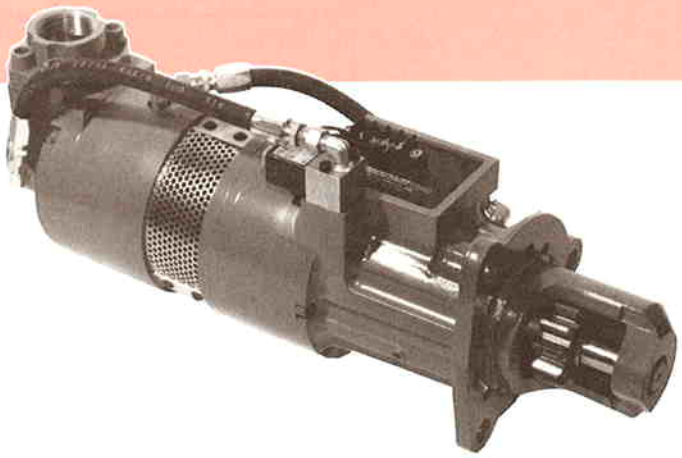
MODEL **45M**

ENGINE STARTERS For On-Highway Vehicles

PRODUCT SPECIFICATION



GENERAL INFORMATION

The TDI *TURBOSTARTTWO*™ Model 45M is a turbine driven engine starter designed for use with diesel engines of up to 1220 CID (20L). The light weight Model 45M delivers high break away torque within a wide range of inlet air pressures and ambient temperatures.

Evolving from the field-proven line of TDI *TURBOSTART*™ turbine-driven† engine air starters, the Model 45M utilizes a pre-engage starter drive to reduce ring gear and pinion wear. It has integral solenoid and relay valves that control starter operation and simplify installation. It also has the exclusive TDI *TURBOSTARTTWO*™ electronic control module, which prevents unintentional engagement and automatically shuts off the starter after the engine is running, preventing excessive cranking speeds and wasted compressed air. You may even select among several turbine nozzle choices and two gear ratios to provide the best possible starter match for your engine application.

TYPICAL MODEL 45M PERFORMANCE

No. of Nozzles	Drive Air PSIG (Bar)	Starting Torque Lb-Ft (Nm) Ratio MA	Starting Torque Lb-Ft (Nm) Ratio MB	Max Power HP (Kw)	Air Usage SCFS (M³/ Sec)
6	60 (4.1)	59 (80)	48 (65)	7 (5)	4 (.11)
	90 (6.2)	88 (119)	72 (97)	13 (9)	5 (.16)
	120 (8.3)	118 (160)	98 (133)	21 (15)	7 (.21)
	150 (10.3)	145 (196)	115 (156)	27 (20)	9 (.25)
7	60 (4.1)	69 (93)	55 (74)	8 (6)	5 (.14)
	90 (6.2)	106 (144)	84 (114)	15 (11)	7 (.20)
	120 (8.3)	139 (188)	110 (149)	23 (17)	8 (.24)
	150 (10.3)	173 (234)	137 (185)	32 (24)	10 (.30)
8	60 (4.1)	79 (107)	62 (84)	10 (7)	5 (.15)
	90 (6.2)	120 (162)	95 (129)	18 (13)	7 (.21)
	120 (8.3)	160 (217)	126 (170)	28 (21)	9 (.26)
	150 (10.3)	198 (268)	156 (211)	35 (26)	11 (.32)
9	60 (4.1)	89 (120)	70 (95)	11 (8)	6 (.16)
	90 (6.2)	133 (180)	105 (142)	20 (15)	8 (.23)
	120 (8.3)	177 (240)	140 (190)	30 (22)	11 (.31)
	150 (10.3)	222 (301)	175 (237)	39 (29)	13 (.37)

OPERATING BENEFITS

- **Low Weight** - Increases cash generating payloads of up to 250 pounds per truck by eliminating starter batteries and electrical cables.
- **Simple Installation** - One electrical connection and one air connection substantially simplifies installation. Optional O-ring face seals virtually eliminate leak-down potential.
- **Longer Life** - Two to three times longer life than conventional electric starters. Flow-through turbine design tolerates liquid or foreign matter in the air stream.
- **Less Air Consumption** - New, super-efficient turbine drive increases the number of starts you get from a smaller, lighter tank.
- **No Lubrication Necessary** - Eliminates problems and expenses associated with supply air lubricator systems. Because the Model 45M has no internal rubbing parts, exhaust air is clean.
- **Low Noise** - Turbine drive produces significantly less noise than competitive designs.
- **Reliability** - Reduced battery usage means more up-time; enviornmentally cleaner, less hazardous operation; less electrical load on remaining battery.
- **Better Starts** - Factory adjusted RPM range offers *optimum* RPM at -20° as well as at 270° F.

† Covered by one or more of the following patents: U.S. - 4507047, 4509896, 4518310; U.K. - 2119863, 2126662.

TDI *TURBOSTARTTWO*™
Engine Starters

FROM
TECH DEVELOPMENT INC.

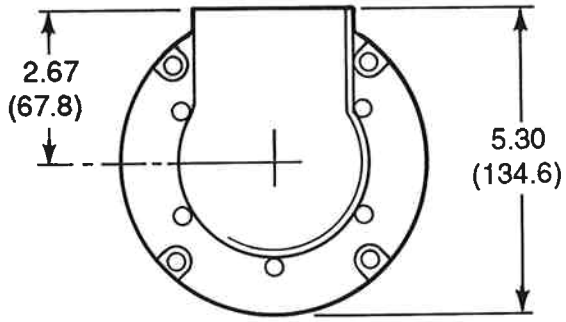
Model 45M Engine Starter Installation Drawing

GENERAL DATA

A	=	Inlet Housing
B	=	Containment Ring
C	=	Turbine Assembly
D	=	Ring Gear
E	=	Gearbox Assembly
F	=	Drive Housing

Operating Range	9 to 32 Volts DC	
	-20° F to 270° F	-29° C to 132° C
	40 to 150 PSI	2.8 to 10.3 Bar
Weight	43 Lb.	19.5 Kg.
Mountings Available	SAE 1, 2, & 3	"U" for Europe
Engine Sizes	Up to 1220 CID	Up to 20.0 Liters
Overspeed Shutdown	2100 RPM; reset at 25 RPM	
Optional	2500 RPM; reset at 25 RPM	

Drawing shows dimensions in Inches and (Millimeters)



(For 1.5" NPT insert, add 1.2" to O/A height)

PART NUMBER CONFIGURATION CHART

45MB 0301R - 061 - 3 - 00

GEAR RATIO
- A = 20.25
- B = 15.95

MOUNTING FLANGE
- 01 = SAE 1
- 02 = SAE 2
- 03 = SAE 3

PINIONS
- 01 = RH, 6/8 pitch, 11 teeth
- 02 = RH, 8/10 pitch, 12 teeth
- 05 = RH, 3M pitch, 11 teeth
- 11 = LH, 6/8 pitch, 11 teeth
- 12 = LH, 8/10 pitch, 12 teeth

ROTATION
- R = RIGHT
- L = LEFT

NUMBER of NOZZLES
06 through 09

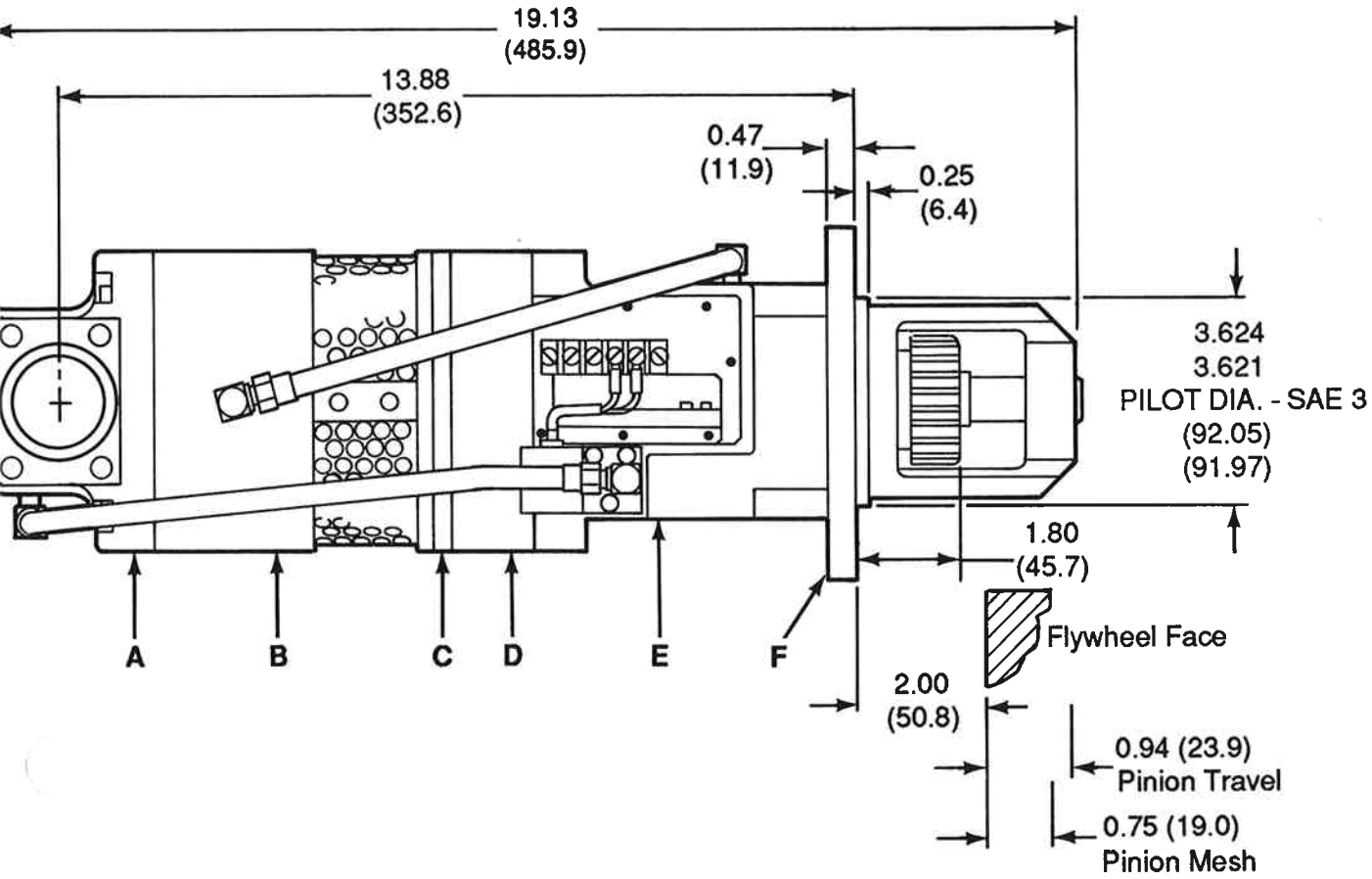
TRIP SPEED
- 1 = 2100 RPM
- 2 = 2500 RPM

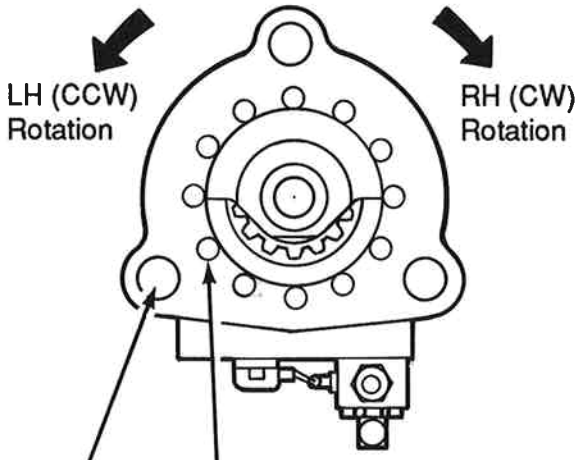
INLET THREAD
- 0 = NONE
- 1 = 3/4 NPT
- 2 = 1 NPT
- 3 = 1 1/4 NPT

SPECIAL FEATURES

COM

You may rotate
positions relative
rotate the Inlet Ho
to the Containme
on one centerline





12 bolts equally spaced permit drive housing to rotate to 12 positions.

Three 0.66 (16.76) dia. holes equally spaced on a 5.75 (146.1) DBC for SAE 3 mounting.

OMPONENT ORIENTATION

tate the Drive Housing (F) to twelve different ative to the Gearbox Assembly (E). You may also et Housing (A) to eight different positions relative nment Ring (B). The starter's motor and drive are erline for easy installation.

BARBER COLMAN COMPANY
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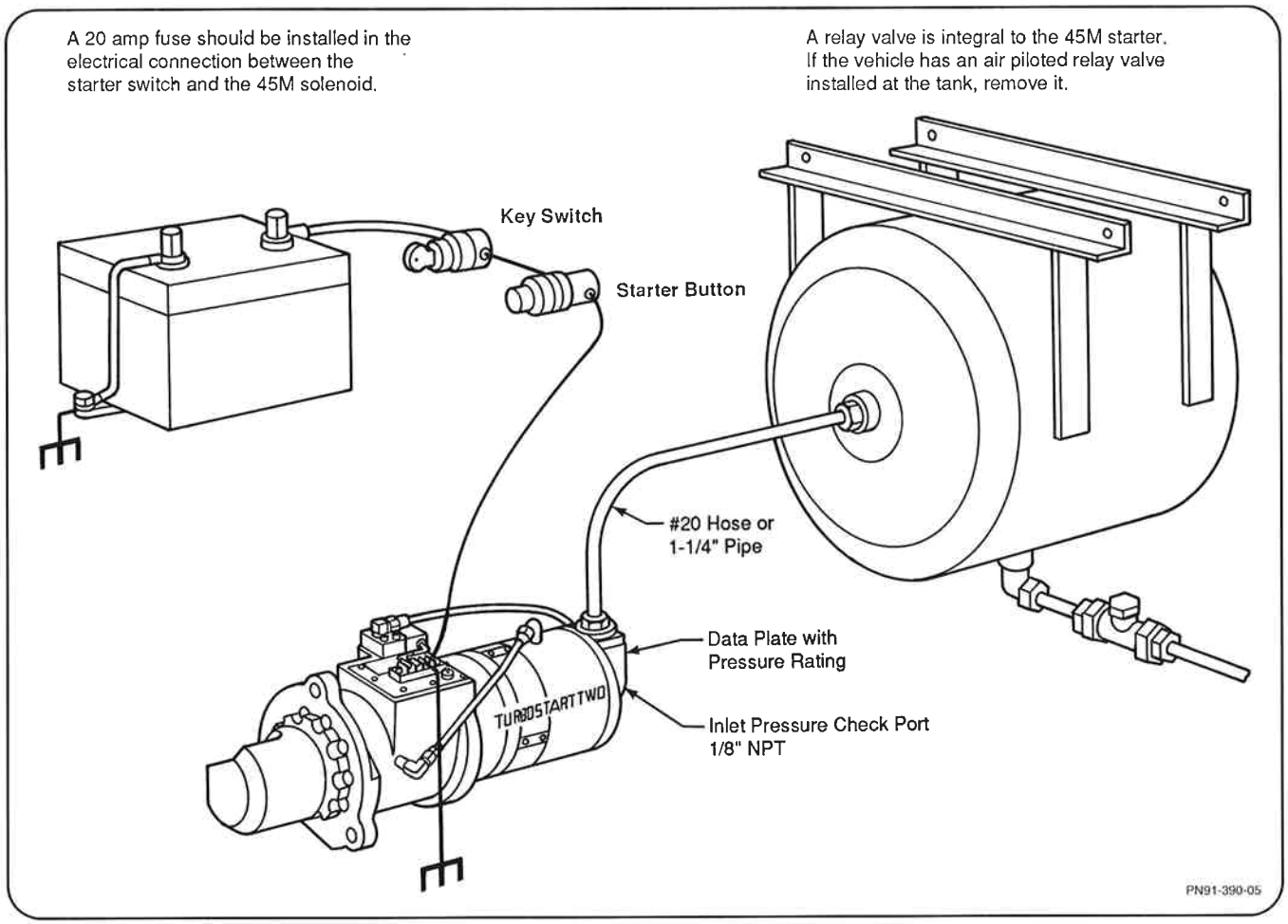
Model 45M
Engine Starters

INSTALLATION PLUMBING DIAGRAM



INSTALLATION INFORMATION

The drawing above shows a typical Model 45M installation.

- A tank pressure of 120 PSIG (8.3 Bar) generally provides reliable starting throughout the Model 45M operating range. *The maximum pressure limit for the Model 45M is 150 PSIG (10.3 Bar).*
- Because turbine starters are sensitive to flow restrictions, use uniform hose or tubing for connecting the supply air line. You may substitute a split flange adaptor for the supplied threaded air inlet adaptor as the hose fitting.
- If you are replacing a vane-type starter, you will also need to remove any in-line lubricator and relay/solenoid valves. The *TURBOSTARTTWO™* does not require these items.

WARRANTY

Tech Development Inc. offers a 2 year / 200,000 mile warranty with the TDI *TURBOSTARTTWO™*. The Model 45M is a product with designed-in quality. It is lighter, longer lasting, and will demonstrate superior performance in cold or hot weather conditions.

SYSTEM ACCESSORIES

TDI P/N	DESCRIPTION
2-22923	Air Tank, 53 Gallon, 14" x 84"
2-22924	Air Tank, 55 Gallon, 24" x 31"
2-22926	Air Tank, 45 Gallon, 14" x 72"
42-427	Cradle Bracket Kit, 24" Dia. Tank
42-433	Cradle Bracket Kit, 14" Dia. Tank

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