

Fowler

Bowers Superbore System



Bowers Superbore Gages combine the Sylvac electronic measuring system with Bowers Bore Gages for the world's finest and easiest to use electronic bore gaging system.

You can select Bowers Superbore Gages as accessories to your existing Sylvac measuring system or start with electronic bore gaging as your primary application. Probes and other components can be added later to develop a custom, multi-purpose measuring system.

Components of the Bowers System: Superbore Gage Head, Electronic Transducer Handle with Sylvac Digital Indicator unit or Superbore Pistol Grip, Extra-Length Extensions and Setting Rings.

Special Features:

- The system utilizes a 3-point contact system for sizes .236" (6mm) and up. A 2-point "split cylinder" system is used for .040" (1mm) through .236" (6mm) sizes.
- Sizes above .630" (16mm) have ceramic measuring anvils.
- Every head is serialized and includes a test certificate.
- Quick, one hand operation is foolproof and allows even unskilled operators to measure and read clearly the exact size of the bore on the digital readout.
- The ample six-foot length, cable allows use at the machine or an inspection center. If needed, an optional nine foot extension cable is also available.
- High accuracy/wide range transducers allow a much wider range per gage head—fewer gage heads and rings are needed to cover the total size range. No need for air or expensive sleeves.
- Choice of digital indication units or Pistol Grip Handle.

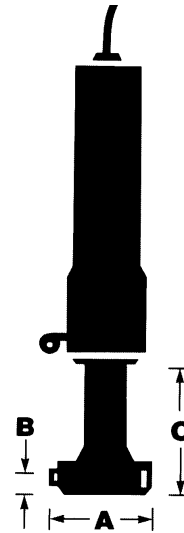


- Resolution to .00001" (.0001mm).
- Preset facility allows measurements of either actual size or deviation from zero.
- Output signals from the Sylvac units connect with printers and computers. Direct RS232 available.
- Rugged, shockproof design allows use in the most rigorous shop environment.
- Sets in wooden cases are available for convenient tool crib storage.
- Blind bore capability on most sizes.
- Special design heads available. Contact our Technical Department for details.



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Bowers Superbore Gage Heads



Bowers Electronic Bore Gage Heads cover a wider range of hole sizes than conventional air or electronic plug gages. Bowers' system needs fewer setting rings and no sleeves.

Superbore anvils are made from Zirconia ceramic—an "advanced" ceramic which offers high strength, low coefficient of friction, better wear resistance than carbide, excellent abrasion resistance (1.5 x carbide), better corrosion resistance than carbide, coefficient expansion similar to steel, and it's non-magnetic.

The Bowers Gage Head threads onto the transducer/handle. Optional extensions in sizes 2½"—6" increase the measuring depth. The extensions can be connected to each other to further increase depth. Extensions can be used on heads above .236" diameter.

Range sizes: .040"/1mm—12.126"/310mm. For smaller sizes (.040"/1mm—.236"/6mm), a 2-point or "split cylinder" system is utilized. A 3-point contact wedge system is used for larger sizes (.236"/6mm—12.126"/310mm). The 3-point contact is designed for indicating lobing. The 2-point design is for indicating out-of-roundness. See chart for "A", "B" and "C" dimensions.

Order No.	A. Range Inch	A. Range Metric (mm)	B. Min. Capacity	C. Depth Capacity	Head Accuracy
54-555-210	.040—.045"	1—1.15mm	B.B.	.230"	.00007"
54-555-212	.045—.051"	1.15—1.3mm	B.B.	.230"	.00007"
54-555-215	.051—.059"	1.3—1.5mm	B.B.	.230"	.00007"
54-555-218	.059—.068"	1.5—1.7mm	B.B.	.310"	.00007"
54-555-220	.068—.078"	1.75—2.00mm	B.B.	.310"	.00007"
54-555-222	.078—.098"	2—2.5mm	B.B.	.390"	.00007"
54-555-223	.098—.118"	2.5—3mm	B.B.	.390"	.00007"
54-555-224	.118—.157"	3—4mm	B.B.	.470"	.00007"
54-555-225	.157—.197"	4—5mm	B.B.	.790"	.00007"
54-555-226	.197—.236"	5—6mm	B.B.	.790"	.00007"
54-555-008	.236—.315"	6—8mm	.157"	2.300"	.0001"
54-555-009	.315—.393"	8—10mm	.157"	2.300"	.00007"

B.B.=Blind bore reading: standard on all heads except .236—.472"(6-12mm).

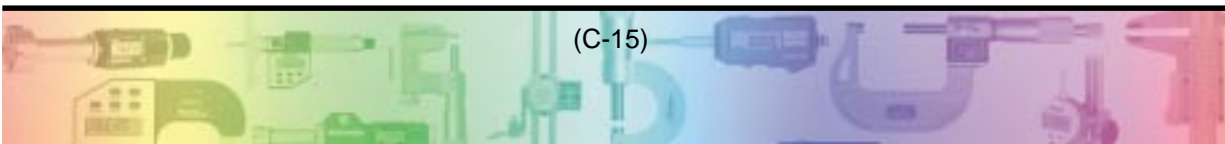


Bowers Superbore Gage Heads



Order No.	A. Range Inch	A. Range Metric (mm)	B. Min. Capacity	C. Depth Capacity	Head Accuracy
54-555-010	.393—.472"	10—12mm	.157"	2.300"	.00007"
54-555-011	.472—.550"	12—14mm	B.B.	2.300"	.00007"
54-555-012	.550—.630"	14—16mm	B.B.	2.300"	.00007"
54-555-015	.630—.710"	16—18mm	B.B.	2.500"	.00006"
54-555-018	.710—.825"	18—21mm	B.B.	2.500"	.00006"
54-555-021	.825—.945"	21—24mm	B.B.	2.500"	.00006"
54-555-024	.945—1.062"	24—27mm	B.B.	2.500"	.00006"
54-555-027	1.062—1.180"	27—30mm	B.B.	2.500"	.00006"
54-555-030	1.180—1.340"	30—34mm	B.B.	2.500"	.00006"
54-555-034	1.340—1.500"	34—38mm	B.B.	2.500"	.00006"
54-555-038	1.500—1.650"	38—42mm	B.B.	2.500"	.00006"
54-555-042	1.650—1.810"	42—46mm	B.B.	2.500"	.00006"
54-555-046	1.810—1.970"	46—50mm	B.B.	2.500"	.00006"
54-555-050	1.970—2.165"	50—55mm	B.B.	3.150"	.00008"
54-555-055	2.165—2.360"	55—60mm	B.B.	3.150"	.00008"
54-555-060	2.360—2.560"	60—65mm	B.B.	3.150"	.00008"
54-555-065	2.560—2.756"	65—70mm	B.B.	3.150"	.00008"
54-555-070	2.756—2.950"	70—75mm	B.B.	3.150"	.00008"
54-555-075	2.950—3.150"	75—80mm	B.B.	3.150"	.00008"
54-555-080	3.150—3.346"	80—85mm	B.B.	3.150"	.00008"
54-555-085	3.346—3.543"	85—90mm	B.B.	3.150"	.00008"
54-555-090	3.543—3.740"	90—95mm	B.B.	3.150"	.00008"
54-555-095	3.740—3.940"	95—100mm	B.B.	3.150"	.00008"
54-555-102	3.940—4.330"	100—110mm	B.B.	3.150"	.0001"
54-555-107	4.330—4.725"	110—120mm	B.B.	3.150"	.0001"
54-555-112	4.725—5.120"	120—130mm	B.B.	3.150"	.0001"
54-555-117	5.120—5.510"	130—140mm	B.B.	3.150"	.0001"
54-555-122	5.510—5.900"	140—150mm	B.B.	3.150"	.0001"
54-555-127	5.900—6.300"	150—160mm	B.B.	3.150"	.0001"
54-555-132	6.300—6.690"	160—170mm	B.B.	3.150"	.0001"
54-555-137	6.690—7.090"	170—180mm	B.B.	3.150"	.0001"
54-555-142	7.090—7.480"	180—190mm	B.B.	3.150"	.0001"
54-555-146	7.480—7.875"	190—200mm	B.B.	3.150"	.0001"
54-555-148	7.875—8.270"	200—210mm	B.B.	3.150"	.0001"
54-555-152	8.270—8.661"	210—220mm	B.B.	4.625"	.00015"
54-555-154	8.661—9.055"	220—230mm	B.B.	4.625"	.00015"
54-555-156	9.055—9.449"	230—240mm	B.B.	4.625"	.00015"
54-555-158	9.449—9.842"	240—250mm	B.B.	4.625"	.00015"
54-555-160	9.842—10.236"	250—260mm	B.B.	4.625"	.00015"
54-555-162	10.236—10.630"	260—270mm	B.B.	4.625"	.00015"
54-555-164	10.630—11.024"	270—280mm	B.B.	4.625"	.00015"
54-555-168	11.024—11.417"	280—290mm	B.B.	4.625"	.00015"
54-555-170	11.417—11.811"	290—300mm	B.B.	4.625"	.00015"
54-555-172	11.811—12.126"	300—310mm	B.B.	4.625"	.00015"

B.B.=Blind bore reading: standard on all heads except .236—.472"(6-12mm).



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Bowers Superbore Ring Gages



**Includes NAMAS
Certificate**

- Bowers Superbore ring gages
- Bowers Superbore ring gages are marked in inch and metric sizes.



Replacement Rings:



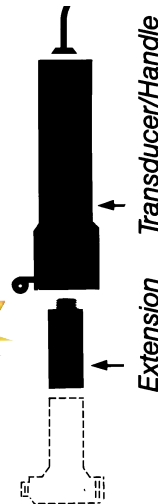
Order No.	Nominal Dia. Inch	Nominal Dia. Metric	Tolerance
54-560-215	.040"	1mm	± .000078"/.002mm
54-560-218	.051"	1.3mm	± .000078"/.002mm
54-560-220	.068"	1.75mm	± .000078"/.002mm
54-560-222	.098"	2.5mm	± .000032"/.0008mm
54-560-224	.157"	4mm	± .000032"/.0008mm
54-560-225	.197"	5mm	± .000032"/.0008mm
54-560-010	.315"	8mm	± .000032"/.0008mm
54-560-012	.472"	12mm	± .000032"/.0008mm
54-560-015	.630"	16mm	± .000032"/.0008mm
54-560-018	.710"	18mm	± .000032"/.0008mm
54-560-024	.945"	24mm	± .000032"/.0008mm
54-560-030	1.181"	30mm	± .000039"/.001mm
54-560-038	1.500"	38mm	± .000039"/.001mm
54-560-046	1.810"	46mm	± .000039"/.001mm
54-560-055	2.165"	55mm	± .000039"/.001mm
54-560-065	2.560"	65mm	± .000059"/.0015mm
54-560-075	2.950"	75mm	± .000059"/.0015mm
54-560-085	3.346"	85mm	± .000059"/.0015mm
54-560-095	3.740"	95mm	± .000059"/.0015mm
54-560-102	3.940"	100mm	± .000059"/.0015mm
54-560-112	4.725"	120mm	± .000078"/.002mm
54-560-137	5.510"	140mm	± .000078"/.002mm
54-560-157	6.300"	160mm	± .000098"/.0025mm
54-560-177	7.090"	180mm	± .000098"/.0025mm
54-560-197	7.875"	200mm	± .000098"/.0025mm
54-560-308	8.661"	220mm	± .000098"/.0025mm
54-560-310	9.449"	240mm	± .000098"/.0025mm
54-560-315	10.236"	260mm	± .000098"/.0025mm
54-560-320	11.024"	280mm	± .000098"/.0025mm
54-560-325	11.811"	300mm	± .000098"/.0025mm



Bowers Superbore Gage Accessories



▲ Handle shown with special screw thread head



◆ *Extensions and Transducers: The Fowler-Bowers extensions offer extended depth for bore gaging. The Transducer Handles encase the sensing electronics in a rugged, shockproof, insulated nylon protective unit.*

- Adjustable Depth Stop #54-333-777—
Used on 2-point heads from .040" to .250"
to achieve consistent results when
measuring heavy components.



Order No.	Description	Fits Gage Head Range
54-260-005	2.5" (63mm) Extension Rod.	.236-.315" (6-8mm)
54-260-006	3" (76mm) Extension Rod.	.315-.630" (8-16mm)
54-260-004	4" (100mm) Extension Rod.	.630-.708" (16-18mm)
54-260-007	6" (150mm) Extension Rod.	.708-1.968" (18-50mm)
54-260-008	6" (150mm) Extension Rod.	1.968-12.126" (50-310mm)
54-555-003	Transducer/Handle, 6' cable.	.040-.080" (1-2mm)
54-555-004	Transducer/Handle, 6' cable.	.078-.236" (2-6mm)
54-555-005	Transducer/Handle, 6' cable.	.236-.630" (6-16mm)
54-555-000	Transducer/Handle, 6' cable.	.630-3.937" (16-100mm)
54-555-002	Transducer/Handle, 6' cable.	.630-12.126" (16-310mm)
54-618-550*	Extension cable for Transducers.	9' (2.75m) Length
54-555-500	Right Angle Attachment. Reduces heads over 3.937"(100mm) to .200"(5mm) increments.	.630-12.126" (16-310mm)
54-333-777**	Adjustable Depth Stop	.040-.236" (1-6mm)
54-560-240	1 Wood case for Heads & Rings.	.040-.080" (1-2mm) or .080-.236" (2-6mm)
54-560-250	1 Wood case for Heads & Rings.	.236-.630" (6-16mm)
54-560-200	1 Wood case for Heads & 1 Wood case for Rings.	.630-1.968" (16-50mm)
54-560-100	1 Wood case for Heads & 1 Wood case for Rings.	.630-3.937" (16-100mm)
54-560-120	1 Wood case for Heads & 1 Wood case for Rings.	1.969-3.937" (50-100mm)
54-560-150	2 Wood cases for Heads & 2 Wood cases for Rings.	3.937-5.906" (100-150mm)
54-560-210	2 Wood cases for Heads & 2 Wood cases for Rings.	5.906-8.268" (150-210mm)



Bowers Superbore Sets



▲ Fowler/Sylvac Digital Display Units #54-618-140 (left) and #54-618-151 (right) offer tolerance indication, preset capability, selectable resolution and many other features.



See the Fowler/Sylvac section for more information.



Order No.	Range	Description
54-555-019	.040-.078"(1—2mm)	Set: 5 bore gage heads, 3 ring gages & transducer/handle in fitted wood case.
54-555-020	.078-.236"(2—6mm)	Set: 5 bore gage heads, 3 ring gages & transducer/handle in fitted wood case.
54-555-150	.236-.630"(6—16mm)	Set: 5 bore gage heads, 3 ring gages & transducer/handle in fitted wood case.
54-555-200	.630-1.968"(16—50mm)	Set: 10 bore gage heads, 5 ring gages & transducer/handle in fitted wood case.
54-555-300	.630-3.937"(16—100mm)	Set: 20 bore gage heads, 10 ring gages & transducer/handle in fitted wood case.
54-555-250	1.968-3.937"(50—100mm)	Set: 10 bore gage heads, 5 ring gages & transducer/handle in fitted wood case.
54-555-360	3.937-5.906"(100—150mm)	Set: 5 bore gage heads, 3 ring gages & transducer/handle in fitted wood case.
54-555-450	3.937-8.268"(100—210mm)	Set: 11 bore gage heads, 6 ring gages & transducer/handle in fitted wood case.
54-555-410	5.906-8.268"(150—210mm)	Set: 6 bore gage heads, 3 ring gages & transducer/handle in fitted wood case.
54-555-475	8.268"-12.125"(210—310mm)	Set: 10 bore gage heads, 5 ring gages & transducer/handle in fitted wood case.

Sylvac Readout/Preselector:

54-618-140* Sylvac Digital D-80 Display Unit.

54-618-151* Sylvac Digital D-100S Indication Unit.

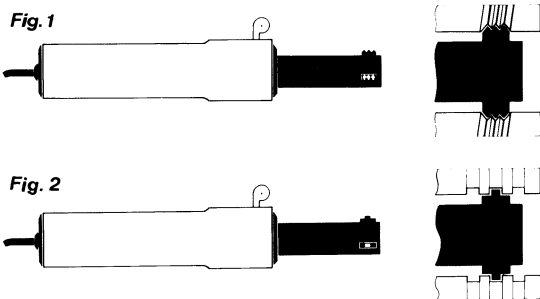
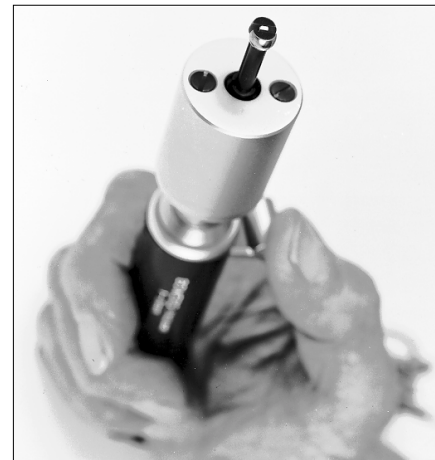
(*C-14;C-15)



The Bowers Superbore Gage System can be used to solve many special applications such as slot width; groove, pitch and spline diameters; gun barrel minor diameter; effective pitch diameter and major diameter of threads.

Shown are just a few special applications that the Superbore System can solve.

Counterclockwise from left: Deep bore system for measuring diameters up to 34 feet deep, groove head to measure diameter of "O" ring groove, internal effective pitch diameter head, and head with spherical anvils for taper and bell-mouth.



Special dedicated 2-point design heads are available from .157"—6" (4—150mm). Contact our Technical Department for more information.

Fig. 1—Screw Thread Measurements: Special heads with thread formed anvils enable effective measurement of any screw thread. Minor, major or effective diameters are just as easily measured as plain diameters. Heads for screw thread applications can be obtained on request.

Fig. 2—Special Applications: Heads with anvils formed to customer requirements can be supplied for measuring "O" ring grooves and special diameters. Special application work can be assessed on submission of customer drawings, sketches, etc. As with thread gaging, time is not wasted in retracting or bringing anvils to measuring position because of the quick action lever on the handle.





Superbore Product Selection Chart

Measuring Range	Set Number	Head Number	Ring Number	Transducer Number	Extension Number
.040—.045" (1—1.15mm)	54-555-019	54-555-210	54-560-215	54-555-003	None
.045—.051" (1.15—1.3mm)	54-555-019	54-555-212	54-560-218	54-555-003	None
.051—.059" (1.3—1.5mm)	54-555-019	54-555-215	54-560-218	54-555-003	None
.059—.068" (1.5—1.75mm)	54-555-019	54-555-218	54-560-220	54-555-003	None
.068—.080" (1.75—2.0mm)	54-555-019	54-555-220	54-560-220	54-555-003	None
.078—.098" (2—2.5mm)	54-555-020	54-555-222	54-560-222	54-555-004	None
.098—.118" (2.5—3mm)	54-555-020	54-555-223	54-560-222	54-555-004	None
.118—.157" (3—4mm)	54-555-020	54-555-224	54-560-224	54-555-004	None
.157—.197" (4—5mm)	54-555-020	54-555-225	54-560-224	54-555-004	None
.197—.236" (5—6mm)	54-555-020	54-555-226	54-560-225	54-555-004	None
.236—.315" (6—8mm)	54-555-150	54-555-008	54-560-010	54-555-005	54-260-005
.315—.393" (8—10mm)	54-555-150	54-555-009	54-560-010	54-555-005	54-260-006
.393—.472" (10—12mm)	54-555-150	54-555-010	54-560-012	54-555-005	54-260-006
.472—.550" (12—14mm)	54-555-150	54-555-011	54-560-012	54-555-005	54-260-006
.550—.630" (14—16mm)	54-555-150	54-555-012	54-560-015	54-555-005	54-260-006
.630—.710" (16—18mm)	54-555-200 54-555-300	54-555-015	54-560-018	54-555-000 54-555-002	54-260-004
.710—.825" (18—21mm)	54-555-200 54-555-300	54-555-018	54-560-018	54-555-000 54-555-002	54-260-007
.825—.945" (21—24mm)	54-555-200 54-555-300	54-555-021	54-560-024	54-555-000 54-555-002	54-260-007
.945—1.062" (24—27mm)	54-555-200 54-555-300	54-555-024	54-560-024	54-555-000 54-555-002	54-260-007
1.062—1.180" (27—30mm)	54-555-200 54-555-300	54-555-027	54-560-030	54-555-000 54-555-002	54-260-007
1.180—1.340" (30—34mm)	54-555-200 54-555-300	54-555-030	54-560-030	54-555-000 54-555-002	54-260-007
1.340—1.500" (34—38mm)	54-555-200 54-555-300	54-555-034	54-560-038	54-555-000 54-555-002	54-260-007
1.500—1.650" (38—42mm)	54-555-200 54-555-300	54-555-038	54-560-038	54-555-000 54-555-002	54-260-007
1.650—1.810" (42—46mm)	54-555-200 54-555-300	54-555-042	54-560-046	54-555-000 54-555-002	54-260-007
1.810—1.970" (46—50mm)	54-555-200 54-555-300	54-555-046	54-560-046	54-555-000 54-555-002	54-260-007
1.970—2.165" (50—55mm)	54-555-250 54-555-300	54-555-050	54-560-055	54-555-000 54-555-002	54-260-008
2.165—2.360" (55—60mm)	54-555-250 54-555-300	54-555-055	54-560-055	54-555-000 54-555-002	54-260-008
2.360—2.560" (60—65mm)	54-555-250 54-555-300	54-555-060	54-560-065	54-555-000 54-555-002	54-260-008





Superbore Product Selection Chart

Measuring Range	Set Number	Head Number	Ring Number	Transducer Number	Extension Number
2.560—2.756" (65—70mm)	54-555-250 54-555-300	54-555-065	54-560-065	54-555-000 54-555-002	54-260-008
2.756—2.950" (70—75mm)	54-555-250 54-555-300	54-555-070	54-560-075	54-555-000 54-555-002	54-260-008
2.950—3.150" (75—80mm)	54-555-250 54-555-300	54-555-075	54-560-075	54-555-000 54-555-002	54-260-008
3.150—3.346" (80—85mm)	54-555-250 54-555-300	54-555-080	54-560-085	54-555-000 54-555-002	54-260-008
3.346—3.543" (85—90mm)	54-555-250 54-555-300	54-555-085	54-560-085	54-555-000 54-555-002	54-260-008
3.543—3.740" (90—95mm)	54-555-250 54-555-300	54-555-090	54-560-095	54-555-000 54-555-002	54-260-008
3.740—3.940" (95—100mm)	54-555-250 54-555-300	54-555-095	54-560-095	54-555-000 54-555-002	54-260-008
3.940—4.330" (100—110mm)	54-555-360 54-555-450	54-555-102	54-560-102	54-555-002	54-260-008
4.330—4.725" (110—120mm)	54-555-360 54-555-450	54-555-107	54-560-112	54-555-002	54-260-008
4.725—5.120" (120—130mm)	54-555-360 54-555-450	54-555-112	54-560-112	54-555-002	54-260-008
5.120—5.510" (130—140mm)	54-555-360 54-555-450	54-555-117	54-560-137	54-555-002	54-260-008
5.510—5.900" (140—150mm)	54-555-360 54-555-450	54-555-122	54-560-137	54-555-002	54-260-008
5.900—6.300" (150—160mm)	54-555-410 54-555-450	54-555-127	54-560-157	54-555-002	54-260-008
6.300—6.690" (160—170mm)	54-555-410 54-555-450	54-555-132	54-560-157	54-555-002	54-260-008
6.690—7.090" (170—180mm)	54-555-410 54-555-450	54-555-137	54-560-177	54-555-002	54-260-008
7.090—7.480" (180—190mm)	54-555-410 54-555-450	54-555-142	54-560-177	54-555-002	54-260-008
7.480—7.875" (190—200mm)	54-555-410 54-555-450	54-555-146	54-560-197	54-555-002	54-260-008
7.875—8.270" (200—210mm)	54-555-410 54-555-450	54-555-148	54-560-197	54-555-002	54-260-008
8.270—8.661" (210—220mm)	N/A	54-555-152	54-560-308	54-555-002	54-260-008
8.661—9.055" (220—230mm)	N/A	54-555-154	54-560-308	54-555-002	54-260-008
9.055—9.449" (230—240mm)	N/A	54-555-156	54-560-310	54-555-002	54-260-008
9.449—9.842" (240—250mm)	N/A	54-555-158	54-560-310	54-555-002	54-260-008
9.842—10.236" (250—260mm)	N/A	54-555-160	54-560-315	54-555-002	54-260-008
10.236—10.630" (260—270mm)	N/A	54-555-162	54-560-315	54-555-002	54-260-008
10.630—11.024" (270—280mm)	N/A	54-555-164	54-560-320	54-555-002	54-260-008
11.024—11.417" (280—290mm)	N/A	54-555-168	54-560-320	54-555-002	54-260-008
11.417—11.811" (290—300mm)	N/A	54-555-170	54-560-325	54-555-002	54-260-008
11.811—12.126" (300—310mm)	N/A	54-555-172	54-560-325	54-555-002	54-260-008



Fowler

Superbore Pistol Grip Bore Gage



▲ Pistol grip handle shown with head (not included).

Fowler's Pistol Grip Bore Gage is a combined handle and readout for use with our Superbore System. So easy to use—press trigger, insert measuring head into bore and the reading is quickly displayed on the indicator when the trigger is released. Consistent pressure of the 120° equally spaced anvils on the bore wall is self centering and finds true alignment with the axis of the bore.

Four pistol grip sizes cover most of the complete range of bore heads. See our section entitled "Bowers Superbore System" for the list of compatible Superbore Heads and specifications (#54-555 series).

Sizes .078"—.236" (2mm—6mm) are 2 point-split cylinder; sizes over .236" (6mm) are 3 point contact. Extensions (Fowler's 54-260 series) can be added for deep bore measuring. Unit #54-558-412 features a higher measuring force to improve repeatability with larger heads.

Special Features:

- Resolution: .00005" (.001mm).
- Accuracy: .0002" (.005mm)
- True inch/metric conversion
- Preset capability.
- Min/max/tir modes.
- Tolerance signal lights.
- Bidirectional RS232 output.
- Preset recall.
- One hand operation allows quick and accurate readings.

Order No.	Uses Superbore Heads within the range of:	Handle Pressure
Pistol Grips w/Indicator		
54-558-006	.078—.236" (2—6mm)	16 oz.(4N)
54-558-016	.236—.630" (6—16mm)	2.2 LBF(11N)
54-558-308	.630—4" (16—100mm)	4.3 LBF(19N)
54-558-412	4—12" (100—310mm)	5 LBF(23N)
54-115-333	Simplex connect kit includes 80" (2m) connecting cable, 9 pin IBM AT RS-232 connector, software support disk & instruction manual	