



# 900 SERIES

## DRILLING RIG

The Ingersoll-Rand 900 Series Drilling Rig is designed for reliability, fast rig-up and efficient operation. It is a performance proven drilling rig. It established its reputation as a mechanical drive rig and is available now in this design. However, the basic design has been expanded to offer new possibilities.

An electric drive drawworks group has been developed using one 1000 HP traction motor for both drawworks and rotary drive. The electric drive rig is available as both a single and double drum drawworks.

A split trailer version of the 900 rig has also been developed. The electric drive rig utilizes this trailer mount while the mechanical drive rig may be either self propelled or trailer mounted. The split trailer design separates the original mechanical self propelled rig into two loads to control package weights where permissible limits may cause problems. The drawworks trailer including the drawworks, its power group and the hydraulic power unit moves as a load. The mast on its own bogie moves with its hydraulic raising system, the reserve line spool and the traveling block in strung-up condition.

As a mechanical drive self propelled rig, the two engine power package, compound drawworks, heavy duty rotary drive and deep section mast are unitized into one self propelled load.

Either the trailer rig or the self propelled rig may be matched with a choice of single piece or multiple piece substructures with 17' floor height, reducing moving and rig-up time to a minimum.

### MECHANICAL DRIVE ARRANGEMENT

**POWER**—Two engines (any make) totaling up to 950 horsepower at 2100 RPM. Provides single or two engine power to all rig functions, including hoisting, rotating, mud pump or roading. Engines are high mounted for convenient accessibility to encourage good preventive maintenance.

**TORQUE CONVERTERS**—Two converters individually matched to engines selected. Automatic lockup feature in each converter for maximum efficiency.

**TRANSMISSIONS**—Allison CLT 5861 in combination with converters. Synchronized

full load shifting with five forward speeds and one reverse speed. Driller can instantly select the proper gear in any operation. The wide range of speeds available to the drawworks reduces dwell time between speed ranges and reduces total trip time.

**COMPOUND**—Integral with final drum drive. Idler adjusted high speed roller chain in oil bath case compounding each engine drive to drawworks drum shaft.

**DRAWWORKS**—Model 2346. Large diameter drum barrel with 12" x 46" water circulating type brake rims bolted to drum. Full wrap, single point adjusted, fully equalized brake bands. Outboard drum clutch for easy maintenance. 60,000# single line pull, Parmac V-80 brake driven through overrunning coupling.

**CATWORKS**—Hydraulic catworks including high capacity breakout cylinder, spinning and make-up cylinder and planetary gear, self-locking handling winch for smooth, safer catheading operations.

**DRAWWORKS DRIVE**—Heavy-duty propeller shaft drive through two Model 450 right-angle gear boxes and compounding chains to drawworks drum shaft. Allows individual power transmission from either engine directly to drum shaft.

**ROTARY DRIVE**—Propeller shaft via full air rotary clutch, heavy-duty reverse gear box, and oil bath roller chain elevated rotary drive, unitized on back face of mast. Simple propeller shaft connection at rig-up and rig-down. Nominal max. rotary speed—220 RPM. Nominal table working torque—30,000 ft. lbs.

**CARRIER**—The mechanical drive rig is provided with a six axle, triple front, triple rear, 134,000# capacity carrier. It is designed to meet all highway safety requirements and to provide required off-highway reliability and toughness.

### ELECTRIC DRIVE ARRANGEMENT

—The 900E Series rig is designed as an SCR electric powered rig. One GE 752 (or equivalent) 1000 HP traction motor provides power to both the drawworks and the rotary. The drawworks drive is a two speed high/low

drum clutch arrangement. An optional sand drum assembly may be mounted in the drawworks group. The rotary drive is taken from the drawworks drive via a Model 600 right angle gear box. The full air rotary clutch is mounted on the right angle drive output shaft. A propeller shaft drive and oil bath roller chain elevated drive mounted on the back face of the mast complete the rotary drive. See page 22 for details of this drawworks group.

### FEATURES COMMON TO BOTH MECHANICAL AND ELECTRICAL DRIVES

**MAST**—117' 350,000# API-rated telescoping mast. Deep derrick section for maximum torsional stability. Patented pawl mechanism assuring positive transfer of load from upper to lower section. Hydraulic cylinder raising and extending system for greater reliability and simplicity. Square tubular construction offers maximum rigidity and a capability to withstand unplanned abuse. Heavy-duty rigid racking board with side-mounted fingers provided with finger safety locks. Load guylines to carrier.

**CARRIER**—The mechanical drive rig is provided with a six axle, triple front, triple rear, 120,000# capacity carrier. It is designed to meet all highway safety requirements and to provide required off-highway reliability and toughness.

**TRAILER**—The mechanical drive and electric drive arrangements of the 900 Series rig are both available as trailer type split rig arrangements. Please see page 22 for details.

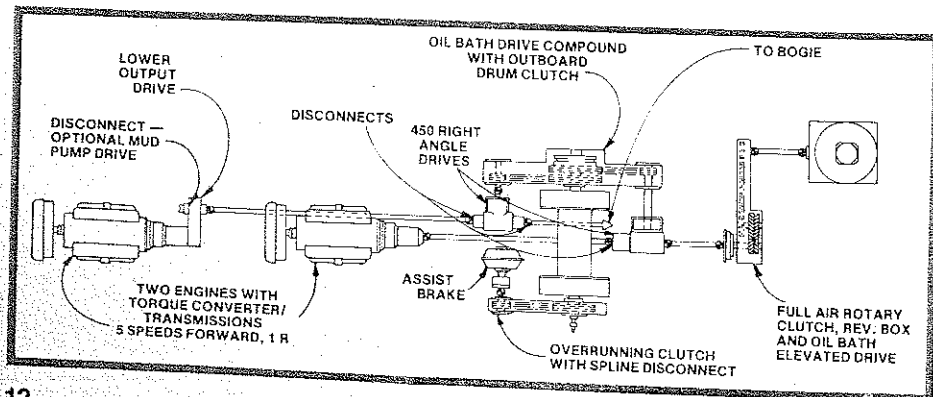
**SUBSTRUCTURE**—Choice of T-Type telescoping substructure with derrick base and rig base or stacked fixed height substructure with setback cross base and derrick cross base. 17' high structures. Either type provides wind guy anchorage eliminating external wind guy anchors. See pages 18-19 for details.

**HYDRAULIC POWER**—35 GPM 2500 psi max. pressure system. Provided by either of two pumps.

**POWER RESERVE LINE SPOOL**—Hydraulic powered reserve line spool. On self propelled rigs, spool is alongside carrier on off driller's side between front and rear bogies. On trailer rig, spool is on mast trailer assembly.

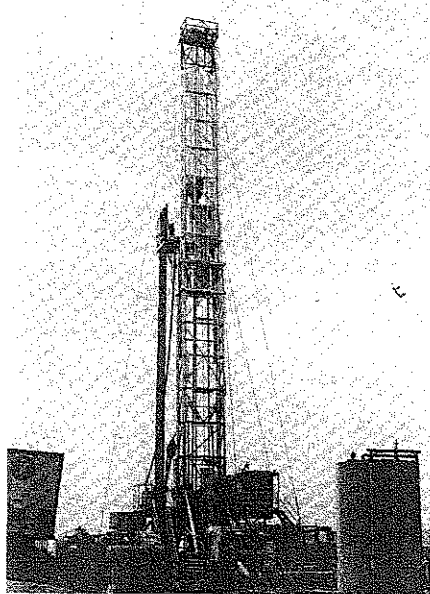
## INGERSOLL-RAND®

### OILFIELD PRODUCTS



# 7,000'-10,000' NOMINAL DEPTH RANGE, 4 1/2" D.P., DOUBLES 1000 HORSEPOWER

## MECHANICAL DRIVE: TWO ENGINES WITH TORQUE CONVERTERS ELECTRIC DRIVE: ONE DC TRACTION MOTOR



### SELF PROPELLED CARRIER SPECIFICATIONS MECHANICAL DRIVE ARRANGEMENT

CARRIER MODEL	C9-982-300
WHEELBASE (from centerline of front triple to centerline of rear triple)	300"
TYPE FRAME (Hi-strength steel)	22" Fab. Channel
TYPE SUSPENSION	Front-Spring Rear-Walking Beam Third Axle Air
FRONT AXLE SERVICE RATING	(3) DCB 66,000#
REAR AXLE SERVICE RATING	Triple with DP 460 P 68,000#
STANDARD TIRES	Front: 18.00 x 22.5 16 Ply Duplex Rear: 10.00 x 20 12 Ply Nylon

For split trailer package see p. 22.

### TYPICAL RIG FIELD WEIGHTS

FRONT	66,900#
REAR	67,200#
TOTAL	134,100#

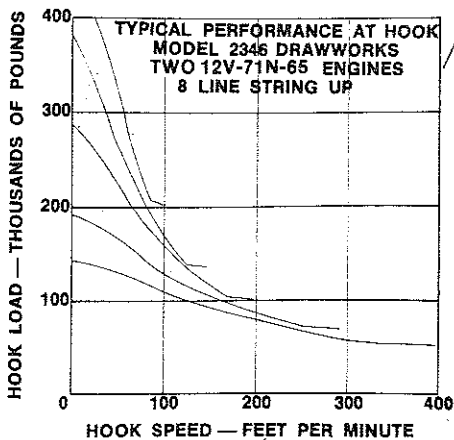
### TYPICAL POWER

#### ENGINES (HP @ RPM)

Note: Horsepowers shown are manufacturer's ratings at SAW Std. conditions (85°F. and 500' altitude). Deduction must be made for fan, compressors, and intake and exhaust system losses.

- (2) DDED 12V-71N @ 456 HP each. Total 912 HP @ 2100 RPM.
- (2) DDED 12V-71T @ 485 HP each. Total 970 HP @ 2100 RPM.
- (2) Caterpillar 3408 @ 475 HP each. Total 950 HP @ 2100 RPM.

For electric drive see p. 22.



### MODEL 2346 DRAWWORKS SPECIFICATIONS MECHANICAL DRIVE ARRANGEMENT

Drawworks Horsepower Rating	800-950
Drum Dia. x Length	23 1/8" x 44"
Grooving - Counterbalanced LeBus	1 1/8"
Brakes, Water Cooled (Dia. x Width)	46" x 12"
Effective Brake Area	3,324 Sq. in.
Hoisting Speeds	5 Forward, 1 Reverse
Rotary Speeds	5 Forward, 1 Reverse
Parmac Brake	V80
Drum Clutch	PO 30" 2 Plate
Rotary Clutch	PO 18" 2 Plate
Brake Clutch	Overrunning, Type C or equivalent
Drum Drive Chains	Two 1 1/2" Triple
Rotary Drive Chain	1 1/2" Double
Brake Drive Chain	1 1/2" Quad

### MODEL 117 - 350 MAST SPECIFICATIONS

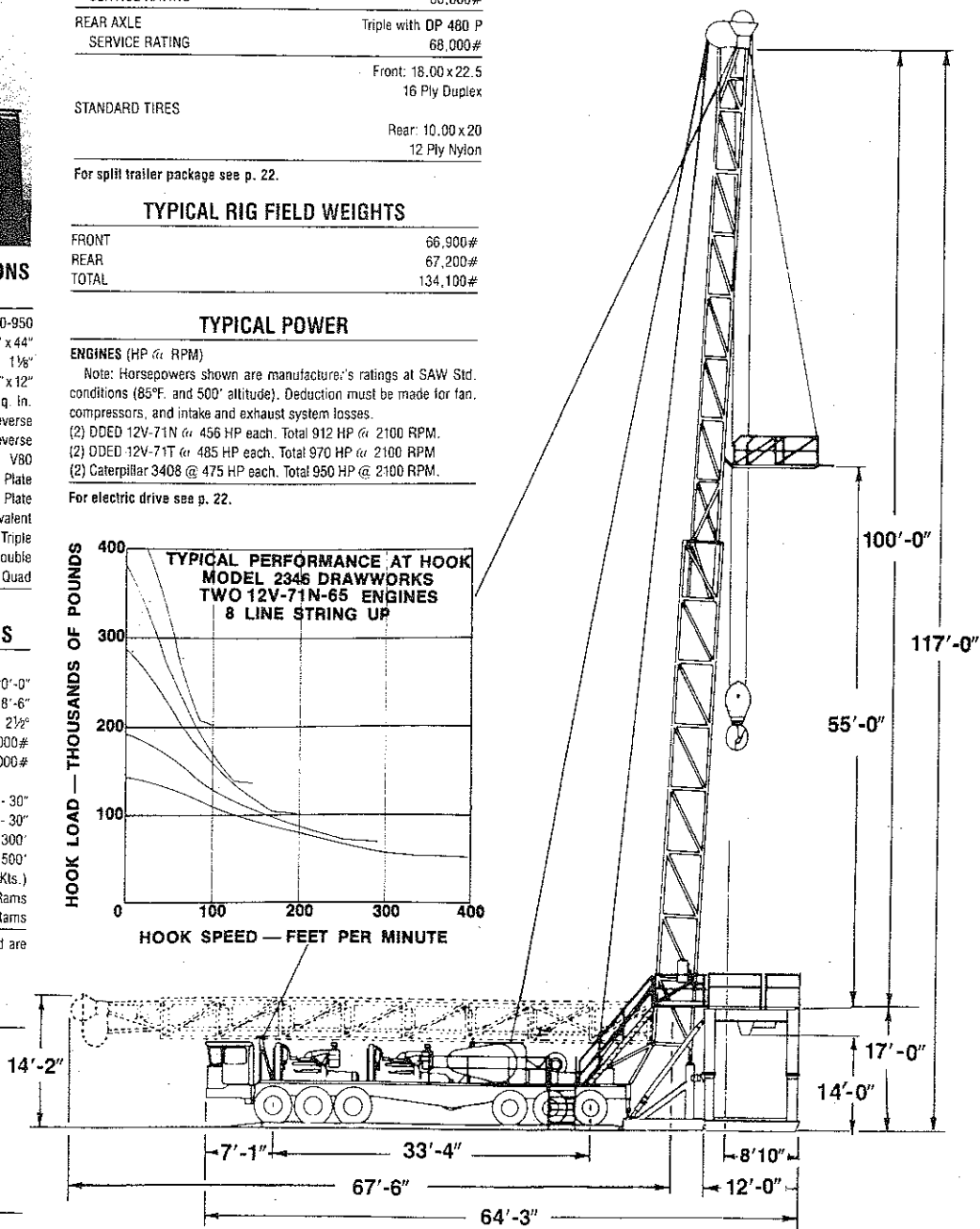
Type - Telescoping, Hydraulic Raised and Extended, Tilted	
Clear Height (with 17' Floor)	100'-0"
Leg Spread	8'-6"
Mast Tilt	2 1/2°
Hook Load Capacity (API Std. 4E)	(8 Lines) 350,000# (10 Lines) 365,000#
Crown: (Std.)	
Fast Line Sheave & Dead Line Sheave	1 - 36" & 1 - 30"
Cluster Sheaves	5 - 30"
Racking Capacity 4 1/2" OD D.P. 6 1/2" OD T.J.	10,300'
(Range 2 Doubles) 4" OD D.P., 6 1/2" OD T.J.	10,500'
Wind Rating with Full Setback	69 mph (60 Kts.)
Raising System	Two 3 Stage Double Acting Rams
Extending System	Two 1 Stage Single Acting Rams

NOTE: Four wind guys to crown and cross guys to racking board are recommended for wind stability.

### SUBSTRUCTURE SPECIFICATIONS\*

Type - Cross-Type, Single Piece, Telescoping	
Floor Height	17'-0"
Bottom of Rotary Beam Clearance	14'-0"
Door Size, Length x Width	13'-8" x 26'-0"
Ground Overall Dimensions, Length x Width	40'-0" x 12'-0"
Rotary Capacity	350,000#
Setback Capacity	200,000#
Total Simultaneous Capacity	550,000#

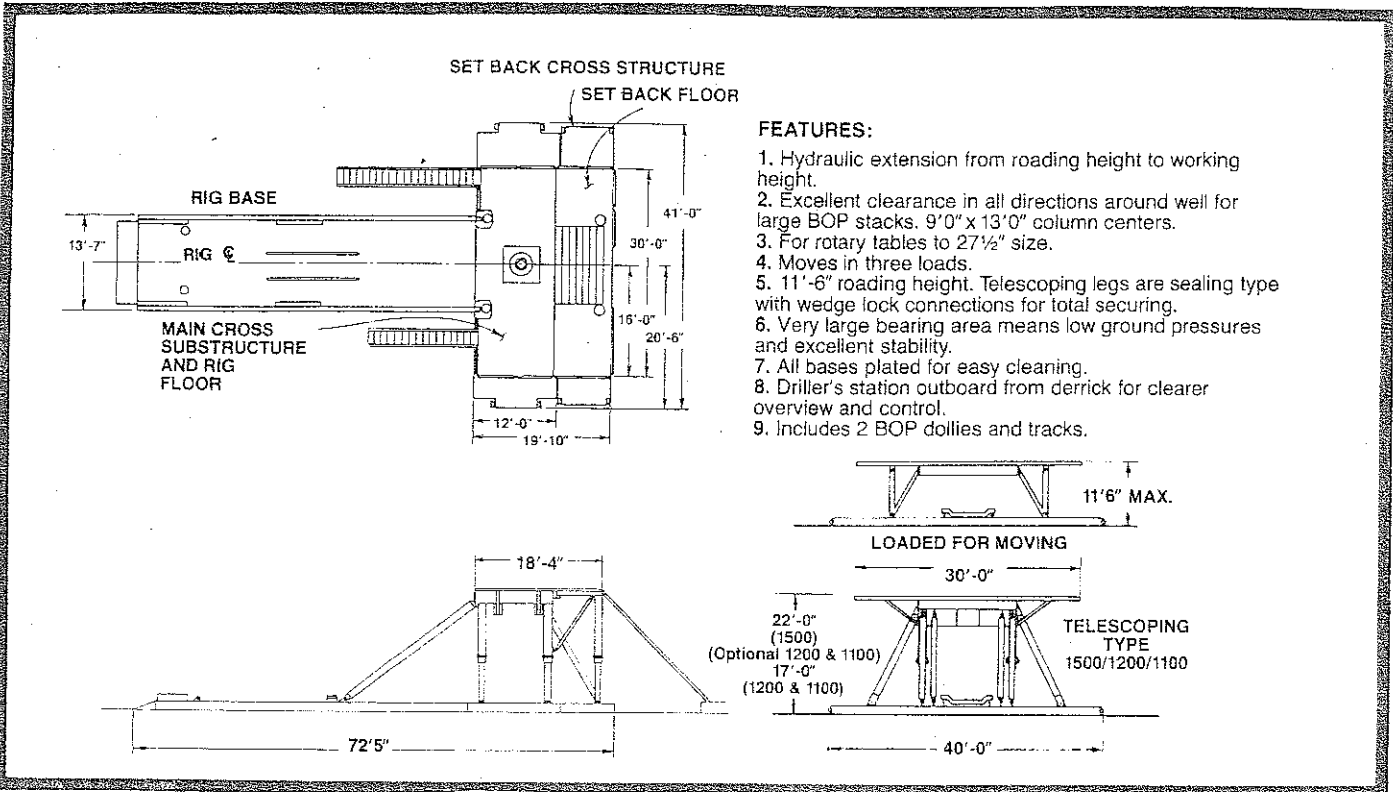
\*Optional Types Available



# SUBSTRUCTURES

1500/1200/1100  
SERIES

**HIGH CROSS-TYPE SUBSTRUCTURE WITH TELESCOPING SINGLE-PIECE MAIN STRUCTURE, SETBACK FLOOR, SETBACK BASE AND RIG BASE**

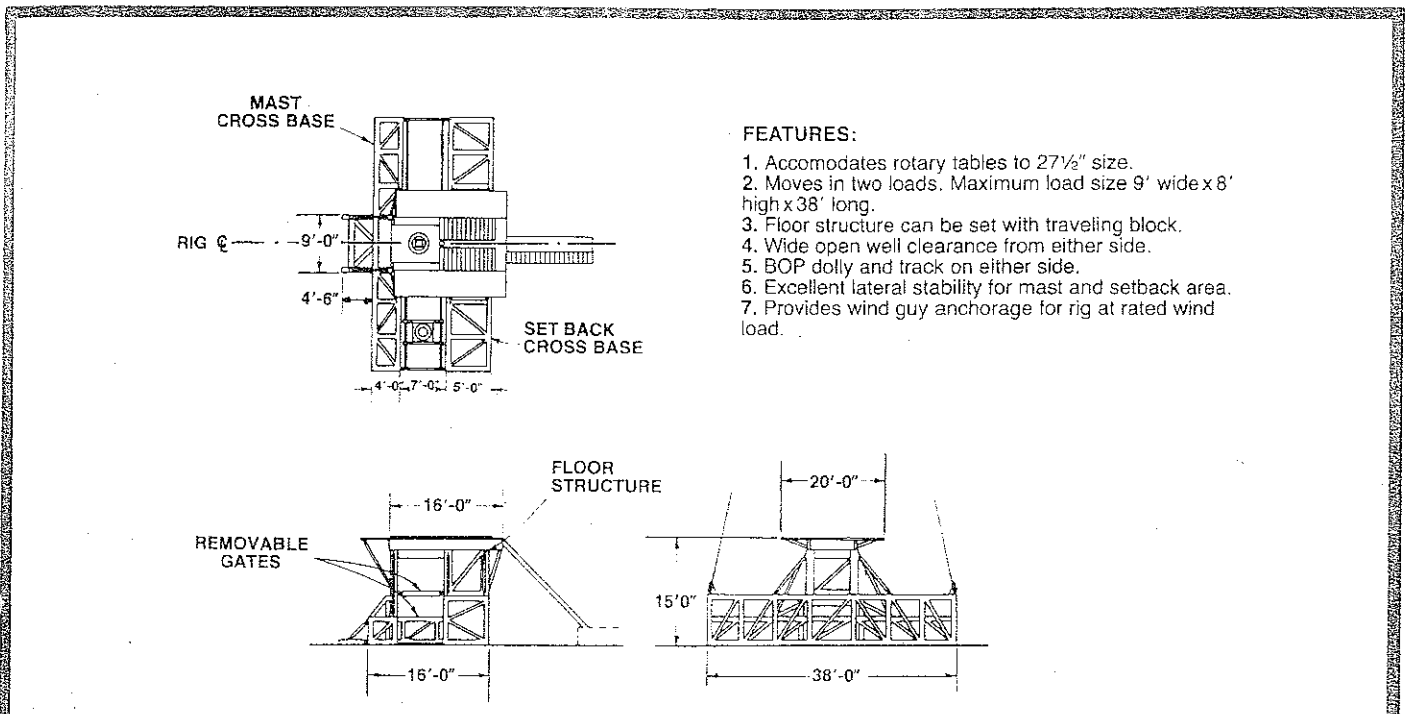


**FEATURES:**

1. Hydraulic extension from roading height to working height.
2. Excellent clearance in all directions around well for large BOP stacks. 9'0" x 13'0" column centers.
3. For rotary tables to 27½" size.
4. Moves in three loads.
5. 11'-6" roading height. Telescoping legs are sealing type with wedge lock connections for total securing.
6. Very large bearing area means low ground pressures and excellent stability.
7. All bases plated for easy cleaning.
8. Driller's station outboard from derrick for clearer overview and control.
9. Includes 2 BOP dollies and tracks.

**STACKED SUBSTRUCTURE WITH SETBACK CROSS BASE AND MAST CROSS BASE**

900/750  
SERIES



**FEATURES:**

1. Accomodates rotary tables to 27½" size.
2. Moves in two loads. Maximum load size 9' wide x 8' high x 38' long.
3. Floor structure can be set with traveling block.
4. Wide open well clearance from either side.
5. BOP dolly and track on either side.
6. Excellent lateral stability for mast and setback area.
7. Provides wind guy anchorage for rig at rated wind load.