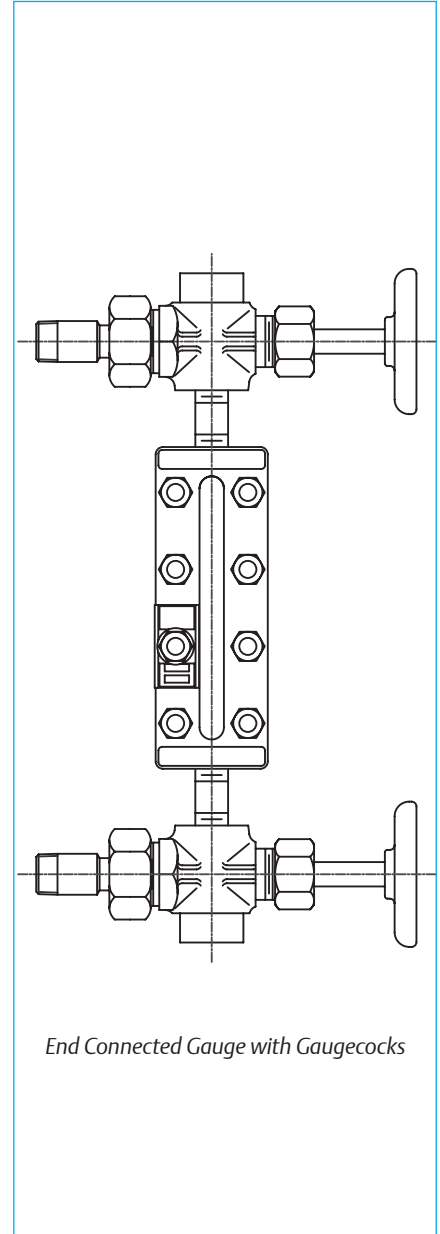
MAXIMUM RECOMMENDED PRESSURE AT SATURATED TEMPERATURE	GAUGE	GAUGE/COCK	FLANGE	NOTES
650 psig / 4.48 MPag at 497°F / 258°C	TSL-F	730R	Standard 1/2 in. CL600 LF	1, 3, 4
1500 psig / 10.34 MPag at 596°F / 313°C	TSM-F	730R	Standard 1/2 in. CL1500 LF	1, 3, 4
1800 psig / 12.41 MPag at 621°F / 327°C	Colorport-4595F	730R	Standard 3/4 in. CL1500 RF	2, 3, 4
3000 psig / 20.68 MPag at 695°F / 368°C	Colorport-4595F	L200V	Standard 3/4 in. CL2500 LTRF	2, 4

1. Grafoil® gaskets with 316 Stainless steel inserts, mica shields and belleville washers are standard.
2. Mica shields, formed graphite gasket and belleville washers (part of port assembly) are standard.
3. With ball checks omitted for ASME boiler service.
4. Model Hy-P-Check ball checks available at additional cost.



Table 1. Reflex Series: RL, RM, RMR, RH, RHR, RLC and Transparent Series: TL, TM, TMR, TH, THR, TLC

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				130, 230, 330, 430 Series Gaugecock		120, 220, 320, 420 Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	7.875	200	10.875	276
1	2	4.750	121	8.875	225	11.875	301
1	3	5.750	146	9.875	251	12.875	327
1	4	6.750	171	10.875	276	13.875	352
1	5	7.875	200	12.000	305	15.000	381
1	6	9.125	232	13.250	337	16.250	413
1	7	10.250	260	14.375	365	17.375	441
1	8	11.875	302	16.000	406	19.000	483
1	9	12.625	321	16.750	425	19.750	502
2	4	15.000	381	19.125	486	22.125	562
2	5	17.250	438	21.375	543	24.375	619
2	6	19.750	502	23.875	606	26.875	683
2	7	22.000	559	26.125	664	29.125	740
2	8	25.250	641	29.375	746	32.375	822
2	9	26.750	679	30.875	784	33.875	860
3	6	30.375	772	34.500	876	37.500	953
3	7	33.750	857	37.875	962	40.875	1038
3	8	38.625	981	42.750	1086	45.750	1162
3	9	40.875	1038	45.000	1143	48.000	1219
4	7	45.500	1156	49.625	1260	52.625	1337
4	8	52.000	1321	56.125	1426	59.125	1502
4	9	55.000	1397	59.125	1502	62.125	1578
5	7	57.250	1454	61.375	1559	64.375	1635
5	8	65.375	1661	69.500	1765	72.500	1842
5	9	69.125	1756	73.250	1861	76.250	1937
6	8	78.750	2000	82.875	2105	85.875	2181
6	9	83.250	2115	87.375	2219	90.375	2296
7	8	92.125	2340	96.250	2445	99.250	2521
7	9	97.375	2473	101.500	2578	104.500	2654
8	8	105.500	2680	109.625	2784	112.625	2861
8	9	111.500	2832	115.625	2937	118.625	3013
9	8	118.875	3019	123.000	3124	126.000	3200
9	9	125.625	3191	129.750	3296	132.750	3372
10	8	132.250	3359	136.375	3464	139.375	3540
10	9	139.750	3550	143.875	3654	146.875	3731



Options:

1. (M) Union Gauge Connection - 120, 220, 320, 420, 520, 720 dimension +0.125
2. (F) Spherical Union Gauge Connection - 120, 220, 320, 420, 520, 720 dimension +2.750
3. (M) Spherical Union Gauge Connection - 120, 220, 320, 420, 520, 720 dimension +1.625

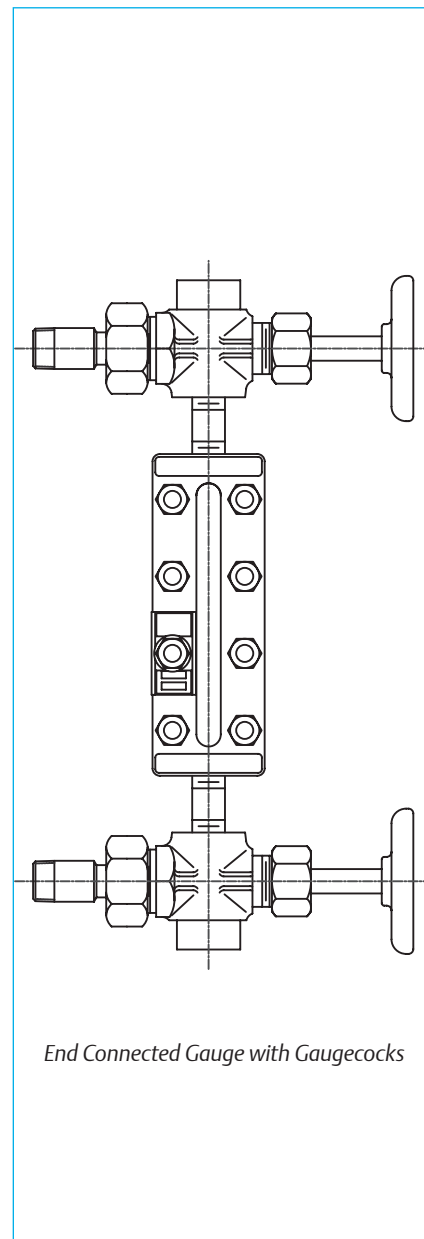
End Connected Gauges

1/2 NPTF Reflex and Transparent Gauges

PENBERTHY™

Table 1. Reflex Series: RL, RM, RMR, RH, RHR, RLC and Transparent Series: TL, TM, TMR, TH, THR, TLC (continued)

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				530 and 730 Series Gaugecock		520 and 720 Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	9.625	244	11.625	295
1	2	4.750	121	10.625	270	12.625	321
1	3	5.750	146	11.625	295	13.625	346
1	4	6.750	171	12.625	321	14.625	371
1	5	7.875	200	13.750	349	15.750	400
1	6	9.125	232	15.000	381	17.000	432
1	7	10.250	260	16.125	410	18.125	460
1	8	11.875	302	17.750	451	19.750	502
1	9	12.625	321	18.500	470	20.500	521
2	4	15.000	381	20.875	530	22.875	581
2	5	17.250	438	23.125	587	25.125	638
2	6	19.750	502	25.625	651	27.625	702
2	7	22.000	559	27.875	708	29.875	759
2	8	25.250	641	31.125	791	33.125	841
2	9	26.750	679	32.625	829	34.625	879
3	6	30.375	772	36.250	921	38.250	972
3	7	33.750	857	39.625	1006	41.625	1057
3	8	38.625	981	44.500	1130	46.500	1181
3	9	40.875	1038	46.750	1187	48.750	1238
4	7	45.500	1156	51.375	1305	53.375	1356
4	8	52.000	1321	57.875	1470	59.875	1521
4	9	55.000	1397	60.875	1546	62.875	1597
5	7	57.250	1454	63.125	1603	65.125	1654
5	8	65.375	1661	71.250	1810	73.250	1861
5	9	69.125	1756	75.000	1905	77.000	1956
6	8	78.750	2000	84.625	2150	86.625	2200
6	9	83.250	2115	89.125	2264	91.125	2365
7	8	92.125	2340	98.000	2489	100.000	2540
7	9	97.375	2473	103.250	2623	105.250	2673
8	8	105.500	2680	111.375	2829	113.375	2880
8	9	111.500	2832	117.375	2981	119.375	3032
9	8	118.875	3019	124.750	3169	126.750	3219
9	9	125.625	3191	131.500	3340	133.500	3391
10	8	132.250	3359	138.125	3508	140.125	3559
10	9	139.750	3550	145.625	3699	147.625	3750

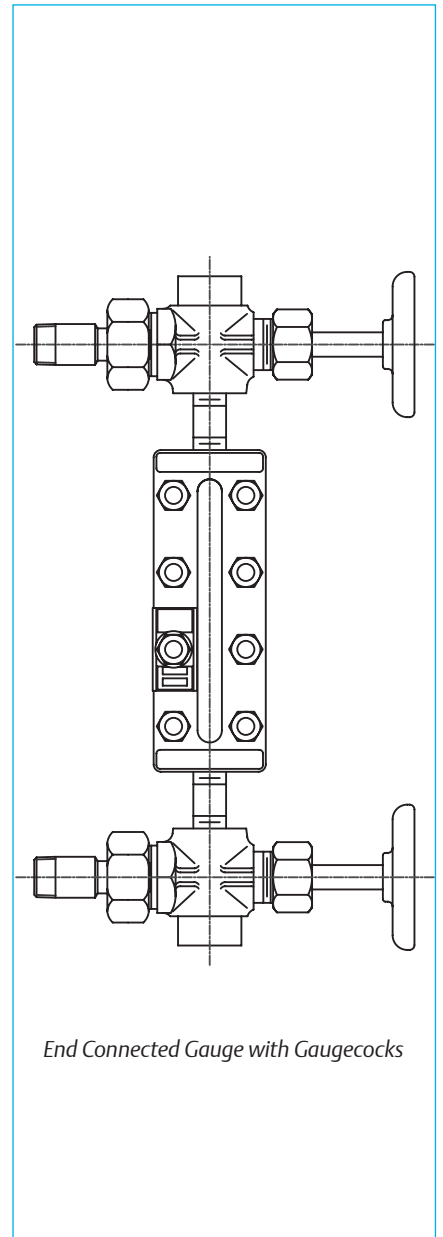


Options:

1. (M) Union Gauge Connection - 120, 220, 320, 420, 520, 720 dimension +0.125
2. (F) Spherical Union Gauge Connection - 120, 220, 320, 420, 520, 720 dimension +2.750
3. (M) Spherical Union Gauge Connection - 120, 220, 320, 420, 520, 720 dimension +1.625

**Table 1. Reflex Series: RL, RM, RH, RLC and
Transparent Series: TL, TM, TH, TLC**

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				130, 230, 330 and 430 Series Gaugecock		120, 220, 320 and 420 Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	8.375	213	11.375	289
1	2	4.750	121	9.375	238	12.375	314
1	3	5.750	146	10.375	264	13.375	340
1	4	6.750	171	11.375	289	14.375	365
1	5	7.875	200	12.500	318	15.500	394
1	6	9.125	232	13.750	349	16.750	425
1	7	10.250	260	14.875	378	17.875	454
1	8	11.875	302	16.500	419	19.500	495
1	9	12.625	321	17.250	438	20.250	514
2	4	15.000	381	19.625	498	22.625	575
2	5	17.250	438	21.875	556	24.875	632
2	6	19.750	502	24.375	619	27.375	695
2	7	22.000	559	26.625	676	29.625	752
2	8	25.250	641	29.875	759	32.875	835
2	9	26.750	679	31.375	797	34.375	873
3	6	30.375	772	35.000	889	38.000	965
3	7	33.750	857	38.375	975	41.375	1051
3	8	38.625	981	43.250	1099	46.250	1175
3	9	40.875	1038	45.500	1156	48.500	1232
4	7	45.500	1156	50.125	1273	53.125	1349
4	8	52.000	1321	56.625	1438	59.625	1514
4	9	55.000	1397	59.625	1514	62.625	1591
5	7	57.250	1454	61.875	1572	64.875	1648
5	8	65.375	1661	70.000	1778	73.000	1854
5	9	69.125	1756	73.750	1873	76.750	1949
6	8	78.750	2000	83.375	2118	86.375	2194
6	9	83.250	2115	87.875	2232	90.875	2308
7	8	92.125	2340	96.750	2457	99.750	2534
7	9	97.375	2473	102.000	2591	105.000	2667
8	8	105.500	2680	110.125	2797	113.125	2873
8	9	111.500	2832	116.125	2950	119.125	3026
9	8	118.875	3019	123.500	3137	126.500	3213
9	9	125.625	3191	130.250	3308	133.250	3385
10	8	132.250	3359	136.875	3477	139.875	3553
10	9	139.750	3550	144.375	3667	147.375	3743



Options:

1. (M) Union Gauge Connection - 120, 220, 320, 420, 520, 720 dimension -0.375
2. (M) Spherical Union Gauge Connection - 120, 220, 320, 420, 520, 720 dimension +1.125

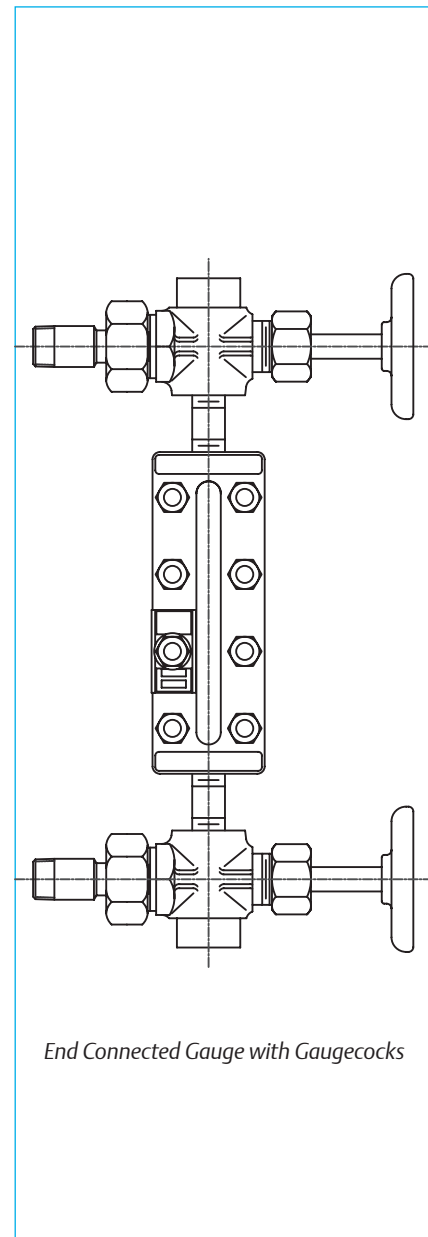
End Connected Gauges

3/4 NPTF Reflex and Transparent Gauges

PENBERTHY™

Table 1. Reflex Series: RL, RM, RH, RLC and Transparent Series: TL, TM, TH, TLC (continued)

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				530 and 730 Series Gaugecock		520 and 720 Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	10.125	257	12.125	308
1	2	4.750	121	11.125	283	13.125	333
1	3	5.750	146	12.125	308	14.125	359
1	4	6.750	171	13.125	333	15.125	384
1	5	7.875	200	14.250	362	16.250	413
1	6	9.125	232	15.500	394	17.500	445
1	7	10.250	260	16.625	422	18.625	473
1	8	11.875	302	18.250	464	20.250	514
1	9	12.625	321	19.000	483	21.000	533
2	4	15.000	381	21.375	543	23.375	594
2	5	17.250	438	23.625	600	25.625	651
2	6	19.750	502	26.125	664	28.125	714
2	7	22.000	559	28.375	721	30.375	772
2	8	25.250	641	31.625	803	33.625	854
2	9	26.750	679	33.125	841	35.125	892
3	6	30.375	772	36.750	933	38.750	984
3	7	33.750	857	40.125	1019	42.125	1070
3	8	38.625	981	45.000	1143	47.000	1194
3	9	40.875	1038	47.250	1200	49.250	1251
4	7	45.500	1156	51.875	1318	53.875	1368
4	8	52.000	1321	58.375	1483	60.375	1534
4	9	55.000	1397	61.375	1559	63.375	1610
5	7	57.250	1454	63.625	1616	65.625	1667
5	8	65.375	1661	71.750	1822	73.750	1873
5	9	69.125	1756	75.500	1918	77.500	1969
6	8	78.750	2000	85.125	2162	87.125	2213
6	9	83.250	2115	89.625	2276	91.625	2327
7	8	92.125	2340	98.500	2502	100.500	2553
7	9	97.375	2473	103.750	2635	105.750	2686
8	8	105.500	2680	111.875	2842	113.875	2892
8	9	111.500	2832	117.875	2994	119.875	3045
9	8	118.875	3019	125.250	3181	127.250	3232
9	9	125.625	3191	132.000	3353	134.000	3404
10	8	132.250	3359	138.625	3521	140.625	3572
10	9	139.750	3550	146.125	3712	148.125	3762



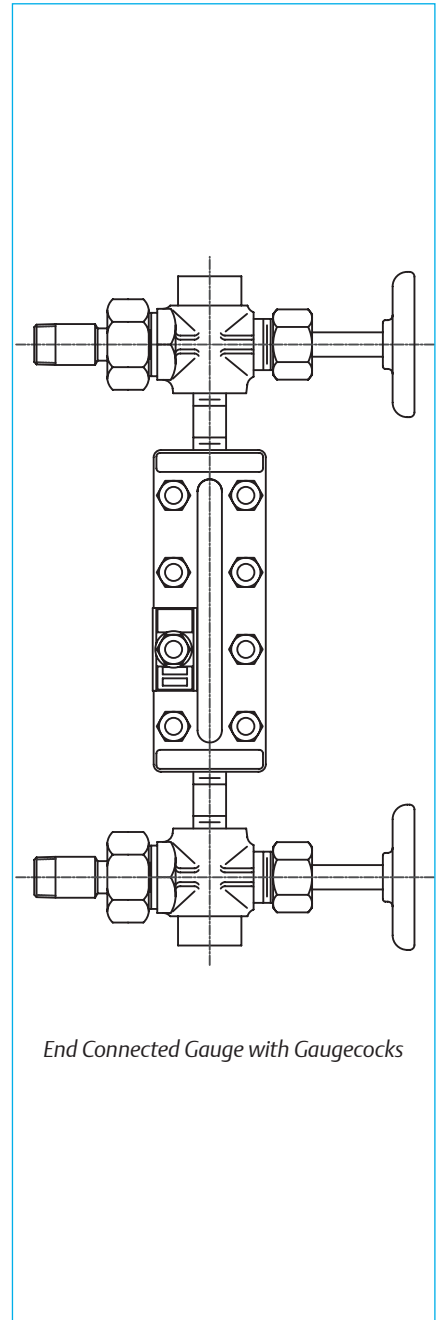
Options:

1. (M) Union Gauge Connection - 120, 220, 320, 420, 520, 720 dimension -0.375
2. (M) Spherical Union Gauge Connection - 120, 220, 320, 420, 520, 720 dimension +1.125

Table 1. Reflex Series: RM and RMR and Transparent Series: TM and TMR⁽¹⁾

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				780 Gaugecock Series		N2 and K2 Gaugecock Series	
				1/2 in. NPT X 3/4 O.D. Adapter 3/4 in. NPT X 3/4 O.D. Adapter		1/2 in. NPT X 5/8 O.D. Adapter 1/2 in. NPT X 3/4 O.D. Adapter 3/4 in. NPT X 3/4 O.D. Adapter	
				in.	mm	in.	mm
1	1	3.750	95	12.750	324	12.000	305
1	2	4.750	121	13.750	349	13.000	330
1	3	5.750	146	14.750	375	14.000	356
1	4	6.750	171	15.750	400	15.000	381
1	5	7.875	200	16.875	429	16.125	410
1	6	9.125	232	18.125	460	17.375	441
1	7	10.250	260	19.250	489	18.500	470
1	8	11.875	302	20.875	530	20.125	511
1	9	12.625	321	21.625	549	20.875	530
2	4	15.000	381	24.000	610	23.250	591
2	5	17.250	438	26.250	667	25.500	648
2	6	19.750	502	28.750	730	28.000	711
2	7	22.000	559	31.000	787	30.250	768
2	8	25.250	641	34.250	870	33.500	851
2	9	26.750	679	35.750	908	35.000	889
3	6	30.375	772	39.375	1000	38.625	981
3	7	33.750	857	42.750	1086	42.000	1067
3	8	38.625	981	47.625	1210	46.875	1191
3	9	40.875	1038	49.875	1267	49.125	1248
4	7	45.500	1156	54.500	1384	53.750	1365
4	8	52.000	1321	61.000	1549	60.250	1530
4	9	55.000	1397	64.000	1626	63.250	1607
5	7	57.250	1454	66.250	1683	65.500	1664
5	8	65.375	1661	74.375	1889	73.625	1870
5	9	69.125	1756	78.125	1984	77.375	1965
6	8	78.750	2000	87.750	2229	87.000	2210
6	9	83.250	2115	92.250	2343	91.500	2324
7	8	92.125	2340	101.125	2569	100.375	2550
7	9	97.375	2473	106.375	2702	105.625	2683
8	8	105.500	2680	114.500	2908	113.750	2889
8	9	111.500	2832	120.500	3061	119.750	3042
9	8	118.875	3019	127.875	3248	127.125	3229
9	9	125.625	3191	134.625	3419	133.875	3400
10	8	132.250	3359	141.250	3588	140.500	3569
10	9	139.750	3550	148.750	3778	148.000	3759

1. Using 3 in. long Stuffing Box adapters.



Options:

1. (M) Union Gauge Connection - 120, 220, 320, 420, 520, 720 dimension -0.375
2. (M) Spherical Union Gauge Connection - 120, 220, 320, 420, 520, 720 dimension +1.125

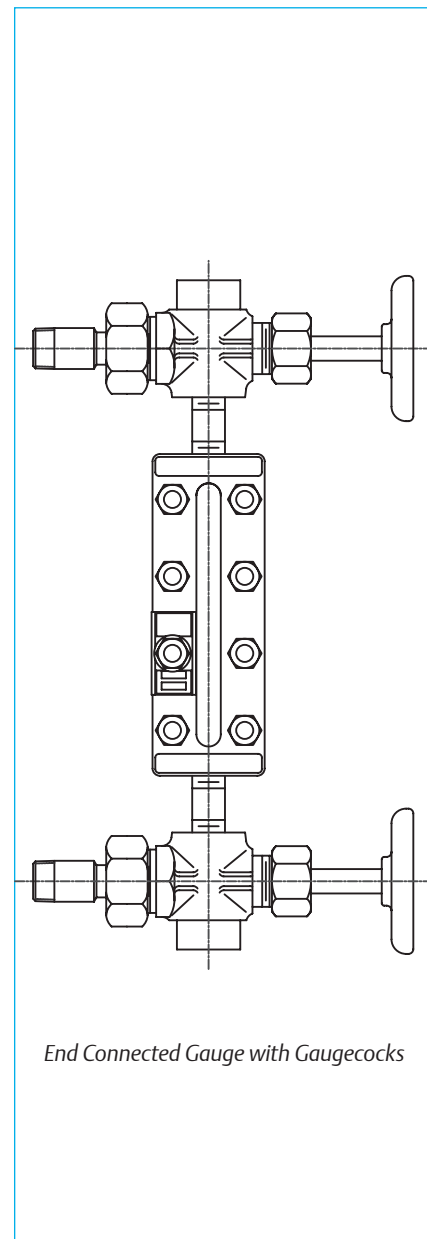
End Connected Gauges

3/4 NPTF Reflex and Transparent Gauges

PENBERTHY™

**Table 1. Reflex Series: RMR, RHR and
Transparent Series: TMR, THR**

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				130, 230, 330, 430 Series Gaugecock		120, 220, 320, 420 Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	9.125	232	12.125	308
1	2	4.750	121	10.125	257	13.125	333
1	3	5.750	146	11.125	283	14.125	359
1	4	6.750	171	12.125	308	15.125	384
1	5	7.875	200	13.250	337	16.250	413
1	6	9.125	232	14.500	368	17.500	445
1	7	10.250	260	15.625	397	18.625	473
1	8	11.875	302	17.250	438	20.250	514
1	9	12.625	321	18.000	457	21.000	533
2	4	15.000	381	20.375	518	23.375	594
2	5	17.250	438	22.625	575	25.625	651
2	6	19.750	502	25.125	638	28.125	714
2	7	22.000	559	27.375	695	30.375	772
2	8	25.250	641	30.625	778	33.625	854
2	9	26.750	679	32.125	816	35.125	892
3	6	30.375	772	35.750	908	38.750	984
3	7	33.750	857	39.125	994	42.125	1070
3	8	38.625	981	44.000	1118	47.000	1194
3	9	40.875	1038	46.250	1175	49.250	1251
4	7	45.500	1156	50.875	1292	53.875	1368
4	8	52.000	1321	57.375	1457	60.375	1534
4	9	55.000	1397	60.375	1534	63.375	1610
5	7	57.250	1454	62.625	1591	65.625	1667
5	8	65.375	1661	70.750	1797	73.750	1873
5	9	69.125	1756	74.500	1892	77.500	1969
6	8	78.750	2000	84.125	2137	87.125	2213
6	9	83.250	2115	88.625	2251	91.625	2327
7	8	92.125	2340	97.500	2477	100.500	2553
7	9	97.375	2473	102.750	2610	105.750	2686
8	8	105.500	2680	110.875	2816	113.875	2892
8	9	111.500	2832	116.875	2969	119.875	3045
9	8	118.875	3019	124.250	3156	127.250	3232
9	9	125.625	3191	131.000	3327	134.000	3404
10	8	132.250	3359	137.625	3496	140.625	3572
10	9	139.750	3550	145.125	3686	148.125	3762



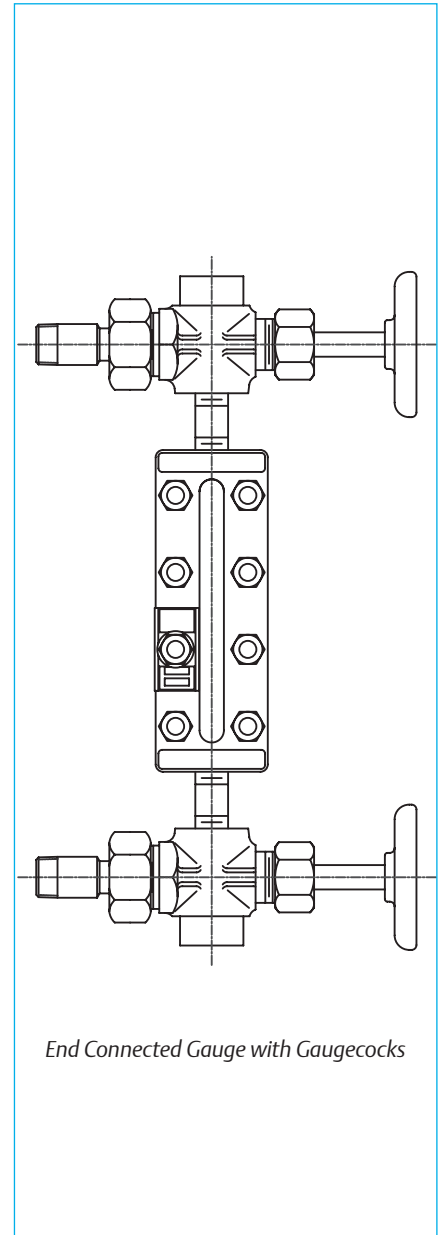
End Connected Gauge with Gaugecocks

Options:

1. (M) Union Gauge Connection - 120, 220, 320, 420, 520, 720 dimension -0.375
2. (M) Spherical Union Gauge Connection - 120, 220, 320, 420, 520, 720 dimension +1.125

**Table 1. Reflex Series: RMR, RHR and
Transparent Series: TMR, THR (continued)**

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				530 and 730 Series Gaugecock		520 and 720 Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	10.875	276	12.875	327
1	2	4.750	121	11.875	302	13.875	352
1	3	5.750	146	12.875	327	14.875	378
1	4	6.750	171	13.875	352	15.875	403
1	5	7.875	200	15.000	381	17.000	432
1	6	9.125	232	16.250	413	18.250	464
1	7	10.250	260	17.375	441	19.375	492
1	8	11.875	302	19.000	483	21.000	533
1	9	12.625	321	19.750	502	21.750	552
2	4	15.000	381	22.125	562	24.125	613
2	5	17.250	438	24.375	619	26.375	670
2	6	19.750	502	26.875	683	28.875	733
2	7	22.000	559	29.125	740	31.125	791
2	8	25.250	641	32.375	822	34.375	873
2	9	26.750	679	33.875	860	35.875	911
3	6	30.375	772	37.500	953	39.500	1003
3	7	33.750	857	40.875	1038	42.875	1089
3	8	38.625	981	45.750	1162	47.750	1213
3	9	40.875	1038	48.000	1219	50.000	1270
4	7	45.500	1156	52.625	1337	54.625	1387
4	8	52.000	1321	59.125	1502	61.125	1553
4	9	55.000	1397	62.125	1578	64.125	1629
5	7	57.250	1454	64.375	1635	66.375	1686
5	8	65.375	1661	72.500	1842	74.500	1892
5	9	69.125	1756	76.250	1937	78.250	1988
6	8	78.750	2000	85.875	2181	87.875	2232
6	9	83.250	2115	90.375	2296	92.375	2346
7	8	92.125	2340	99.250	2521	101.250	2572
7	9	97.375	2473	104.500	2654	106.500	2705
8	8	105.500	2680	112.625	2861	114.625	2911
8	9	111.500	2832	118.625	3013	120.625	3064
9	8	118.875	3019	126.000	3200	128.000	3251
9	9	125.625	3191	132.750	3372	134.750	3423
10	8	132.250	3359	139.375	3540	141.375	3591
10	9	139.750	3550	146.875	3731	148.875	3781



Options:

1. (M) Union Gauge Connection - 120, 220, 320, 420, 520, 720 dimension -0.375
2. (M) Spherical Union Gauge Connection - 120, 220, 320, 420, 520, 720 dimension +1.125

End Connected Gauges

1/2 and 3/4 NPTF Reflex and Transparent Gauges

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Table 1. Transparent Series: TU

SIZE	VISIBLE GLASS		MINIMUM CENTERS				
			630 Gaugecock Series				
	in.	mm	1/2 NPT (F) Rigid		3/4 NPT (F) Rigid		
				in.	mm	in.	mm
1TU1	3.531	90	9.625	244	10.125	257	
1TU3	5.531	140	11.625	295	12.125	308	
1TU4	6.531	166	12.625	321	13.125	333	
1TU5	7.656	194	13.750	349	14.250	362	
1TU7	10.031	255	16.125	410	16.625	422	
2TU1	8.875	225	14.875	378	15.375	391	
2TU3	12.875	327	18.875	479	19.375	492	
2TU4	14.875	378	20.875	530	21.375	543	
2TU5	17.125	435	23.125	587	23.625	600	
2TU7	21.875	556	27.875	708	28.375	721	
3TU3	20.219	514	26.250	667	26.750	679	
3TU4	23.219	590	29.250	743	29.750	756	
3TU5	26.594	675	32.625	829	33.125	841	
3TU7	33.719	856	39.750	1010	40.250	1022	
4TU4	31.563	802	37.625	956	38.125	968	
4TU5	36.063	916	42.125	1070	42.625	1083	
4TU7	45.563	1157	51.625	1311	52.125	1324	
5TU5	45.531	1156	51.625	1311	52.125	1324	
5TU7	57.406	1458	63.500	1613	64.000	1626	
6TU5	55.000	1397	61.000	1549	61.500	1562	
6TU7	69.250	1759	75.250	1911	75.750	1924	
7TU5	64.469	1638	70.500	1791	71.000	1803	
7TU7	81.094	2060	87.125	2213	87.625	2226	
8TU5	73.938	1878	80.000	2032	80.500	2045	
8TU7	92.938	2361	99.000	2515	99.500	2527	
9TU5	83.406	2119	89.500	2273	90.000	2286	
9TU7	104.781	2661	110.875	2816	111.375	2829	
10TU5	92.875	2350	98.875	2511	99.375	2524	
10TU7	116.625	2962	122.625	3115	123.125	3127	

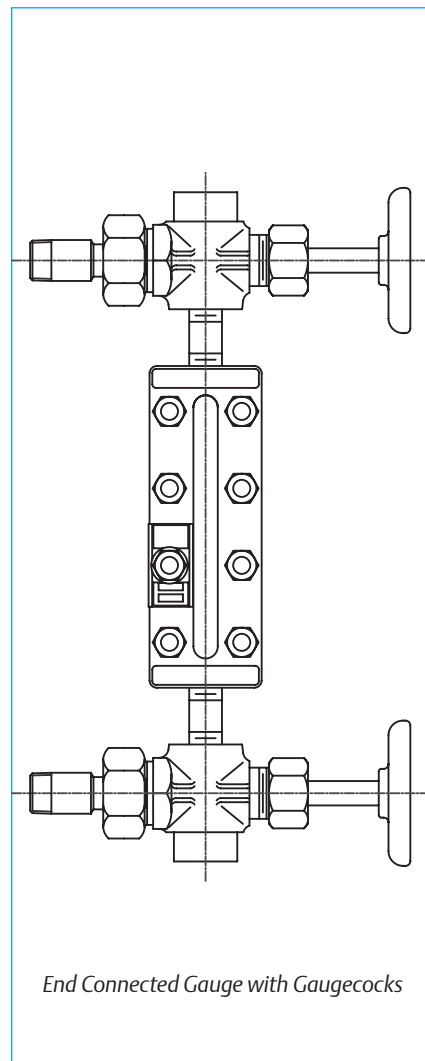
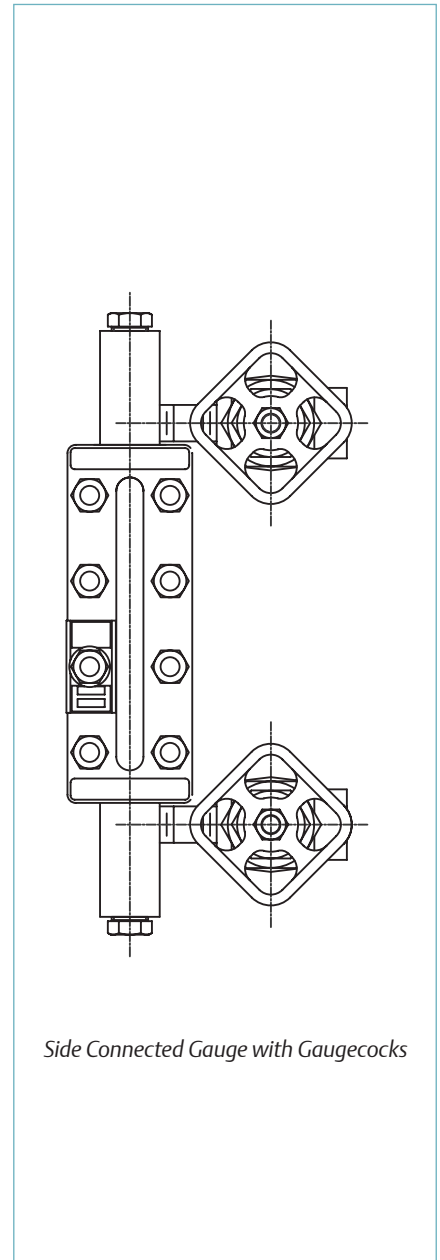


Table 1. Reflex Series: RL and Transparent Series: TL

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				120 or 220 M/F (Union) and 130 or 230 F (Rigid) Series Gaugecock		320 or 420 M/F (Union) and 330 or 430 F (Rigid) Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	5.250	133	----	----
1	2	4.750	121	6.250	159	4.750	121
1	3	5.750	146	7.250	184	5.750	146
1	4	6.750	171	8.250	210	6.750	171
1	5	7.875	200	9.375	238	7.875	200
1	6	9.125	232	10.625	270	9.125	232
1	7	10.250	260	11.750	298	10.250	260
1	8	11.875	302	13.375	340	11.875	302
1	9	12.625	321	14.125	359	12.625	321
2	4	15.000	381	16.500	419	15.000	381
2	5	17.250	438	18.750	476	17.250	438
2	6	19.750	502	21.250	540	19.750	502
2	7	22.000	559	23.500	597	22.000	559
2	8	25.250	641	26.750	679	25.250	641
2	9	26.750	679	28.250	718	26.750	679
3	6	30.375	772	31.875	810	30.375	772
3	7	33.750	857	35.250	895	33.750	857
3	8	38.625	981	40.125	1019	38.625	981
3	9	40.875	1038	42.375	1076	40.875	1038
4	7	45.500	1156	47.000	1194	45.500	1156
4	8	52.000	1321	53.500	1359	52.000	1321
4	9	55.000	1397	56.500	1435	55.000	1397
5	7	57.250	1454	58.750	1492	57.250	1454
5	8	65.375	1661	66.875	1699	65.375	1661
5	9	69.125	1756	70.625	1794	69.125	1756
6	8	78.750	2000	80.250	2038	78.750	2000
6	9	83.250	2115	84.750	2153	83.250	2115
7	8	92.125	2340	93.625	2378	92.125	2340
7	9	97.375	2473	98.875	2511	97.375	2473
8	8	105.500	2680	107.000	2718	105.500	2680
8	9	111.500	2832	113.000	2870	111.500	2832
9	8	118.875	3019	120.375	3058	118.875	3019
9	9	125.625	3191	127.125	3229	125.625	3191
10	8	132.250	3359	133.750	3397	132.250	3359
10	9	139.750	3550	141.250	3588	139.750	3550



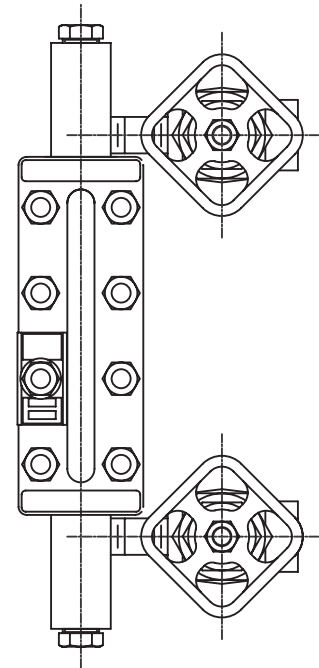
Side Connected Gauges

1/2 NPTM Reflex and Transparent Gauges

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Table 2. Reflex Series: RLC and Transparent Series: TLC

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				120 or 220 M/F (Union) and 130 or 230 F (Rigid) Series Gaugecock		320 or 420 M/F (Union) and 330 or 430 F (Rigid) Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	---	---	---	---
1	2	4.750	121	---	---	---	---
1	3	5.750	146	---	---	---	---
1	4	6.750	171	8.250 ⁽¹⁾	210 ⁽¹⁾	6.750 ⁽¹⁾	171 ⁽¹⁾
1	5	7.875	200	9.375	238	7.875	200
1	6	9.125	232	10.625	270	9.125	232
1	7	10.250	260	11.750	298	10.250	260
1	8	11.875	302	13.375	340	11.875	302
1	9	12.625	321	14.125	359	12.625	321
2	4	15.000	381	16.500	419	15.000	381
2	5	17.250	438	18.750	476	17.250	438
2	6	19.750	502	21.250	540	19.750	502
2	7	22.000	559	23.500	597	22.000	559
2	8	25.250	641	26.750	679	25.250	641
2	9	26.750	679	28.250	718	26.750	679
3	6	30.375	772	31.875	810	30.375	772
3	7	33.750	857	35.250	895	33.750	857
3	8	38.625	981	40.125	1019	38.625	981
3	9	40.875	1038	42.375	1076	40.875	1038
4	7	45.500	1156	47.000	1194	45.500	1156
4	8	52.000	1321	53.500	1359	52.000	1321
4	9	55.000	1397	56.500	1435	55.000	1397
5	7	57.250	1454	58.750	1492	57.250	1454
5	8	65.375	1661	66.875	1699	65.375	1661
5	9	69.125	1756	70.625	1794	69.125	1756
6	8	78.750	2000	80.250	2038	78.750	2000
6	9	83.250	2115	84.750	2153	83.250	2115
7	8	92.125	2340	93.625	2378	92.125	2340
7	9	97.375	2473	98.875	2511	97.375	2473
8	8	105.500	2680	107.000	2718	105.500	2680
8	9	111.500	2832	113.000	2870	111.500	2832
9	8	118.875	3019	120.375	3058	118.875	3019
9	9	125.625	3191	127.125	3229	125.625	3191
10	8	132.250	3359	133.750	3397	132.250	3359
10	9	139.750	3550	141.250	3588	139.750	3550



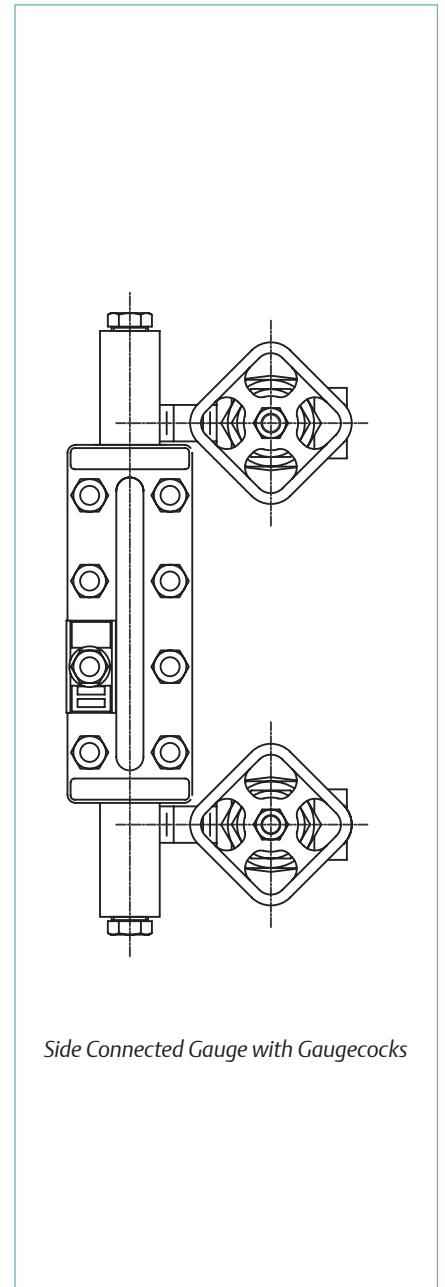
Side Connected Gauge with Gaugecocks

NOTE:

1. RLC and TLC Series not available in single section with glass size 1, 2, 3 and 4.

Table 3. Reflex Series: RM, RH and Transparent Series: TM, TH

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				120 or 220 M/F (Union) and 130 or 230 F (Rigid) Series Gaugecock		320 or 420 M/F (Union) and 330 or 430 F (Rigid) Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	4.750 ⁽¹⁾	121 ⁽¹⁾	---	---
1	2	4.750	121	5.750 ⁽¹⁾	146 ⁽¹⁾	---	---
1	3	5.750	146	6.750 ⁽¹⁾	171 ⁽¹⁾	5.250 ⁽¹⁾	133 ⁽¹⁾
1	4	6.750	171	7.750 ⁽¹⁾	197 ⁽¹⁾	6.250 ⁽¹⁾	159 ⁽¹⁾
1	5	7.875	200	8.875	225	7.375	187
1	6	9.125	232	10.125	257	8.625	219
1	7	10.250	260	11.250	286	9.750	248
1	8	11.875	302	12.875	327	11.375	289
1	9	12.625	321	13.625	346	12.125	308
2	4	15.000	381	16.000	406	14.500	368
2	5	17.250	438	18.250	464	16.750	425
2	6	19.750	502	20.750	527	19.250	489
2	7	22.000	559	23.000	584	21.500	546
2	8	25.250	641	26.250	667	24.750	629
2	9	26.750	679	27.750	705	26.250	667
3	6	30.375	772	31.375	797	29.875	759
3	7	33.750	857	34.750	883	33.250	845
3	8	38.625	981	39.625	1006	38.125	968
3	9	40.875	1038	41.875	1064	40.375	1026
4	7	45.500	1156	46.500	1181	45.000	1143
4	8	52.000	1321	53.000	1346	51.500	1308
4	9	55.000	1397	56.000	1422	54.500	1384
5	7	57.250	1454	58.250	1480	56.750	1441
5	8	65.375	1661	66.375	1686	64.875	1648
5	9	69.125	1756	70.125	1781	68.625	1743
6	8	78.750	2000	79.750	2026	78.250	1988
6	9	83.250	2115	84.250	2140	82.750	2102
7	8	92.125	2340	93.125	2365	91.625	2327
7	9	97.375	2473	98.375	2499	96.875	2461
8	8	105.500	2680	106.500	2705	105.000	2667
8	9	111.500	2832	112.500	2858	111.000	2819
9	8	118.875	3019	119.875	3045	118.375	3007
9	9	125.625	3191	126.625	3216	125.125	3178
10	8	132.250	3359	133.250	3385	131.750	3346
10	9	139.750	3550	140.750	3575	139.250	3537



NOTE:
1. RH, TH, RHR and THR Series not available in single section with glass size 1, 2, 3 and 4.

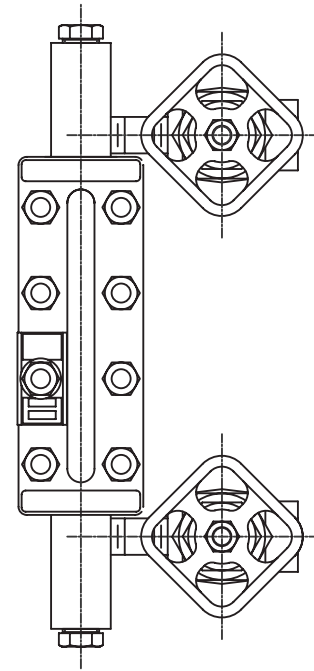
Side Connected Gauges

1/2 NPTM Reflex and Transparent Gauges

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Table 4. Reflex Series: RMR, RHR and Transparent Series: TMR, THR

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				120 or 220 M/F (Union) and 130 or 230 F (Rigid) Series Gaugecock		320 or 420 M/F (Union) and 330 or 430 F (Rigid) Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	5.250 ⁽¹⁾	133 ⁽¹⁾	--- ⁽¹⁾	--- ⁽¹⁾
1	2	4.750	121	6.250 ⁽¹⁾	159 ⁽¹⁾	4.750 ⁽¹⁾	121 ⁽¹⁾
1	3	5.750	146	7.250 ⁽¹⁾	184 ⁽¹⁾	5.750 ⁽¹⁾	146 ⁽¹⁾
1	4	6.750	171	8.250 ⁽¹⁾	210 ⁽¹⁾	6.750 ⁽¹⁾	171 ⁽¹⁾
1	5	7.875	200	9.375	238	7.875	200
1	6	9.125	232	10.625	270	9.125	232
1	7	10.250	260	11.750	298	10.250	260
1	8	11.875	302	13.375	340	11.875	302
1	9	12.625	321	14.125	359	12.625	321
2	4	15.000	381	16.500	419	15.000	381
2	5	17.250	438	18.750	476	17.250	438
2	6	19.750	502	21.250	540	19.750	502
2	7	22.000	559	23.500	597	22.000	559
2	8	25.250	641	26.750	679	25.250	641
2	9	26.750	679	28.250	718	26.750	679
3	6	30.375	772	31.880	810	30.375	772
3	7	33.750	857	35.250	895	33.750	857
3	8	38.625	981	40.125	1019	38.625	981
3	9	40.875	1038	42.375	1076	40.875	1038
4	7	45.500	1156	47.000	1194	45.500	1156
4	8	52.000	1321	53.500	1359	52.000	1321
4	9	55.000	1397	56.500	1435	55.000	1397
5	7	57.250	1454	58.750	1492	57.250	1454
5	8	65.375	1661	66.875	1699	65.375	1661
5	9	69.125	1756	70.625	1794	69.125	1756
6	8	78.750	2000	80.250	2038	78.750	2000
6	9	83.250	2115	84.750	2153	83.250	2115
7	8	92.125	2340	93.625	2378	92.125	2340
7	9	97.375	2473	98.880	2512	97.380	2473
8	8	105.500	2680	107.000	2718	105.500	2680
8	9	111.500	2832	113.000	2870	111.500	2832
9	8	118.875	3019	120.375	3058	118.875	3019
9	9	125.625	3191	127.125	3229	125.625	3191
10	8	132.250	3359	133.750	3397	132.250	3359
10	9	139.750	3550	141.250	3588	139.750	3550



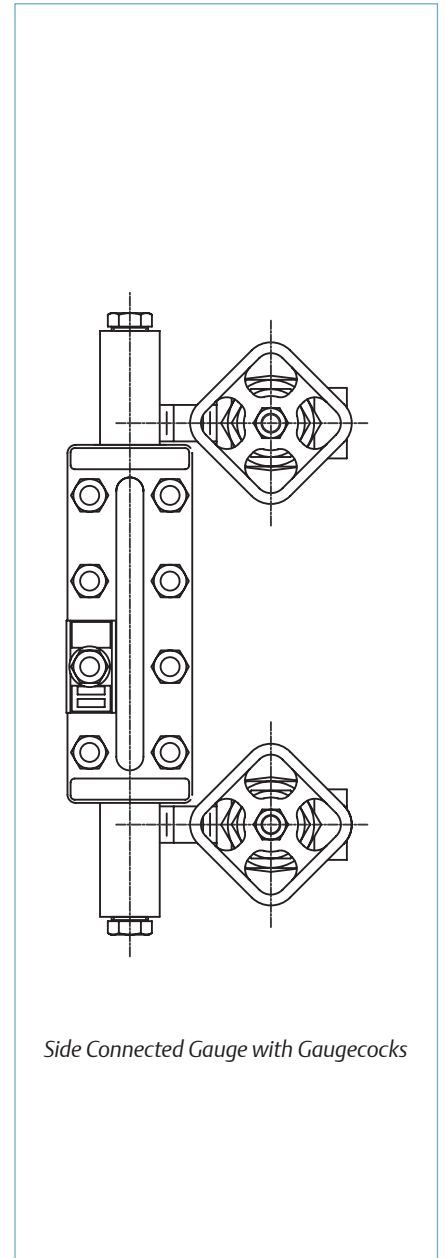
Side Connected Gauge with Gaugecocks

NOTE:

1. RH, TH, RHR and THR Series not available in single section with glass size 1, 2, 3 and 4.

Table 1. Reflex Series: RL and Transparent Series: TL

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				120 or 220 M/F (Union) and 130 or 230 F (Rigid) Series Gaugecock		320 or 420 M/F (Union) and 330 or 430 F (Rigid) Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	5.625	143	----	----
1	2	4.750	121	6.625	168	5.125	130
1	3	5.750	146	7.625	194	6.125	156
1	4	6.750	171	8.625	219	7.125	181
1	5	7.875	200	9.750	248	8.250	210
1	6	9.125	232	11.000	279	9.500	241
1	7	10.250	260	12.125	308	10.625	270
1	8	11.875	302	13.750	349	12.250	311
1	9	12.625	321	14.500	368	13.000	330
2	4	15.000	381	16.875	429	15.375	391
2	5	17.250	438	19.125	486	17.625	448
2	6	19.750	502	21.625	549	20.125	511
2	7	22.000	559	23.875	606	22.375	568
2	8	25.250	641	27.125	689	25.625	651
2	9	26.750	679	28.625	727	27.125	689
3	6	30.375	772	32.250	819	30.750	781
3	7	33.750	857	35.625	905	34.125	867
3	8	38.625	981	40.500	1029	39.000	991
3	9	40.875	1038	42.750	1086	41.250	1048
4	7	45.500	1156	47.375	1203	45.875	1165
4	8	52.000	1321	53.875	1368	52.375	1330
4	9	55.000	1397	56.875	1445	55.375	1407
5	7	57.250	1454	59.125	1502	57.625	1464
5	8	65.375	1661	67.250	1708	65.750	1670
5	9	69.125	1756	71.000	1803	69.500	1765
6	8	78.750	2000	80.625	2048	79.125	2010
6	9	83.250	2115	85.125	2162	83.625	2124
7	8	92.125	2340	94.000	2388	92.500	2350
7	9	97.375	2473	99.250	2521	97.750	2483
8	8	105.500	2680	107.375	2727	105.875	2689
8	9	111.500	2832	113.375	2880	111.875	2842
9	8	118.875	3019	120.750	3067	119.250	3029
9	9	125.625	3191	127.500	3239	126.000	3200
10	8	132.250	3359	134.125	3407	132.625	3369
10	9	139.750	3550	141.625	3597	140.125	3559



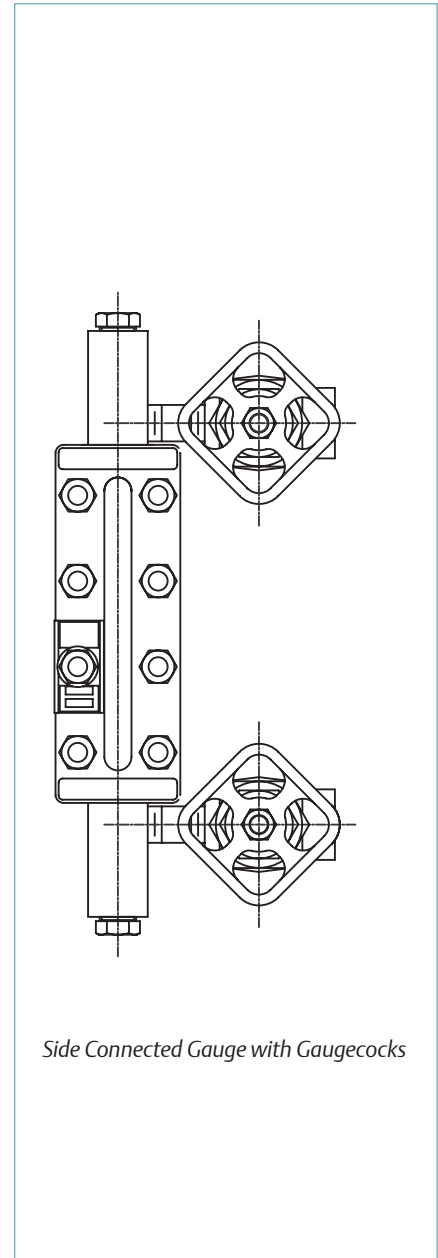
Side Connected Gauges

3/4 NPTM Reflex and Transparent Gauges

PENBERTHY™

Table 2. Reflex Series: RLC and Transparent Series: TLC

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				120 or 220 M/F (Union) and 130 or 230 F (Rigid) Series Gaugecock		320 or 420 M/F (Union) and 330 or 430 F (Rigid) Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	---	---	---	---
1	2	4.750	121	---	---	---	---
1	3	5.750	146	---	---	---	---
1	4	6.750	171	8.250 ⁽¹⁾	210 ⁽¹⁾	6.750 ⁽¹⁾	171 ⁽¹⁾
1	5	7.875	200	9.375	238	7.875	200
1	6	9.125	232	10.625	270	9.125	232
1	7	10.250	260	11.750	298	10.250	260
1	8	11.875	302	13.375	340	11.875	302
1	9	12.625	321	14.125	359	12.625	321
2	4	15.000	381	16.500	419	15.000	381
2	5	17.250	438	18.750	476	17.250	438
2	6	19.750	502	21.250	540	19.750	502
2	7	22.000	559	23.500	597	22.000	559
2	8	25.250	641	26.750	679	25.250	641
2	9	26.750	679	28.250	718	26.750	679
3	6	30.375	772	31.875	810	30.375	772
3	7	33.750	857	35.250	895	33.750	857
3	8	38.625	981	40.125	1019	38.625	981
3	9	40.875	1038	42.375	1076	40.875	1038
4	7	45.500	1156	47.000	1194	45.500	1156
4	8	52.000	1321	53.500	1359	52.000	1321
4	9	55.000	1397	56.500	1435	55.000	1397
5	7	57.250	1454	58.750	1492	57.250	1454
5	8	65.375	1661	66.875	1699	65.375	1661
5	9	69.125	1756	70.625	1794	69.125	1756
6	8	78.750	2000	80.250	2038	78.750	2000
6	9	83.250	2115	84.750	2153	83.250	2115
7	8	92.125	2340	93.625	2378	92.125	2340
7	9	97.375	2473	98.875	2511	97.375	2473
8	8	105.500	2680	107.000	2718	105.500	2680
8	9	111.500	2832	113.000	2870	111.500	2832
9	8	118.875	3019	120.375	3058	118.875	3019
9	9	125.625	3191	127.125	3229	125.625	3191
10	8	132.250	3359	133.750	3397	132.250	3359
10	9	139.750	3550	141.250	3588	139.750	3550



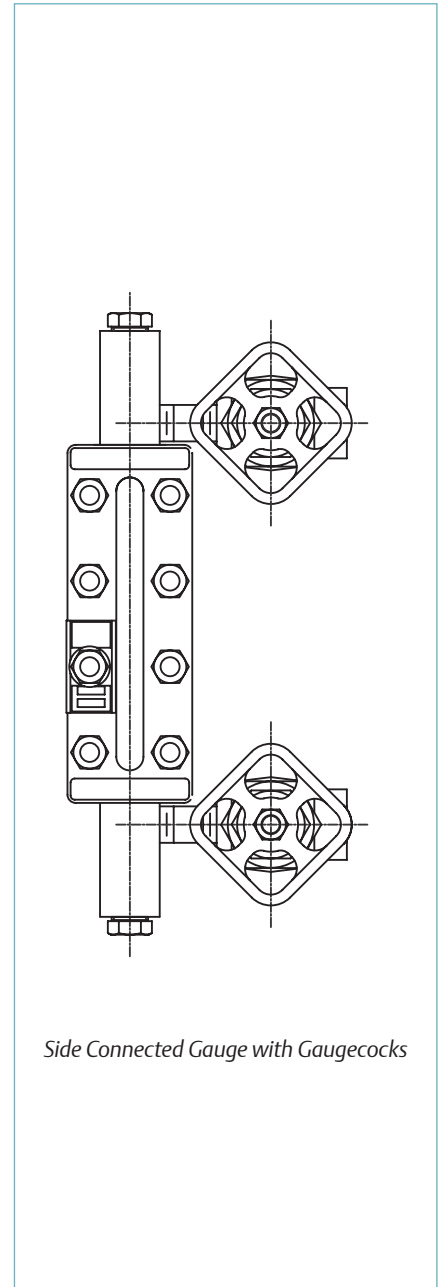
Side Connected Gauge with Gaugecocks

NOTE:

1. RLC and TLC Series not available in single section with glass size 1, 2, 3 and 4.

Table 3. Reflex Series: RM, RH and Transparent Series: TM, TH

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				120 or 220 M/F (Union) and 130 or 230 F (Rigid) Series Gaugecock		320 or 420 M/F (Union) and 330 or 430 F (Rigid) Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	5.250 ⁽¹⁾	133 ⁽¹⁾	---	---
1	2	4.750	121	6.250 ⁽¹⁾	159 ⁽¹⁾	4.750 ⁽¹⁾	---
1	3	5.750	146	7.250 ⁽¹⁾	184 ⁽¹⁾	5.750 ⁽¹⁾	146 ⁽¹⁾
1	4	6.750	171	8.250 ⁽¹⁾	210 ⁽¹⁾	6.750 ⁽¹⁾	171 ⁽¹⁾
1	5	7.875	200	9.375	238	7.875	200
1	6	9.125	232	10.625	270	9.125	232
1	7	10.250	260	11.750	298	10.250	260
1	8	11.875	302	13.375	340	11.875	302
1	9	12.625	321	14.125	359	12.625	321
2	4	15.000	381	16.500	419	15.000	381
2	5	17.250	438	18.750	476	17.250	438
2	6	19.750	502	21.250	540	19.750	502
2	7	22.000	559	23.500	597	22.000	559
2	8	25.250	641	26.750	679	25.250	641
2	9	26.750	679	28.250	718	26.750	679
3	6	30.375	772	31.875	810	30.375	772
3	7	33.750	857	35.250	895	33.750	857
3	8	38.625	981	40.125	1019	38.625	981
3	9	40.875	1038	42.375	1076	40.875	1038
4	7	45.500	1156	47.000	1194	45.500	1156
4	8	52.000	1321	53.500	1359	52.000	1321
4	9	55.000	1397	56.500	1435	55.000	1397
5	7	57.250	1454	58.750	1492	57.250	1454
5	8	65.375	1661	66.875	1699	65.375	1661
5	9	69.125	1756	70.625	1794	69.125	1756
6	8	78.750	2000	80.250	2038	78.750	2000
6	9	83.250	2115	84.750	2153	83.250	2115
7	8	92.125	2340	93.625	2378	92.125	2340
7	9	97.375	2473	98.875	2511	97.375	2473
8	8	105.500	2680	107.000	2718	105.500	2680
8	9	111.500	2832	113.000	2870	111.500	2832
9	8	118.875	3019	120.375	3058	118.875	3019
9	9	125.625	3191	127.125	3229	125.625	3191
10	8	132.250	3359	133.750	3397	132.250	3359
10	9	139.750	3550	141.250	3588	139.750	3550



NOTE:
1. RH, TH, RHR and THR Series not available in single section with glass size 1, 2, 3 and 4.

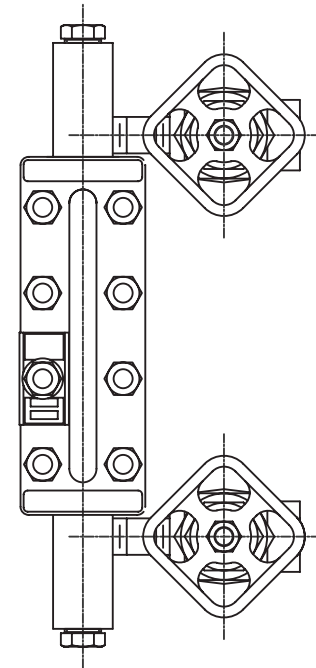
Side Connected Gauges

3/4 NPTM Reflex and Transparent Gauges

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Table 4. Reflex Series: RMR, RHR and Transparent Series: TMR, THR

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				120 or 220 M/F (Union) and 130 or 230 F (Rigid) Series Gaugecock		320 or 420 M/F (Union) and 330 or 430 F (Rigid) Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	5.500 ⁽¹⁾	140 ⁽¹⁾	--- ⁽¹⁾	--- ⁽¹⁾
1	2	4.750	121	6.500 ⁽¹⁾	165 ⁽¹⁾	5.000 ⁽¹⁾	127 ⁽¹⁾
1	3	5.750	146	7.500 ⁽¹⁾	191 ⁽¹⁾	6.000 ⁽¹⁾	152 ⁽¹⁾
1	4	6.750	171	8.500 ⁽¹⁾	216 ⁽¹⁾	7.000 ⁽¹⁾	178 ⁽¹⁾
1	5	7.875	200	9.630	245	8.130	207
1	6	9.125	232	10.880	276	9.380	238
1	7	10.250	260	12.000	305	10.500	267
1	8	11.875	302	13.630	346	12.130	308
1	9	12.625	321	14.380	365	12.880	327
2	4	15.000	381	16.750	425	15.250	387
2	5	17.250	438	19.000	483	17.500	445
2	6	19.750	502	21.500	546	20.000	508
2	7	22.000	559	23.750	603	22.250	565
2	8	25.250	641	27.000	686	25.500	648
2	9	26.750	679	28.500	724	27.000	686
3	6	30.375	772	32.130	816	30.630	778
3	7	33.750	857	35.500	902	34.000	864
3	8	38.625	981	40.380	1026	38.880	988
3	9	40.875	1038	42.630	1083	41.130	1045
4	7	45.500	1156	47.250	1200	45.750	1162
4	8	52.000	1321	53.750	1365	52.250	1327
4	9	55.000	1397	56.750	1441	55.250	1403
5	7	57.250	1454	59.000	1499	57.500	1461
5	8	65.375	1661	67.130	1705	65.630	1667
5	9	69.125	1756	70.880	1800	69.380	1762
6	8	78.750	2000	80.500	2045	79.000	2007
6	9	83.250	2115	85.000	2159	83.500	2121
7	8	92.125	2340	93.880	2385	92.380	2346
7	9	97.375	2473	99.130	2518	97.630	2480
8	8	105.500	2680	107.250	2724	105.750	2686
8	9	111.500	2832	113.250	2877	111.750	2838
9	8	118.875	3019	120.630	3064	119.130	3026
9	9	125.625	3191	127.380	3235	125.880	3197
10	8	132.250	3359	134.000	3404	132.500	3366
10	9	139.750	3550	141.500	3594	140.000	3556



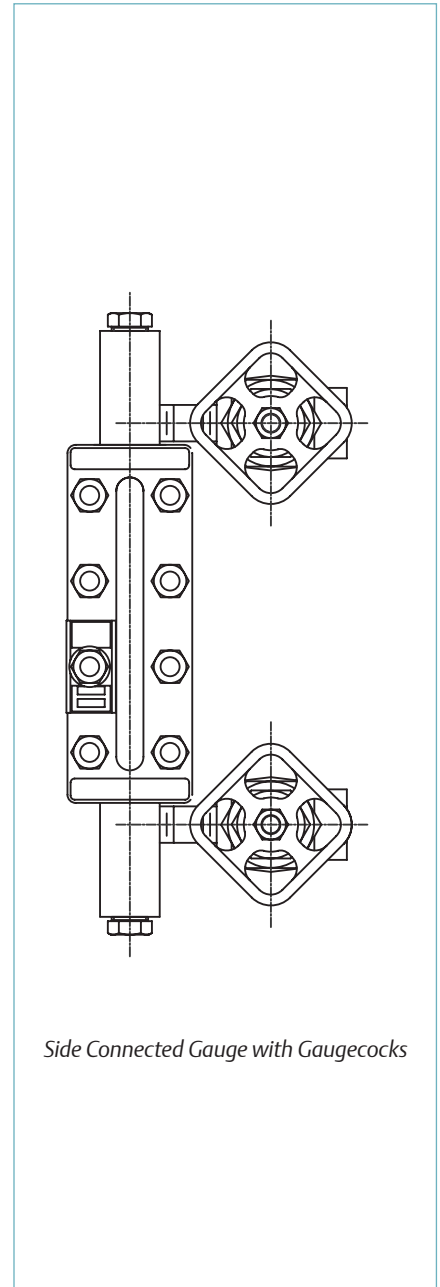
Side Connected Gauge with Gaugecocks

NOTE:

1. RH, TH, RHR and THR Series not available in single section with glass size 1, 2, 3 and 4.

Table 1. Reflex Series: RM, RH and Transparent Series: TM, TH

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				520 M/F (Union) and 530 F (Rigid) Series Gaugecock		720 M/F (Union) and 730 F (Rigid) Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	4.750 ⁽¹⁾	121 ⁽¹⁾	4.250 ⁽¹⁾	108 ⁽¹⁾
1	2	4.750	121	5.750 ⁽¹⁾	146 ⁽¹⁾	4.250 ⁽¹⁾	108 ⁽¹⁾
1	3	5.750	146	6.750 ⁽¹⁾	171 ⁽¹⁾	5.250 ⁽¹⁾	133 ⁽¹⁾
1	4	6.750	171	7.750 ⁽¹⁾	197 ⁽¹⁾	6.250 ⁽¹⁾	159 ⁽¹⁾
1	5	7.875	200	8.875	225	7.375	187
1	6	9.125	232	10.125	257	8.625	219
1	7	10.250	260	11.250	286	9.750	248
1	8	11.875	302	12.875	327	11.375	289
1	9	12.625	321	13.625	346	12.125	308
2	4	15.000	381	16.000	406	14.500	368
2	5	17.250	438	18.250	464	16.750	425
2	6	19.750	502	20.750	527	19.250	489
2	7	22.000	559	23.000	584	21.500	546
2	8	25.250	641	26.250	667	24.750	629
2	9	26.750	679	27.750	705	26.250	667
3	6	30.375	772	31.375	797	29.875	759
3	7	33.750	857	34.750	883	33.250	845
3	8	38.625	981	39.625	1006	38.125	968
3	9	40.875	1038	41.875	1064	40.375	1026
4	7	45.500	1156	46.500	1181	45.000	1143
4	8	52.000	1321	53.000	1346	51.500	1308
4	9	55.000	1397	56.000	1422	54.500	1384
5	7	57.250	1454	58.250	1480	56.750	1441
5	8	65.375	1661	66.375	1686	64.875	1648
5	9	69.125	1756	70.125	1781	68.625	1743
6	8	78.750	2000	79.750	2026	78.250	1988
6	9	83.250	2115	84.250	2140	82.750	2102
7	8	92.125	2340	93.125	2365	91.625	2327
7	9	97.375	2473	98.375	2499	96.875	2461
8	8	105.500	2680	106.500	2705	105.000	2667
8	9	111.500	2832	112.500	2858	111.000	2819
9	8	118.875	3019	119.875	3045	118.500	3010
9	9	125.625	3191	126.625	3216	125.125	3178
10	8	132.250	3359	133.250	3385	131.750	3346
10	9	139.750	3550	140.750	3575	139.250	3537



NOTE:
1. RH, TH, RHR and THR Series not available in single section with glass size 1, 2, 3 and 4.

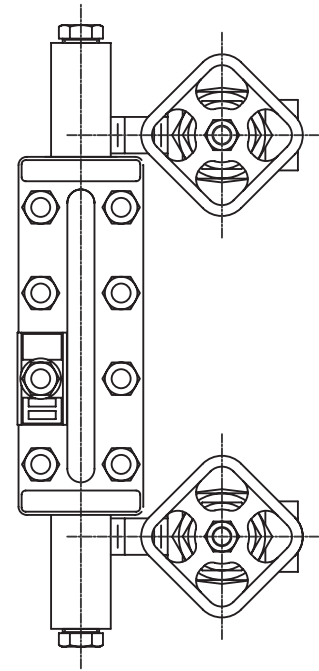
Side Connected Gauges

1/2 NPTM Reflex and Transparent Gauges

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Table 2. Reflex Series: RMR, RHR and Transparent Series: TMR, THR

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				520 M/F (Union) and 530 F (Rigid) Series Gaugecock		720 M/F (Union) and 730 F (Rigid) Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	5.250 ⁽¹⁾	133 ⁽¹⁾	--- ⁽¹⁾	--- ⁽¹⁾
1	2	4.750	121	6.250 ⁽¹⁾	159 ⁽¹⁾	4.750 ⁽¹⁾	121 ⁽¹⁾
1	3	5.750	146	7.250 ⁽¹⁾	184 ⁽¹⁾	5.750 ⁽¹⁾	146 ⁽¹⁾
1	4	6.750	171	8.250 ⁽¹⁾	210 ⁽¹⁾	6.750 ⁽¹⁾	171 ⁽¹⁾
1	5	7.875	200	9.375	238	7.875	200
1	6	9.125	232	10.625	270	9.125	232
1	7	10.250	260	11.750	298	10.250	260
1	8	11.875	302	13.375	340	11.875	302
1	9	12.625	321	14.125	359	12.625	321
2	4	15.000	381	16.500	419	15.000	381
2	5	17.250	438	18.750	476	17.250	438
2	6	19.750	502	21.250	540	19.750	502
2	7	22.000	559	23.500	597	22.000	559
2	8	25.250	641	26.750	679	25.250	641
2	9	26.750	679	28.250	718	26.750	679
3	6	30.375	772	31.875	810	30.380	772
3	7	33.750	857	35.250	895	33.750	857
3	8	38.625	981	40.125	1019	38.625	981
3	9	40.875	1038	42.375	1076	40.875	1038
4	7	45.500	1156	47.000	1194	45.500	1156
4	8	52.000	1321	53.500	1359	52.000	1321
4	9	55.000	1397	56.500	1435	55.000	1397
5	7	57.250	1454	58.750	1492	57.250	1454
5	8	65.375	1661	66.875	1699	65.375	1661
5	9	69.125	1756	70.625	1794	69.125	1756
6	8	78.750	2000	80.250	2038	78.750	2000
6	9	83.250	2115	84.750	2153	83.250	2115
7	8	92.125	2340	93.625	2378	92.125	2340
7	9	97.375	2473	98.875	2511	97.375	2473
8	8	105.500	2680	107.000	2718	105.500	2680
8	9	111.500	2832	113.000	2870	111.500	2832
9	8	118.875	3019	120.375	3058	118.875	3019
9	9	125.625	3191	127.125	3229	125.625	3191
10	8	132.250	3359	133.750	3397	132.250	3359
10	9	139.750	3550	141.250	3588	139.750	3550

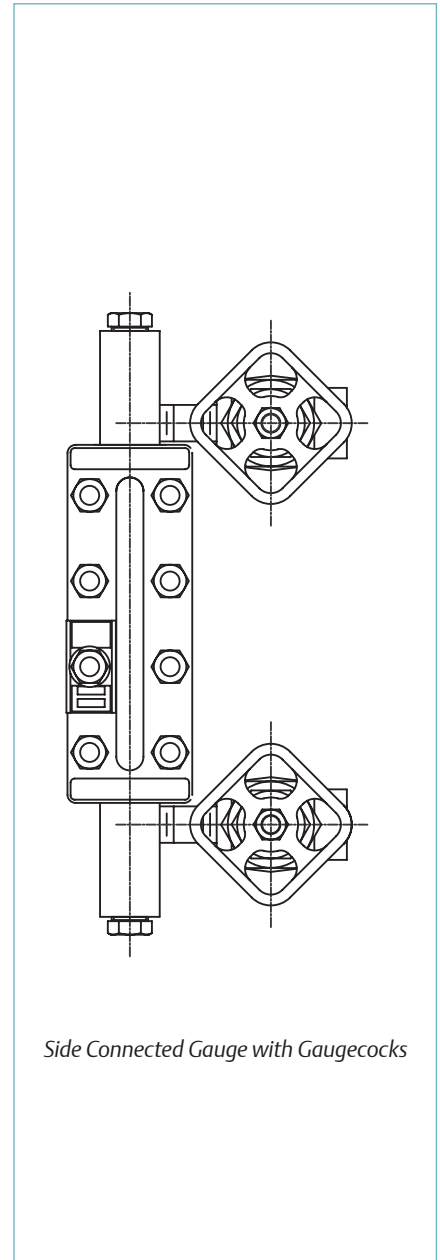


Side Connected Gauge with Gaugecocks

NOTE:
1. RH, TH, RHR and THR Series not available in single section with glass size 1, 2, 3 and 4.

Table 1. Reflex Series: RLC and Transparent Series: TLC

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				520 M/F (Union) and 530 F (Rigid) Series Gaugecock		720 M/F (Union) and 730 F (Rigid) Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	--- ⁽¹⁾	--- ⁽¹⁾	--- ⁽¹⁾	--- ⁽¹⁾
1	2	4.750	121	--- ⁽¹⁾	--- ⁽¹⁾	--- ⁽¹⁾	--- ⁽¹⁾
1	3	5.750	146	--- ⁽¹⁾	--- ⁽¹⁾	--- ⁽¹⁾	--- ⁽¹⁾
1	4	6.750	171	8.250 ⁽¹⁾	210 ⁽¹⁾	6.750 ⁽¹⁾	171 ⁽¹⁾
1	5	7.875	200	9.375	238	7.875	200
1	6	9.125	232	10.625	270	9.125	232
1	7	10.250	260	11.750	298	10.250	260
1	8	11.875	302	13.375	340	11.875	302
1	9	12.625	321	14.125	359	12.625	321
2	4	15.000	381	16.500	419	15.000	381
2	5	17.250	438	18.750	476	17.250	438
2	6	19.750	502	21.250	540	19.750	502
2	7	22.000	559	23.500	597	22.000	559
2	8	25.250	641	26.750	679	25.250	641
2	9	26.750	679	28.250	718	26.750	679
3	6	30.375	772	31.875	810	30.375	772
3	7	33.750	857	35.250	895	33.750	857
3	8	38.625	981	40.125	1019	38.625	981
3	9	40.875	1038	42.375	1076	40.875	1038
4	7	45.500	1156	47.000	1194	45.500	1156
4	8	52.000	1321	53.500	1359	52.000	1321
4	9	55.000	1397	56.500	1435	55.000	1397
5	7	57.250	1454	58.750	1492	57.250	1454
5	8	65.375	1661	66.875	1699	65.375	1661
5	9	69.125	1756	70.625	1794	69.125	1756
6	8	78.750	2000	80.250	2038	78.750	2000
6	9	83.250	2115	84.750	2153	83.250	2115
7	8	92.125	2340	93.625	2378	92.125	2340
7	9	97.375	2473	98.875	2511	97.375	2473
8	8	105.500	2680	107.000	2718	105.500	2680
8	9	111.500	2832	113.000	2870	111.500	2832
9	8	118.875	3019	120.375	3058	118.875	3019
9	9	125.625	3191	127.125	3229	125.625	3191
10	8	132.250	3359	133.750	3397	132.250	3359
10	9	139.750	3550	141.250	3588	139.750	3550



NOTE:

1. RLC and TLC Series not available in single section with glass size 1, 2, 3 and 4.

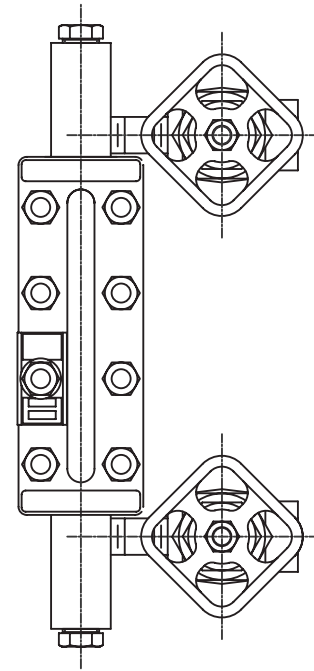
Side Connected Gauges

3/4 NPTM Reflex and Transparent Gauges

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Table 1. Reflex Series: RM, RH and Transparent Series: TM, TH

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				520 M/F (Union) and 530 F (Rigid) Series Gaugecock		720 M/F (Union) and 730 F (Rigid) Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	5.250 ⁽¹⁾	133 ⁽¹⁾	--- ⁽¹⁾	--- ⁽¹⁾
1	2	4.750	121	6.250 ⁽¹⁾	159 ⁽¹⁾	4.750 ⁽¹⁾	121 ⁽¹⁾
1	3	5.750	146	7.250 ⁽¹⁾	184 ⁽¹⁾	5.750 ⁽¹⁾	146 ⁽¹⁾
1	4	6.750	171	8.250 ⁽¹⁾	210 ⁽¹⁾	6.750 ⁽¹⁾	171 ⁽¹⁾
1	5	7.875	200	9.375	238	7.875	200
1	6	9.125	232	10.625	270	9.125	232
1	7	10.250	260	11.750	298	10.250	260
1	8	11.875	302	13.375	340	11.875	302
1	9	12.625	321	14.125	359	12.625	321
2	4	15.000	381	16.500	419	15.000	381
2	5	17.250	438	18.750	476	17.250	438
2	6	19.750	502	21.250	540	19.750	502
2	7	22.000	559	23.500	597	22.000	559
2	8	25.250	641	26.750	679	25.250	641
2	9	26.750	679	28.250	718	26.750	679
3	6	30.375	772	31.875	810	30.375	772
3	7	33.750	857	35.250	895	33.750	857
3	8	38.625	981	40.125	1019	38.625	981
3	9	40.875	1038	42.375	1076	40.875	1038
4	7	45.500	1156	47.000	1194	45.500	1156
4	8	52.000	1321	53.500	1359	52.000	1321
4	9	55.000	1397	56.500	1435	55.000	1397
5	7	57.250	1454	58.750	1492	57.250	1454
5	8	65.375	1661	66.875	1699	65.375	1661
5	9	69.125	1756	70.625	1794	69.125	1756
6	8	78.750	2000	80.250	2038	78.750	2000
6	9	83.250	2115	84.750	2153	83.250	2115
7	8	92.125	2340	93.625	2378	92.125	2340
7	9	97.375	2473	98.875	2511	97.375	2473
8	8	105.500	2680	107.000	2718	105.500	2680
8	9	111.500	2832	113.000	2870	111.500	2832
9	8	118.875	3019	120.375	3058	118.875	3019
9	9	125.625	3191	127.125	3229	125.625	3191
10	8	132.250	3359	133.750	3397	132.250	3359
10	9	139.750	3550	141.250	3588	139.750	3550



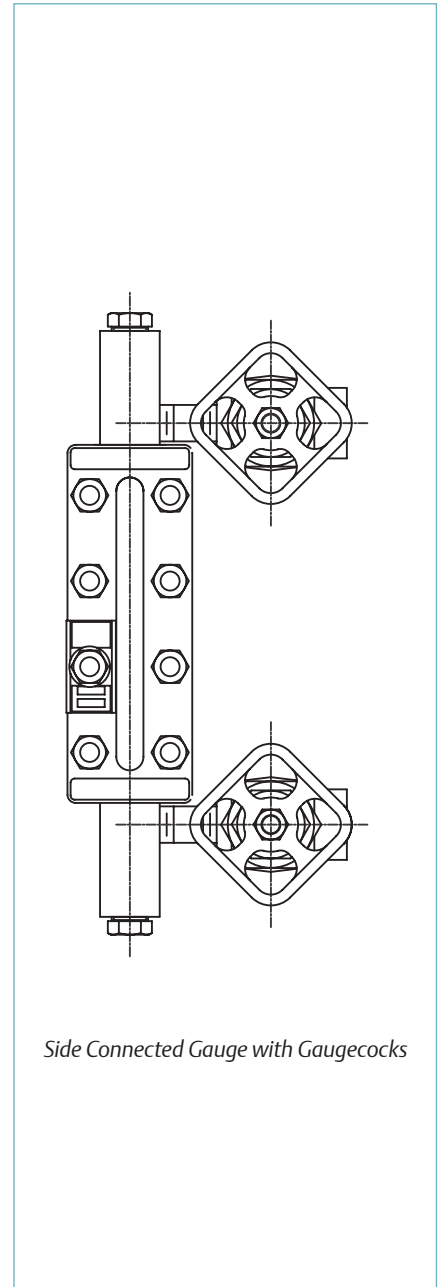
Side Connected Gauge with Gaugecocks

NOTE:

1. RH, TH, RHR and THR Series not available in single section with glass size 1, 2, 3 and 4.

Table 2. Reflex Series: RMR, RHR and Transparent Series: TMR, THR

NUMBER OF SECTIONS	GLASS SIZE	VISIBLE GLASS		MINIMUM CENTERS			
				520 M/F (Union) and 530 F (Rigid) Series Gaugecock		720 M/F (Union) and 730 F (Rigid) Series Gaugecock	
		in.	mm	in.	mm	in.	mm
1	1	3.750	95	5.500 ⁽¹⁾	140 ⁽¹⁾	---	---
1	2	4.750	121	6.500 ⁽¹⁾	165 ⁽¹⁾	5.000 ⁽¹⁾	127 ⁽¹⁾
1	3	5.750	146	7.500 ⁽¹⁾	191 ⁽¹⁾	6.000 ⁽¹⁾	152 ⁽¹⁾
1	4	6.750	171	8.500 ⁽¹⁾	216 ⁽¹⁾	7.000 ⁽¹⁾	178 ⁽¹⁾
1	5	7.875	200	9.630	245	8.130	207
1	6	9.125	232	10.880	276	9.380	238
1	7	10.250	260	12.000	305	10.500	267
1	8	11.875	302	13.630	346	12.130	308
1	9	12.625	321	14.380	365	12.880	327
2	4	15.000	381	16.750	425	15.250	387
2	5	17.250	438	19.000	483	17.500	445
2	6	19.750	502	21.500	546	20.000	508
2	7	22.000	559	23.750	603	22.250	565
2	8	25.250	641	27.000	686	25.500	648
2	9	26.750	679	28.500	724	27.000	686
3	6	30.375	772	32.130	816	30.630	778
3	7	33.750	857	35.500	902	34.000	864
3	8	38.625	981	40.380	1026	38.880	988
3	9	40.875	1038	42.630	1083	41.130	1045
4	7	45.500	1156	47.250	1200	45.750	1162
4	8	52.000	1321	53.750	1365	52.250	1327
4	9	55.000	1397	56.750	1441	55.250	1403
5	7	57.250	1454	59.000	1499	57.500	1461
5	8	65.375	1661	67.130	1705	65.630	1667
5	9	69.125	1756	70.880	1800	69.380	1762
6	8	78.750	2000	80.500	2045	79.000	2007
6	9	83.250	2115	85.000	2159	83.500	2121
7	8	92.125	2340	93.880	2385	92.380	2346
7	9	97.375	2473	99.130	2518	97.630	2480
8	8	105.500	2680	107.250	2724	105.750	2686
8	9	111.500	2832	113.250	2877	111.750	2838
9	8	118.875	3019	120.630	3064	119.130	3026
9	9	125.625	3191	127.380	3235	125.880	3197
10	8	132.250	3359	134.000	3404	132.500	3366
10	9	139.750	3550	141.500	3594	140.000	3556



NOTE:
 1. RH, TH, RHR and THR Series not available in single section with glass size 1, 2, 3 and 4.

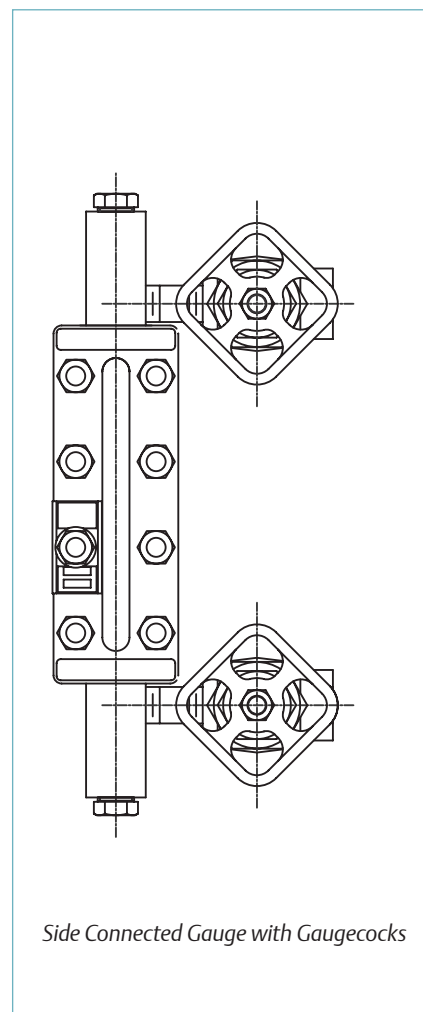
Side Connected Gauges

1/2 and 3/4 NPT Transparent Gauges

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Table 1: Transparent Series: TU

NUMBER OF SECTIONS	VISIBLE GLASS		MINIMUM CENTERS	
			630 F (Rigid) Gaugecock Series	
	in.	mm	in.	mm
1TU1	3.531	90	4.250	108
1TU3	5.531	140	6.250	159
1TU4	6.531	166	7.250	184
1TU5	7.656	194	8.375	213
1TU7	10.031	255	10.750	273
2TU1	8.875	225	9.625	244
2TU3	12.875	327	13.625	346
2TU4	14.875	378	15.625	397
2TU5	17.125	435	17.875	454
2TU7	21.875	556	22.625	575
3TU3	20.219	514	21.000	533
3TU4	23.219	590	24.000	610
3TU5	26.594	675	27.375	695
3TU7	33.719	856	34.500	876
4TU4	31.563	802	32.375	822
4TU5	36.063	916	36.875	937
4TU7	45.563	1157	46.375	1178
5TU5	45.531	1156	46.250	1175
5TU7	57.406	1458	58.125	1476
6TU5	55.000	1397	55.750	1416
6TU7	69.250	1759	70.000	1778
7TU5	64.469	1638	65.250	1657
7TU7	81.094	2060	81.875	2080
8TU5	73.938	1878	74.750	1899
8TU7	92.938	2361	93.750	2381
9TU5	83.406	2119	84.125	2137
9TU7	104.781	2661	105.500	2680
10TU5	92.875	2350	93.625	2378
10TU7	116.625	2962	117.375	2981



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