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**INTERNAL GEAR PUMPS  
IN  
STAINLESS STEEL**

RELIABLE PUMPING PARTNERS SINCE 1960'S



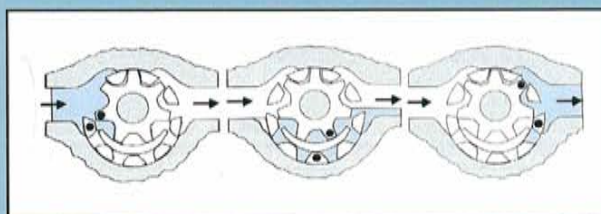
## INTRODUCTION

The very first pump produced by TUSHACO in 1968 was an Internal Gear Pump Mode R-1G for low pressure burner service - till this day it is in production with great success. Subsequently only TUSHACO had the foresight to introduce several other exotic designs, to take care of growing industrial demands, thus placing themselves on the forefront in the field of Rotary Positive Displacement Pumps. Experience gained over years in designing and building Rotary Pumps combined with knowledge in Application Engineering has resulted in this development of New Stainless Steel Internal Gear Series specifically for food, chemical and pharmaceutical industry. Computer aided designs, CNC in-house machining facilities and sophisticated test beds, together with TUSHACO dedication made instant success of the New Internal Gear 'IG' Series from day one.

Innovative, simple construction has ensured very easy maintenance and totally reliable hassle-free installation. A glance at the reference list of scores of pumps delivered for New Food Processing and industrial projects within a short period is a silent testimony for TUSHACO performance.

## SALIENT FEATURES

- Smooth quiet flow
- Excellent self priming
- Insensitive to viscosities
- All metal construction, no contamination
- Single sealing, external bearing
- Low noise and pulsation
- Reversibility
- Bracket/ Gear Box mounting allows free expansion/ contraction - alignment not affected
- Easy maintenance
- Built-in reducer offers ideal speed range 240 -- 960 RPM
- Slow speeds ensure better pumping and longer life
- Reduced maintenance



## Working Principle

TUSHACO IG Series employs proven Internal Gearing (Gear within Gear) principle for pumping. The main gear is keyed to the drive shaft, and rotates concentric in the pump casing. Idler is located on an eccentric pin on the front cover to rotate freely and meshes with main gear when assembled. A crescent shaped partition precision machine on the front cover maintains a small, but positive clearance to achieve perfect sealing between parts. As the gears come out of mesh, partial vacuum is created, forcing the fluid to rush into the pump casing and fill in the voids between the teeth. Both gears rotating in the same direction of rotation gently transfer the fluid to the delivery port. The resulting action is the smooth-steady flow, low in pulsation, noise and vibration.

Single shaft design well supported on outboard bearing (except for one inside sleeve bearing) enables to pump products even with poor lubricating value unlike in the external gear pumps. External bearing construction offers easy access the pump components i.e., rotor set and even pump casing simply by removing the front cover without disturbing drive parts, bearings, etc., and in place. Block pump mounted integrally on hollow shaft gearbox automatically produces the speed (in several ratios) and enables even the pump rotor to be pulled out without disturbing the drive! It is easily possible to jacket front and rear covers for product heating-thus making the design unique and versatile ideally suited for process pumping.

## Construction

The IG Series is modular developed with excellent interchangeability. The pump is available either as bracket mounted 'BM' or gearbox mounted 'GM' models. The sectional drawing shows both versions. The mounted casing construction provides stress free operation while handling products at higher temperatures. The major components are casing, front cover, rear cover, seal box (casing parts) and rotor set (rotor, idler and shaft). Most casing components are made by lost wax process for better finish and grain structure.

'GM' version offers a choice of different speed ratios, making it easy to handle viscous products besides eliminating problems of alignment, extra set of coupling. Standard 4 pole or 6 pole motors can be directly coupled to such units making it very reliable, compact and clean drive. Another unique feature is the provision for adjusting clearance between rotor set and cover by means of rotor positioning device enabling to restore pump capacity even after wear and tear after long use.

The table below gives various possible material compositions :

	Stainless Steel	Cast Iron	Carbon Steel	GumMetal Bronze	Carbon Graphite	Ceramic
Casing parts	✓		✓			
Rotor set	✓	✓	✓	✓		
Sleeve bearing		✓		✓	✓	✓

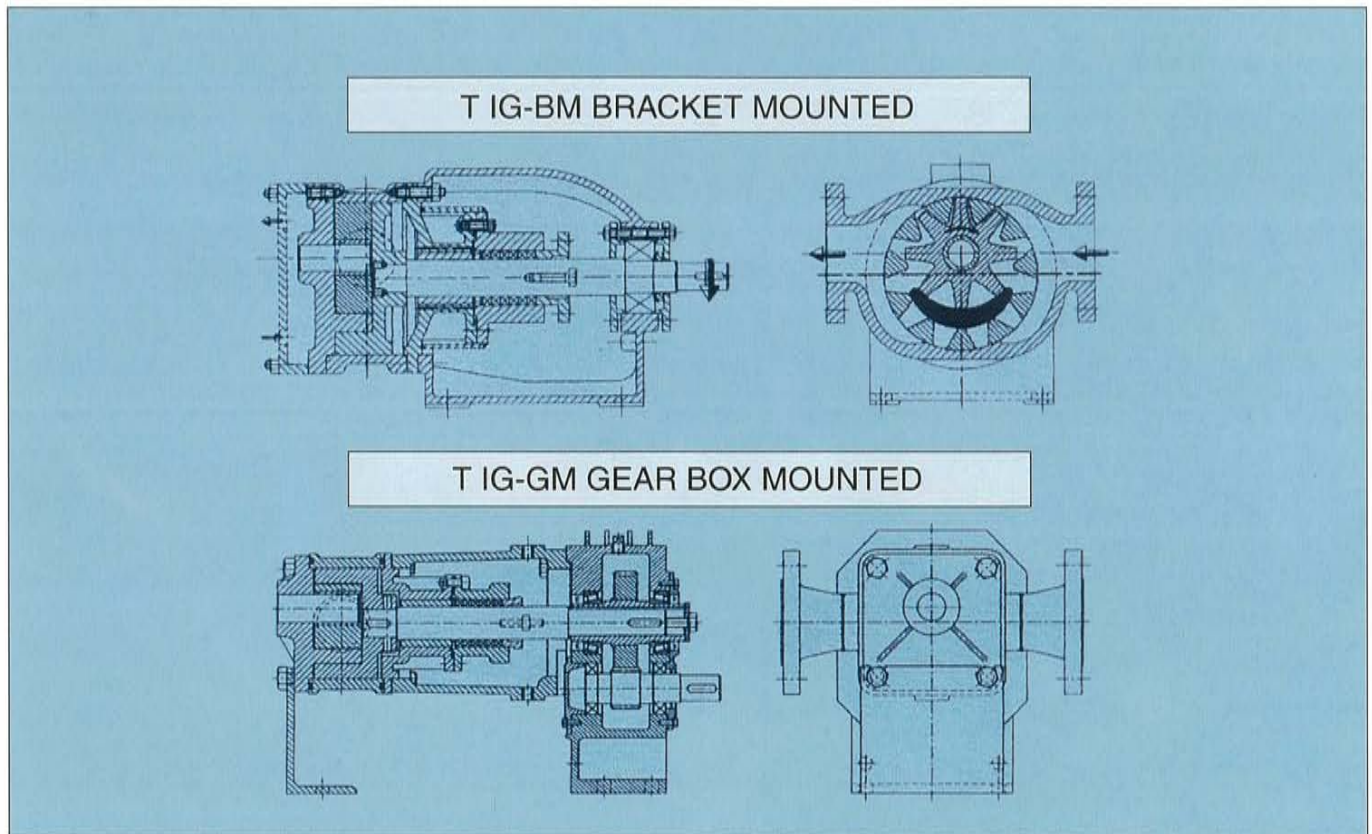


Pumps can be equipped with heating/ Cooling Jacket on front cover / rear cover and in some cases also Pump Housing. Choice of Mechanical Seal/ Stuffing box is available for shaft sealing.

### Drive

Direct drive, V-Belt drive , Gear box, Gear Motor, Mechanical Variator or other drives can be furnished complete with base frame, coupling, foundation bolts etc.

### Typical Sectional Drawing



### Typical Parameters

Models	Port Size	Capacity	upto	800 LPM
T IG 100	2"	Pressure std.	upto	7kg/ Cm"
T IG 150	2½"	Pressure spl.	upto	14kg/cm"
TIG 200	3"	Viscosity	upto	100,000 cSt
		Temperature	upto	200°C

### Typical Liquid List

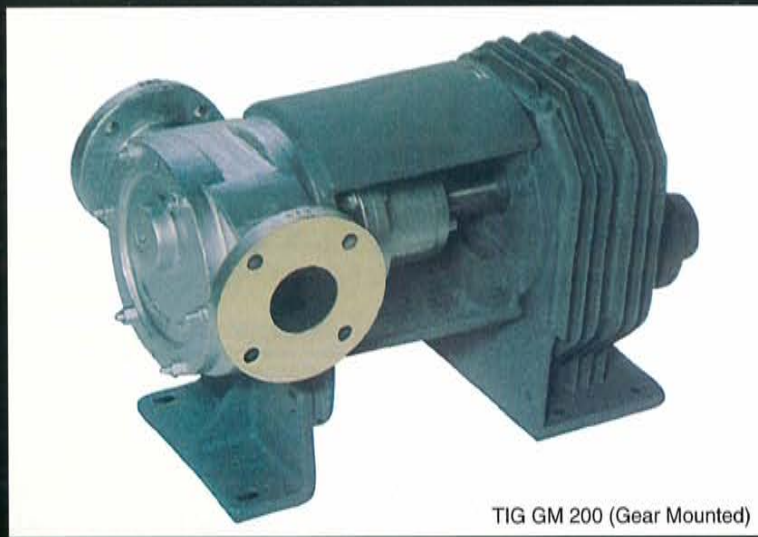
Baby Foods	Frostings	Lecithin	Soups
Batters	Fruit Concentrates	Lotions	Starch
Butter	Fruit Drinks	Margarine	Sweeteners
Caramel	Fruit Fillings	Mayonnaise	Syrups
Chewing Gum Base	Fruit Puree	Molasses	Soft Drink Concentrate
Chocolate	Fudge	Oils	Tomato Puree
Coffee	Gelatine	Peanut Butter	Tomato Paste
Cookie Dough	Glucose	Printing Ink	Tooth Paste
Cottage Cheese	Gums	Puddings	Wheat Gluten
Curd	Honey	Putty	Whey
Extracts Flavoring	Ice Cream	Red Chilly Paste	Yeast
Fondant	Icing	Salad Dressings	Yeast Slurry
Fats	Jams	Sauce	Yogurt
	Jellies	Shampoos	
	Ketchups	Soap	

Other TUSHACO Designs of rotary pumps:

External Gear, Internal lobe (Trichoidal), Shuttle Block, Vane, Three Screw, Twin Screw, Progressive Cavity.



# TUSHACO PUMPS<sup>®</sup>



TIG GM 200 (Gear Mounted)

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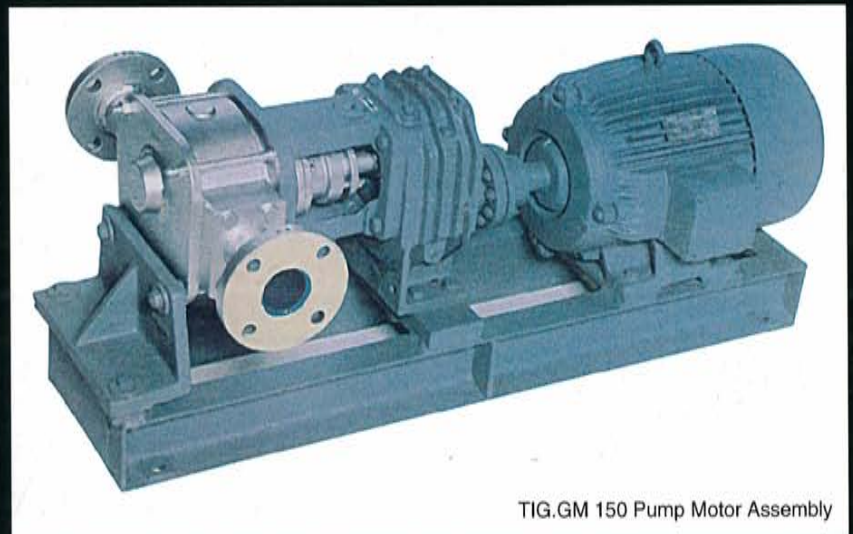
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TIG BM 100 (Bracket Mounted)



TIG GM 100 (Gear Mounted)



TIG GM 150 Pump Motor Assembly

## Performance proven positive pumping power !

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