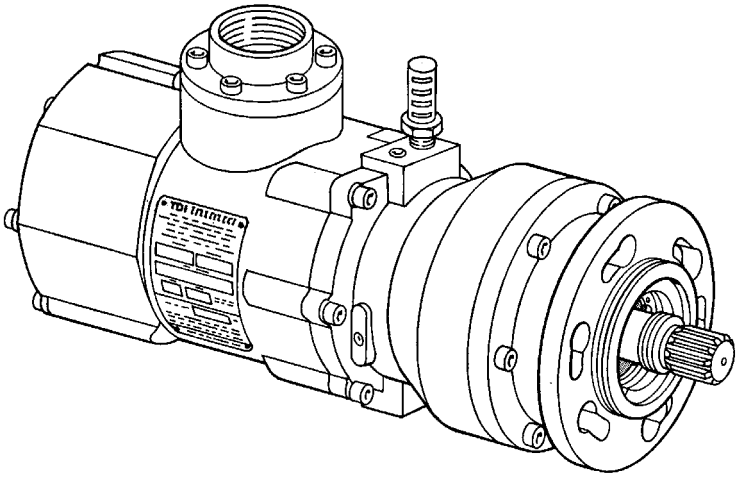


TDI
TURBOSTART™
Model 56B

INDUSTRIAL GAS TURBINE STARTER

- The TDI *TURBOStart* Series turbine powered starter motor is designed for application to industrial gas turbines derived from aviation engines. The Model 56B has a mounting flange and output shaft spline that will mate with any engine utilizing a MS 3332-2 (AS) Type G engine accessory drive pad. The 56B is also ideally suited for cranking the Dresser Rand DR990 & DJ50 gas turbine engines. These engines are widely used for electrical power generation, industrial drives, and marine propulsion.

APPLICATION VERSATILITY

- The 56B uses a robust turbine drive motor design. Properly installed, the turbine motor is highly resistant to damage caused by wet or hard contaminates in the drive air/gas.

CONTAMINATED SUPPLY AIR/GAS

- For natural gas operation the starter is fitted with Marman V-band adapters on both the inlet and exhaust ports. For operation on compressed air, a turbine guard screen is supplied. A variety of inlet and exhaust adapters are available on request.

INSTALLATION FLEXIBILITY

- The Model 56B provides significantly lower life cycle costs when compared to both the acquisition and operating costs of aviation derived starters. For industrial turbine engine application, the Model 56B provides superior performance and reliability at substantial savings over other starter alternatives.

LOWER LOST

- The starter can be operated using compressed air or natural gas pressures up to 150 psig (10 BAR). The 56B produces up to 180 HP on natural gas. See performance data.

CRANKING POWER

- The Model 56B starter incorporates the TDI low mass turbine rotor designed to fracture in a precisely engineered and inherently safe manner should the starter ever over speed.

SAFETY

- The Model 56B features an internal (vented) oil sump, which functions as a stand-alone method of starter lubrication. The Model 56B also provides pressure lubrication ports which permit optional extension of the engine oil system to facilitate starter lubrication. This option is preferred by some operators when using the Model 56B.

LUBRICATION OPTIONS

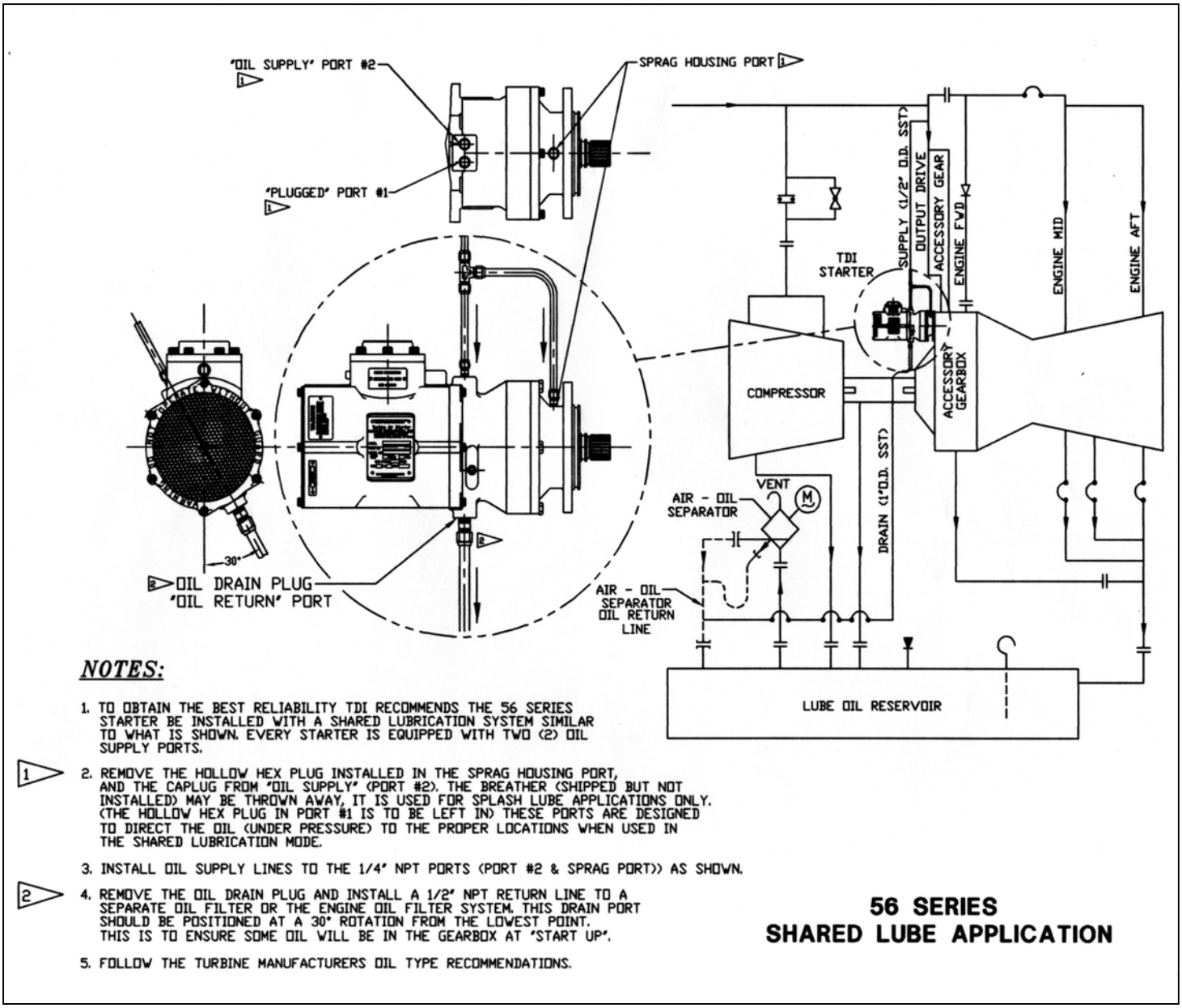
from **TECH DEVELOPMENT**
6800 Poe Avenue •Dayton, OH 45413
Tel: 937-898-9600 •Fax: 937-898-8431

DESCRIPTION OF OPERATION

- An axial flow turbine coupled to an integral planetary gear reduction set powers the Model 56B starter. The turbine power combined with the planetary gear reducer results in a very efficient and compact unit. The Model 56B incorporates a sprag type overrunning clutch in the starter gearbox drive train to provide a means of disengaging the starter from the gas turbine engine once the starter cutout speed has been reached. The Model 56B starter can be operated using either compressed air or natural gas.

DEVELOPMENT HISTORY

- Tech Development Inc. introduced the first turbine technology for starting industrial engines in 1979. The *TURBOStart* 56 series air starters feature an innovative and more reliable turbine motor than any other gas turbine starter on the market today. The 56B is the result of TDI's continuing turbine starter design innovations.



NOTES:

1. TO OBTAIN THE BEST RELIABILITY TDI RECOMMENDS THE 56 SERIES STARTER BE INSTALLED WITH A SHARED LUBRICATION SYSTEM SIMILAR TO WHAT IS SHOWN. EVERY STARTER IS EQUIPPED WITH TWO (2) OIL SUPPLY PORTS.
2. REMOVE THE HOLLOW HEX PLUG INSTALLED IN THE SPRAG HOUSING PORT, AND THE CAPLUG FROM "OIL SUPPLY" (PORT #2). THE BREATHER (SHIPPED BUT NOT INSTALLED) MAY BE THROWN AWAY, IT IS USED FOR SPLASH LUBE APPLICATIONS ONLY. (THE HOLLOW HEX PLUG IN PORT #1 IS TO BE LEFT IN) THESE PORTS ARE DESIGNED TO DIRECT THE OIL (UNDER PRESSURE) TO THE PROPER LOCATIONS WHEN USED IN THE SHARED LUBRICATION MODE.
3. INSTALL OIL SUPPLY LINES TO THE 1/4" NPT PORTS (PORT #2 & SPRAG PORT)) AS SHOWN.
4. REMOVE THE OIL DRAIN PLUG AND INSTALL A 1/2" NPT RETURN LINE TO A SEPARATE OIL FILTER OR THE ENGINE OIL FILTER SYSTEM. THIS DRAIN PORT SHOULD BE POSITIONED AT A 30° ROTATION FROM THE LOWEST POINT. THIS IS TO ENSURE SOME OIL WILL BE IN THE GEARBOX AT "START UP".
5. FOLLOW THE TURBINE MANUFACTURERS OIL TYPE RECOMMENDATIONS.

56 SERIES
SHARED LUBE APPLICATION

from **TECH DEVELOPMENT**
6800 Poe Avenue •Dayton, OH 45413
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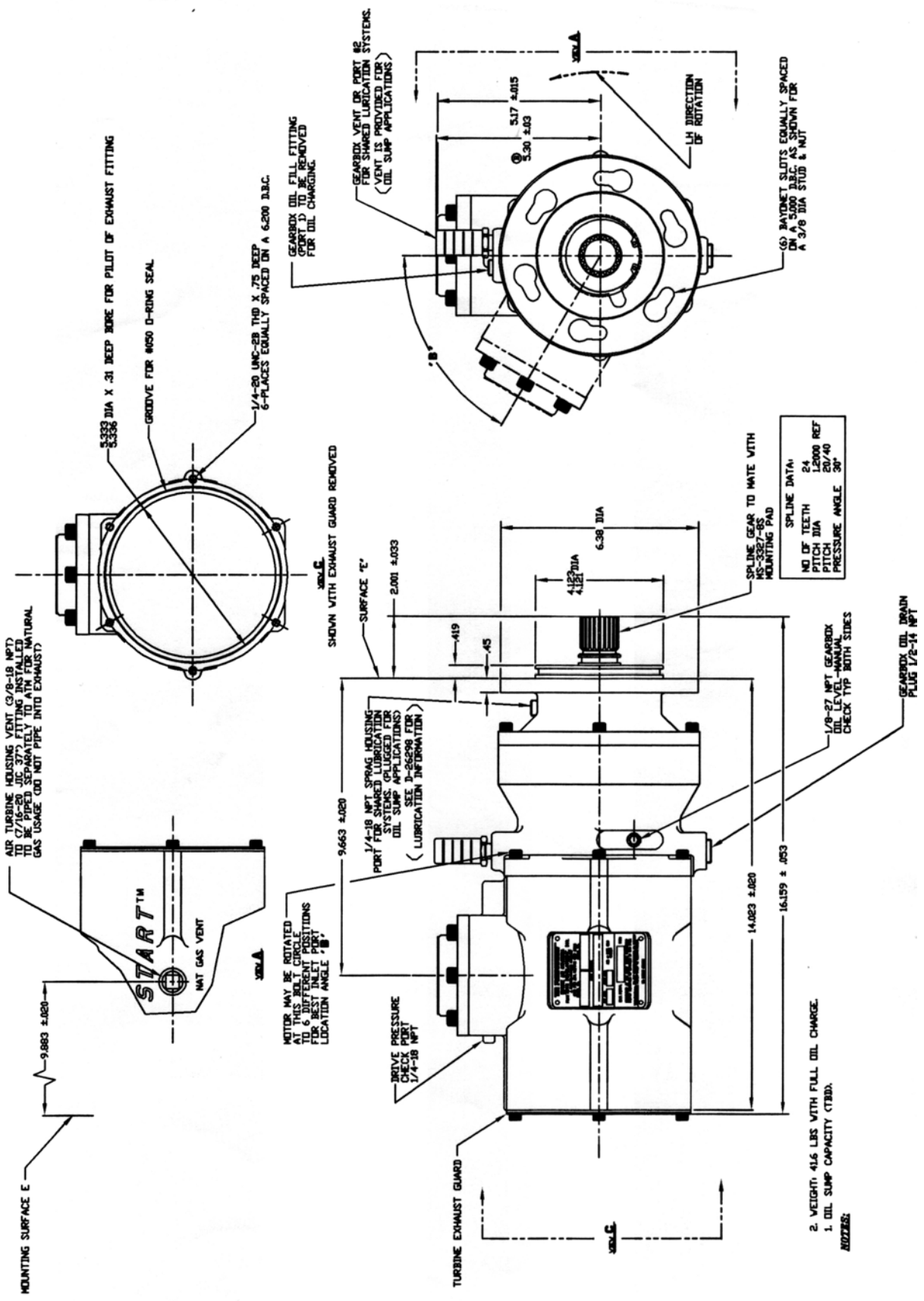

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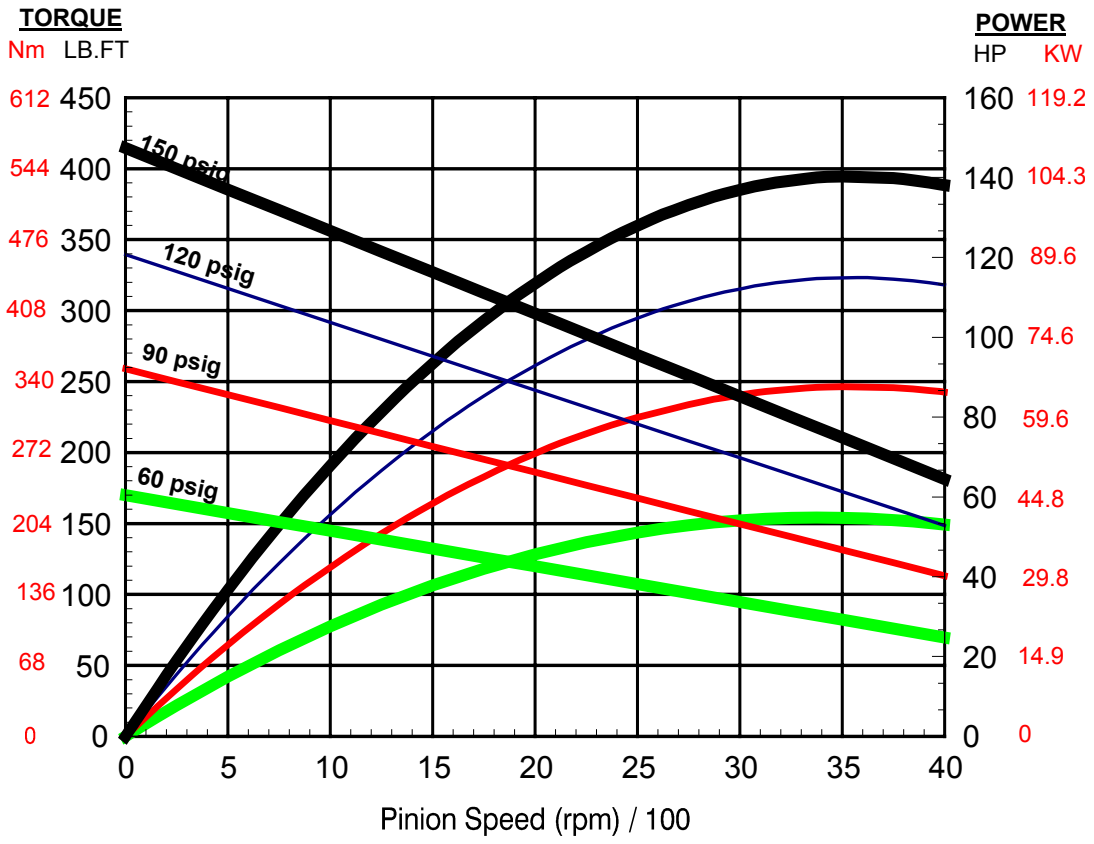
TDI *TURBOTWIN*

MODEL: 56B PERFORMANCE CURVES

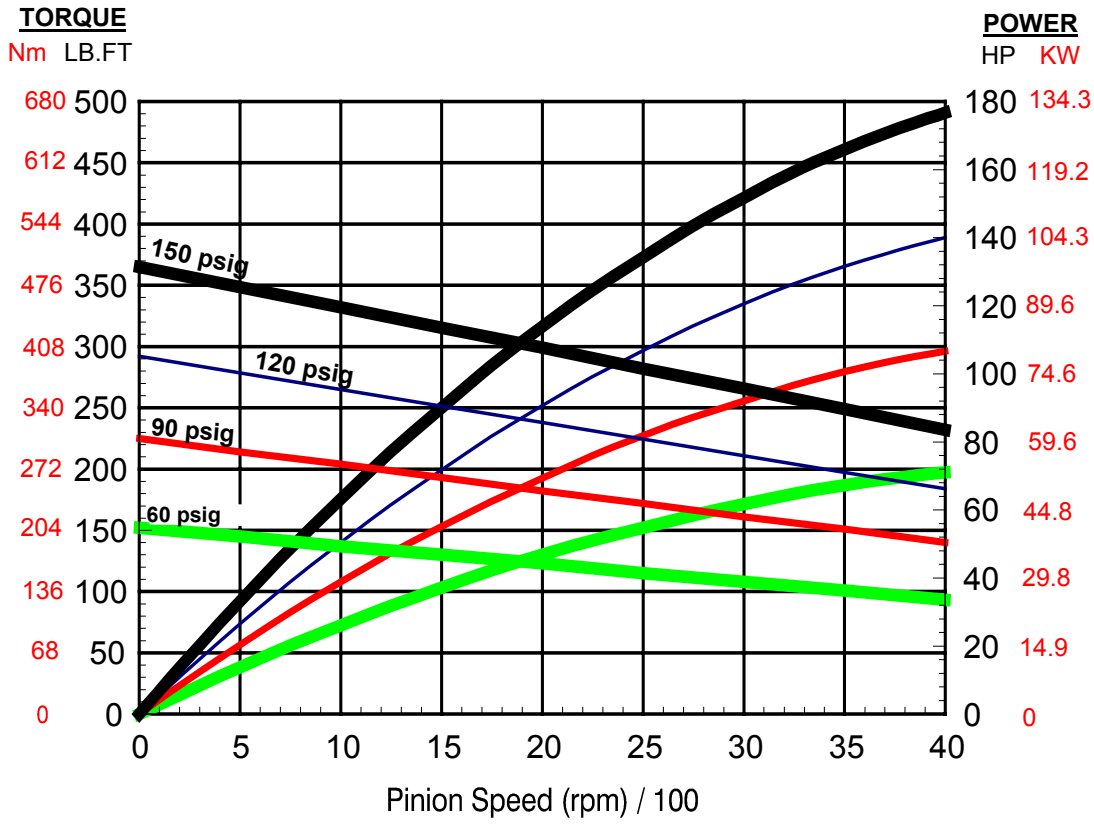
Model: 56B
21 Nozzles
70° F Compressed Air
9.0:1 Gear Ratio

INLET Pressure	FLOW (Scfm)	FLOW (Nm3/h)
60 PSIG	1050	1785
90 PSIG	1450	2465
120 PSIG	1940	3298
150 PSIG	2370	4029



Model: 56B
21 Nozzles
70° F Methane Gas
9.0:1 Gear Ratio

INLET Pressure	FLOW (Scfm)	FLOW (Nm3/h)
60 PSIG	1475	2508
90 PSIG	2070	3519
120 PSIG	2660	4522
150 PSIG	3255	5534



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