

FURUKAWA ROCK DRILL USA Rock Drill Division



HCR1800-EDII Equipped with Tier IV EPA Compliant Engine

Two Drifter Options for Increased Versatility

Choose the best drifter for your job.

The HCR1800 allows you to choose from two different drifters, depending on your specific application needs.

The HD828 drifter:

- ▶ Hole diameters from 3.5" to 5"
- > Operates at up to 190 rpms
- ▶ Blow speed of 2,700 3,300 bpm.

The HD836 drifter:

- ▶ Hole diameters from 4" to 6"
- > Operates at up to 150 rpms
- Blow speed of 2,600 3,100 bpm.

Use the HD828 drifter to drill holes from 3.5" to 5". or step up to the HD836 drifter for holes from 4" to 6" (using GT60 drill steel)

Whether you choose the HD828 drifter or step-up to the HD836, you will benefit from dependable performance and easy operation.

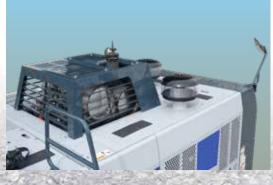




HCR1800 cabs are ergonomically friendly with features that reduce operator fatigue. Cabs are 51" (1,300mm) with ROPS/FOPS standard. In addition, all cabs are air-conditioned and continuously pressurized with filtered air to maintain a comfortable operating environment. Other features include:

- Rubber-mounted engine frame isolates cab from engine vibrations.
- > Joy stick drilling control for easy operation.
- Large windows maximize operator visibility.
- Walk-around ground level maintenance provides fast, easy upkeep or repair.
- All-In-One display allows operator to monitor machine functions while remaining focused on the drilling.









Combining performance and economy.

Combining performance and economy, the HCR1800-ED is the perfect drill for guarries or construction sites. Simple, durable and efficient, the HCR1800 series incorporates a self-adjusting drill system that ensures high productivity no matter what the drilling situation. By automatically controlling the impact force, feed force, rotation force and dual damper pressure, the HCR1800 continuously adapts to the changing rock conditions, increasing drilling performance and the life of drill tools while decreasing fuel consumption.

Manage fuel savings.

With FRD's TFSS (total fuel savings system), the operator selects the optimum engine speed for the application, allowing all fuel savings functions to be automatically managed during drilling operation.

Added features bring versatility.

- meets US exhaust emissions regulations.
- can add and remove rods using a single lever.
- increased drill pattern.
- and decreases bit wear.
- > Reliable dust control system with increased suction capacity provides effective pre-cleaning to reduce the escape of rock dust. An optional dust suppression system is available for difficult drilling conditions.
- > Choose from an HD828 or HD836 drifter to meet your specific application needs.





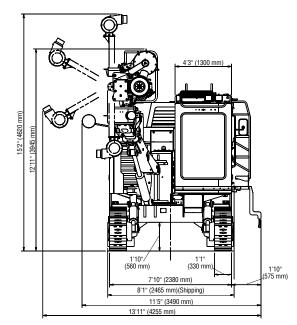


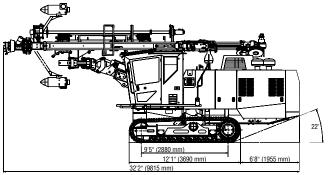
- > Low-emission Tier IV CAT[®] engine offers low fuel consumption and
- > Advanced rotary rod changer allows easy drill rod changes. Operators
- > HCR1800-EDII features 12' or 14' rods with extendable boom for
- > Heavy-duty undercarriage featuring a pentagonal section design to reduce dirt build-up and track wear – ensures strength and durability. > High-output compressor increases flushing air, provides faster drilling

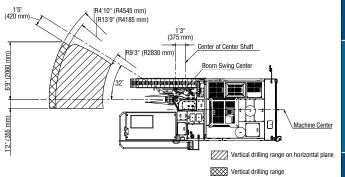
- > Options available, but not limited to: - 2D/3D angle indicator.
- Water dust suppression.
- Heavy-duty rear-mounted bumper.
- Cold-start kit.
- Rear camera.



Reliable dust control system.







The drilling coverage shown above is for the HCR1800-ED with HD836 drifter.

- Note: *1 "Overall Weight (A)" includes weights of fuel and oils (full). *2 "Overall Weight (B)" includes weight of "Overall Weight (A)", operator, rod and bit. *3 "Ground Contact Pressure" is calculated based on "Overall Weight (A)". .

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Furukawa's policy is one of continual improvement. Specifications may change between printing.



FURUKAWA ROCK DRILL USA

Rock Drill Division

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	UCD1000	ED	-828	ED-	836
	HCR1800	US Standard	Metric	US Standard	Metric
Dimensions and Weight	Overall Weight (A) *1	43,938 lb	19,930 kg	43,938 lb	19,930 kg
	Overall Weight (B) *2	45,768 lb	20,760 kg	45,768 lb	20,760 kg
	Overall Length	32'10"	10,015 mm	32'10"	10,015 mm
	Shipping Length	36'7"	11,160 mm	36'7"	11,160 mm
ions	Overall Width	11'5"	3,490 mm	11'5"	3,490 mm
ensi	Shipping Width	8'1"	2,465 mm	8'1"	2,465 mm
E.	Overall Height	15'2"	4,620 mm	15'2"	4,620 mm
	Shipping Height	11'1'	3,375 mm	11'1"	3,375 mm
	Model	HD	0828	HD	836
	Weight	597 lb	271 kg	772 lb	350 kg
5	Length	3'9"	1,148 mm	3'10"	1,171 mm
Drifter	Width	1'3"	387 mm	1'4"	418 mm
	Height	1'1"	328 mm	1'3"	375 mm
	Number of Blows	2,700 ~ 3	3,300 bpm	2,600 ~ 3	,100 bpm
	Rotating Speed	0 - 190 rpm	0 -190 min ⁻¹	0 - 120 rpm	0 - 120 min ⁻¹
	Track Length	12'1"	3,690 mm	12'1"	3,690 mm
	Track Length on Ground	9'5"	2,880 mm	9'5"	2,880 mm
•	Track Width	1'1"	330 mm	1'1"	330 mm
Undercarriage	Ground Contact Pressure *3	14.9 psi	102.8 kPa	14.9 psi	102.8 kPa
rcar	Ground Clearance	1'10"	560 mm	1'10"	560 mm
nde	Frame Oscillation Angle		±7	.5°	
-	Tramming Speed	0 - 2.3 mph	0 - 3.7 km/h	0 - 2.3 mph	0 - 3.7 km/h
	Gradeability		57.4%	o (30°)	
	Maximum Traction Force	28,551 lb-force	127 kN	28,551 lb-force	127 kN
	Make & Model		CAT [®] C9.3 (Tier4	Final, Stage IV)	
	Туре	Diesel, Water-Cooled, 6 Cylinders			
ie	Piston Displacement	567 cu in	9.3 L	567 cu in	9.3. L
Engine	Power Output	350 hp / 2,200 rpm	261 kW / 2,200 min-1	350 hp / 2,200 rpm	261 kW / 2,200 min-1
	Fuel Capacity	158.5 gal	600 L	158.5 gal	600 L
	DEF Capacity	9.0 gal	34 L	9.0 gal	34 L
	Variable Displacement Pump	Axial Piston Pump x2			
Hydraulic Equipment	Fixed Displacement Pump	Gear Pump x3			
, in the second	Drive Motor	-	Hydraulic Motor w	ith Reduction Gear	
= 2	Hydraulic Oil Reservoir Capacity	63.4 gal	240 L	63.4 gal	240 L
	Model	JE326-134			
	Туре	Extension			
E	Boom Lifting Angle (Up / Down)	41° / 20°			
Boom	Boom Swing Angle (Right / Left)		32°	/ 0°	
	Boom Slide Length	2'11"	900 mm	1'11"	600 mm
	Guide Rotary Angle			-	
	Model	GH832-33			
	Overall Length	28'6"	8,700 mm	28'6"	8,700 mm
Guide Shell	Feed Length	For 12': 15'1"	For 3,660 mm: 4,595 mm	17'2"	5,225 mm
		For 14': 17'2"	For 4,265 mm: 5,225 mm		-,
de S	Feed Type		Hydraulic Moto		
Gui	Guide Slide Length	4'11" 1,500 mm 4'11" 1,500 mm			
	Guide Swing Angle (Right / Left)	25° / 90° 170°			
	Guide Tilt Angle				
					0.4 1.41
	Maximum Pulling Force	7,644 lb-force	34 kN	7,644 lb-force	34 kN
sor	Make & Model	7,644 lb-force	AIRMAN PE	0SF290-S16	34 kN
pressor	Make & Model Type		AIRMAN PE 1-Stage Screv	DSF290-S16 v Compressor	I
Compressor	Make & Model Type Discharge Airflow	477 cfm	AIRMAN PE 1-Stage Screv 13.5 m³/min	DSF290-S16 v Compressor 477 cfm	13.5 m³/min
Compressor	Make & Model Type Discharge Airflow Discharge Pressure		AIRMAN PE 1-Stage Screv 13.5 m³/min 1.03 MPa	DSF290-S16 v Compressor 477 cfm 149 psi	I
	Make & Model Type Discharge Airflow Discharge Pressure Model	477 cfm 149 psi	AIRMAN PE 1-Stage Screv 13.5 m³/min 1.03 MPa A88	SF290-S16 v Compressor 477 cfm 149 psi 5-44	13.5 m³/min 1.03 MPa
	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity	477 cfm	AIRMAN PE 1-Stage Screv 13.5 m ³ /min 1.03 MPa A88 40 m ³ /min	SF290-S16 4 Compressor 477 cfm 149 psi 5-44 1,413 cfm	13.5 m³/min
	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements	477 cfm 149 psi	AIRMAN PC 1-Stage Screv 13.5 m³/min 1.03 MPa A88: 40 m³/min	SF290-S16 v Compressor 477 cfm 149 psi 5-44 1,413 cfm	13.5 m³/min 1.03 MPa
Dust Collector Compressor	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements Dust Removal System	477 cfm 149 psi	AIRMAN PC 1-Stage Screv 1.3.5 m³/min 1.03 MPa A88: 40 m³/min 6 Automatic A	SF290-S16 v Compressor 477 cfm 149 psi 5-44 1,413 cfm 5 5- 44	13.5 m³/min 1.03 MPa
Dust Collector	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements Dust Removal System Suction Cap	477 cfm 149 psi	AIRMAN PC 1-Stage Screv 1.3.5 m³/min 1.03 MPa A88 40 m³/min 40 m³/min 40 m³/min 50 Matomatic / Silde	SF290-S16 v Compressor 477 cfm 149 psi 5-44 1,413 cfm 5 4ir Pulse Jet Type	13.5 m³/min 1.03 MPa
Dust Collector	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements Dust Removal System Suction Cap Model	477 cfm 149 psi	AIRMAN PC 1-Stage Screv 13.5 m ⁵ /min 1.03 MPa A88 40 m ³ /min 40 m ³ /min 40 m ³ /min 51 60 60 60 60 60 60 60 60 60 60	SF290-S16 v Compressor 477 cfm 149 psi 5-44 1,413 cfm 3 4 Vir Pulse Jet Type 13-31	13.5 m³/min 1.03 MPa
Dust Collector	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements Dust Removal System Suction Cap Model Number of Rods	477 cfm 149 psi 1,413 cfm	AIRMAN PC 1-Stage Screv 13.5 m³/min 1.03 MPa A88 40 m³/min 40 m³/min 40 m³/min 51 de 6 de 6 de 7 (For T51 and GT60)	SF290-S16 v Compressor 477 cfm 149 psi 5-44 1,413 cfm 5 ivr Pulse Jet Type 13-31 or 6 (For GT60-TUBE)	13.5 m³/min 1.03 MPa 40 m³/min
Dust Collector	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements Dust Removal System Suction Cap Model Number of Rods Rod Diameter	477 cfm 149 psi	AIRMAN PC 1-Stage Screv 13.5 m³/min 1.03 MPa A88 40 m³/min C Automatic <i>I</i> Silde GR8(7 (For T51 and GT60) 51 mm	SF290-S16 v Compressor 477 cfm 149 psi 5-44 1,413 cfm 5 4ir Pulse Jet Type 13-31 or 6 (For GT60-TUBE) 2.36°, 2.52°, 3.42°	13.5 m³/min 1.03 MPa
	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements Dust Removal System Suction Cap Model Number of Rods Rod Diameter Number of Control Levers	477 cfm 149 psi 1,413 cfm 2*	AIRMAN PC 1-Stage Screw 13.5 m³/min 1.03 MPa A88: 40 m³/min A88: 40 m³/min C Automatic A Slide GR80 7 (For T51 and GT60) 51 mm	SF290-S16 v Compressor 477 cfm 149 psi 5-44 1,413 cfm 5 4ir Pulse Jet Type 13-31 or 6 (For GT60-TUBE) 2,36°, 2.52°, 3.42°	13.5 m³/min 1.03 MPa 40 m³/min 60 mm, 64 mm, 87 mm
Rod Changer Dust Collector	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements Dust Removal System Suction Cap Model Number of Rods Rod Diameter	477 cfm 149 psi 1,413 cfm 2° 3.5' - 5'	AIRMAN PC 1-Stage Screv 13.5 m ⁵ /min 1.03 MPa A88 40 m ³ /min C Automatic <i>I</i> Silde GR80 7 (For T51 and GT60) 51 mm 89 - 127 mm	SF290-S16 v Compressor 477 cfm 149 psi 5-44 1,413 cfm 5 4ir Pulse Jet Type 13-31 or 6 (For GT60-TUBE) 2.36°, 2.52°, 3.42° 4″ - 5.5° (6°)	13.5 m³/min 1.03 MPa 40 m³/min 60 mm, 64 mm, 87 mm 102 - 140 mm (152 mm)
Rod Changer Dust Collector	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements Dust Removal System Suction Cap Model Number of Rods Rod Diameter Number of Control Levers	477 cfm 149 psi 1,413 cfm 2° 3.5' - 5'	AIRMAN PC 1-Stage Screw 13.5 m³/min 1.03 MPa A88: 40 m³/min A88: 40 m³/min C Automatic A Slide GR80 7 (For T51 and GT60) 51 mm	SF290-S16 v Compressor 477 cfm 149 psi 5-44 1,413 cfm 5 4ir Pulse Jet Type 13-31 or 6 (For GT60-TUBE) 2.36°, 2.52°, 3.42° 4″ - 5.5° (6°)	13.5 m³/min 1.03 MPa 40 m³/min 60 mm, 64 mm, 87 mm 102 - 140 mm (152 mm) 60
Rod Changer Dust Collector	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements Dust Removal System Suction Cap Model Number of Rods Rod Diameter Number of Control Levers Bit Range	477 cfm 149 psi 1,413 cfm 2° 3.5' - 5'	AIRMAN PC 1-Stage Screv 13.5 m ⁵ /min 1.03 MPa A88 40 m ³ /min C Automatic <i>I</i> Silde GR80 7 (For T51 and GT60) 51 mm 89 - 127 mm	SF290-S16 v Compressor 477 cfm 149 psi 5-44 1,413 cfm 5- Vir Pulse Jet Type 33-31 or 6 (For GT60-TUBE) 2.36°, 2.52°, 3.42° 4° - 5.5° (6°) GT	13.5 m³/min 1.03 MPa 40 m³/min 60 mm, 64 mm, 87 mm 102 - 140 mm (152 mm) 60
Dust Collector	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements Dust Removal System Suction Cap Model Number of Rods Rod Diameter Number of Control Levers Bit Range Rod Type	477 cfm 149 psi 1,413 cfm 2* 3.5* - 5* T	AIRMAN PC 1-Stage Screv 13.5 m³/min 1.03 MPa A88 40 m³/min 6 Automatic <i>I</i> Silde GR80 7 (For T51 and GT60) 51 mm 89 - 127 mm 51	SF290-S16 v Compressor 477 cfm 149 psi 5-44 1,413 cfm 5- Vir Pulse Jet Type 13-31 0 of 6 (For GT60-TUBE) 2,36°, 2.52°, 3.42° 4° - 5.5° (6°) GT60 Tube (Dia	13.5 m³/min 1.03 MPa 40 m³/min 60 mm, 64 mm, 87 mm 102 - 140 mm (152 mm) 60 87 mm / 3.42°)
Bit and Rod Changer Dust Collector	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements Dust Removal System Suction Cap Model Number of Rods Rod Diameter Number of Control Levers Bit Range Rod Type Rod Length Starter Rod Length	477 cfm 149 psi 1,413 cfm 2" 2" 3.5" - 5" T 12' or 14'	AIRMAN PC 1-Stage Screv 13.5 m³/min 1.03 MPa A88: 40 m³/min (Automatic <i>I</i> Silde GR80 7 (For T51 and GT60) 51 mm 1 89 - 127 mm 51 3.660 mm or 4.265 mm 4.265 mm	SF290-S16 v Compressor 477 cfm 149 psi 5-44 1,413 cfm 5- 44 1,413 cfm 5- 47 70pe 13-31 or 6 (For GT60-TUBE) 2,36°, 2,52°, 3,42° 1 4° - 5,5° (6°) GT60 Tube (Dia 14° 18°	13.5 m³/min 1.03 MPa 40 m³/min 60 mm, 64 mm, 87 mm 102 - 140 mm (152 mm) 60 87 mm / 3.42°) 4,265 mm
Bit and Rod Changer Dust Collector	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements Dust Removal System Suction Cap Model Number of Rods Rod Diameter Number of Control Levers Bit Range Rod Type Rod Length	477 cfm 149 psi 1,413 cfm 2" 2" 3.5" - 5" T 12' or 14'	AIRMAN PC 1-Stage Screv 13.5 m³/min 1.03 MPa A88: 40 m³/min 6 Automatic <i>I</i> Silde GR86 7 (For T51 and GT60) 51 mm 1 89 - 127 mm 51 3,660 mm or 4,265 mm	SF290-S16 v Compressor 477 cfm 149 psi 5-44 1,413 cfm 5- 44 1,413 cfm 5- 44 1,413 cfm 5- 47 2,36°, 2,52°, 3,42° 1 4° - 5,5° (6°) GT60 Tube (Dia 14° 18° Ah/5hr x2	13.5 m³/min 1.03 MPa 40 m³/min 60 mm, 64 mm, 87 mm 102 - 140 mm (152 mm) 60 87 mm / 3.42°) 4,265 mm
Rod Changer Dust Collector	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements Dust Removal System Suction Cap Model Number of Rods Rod Diameter Number of Control Levers Bit Range Rod Type Rod Length Starter Rod Length Battery Light	477 cfm 149 psi 1,413 cfm 2" 2" 3.5" - 5" T 12' or 14'	AIRMAN PC 1-Stage Screv 13.5 m³/min 1.03 MPa A88 40 m³/min 6 Automatic <i>I</i> Silde GRac 7 (For T51 and GT60) 51 mm 89 - 127 mm 51 3,660 mm or 4,265 mm 4,265 mm 12V; 160	SF290-S16 v Compressor 149 psi 5-44 1,413 cfm 5 4 4 5 4 4 7 5 2,36°, 2.52°, 3.42° 4 4 4 5 5 5 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6	13.5 m³/min 1.03 MPa 40 m³/min 60 mm, 64 mm, 87 mm 102 - 140 mm (152 mm) 60 87 mm / 3.42°) 4,265 mm
Electrics Bit and Rod Changer Dust Collector	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements Dust Removal System Suction Cap Model Number of Rods Rod Diameter Number of Control Levers Bit Range Rod Type Rod Length Starter Rod Length Battery	477 cfm 149 psi 1,413 cfm 2" 2" 3.5" - 5" T 12' or 14'	AIRMAN PC 1-Stage Screv 13.5 m ⁵ /min 1.03 MPa A88 40 m ³ /min 40 m ³ /min 40 m ³ /min 6 Automatic <i>I</i> Silde GR8 7 (For T51 and GT60) 51 mm 89 - 127 mm 51 3.660 mm or 4.265 mm 4.265 mm 12V; 160, 24V; 7	SF290-S16 v Compressor 149 psi 5-44 1,413 cfm 5 4 4 5 4 4 7 5 2,36°, 2.52°, 3.42° 4 4 4 5 5 5 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6	13.5 m³/min 1.03 MPa 40 m³/min 60 mm, 64 mm, 87 mm 102 - 140 mm (152 mm) 60 87 mm / 3.42°) 4,265 mm
Electrics Bit and Rod Changer Dust Collector	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements Dust Removal System Suction Cap Model Number of Rods Rod Diameter Number of Control Levers Bit Range Rod Type Rod Length Starter Rod Length Battery Light	477 cfm 149 psi 1,413 cfm 2" 2" 3.5" - 5" T 12' or 14'	AIRMAN PC 1-Stage Screv 13.5 m ⁵ /min 1.03 MPa A88 40 m ³ /min 40 m ³ /min 40 m ³ /min 6 Automatic <i>I</i> Silde GR8 7 (For T51 and GT60) 51 mm 89 - 127 mm 51 3.660 mm or 4.265 mm 4.265 mm 12V; 160, 24V; 7	SF290-S16 v Compressor 149 psi 5-44 1,413 cfm 5 4 4 5 4 4 7 5 2,36°, 2.52°, 3.42° 4 4 4 5 5 5 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6	13.5 m³/min 1.03 MPa 40 m³/min 60 mm, 64 mm, 87 mm 102 - 140 mm (152 mm) 60 87 mm / 3.42°) 4,265 mm
Electrics Bit and Rod Changer Dust Collector	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements Dust Removal System Suction Cap Model Number of Rods Rod Diameter Number of Control Levers Bit Range Rod Type Rod Length Starter Rod Length Battery Light Voltage	477 cfm 149 psi 1,413 cfm 2° 3.5' - 5' T 12' or 14' 14'	AIRMAN PC 1-Stage Screv 13.5 m³/min 1.03 MPa A88 40 m³/min C Automatic A Silde GR80 7 (For T51 and GT60) 51 mm 89 - 127 mm 51 3,660 mm or 4,265 mm 4,265 mm 12V; 160. 24V; 7 DC	SF290-S16 v Compressor 477 cfm 149 psi 5-44 1,413 cfm 5- 44 1,413 cfm 5- 47 1,413 cfm 5- 47 1,413 cfm 13-31 or 6 (For GT60-TUBE) 2,36°, 2,52°, 3,42° 14 4° - 5,5° (6°) GT GT60 Tube (Dia 14' 18' Atr/Shr x2 OW x4 24V	13.5 m³/min 1.03 MPa 40 m³/min 60 mm, 64 mm, 87 mm 102 - 140 mm (152 mm) 60 87 mm / 3.42°) 4.265 mm 5,490 mm
Bit and Rod Changer Dust Collector	Make & Model Type Discharge Airflow Discharge Pressure Model Suction Capacity Number of Filter Elements Dust Removal System Suction Cap Model Number of Rods Rod Diameter Number of Control Levers Bit Range Rod Type Rod Length Starter Rod Length Battery Light Voltage	477 cfm 149 psi 1,413 cfm 2° 3.5' - 5' T 12' or 14' 14'	AIRMAN PC 1-Stage Screv 13.5 m³/min 1.03 MPa A88 40 m³/min C Automatic A Silde GR80 7 (For T51 and GT60) 51 mm 89 - 127 mm 51 3,660 mm or 4,265 mm 4,265 mm 12V; 160. 24V; 7 DC	SF290-S16 v Compressor 477 cfm 149 psi 5-44 1,413 cfm 5- 44 1,413 cfm 5- 47 1,413 cfm 5- 47 1,413 cfm 13-31 or 6 (For GT60-TUBE) 2,36°, 2,52°, 3,42° 14 4° - 5,5° (6°) GT GT60 Tube (Dia 14' 18' Atr/Shr x2 OW x4 24V	13.5 m³/min 1.03 MPa 40 m³/min 60 mm, 64 mm, 87 mm 102 - 140 mm (152 mm) 60 87 mm / 3.42°) 4.265 mm 5,490 mm