

# TDI **TURBOSTART™** Model 56K

## 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 56K has a mounting flange and output shaft spline that will mate with any engine utilizing an AND 20002 Type XII-S engine accessory drive pad. The 56K is ideally suited for cranking the Allison 501K gas turbine engines. These engines (Direct Drive Shaft – 1:1 Ratio) are widely used for electrical power generation, industrial drives, and marine propulsion.
- The 56K uses a robust turbine drive motor design. Properly installed, the turbine motor is highly resistant to damage caused by wet or hard contaminants in the drive air/gas.
- For natural gas operation the starter is fitted with a 90° elbow adapter on the starter exhaust. For operation on compressed air, a turbine guard screen is supplied. A variety of inlet and exhaust adapters are available on request.
- The Model 56K 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 56K provides superior performance and reliability at substantial savings over other starter alternatives.
- The starter can be operated using compressed air or natural gas pressures up to 90 psig (6 BAR). The 56K produces up to 120 HP on natural gas. See performance data.
- The Model 56K 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.
- The Model 56K features an internal (vented) oil sump, which functions as a stand-alone method of starter lubrication. The Model 56K 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 56K.

**APPLICATION  
VERSATILITY**

**CONTAMINATED  
SUPPLY AIR/GAS**

**INSTALLATION  
FLEXIBILITY**

**LOWER COST**

**CRANKING POWER**

**SAFETY**

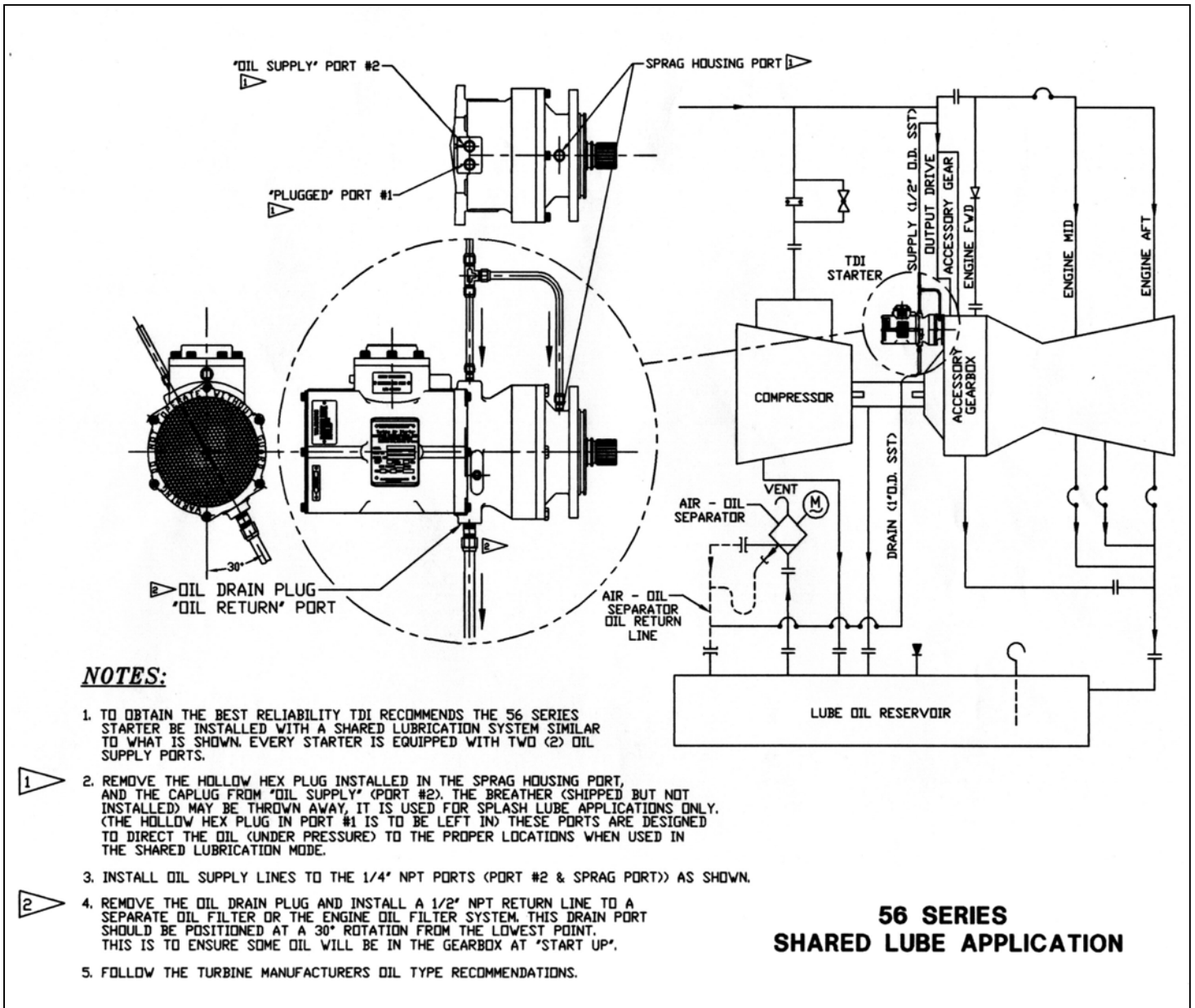
**LUBRICATION  
OPTIONS**

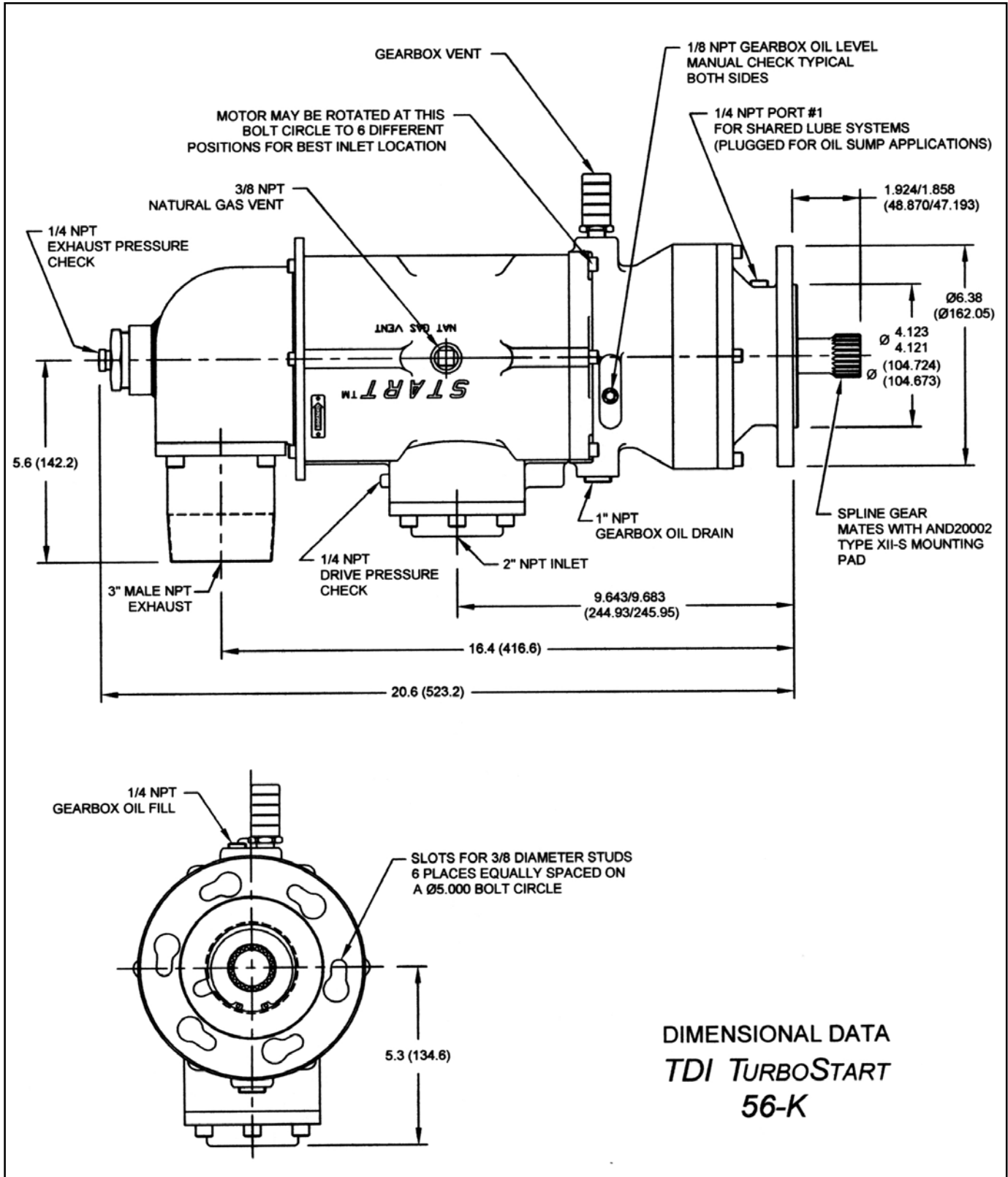
- An axial flow turbine coupled to an integral planetary gear reduction set powers the Model 56K starter. The turbine power combined with the planetary gear reducer results in a very efficient and compact unit. The Model 56K incorporates a sprag type overrunning clutch in the starter gearbox drive train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

## DESCRIPTION OF OPERATION

- 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 56K is the result of TDI's continuing turbine starter design innovations.

## DEVELOPMENT HISTORY

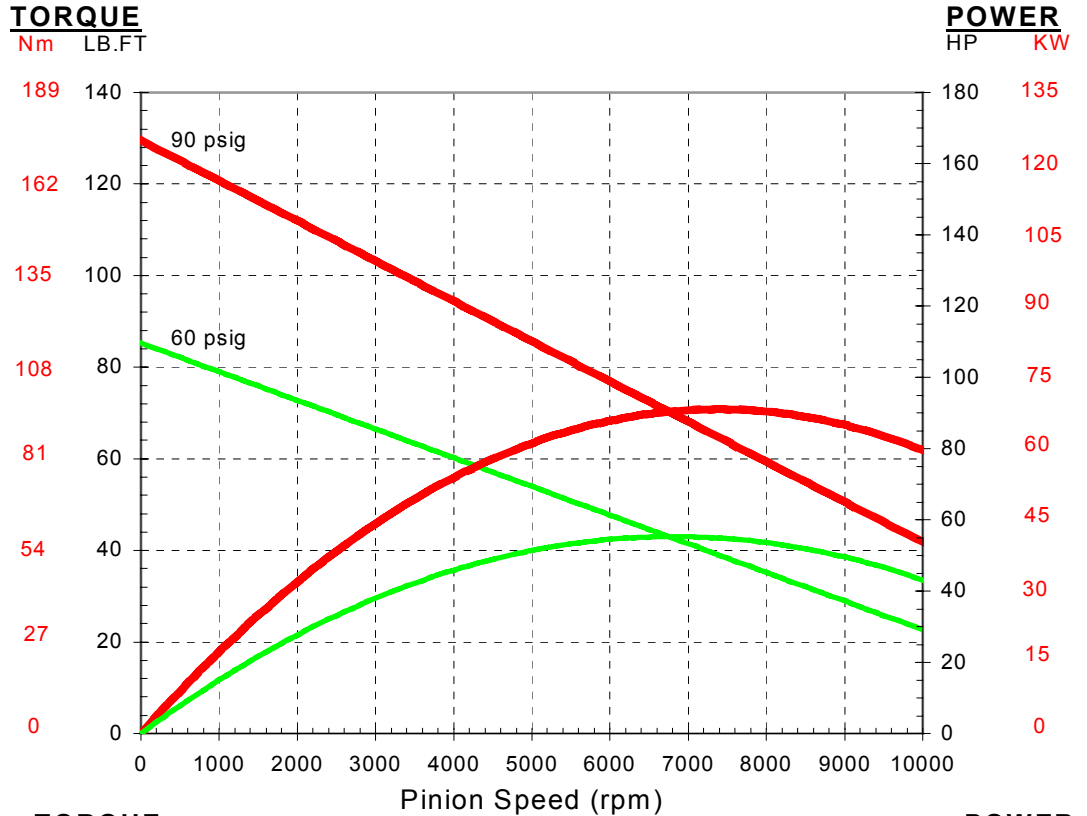




**TDI TURBOSTART**  
**MODEL: 56K**  
**PERFORMANCE**  
**CURVES**

Model: 56K  
 21 Nozzles  
 70° F Compressed Air  
 4.5:1 Gear Ratio

INLET Pressure	FLOW (Scfm)	FLOW (Nm <sup>3</sup> /h)
60 PSIG	1050	1785
90 PSIG	1450	2465



Model: 56K  
 21 Nozzles  
 70° F Methane Gas  
 4.5:1 Gear Ratio

INLET Pressure	FLOW (Scfm)	FLOW (Nm <sup>3</sup> /h)
60 PSIG	1475	2505
90 PSIG	2070	3520

