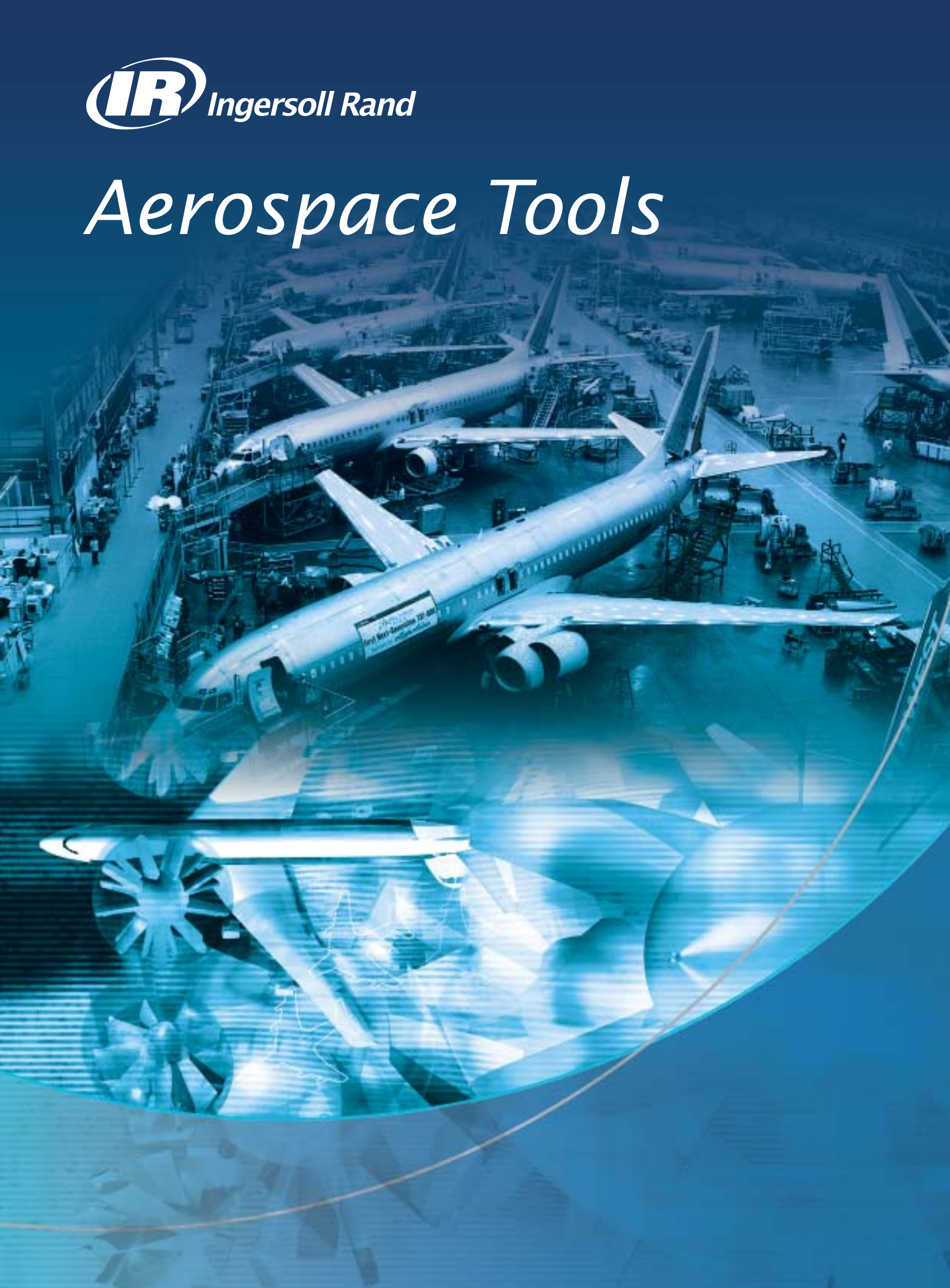
Ingersoll Rand

Aerospace Tools



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Ingersoll Rand Tools Division

Headquartered in Annandale, New Jersey, offers the broadest range of tools in the world. Ingersoll Rand is committed to fulfill our customers' expectation by providing products, technology and services of the highest quality. Constantly, we strive for world class standards in customer service and foster the involvement and dedication of our employees to continuing improvement. Our tools are sold and serviced by a network of distributors around the world. We appreciate the opportunity to meet your material tools products needs.

The new Ingersoll Rand corporate brand identity introduction in 2000, is now being incorporated into product identification and packaging, as well as all communication. While all product photography in this catalog reflects the symbol and logo type signature, many of our products are still in the process of being updated to reflect our new look on everything Ingersoll Rand.

Compact size and excellent powerto-weight ratios distinguish the Ingersoll Rand line of air drills for production and maintenance applications. Models availablesuited to various levels of precision and capacity.They include pistol-grip, straight, and angle configurations, along with tappers and specific accessories.

High Performance Ergonomics

Q2 Series drills offer unprecedented power– made even more powerful by advanced ergonomics, including:

- Contoured rear radius, which provides a comfortable, convenient position for gripping the back of the motor housing
- Compact size
- Lightweight
- Even balance
- Contoured triggers and levers for reduced stress and greater distribution of grip force
- Tease trigger action for smooth starts and excellent control
- Ribbed, soft-grip surfaces molded over composite handles

The Best Power-to-Weight Ratio in the Industry

Q2 Series drills deliver greater power at specific speed ratings than any other competitive offering – and they deliver it in a smaller, lighter package.Your operators will get the job done in less time, with superior quality and ease-of-use. More efficient, high-output motors mean your operators can cover more applications with fewer tools. And speed can be reduced to 50% of free speed to match the job requirements.

Durability and Power Only Ingersoll Rand Can Deliver

Q2 Series drills offer the durability and performance that has made the Ingersoll Rand name legendary-and now, better than ever. Simply put, no other drills offer industry-leading ergonomics with this much power and endurance. Q2 Series tools are engineered using the highest-quality designs and manufactured with materials that ensure long life and minimal service requirements. All Q2 Series tools offer best-in class, lube-free performance, and are designed to deliver excellent results with or without air motor lubrication.

Ingersoll Rand drills for production applications all share key features, such as: double row ball bearing construction, which assures a maximum TIR (total inch runout) of .005" for precise, concentric holes.Variable throttle control permits slow speed starting to protect the workpiece, along with high speed running for fast completion.

In addition, IR offers the Series 5, 6, and 7 models, all with Skinsulate comfort grip surfaces for enhanced control. Series 5 models produce .4 hp and cover the 900-5000 rpm range, adding reversible pistol-grip models. Series 6 models deliver .51 hp in the 350 to 20,000 rpm range in pistol-grip and lever throttle variations, with easy to service modular design. Cantilever-mounted planetary gears also offer easy accessibility, without the need to press from the gear frame. Series 7 models share these features in pistol-grip configurations, covering the 600-20,000 rpm range with a .75 hp output.

Production angle drills in Series Q2, 5, 6, and 7 provide 360 degree angle head rotation for ideal tool, task, and tool user orientation and throttle position. They cover a 400-6000 rpm range. The Series 728 models are powerful, economical solutions for general-purpose maintenance applications. They deliver .5 hp and cover a 950-3800 range. In addition, IR offers powerful, accurate tappers for threading holes on-site, as well as lightweight riveters and hammers for related assembly applications.

And–for super duty specialty applications in maintenance or construction, IR offers a complete line of large-configuration low-speed drills and angle drills. These reversible or non-reversible units feature ball bearing support for long life, selfclosing throttles and built-in lubricators. Consult your IR representative or distributor for more details on these models. Whatever the need, IR can respond with a high performance drill perfectly matched to your application. Consult the Drill Selection Chart to define your requirements.

Drills

Selection Chart

Suggested surface speeds for high speed steel drills in various materials

Material	Speed in SFM
Alloy Steel (300 to 400Brinnel)	20 to 30
Stainless Steel	30 to 40
Automotive Steel Forgings	40 to 50
Tool Steel, 1.2C	50 to 60
Steel, .4C to .5C	70 to 80
Mild Machinery, .2C to .3C	80 to 110
Hard Chilled Cast Iron	30 to 40
Medium Hard Cast Iron	70 to 100
Soft Cast Iron	100 to 150
Malleable Iron	80 to 90
Monel Metal	40 to 50
High Tensile Strength Bronze	70 to 150
Ordinary Brass and Bronze	200 to 300
Aluminum and its alloys	200 to 300
Magnesium and its alloys	250 to 400
Slate, Marble and Stone	15 to 25
Bakelite and similar material	100 to 150
Wood	300 to 400

Note: Carbon steel twist drills should be run at speeds of 40 to 50 percent of those given above.

Drilling Speed (rpm) = 0.75 x Free Speed (rpm)

Hole Diameter In.	Surface Speed, Feet per minute 30	40	50	60	70	80	90	100	110	150	200	300	400
Drilling Speed, rpm (Optimum Operating Speed – Not Cataloged Free Speed)													
1/16	1800	2400	3000	3600	4200	4900	5500	6100	6700	9000	12,000	18,000	24,000
1/8	900	1200	1500	1800	2100	2400	2700	3000	3400	4600	6100	9200	12,000
3/16	600	800	100	1200	1400	1600	1800	2000	2200	3100	4100	6100	8100
1/4	450	600	750	900	1100	1200	1400	1500	1700	2300	3100	4600	6100
5/16	350	500	600	750	850	1000	1100	1200	1300	1800	2400	3700	4900
3/8	300	400	500	600	700	800	900	1000	1100	1500	2000	300	4000
1/2	200	300	400	450	550	600	650	750	850	1100	1500	2300	3000

Production Drills

Features
- Variable speed control allows slow speed starting and high speed for fast drilling
- Excellent power-to-weight ratio gets the job done with less fatigue
- 0.30 HP
- e-chip Asset Management enabled

Standard Equipment
- Drill chuck and key

Accessories
- 3RA-365 Horizontal hanger

Q2 Series Drills

Examples of Popular Models

Model	Free Speed rpm	Stall Torque in.-lb.	Stall Torque Nm	Length With Chuck in.	Length With Chuck mm	Weight with chuck lb.	Weight with chuck kg	Chuck Capacity in.	Chuck Capacity mm	Side to Center Distance in.	Side to Center Distance mm	CFM
Pistol-Grip												
QP511D	5100	9.4	1.1	6.7	171	1.44	0.65	1/4	6.35	0.588	15	16
QP381D	3800	12.8	1.5	7.2	184	1.54	0.7	1/4	6.35	0.588	15	16
QP301D	3000	16.2	1.8	6.7	171	1.44	0.65	1/4	6.35	0.588	15	16
QP302D	3000	16.2	1.8	7.2	184	1.66	.75	3/8	9.5	0.718	18	16
QP201D	2000	24.3	2.8	7.2	184	1.54	0.7	1/4	6.35	0.588	15	16
QP202D	2000	24.3	2.8	7.2	184	1.76	0.8	3/8	9.5	0.718	18	16
QP151D	1500	30.0	3.4	7.2	184	1.54	0.7	1/4	6.35	0.588	15	16
QP091D	900	51.1	5.8	7.2	184	1.54	0.7	1/4	6.35	0.588	15	16
QP051D	500	86.4	9.8	7.2	184	1.54	0.7	1/4	6.35	0.588	15	16

1-Series Performance Specifications

Model	Free Speed (rpm)	Stall Torque (ft-lb)	Stall Torque (Nm)	Length (in)	Length (mm)	Weight (lb)	Weight (kg)	Chuck or Spindle	Side to Center (in)	Side to Center (mm)	Air Usage (CFM)	Inlet
1P38ST4	3800	20	2.3	6.25	159	1.44	0.65	1/4" chuck	21/32	16.5	11	1/4" NPT
1AL1	2800	15	1.7	6.25	159	1.44	0.65	1/4"chuck	21/32	16.5	11	1/8" NPT
1P09ST4	900	67	7.6	6.75	172	1.50	0.68	1/4" chuck	21/32	16.5	11	1/4" NPT
1P06ST4	600	100	11.3	6.75	172	1.50	0.68	1/4" chuck	21/32	16.5	11	1/4" NPT

Series				
Q2	0.19 kW	75 dBa	1/4"NPT	6 mm

Series 5

- 900-5000 rpm
- .40 HP
- Chuck capacity 1/4" to 1/2"

Features

- Double row ball bearings assure maximum TIR of .005" for precise, concentric holes
- Variable speed control allows slow speed starting and high speed for fast drilling
- Skinsulate housing for operator comfort and productivity. (Pistol Only)
- Excellent power-to-weight ratio gets the job done with less fatigue

Standard Equipment

- Drill chuck and key
- Vertical hanger
- For Model 5LN3, Dead handle assembly and required adapters:
- 728N-A48 Dead handle assembly
- 5A-49 Adapter (two required)
- For Model 5RAN2T8, Dead handle assembly and required adapters:
- RIA-A48 Dead handle assembly
- 5A-ST49 Adapter (two required)

Accessories

- For H, J, K and L ratio models 5A-309 Chuck shield
- 5L-K184 Piped-away exhaust kit
- 7RA-A366 Horizontal hanger

5AJST4

Series 5

Model	Free Speed rpm	Stall Torque in.-lb.	Stall Torque Nm	Length With Chuck in.	Length With Chuck mm	Weight with chuck lb.	Weight with chuck kg	Chuck Capacity in.	Chuck Capacity mm	Side to Center Distance in.	Side to Center Distance mm	CFM
Reversible Pistol-Grip												
5RALST6	2000	35	4.0	6.19	173	2.25	1.0	3/8	10	13/16	21	17
5RANST6	900	70	8.0	8.25	210	3.0	1.4	3/8	13	13/16	21	17
5RANST8	900	70	8.0	8.25	210	3.0	1.4	1/2	13	13/16	21	17
Nonreversible Pistol-Grip												
5AHST4	5000	20	2.3	6.81	173	2.0	.09	1/4	6	13/16	21	17
5AJST4	4500	20	2.3	6.81	173	2.0	.09	1/4	6	13/16	21	17
5AKST4	3000	30	3.4	6.81	173	2	.09	1/4	6	13/16	21	17
5ALST4	2200	40	4.5	6.81	173	2	.09	1/4	6	13/16	21	17
5ANST6	1000	80	9.0	8.13	206	2.75	1.2	3/8	10	13/16	21	17

Series 6

Model	Free Speed rpm	Stall Torque in.-lb.	Stall Torque Nm	Length With Chuck in.	Length With Chuck mm	Weight with chuck lb.	Weight with chuck kg	Chuck Capacity in.	Chuck Capacity mm	Side to Center Distance in.	Side to Center Distance mm	CFM
Pistol-Grip												
6ADST4	20,000	7	.8	7.00	178	2.19	1.00	1/4	6	51/64	21	20
6AHST4	6000	23	2.6	7.00	178	2.19	1.00	1/4	6	51/64	21	20
6AJST4	5100	27	3.1	7.00	178	2.19	1.00	1/4	6	51/64	21	20
6AJJST4	3950	35	4.0	7.00	178	2.19	1.00	1/4	6	51/64	21	20
6AKST4	3100	45	5.1	7.00	178	2.19	1.00	1/4	6	51/64	21	20
6ALST4	2150	64	7.3	7.00	178	2.19	1.00	1/4	6	51/64	21	20
6AMST6	1500	89	10.1	8.00	203	2.75	1.25	3/8	10	51/64	21	20
6ARST6	500	220	25.1	8.25	210	3.00	1.36	3/8	10	51/64	21	20
6ASST6	350	313	35.7	8.25	210	3.00	1.36	3/8	10	51/64	21	20

Series				
5	0.30 kW	75 dBa	1/4"NPT	6 mm
6	0.38 kW	74 dBa	1/4"NPT	10 mm
7	0.57 kW	80 dBa	1/4"NPT	8 mm

Series-7

- 600 - 20,000 rpm
- .75 HP
- Chuck capacity 1/4" to 1/2"

Features

- Double row ball bearing construction assures maximum TIR of .005" for precise, concentric holes
- Variable speed control permits slow speed starting and high speed for fast drilling
- Skinsulate housing for operator comfort and productivity
- Cantilever-mounted planetary gears are easily accessible without need to press from gear frame; simplifies maintenance

Standard Equipment

- Drill chuck and key
- Vertical hanger
- Horizontal hanger
- Dead handle on N and Q ratio models

Accessories

- R1A-48 Dead handle and 7A-49 Dead handle adapter (2 adapters required)
- For D, H, J, JJ, and K ratio models 7AH-K309 Chuck shield kit
- 7RA-A366 Horizontal hanger

7AMST6

Series-7

Model	Free Speed rpm	Stall Torque in.-lb.	Stall Torque Nm	Length With Chuck in.	Length With Chuck mm	Weight with chuck lb.	Weight with chuck kg	Chuck Capacity in.	Chuck Capacity mm	Side to Center Distance in.	Side to Center Distance mm	CFM
Pistol-Grip												
7ADST4	20,000	10	1.13	7.44	189	2.25	1.02	1/4	6	7/8	22	25
7AHST4	6000	33	3.73	7.44	189	2.31	1.05	1/4	6	7/8	22	25
7AJST4	4800	40	4.52	7.44	189	2.31	1.05	1/4	6	7/8	22	25
7AJJST4	4000	47	5.53	7.44	189	2.31	1.05	1/4	6	7/8	22	25
7AKST6	3200	58	6.55	7.63	194	2.38	1.08	3/8	10	7/8	22	25
7ALST6	2400	78	8.81	7.44	198	2.69	1.22	3/8	10	7/8	22	25
7AMST6	1400	130	14.69	8.50	216	2.94	1.33	3/8	10	7/8	22	25
7ANST8	900	185	20.91	8.75	222	3.19	1.45	1/2	13	7/8	22	25
7AQST8	600	270	30.51	8.75	222	3.25	1.47	1/2	13	7/8	22	25

Series				
Q2	0.19 kW	75 dBa	1/4"NPT	6 mm

5LN3

QS381D

Q2 Series

Model	Free Speed rpm	Stall Torque in.-lb.	Nm	Length With Chuck in.	mm	Weight with chuck lb.	kg	Chuck Capacity in.	mm	Side to Center Distance in.	mm	CFM
Lever Throttle												
QS511D	5100	10.0	1.2	8.07	205	1.37	0.62	1.4	6.35	0.588	15	16
QS381D	3800	13.5	1.5	8.07	205	1.37	0.62	1.4	6.35	0.588	15	16
QS382D	3800	13.5	1.5	8.59	218	1.58	0.71	3.8	9.5	0.7	18	16
QS301D	3000	17.0	1.9	8.07	205	1.37	0.62	1.4	6.35	0.588	15	16
QS201D	2000	27.0	3.1	8.07	205	1.37	0.62	1.4	6.35	0.588	15	16
QS151D	1500	33.3	3.8	8.07	205	1.37	0.62	1.4	6.35	0.588	15	16
QS091D	900	56.7	6.4	8.07	205	1.37	0.62	1.4	6.35	0.588	15	16

Series 5

Model	Free Speed rpm	Stall Torque in.-lb.	Nm	Length With Chuck in.	mm	Weight with chuck lb.	kg	Chuck Capacity in.	mm	Side to Center Distance in.	mm	CFM
Nonreversible Lever Throttle												
5LJ1	4800	20	2.38	.06	205	2.06	.09	1/4	6	13/16	21	16
5LK1	3100	30	3.4	8.06	205	2.06	.09	1/4	6	13/16	21	16
5LL1	2300	40	4.5	8.06	205	2.06	.09	1/4	6	13/16	21	15
5LN3	1000	80	9.0	9.38	238	3.25	1.5	3/8	10	13/16	21	15

Series 6

Model	Free Speed rpm	Stall Torque in.-lb.	Nm	Length With Chuck in.	mm	Weight with chuck lb.	kg	Chuck Capacity in.	mm	Side to Center Distance in.	mm	CFM
Lever Throttle												
6LH1	6000	23	2.6	7.91	201	2.13	.95	1/4	6	51/64	21	20
6LJ1	5100	27	3.1	7.91	201	2.13	.95	1/4	6	51/64	21	20
6LJJ1	3950	35	4.0	7.91	201	2.13	.95	1/4	6	51/64	21	20
6LK1	3100	45	5.1	7.91	201	2.13	.95	1/4	6	51/64	21	20
6LL1	2150	64	7.3	7.91	201	2.13	.95	1/4	6	51/64	21	20
6LR3	500	220	25.1	9.19	233	2.94	1.33	3/8	10	51/64	21	20

QA3519D

QA2759D

Series Q2, 5, 6, and 7
500 - 6000 rpm
1/4" x 28" Female threaded spindle

Features

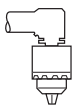
- Maximum TIR runout of .005⁰ ensures precision holes for critical applications
- Infinitely variable speed allows slow speed starting and high speed drilling
- Angle head may be rotated 360⁰ to allow ideal orientation with the throttle
- Ergonomically designed housing provides a secure surface for operator grip
- Modular design allows maximum parts interchangeability and easy, low cost maintenance
- e-chip Asset Management enabled

Accessories

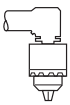
- For all series
  7L-365 Vertical hanger
- For Series 5, 6, and 7
  6WS-366 Horizontal hanger
- For Series 5, 6, and 7
  7L-K284 Piped-away exhaust kit

Q2 Series Drills

Air Production Angle Drills

	Ref. No.	Free Speed rpm	Stall Torque Nm	Weight With Chuck kg	Length with chuck mm	Chuck Capacity mm	in	mm	CFM l/min
WITH 90⁰ ANGLE HEAD-AVEC TETE DANGLEA 90⁰-MIT 90⁰ WINKELKOPF-CON CABEZA ANGULAR 90⁰-CON TESTA AD ANGOLO 90⁰									
	QA3519D	3500	1.6	0.94	238	6 mm	78	13.6	450
	QA2719D	2700	2.2	0.94	238	6 mm	78	13.6	450
	QA1719D	1750	2.1	0.94	238	6 mm	78	13.6	450
	QA1219D	1270	4.9	0.94	238	6 mm	78	13.6	450
	QA0819D	850	7.4	0.94	238	6 mm	78	13.6	450
	QA0519D	500	12.5	0.94	238	6 mm	78	13.6	450
 3/8"-24	QA3579D	3500	1.6	0.62	221	-	27	9.5	450
	QA2779D	2700	2.2	0.62	221	-	27	9.5	450
	QA1779D	1750	2.1	0.62	221	-	27	9.5	450
	QA1279D	1270	4.9	0.62	221	-	27	9.5	450
	QA0879D	850	7.4	0.62	221	-	27	9.5	450
	QA0579D	500	12.5	0.62	221	-	27	9.5	450
	QA3539D	3500	1.8	0.62	221	3/16"	27	9.5	450
	QA2739D	2700	2.3	0.62	221	3/16"	27	9.5	450
	QA1739D	1750	3.6	0.62	221	3/16"	27	9.5	450
	QA1239D	1270	4.5	0.62	221	3/16"	27	9.5	450
	QA0839D	850	7.6	0.62	221	3/16"	27	9.5	450
	QA0539D	500	12.8	0.62	221	3/16"	27	9.5	450
 1/4"-28	QA3559D	3500	1.8	0.62	221	-	27	9.5	450
	QA2759D	2700	2.3	0.62	221	-	27	9.5	450
	QA1759D	1750	3.6	0.62	221	-	27	9.5	450
	QA1259D	1270	4.5	0.62	221	-	27	9.5	450
	QA0859D	850	7.6	0.62	221	-	27	9.5	450
	QA0559D	500	12.8	0.62	221	-	27	9.5	450
WITH 45⁰-ANGLE TETE DANGLE-45⁰-MIT 45⁰-WINKELKOPF-CON CABEZA ANGULAR 45⁰-CON TESTA AD ANGOLO 45⁰									
	QA2734D	2700	1.9	0.67	268	3/16"	33.6	8.3	450
	QA2134D	2100	3.1	0.67	268	3/16"	33.6	8.3	450
	QA1234D	1270	5.1	0.67	268	3/16"	33.6	8.3	450
 1/4"-28	QA2754D	2700	1.9	0.67	268	-	33.6	8.3	450
	QA2154D	2100	3.1	0.67	268	-	33.6	8.3	450
	QA1254D	1270	5.1	0.67	268	-	33.6	8.3	450

Series 5,6,7
Air Production Angle Drills

Ref. No.	Free Speed rpm	Stall Torque Nm	Weight With Chuck kg	Length with chuck mm	Chuck Capacity mm	in	mm	CFM l/min
WITH 90°-ANGLE HEAD-AAVEC TETE D-ANGLE-90°-MIT 90°-WINKELKOPF-CON CABEZA ANGULAR-CON TESTA AD ANGOLO 90°								
	5LH1A4	4800	2.3	1.00	249	9/32-40	30	9	480
	5LK1A4	3000	3.5	1.00	249	9/32-40	30	9	480
	5LL1A4	2200	4.5	1.00	249	9/32-40	30	9	480
	5LK2A41	2000	5.1	1.20	239	6 mm	75	14	480
	6LK2A41	2000	7.3	1.25	241	6 mm	75	14	560
	5LL2A41	1500	6.8	1.20	239	6 mm	75	14	480
	6LL2A42	1400	10.7	1.27	242	10 mm	81	14	560
	7LM3A43	900	21.7	1.79	281	10 mm	99	18	700
	5LN2A43	700	13.6	1.60	259	10 mm	91	14	480
	6LP3A43	600	21.7	1.70	270	10 mm	99	18	560
	7LN3A44	600	31.1	1.90	281	13 mm	105	18	700
	6LR3A44	400	36.2	1.81	272	13 mm	105	18	560

90 x 90 Degree Drills

Precision Angle Drills

QA2755D

Q2 Series Drills

Model	Free Speed rpm	Stall Torque in.-lb.	Stall Torque Nm	Spindle	Length in.	Length mm	Weight lb.	Weight kg	Side to Center Distance in.	Side to Center Distance mm	Head Height in.	Head Height mm	CFM
Lever Throttle Angle Drills (90 x 90 Degree Small Angle Head)													
QA3535D	3500	13.9	1.6	3/16" collet with 9/32"-40 thread	1.6	0.73	9.03	229	0.365	9.3	1.05	26.7	16
QA3555D	3500	13.9	1.6	1/4" - 28 female thread	1.6	0.73	9.03	229	0.365	9.3	1.05	26.7	16
QA2755D	2700	18.8	2.1	1/4" - 28 female thread	1.6	0.73	9.03	229	0.365	9.3	1.05	26.7	16
QA2135D	2100	23.6	2.7	3/16" collet with 9.32" - 40 thread	1.6	0.73	9.03	229	0.365	9.3	1.05	26.7	16
QA2155D	2100	23.6	2.7	1/4" - 28 female thread	1.6	0.73	9.03	229	0.365	9.3	1.05	26.7	16
QA1755D	1750	37.5	4.3	1/4" - 28 female thread	1.6	0.73	9.03	229	0.365	9.3	1.05	26.7	16
QA1235D	1270	46.3	5.3	3/16" collet with 9/32" - 40 thread	1.6	0.73	9.03	229	0.365	9.3	1.05	26.7	16
QA1255D	1270	46.3	5.3	1/4" - 28 female thread	1.6	0.73	9.03	229	0.365	9.3	1.05	26.7	16
QA0855D	850	62.5	7.1	1/4" - 28 female thread	1.6	0.73	9.03	229	0.365	9.3	1.05	26.7	16
QA0555D	500	106.3	12.1	1/4" - 28 female thread	1.6	0.73	9.03	229	0.365	9.3	1.05	26.7	16

When Engineering know-how, state of the art design and ergonomics meet along with quality and new requirements of flexible production: Ingersoll Rand provides you with it's latest P33 generation of modular drills.

The Ingersoll Rand P33 modular drill range, originates as an evolution from successfull P27 drill range, providing same ideal flexibility, ergonomics, but with an even more powerfull motor as well as outstanding level of qualityand precision & performance.

Flexibility and Interchangeability

- One motor 0.33 KW (0.44 hp).
- Pistol or straight modular handle.
- Wide range of speeds available, from 660 to 5400 rpm.
- 11 modular drill attachments, with 30, 90, 180 angle heads and additional in-line heads.
- P33 is fully interchangeable with the P27 range attachments and accessories.
- P33 is the ideal tool for the multi-task drilling environment, it matches operator needs for accuracy and precise drilling operations according to material and application requirements.

Operator Confort and Ergonomics

- Lube free motor for a clean working environment.
- Low level of noise with 71 dB(A).
- Sof touch housing for a more ergonomic grip.
- Quick change motor and attachment to provide end user with fast changeover.

Economic effectiveness

P33 Modular air drills remains your best choice also reduced motor units and attachements investment well as reduced spares inventories and easy maintenance.

Fixed straight models also available

- 8 straight fixed drills with chuck.
- Speed from 660 to 18000 rpm.
- Same motor and gears as modular models.

Soft-touch, non-slip grip On straight motor modules

Insulates skin from cold metal housing and minimises vibrations. Secures grip with minimal grip force.

High efficiency gearing

The precision gearing is mounted on precision ball bearings and high resistance bearings in composite material which ensure low vibration and smooth running.

Lightweight Lube-free motor And vanes

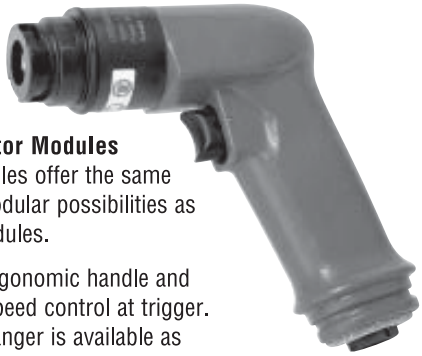
High power high torque air motor. Identical to all models for reduced spares inventory and easy maintenance.

The motor is a specially designed lube-free motor, using a steel rotor, a cast iron stator and light aerospace alloy flanges. The vanes are of a self-lubricating composite material which is exclusive to Ingersoll Rand's tools, and which ensures that performance is maintained in true non-lube environments.

Progressive speed throttle

All straight motor modules have a sensitive and progressive throttle for precise control (control by lever as standard). The 3200 and 5400 rpm motor modules are also available with button throttle control.

A self-locking lever is available asan option.



Pistol grip Motor Modules
The pistol modules offer the same features and modular possibilities as the straight modules.

They offer an ergonomic handle and a progressive speed control at trigger. An horizontal hanger is available as an option.

Exclusive to Ingersoll rand P33 series, Unique worlwide Patented mechanism
The patented mechanism for attaching and orienting the drill heads is very simple to perform and safe.

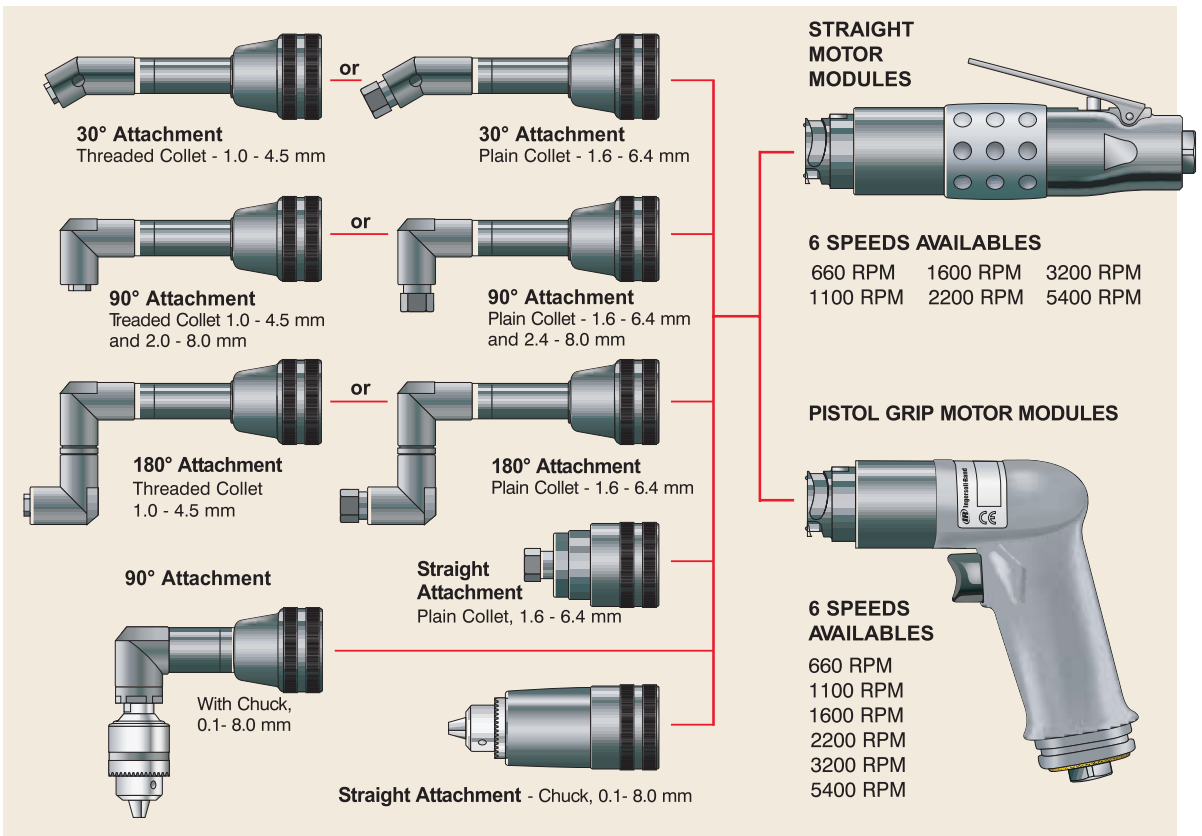
Attachment change in 3 seconds.Modular bevel gear construction
All gearing in the angle head is mounted on ball bearings to ensure high linearity and low noise. One bevel gear is common throughout all heads to reduce spares inventory and to simplify repair.

Modular drill kits
Custom drill kits areavailable, combining motor modules with attachments, collets and accessories.
Please contact your local distributor or Ingersoll Rand office for further details.

Patented Drilling Attachment with 360 Rotating Head Mechanism
Allows the head to be located at any of 18 positions, at 200⁰ intervals.

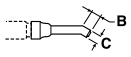
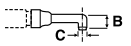
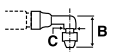
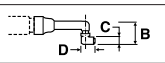
Drilling attachment spindles:

The drilling attachments are available with plain collet, threaded collet or chuck



Modular Drills

Model number	Free speed rpm	Rated power at 620 kPa (90 psi) kW	Stalling torque Nm	Total weight kg	Side to centre distance mm	Module length A mm
P33006-DMSL	660	0.33	16	0.79	22	179
P33011-DMSL	1100	0.33	9.5	0.79	22	179
P33016-DMSL	1600	0.33	6.8	0.79	22	179
P33022-DMSL	2200	0.33	4.5	0.67	22	164
P33032-DMSL	3200	0.33	3.2	0.67	22	164
P33054-DMSL	5400	0.33	1.9	0.67	22	164
STRAIGHT GRIP MOTOR MODULE – BUTTON CONTROL						
P33032-DMSL-B	3200	0.33	3.2	0.64	22	164
P33054-DMSL-B	5400	0.33	1.9	0.63	22	164
PISTOL GRIP MOTOR MODULE – TRIGGER CONTROL						
P33006-PMSL	660	0.33	16	0.92	21.3	161
P33011-PMSL	1100	0.33	9.5	0.92	21.3	161
P33016-PMSL	1600	0.33	6.8	0.92	21.3	161
P33022-PMSL	2200	0.33	4.5	0.80	21.3	146
P33032-PMSL	3200	0.33	3.2	0.80	21.3	146
33054-PMSL	5400	0.33	1.9	0.80	21.3	146

	Drill attachment	Model number	Collet/chuck capacity mm	Total length L with motor (A) mm	Dimensions B mm	C mm	D mm	Attachment weight kg
	30° / Threaded collet	R33M030P45	1.0 - 4.5	A+93	19.5	17	-	0.24
	30° / Plain collet	R33M030P64	1.6 - 6.4	A+93	31.5	17	-	0.24
	90° / Threaded collet	R33M090P45	1.0 - 4.5	A+97	31	17	-	0.24
		R33M090F80	2.0 - 8.0	A+93	49	25	-	0.36
	90° / Plain collet	R33M090P64	1.6 - 6.4	A+97	43	17	-	0.25
		R33M090P80	2.4 - 8.0	A+66	53	25	-	0.39
	90° / Chuck	R33M090M80	0.1 - 8.0	A+66	97.3	30	-	0.54
	180° / Threaded collet	R33M180P45	1.0 - 4.5	A+97	63.2	17	31	0.30
	180° / Plain collet	R33M180P64	1.6 - 6.4	A+97	63.2	17	43	0.32
	Straight / plain collet	R33M000P64	1.6 - 6.4	A+43	-	17	-	0.16
	Straight / chuck	R33M000M80	0.1 - 8.0	A+72	-	40	-	0.38

Non-Modular Drills

Straight Configuration with Chuck

Model number	Free speed rpm	Rated power at 620 kPa (90 psi) kW	Stalling torque * Nm	Chuck capacity mm	Total weight kg	Side to centre distance mm	Drill length mm
P33006-DSL	660	0.33	16	10	1.0	22	235
P33011-DSL	1100	0.33	9.5	10	1.0	22	235
P33016-DSL	1600	0.33	6.8	8	0.94	22	227
P33022-DSL	2200	0.33	4.5	8	0.90	22	212
P33032-DSL	3200	0.33	3.2	8	0.90	22	212
P33054-DSL	5400	0.33	1.9	6	0.90	22	212
P33110-DSL	11000	0.33	0.9	6	0.96	22	227
P33180-DSL	18000	0.33	0.55	6	0.90	22	212

** A dead handle is recommended for torques above 6 Nm.*

Replacement Chucks and Keys

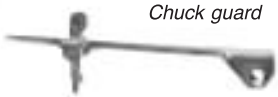
Corresponding attachment or drill	Chuck capacity (mm)	Thread (female)	Drill chuck part no.	Chuck key part no.
R33M090M80 Angle attachment[1]	0 - 8	3/8"-24	115313	117271
R33M000M80 Sraight attachment[1]	0 - 8	3/8"-24	115313	117271
P33 Straight/Fixed drills[2]	0 - 6 0 - 8 0 -10	3/8"-24	117269 115313 117311	117271 117271 117312

(1) Supplied as standard with the attachment.
(2) Supplied as standard with the drill.

Drill Accessories

Vertical hanger

Chuck guard



Self-locking lever

Description	
Chuck guard*	128037
Self-locking lever	131655
Vertical hanger (for straight modules)	128065
Horizontal hanger (for pistol modules)	118303

For all P33 models with chuck capacity up to 8 mm.

Threaded collets for P45 angle head

Ø	Part no.
1.0	120071
1.5	120072
2.0	120073
2.2	120102
2.4	120106
2.5	120074
3.0	120075
3.1	120105
3.17	120101
3.25	120104
3.3	120113
3.5	120076
3.6	123991
3.7	121552
3.8	125783
3.9	120107
4.0	120077
4.1	120103
4.2	120110
4.5	120078
	-
	-
	-
	-
	-
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	-

Plain collets for P64 angle head

Ø	Part no.
1.6	128250
1.8	128251
2.0	128252
2.2	128253
2.4	128254
2.6	128255
2.8	128256
3.0	128257
3.2	128258
3.4	128259
3.6	128260
3.8	128261
4.0	128262
4.2	128263
4.4	128264
4.6	128265
4.8	128266
5.0	128267
5.2	128268
5.4	128269
5.6	128270
5.8	128271
6.0	128272
6.2	128273
6.4	128274
	-
	-
	-
	-

Plain collets for P80 angle head

Ø	Part no.
2.4	128280
2.6	128281
2.8	128282
3.0	128283
3.2	128284
3.4	128285
3.6	128286
3.8	128287
4.0	128288
4.2	128289
4.4	128290
4.6	128291
4.8	128292
5.0	128293
5.2	128294
5.4	128295
5.6	128296
5.8	128297
6.0	128298
6.2	128299
6.4	128300
6.6	128301
6.8	128302
7.0	128303
7.2	128304
7.4	128305
7.6	128306
7.8	128307
8.0	128308

Threaded collets for F80 angle head

Ø	Part no.
2.0	128310
2.5	128311
3.0	128312
3.5	128313
4.0	128314
4.5	128315
5.0	128316
5.5	128317
6.0	128318
6.5	128319
7.0	128320
7.5	128321
8.0	128322
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Collets for R33 Angle Heads

All heads are supplied without collets as standard.

A Note About Q2 Series Model Information

Q2 Series tools can be configured with an extensive range of specification options. You will note a Q2 Series Model Builder at the beginning of each product section, outlining how to create all available combinations. They are followed by performance specifications, and then actual model listings for other IR models, including examples of popular Q2 Series choices.

The new Q2 Series fastening tools set new standards for ergonomic comfort, while exceeding global industry standards for performance and consistent, long term torque accuracy. The full line of pistol-grip, straight, and angle configurations reflects light weight, compact size, and easy accessibility for a variety of tasks. Pistol grip models are available with top or bottom air inlets, and interchangeable large and small handles. Straight models employ an egg-shaped housing for a natural fit, with a soft-grip surface overmolded on a composite core for a comfortable texture and temperature. Color-coded torque adjustment covers allow tool differentiation by torque setting or calibration date. Angle models share the contoured two-finger throttle and low-force, sliding forward/reverse control with all other Q2 models.

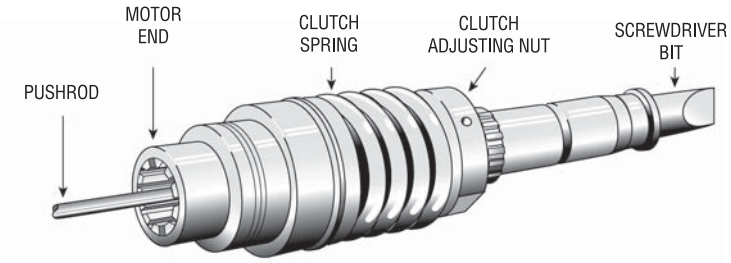
General IR screwdriver accessories for both air and DC elecric models complete the picture, and enable you to create a total system that optimizes the relationship of tool, task, and tool user. Choose form IR workstations and torque testers, and a variety of ergonomic equipment to create the ultimate workplace.

With torque ranges from 1.6 in.-oz. to 130 in.-lb., and speed ranges from 250-2800 rpm, IR offers s crewdrivers to meet all assembly needs. Consult the specifying guide and product listings that follow, and make your choice!

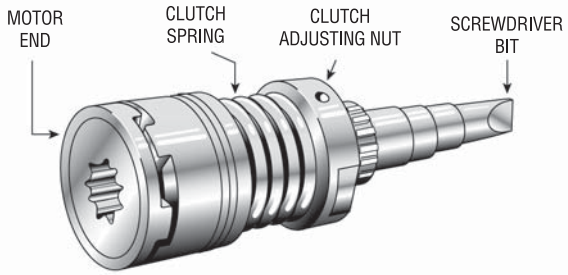
Clutch Selections

Selection of the appropriate clutch arrangement for your application is the first critical step in screwdriver specification. IR offers four basic types – adjustable precision shut-off, adjustable cushion clutch, positive jaw, and direct drive. The following introduction, coupled with the "Types of Joints" table on the following page, will help you define your requirements.

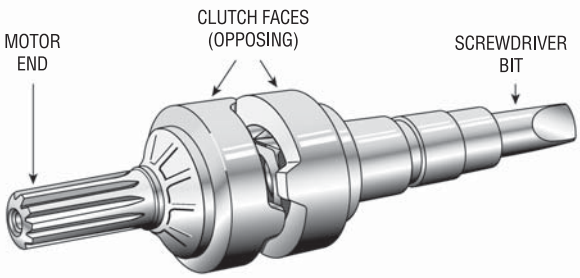
Adjustable Precision Shut-Off Clutch
Designed for critical fastening applications involving plastics, composites, or metals that require precise torque control. Automatic shut-off reduces air consumption and torque reaction.



Adjustable Cushion Clutch
Steel balls rolling between indented plates provide smooth disengaging at preset torque while minimizing vibration to the operator. Very good general purpose torque limiting clutch.



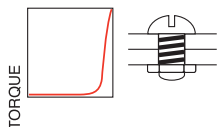
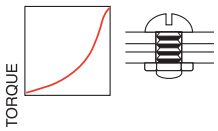
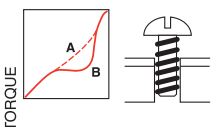
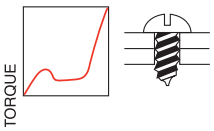
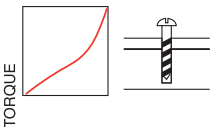
Positive Jaw Clutch
Designed for applications where driving torque may exceed final seating torque as in wood and self-tapping applications. Applied torque is controlled by the operator and can be limited by regulating air line pressure.



Direct Drive
Designed for soft pull applications in wood and other materials not requiring critical torque control. Applied torque is controlled by the operator and can be limited by regulating air line pressure.

Clutch Selection Chart

Types of Joints

	Free Running-Slam (Hard Drive)	Compressing Gaskets (Soft Draw)	Self-Tapping Screws	Sheet Metal Screws	Wood Screws
Select the Clutch to Fit Your Job	 Resistance low at start and during rundown but peaks suddenly as bolt head seats.	 Turning resistance gradually increases as squeeze progresses to final turn.	 Initial resistance high through tapping travel, easing off until sudden (B) or gradual (A)	 Starting torque builds until penetration made, then resistance slacks off until head seats.	 Low resistance at start builds gradually through entire rundown until head seats.
Adjustable Precision Shut-Off Clutch	EXCELLENT for all screw sizes where precise torque control is required.	BEST for all screw sizes where precise torque control is required.	BEST for all screw sizes except where tapping torque exceeds final torque.	EXCELLENT for all size screws—not suitable if tapping torque exceeds stripping torque.	Not recommended
Adjustable Cushion Clutch	VERY GOOD for most screw sizes where torque control is IMPORTANT.	VERY GOOD for most screw sizes where torque control is IMPORTANT.	VERY GOOD for all screw sizes where tapping torque does not exceed final torque.	GOOD for most screws where final torque exceeds tapping torque.	FAIR for all screw sizes.
Positive Jaw Clutch	FAIR for all sizes where close torque control is not required.	GOOD for most screws where close torque control is not required.	GOOD where tapping torque greatly exceeds final torque.	VERY GOOD where sheets are not aligned...GOOD where tapping torque is higher than final torque.	BEST for all screw sizes.
Direct Drive	GOOD for all screw sizes in hands of experienced operators.	GOOD for large and medium screws – must be adjusted to run rather slowly for small screws.	Not recommended unless stripping torque is considerably higher than tapping torque.	Not recommended unless stripping torque is considerably higher than tapping torque.	GOOD for large and medium screws – must be adjusted to turn slowly for small screws.

Screw Torque Guide

Maximum Torque for Screws

Screw Size	Low Carbon Steel		18-8 Stainless		Brass		Silicon Bronze		Aluminum 2024-T4		316 Stainless		Monel	
	in.-lb.	Nm	in.-lb.	Nm	in.-lb.	Nm	in.-lb.	Nm	in.-lb.	Nm	in.-lb.	Nm	in.-lb.	Nm
2 - 56	2.2	.25	2.5	.28	2.0	.23	2.3	.26	1.4	.16	2.6	.29	2.5	.28
2 - 64	2.7	.31	3.0	.34	2.5	.28	2.8	.32	1.7	.19	3.2	.36	3.1	.35
3 - 48	3.5	.40	3.9	.44	3.2	.36	3.6	.41	2.1	.24	4.0	.45	4.0	.45
3 - 56	4.0	.45	4.4	.50	3.6	.41	4.1	.46	2.4	.27	4.6	.52	4.5	.51
4 - 40	4.7	.53	5.2	.59	4.3	.49	4.8	.54	2.9	.33	5.5	.62	5.3	.60
4 - 48	5.9	.67	6.6	.75	5.4	.61	6.1	.69	3.6	.41	6.9	.78	6.7	.76
5 - 40	6.9	.78	7.7	.87	6.3	.71	7.1	.80	4.2	.48	8.1	.92	7.8	.88
5 - 44	8.5	.96	9.4	1.06	7.7	.87	8.7	.98	5.1	.58	9.8	1.11	9.6	1.09
6 - 32	8.7	.98	9.6	1.09	7.9	.89	8.9	1.01	5.3	.60	10.1	1.14	9.8	1.11
6 - 40	10.9	1.23	12.1	1.37	9.9	1.12	11.2	1.27	6.6	.75	12.7	1.44	12.3	1.39
8 - 32	17.8	2.01	19.8	2.24	16.2	1.83	18.4	2.08	10.8	1.22	20.7	2.34	20.2	2.28
8 - 36	19.8	2.24	22.0	2.49	18.2	2.01	20.4	2.31	12.0	1.36	23.0	2.60	22.4	2.53
10 - 24	20.8	2.35	22.8	2.58	18.6	2.10	21.2	2.40	13.8	1.59	23.8	2.69	25.9	2.93
10 - 32	29.7	3.36	31.7	3.58	25.9	2.93	29.3	3.31	19.2	2.17	33.1	3.74	34.9	3.94
1/4- 20	65.0	7.35	75.2	8.50	61.5	6.95	68.8	7.77	45.6	5.15	78.8	8.90	85.3	9.64
1/4 - 28	90.0	10.20	90.0	10.20	77.0	8.70	87.0	9.83	57.0	6.44	99.0	11.20	106.0	12.00
15/16 - 18	129.0	14.60	132.0	14.90	107.0	12.10	123.0	13.90	80.0	9.04	138.0	15.60	149.0	16.80
15/16 - 24	139.0	15.70	142.0	16.10	116.0	13.10	131.0	14.80	86.0	9.72	147.0	16.60	160.0	18.10

Source: "Fasteners" published by Industrial Fasteners Institute.

Adjustable Shut-Off Screwdrivers

The most accurate of all air screwdrivers, adjustable shut-off (or automatic shut-off) screwdrivers are designed for critical fastening applications involving plastics, composites, or metals that require precise torque control. The final fastening torque is set by adjusting the compression of a clutch spring within the front section of the tool. This class of tools is recommended for hard or soft joints or for self-tapping or sheet metal screws provided tapping torque does not exceed the final torque. Automatic shut-off tools also reduce air consumption and are the most ergonomically sound of all air screwdrivers.

QP1T20S1D

Pistol Grip

Features

- Torque range (soft draw) 3.0 to 47.8 in.-lb. / 0.3 - 5.4 Nm
- Recommended for joints where precise torque control is required.
- E-Chip Standard for Asset Management
- Speeds: 250 to 2800 RPM
- Specification tables include examples of our most popular models.
- Ergonomic design reduces operator fatigue.
- Air Inlet Location: Top or handle

Skinsulate® Comfort Coating

Q2 Series Model Builder for All Available Versions

Model Number Sequence

Style		Rotation		Throttle		Speed		Clutch		Bit Holder/Drive		Options: Inlet Location		Grip Size		Inlet Style		Electronics	
Adjustable Precision Shut-Off Clutch/Pistol-Grip																			
Q	Pistol	P	Rev	1	Trigger Permit	T	2800	28	Auto Shut-Off	S	¼" Quick Change	1	Top	T	Small	A	¼-19 BSP	B	Dallas Chip	D
					Push-to-Start	P	2000	20			¼" Bit Finder	3								
					Trigger Start	S	1710	17			5mm Double End Quick Change	5								
							1000	10			¼" Double End Quick Change	7								
							500	05												
							250	02												

Performance Specifications (Soft Joint)

RPM	in-lbs.	Nm	kg-cm	Weight	dBa	Vibration	Length	Side to Center Distance
2800	3 - 9.7	0.3 - 1.1	3.5 - 11.2	1.75 lbs/0.79 kg	75	<2m/s²	8.3 in/211 mm	0.58 in/14.7 mm
2000	3 - 22.1	0.3 - 2.5	3.5 - 25.5	1.85 lbs/0.84 kg	75	<2m/s²	8.8 in/224 mm	0.58 in/14.7 mm
1710	3 - 27.3	0.3 - 3.1	3.5 - 31.5	1.85 lbs/0.84 kg	75	<2m/s²	8.8 in/224 mm	0.58 in/14.7 mm
1000	3 - 40	0.3 - 4.5	3.5 - 46.1	1.85 lbs/0.84 kg	75	<2m/s²	8.8 in/224 mm	0.58 in/14.7 mm
500	3 - 47.8	0.3 - 5.4	3.5 - 55.1	1.85 lbs/0.84 kg	75	<2m/s²	8.8 in/224 mm	0.58 in/14.7 mm
250	3 - 47.8	0.3 - 5.4	3.5 - 55.1	1.85 lbs/0.84 kg	75	<2m/s²	8.8 in/224 mm	0.58 in/14.7 mm

Adjustable Precision Shut-Off Clutch Model Specifications

Includes examples of popular Q2 Series models

Model	Torque Range (Soft Draw) in.-lb.	Nm	Free Speed rpm	Weight lb.	Length in.	Side to Center Distance in.	Clutch Spring**	CFM
Reversible Pistol Handle (Trigger Permit)								
QP1T28S1D	3 - 9.7	0.3 - 1.1	2800	1.75	8.3	0.58	L	16
QP1T28S3D	3 - 9.7	0.3 - 1.1	2800	1.75	8.3	0.58	L	16
QP1T20S1D	3 - 22.1	0.3 - 2.5	2000	1.85	8.8	0.58	L, M	16
QP1T20S1TD*	3 - 22.1	0.3 - 2.5	2000	1.85	8.8	0.58	L, M	16
QP1T17S1D	3 - 27.3	0.3 - 3.1	1710	1.85	8.8	0.58	L, M	16
QP1T17S3D	3 - 27.3	0.3 - 3.1	1710	1.85	8.8	0.58	L, M	16
QP1T10S1D	3 - 40	0.3 - 4.5	1000	1.85	8.8	0.58	L, M, H	16
QP1T10S3D	3 - 40	0.3 - 4.5	1000	1.85	8.8	0.58	L, M, H	16
QP1T05S1D	3 - 47.8	0.3 - 5.4	500	1.85	8.8	0.58	L, M, H	16
QP1T05S3D	3 - 47.8	0.3 - 5.4	500	1.85	8.8	0.58	L, M, H	16
QP1T02S1D	3 - 47.8	0.3 - 5.4	250	1.85	8.8	0.58	L, M, H	16
Reversible Pistol Handle (Push to Start)								
QP1P28S1D	3 - 9.7	0.3- 1.1	2800	1.75	8.3	0.58	L	16
QP1P20S1D	3 - 22.1	0.3- 2.5	2000	1.85	8.8	0.58	L, M	16
QP1P20S1TD*	3 - 22.1	0.3 - 2.5	2000	1.85	8.8	0.58	L, M	16
QP1P20S3D	3 - 22.1	0.3 - 2.5	2000	1.85	8.8	0.58	L, M	16
QP1P17S1D	3 - 27.3	0.3 - 3.1	1710	1.85	8.8	0.58	L, M	16
QP1P10S1D	3 - 40	0.3 - 4.5	1000	1.85	8.8	0.58	L, M, H	16
QP1P05S1D	3 - 47.8	0.3 - 5.4	500	1.85	8.8	0.58	L, M, H	16
Reversible Pistol Handle (Trigger Start)								
QP1S28S1D	3 - 9.7	0.3 - 1.1	2800	1.75	8.3	0.58	L	16
QP1S20S1D	3 - 22.1	0.3 - 2.5	2000	1.85	8.8	0.58	L, M	16
QP1S20S1TD*	3 - 22.1	0.3 - 2.5	2000	1.85	8.8	0.58	L, M	16
QP1S20S3D	3 - 22.1	0.3 - 2.5	2000	1.85	8.8	0.58	L, M	16
QP1S17S1D	3 - 27.3	0.3 - 3.1	1710	1.85	8.8	0.58	L, M	16
QP1S10S1D	3 - 40	0.3 - 4.5	1000	1.85	8.8	0.58	L, M, H	16

Tool Series	Sound Approx. dBa	Air Inlet NPT	Hose Size	Installed Spring
Q2	75	¼"	¼"	Heaviest

**T = located at the end of the model number indicates top air inlet*

***Clutch Spring: L = Light, M = Medium, H = Heavy.*

Performance figures are at 90 psi (620 kPa).

Q4, S1 = ¼" Quick Change Chuck

Adjustable Shut-Off Screwdrivers

Straight

Features

- Torque range (soft draw): 3.0 to 47.8 in.-lb. / 0.3 - 5.4 Nm
- Recommended for joints where precise torque control is required.
- Speeds: 250 to 2800 RPM
- E-chip standard for Asset Management
- Specification tables include examples of our most popular models
- Ergonomic design reduces operator fatigue

Skinsulate® Comfort Coating

QS1P20S1D

Q2 Series Model Builder for All Available Versions

Model Number Sequence

Style		Rotation		Throttle		Speed		Clutch		Bit Holder/Drive		Options: Inlet Style		Options: Electronics	
Adjustable Precision Shut-Off Clutch/Straight Tool															
Q	Straight	S	Rev	1	Lever Start	L	2800	28	Auto Shut-Off	S	¼" Quick Change	1	¼-19 BSP	B	Dallas Chip	D
					Push-to-Start	P	2000	20			¼" Bit Finder	3				
					Lever Permit	T	1710	17			5mm Double End Quick Change	5				
							1000	10			¼" Double End Quick Change	7				
							500	05								
							250	02								

Performance Specifications (Push-to-Start – Soft Joint)

RPM	in-lbs.	Nm	kg-cm	Weight	dBa	Vibration	Length	Side to Center Distance
2800	3 - 9.7	0.3 - 1.1	3.5 - 11.2	1.37 lbs/0.62 kg	75	<2m/s²	8.8 in/224 mm	0.87 in/22 mm
2000	3 - 22.1	0.3 - 2.5	3.5 - 25.5	1.37 lbs/0.62 kg	75	<2m/s²	8.8 in/224 mm	0.87 in/22 mm
1710	3 - 27.3	0.3 - 3.1	3.5 - 31.5	1.37 lbs/0.62 kg	75	<2m/s²	8.8 in/224 mm	0.87 in/22 mm
1000	3 - 40	0.3 - 4.5	3.5 - 46.1	1.37 lbs/0.62 kg	75	<2m/s²	8.8 in/224 mm	0.87 in/22 mm
500	3 - 47.8	0.3 - 5.4	3.5 - 55.1	1.37 lbs/0.62 kg	75	<2m/s²	8.8 in/224 mm	0.87 in/22 mm
250	3 - 47.8	0.3 - 5.4	3.5 - 55.1	1.37 lbs/0.62 kg	75	<2m/s²	8.8 in/224 mm	0.87 in/22 mm

Performance Specifications (Lever Start and Lever Permit – Soft Joint)

RPM	in-lbs.	Nm	kg-cm	Weight	dBa	Vibration	Length	Side to Center Distance
2800	3 - 9.7	0.3 - 1.1	3.5 - 11.2	1.53 lbs/0.69 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm
2000	3 - 22.1	0.3 - 2.5	3.5 - 25.5	1.53 lbs/0.69 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm
1710	3 - 27.3	0.3 - 3.1	3.5 - 31.5	1.53 lbs/0.69 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm
1000	3 - 40	0.3 - 4.5	3.5 - 46.1	1.53 lbs/0.69 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm
500	3 - 47.8	0.3 - 5.4	3.5 - 55.1	1.53 lbs/0.69 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm
250	3 - 47.8	0.3 - 5.4	3.5 - 55.1	1.53 lbs/0.69 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm

Adjustable Precision Shut-Off Clutch Model Specifications

Includes examples of popular Q2 Series models

Model	Torque Range (Soft Draw) in.-lb.	Nm	Free Speed rpm	Weight lb.	Length in.	Side to Center Distance in.	Clutch Spring**	CFM
Reversible Straight Handle (Push to Start)								
QS1P28S1D	3 - 9.7	0.3 - 1.1	2800	1.37	8.8	0.87	L	16
QS1P28S3D	3 - 9.7	0.3 - 1.1	2800	1.37	8.8	0.87	L	16
QS1P20S1D	3 - 22.1	0.3 - 2.5	2000	1.37	8.8	0.87	L, M	16
QS1P20S3D	3 - 22.1	0.3 - 2.5	2000	1.37	8.8	0.87	L, M	16
QS1P17S1D	3 - 27.3	0.3 - 3.1	1710	1.37	8.8	0.87	L, M	16
QS1P17S3D	3 - 27.3	0.3 - 3.1	1710	1.37	8.8	0.87	L, M	16
QS1P10S3D	3 - 40	0.3 - 4.5	1000	1.37	8.8	0.87	L, M, H	16
QS1P10S1D	3 - 40	0.3 - 4.5	1000	1.37	8.8	0.87	L, M, H	16
QS1P05S1D	3 - 47.8	0.3 - 5.4	500	1.37	8.8	0.87	L, M, H	16
QS1P05S3D	3 - 47.8	0.3 - 5.4	500	1.37	8.8	0.87	L, M, H	16
QS1P02S1D	3 - 47.8	0.3 - 5.4	250	1.37	8.8	0.87	L, M, H	16
Reversible Straight Handle (Lever Permit)								
QS1T28S1D	3 - 9.7	0.3 - 1.1	2800	1.53	9.5	0.87	L	16
QS1T20S1D	3 - 22.1	0.3 - 2.5	2000	1.53	9.5	0.87	L, M	16
QS1T20S3D	3 - 22.1	0.3 - 2.5	2000	1.53	9.5	0.87	L, M	16
QS1T17S1D	3 - 27.3	0.3 - 3.1	1710	1.53	9.5	0.87	L, M	16
QS1T10S1D	3 - 40	0.3 - 4.5	1000	1.53	9.5	0.87	L, M, H	16
QS1T05S1D	3 - 47.8	0.3 - 5.4	500	1.53	9.5	0.87	L, M, H	16
QS1T02S1D	3 - 47.8	0.3 - 5.4	250	1.53	9.5	0.87	L, M, H	16
Reversible Straight Handle (Lever Start)								
QS1L28S1D	3 - 9.7	0.3 - 1.1	2800	1.53	9.5	0.87	L	16
QS1L20S1D	3 - 22.1	0.3 - 2.5	2000	1.53	9.5	0.87	L, M	16
QS1L20S3D	3 - 22.1	0.3 - 2.5	2000	1.53	9.5	0.87	L, M	16
QS1L17S1D	3 - 27.3	0.3 - 3.1	1710	1.53	9.5	0.87	L, M	16
QS1L10S1D	3 - 40	0.3 - 4.5	1000	1.53	9.5	0.87	L, M, H	16
QS1L05S3D	3 - 47.8	0.3 - 5.4	500	1.53	9.5	0.87	L, M, H	16
QS1L02S1D	3 - 47.8	0.3 - 5.4	250	1.53	9.5	0.87	L, M, H	16

Tool Series	Sound Approx. dBa	Air Inlet NPT	Hose Size	Installed Spring
Q2	75	¼"	¼"	Heaviest

***Clutch Spring: L = Light, M = Medium, H = Heavy.*

Performance figures are at 90 psi (620 kPa).

Q4, S1 = ¼" Quick Change Chuck

Adjustable Cushion Clutch Screwdrivers

Adjustable cushion clutch tools (also called rolling ball clutches) provide a medium level of torque control for many general use applications. The tool's output torque is controlled by adjusting a mechanical spring that provides axial force on steel balls rolling between indented plates. By providing smooth disengagement at a preset torque while minimizing vibration to the operator, these tools are a solid choice for general purpose fastening applications.

QP1S17C1D

Pistol Grip

Features

- Torque range (soft draw): 3.0 to 47.8 in.-lb. / 0.3 - 5.4 Nm
- Recommended for joints that require a torque limiting clutch.
- Speeds: 250 to 2800 RPM
- Air Inlet Location: Top or Handle
- Ergonomic design reduces operator fatigue
- E-chip standard for Asset Management
- Specification tables include examples of our most popular models.

Skinsulate® Comfort Coating

Q2 Series Model Builder for All Available Versions

Model Number Sequence

Style		Rotation		Throttle		Speed		Clutch		Bit Holder/Drive		Options: Inlet Location		Options: Grip Size		Options: Inlet Style		Options: Electronics	
Cushion Clutch/Pistol-Grip																			
Q	Pistol	P	Rev	1	Trigger Permit	T	2800	28	Cushion Clutch	C	¼" Quick Change	1	Top	T	Small	A	¼-19 BSP	B	Dallas Chip	D
					Push-to-Start	P	2000	20			¼" Bit Finder	3								
					Trigger Start	S	1710	17			5mm Double End Quick Change	5								
							1000	10			¼" Double End Quick Change	7								
							500	05												
							250	02												

Performance Specifications (Soft Joint)

RPM	in-lbs.	Nm	kg-cm	Weight	dBa	Vibration	Length	Side to Center Distance
2800	3 - 9.7	0.3 - 1.1	3.5 - 11.2	1.75 lbs/0.79 kg	75	<2m/s²	8.3 in/211 mm	0.58 in/14.7 mm
2000	3 - 22.1	0.3 - 2.5	3.5 - 25.5	1.85 lbs/0.84 kg	75	<2m/s²	8.8 in/224 mm	0.58 in/14.7 mm
1710	3 - 27.3	0.3 - 3.1	3.5 - 31.5	1.85 lbs/0.84 kg	75	<2m/s²	8.8 in/224 mm	0.58 in/14.7 mm
1000	3 - 40	0.3 - 4.5	3.5 - 46.1	1.85 lbs/0.84 kg	75	<2m/s²	8.8 in/224 mm	0.58 in/14.7 mm
500	3 - 47.8	0.3 - 5.4	3.5 - 55.1	1.85 lbs/0.84 kg	75	<2m/s²	8.8 in/224 mm	0.58 in/14.7 mm
250	3 - 47.8	0.3 - 5.4	3.5 - 55.1	1.85 lbs/0.84 kg	75	<2m/s²	8.8 in/224 mm	0.58 in/14.7 mm

Adjustable Cushion Clutch Model Specifications

Includes examples of popular Q2 Series models

Model	Torque Range (Soft Draw) in.-lb.	Nm	Free Speed rpm	Weight lb.	Length in.	Side to Center Distance in.	Clutch Spring**	CFM
Reversible Pistol Handle (Trigger Start)								
QP1S28C1D	3 - 9.7	0.3 - 1.1	2800	1.75	8.3	0.58	L	16
QP1S28C3D	3 - 9.7	0.3 - 1.1	2800	1.75	8.3	0.58	L	16
QP1S20C1D	3 - 22.1	0.3 - 2.5	2000	1.85	8.8	0.58	L, M	16
QP1S20C1TD*	3 - 22.1	0.3 - 2.5	2000	1.85	8.8	0.58	L, M	16
QP1S20C3D	3 - 22.1	0.3 - 2.5	2000	1.85	8.8	0.58	L, M	16
QP1S17C1D	3 - 27.3	0.3 - 3.1	1710	1.85	8.8	0.58	L, M	16
QP1S17C3D	3 - 27.3	0.3 - 3.1	1710	1.85	8.8	0.58	L, M	16
QP1S10C1D	3 - 40	0.3 - 4.5	1000	1.85	8.8	0.58	L, M, H	16
QP1S10C3D	3 - 40	0.3 - 4.5	1000	1.85	8.8	0.58	L, M, H	16
Reversible Pistol Handle (Trigger Permit)								
QP1T28C1D	3 - 9.7	0.3 - 1.1	2800	1.75	8.3	0.58	L	16
QP1T20C1D	3 - 22.1	0.3 - 2.5	2000	1.85	8.8	0.58	L, M	16
QP1T20C1TD*	3 - 22.1	0.3 - 2.5	2000	1.85	8.8	0.58	L, M	16
QP1T17C1D	3 - 27.3	0.3 - 3.1	1710	1.85	8.8	0.58	L, M	16
QP1T10C1D	3 - 40	0.3 - 4.5	1000	1.85	8.8	0.58	L, M, H	16
Reversible Pistol Handle (Push to Start)								
QP1P28C1D	3 - 9.7	0.3 - 1.1	2800	1.75	8.3	0.58	L	16
QP1P20C1D	3 - 22.1	0.3 - 2.5	2000	1.85	8.8	0.58	L, M	16
QP1P20C1TD *	3 - 22.1	0.3 - 2.5	2000	1.85	8.8	0.58	L, M	16
QP1P17C1D	3 - 27.3	0.3 - 3.1	1710	1.85	8.8	0.58	L, M	16
QP1P10C1D	3 - 40	0.3 - 4.5	1000	1.85	8.8	0.58	L, M, H	16
QP1P05C1D	3 - 47.8	0.3 - 5.4	500	1.85	8.8	0.58	L, M, H	16

Tool Series	Sound Approx. dBa	Air Inlet NPT	Hose Size	Installed Spring
Q2	75	¼"	¼"	Heaviest

**T = located at the end of the model number indicates top air inlet*

***Clutch Spring: L = Light, M = Medium, H = Heavy.*

Performance figures are at 90 psi (620 kPa).

Q4, S1 = ¼" Quick Change Chuck

Adjustable Cushion Clutch Screwdrivers

Straight

Features

- Torque range (soft draw): 3.0 to 47.8 in.-lb. / 0.3 - 5.4 Nm
- Recommended for joints that require a torque limiting clutch.
- Speeds: 250 to 2800 RPM
- Air Inlet Location: Top or Handle
- Ergonomic design reduces operator fatigue.
- E-chip standard for Asset Management.
- Specification tables include examples of our most popular models.

Skinsulate® Comfort Coating

QS1P28C1D

Q2 Series Model Builder for All Available Versions

Model Number Sequence

Style		Rotation		Throttle		Speed		Clutch		Bit Holder/Drive		Options: Inlet Style		Options: Electronics	
Cushion Clutch/Straight Tool															
Q	Straight	S	Rev	1	Lever Start	L	2800	28	Cushion Clutch	C	¼" Quick Change	1	¼-19 BSP	B	Dallas Chip	D
					Push-to-Start	P	2000	20			¼" Bit Finder	3				
					Lever Permit	T	1710	17			5mm Double End Quick Change	5				
							1000	10			¼" Double End Quick Change	7				
							500	05								
							250	02								

Performance Specifications (Push-to-Start – Soft Joint)

RPM	in-lbs.	Nm	kg-cm	Weight	dBa	Vibration	Length	Side to Center Distance
2800	3 - 9.7	0.3 - 1.1	3.5 - 11.2	1.37 lbs/0.62 kg	75	<2m/s²	8.8 in/223 mm	0.87 in/22 mm
2000	3 - 22.1	0.3 - 2.5	3.5 - 25.2	1.37 lbs/0.62 kg	75	<2m/s²	8.8 in/223 mm	0.87 in/22 mm
1710	3 - 27.3	0.3 - 3.1	3.5 - 31.5	1.37 lbs/0.62 kg	75	<2m/s²	8.8 in/223 mm	0.87 in/22 mm
1000	3 - 40	0.3 - 4.5	3.5 - 46.1	1.37 lbs/0.62 kg	75	<2m/s²	8.8 in/223 mm	0.87 in/22 mm
500	3 - 47.8	0.3 - 5.4	3.5 - 55.1	1.37 lbs/0.62 kg	75	<2m/s²	8.8 in/223 mm	0.87 in/22 mm
250	3 - 47.8	0.3 - 5.4	3.5 - 55.1	1.37 lbs/0.62 kg	75	<2m/s²	8.8 in/223 mm	0.87 in/22 mm

Performance Specifications (Lever Start and Lever Permit – Soft Joint)

RPM	in-lbs.	Nm	kg-cm	Weight	dBa	Vibration	Length	Side to Center Distance
2800	3 - 9.7	0.3 - 1.1	3.5 - 11.2	1.53 lbs/0.69 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm
2000	3 - 22.1	0.3 - 2.5	3.5 - 25.5	1.53 lbs/0.69 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm
1710	3 - 27.3	0.3 - 3.1	3.5 - 31.5	1.53 lbs/0.69 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm
1000	3 - 40	0.3 - 4.5	3.5 - 46.1	1.53 lbs/0.69 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm
500	3 - 47.8	0.3 - 5.4	3.5 - 55.1	1.53 lbs/0.69 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm
250	3 - 47.8	0.3 - 5.4	3.5 - 55.1	1.53 lbs/0.69 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm

Adjustable Cushion Clutch Model Specifications

Includes examples of popular Q2 Series models

Model	Torque Range (Soft Draw) in.-lb.	Nm	Free Speed rpm	Weight lb.	Length in.	Side to Center Distance in.	Clutch Spring**	CFM
Reversible Straight Handle (Lever Throttle)								
QS1L28C1D	3 - 9.7	0.3 - 1.1	2800	1.53	9.5	0.87	L	16
QS1L28C3D	3 - 9.7	0.3 - 1.1	2800	1.53	9.5	0.87	L	16
QS1L20C1D	3 - 22.1	0.3 - 2.5	2000	1.53	9.5	0.87	L, M	16
QS1L17C1D	3 - 27.3	0.3 - 3.1	1710	1.53	9.5	0.87	L, M	16
QS1L17C3D	3 - 27.3	0.3 - 3.1	1710	1.53	9.5	0.87	L, M	16
QS1L10C1D	3 - 40	0.3 - 4.5	1000	1.53	9.5	0.87	L, M, H	16
QS1L10C3D	3 - 40	0.3 - 4.5	1000	1.53	9.5	0.87	L, M, H	16
Reversible Straight Handle (Lever Permit)								
QS1T28C1D	3 - 9.7	0.3 - 1.1	2800	1.53	9.5	0.87	L	16
QS1T20C1D	3 - 22.1	0.3 - 2.5	2000	1.53	9.5	0.87	L, M	16
QS1T17C1D	3 - 27.3	0.3 - 3.1	1710	1.53	9.5	0.87	L, M	16
Reversible Straight Handle (Push-to-Start)								
QS1P28C1D	3 - 9.7	0.3 - 1.1	2800	1.37	8.8	0.87	L	16
QS1P28C3D	3 - 9.7	0.3 - 1.1	2800	1.37	8.8	0.87	L	16
QS1P20C1D	3 - 22.1	0.3 - 2.5	2000	1.37	8.8	0.87	L, M	16
QS1P17C1D	3 - 27.3	0.3 - 3.1	1710	1.37	8.8	0.87	L, M	16
QS1P17C3D	3 - 27.3	0.3 - 3.1	1710	1.37	8.8	0.87	L, M	16
QS1P10C1D	3 - 40	0.3 - 4.5	1000	1.37	8.8	0.87	L, M, H	16
QS1P10C3D	3 - 40	0.3 - 4.5	1000	1.37	8.8	0.87	L, M, H	16

Tool Series	Sound Approx. dBa	Air Inlet NPT	Hose Size	Installed Spring
Q2	75	¼"	¼"	Heaviest

**T = located at the end of the model number indicates top air inlet*

***Clutch Spring: L = Light, M = Medium, H = Heavy.*

Performance figures are at 90 psi (620 kPa).

Q4, S1 = ¼" Quick Change Chuck

Direct Drive Screwdrivers

Designed for soft draw applications in wood and other materials not requiring critical torque control, direct drive air screwdrivers provide basic fastening capability. Applied torque is controlled by the operator and can be limited by regulating air line pressure.

QP1S10D1D

Pistol Grip

Features

- Torque range (soft draw): 0 to 80.1 in.-lb. / 1.8 to 9.1 Nm
- Recommended for soft draw applica tions in wood or other materials not requiring critical torque control.
- Speed: 250 to 2800 RPM
- Ergonomic design reduces operator fatigue
- E-chip standard for Asset Management
- Specification tables include examples of our most popular models.

Skinsulate® Comfort Coating

Q2 Series Model Builder for All Available Versions

Model Number Sequence

Style	Rotation	Throttle	Speed	Clutch	Bit Holder/Drive	Options			
						Inlet Location	Grip Size	Inlet Style	Electronics
Direct Drive/Pistol-Grip									
Q	Pistol	P	Rev	1	Trigger Start	S	2800	28	Direct Drive	D	¼" Quick Change	1	Top	T	Small	A	¼-19 BSP	B	Dallas Chip	D
							2000	20			¼" Bit Finder	3								
							1710	17			5mm Double End Quick Change	5								
							1000	10			¼" Double End Quick Change	7								
							500	05												
							250	02												

Performance Specifications (Soft Joint)

RPM	in-lbs.	Nm	kg-cm	Weight	dba	Vibration	Length	Side to Center Distance
2800	16.1 max	1.8 max	18.6 max	1.39 lbs/0.63 kg	75	<2m/s²	5.9 in/150 mm	0.58 in/14.7 mm
2000	25.6 max	2.9 max	29.6 max	1.49 lbs/0.67 kg	75	<2m/s²	6.4 in/163 mm	0.58 in/14.7 mm
1710	30 max	3.4 max	34.6 max	1.49 lbs/0.67 kg	75	<2m/s²	6.4 in/163 mm	0.58 in/14.7 mm
1000	45.9 max	5.2 max	53 max	1.49 lbs/0.67 kg	75	<2m/s²	6.4 in/163 mm	0.58 in/14.7 mm
500	86.7 max	9.8 max	100 max	1.49 lbs/0.67 kg	75	<2m/s²	6.4 in/163 mm	0.58 in/14.7 mm
250	80.1 max	9.1 max	92.5 max	1.49 lbs/0.67 kg	75	<2m/s²	6.4 in/163 mm	0.58 in/14.7 mm

Direct Drive Model Specifications

Includes examples of popular Q2 Series models

Model	Torque (Soft Draw)* 50 psi in.-lb.	50 psi Nm	90 psi in.-lb.	90 psi Nm	Free Speed rpm	Weight lb.	Length in.	Side to Center Distance in.	CFM
Reversible Pistol Handle (Trigger Start)									
QP1S28D1D	–	–	16.1	1.8	2800	1.39	5.9	.58	16
QP1S17D1D	–	–	30.0	3.4	1710	1.49	6.4	.58	16
QP1S10D1D	–	–	45.9	5.2	1000	1.49	6.4	.58	16

Q4, D1 = ¼" Quick Change Chuck ** Torque may be adjusted by varying the air pressure.* *Air Inlet: Series 3, ⅛" NPT. All others ¼" NPT.* *Size Hose Recommended: Series 41, 7, 5/16". All others ¼".*

Direct Drive Screwdrivers

Straight

Features

- Torque range (soft draw): 0 to 45.9 in.-lb. / 0 - 5.2 Nm
- Recommended for soft draw applications in wood or other materials not requiring critical torque control.
- Speeds: 1000 to 2800 RPM
- Ergonomic design reduces operator fatigue
- E-chip standard for Asset Management
- Specification tables include examples of our most popular models.

Skinsulate® Comfort Coating

Q2 Series Model Builder for All Available Versions

Model Number Sequence

Style		Rotation		Throttle		Speed		Clutch		Bit Holder/Drive		Options: Inlet Style		Options: Electronics	
Direct Drive/Straight Tool															
Q	Straight	S	Rev	1	Lever Start	L	2800	28	Direct Drive	D	¼" Quick Change	1	¼-19 BSP	B	Dallas Chip	D
							2000	20			¼" Bit Finder	3				
							1710	17			5mm Double End Quick Change	5				
							1000	10			¼" Double End Quick Change	7				
							500	05								
							250	02								

Performance Specifications (Push-to-Start – Soft Joint)

RPM	in-lbs.	Nm	kg-cm	Weight	dba	Vibration	Length	Side to Center Distance
2800	16.1 max	1.8 max	18.6 max	1.33 lbs/0.60 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm
2000	25.6 max	2.9 max	29.6 max	1.33 lbs/0.60 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm
1710	30 max	3.4 max	34.6 max	1.33 lbs/0.60 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm
1000	51 max	5.8 max	58.9 max	1.33 lbs/0.60 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm
500	86.7 max	9.8 max	100 max	1.33 lbs/0.60 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm
250	80.1 max	9.1 max	92.5 max	1.33 lbs/0.60 kg	75	<2m/s²	9.5 in/241 mm	0.87 in/22 mm

Direct Drive Model Specifications

Includes examples of popular Q2 Series models

Model	Torque (Soft Draw)* 50 psi in.-lb.	50 psi Nm	90 psi in.-lb.	90 psi Nm	Free Speed rpm	Weight lb.	Length in.	Side to Center Distance in.	CFM
Reversible Straight Handle (Lever Throttle)									
QS1L28D1D	–	–	16.1	1.8	2800	1.33	9.5	.87	16
QS1L17D1D	–	–	30.0	3.4	1710	1.33	9.5	.87	16

Q4, D1 = ¼" Quick Change Chuck ** Torque may be adjusted by varying the air pressure.* *Air Inlet: Series 3, ⅛" NPT. All others ¼" NPT.* *Size Hose Recommended: Series 41, 7, 5/16". All others ¼".*

Adjustable Shut-Off Nutrunners

Features

- Torque range (soft draw): 3.5 to 101.5 in.-lb. / 0.4 to 11.5 Nm
- Speeds: 250 to 1750 RPM
- E-chip standard for Asset Management
- Specification tables includes examples of our most popular models.
- Recommended for joints where precise torque control is required.
- Ergonomic design reduces operator fatigue.

Skinsulate® Comfort Coating

QA1L18S9LD

Q2 Series Model Builder for All Available Versions

Model Number Sequence

Style		Rotation		Throttle		Speed		Clutch		Bit Holder/Drive		Angle Head		Options	
														Inlet Style	Electronics
Adjustable Precision Shut-Off Clutch/Angle Screwdriver															
Q	Angle	A	Rev	1	Lever Start	L	1750	18	Auto Shut-Off	S	¼" Quick Change (large head only)	1	Large	L	¼-19 BSP	B	Dallas Chip	D
							1270	12			¼" Wire Detent Hex Bit Holder (large head only)	9						
							850	08										
							500	05										
							250	02										

Performance Specifications (Soft Joint)

RPM	in-lbs.	Nm	kg-cm	Weight	dba	Vibration	Length	Side to Center Distance	Head Height
1750	3.5 - 26.1	0.4 - 3.0	4 - 30.1	2.07 lbs/0.94 kg	75	<2m/s²	11.9 in/303 mm	0.52 in/13 mm	1.34 in/34 mm
1270	3.5 - 32.2	0.4 - 3.7	4 - 37.2	2.07 lbs/0.94 kg	75	<2m/s²	11.9 in/303 mm	0.52 in/13 mm	1.34 in/34 mm
850	3.5 - 47.2	0.4 - 5.3	4 - 54.5	2.07 lbs/0.94 kg	75	<2m/s²	11.9 in/303 mm	0.52 in/13 mm	1.34 in/34 mm
500	3.5 - 56.4	0.4 - 6.4	4 - 65.1	2.07 lbs/0.94 kg	75	<2m/s²	11.9 in/303 mm	0.52 in/13 mm	1.34 in/34 mm
250	3.5 - 56.4	0.4 - 6.4	4 - 65.1	2.07 lbs/0.94 kg	75	<2m/s²	11.9 in/303 mm	0.52 in/13 mm	1.34 in/34 mm

Q2 Series Model Builder for All Available Versions

Model Number Sequence

Style	Rotation	Throttle	Speed	Clutch	Bit Holder/Drive	Angle Head	Options	
							Inlet Style	Electronics
Adjustable Precision Shut-Off Clutch/High Torque Angle Screwdriver								
Q	A	Rev	1	Lever Start	L	500	05	Auto Shut-Off	S	¼" Quick Change	1	Large	XL	¼-19 BSP	B	Dallas Chip	D
						250	02			¼" Wire Detent Hex Bit Holder	9						

Performance Specifications (Soft Joint)

RPM	in-lbs.	Nm	kg-cm	Weight	dBa	Vibration	Length	Side to Center Distance	Head Height
500	11.7 - 88.3	1.4 - 10.0	13.5 - 102	2.26 lbs/1.02 kg	75	<2m/s²	12.9 5in/329 mm	0.52 in/13 mm	1.34 in/34 mm
250	11.7 - 101.5	1.4 - 11.5	13.5 - 102	2.26 lbs/1.02 kg	75	<2m/s²	12.9 5in/329 mm	0.52 in/13 mm	1.34 in/34 mm

Adjustable Precision Shut-Off Clutch Model Specifications

Includes examples of popular Q2 Series models

Model	Torque Range (Soft Draw) in.-lb.	Nm	Free Speed rpm	Weight lb.	Length in.	Angle Head Side to Center in.	Height to Base of Bit in.	Clutch Spring**	CFM
Reversible Angle (Lever Start)									
QA1L18S1LD	3.5 - 26.1	0.4 - 3.0	1750	2.07	11.9	0.52	1.34	L, M	16
QA1L18S9LD	3.5 - 26.1	0.4 - 3.0	1750	2.07	11.9	0.52	1.34	L, M	16
QA1L12S1LD	3.5 - 32.2	0.4 - 3.7	1270	2.07	11.9	0.52	1.34	L, M	16
QA1L12S9LD	3.5 - 32.2	0.4 - 3.7	1270	2.07	11.9	0.52	1.34	L, M	16
QA1L08S9LD	3.5 - 47.2	0.4 - 5.3	850	2.07	11.9	0.52	1.34	L, M, H	16
QA1L08S1LD	3.5 - 47.2	0.4 - 5.3	850	2.07	11.9	0.52	1.34	L, M, H	16
QA1L05S9LD	3.5 - 56.4	0.4 - 6.4	500	2.07	11.9	0.52	1.34	L, M, H	16
QA1L05S1XLD	11.7 - 88.3	1.4 - 10.0	500	2.26	12.95	0.52	1.34	L, M	16
QA1L02S1LD	3.5 - 56.4	0.4 - 6.4	250	2.07	11.9	0.52	1.34	L, M, H	16
QA1L02S1XLD	11.7 - 101.5	1.4 - 11.5	250	2.26	12.95	0.52	1.34	L, M	16

***Clutch Spring: L = Light, M = Medium, H = Heavy.*

S9L, S5L, S9XL = Requires standard ¼" hex detented shank bit

H4 = Requires standard ¼" hex insert bit

S1L, S1XL = ¼" quick change

Adjustable Cushion Clutch Nutrunners

Features

- Torque range (soft draw): 3.5 to 56.4 in.-lb. / 0.4 to 6.4 Nm
- Recommended for joints that require a torque limiting clutch.
- Speeds: 500 to 1750 RPM
- E-chip standard for Asset Management.
- Specification tables include examples of our most popular models.
- Ergonomic design reduces operator fatigue.

Skinsulate® Comfort Coating

Q2 Series Model Builder for All Available Versions

Model Number Sequence

Style		Rotation		Throttle		Speed		Clutch		Bit Holder/Drive		Angle Head		Options	
														Inlet Style	Electronics
Cushion Clutch/Angle Screwdriver															
Q	Angle	A	Rev	1	Lever Start	L	1750	18	Cushion Clutch	C	¼" Quick Change	1	Large	L	¼-19 BSP	B	Dallas Chip	D
							1270	12			¼" Wire Detent Hex Bit Holder	9						
							850	08										
							500	05										
							250	02										

Performance Specifications (Soft Joint)

RPM	in-lbs.	Nm	kg-cm	Weight	dba	Vibration	Length	Side to Center Distance	Head Height
1750	3.5 - 26.1	0.4 - 3.0	4 - 30.1	2.03 lbs/0.92 kg	75	<2m/s²	11.9 in/303 mm	0.52 in/13 mm	1.34 in/34 mm
1270	3.5 - 32.2	0.4 - 3.7	4 - 37.2	2.03 lbs/0.92 kg	75	<2m/s²	11.9 in/303 mm	0.52 in/13 mm	1.34 in/34 mm
850	3.5 - 47.2	0.4 - 5.3	4 - 54.5	2.03 lbs/0.92 kg	75	<2m/s²	11.9 in/303 mm	0.52 in/13 mm	1.34 in/34 mm
500	3.5 - 56.4	0.4 - 6.4	4 - 65.1	2.03 lbs/0.92 kg	75	<2m/s²	11.9 in/303 mm	0.52 in/13 mm	1.34 in/34 mm
250	3.5 - 56.4	0.4 - 6.4	4 - 65.1	2.03 lbs/0.92 kg	75	<2m/s²	11.9 in/303 mm	0.52 in/13 mm	1.34 in/34 mm

Direct Drive Nutrunners

Features

- Torque Range (Soft Draw): 0 to 85.3 in.-lb. / 0 to 9.7 Nm
- Speeds: 250 to 1750 RPM
- E-chip standard for Asset Management.
- Specification tables include examples of our most popular models.
- Recommended for applications not requiring critical torque control.
- Ergonomic design reduces operator fatigue.

Skinsulate® Comfort Coating

Adjustable Cushion Clutch Model Specifications

Includes examples of popular Q2 Series Models

Model	Torque Range (Soft Draw) in.-lb.	Nm	Free Speed rpm	Weight lb.	Length in.	Angle Head Side to Center in.	Height to Base of Bit in.	Clutch Spring**	CFM
Reversible Angle (Lever Start)									
QA1L18C9LD	3.5 - 26.1	0.4 - 3	1750	2.07	11.9	0.52	1.34	L, M	16
QA1L18C1LD	3.5 - 26.1	0.4 - 3.0	1750	2.07	11.9	0.52	1.34	L, M	16
QA1L12C1LD	3.5 - 32.2	0.4 - 3.7	1270	2.07	11.9	0.52	1.34	L, M	16
QA1L12C9LD	3.5 - 32.2	0.4 - 3.7	1270	2.07	11.9	0.52	1.34	L, M	16
QA1L08C1LD	3.5 - 47.2	0.4 - 5.3	850	2.07	11.9	0.52	1.34	L, M, H	16
QA1L08C9LD	3.5 - 47.2	0.4 - 5.3	850	2.07	11.9	0.52	1.34	L, M, H	16
QA1L05C9LD	3.5 - 56.4	0.4 - 6.4	500	2.07	11.9	0.52	1.34	L, M, H	16
QA1L02C1LD	3.5 - 56.4	0.4 - 6.4	250	2.07	11.9	0.52	1.34	L, M, H	16

Tool Series	Sound Approx. dBa	Air Inlet NPT	Hose Size	Installed Spring
Q2	75	¼"	¼"	Heaviest

C3, C9L = Requires standard ¼" hex detented shank bit

C1L = ¼" quick change

***Clutch Spring: L = Light, M = Medium, H = Heavy.*

Performance figures are at 90 psi (620 kPa)

Accessories

Please also see the IRAX Accessories catalog, Form 52225-G

Description	
Bits and Bit Guides (See pages 34-41)	
Hand Grip (for Straight Models only)	STD
Horizontal Hanger (for Pistol Models only)	TRP-A365
Dead Handle	None
Dead Handle Adapter (two required for above)	None
31" Exhaust Hose	3RL-284
Piped-Away Exhaust Kit (Straight Models only)	LG1-K284
Comfort Grip (Straight Lever)	STD
Comfort Grip (Straight Push-to-Start)	STD
Comfort Grip (Pistol) Small	TRP-40-1
Top Air Inlet Kit (use with Push-to-Start Auto Shut-Off only)	STD
Suspension Bail (Straight Models only)	7L-365

Clutch Housing Adjustment Cover

Pistol Buttplate

Flanged Adjustment Covers

Color Differentiating Components for Q2 Fastening Tools

Part Number	Color
Clutch Housing Adjustment Cover (for Q2 Angle Nutrunners)	
TRL-415-1	Gold
TRL-415-2	Red
TRL-415-3	Blue
TRL-415-4	Green
TRL-415-5	Lime Green
Pistol Buttplate (for Q2 Pistol Fasteners)	
TRP-B-R	Orange
TRP-B-G	Green
TRP-B-B	Blue
TRP-B-Y	Light Grey
Flanged Adjustment Cover (for Q2 In-Line Fasteners)	
TRH-40-23-R	Orange
TRH-40-23-G	Green
TRH-40-23-B	Blue
TRH-40-23-Y	Light Grey
Non-Flanged Adjustment Cover (for Q2 In-Line Fasteners)	
TRH-40-24-R	Orange
TRH-40-24-G	Green
TRH-40-24-B	Blue
TRH-40-24-Y	Light Grey

Lightweight Riveters

For driving 1/8"- 3/8" (3-10mm) rivets

Features

- Accurate and easily controlled tease throttle
- Standard beehive retainer-allows use of a wide variety of accessories
- Built-in power regulators on A1 and B1 Models-the operator can change power on the job with no downtime
- Model 772-Unitized "easy-out" throttle valve assembly
- Model 772-Furnished with two retainers for use with a wide variety of accessories

Accessories

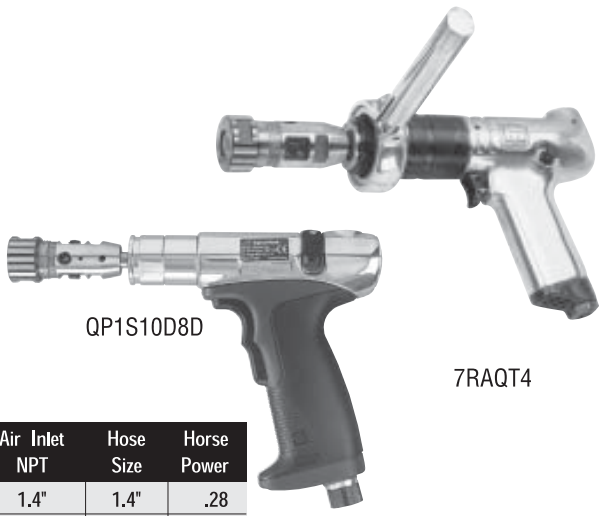
See IRAX accessories catalog, Form 52225-G

Model	Cold Rivet Capacity Diameter Aluminum in.	mm	Dural & Soft Iron in.	mm	Handle	Length Less Accessory in.	mm	Weight Less Accessory lb.	kg	Piston Stroke in.	mm	Blows per Minute	For Use with Rivet Set Shank Bore in.	mm	Diameter in.	CFM
Industrial/Aerospace																
AVC10A1	1/8	3	1/8	3	Pistl	6	152	2 3/16	1.28	17/8	48	3200	9/16	14	.401	12
AVC10C1	1/8	3	1/8	3	Straight	6 25/32	172	2 1/16	.94	1 7/8	48	3200	9/16	14	.401	12
AVC12A	13/16	5	3/16	5	Pistol	7 3/4	197	3 3/8	1.53	3	76	2100	9/16	14	.401	13
AVC13A1	1/4	6	1/4	6	Pistol	8 3/4	222	3 11/16	1.6	4	101	1725	9/16	14	.401	13
AVC26A1	3/8	10	5/16	8	Pistol	11 5/16	287	5 1/8	2.32	6	152	1120	3/4	19	.498	14
AVC26B1	3/8	10	5/16	8	Goose Neck	13 15/16	354	7	3.18	6	152	1120	3/4	19	.498	14
General Purpose																
772 For light duty cutting & hammering					Pistol	73/8	187	35/8	1.64	21/4	57	3000	3/4	19	.401	-

Air Inlet = 1.4" NPT
Recommended Hose = 5.16" (8mm)

AVC 26 use 1.2" (13mm)
Performance figures are at 90 psi (620 kPa)

Tappers



Features

- Air-thrown reverse valve for instant reversal
- Ergonomically designed for operator comfort and high production
- Variable throttle for maximum control and minimum tap breakage
- Modular design makes servicing easy and economical

Standard Equipment

- Dead handle assembly for Model 7RAQT4: RIA-A48 handle
  7A-49A adapter
  (two required)

Accessories

See IRAX accessories catalog, Form 52225-G

Tool Series	Sound Approx. dBa	Air Inlet NPT	Hose Size	Horse Power
Q2	75	1.4"	1.4"	.28
7	79	1.4"	5.16"	.50

Model	Free Speed rpm	Chuck Capacity in.	mm	Tapping Capacity lb.	kg	Weight in.	mm	Length in.	mm	Side to Center Distance in.	mm	CFM
QP1S10D8D	1000	.25	6	1.4	6	1.79	.85	7.2	183	.58	14.7	16
7RAQT4	475	.383	13	1.2	3	3.38	1.5	11.81	300	.875	22	27

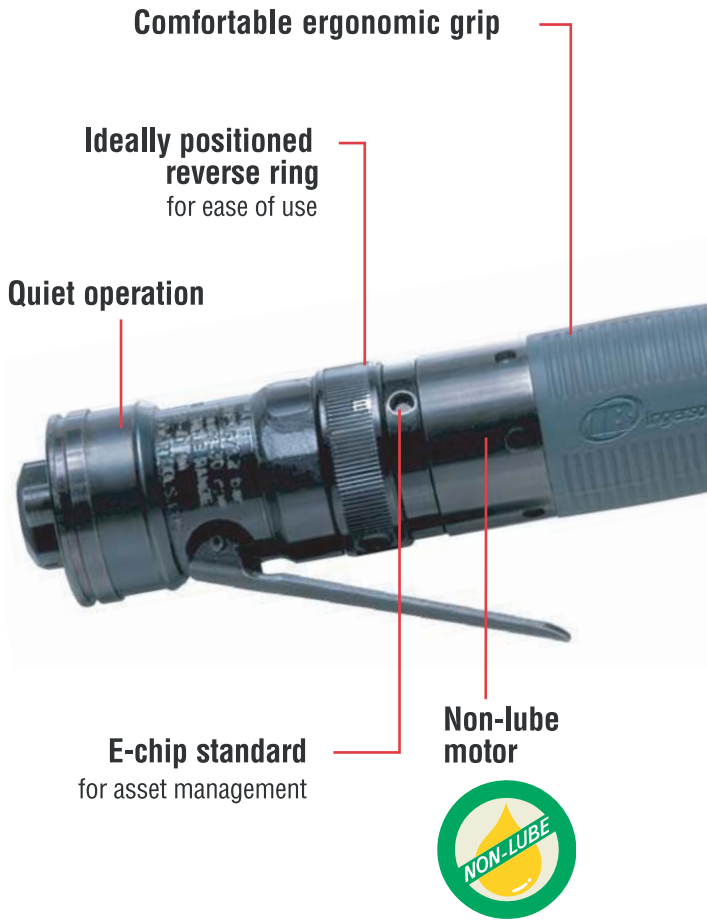
Performance figures are at 90 psi (6.2 BAR) air pressure.

The perfect tool when it's on the line

At Ingersoll Rand, we know how demanding work can be on the assembly line. Maximizing productivity takes a combination of precision and durability — which is exactly what you get with our QA4 Series pneumatic nutrunners.

These powerful, newly designed tools are lightweight, compact, quiet, and durable enough for the toughest high volume applications, yet still deliver the precision and accuracy you need. The QA4 Series tools are easy to maintain and service — which means less downtime — and are fully configurable in straight or angle configurations, shut-off or stall, fixed or floating spindles, and in a variety of drive sizes.

As with any Ingersoll Rand tool, you can count on the QA4 Series to deliver what you need to get the job done. And you can also count on us to provide all the parts and accessories to help maximize the performance of the QA4 Series. For more details, see your Ingersoll Rand distributor, call (800) 376-TOOL, or visit irtools.com.



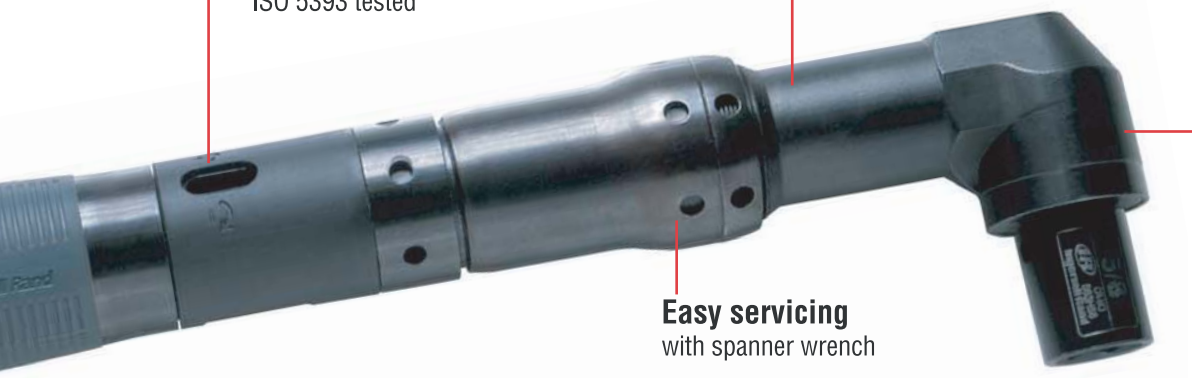
QA4 Series Nutrunners

MODEL	COMMON FASTENER SIZE	SQUARE DRIVE	TORQUE RANGE SOFT JOINT ft-lb (Nm)	FREE SPEED rpm	WEIGHT lb (kg)	LENGTH in (mm)	HEAD HEIGHT in (mm)	HEAD SIDE TO CENTER in (mm)
QA4 ANGLE SHUT-OFF NUTRUNNERS — REVERSIBLE								
QA4AALS011NP25S06	M4 – M5	3/8"	3.7 – 8.5 (5 – 11.5)	1,025	3.17 (1.44)	19.4 (342)	1.28 (32.5)	0.50 (12.5)
QA4AALS015NP25S06	M5 – M6	3/8"	5.2 – 11.1 (7 – 15)	800	3.17 (1.44)	19.4 (342)	1.28 (32.5)	0.50 (12.5)
QA4AALS020NP25S06	M6 – M8	3/8"	7.4 – 14.8 (10 – 20)	625	3.17 (1.44)	19.4 (342)	1.28 (32.5)	0.50 (12.5)
QA4AALS020NP28S06	M6 – M8	3/8"	7.4 – 14.8 (10 – 20)	625	3.35 (1.52)	20.6 (363)	1.39 (35.25)	0.55 (14.0)
QA4AALS030NP28S06	M8 – M10	3/8"	11.1 – 22.1 (15 – 30)	425	3.35 (1.52)	20.6 (363)	1.39 (35.25)	0.55 (14.0)
QA4AALS040NP35S06	M8 – M10	3/8"	14.8 – 29.5 (20 – 40)	325	3.98 (1.81)	22.4 (395)	1.71 (43.5)	0.69 (17.5)
QA4AALS040NP35S08	M8 – M11	1/2"	14.8 – 29.5 (20 – 40)	325	4.00 (1.81)	22.4 (395)	1.71 (43.5)	0.69 (17.5)
QA4AALS055NP35S08	M10 – M13	1/2"	18.4 – 40.6 (25 – 55)	200	4.50 (2.04)	23.7 (418)	1.71 (43.5)	0.69 (17.5)
QA4 ANGLE STALL NUTRUNNERS — REVERSIBLE								
QA4AALD011NP25S06	M4 – M5	3/8"	3.7 – 8.5 (5 – 11.5)	1,025	2.47 (1.12)	16.0 (283)	1.28 (32.5)	0.50 (12.5)
QA4AALD015NP25S06	M5 – M6	3/8"	5.2 – 11.1 (7 – 15)	800	2.47 (1.12)	16.0 (283)	1.28 (32.5)	0.50 (12.5)
QA4AALD020NP25S06	M6 – M8	3/8"	7.4 – 14.8 (10 – 20)	625	2.47 (1.12)	16.0 (283)	1.28 (32.5)	0.50 (12.5)
QA4AALD030NP28S06	M8 – M10	3/8"	11.1 – 22.1 (15 – 30)	425	2.63 (1.20)	16.0 (283)	1.39 (35.25)	0.55 (14.0)
QA4AALDO40NP35S06	M8 – M11	3/8"	14.8 – 29.5 (20 – 40)	325	3.25 (1.48)	19.1 (336)	1.71 (43.5)	0.69 (17.5)
QA4AALDO55NP35S08	M10 – M13	1/2"	18.4 – 40.6 (25 – 55)	200	3.88 (1.76)	20.3 (359)	1.71 (43.5)	0.69 (17.5)

Tool performance rated at 90 psi (6.2 bar). Air consumption at free speed is 28 cfm. Air inlet is 1/4" NPT. Recommended hose size is 1/2".

Externally adjustable precision shut-off clutch
for consistent joints;
ISO 5393 tested

Configurable to your application
Don't see your configuration? Check irtools.com for an expanded selection



Longer service life
through precision machining and heat treatment

Easy servicing
with spanner wrench

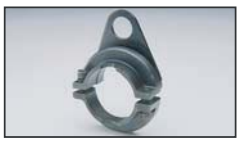
QA	4	A	A	L	S	011	N	P	25	S	04
SERIES	MOTOR	RELEASE	BODY STYLE	TOOL ACTIVATOR	CLUTCH TYPE	MAX TORQUE (Nm)	INLET	MOUNTING	OUTPUT SPINDLE	DRIVE TYPE	DRIVE SIZE
QA	4	A	A Angle S Inline M Power unit Z Off-set	L Lever R Remote	S Adjustable shut-off D Stall	Angles 011 015 020 030 040 055 Inlines 012 015 020 027 046	N 1/4" NPT B 1/4" BSP	P Standard gear case F Flanged	25 = 25 mm head 28 = 28 mm head 35 = 35 mm head 20 = 25 mm spindle, no float (solid) 21 = 50 mm spindle, 19 mm float 41 = 100 mm spindle, 19 mm float 61 = 150 mm spindle, 38 mm float 81 = 200 mm spindle, 38 mm float	S Square Q Quick-change (female hex)	04 1/4" 06 3/8" 08 1/2"

MODEL	COMMON FASTENER SIZE	SQUARE DRIVE	TORQUE RANGE SOFT JOINT ft-lb (Nm)	FREE SPEED rpm	WEIGHT lb (kg)	LENGTH in (mm)	SIDE TO CENTER in (mm)
QA4 INLINE SHUT-OFF NUTRUNNERS — REVERSIBLE							
QA4ASLS012NP41S06	M4 – M5	3/8"	4.4 – 8.8 (6 – 12)	1,050	3.22 (1.46)	18.3 (464)	1.60 (41)
QA4ASLS015NP41S06	M5 – M6	3/8"	5.2 –11.1 (7 – 15)	850	3.22 (1.46)	18.3 (464)	1.60 (41)
QA4ASLS020NP41S06	M6 – M8	3/8"	7.4 – 14.8 (10 – 20)	600	3.22 (1.46)	18.3 (464)	1.60 (41)
QA4ASLS027NP41S06	M8 – M10	3/8"	10.3 –19.9 (14 – 27)	450	3.22 (1.46)	18.3 (464)	1.60 (41)
QA4ASLS046NP41S06	M8 – M12	3/8"	14.8 – 33.9 (20 – 46)	250	3.73 (1.69)	18.8 (478)	1.81 (46)
QA4ASLS046NP41S08	M8 – M12	1/2"	14.8 – 33.9 (20 – 46)	250	3.77 (1.71)	18.8 (478)	1.81 (46)
QA4 INLINE REMOTE-START NUTRUNNERS —REVERSIBLE							
QA4ASRS012NF41S06	M4 – M5	3/8"	4.4 – 8.8 (6 – 12)	1,050	3.55 (1.61)	17.8 (451)	1.60 (41)
QA4ASRS015NF41S06	M5 – M6	3/8"	5.2 – 11.1 (7 – 15)	850	3.55 (1.61)	17.8 (451)	1.60 (41)
QA4ASRS020NF41S06	M6 – M8	3/8"	7.4 – 14.8 (10 – 20)	600	3.55 (1.61)	17.8 (451)	1.60 (41)
QA4ASRS027NF41S06	M8 – M10	3/8"	10.3 –19.9 (14 – 27)	450	3.55 (1.61)	17.8 (451)	1.60 (41)
QA4ASRS046NF41S06	M8 – M12	3/8"	14.8 – 33.9 (20 – 46)	250	4.06 (1.84)	18.3 (465)	1.81 (46)
QA4ASRS046NF41S08	M8 – M12	1/2"	14.8 – 33.9 (20 – 46)	250	4.06 (1.84)	18.3 (465)	1.81 (46)

IMPORTANTNOTE:Tool shown with mounting flange 15E4-K48. Inline tools require the use of a mounting flange. See back cover for flange mounting options.


Flanged Mounting Kits


Mounting Plate Kits


Swivel Hanger Kit


Extended Lever Kit


Calibration Equipment


Workstations


FRL

Accessories

FLANGE MOUNTING OPTIONS	DESCRIPTION	PART NUMBER
Reaction Bar	Inline to 027 Nm floating spindle	GEA15-K48
	Inline to 046 Nm floating spindle	DEA120-K48
Workstation Mounting Kit		
	Inline to 027 Nm floating spindle	GEA4-K48
	Inline to 046 Nm floating spindle	DAM120-K48
Flanged Mounting Kit		
	Full SplineInline to 027 Nm floating spindle15E4-K48	
	Full SplineInline to 046 Nm floating spindleGEM120-K48	
	Smooth ClampAllQA4-K48	
SWIVEL HANGER		129851
SPANNER WRENCH		GEA40-478
LEVER KITS	Extended Lever131654	
	Locking Lever131655	
CALIBRATION EQUIPMENT		
	ETT Torque Tester3 – 30 Nm torque rangeETT-30-US	
	ETA Torque AnalyzerETA5	
	Rotary Transducer3/8" square, 3.8 – 75 Nm, standardTR75S6	
	Smart transducer, torqueTRD75S6	
	Smart transducer, torque & angleTRDA75S6	
	Stationary Transducer3/8" square, 7.5 – 150 NmTS150S6	
	Smart transducerTSD135S6	
	ETA Joint Simulator3/8" squareJKR75	
WORKSTATIONS		
	Lightweight Torque Arm With Tool HolderEZTA080500	
	Lightweight Torque Arm Without Tool Holder43146000	
EXHAUST KIT		QA4-EXH-989
ANGLE HEAD BOOT	25 angle head131996	
	28 angle head131995	
	35 angle head131997	
FRL		C28121-800
LUBRICANT		10G

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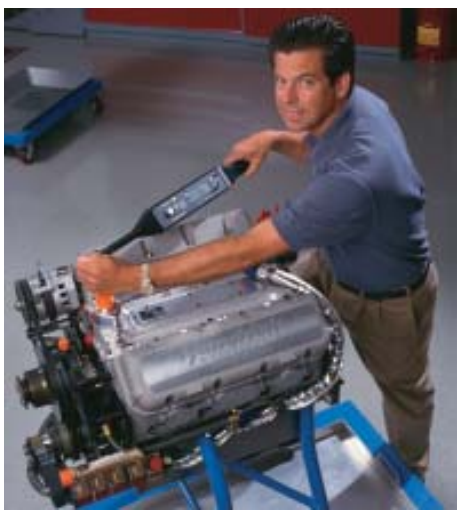
Repairs done right. Service made simple.

Expert™ Torque Analysis Systems

The expanding range of IR Expert Torque Analysis Systems provides the perfect complement for precision fastening tools. It now features the new ETA Series, incorporating the latest digital technology, and includes the proven Sensor I products, widely used throughout industry...and even the space program...where precise calibration is essential.



The Sensor I Expert wrench has proven itself as an invaluable asset for some of the world's leading auto racing teams. Randy Dorton, director of the engine development program at Hendrick Motorsports, utilizes the tool in building winning powerplants for their NASCAR Winston Cup and Busch Grand National Series teams.

Sensor I Expert Wrench

Ingersoll-Rand has created two indispensable tools for developing, meeting and verifying virtually any tightening specification for bolted assemblies in the laboratory or on the production line: The Sensor I Expert and Sensor I Expert Auditor electronic wrenches. Based on the highly regarded Sensor I wrench – the industry standard for portable tightening systems since 1983 – the new Expert and Expert Auditor are powerful, compact systems capable of:

- Performing advanced tightening strategies including torque control, angle control and yield control
- Ensuring quality torque auditing with the proprietary Dynamic Torque Audit feature
- Recording tightening data
- Displaying current SPC information for tightening operations

Typical Applications

- Alaboratory device for developing fastening specifications for applications
- On-line quality auditing
- Low volume assembly
- SPC quality control and data collection

20 Custom Application Setups

- Stores custom fastening strategies for specific applications

Data Storage

- Stores up to 1000 final tightening values per application setup (up to 2500 maximum values)
- Stores up to ten tightening traces

Four Tightening Modes

- Torque control – For accurate torque tightening
- Torque plus angle control – For tightening to a specific angle beyond snug Improved clamp load consistency on more critical applications
- Yield control – For tightening to yield point of fastener. For obtaining maximum clamp load from fastener
- Dynamic torque audit – Quality assurance for fasteners exiting assembly line

Statistical Capability

- SPC calculations including mean, standard deviation, Cp, and Cpk, can be viewed on screen or sent to a PC

Direct Computer Interface

- Integral RS232 port allows for direct connection of tool to computer for downloading fastening data and traces.
- For additional functionality, it can be used in conjunction with the PC Companion software.

The features of the Expert Wrench significantly enhance the scope of information delivery, as well as accessibility and ease of use:

- Built-in non-contact angle measurement (optional)
- On-board storage of tightening data to eliminate the need for a local PC
- Quality control limits on tightening parameters give an instant picture of the fastening quality and help ensure a "good " tightening
- Serial interface for transmission and analysis of data

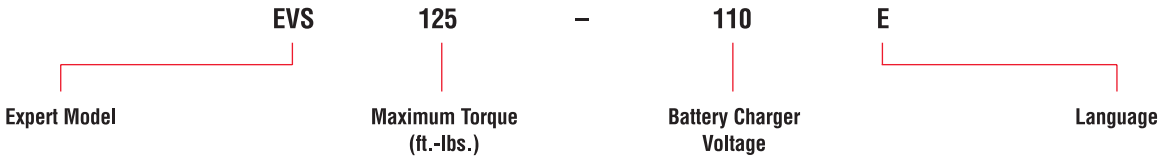
The Sensor I Expert Wrench is far more capable than operator-dependent hand torque wrenches, and is the perfect supplement to power tools, whether basic or advanced. It enables operators to gain control of fastening operations by setting standards, auditing performance, and monitoring repairs. The Sensor I Expert is the only tool of its type that detects the yield point of the fastener. Because problems occur when fasteners are attached without sufficient tightness, the solution focuses on getting bolts as tight as possible...safely.

Non-Contact EZ Angle Reference (optional)
Option to eliminate the angle reference arm for increased speed and ease of use.

Ability to Tighten Left-Handed Thread
Easily switched between left and right hand fasteners in any tightening mode.

Torque Multiplier Capability
Can be used with an external torque multiplier of any value up to 10 times.

Product Information Guide



Model Numbers*

Model	Torque Range ft.-lbs.	Torque Range Nm	Charger	Language
E__125-110E	15 -125	20 - 170	110 VAC, 60 HZ	English
E__125-110G	15 -125	20 - 170	110 VAC, 60 HZ	German
E__125-110F	15 -125	20 - 170	110 VAC, 60 HZ	French
E__125-110S	15 -125	20 - 170	110 VAC, 60 HZ	Spanish
E__125-110I	15 -125	20 - 170	110 VAC, 60 HZ	Italian
E__125-220E	15 -125	20 - 170	220 VAC, 50 HZ	English
E__125-220G	15 -125	20 - 170	220 VAC, 50 HZ	German
E__125-220F	15 -125	20 - 170	220 VAC, 50 HZ	French
E__125-220S	15 -125	20 - 170	220 VAC, 50 HZ	Spanish
E__125-220I	15 -125	20 - 170	220 VAC, 50 HZ	Italian
E__250-110E	80 - 250	108 - 340	110 VAC, 60 HZ	English
E__250-110G	80 - 250	108 - 340	110 VAC, 60 HZ	German
E__250-110F	80 - 250	108 - 340	110 VAC, 60 HZ	French
E__250-110S	80 - 250	108 - 340	110 VAC, 60 HZ	Spanish
E__250-110I	80 - 250	108 - 340	110 VAC, 60 HZ	Italian
E__250-220E	80 - 250	108 - 340	220 VAC, 50 HZ	English
E__250-220G	80 - 250	108 - 340	220 VAC, 50 HZ	German
E__250-220F	80 - 250	108 - 340	220 VAC, 50 HZ	French
E__250-220S	80 - 250	108 - 340	220 VAC, 50 HZ	Spanish
E__250-220I	80 - 250	108 - 340	220 VAC, 50 HZ	Italian
E__400-110E	100 - 400	132 - 540	110 VAC, 60 HZ	English
E__400-110G	100 - 400	132 - 540	110 VAC, 60 HZ	German
E__400-110F	100 - 400	132 - 540	110 VAC, 60 HZ	French
E__400-110S	100 - 400	132 - 540	110 VAC, 60 HZ	Spanish
E__400-110I	100 - 400	132 - 540	110 VAC, 60 HZ	Italian
E__400-220E	100 - 400	132 - 540	220 VAC, 50 HZ	English
E__400-220G	100 - 400	132 - 540	220 VAC, 50 HZ	German
E__400-220F	100 - 400	132 - 540	220 VAC, 50 HZ	French
E__400-220S	100 - 400	132 - 540	220 VAC, 50 HZ	Spanish
E__400-220I	100 - 400	132 - 540	220 VAC, 50 HZ	Italian

**Insert a "VS" at the __ in the model number to order the Expert or insert an "A" at the __ in the model number to order the Expert Auditor.*

ETA Series Expert Torque Analyzer

The new Ingersoll-Rand ETA Series Expert Torque Analyzer is designed for use with a broad new range of transducers to dynamically measure and record the torque output of all types of fastening tools, including pulse tools. The Expert Torque Analyzer has full statistical capability, and all data can be downloaded to a computer or printer via the RS232 port. The full line of joint kits facilitates testing of fastening tools in the tool crib, quality lab or on the line.

Bring your tool crib or quality check torque process up to date with the latest digital technology. The new Electronic Torque Analyzer System from Ingersoll-Rand offers you all the equipment required to test both your tools used on line and your torque wrenches used to monitor the quality of joints.

The ETA Series of products offers stationary transducers that mount to a table or cart, rotary transducers to use right on the job, and joint kits to simulate a variety of conditions from hard to soft joints.

The ETA2 torque analyzer will store up to 200 torque readings and provide CP/CPK and CM/CMK analysis of the data. Data may be transferred to a PC or printer via the RS232 port. The unit is capable of reading in four different modes to cover a variety of tools such as standard air tools, pulse tools, and click wrenches.

Any of six different languages (English, French, German, Italian, Spanish, Swedish) may be selected on the Expert Torque Analyzer. The charger is equipped with three different adapters to make it easy to use in most of the world. Nine different units of measure make it compatible with most standards used in the global market.

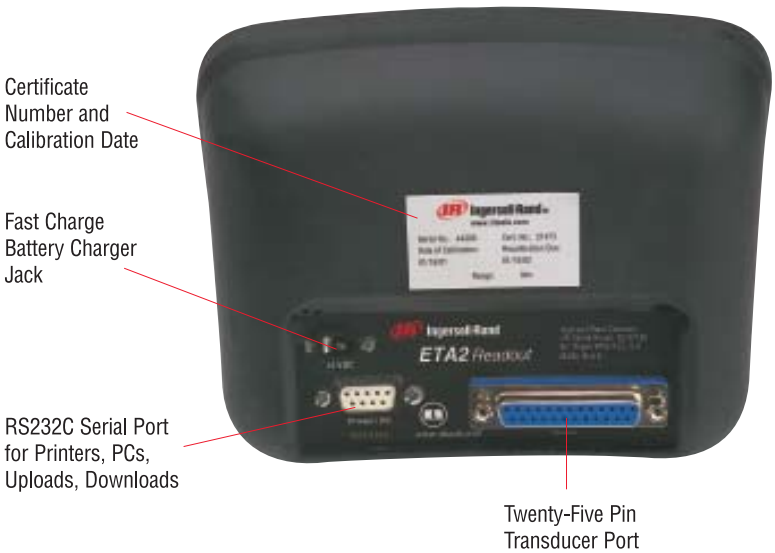
The ETA2 is portable and includes a neck strap. The bottom concave design makes it comfortable and easy to use. The powerful NiMh battery provides over 8 hours of use before requiring a charge. Utilizing the new materials and charging routines, the battery can be completely recharged in 2-1/2 hours without leaving a footprint on the battery's memory.

ETA2 Kit includes:
ETA2Torque analyzer
ETA2-STRAPCamera-type neck strap
ETA2-BCBattery charger
ETA2-P525Port saver
ETA2-PC99PC connector cable
ETA2-P925Printer cable
ETA2-CASECarrying case
7464Operating manual

ETA2 Features
- Monitors torque, pulse count and first peak
- Memory holds 200 readings
- Range, mean and Sigma calculations
- CP, CPK, CM, CPM
- Nine units of measure
- Time and date stamped

Front View

Rear View



ETA Transducers and Joint Simulators

Ingersoll-Rand rotary and stationary transducers span the range of 1.5 to 1000Nm. They are designed to work with the ETA2 torque analyzer or other equipment that uses industry standard transducers. These transducers will work with pulse tools, nutrunners, screwdrivers, click wrenches, hand torque wrenches and direct drive tools and motors.

The joint simulators have a range up to 1000Nm. Their joint rate can be changed to emulate different joint conditions from hard to soft. They are useful in tool cribs to preset tools for production and test capability under controlled joint rates. The joint kits are available as separate items or as a kit with a stationary transducer.

Transducer Technical Data
Bridge Resistance:350 Ohm
Overload Capacity:125% of rated max capacity
Static Accuracy:0.3%
Zero Offset Stability:0.1% of capacity per C
Operating Temperature:13-104 °F

Calibration Service
For calibration of torque transducers, send to:
Ingersoll-Rand Company
Attention: ETADepartment
510 Hester Drive
White House, TN 37188

Stationary Transducers

Drive Size	Transducer Range Nm	Transducer Range ft.-lb.	Stationary Transducer	Model No. Joint Simulator	Joint Capacity Nm	Model No. Joint and Transducer Kit
¼" Square	1.5 to 30	1.1 to 22	TS30S4	JKS30	30	JKST30
⅜" Square	7.5 to 150	5.5 to 110	TS150S6	JKS150	150	JKST150
½" Square	15.0 to 300	11 to 221	TS300S8	JKS300	300	JKST300
¾" Square	50.0 to 1000	37 to 738	TS1000S12	JKS1000	1000	JKST1000

Rotary Transducers

Drive Size	Transducer Range Nm	Transducer Range in.-lb.	Transducer Range ft.-lb.	Rotary Transducer
¼" Hex	.10 to 2	1.0 to 18		TR2H4
¼" Hex	.25 to 5	2.2 to 44		TR5H4
¼" Hex	1.0 to 20	9.0 to 180		TR20H4
¼" Square	1.0 to 20	9.0 to 180		TR20S4
⅜" Square	3.8 to 75		2.8 to 55	TR75S6
½" Square	9.0 to 180		6.7 to 133	TR180S8
¾" Square	12.5 to 250		9.2 to 185	TR250S12
¾" Square	25.0 to 500		18.5 to 370	TR500S12

Bench Top Joint Simulators for Rotary Transducers

Drive Size	Joint Capacity	Joint Simulator
¼" Square	20	JKR20
⅜" Square	75	JKR75
½" Square	180	JKR180
¾" Square	500	JKR500

Torque Testers

ST9100 Electronic Torque Tester

Features

- Internal transducer has a range of 0-100 in.-lb., 0-113 cNm, and 0-115 kgf-cm.
- Certified to NBS/NIST standards
- Recommended for use with power and hand tools
- External Ports: 1) RS-232 serial port, 1) transducer port
- Built-in printer
- Real time clock and calendar with battery backup
- Manual and auto zero reset functions
- Peak and first peak detection capability (for cushion clutch tools)
- Memory partitioning capability– up to 10,000 readings
- Memory downloading function for internal or external printing or downloading to serial device via RS-232 compatible port.
- Cable with serial and parallel adapter (9 pin and 24 pin)
- Fast charging NiCad battery system with LOW BATTERYindicator
- CCW dynamic measurement available

ST9100

ST9100 Standard Equipment

- ST9100-800Rundown adapter spring assembly (Includes two springs)
- ST9100-812Wall mounting bracket
- ST9100-803120V battery charger
- ST9100-810Data acquisition disks (WIN 95)
- Custom carrying case

Model	Accuracy	Weight	Dimensions
ST9100	5-10 ± 1% 10-20 ± 0.5% 20-100 ± 0.25%	10¼ lb.	12¼" x 7.88" x 2.88"

ST102 Electronic Torque Tester

Features

- Ideal for testing output torque of assembly tools in the calibration lab, repair crib, or on the production line
- Automatic zero function
- Internal transducer has a range of 0 -100 in.-lb. (0 -11.3 Nm) (clockwise and counterclockwise)
- Internal battery provides 30 hours of continuous testing
- Certified to NBS/NISTstandards
- Exclusive external transducer connection for monitoring on line fastening operations
- External connection for adapting visual displays such as plotter or digital storage oscilloscope
- Metric and English capabilities

ST102 Standard Equipment

- ST100-800Rundown adapter spring assembly (Includes both springs)
- ST100-805Battery pack (internal)
- ST102-803Battery charger (120 Volts)
- ST102-804Custom carrying case

ST102 Accessories

- ST100-801Hard draw spring
- ST100-802Soft draw spring
- ST102-808Battery charger (240 Volts)

Model	Accuracy	Weight	Dimensions
ST102	5-10 ± 2% 10-20 ± 1% 20-100 ± 0.5%	6⅝ lb.	10³⁄₁₆" x 8" x 3½

Advancements in manufacturing and production have transformed the world of industrial finishing. While the need for traditional, heavy-duty material removal continues in many segments, increases in precision and reductions in waste have changed overall demands. New materials require different tool speeds and attachments. A greater focus on product quality has tightened the standards of finishing. Parts and components must match surrounding surfaces with impeccable accuracy. With these changes in materials and processes, exactness and finesse in finishing operations have taken on new significance.

Likewise, finishing technicians are a key factor in producing ultimate product quality. These are men and women who depend on resources that encourage and maximize their special set of skills. Today's operators deserve and require tools that contribute to **quality of performance…and quality of life.** Ingersoll Rand has provided tools for industry for more than a century, combining the best engineering talent, top-quality materials, and the strongest support in the business. Our classic designs have set performance standards that endure today. Our latest introductions reflect emerging trends in tool use, changing technology, and new materials. Whatever the application, Ingersoll Rand industrial tools bring out the best in your operator's skills, and contribute to the ultimate quality of your products and processes.

Revolution Series Finishing Tools
We created the new Revolution Series for non-production industrial applications, delivering high performance at an affordable price. Ergonomic design and light weight make these tools comfortable and easy to use for material removal and finishing. The full range of models includes straight, extended, and angle configurations.

G Series Grinder
Introducing the new G-Series industrial grinders from Ingersoll Rand —the G1, G2, and G3-Series. These three series of grinders uphold the Ingersoll Rand tradition of innovation and unmatched durability and reliability. The G-Series grinders deliver more power and precision for enhanced performance. They're easier to service, which means less downtime. And the grinders' ergonomic design makes them more comfortable to use.

Sanders / Polishers / Buffers
Reflecting the rapidly changing demands of industrial finishing, sanders, polishers and buffers have emerged as a key segment. Constant process improvement throughout industry now results in less waste on castings and molded parts, shifting emphasis from material removal to surface finishing. The Ingersoll Rand line of sanders, buffers and polishers includes models based on the popular Cyclone and Pro Series tool lines...and features a complete range of Cyclone random orbital sanders as well.

ErgoPro Series Grinders
Ingersoll Rand's ErgoPro Series offers a complete line of heavy-duty tools designed with outstanding safety features and state-of-the-art ergonomic enhancements for increased operator comfort and superior performance. This line comes equipped with interchangeable internal parts to simplify stocking and repairs. The excellent power-to-weight ratio makes your operators top performers. ErgoPro Series models feature best-in-class vibration dampening technologies, the Ingersoll Rand motor controller, integral guard, and self-locking throttle lever to prevent accidental operation.

These products reflect the IR philosphy of High Performance Ergonomics—user oriented design that provides real-world productivity benefits..based on a systematic, objective measure of ergonomic factors for validation and value.

Choosing and Using Grinder Accessories
For safety and performance, always select the proper abrasive wheel for your job. Cup wheels remove large amounts of metal and are good

for open spaces. Depressed center wheels are ideal for use in rough grinding operations and all-around heavy material removal. In applications where a horizontal grinder is required, choose Type One wheels.

Choose tools with enough horsepower to drive the abrasive wheel you are using, and allow the grinder's speed to work for you. Bearing down on under-powered tools slows the rpm output and reduces overall efficiency.

Grinder Safety Tips

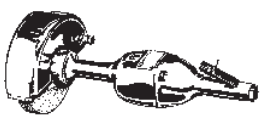
Always use eye protection. Use only recommended equipment and adapters. Inspect grinding wheels closely for any imperfections or damage such as cracks, pitting, or broken edges. Always make sure that the tool speed does not exceed the maximum operating speed marked on the wheel or wheel package. Use correct size guards, flanges, blotters, spindles, and mounting practices to ensure operator safety.

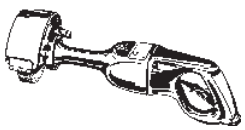
Mounting a Grinding Wheel

When mounting a grinding wheel on any portable power tool, be sure to:

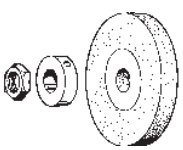
- Inspect the grinding wheel closely for any imperfections or damage such as cracks, pitting or broken edges.
- Verify that the tool's spindle does not exceed the maximum operating speed marked on the wheel or wheel package.
- Use correct size guards, flanges, blotters, spindles and mounting practice as shown below.

Horizontal Grinders

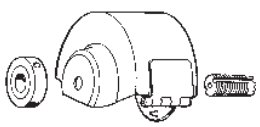




TYPE 1 Straight Wheels

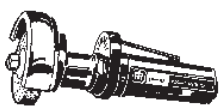


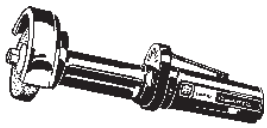
Wheel Sizes: 6" and 8"



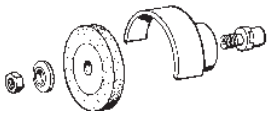
Spindle Sizes: 5/8" (16mm) and 1" (25mm)

Small Horizontal Grinders

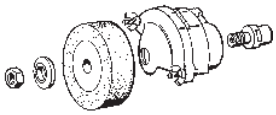




TYPE 1 Straight Wheels

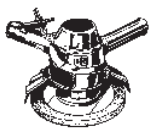


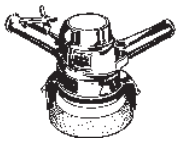
Wheel Sizes: 2", 3" and 4"
Spindle Sizes: 3/8" (10mm) and 1/2" (12mm)



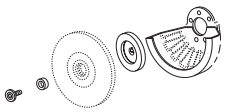
Wheel Sizes: 2", 3" and 4"
Spindle Sizes: 3/8" (10mm) and 1/2" (12mm)

Vertical and Angle Grinders

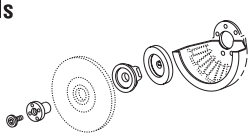




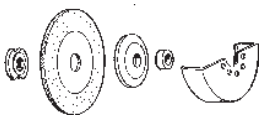
TYPE 27 Depressed Center Flat Wheels



Threaded Wheel Sizes: 7" and 9"
Type: Spindle Sizes: 5/8" and 7/8"

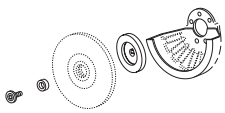


Threaded Wheel Sizes: 7" and 9"
Type: Spindle Sizes: 5/8" and 7/8"

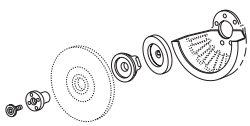


Spindle Size: 3/8"

TYPE 28 Depressed Center Saucer Wheels

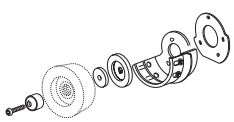


Threaded Wheel Sizes: 7" and 9"
Type: Spindle Sizes: 5/8" and 7/8"



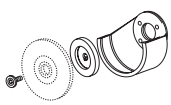
Non-Threaded Wheel Sizes: 7" and 9"
Type: Spindle Sizes: 5/8" and 7/8"

TYPE 6 and 11 Cup Wheels



Wheel Sizes: 5" and 6"
Spindle Sizes: 5/8" and 7/8"

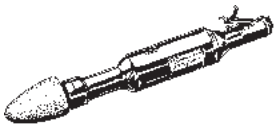
TYPE 13-1" Thick Saucer Wheels



Wheel Size: 7"
Spindle Size: 5/8"

WARNING: Always use eye protection. Use only recommended equipment and adapters. Consult parts bulletin for details. Do not use if actual tool RPM is greater than nameplate RPM. Check RPM each shift or upon changing accessory. For further safety information, consult ANSIB7.1 and ANSIB186.1.

Cone and Plug Wheel Grinders

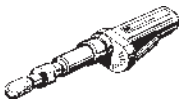


TYPE 16, 17, 18, 18R and 19 Cone and Plug Wheels

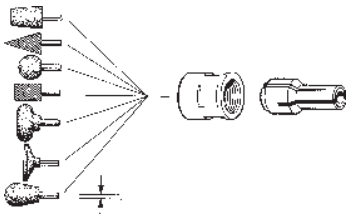
Wheel Sizes: 11/4" and 3"
(max. dia.)

Spindle Sizes: 3/8", 1/2"
and 5/8"

Collet Type Grinders



Mounted Wheels and High Speed Steel or Carbide Burs



Collet Sizes: 1/8", 1/4" and 3/8"
(3, 6 and 10mm)
Mandrel Diameters: 1/8:, 1/4" and 3/8"
(3, 6 and 10mm)

There's more to today's finishing process than the tools of the trade. Ingersoll Rand is an information resource for your business, and can assist in creating more effective and productive workplace configurations, as well as tool recommendations. Your selection and purchase of finishing tools has a direct effect on process and product quality.Your decision can make a difference in finishing efficiency – and in the improved quality and durability of finishes. So before you make your next purchase decision, contact your local IR representative or distributor for assistance and information regarding the latest IR product and technology developments.

312AC4

325XC4

325SC4

330SC4

Model Number	Maximum Rated Power hp	Free Speed	Weight lb.	Height Over Side to Center Length in.	Spindle in.	Distance in.	Configuration	CFM
Straight								
325SC4	.3	25,000	13/16	6	N/A	3/4	1/4" collet	15
330SC4	.3	30,000	13/16	6	N/A	3/4	1/4" collet	15
335SC4	.3	35,000	13/16	6	N/A	3/4	1/4" collet	15
325XC4	.3	25,000	1 1/4	9	N/A	3/4	1/4" collet, 3" extended	15
330XC4	.3	30,000	1 1/4	9	N/A	3/4	1/4" collet, 3" extended	15
Angle								
312AC4	.3	12,000	1 1/8	6 1/8	2 17/32	3/4	1/4" collet angle	15
314AC4	.3	14,000	1 1/8	6 1/8	2 17/32	3/4	1/4" collet angle	15
320AC4	.3	20,000	1 1/8	6 1/8	2 17/32	3/4	1/4" collet angle	15
312AG3	.3	12,000	1 3/8	6 1/4	2 17/32	3/4	3" angle guarded 3/8"-24 spindle	15
314AG3	.3	14,000	1 3/8	6 1/4	2 17/32	3/4	3" angle guarded 3/8"-24 spindle	15
320AG3	.3	20,000	1 3/8	6 1/4	2 17/32	3/4	3" angle guarded 3/8"-24 spindle	15

NOTES: Air inlet for all models is 1/4"NPT. All models are rear exhaust 5/16" air hose recommended Performance figures are at 90 psi Collet Wrenches are standard.

Grinder Solutions for Any Applications.

G1	G2	G3
P At 0.4 hp, the G1-Series packs a lot of power in a small package **R** Ideal for light material removal, cleaning rough castings, deburring parts, cleaning up welds, and other finishing tasks **H** Ergonomic D-shaped handle fits better in your hand **H** Low noise and vibration **S** One-nut access for all motor servicing **P** Available in straight, angle, and extended straight configurations	**P** Perfect for bigger jobs, the G2-Series performs at an even more impressive 0.8 hp **H** Ergonomic D-shaped handle fits better in your hand **S** One-nut access for all motor servicing **H** Low noise and vibration **R** Suited for heavier-duty grinding, cutting, cleaning, and polishing applications **P** Available in straight, extended straight, **R** angle, and extended angle configurations.	**P** Superior pwer-to-weight ration-delivering a mighty 1.35 hp **P** The biggest jobs demand the most power **R** Internal contamination-free air controller helps maintain tool speed to maximize material removal rate **R** Ideal for industrial-duty material removal with burs, grinding wheels, and coated abrasives **H** Ergonomic D-shaped handle fits better in your hand **H** Low noise and vibration **S** One-nut access for all motor servicing **P** Available in extended straight, angle, and extended angle configurations **R** Angle head rated for 2,000+ hours of use

Performance. Precision. Power.

We've done what we can to improve the daily grind.
Introducing the new G-Series industrial grinders from Ingersoll Rand-the G1, G2, and G3-Series. These three series of grinders uphold the Ingersoll Rand tradition of innovation and unmatched durability and reliability.

The G-Series grinders deliver more power and precision for enhanced performance. They're easlier to service, which means less downtime. And the grinders' ergonomic design makes them more comfortable to use.

We Know you're always looking for ways to increase productivity. With our G-Series industrial grinders, we don't just say "more power to you," we deliver it.

The G-Series industrial grinders easily and reliably withstand the rigors of today's most demanding industrial environments and conditions.

Productivity Rated.

Ingersoll Rand created the Productivity Rated emblem to identify our industrial grade tools that meet very stringent requirements in the following key areas:

P Productivity — best-in-class power

R Reliability — durability and long-lasting performance

S Serviceability — easily repaired and maintained

H Health & Safety — ergonomic details, lower weight, and reduced sound and vibration

The new G-Series industrial grinders are the first of our tools to earn the Productivity Rated distinction. We pushed the tools through an extensively rigorous process involving testing, re-engineering, and customer feedback. As a result, ergonomics were enhanced, productivity was boosted, and the G-Series became the world-class tools they are today.

The Productivity Rated distinction shows our commitment to producing the best tools on the market. When you see the Productivity Rated badge, you can be sure you're getting a tool that works as hard as you do.

G1- SERIES

PART NUMBER	POWER hp	FREE SPEED rpm	OUTPUT	WEIGHT lb	OVERALL LENGTH in	HEIGHT OVER SPINDLE in	AIRFLOW cfm
G-SERIES ANGLE GRINDERS							
G1A120FG4	0.4	12,000	1/4" Collet	1.1	6	3	19
G1A120RG4	0.4	12,000	1/4" Collet	1.1	6	3	19
G1A200FG4	0.4	20,000	1/4" Collet	1.1	6	3	25
G1A200RG4	0.4	20,000	1/4" Collet	1.1	6	3	25
G1A200RH63	0.4	20,000	3/8" – 3" Guard	1.3	6	1-7/8	25
G1A200RP63	0.4	20,000	3/8" – 3" Guard	1.3	6	1-7/8	25
G-SERIES ANGLE SANDERS							
G1A120RS418	0.4	12,000	1/4" x 18 Belt"	1.2	14*	N/A	19
G1A120RS4	0.4	12,000	1/4" – 20" Thread	1.1	6	3	19
G1A120RS812	0.4	12,000	1/2" x 12" Belt	1.2	10-3/4*	N/A	19
G1A120RS818	0.4	12,000	1/2" x 12" Belt	1.5	14*	N/A	19
G1A200RS4	0.4	20,000	1/4" – 20" Thread	1.1	6	N/A	25
G1A200RS812	0.4	20,000	1/2" x 12" Belt	1.2	10-3/4*	N/A	25
G1A200RS818	0.4	20,000	1/2" x 12" Belt	1.5	14*	N/A	25
G-SERIES HORIZONTAL GRINDERS							
G1H200FG4	0.4	20,000	1/4" Collet	0.9	6-1/8	N/A	19
G1H200RG4	0.4	20,000	1/4" Collet	0.9	6-1/8	N/A	19
G1H200RH63	0.4	20,000	1/4" Collet	1.2	6-1/8	N/A	19
G1H250PH63	0.4	25,000	1/4" Collet	1.2	6-1/8	N/A	20
G1H250FG4	0.4	25,000	1/4" Collet	0.9	6-1/8	N/A	20
G1H250RG4	0.4	25,000	1/4" Collet	0.9	6-1/8	N/A	20
G1H250RH63	0.4	25,000	1/4" Collet	0.9	6-1/8	N/A	20
G1H350FG4	0.4	35,000	1/4" Collet	0.9	6-1/8	N/A	25
G1H350RG4	0.4	35,000	1/4" Collet	0.9	6-1/8	N/A	25
G-SERIES HORIZONTAL EXTENDED GRINDERS							
G1X200RG4	0.4	20,000	1/4" Collet	1.3	9-1/8	N/A	25
G1X250RG4	0.4	25,000	1/4" Collet	1.3	9-1/8	N/A	25
G1X350RG4	0.4	35,000	1/4" Collet	1.3	9-1/8	N/A	25

**Length with belt attachment.*

G2-SERIES

PART NUMBER	POWER hp	FREE SPEED rpm	EXHAUST	OUTPUT	WEIGHT lb	OVERALL LENGTH in	HEIGHT OVER SPINDLE END in	AIRFLOW cfm
G-SERIES ANGLE GRINDERS								
G2A090RG4	0.8	9,000	Rear	1/4" Collet	2.3	7-3/4	3	36
G2A090RP64*	0.8	9,000	Rear	3/8" – 4" Guard	3.0	7-3/4	2-1/2	36
G2A120RG4	0.8	12,000	Rear	1/4" Collet	2.3	7-3/4	3	36
G2A120RP1045*	0.8	12,000	Rear	5/8" – 4-1/2" Guard	3.2	7-3/4	2-3/8	36
G2A120RP105*	0.8	12,000	Rear	5/8" – 5" Guard	3.6	7-3/4	2-3/8	36
G2A120RP64*	0.8	12,000	Rear	3/8" – 4" Guard	3.0	7-3/4	2-1/2	36
G2A150RP64*	0.8	15,000	Rear	3/8" – 4" Guard	3.0	7-3/4	2-1/2	36
G2A180RG4	0.8	18,000	Rear	1/4" Collet	2.3	7-3/4	3	36
G2A180RH64*	0.8	18,000	Rear	3/8" – 4" Guard	2.7	7-3/4	2-5/8	36
G2A180RP63*	0.8	18,000	Rear	3/8" – 3" Guard	3.1	7-3/4	2-1/2	36
G-SERIES ANGLE SANDERS								
G2A100RS10	0.8	10,000	Rear	5/8" – 11" Thread	2.7	7-3/4	3	36
G2A120RS10	0.8	12,000	Rear	5/8" – 11" Thread	2.7	7-3/4	3	36
G2A135RS10	0.8	13,500	Rear	5/8" – 11" Thread	2.7	7-3/4	3	36
G-SERIES HORIZONTAL GRINDERS								
G2H180FG4	0.8	18,000	Front	1/4" Collet	1.6	7-3/8	N/A	36
G2H180RG4	0.8	18,000	Rear	1/4" Collet	1.6	7-3/8	N/A	36
G2H200FG4	0.8	20,000	Front	1/4" Collet	1.6	7-3/8	N/A	36
G2H200RG4	0.8	20,000	Rear	1/4" Collet	1.6	7-3/8	N/A	36
G2H250FG4	0.8	25,000	Front	1/4" Collet	1.6	7-3/8	N/A	36
G2H250RG4	0.8	25,000	Rear	1/4" Collet	1.6	7-3/8	N/A	36
G-SERIES EXTENDED ANGLE GRINDERS								
G2E135RG4	0.8	13,500	Rear	1/4" Collet	2.6	10-3/8	3	36
G2E135RH64*	0.8	13,500	Rear	3/8"– 4" Guard	2.0	10-3/8	2-5/8	36
G2E135RP64*	0.8	13,500	Rear	3/8"– 4" Guard	3.0	10-3/8	2-5/8	36
G2L100RP106*	0.8	10,000	Rear	5/8"– 6" Guard	4.4	12-5/8	2-3/8	36
G2L120RP1045*	0.8	12,000	Rear	5/8"– 4-1/2" Guard	4.4	12-5/8	2-3/8	36
G2L120RP64*	0.8	12,000	Rear	3/8"– 4" Guard	4.4	12-5/8	2-1/2	36
G-SERIES EXTENDED ANGLE SANDERS								
G2L075FS10	0.8	7,500	Front	5/8"– 11" Thread	3.9	12-5/8	3-1/4	36
G2L120RS10	0.8	12,000	Rear	5/8"– 11" Thread	3.9	12-5/8	3	36
G-SERIES EXTENDED HORIZONTAL GRINDERS								
G2S180RH63*	0.8	18,000	Rear	3/8"– 3" Guard	2.5	8-5/8	N/A	36
G2X180RG4	0.8	18,000	Rear	1/4" Collet	2.7	12-1/8	N/A	36
G2X180RH63*	0.8	18,000	Rear	3/8"– 3" Guard	3.2	12-3/8	N/A	36
G2X180RH64*	0.8	18,000	Rear	3/8"– 4" Guard	3.5	12-3/8	N/A	36
G2X200RG4	0.8	20,000	Rear	1/4" Collet	2.7	12-1/8	N/A	36
G2X250RG4	0.8	25,000	Rear	1/4" Collet	2.7	12-1/8	N/A	36

**P = Type 27 Wheel, H = Type 1 Wheel*

G3-SERIES

PART NUMBER	POWER hp	FREE SPEED rpm	OUTPUT	WEIGHT lb	OVERALL LENGTH in	HEIGHT OVER SPINDLE in	AIRFLOW cfm
G-SERIES ANGLE GRINDERS							
G3A120RP1045	1.35	12,000	4.5" Guard	4.6	9-5/8	3-5/8	55
G3A120RP105	1.35	12,000	5" Guard	4.7	9-5/8	3-5/8	55
G3A100RP106	1.35	10,000	6" Guard	4.9	9-5/8	3-5/8	33
G-SERIES STRAIGHT EXTENDED GRINDERS							
G3X180RG4	1.35	18,000	1/4" Collet	3.7	14-1/8	N/A	55
G3X150RG4	1.35	15,000	1/4" Collet	3.7	14-1/8	N/A	33
G3X180RH63	1.35	18,000	3" Guard	4.5	14-1/8	N/A	55
G3X150RH64	1.35	15,000	4" Guard	4.5	14-1/8	N/A	33

G2 A 180 R P 10 45

Power hp
G1 0.4
G2 0.8
G3 1.35

Model Configurations
A Angle Grinder
E Extended Angle Grinder — small (LA1-550) angle housing
L Extended Angle Grinder — large (AG2-550) angle housing
H Horizontal — no extension
X Extended Horizontal Grinder
XX Double Bearing — extended horizontal
S 2" extension

Free Speed
(18,000 rpm)

Exhaust Direction
R Rear Exhaust
F Front Exhaust
P Piped-away Exhaust

Output Type
P Type 27 Wheel Tools
H Type 1 Wheel Tools
G Collet Tools
S Sander Arbor

Output Size — Type 27 Tools
5 3/8" Arbor — Metric mounting flanges for 80 mm x 10 mm plain hole wheels
6 3/8" Arbor — English mounting flanges for 3" or 4" x 5/8" plain hole wheels
7 3/8" Arbor — Metric mounting flanges for 100 mm x 16 mm plain hole wheels
9 M14 Arbor — Matched mounting flanges for 115 mm, 125 mm or 150 mm x 22.2 mm plain hole wheels
10 5/8" – 11" Arbor with English flanges for 7/8" plain hole wheels

Output Size — Type 1 Tools
6 3/8" Arbor for 3" or 4" x 3/8" Type 1 wheels

Output Size — Collet Tools
4 1/4" Collet
4M 6 mm Collet

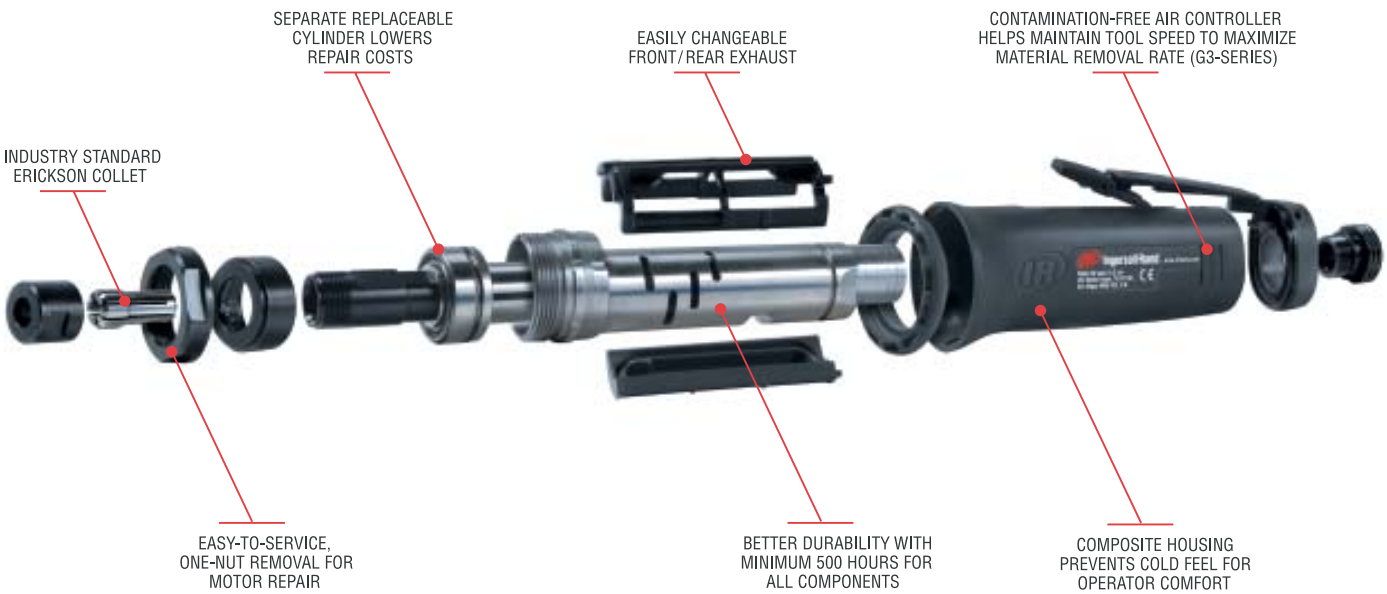
Guard Sizes
3 3" Guard
4 4" Guard
45 4.5" Guard
5 5" Guard
6 6" Guard

The G-SERIES Grinders. What you see...

From the compact 0.4 hp G1-Series to the powerful 1.35 hp G3-Series, these grinders are made to order for any grinding, cutting, and material removal needs. Engineered and built with Ingersoll Rand reliability and durability, the G-Series has the features operators want most.

...is What you Get, Times Three.

With our G-Series industrial grinders, you total cost of ownership is reduced. You get the job done faster with greater power, and the easy serviceability of the G-Series means shorter downtimes and fewer parts in inventory.



Ensure Peak Performance

Protect your Tools with Double the Warranty.

At Ingersoll Rand, we don't just build the most durable and powerful tools on the market, we back them up with a warranty program that's just as reliable. When you purchase an Ingersoll Rand Extended Warranty Kit, you'll get an additional one year of coverage for parts and labor, for a total of two years protection.*

Each Extended Warranty Kit contains the following:

- One FRL
- One pint of lubricating oil
- One 4 oz tube of grease
- One G-Series tune-up kit

**Limited warranty on full parts and labor for additional year; applicable to workmanship, craftsmanship, and materials.*

Tune-Up Kit

Our Tune-up Kits will help you keep your tools running in tip-top shape with soft part replacement.

Connection Kit

Ingersoll Rand Connection Kits keep your tools working as hard as you do.

Sanders / Polishers / Buffers

Reflecting the rapidly changing demands of industrial finishing, sanders, polishers and buffers have emerged as key segments. Constant process improvements throughout industry now result in less waste on castings and molded parts, shifting emphasis from material removal to surface finishing. The Ingersoll Rand line of sanders, buffers and polishers includes models based on the popular Cyclone tools, as well as configurations from the larger, heavier-duty ErgoPro and Pro Series tool offerings. All give you the ability to match capacity and attachments precisely to the workpiece and material, for finessing a high-quality finish.

Ingersoll Rand offers two distinct lines of Sanders/Polishers/Buffers in an effort to match all levels of finishing applications. From the smaller Cyclone Series, to the heavy-duty ErgoPro and Pro Series offerings, there is a tool to match all surface preparation and material fabrication applications. Like other finishing tools IR offers, these sanders/polishers/buffers have the same user-friendly, safety-oriented features that make them the benchmark against which all competitive tools are judged.

Finishing Tool Features

ErgoPro and Pro Series 88 and 99
- Powerful 2 hp and 3 hp motors for high, efficient performance.
- Patented stainless steel motor controller with industry's only

lifetime guarantee.
- Self-locking throttle lever prevents accidental operation.
- Integral steel guard provides extra strength for added operator protection.
- Four-position exhaust adds to operator comfort on horizontal models.
- Adjustable ergonomic side handles increase operator control on vertical models.
- Built-in mist lubricator automatically oils motor each time tool is used.

ErgoPro and Pro Series 77
- Powerful 11.2 hp motor produces high, efficient performance.
- Patented stainless steel motor controller with industry's only lifetime guarantee.
- Self-locking throttle lever prevents accidental operation.
- Integral steel guard provides extra strength for added operator protection.
- Low-profile angle head improves close-quarter applications.
- Built-in mist lubricator automatically oils motor when tool is started.

Pro Series 61
- Solid steel motor and arbor housing provide maximum durability.
- Powerful 11.3 hp motor produces high, efficient performance.
- Patented stainless steel motor controller is maintenance- and adjustment-free.
- Heavy-duty, double-row ball bearings assure long life and smooth operation.
- Exclusive grit-rejection system keeps motor and bearings clean for extended life.
- Built-in mist lubricator automatically oils motor when throttle is activated.

Product Indentification Guide

TYPICAL MODEL
88HL60H106

Series	Type	Throttle	Free Speed (rpm)	Type of Wheel	Diameter and Thread of Arbor	Diameter of Wheel or Collet
61	A = Angle	L = Lever	45 = 4,500	G = Collet	6 = 3/8" - 24 Thread	4 = 1/4" Collet
77	H = Horizontal	G = Grip	60 = 6,000	H = Type 1 Wheel	8 = 1/2" - 13 Thread	3 = 3" Wheel
88	V = Vertical		77 = 7,700	L = Cone Wheel	10= 5/8" - 11 Thread	4 = 4" Wheel
99			90 = 9,000	P = Type 27 Wheel		6 = 6" Wheel
			120 = 12,000	S = Type 11 Wheel		7 = 7" Wheel
			150 = 15,000			8 = 8" Wheel
						9 = 9" Wheel

Straight Grinders

Carbide Bur and Mounted Wheel

61H120G4

Standard Equipment
- G160HD-700-1/4
  1/4" Erickson collet
- DG10-69
  Collet body wrench
- DG120-69
  Collet nut wrench

Accessories
- DG120-700-G6
  3/8" Collet

G4 = 1.4" Erickson Collet

Model (Side Exhaust)	Rated Power hp	Free Speed rpm	Weight lb.	Length in.	Spindle Housing Diameter in.	CFM
61H120G4	1.25	12,000	41/4	151/2	17/16	37
61H150G4	1.33	15,000	41/4	151/2	17/16	40

Air Inlet: Both Models 3.8 “.
Size Hose Recommended: Both Models 1.2".
Performance figures are at 90 psi air pressure.

Cone and Plug Wheel

61H120L6

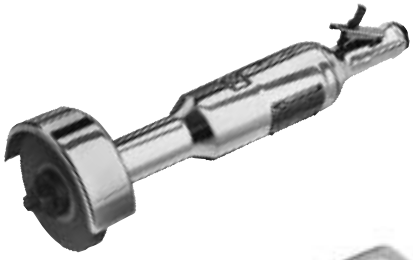
88HL90L10

L6 = 3.8" - 24 Spindle
L10 = 5.8" - 11 Spindle

Model (Side Exhaust)	Rated Power hp	Free Speed rpm	Weight lb.	Length in.	Spindle Housing Diameter in.	CFM
61H120L6	1.25	12,000	41/4	143/4	17/16	37
61H150L6	1.33	15,000	41/4	143/4	17/16	40
77H90L10	1.50	9,000	6	167/16	17/8	37
77H120L10	1.50	12,000	6	167/16	17/8	39
88HL90L10	2.20	9,000	83/8	181/4	21/4	66

Air Inlet: Series 88H, 1.2" NPT. All others 3.8" NPT.
Size Hose Recommended: Series 88H, 3.4". All others 1.2".
Performance figures are at 90 psi air pressure.
** Maximum wheel diameter 3".*

Standard Equipment
Wheel Guard, Flanges and Nut



77H120H84

88HG60H106

99HL60H108

H63 = 3.8" - 24 Spindle, 3" Guard
H64 = 3.8" - 24 Spindle, 4" Guard
H84 = 1.2" - 13 Spindle, 4" Guard
H106 = 5.8" - 11 Spindle, 6" Guard
H108 = 5.8" - 11 Spindle, 8" Guard

Model	Handle	Rated Power hp	Free Speed rpm	Weight with Guard & Flanges lb.	Spindle Housing Length in.	Wheel Diameter in.	Size in.	CFM
61H120H63	Lever	1.25	12,000	43/4	153/4	17/16	3 x 1/2	37
61H120H64	Lever	1.25	12,000	43/4	153/4	17/16	4 x 1/2	37
61H150H63	Lever	1.33	15,000	43/4	153/4	17/16	3 x 1/2	40
77H120H63	Lever	1.50	12,000	61/8	165/8	25/8	3 x 1/2	39
77H90H84	Lever 1.50	9000	61/2	171/4	25/8	4 x 1	37	
77H120H84	Lever	1.50	12,000	61/2	171/4	25/8	4 x 1	39
88HL60H106*	Lever	2.00	6,000	115/16	20	33/8	6 x 1	61
88HG60H106*	Grip	2.00	6,000	1111/16	193/4	33/8	6 x 1	61
99HL60H106*	Lever	3.00	6,000	131/2	201/2	37/8	6 x 1	84
99HG60H106*	Grip	3.00	6,000	145/16	203/8	37/8	6 x 1	84
99HL45H108**	Lever	2.35	4,500	1413/16	201/4	37/8	8 x 1	70
99HG45H108**	Grip	2.35	4,500	155/8	201/8	37/8	8 x 1	70
99HL60H108**	Lever	3.00	6,000	1413/16	201/4	37/8	8 x 1	84

Size Hose Recommended: Series 61H and 77H, 1.2".
Series 88H and 99H, 3.4"
Performance figures are at 90 psi air pressure.
**Net weight of Guard and Flanges is 3.2 lbs.*
***Net weight of Guard and Flanges is 4.5 lbs.*
Air Inlet:Series 61H and 77H, 3.8" NPT.
Series 88H and 99H, 1.2" NPT.

Accessories

Description	Series 61H Part Number	Series 77H Part Number	Series 88H Part Number
1/4" Erickson Collet	G160-HD-700-1.4	-	-
1/4" Erickson Collet Assembly	DG220-A290-G4	-	-
3/8" Erickson Collet	DG120-700-G6 - -		
3/8" Erickson Collet Assembly	DG220-A290-G6	-	-
Collet Body Wrench	DG10-69	-	-
Collet Nut Wrench	DG120-69	-	-
3/8"-24 Cone Wheel Spindle	DG220-104-L6	-	-
Cone Wheel Spindle Wrench	DG20-69A	7RAQT4-254	7RAQT4-254
Controller Wrench	R15-169	77H-950	88V60-950

Angle Grinders

Depressed Center Wheel
Type 27 and 28 Wheel

Standard Equipment

- Wheel guard, flanges and nut for threaded and plain depressed center wheels

Accessories

- For vertical grinder 88V60-K184 (for 88V)
- Piped away exhaust kit 99V60-K184 (for 99V)

77A60P107

88V60P107

P107 = 5.8" - 11 Spindle, 7" Guard
P109 = 5.8" - 11 Spindle, 9" Guard

Model	Vibration m/s2	For Type 27 & 28 Wheels Size in.	Rated Power hp	Free Speed rpm	Weight lb.	Length in.	Height Over End of Spindle in.	Side to Center Distance at Spindle in.	CFM
Angle Grinders*									
77A60P107	1.9	7	1.5	6,000	9	179/16	37/8	15/16	39
77A60P109	1.8	9	1.5	6,000	93/16	179/16	37/8	15/16	39
77A75P107	2.0	7	1.5	7,500	93/16	179/16	37/8	15/16	39
Vertical Grinders **									
88V60P107	1.5	7	2.1	6,000	83/4	-	63/32	21/8	61
88V60P109	1.0	9	2.1	6,000	91/16	-	63/32	21/8	61
88V77P107	1.2	7	2.2	7,700	83/4	-	63/32	21/8	68
88V85P107	1.5	7	2.2	8,500	83/4	-	63/32	21/8	66
99V60P107	1.5	7	3.0	6,000	111.4	-	67/8	25/16	84
99V60P109	0.9	9	3.0	6,000	115/16	-	67/8	25/16	84
99V77P107	0.9	7	3.0	7,700	111.4	-	67/8	25/16	84
99V85P107	1.4	7	3.0	8,500	111.4	-	67/8	25/16	88

***Air Inlet : All Models 1.2" NPT.*
Size Hose Recommended: All Models 3.4".
Performance figures are at 90 psi air pressure.
**Air Inlet: All Models 3.8" NPT.*
Size Hose Recommended: All Models 1.2".
Performance Figures are at 90 psi air pressure.

Accessories

Description	Series 77A Part Number	Series 88V Part Number	Series 99V Part Number
6" Type 6 or 11 Cup Wheel Guard	-	88V60-A216	99V60-A216A
Piped-Away Exhaust Kit	-	88V60-K184	99V60-K184
Wheel Retaining Screw Wrench	88V-562	88V-562	88V-562
Controller Wrench	77H-950	88V60-950	99V60-950
Comfort Grips	-	CG-88V	CG-99V

**For use with Type 27 "Plain Hole" Depressed Center Wheels*

Vertical Grinders

Cup Wheel
Type 6 and 11 Wheel

Standard Equipment
- Wheel guard, flanges and nut

Accessories
- For vertical grinder

88V60-K184 (for 88V)
Piped away exhaust kit
99V60-K184 (for 99V)
Piped away exhaust kit

88V60S106

99V60S106

S106 = 5/8"-11 Spindle, 6" Guard

Model	Vibration m/s2	For Type 6 & 11 Wheels Size in.	Rated Power hp	Free Speed rpm	Weight lb.	Height Over End of Spindle in.	Side to Center Distance at Spindle in.	CFM
88V60S106	0.8	5 or 6	2.1	6,000	83/8	63/32	21/8	61
99V45S106	1.1	5 or 6	2.5	4,500	103/4	67/8	215/16	70
99V60S106	0.6	5 or 6	3.0	6,000	103/4	67/8	215/16	84

Air Inlet : All Models 1.2" NPT.
Size Hose Recommended: All Models 3.4".
Performance figures are at 90 psi air pressure.

Accessories

Description	Series 88V Part Number	Series 99V Part Number
7" Type 27 Wheel Guard	88V60-106-7	99V77-106-7
9" Type 27 Wheel Guard	88V60-106-9	99V60-106-9
7" and 9" Type 27 Wheel Adapter Kit*	R3F-AS337	R3F-AS337
Piped-Away Exhaust Kit	88V60-K184	99V60-K184
Wheel Retaining Screw Wrench	88V-562	88V-562
Controller Wrench	88V60-950	99V60-950
Comfort Grips	CG-88V	CG-99V

**For use with Type 27 "Plain Hole" Depressed Center Wheels*

Angle Tools

ErgoPro Series
Features state-of-the-art vibration dampening technologies!
See page 27 for more details.

77A25F107

Standard Equipment
- Back up pads with nut

77A-BM825-7 7" Firm (F107)
77A-AM825-9 9" Medium (W109)
- P500-850 polishing bonnet

(Model 77A25F107 only)

Accessories
- 77A-AM825-5 5" medium pad
- 77A-AM825-7 7" medium pad
- AG230-26M spanner

F107 = 5.8" -11 Spindle, 7" Polishing Bonnet
W107 = 5.8" -11 Spindle, 7" Back Up Pad
W109 = 5.8" -11 Spindle, 9" Back Up Pad

Model	Vibration m/s2	Rated Power hp	Free Speed rpm	Weight lb.	Length in.	Height Over End of Spindle in.	Side to Center Distance in.	CFM
77A25F107	3.4	1.5	2500	83/8	179/16	33/34	15/16	37
77A45W109	1.5	1.5	4500	713/16	179/16	33/34	15/16	37
77A60W107	1.2	1.5	6000	7 3/16	179/16	33/34	15/16	39

Air Inlet: All Models 3.8" NPT.
Performance figures are at 90 psi air pressure.
Size Hose Recommended: All Models 1.2".

Vertical Tools

ErgoPro Series

88S60W107

Standard Equipment

- Back-up pads
  77A-AM825-7
  7" Medium pad
  77A-AM825-9
  9" Pad

Accessories

- Comfort grips
  CG-88V, CG99V
- 77A-BM825-7
  7" firm pad
- AG230-26M spanner
- AG230-26M spanner wrench
- Piped-away exhaust Kits
  88V60-K184, 99V60-K184

W107 = 5.8" -11 Spindle, 7" Back Up Pad
W109 = 5.8" -11 Spindle, 9" Back Up Pad

Model	Vibration m/s2	Rated Power hp	Free Speed rpm	Height Over Weight lb.	Side to Center End of Arbor in.	Distance at Spindle in.	CFM
88S45W109	1.0	1.8	4,500	71/8	6	21/8	50
88S60W107	1.0	2.0	6,000	71/8	6	21/8	61
99S45W109	0.6	2.5	4,500	91/2	61/4	215/16	70
99S60W107	0.9	3.0	6,000	91/2	61/4	215/16	84

Air Inlet: Both Models 1.2" NPT. *Size Hose Recommended: Both Models 3.4".* *Performance figures are at 90 psi air pressure.*

Pro Series

Standard Equipment

- 77A-8M825-7
  Back-up pad
- P500-850
  Polishing bonnet
  (Model 7P24L only)

7S60L

P = 5.8" - 11 Spindle, 7" Polishing Bonnet
S = 5.8" - 11 Spindle, 7" Back Up Pad

Model	Rated Power hp	Free Speed rpm	Weight without Pad lb.	Height Over End of Arbor in.	Side to Center Distance in.	CFM
7P24L	.80	2,400	31/4	63/8	3/8	22
7S30L	.80	3,000	31/4	63/8	3/8	22
7S48L	.80	4,800	31/4	63/8	3/8	22
7S60L	.80	6,000	31/4	63/8	3/8	22

Air Inlet: All Models 1.4" NPT. *Size Hose Recommended: All Models 5.16".* *erformance figures are at 90 psiair pressure.*

Product Identification Guide

TYPICAL MODEL
7S60L

Series
7

Product Designation
P = Polisher
S = Sander

Speed
24 = 2400
30 = 3000
48 = 4800
60 = 6000

Throttle
L = Lever

Straight Tools
Pro Series

77H30B106

Standard Equipment
- Wheel flanges and nut

Accessories
- 7RAQT4-254
  Wheel bearing nut wrench 1"
- 7S60-24818
  Wire brush nut wrench

B106 = 5.8"-11 x 2" Spindle (for Flap Wheels, Wire Brushes, etc.)
Spindle is 23.4" Long
Threads are 2" Long

Model	Rated Power hp	Free Speed rpm	Weight lb.	Length in.	Side to Center Distance at Spindle in.	CFM
77H30B106	1.5	3,000	75/16	1711/16	15/16	37
77H50B106	1.5	5,000	75/16`	1711/16	15/16	39

Air Inlet: Both Models 3.8" NPT.
Size Hose Recommended: Both Models 1.2".
Performance figures are at 90 psi air pressure.

Accessories

Description	Series C Part #	Series 7 Part #	Series T&H Part #	Series 77A Part #	Series 88S Part #	Series 99S Part #
5" Sanding Pad Assembly (med.)	-	77A-AM825-5	77A-AM825-5	77A-AM825-5	77A-AM825-5	77A-AM825-5
7" Sanding Pad Assembly (med.)	-	77A-AM825-7	77A-AM825-7	77A-AM825-7	77A-AM825-7	77A-AM825-7
7" Sanding Pad Assembly (firm)`	-	77A-BM825-7	77A-BM825-7	77A-BM825-7	77A-BM825-7	77A-BM825-7
9" Sanding Pad Assembly (firm)	-	77A-AM825-9	-	77A-AM825-9	77A-AM825-9	77A-AM825-9
7" Wool Polishing Bonnet	-	P500-850	P500-850	P500-850	-	-
Pad Nut	-	D94SK-226	D94SK-226	D94SK-226	D94SK-226	D94SK-226
Pad Nut Wrench	-	D94SK-26	D94SK-26	D94SK-26	D94SK-26	D94SK-26
Spindle Wrench	-	7S60-24818*	-	DG120-69	DG120-69	DG120-69**
2" Abrasive Kit	LG1-K2	-	-	-	-	-
3" Abrasive Kit	LG1-K3	-	-	-	-	-
Inlet Hose Assembly 5/16" x 8' 1/4 Male + 3/8 Female Ends	RO-130	-	RO-130	-	-	-
Piped-Away Exhaust Kit	LG1-K184	-	LG2-K284	-	88V60-K184	99V60-K184
Controller Wrench	-	-	-	77H-950	88V60-950	99V60-950
Pad Nut Kit	-	77A-826	77A-826	77A-826	77A-826	77A-826
Pad Nut Spanner	AG230-26M	-	AG230-26M	-	-	-
Comb. Wrench 1/2 - 9/16"	DG10-69	-	-	-	-	-
Comb. Wrench 7/16 - 11/16"	-	-	DG20-69A	-	-	-

** 5.16" OE*
*** 5.8" x 3.4" OE*

Cyclone Select Series

Cyclone Select Series
The Select Series composite housing keeps overall weight at just 1.83 lbs., with reduced vibration and quiet operation at just 78 dBa.

- High efficiency air motors deliver true 12,000 rpm performance.
- One sander fits all hand sizes, with interchangeable soft rubber grip rings that fit securely around the top of the housing:
- Black for medium hands (standard)
- Grey for small hands
- Blue for large hands

- Vacuum-ready models extract dust and particulates through and around the pad...and then up and directly out a dedicated port, keeping foreign matter away from the motor. Special shroud material prevents surface marring, and lightweight, flexible hoses provide excellent maneuverability

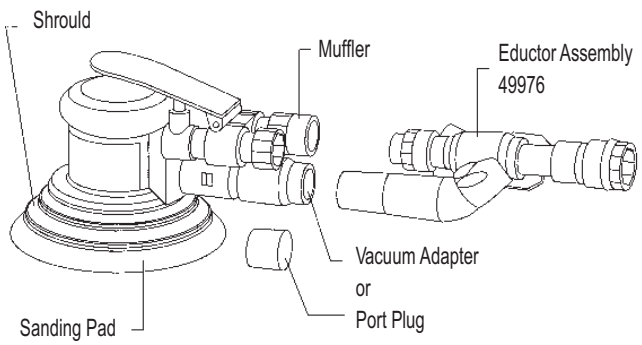
Another unique feature:
Non-vacuum models can easily be converted to vacuum-ready status with the simple addition of a vacuum adapter, petal pad, and different shroud, if desired. Choose from four non-vac models, with 5-inch or 6-inch pads, and duck or vinyl pad faces, four vacuum-ready models, for use with central or portable vacuum systems, Or... 2 CycloVac models, self-generated vacuum models. Select short shrouds for maximum workpiece visibility, or long shrouds for maximum dust evacuation.

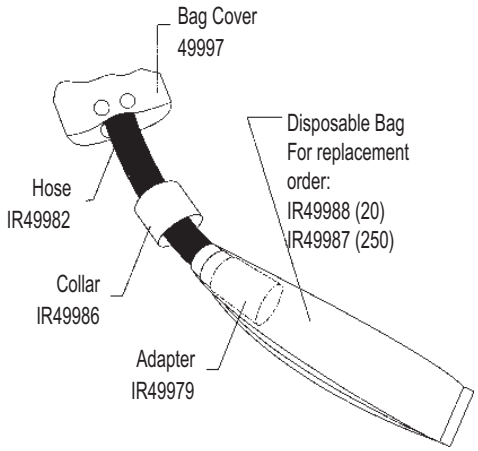
CycloVac System

- Unique “double bagging” integral vacuum system that provides a cleaner work environment. This arrangement also promotes the proper disposal of collected particulates for maximum total effect
- Delivers twice the vacuum power of the nearest competitor, and uses a disposable dust bag enclosed in a protective cover
- The sander's eductor assembly employs a nozzle to produce a high velocity ‘vac’of tool exhaust air that entrains the air and dust from the sanding area. The diffuser then channels both streams of air through the hose and into the collection bag
- The result: A truly effective, self-contained, self-generated vacuum sanding system in one compact, convenient package

- Available in 5” and 6 ” pad models, with disposable vacuum bags prepackaged in quantities of 20 or 250. Other Select Series models can be converted to the CycloVac System with an available kit

CycloVac™ SYSTEM





Cyclone Select Series/CycloVac System

R O 2 5 B - P S D - 1

Tool	Horsepower	Pad Size	Tool Generation	Vacuum Style	Shroud Style	Pad Style	Orbit
Random Orbital Sander	2 = (.20)	5 = 5" Pad 6 = 6" Pad		P = Plain (Non-Vac) C = Central Vac V = CycloVac System	S = Short Shroud L = Long Shroud	D = Duck Pad V = Vinyl Pad	1 = 3/16 Orbit 2 = 3/32 Orbit

Model Number	Shroud Style	Pad Size in.	Pad Size mm	Pad Face	Rated Max Free Speed rpm	Power hp	Air Consp. @ Free Speed scfm	Spindle Thread (female)	Weight lb.	Weight kg
Non-Vacuum										
RO25B-PSV-1*	Short	5	127	Vinyl	12,000	.20	15.8	5/16"-24	1.83	.83
RO26B-PSV-1	Short	6	152	Duck	12,000	.20	15.8	5/16"-24	1.92	.87
Vacuum-Ready										
RO25B-CSV-1	Short	5	127	Vinyl	12,000	.20	15.8	5/16"-24	1.83	.83
RO25B-CSV-1*	Short	5	127	Vinyl	12,000	.20	15.8	5/16"-24	1.92	.87
RO26B-CSV-1	Short	6	152	Vinyl	12,000	.20	15.8	5/16"-24	1.92	.87
RO26B-CSV-1	Long	6	152	Vinyl	12,000	.20	15.8	85/16"-24	1.92	.87
CycloVac										
RO25B-VSV-1	Long	5	127	Vinyl	12,000	.20	15.8	5/16"-24	1.92	.87
RO26B-VSV-1	Long	6	152	Vinyl	12,000	.20	15.8	5/16"-24	1.92	.87

**Most popular model*
Sanding pads have industry-standard hole pattern for "thru-the-pad" vacuum pickup. For use with coated sanding discs with pre-punched holes.
Alir inlet: 1.4" NPT Female Recommended air pressure: 90psi (6.2 bar) Recommended hose size: 5.16" (8mm) I.D.
Std Equipment: 3 49973 Bag
1 49997 Bag Cover
1 IR49979 Adapter
1 IR49982 Hose
1 IR49986 Collar

Cyclone Standard Series

- Select from non-vac models, vac-ready models for use with central or portable vacuum systems, or venturi-vac models with a self-contained hose and dust collection bag in the Cyclone Standard Series
- Non-vac models can be converted to vac-ready status with an available conversion kit
- Comfortable cushion grip provides excellent feel and control Cyclone Random Orbital Sanders

Cyclone Standard Series

R O 3 5 A - P S D

Tool
Random Orbital Sander

Horsepower
3 = (.30)

Pad Size
5 = 5" Pad
6 = 6" Pad

Tool Generation

Vacuum Style
P = Plain (Non-Vac)
C = Central Vac
V = Venturi Vac

Shroud Style
S = Short Shroud
L = Long Shroud

Pad Style
D = Duck Pad
V = Vinyl Pad
-L = Vinyl Pad

3/16

3.16" Orbit Pattern

Model Number Palm Style	Model Number Long Handle	Pad Size in.	Pad Face mm	Free Speed rpm	Power hp	Air Consp. @ Free Speed scfm	Spindle Thread (female)	Weight (lb./kg) Palm style	Weight (lb./kg) Long handle
Non-Vacuum									
RO35A-PSD	RO35A-PSD-L	5` 127	Duck	10,000	.30	18.5	5/16"-24	2.3 1.0	2.6 1.2
RO35A-PSV*	RO35A-PSV-L	5 127	Vinyl	10,000	.30	18.5	5/16"-24	2.3 1.0	2.6 1.2
RO36A-PSD	RO36A-PSD-L	6 152	Duck	10,000	.30	18.5	5/16"-24	2.3 1.0	2.6 1.2
RO36A-PSV*	RO36A-PSV-L	6 152	Vinyl	10,000	.30	18.5	5/16"-24	2.3 1.0	2.6 1.2
RO35A-CSV*	-	5 127	Vinyl	10,000	.30	18.5	5/16"-24	2.4	1.2
RO36A-CSV	-	6 152	Vinyl	10,000	.30	18.5	5/16"-24	2.4	1.2
Venturi-Vac									
RO35A-VLV	-	5 127	Vinyl	10,000	.30	18.5	5/16"- 24	2.4	1.1
RO36A-VLV	-	6 152	Vinyl	10,000	.30	18.5	5/16"- 24	2.4	1.1

**Most popular model*
Sanding pads have industry-standard hole pattern for "thru-the-pad" vacuum pickup. For use with coated sanding discs with pre-punched holes.
AIR INLET: 1.4" NPT Female *Recommended Air Pressure: 90psi (6.2 bar)* *Recommended Hose Size: 5.16" (8mm) I.D.*

Accessories

Premium Quality Low-Profile Pads

Non-vacuum-3.8" (9.5 mm) Thick
(Select and CycloVac only)
IR49877-1 5" Duck Face
IR49878-1 5" Vinyl Face
IR49879-1 6" Vinyl Face
IR49880-1 6" Duck Face

(Standard only)
IR49094-1 5" (127 mm) dia., Vinyl Face "diamond" pattern.
IR49095-1 5" (127 mm) dia., Duck Face
351-825-6A 6" (152 mm) dia., Vinyl Face "diamond" pattern.
IR49098-1 6" (152 mm) dia., Duck Face

Vacuum* 3.8" (9.5 mm) Thick
IR49096-1 5" (127 m) dia., Vinyl Face "petal" pattern.
49099-1 6" (152 m) dia., Vinyl Face "petal" pattern.

Pad Wrenches

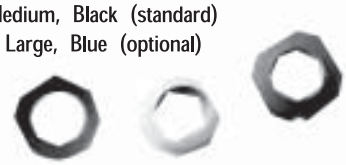
Use to remove sanding pad.
Included with every tool.
351-69 for Standard non-vacuum models.
354-69 for all Standard vacuum models.

Spanner Wrenches

Use to remove the lock ring securing the motor assembly.
48869 for all CycloVac models.
44548 for all Standard Series models.

Grip Rings

Alternate grip rings for Select models.
IR49801 Small, Grey (optional)
49798 Medium, Black (standard)
IR49799 Large, Blue (optional)



Vacuum Adapters

49802 (Select)

Vacuum Hoses

IR49600 6' (1.8m) Hose Equipped with molded 1" I.D. cuffs at each end.

Dust Collection Bag (Select)

355-402
Dust Collection Bag

CycloVac Disposable Vacuum Bags

IR49988 Vacuum Bag (20 Pack)
IR49987 Vacuum Bag (250 Pack)
49973 Vacuum Bag (single)

CycloVac Conversion Kits

IR49977 Conversion Kit 5"
IR49978 Conversion Kit 6"
(To convert non-vac tools to vacuum)

Service Kits

Contains all the necessary genuine I-R replacement parts for proper preventative maintenance.
IR49837 (Select) IR49846 (Standard)

Notes

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Ingersoll Rand
Industrial Technologies

Ingersoll Rand Industrial Technologies provides products, services and solutions to enhance the efficiency and productivity of our commercial, industrial and process customers. Our innovation products include air compressor, air system components, tools, pumps and fluid handling systems and macroturbines.

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