C-SERIES 3516 Compression Package

Proven Quality and Reliability, Delivered Fast

Key Benefits

Faster to Gas Revenue

- Typically deliverd in 10 to 14 weeks without compromising quality, performance or configurability, so you can get your gas and revenue stream moving
- Ready inventory of preconfigured units may be available for immediate delivery
- Production drawings provided with proposal or within 2-3 business days of project award, to expedite your planning and lower your contract, budget and schedule risks
- Simple assembly and commissioning allows you to bring your operation online quickly
- From purchasing to delivery to startup, substantial time is saved which can be directed into other aspects of your project

Complete Confidence

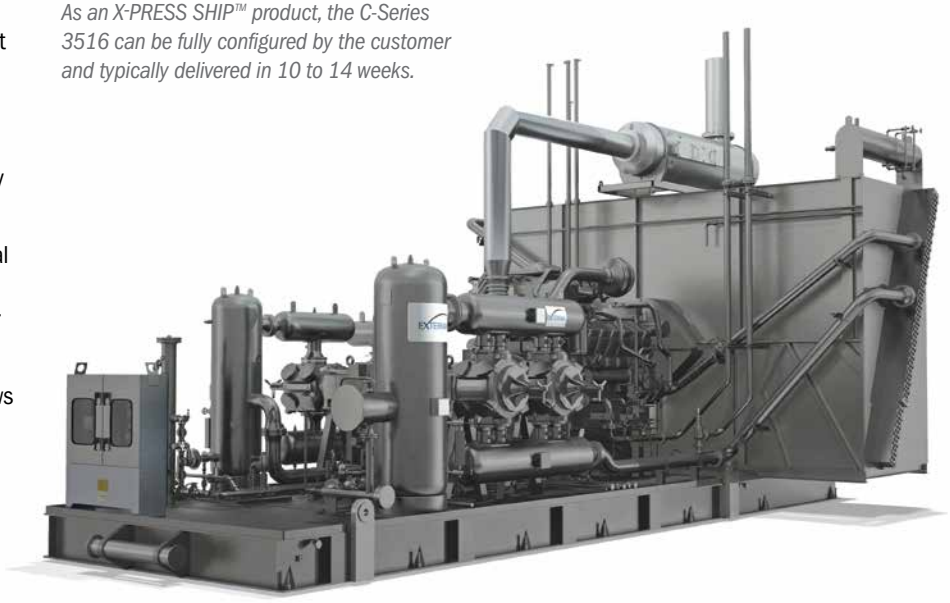
- Exterran's 50+ years of experience and unsurpassed expertise as the global compression leader assures you are getting high-performing packages
- Exterran has built thousands of units for its own contract fleet and solved challenges for every application, so you can be highly confident that your unit is reliable and fit for purpose
- Your unit is based on the same engineering used in our contract fleet, which has approximately 4-million horsepower and achieves 99+% service availability
- Exterran engineering ensures consistent quality, predictable performance, simple operation and easy maintenance
- Engineering and operations experts are available to assist with configuration decisions and technical support

Flexibility and Savings

- Drawing from an extensive list of ready options, there are thousands of ways to customize units to meet your application requirements
- 12-foot skid width reduces transportation permitting requirements and associated costs
- Exterran can install, commission and service your units to facilitate your startup and unburden your maintenance operations

X-PRESS SHIP™ PRODUCT

As an X-PRESS SHIP™ product, the C-Series 3516 can be fully configured by the customer and typically delivered in 10 to 14 weeks.



OVERVIEW

Exterran C-Series 3516 Gas Compression Packages are pre-engineered and assembled with high-quality components and a wide range of options – allowing for exceptional configuration flexibility and high performance along with rapid delivery and startup. Packages are available up to 1,380 horsepower and are outfitted with Caterpillar 3516B lean burn engines, ASME-code stamped pressure vessels and Ariel JGT4 compressors, with options such as quiet Harsco/Air-X-Changers fin fan cooler, Hotstart system and Murphy Centurion Plus control panel. Each package is built on a heavy-duty steel skid suitable for a compacted gravel pad or mounting on a concrete foundation.

Standard safety features include automatic shut-down controls and checker-plated, skid-resistant work surfaces. Safety is enhanced because all local instrument gas vents are collected, manifolded and routed to connections at the skid edge. Our design facilitates air emissions compliance with a catalyst housing and NPT sampling ports. Selectable safety options include exhaust insulation, caged ladders, and OSHA-compliant work platforms.

Exterran can also assist you with complete environmental compliance services, from assessment to permitting to records management.

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Exterran has many years of experience operating and maintaining thousands of fleet compressor packages. This experience has contributed to best-practice package content and layout.

Mechanical analysis performed on package design in order to minimize vibrations due to mechanical resonance

Pulsation study pre-performed on all base model configurations

Components are directly supported to the skid cross members (not on deck plate) or structural plate. 1 inch plate across back end of skid for mechanical stiffness of ancillary equipment

Eight , ¾ inch NPT connections enable local coolant temperature monitoring/ management

Isolation valves for coolant conservation during engine service

Upgraded engine exhaust insulation from Caterpillar included as standard content

½ inch NPT pressure connections on pulsation bottles enables collection of pulsation data for future analysis. One, ¾ inch temperature connections on all scrubbers

Engine & compressor oil level regulators provided with inlet/outlet fire safe valves

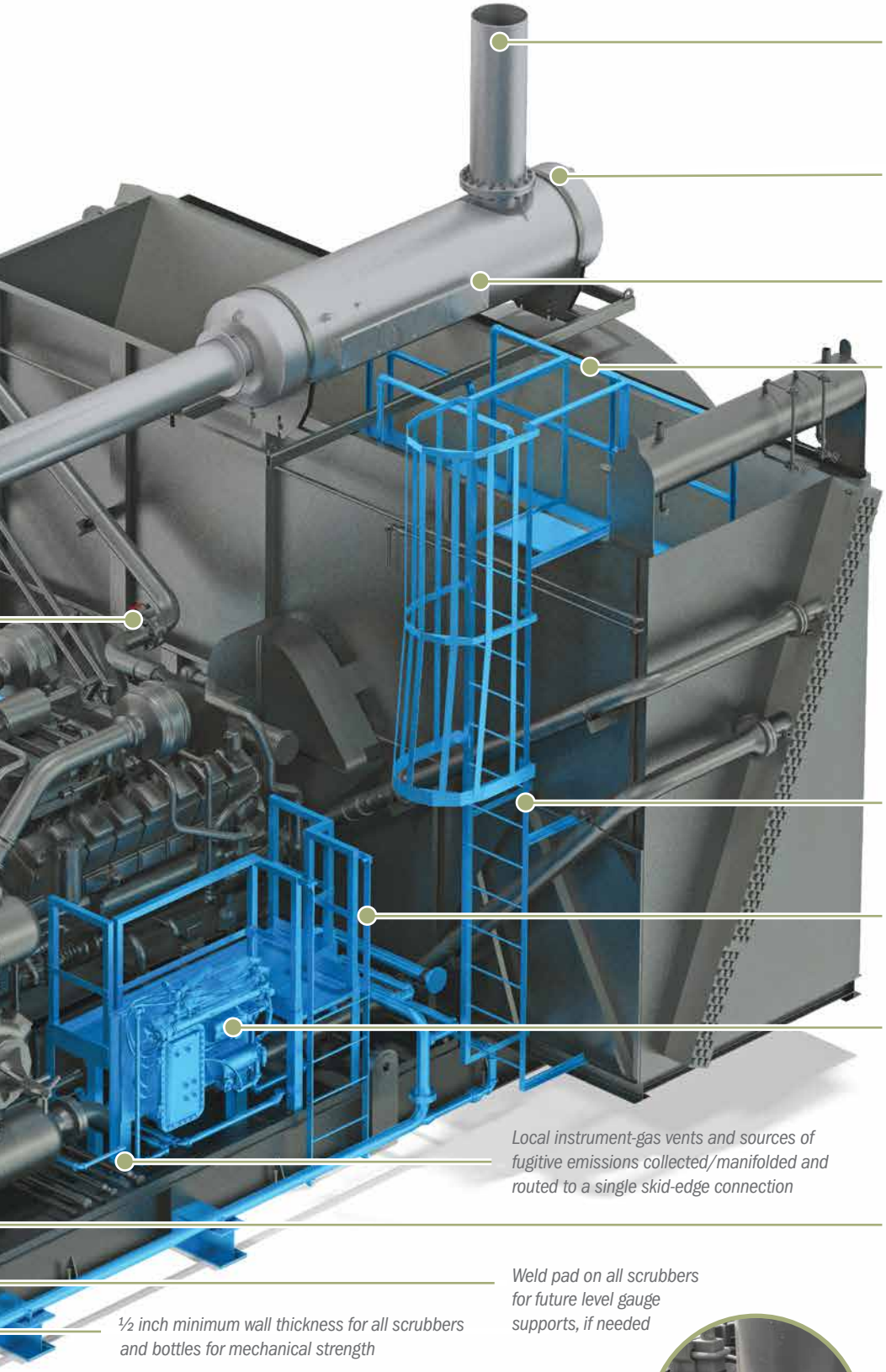
Murphy Centurion control panel

Hotstart system for compressor oil (Optional)

One, 2 inch NPT ball valve and associated threaded piping for future fuel meter installation

Basket-style inlet suction screen with removable spool-piece to enable screen removal (Optional)

Our C-Series 3516 units are designed to be set on an engineered gravel pad or concrete foundation. Skid includes anchor bolt holes and jacking bolts

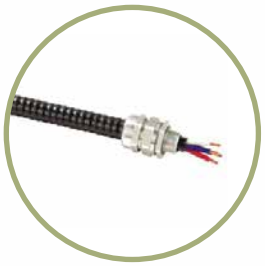


Two, 2 inch NPT emissions test ports provided in exhaust silencer/catalytic converter outlet piping

25-30 dB noise reduction with an EMIT silencer and catalyst housing

Two Type-K thermocouples for monitoring catalytic converter inlet and outlet temperature

Catalyst and surge-tank service/work platform integrated with cooler structure (Optional)



Cable and tray electrical system approved for use in NEC Class I, Division 2 hazardous area classifications

Caged, galvanized ladder to cooler platform (Optional)

OSHA engine work platforms with handrails and ladder. One platform on each side of engine (Optional)

Combo Hotstart system for engine oil/water (Optional)

Exterran's pulsation bottles are designed to improve package efficiency by reducing pressure drop, pulsations and vibrations. This results in increased volumetric flow rate, lower driver HP, lower fuel consumption and operating cost

Local instrument-gas vents and sources of fugitive emissions collected/manifolded and routed to a single skid-edge connection

Weld pad on all scrubbers for future level gauge supports, if needed

½ inch minimum wall thickness for all scrubbers and bottles for mechanical strength

Pressure relief valve vents manifolded into a common header and run to skid edge (Optional)

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Configurable Models

Standard Specifications

Number of Stages	Stage Model	Bore Diameter (inches)			[c] Performance Ranges			
		First Stage	Second Stage	Third Stage	Suction psig	Discharge psig	Flow MMscfd	
1	001	6.375	-	-				
		6.000	-	-	**200 - 600**	**800 - 1200**	**8.6 - 43.7**	
		-	-	-				
2	001	-	6.375	-				
		9.750	**6.000**	-	**50 - 200**	**600 - 1200**	**4.4 - 17.1**	
		9.250	-	-				
[a] 2	002	-	6.375	-	**200 - 325**	**500 - 650**	**20 - 28.7**	single stage
		[b] **9.625**	**6.000**	-				
		[b] 9.125	-	-	**100 - 250**	**1000 - 1200**	**6.3 - 14.7**	two stage
3	001	-	-	6.375				
		17.250	**11.500**	**6.000**	**5 - 50**	**600 - 1200**	**3.3 - 7.5**	
		16.750	11.000	-				
3	002	-	-	6.375				
		15.750	**11.500**	**6.000**	**10 - 50**	**800 - 1200**	**3.7 - 7.0**	
		15.250	11.000	-				
3	003	-	-	6.375				
		15.750	**9.750**	**6.000**	**10 - 40**	**800 - 1200**	**3.4 - 6.5**	
		15.250	9.250	-				
3	004	-	-	6.375				
		13.500	**9.750**	**6.000**	**20 - 60**	**800 - 1300**	**4.2 - 7.8**	
		13.000	9.250	-				

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Stages		Model		First		Second		Third		'3516T4-3-002-15.750-11.500-6.000' (product code example)

[a] 2-002 is convertible as a one or two stage model
[b] All cylinders are Ariel ET-class, except for the first stage of model 2-002, which is Ariel T-class
[c] The performance ranges shown are specifically for the cylinder bore diameters bolded and on the same row to the left

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Standard and Optional Equipment

• Included with base model ◦ When finished packages are available, these options are included

Compressor Frame & Cylinders

Name	Item		Description	Comments
Variable Volume Clearance Pockets (VVCP's)	A01	•	Manual head-end VVCP's included on 1st-stage cylinders only	
	A02	◦	Manual head-end VVCP's included on 1st-stage, 2nd-stage, and 3rd-stage (if applicable) cylinders	
Prelube Pump	A03	•◦	Ariel standard manual priming pump	
	A04		Pneumatic-diaphragm compressor pre-lube pump with block valves, check valve and strainer	Only one selection can be made
	A05		Electric-motor (2 HP, 3 PH, 60 HZ, 230/460 V) driven compressor pre-lube pump with block valves, check valve and strainer. Motor starter provided by customer	
Oil Circulating Heater	A06		Hotstart system for compressor oil only, with required valves and strainer Pump motor is 3 HP, 3 PH, 60 HZ, 2.5 KW, 480 V	
Lube-Oil Meter	A07		Kenco model 1618 low-flow analog compressor lube-oil meter	
Oil Day Tanks	A08		Cooler-mounted 55-gallon oil day-tank	
	A09		Kenco 55-gallon day-tank and stand. Shipped loose for customer installation	
Blowcases for Distance Piece & Packing Drains	A10		Jatco Model JATC-J5000 blowcases. Shipped loose for customer off-skid installation	

Driver

Catalytic Converter DPI	B01		Catalytic converter DPI included and tubed low on cooler face for easy viewing and access	
Catalytic Converter Test Ports	B02	•	Catalytic converter test ports locally located on exhaust system above cooler	
	B03	◦	Catalytic converter test ports tubed low on cooler face for easy access. Includes two ½ inch ball valves	
Engine Exhaust Insulation	B04		Blanket insulation of engine exhaust system including silencer/converter	
Fuel Filter Level Instrumentation	B05	•◦	Manual drain only on fuel filter	
	B06		Fuel filter to include level controller, auto dump valve, level gauge, and high-level shut-down	
Fuel Filter Insulate & Heat Trace	B07		Blanket insulation of fuel filter bottom, dump line and valves and electrical heat trace (220 V, 1 PH, 60 HZ)	
Start Gas Inlet Piping	B08	•◦	Separate 2 inch fuel & 1½ inch start gas connections at skid-edge	
	B09		Fuel and start inlets combined as a single 2 inch connection at skid-edge	
Start Gas Inlet PSV	B10	◦	1½ inch x 2 inch NPT start-gas inlet PSV with outlet piping into starter vent piping header	
Starter Vent Piping	B11	•◦	Starter exhaust locally piped to 7 feet above top of cooler c/w rain cap	
	B12		Starter exhaust run to its own 3 inch - 150 pound skid-edge connection	
Lube Oil Meter	B13		Kenco model 1618 low-flow analog engine lube-oil meter	
Oil Circulating Heater	B14		Combo Hotstart system for engine oil/water, with required valves and strainer. 480 V, 3 PH, 60 HZ – coolant heater: 18 KW, 1 HP pump motor; oil heater: 6 KW, 1 HP pump motor	
Water Temperature Measurement	B15	•◦	Connections for temperature indicators and thermocouples included in engine jacket water (EJW) and auxiliary water (AW) piping, to and from engine to cooler	Only one selection can be made
	B16		Temperature indicators included in EJW and AW piping, to and from engine and cooler	
	B17		Temperature indicators and thermocouples included in EJW and AW piping, to and from engine and cooler	
Engine Work Platforms	B18	◦	OSHA engine work platforms with handrails and ladder (one platform on each side of engine)	Only one selection can be made
	B19		OSHA engine work platforms with handrails and stairs (one platform on each side of engine)	

• Included with base model ◦ When finished packages are available, these options are included

Air Cooler

Name	Item		Description	Comments
Cooler Model	C01	•	Air-X-Changers 144EH, with Exterran standard dimensions and nozzles, sized for customer site conditions	Only one selection can be made
	C02	◦	Air-X-Changers 144EH, with Exterran standard dimensions and nozzles, Fleet/Flex (designed to operate between 110°F ambient at 500 feet and 100°F ambient at 7,000 feet)	
	C03		Air-X-Changers 156EH, with Exterran standard dimensions and nozzles, sized for customer site conditions	
Fan Style	C04	•	Moore-10K-Series 8-blade cooler fan	
	C05	◦	Moore-CL10K-Series 10-blade low-noise cooler fan	Included when selecting the Fleet/Flex Air-X-Changers 144EH (C02)
Service/Work Platform	C06	◦	Catalyst and surge-tank service/work platform integrated with cooler structure	
Ladder	C07	◦	Uncaged, galvanized ladder to cooler platform	
	C08		Caged, galvanized ladder to cooler platform	
Hail Guard	C09		Expanded-mesh hail guard on top of cooler	
Bug Screen	C10		Removable mesh bug screens over cooler intake	
Shipping Legs	C11		Cooler fan-deck shipping legs. Allows cooler to lay on truck for shipping into height-restricted areas	
Louvers	C12	•◦	One set of manual louvers across gas-sections to control gas discharge temperature	Only one selection can be made
	C13		One set of automatic louvers across gas sections to control gas discharge temperature Includes Kimray T12 controller and Garzo actuator	
	C14		Automatic louvers on each gas section to control gas discharge temperatures Includes Kimray T12 controllers and Garzo actuators	

Controls, Instrumentation, & Wiring

Control Panel Make & Model	D01	•◦	Murphy Centurion	Not selectable along with automatic bypass valve (I03) or automatic blowdown valve (I05)
	D02		Altronic DE-3000 in lieu of standard Murphy Centurion	
	D03		Murphy Centurion Plus in lieu of standard Murphy Centurion	
Control Panel Location	D04	•◦	Panel mounted on skid	Only one selection can be made
	D05		Off-skid control panel with sufficient umbilical length to allow location up to 10 feet from compressor end of skid	
	D06		Off-skid control panel with sufficient umbilical length to allow location up to 20 feet from compressor end of skid	
Instrument Gas/ Air Supply	D07	•◦	Regulated gas supplied from downstream of fuel gas filter	
	D08		1 inch NPT galvanized instrument air header with skid-edge ball valve, regulator PI and root valves	
Tube Fittings	D09	•◦	Tube fittings are clear-zinc coated, carbon steel, Parker or equivalent	
	D10		Tube fittings are 316 stainless steel, Parker or equivalent	

Process Vessels (General)

Non-Destructive Examination (NDE)	E01	•◦	RT-2 radiographic testing on ASME-code process vessels and cooler gas headers	Only one selection can be made
	E02		RT-1 radiographic testing on ASME-code vessels and cooler gas headers	
	E03		100% radiographic testing on ASME-code vessels and cooler gas headers	
Post-Weld Heat Treatment (PWHT)	E04		ASME-code vessels and cooler gas headers to include post weld heat treatment	Must include 100% radiography (E03)

Scrubbers

Liquid Drain Valve System	F01	•	Liquid drain valve only	
	F02		External liquid drain valve with 1 inch NPT isolation ball valves included	
Scrubber Insulate & Heat Trace	F03		Blanket insulation of scrubber bottom(s), dump line and valves and electric heat trace	
	F04		Blanket insulation of scrubber bottom, dump line and valves and heat trace with engine jacket water (EJW) Includes 1 inch pipe through scrubber for heating medium	

• Included with base model ◦ When finished packages are available, these options are included

Name	Item		Description	Comments
Pulsation Bottles				
Pulsation Analysis Ports	G01		Kiene valves with caps on each cylinder (head end and crank end) and pulsation bottle heads (opposite inlet/outlet)	
Process Gas Piping				
Non-Destructive Examination (NDE)	H01	•◦	Per Code ASME B31.3	
	H02		100% Radiography/UT of welds on process piping	
Hydrostatic Testing	H03	•◦	Tested at 1.5 MAWP for 30 minutes	
	H04		Tested at 1.5 MAWP for 2 hours	
PSV Vent Piping	H05	•◦	PSV vents locally piped to 7 feet above top of cooler (discharge PSV's) or safely above personnel height (suction & fuel PSV's). Includes rain caps	
	H06		PSV vents manifolded together into a common header and run to compressor end of skid	
Inlet Suction Screen	H07	◦	Basket-style inlet suction screen with removable spool-piece to enable screen removal Option includes full-bore orifice plate (shipped loose) to replace screen upon removal in the field	
Process Gas Valves / Accessories				
Suction Relief Valve	I01	◦	Mercer suction PSV appropriately sized for maximum flow condition installed on scrubber inlet nozzle for ease of suction spool/strainer removal (if applicable); includes PSV vent piped to top of scrubber with rain cap	
Start-up Bypass Valve	I02	•◦	Manually operated bypass valve, KF full-port ball, flanged connections, 3 inch - 900 pound RF	
	I03		Automatic bypass valve (pneumatically actuated), KF full-port ball, flanged connections, 3 inch - 900 pound RF	Must also select Centurion Plus control panel (D03)
Blowdown Valve	I04	•◦	Manually operated blowdown valve, KF full-port ball, 2 inch NPT	
	I05		Automatic blowdown valve (pneumatically actuated), KF full-port ball, 2 inch NPT	Must also select Centurion Plus control panel (D03)
Recycle Valve	I06		Automatic recycle valve (pneumatically actuated control-valve). Sized for 50% of max flow	
Suction Block Valve	I07		Manual suction block valve. Shipped loose for customer installation	
Discharge Block Valve	I08		Manual discharge block valve. Shipped loose for customer installation	
Discharge Check Valve	I09		Manual discharge check valve. Shipped loose for customer installation	
Skid				
Skid Drains	J01	•◦	Four, (4) 1½ inch FNPT drain connections, one located in each corner	
	J02		Manifold four skid drains to a single 1½ inch outlet at compressor-end of package	
Surface Prep & Paint				
Paint Color	K01	•◦	Exterran Gray	
	K02		Commercially available color of customer's choice	
Drawings & Documentation				
Package Service Manuals	L01	•◦	Three CD copies of installation, operations and maintenance manual provided	
	L02		One printed copy and three CD copies of installation, operations and maintenance manual provided	

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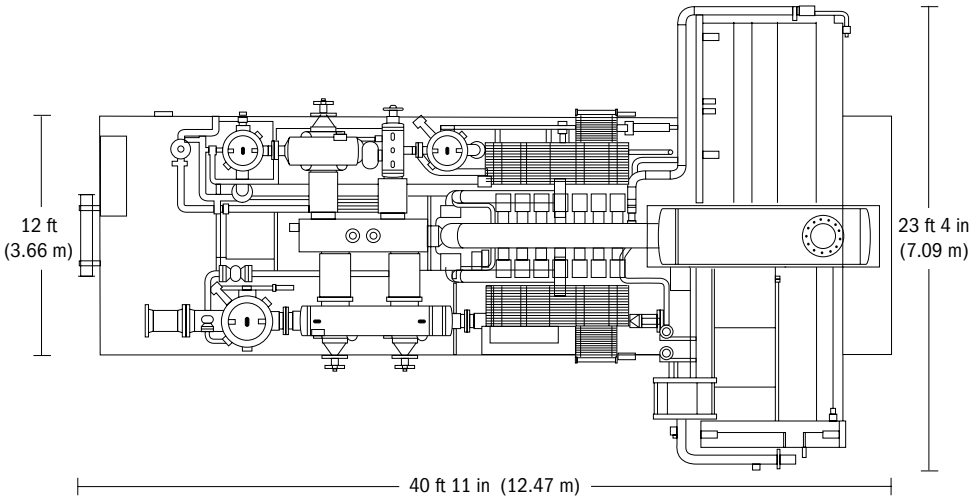
DIMENSIONS

Top View

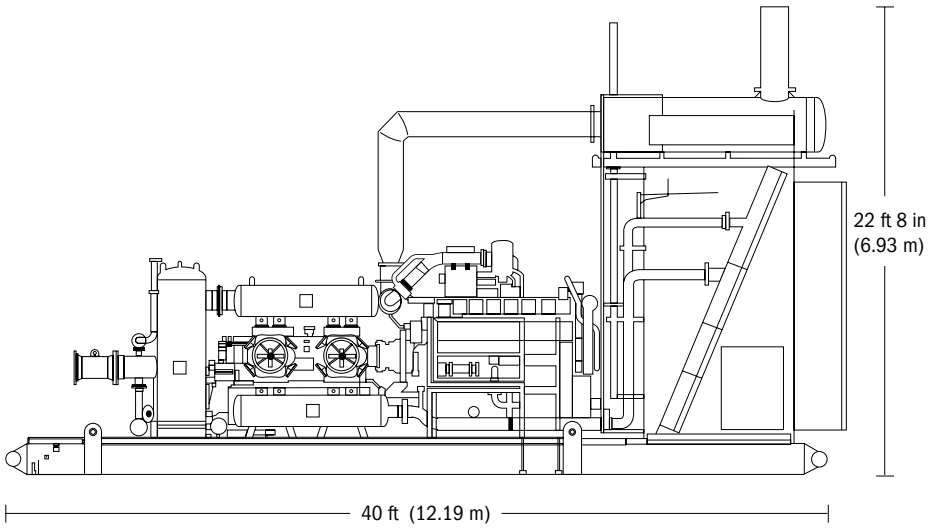
Overall skid length (shown in top view) is the maximum assembled length of the unit.



These illustrations show package with options not included on base models. Cooler and exhaust system are typically removed for shipping. Dimensions shown here are approximate and may vary. Precise measurements for freight permits should be confirmed prior to shipping.

Side View

This view represents the length of the skid and the overall height of the assembled unit.



ABOUT EXTERRAN

Exterran is a global leader in full-service natural-gas compression and a premier provider of equipment and services for petroleum production, gas processing, produced water treatment and more. We also offer turnkey services for the design, fabrication, installation and operation of complete production and processing facilities, as well as an extensive parts and service network. For more than 50 years Exterran has built a legacy of proven performance. We have abundant worldwide resources, unmatched experience and technical expertise, and an unwavering commitment to service. We help clients of all sizes reduce their operational and financial risks and achieve project success.

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