

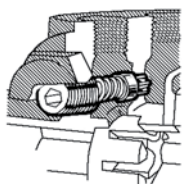
# VIKING GENERAL PURPOSE SPECIAL MOUNTED INTERNAL GEAR PUMPS

SERIES 456

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## Series Description

The 456M units are motor mounted and answer the need for more compact, lighter weight equipment. They use the Series 456 hub type pumps with valves in casings and are mounted to NEMA "C" flange motors. Units are available with 1/4, 1/2, 1/2 or 3/4 HP, 1 ph, 1200 RPM or 1800 RPM, special shaft, open or explosion proof motors. All sizes use the mounting flange bracket with pump connected to motor through coupling. Pump can be turned in bracket to any position desired. Series 456 pump models are available with Underwriters label for handling fuel oil. Model numbers for these pumps must be designated by a suffix -X. "UL" listed models must be equipped with integral relief valve.



### RELIEF VALVE (STANDARD)

Permits bypassing of liquid from discharge back to suction side of pump. Prevents building up excessive pressure in discharge line. If reversing pump at any time, valve parts must be inserted in opposite port. Pumps with relief valve are built with right hand suction as standard.



### MECHANICAL SEAL

All models are furnished with mechanical seal. The seal is a rotary type packaged unit that is simple and self-adjusting.

## Operating Range:

Nominal Flow ②	GPM	.5 to 3
	m <sup>3</sup> /h	.1 to .7
Pressure Range ①	PSI	250 PSI for 100 SSU & above 100 PSI for less than 100 SSU ③
	Bar	17 BAR for 21 cSt & above 7 BAR for less than 21 cSt
Temp. Range ①	°F	-60 to +350
	°C	-51 to +177
Viscosity Range	SSU	28 to 7,500
	cSt	.1 to 1,650

① See following pages or consult factory for specific recommendations on individual models or sizes.

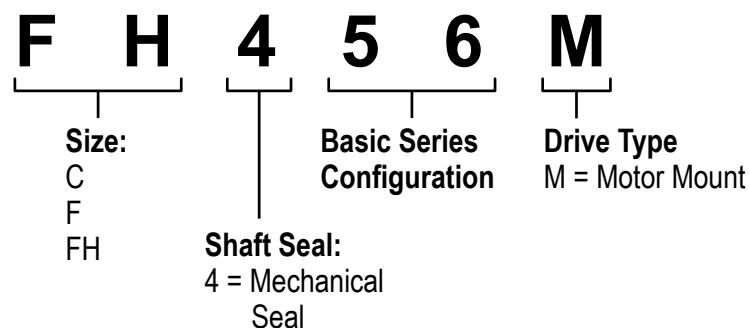
② Nominal capacities based on handling thin liquids.

③ 150 PSI (7 BAR) handling fuel oil less than 100 SSU (21 cSt).

## Nominal Flow Rates:

Pump Size	GPM	m <sup>3</sup> /h	RPM
C	.5	.1	1800
F	1.5	.3	1800
FH	3	.7	1800

## Model Number Key:



SERIES 456  
Unmounted Pump  
FH Size

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# VIKING GENERAL PURPOSE SPECIAL MOUNTED INTERNAL GEAR PUMPS

SERIES 456

## Materials of Construction - 456 Series

Standard Component	Standard Material
Casing	Iron
Head	Iron
Rotor & Shaft	Steel
Idler	Steel
Idler Pin	Steel
Casing Bushing - Mechanical Seal	Carbon Graphite
Elastomer	Buna-N, Viton®
Valve Parts ②	Iron

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SERIES 456 Pump  
with "M" Drive  
"C", "F" and "FH" size pumps

## Specifications - M Drive Units & Unmounted Pumps

Unit Model Number	Unmounted Pump Model Number	Port Size Inches	Nominal Pump Rating			Motor Horsepower Required at Rated Speed Pumping 100 SSU Liquid		Maximum Recommended Discharge Pressure PSIG			⑤ Maximum Recommended Temperature For Cataloged Pump		Maximum Hydrostatic Pressure		⑥ Approximate Shipping Weight With Valve and With Power	
			GPM	m³/h	RPM	50 PSI (3 BAR)	100 PSI (7 BAR)	Less Than 100 SSU	Fuel Oil Less Than 100 SSU	100 SSU and Up	°F	°C	PSI	Bar	Lbs	Kg.
C456M	C456	¼	0.5	0.1	1800	③ ¼	③ ¼	100	150	④ 250	225	107	750	51	42	19
F456M	F456	½	1.5	0.3	1800	③ ¼	③ ¼	100	150	④ 250	225	107	750	51	43	19.5
FH456M	FH456	½	3	0.3	1800	③ ¼	½	100	150	④ 250	225	107	750	51	44	20

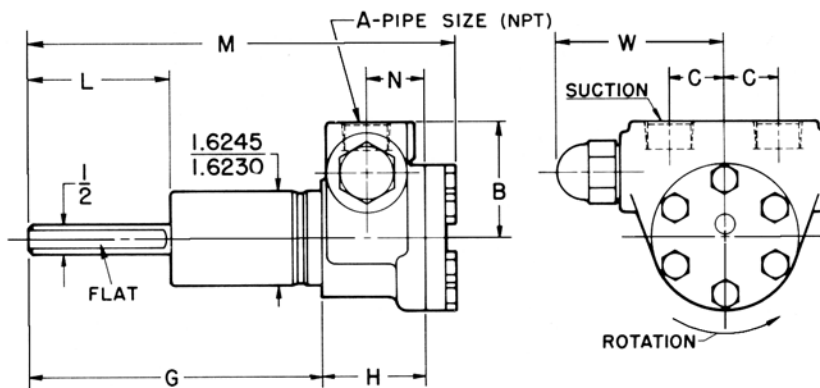
- ① Buna N or Viton® elastomer used in mechanical seal of 456 Series pumps.
- ② Valve integral with pump casing. Right hand suction only.
- ③ ¼ HP smallest readily available motor; see performance curves, which can be electronically generated with the Viking Pump Selector Program, located on [www.vikingpump.com/pumpselector](http://www.vikingpump.com/pumpselector), for actual horsepower.
- ④ With extra clearance, pumps can be used to 500 PSI (34 BAR) on intermittent duty.
- ⑤ Temperatures to 350°F (180°C) can be handled with special construction.
- ⑥ Includes ½ HP, 1 PH. Tefc motor.

# VIKING GENERAL PURPOSE SPECIAL MOUNTED INTERNAL GEAR PUMPS

SERIES 456

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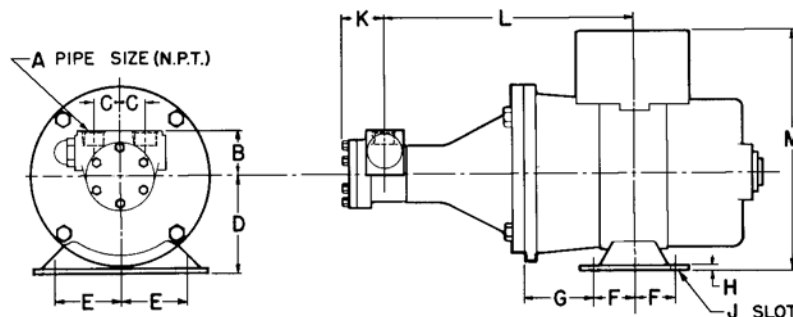
## Dimensions C - F - FH 456 (Unmounted Pumps)



MODEL NO.	A		B	C	G	H	L	M	N	W
C456	1/4	in	1.69	0.75	4.66	1.47	2.25	6.69	0.88	2.56
		mm	42.9	19.1	118.3	37.3	57.2	169.9	22.2	65.1
F456	1/2	in	2	0.94	4.59	1.84	2	7	1	2.88
		mm	50.8	23.8	116.7	46.8	50.8	177.8	25.4	73.0
FH456	1/2	in	2	0.94	4.97	1.84	2.38	7.38	1	2.88
		mm	50.8	23.8	126.2	46.8	60.3	187.3	25.4	73.0

**NOTE:** Shafts as shown on these pumps will **NOT** work on "M" drive units shown below. "G" dimension of 3 3/8" is required.

## Dimensions C - F - FH 456 (M Drive)



MODEL NO.	A		B	C	D	E	F	G	H	J	K	L	M
C456M	1/4	in	1.69	0.75	3.50	2.44	1.50	2.56	0.13	0.34	1.44	8.97	9
		mm	42.9	19.1	88.9	61.9	38.1	65.1	3.2	8.7	36.5	227.8	228.6
F456M	1/2	in	2	0.94	3.50	2.44	1.50	2.56	0.13	0.34	1.56	9.22	9
		mm	50.8	23.8	88.9	61.9	38.1	65.1	3.2	8.7	39.7	234.2	228.6
FH456M	1/2	in	2	0.94	3.50	2.44	1.50	2.56	0.13	0.34	1.56	9.22	9
		mm	50.8	23.8	88.9	61.9	38.1	65.1	3.2	8.7	39.7	234.2	228.6

Ⓢ This dimension approximate. Depends on motor manufacturer, size and type of enclosure.

**NOTE:** Pump may be turned in bracket to any position desired.

Overall dimension of pump and motor will vary depending on motor frame, type of enclosure and manufacturer.

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# VIKING GENERAL PURPOSE SPECIAL MOUNTED INTERNAL GEAR PUMPS

SERIES 75 & 475

## Series Description

For compactness, less weight and simplicity of mounting, Viking's line of close-coupled pumps are ideal for direct connecting to other pieces of equipment. The positive, smooth delivery of these pumps makes them preferred for many types of applications including filtering, circulating, transferring, lubricating or booster service.

The five sizes of Viking close-coupled pumps from 5 to 30 GPM are available in this unmounted type ready to connect on other equipment with standard NEMA "C" flange mounting.

All pumps are available with rotor bore to fit the shaft of a standard motor or other piece of equipment. Bores are furnished in  $\frac{5}{8}$ " and  $\frac{7}{8}$ ". By using a full length key between drive shaft and rotor bore, rigid and positive alignment of pump and drive shaft is assured.

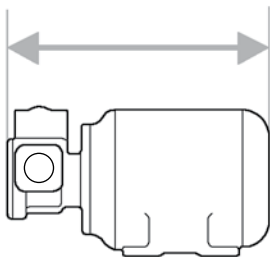
This advanced design is unique in its field for it permits use of STANDARD, unmodified NEMA "C" flange ball bearing motors.

It is extremely close-coupled, reducing needed space, cutting overall weight, eliminating bases, couplings, outboard bearings or any drive equipment and at the same time saves cost.

All sizes are equipped with opposite ports. Only two casing sizes are used for all five pumps. The two smaller pumps use one casing and the three larger pumps use the other.

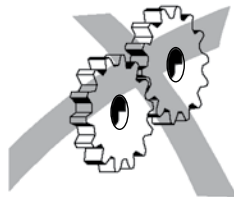
Pumps are built to accept a compact, integral relief valve mounted on top of casing to maintain extreme compactness.

All pumps are available with either mechanical seal suitable for 100 PSI pressure or a lip seal suitable for 50 PSI. No modification of parts are needed to convert from one seal to the other.



### VIKING CLOSE-COUPLED PUMP FEATURES SAVE SPACE

Over-all space (length, height and width) is cut to a minimum with Viking's close-coupled pumps. Complete unmounted pump in all five sizes, 5 to 30 GPM, requires only approximately 5" of space.



### NO DRIVE EQUIPMENT NEEDED

No couplings, bases, gears or outboard bearings. Standard motor shafts are keyed directly to the Viking rotor pump gear eliminating all extra drive equipment. Simple and compact.

## Operating Range:

Nominal Flow ②	GPM	5 to 30
	m <sup>3</sup> /h	1 to 7
Pressure Range	PSI	50 PSI (Series 75) 100 PSI (Series 475)
	Bar	3 BAR (Series 75) 7 BAR (Series 475)
Temp. Range ①	°F	-20 to +350
	°C	-29 to +177
Viscosity Range ①	SSU	28 to 2,500
	cSt	.1 to 550

① See following pages or consult factory for specific recommendations on individual models or sizes.

② Nominal capacities based on handling thin liquids.

## Nominal Flow Rates:

Pump Size	GPM	m <sup>3</sup> /h	RPM
G	5	1	1200
	7	1.5	1800
GG	7	1.5	1200
	10	2	1800
H	10	2	1200
	15	3.5	1800
HJ	13	3	1200
	20	4.5	1800
HL	20	4.5	1200
	30	7	1800

SERIES 75 & 475  
Lip and Mechanical Seal  
Unmounted Pumps  
"G" and "GG" sizes



# VIKING GENERAL PURPOSE SPECIAL MOUNTED INTERNAL GEAR PUMPS

SERIES 75 & 475

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## Materials of Construction - 75 & 475 Series

Standard Component		Standard Material
Casing		Iron
Head		Iron
Rotor		Iron
Idler		Powdered Metal ①
Idler Bushing		Bronze
Shaft Sealing	Lip Seal	Buna-N
	Mechanical Seal	Buna-N, Viton®
Internal Relief Valve		Iron

① "G" and "GG" size have steel idlers.

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SERIES 475 Pump  
"HL" size pump with "M" Drive

## Specifications - M Drive Units & Unmounted Pumps

Unit Model Number		Unmounted Pump Model Number		Port Size	Nominal Pump Rating			Motor Horsepower Required at Rated Speed Pumping 100 SSU Liquid		① Maximum Recommended Discharge Pressure				Maximum Recommended Temperature For Cataloged Pump		Maximum Recommended Viscosity (SSU)		Shipping Weight With Valve					
Lip Seal	Mech. Seal	Lip Seal	Mech. Seal		IN	GPM	m³/h	RPM	25 PSI (2 BAR)	50 PSI (3 BAR)	Lip Seal		Mech. Seal		Lip Seal	② Mech. Seal	1800 RPM	1200 RPM	Mounted Units		Unmounted Pumps		
										PSI	BAR	PSI	BAR	°F	°C	°F	°C			Lbs	Kg.	Lbs	Kg.
G75M	G475M	G75	G475	1	5	1	1200	½	¾	50	3	100	7	225	107	225	107	750	2500	③ 48	③ 22	17	8
					7	1.5	1800																
GG75M	GG475M	GG75	GG475	1	7	1.5	1200	½	¾	50	3	100	7	225	107	225	107	750	2500	③ 48	③ 22	17	8
					10	2	1800																
H75M	H475M	H75	H475	1 ½	10	2	1200	½	1	50	3	100	7	225	107	225	107	750	2500	④ 80	④ 36	24	11
					15	3.5	1800																
HJ75M	HJ475M	HJ75	HJ475	1 ½	13	3	1200	1	1 ½	50	3	100	7	225	107	225	107	750	2500	⑤ 85	⑤ 39	24	11
					20	4.5	1800																
HL75M	HL475M	HL75	HL475	1 ½	20	4.5	1200	1 ½	2	50	3	100	7	225	107	225	107	750	2500	⑤ 85	⑤ 39	26	12
					30	7	1800																

① Mechanical Seal pump will withstand a hydrostatic test pressure of 400 PSI (28 BAR). Lip Seal pump should not be subjected to hydrostatic test. Neither type pump should be used on an application having a suction pressure greater than 15 PSI (1 BAR).

② Temperatures to 350°F (180°C) can be handled with Viton® construction.

③ Includes 56C Frame Motor.

④ Includes 143TC Frame Motor.

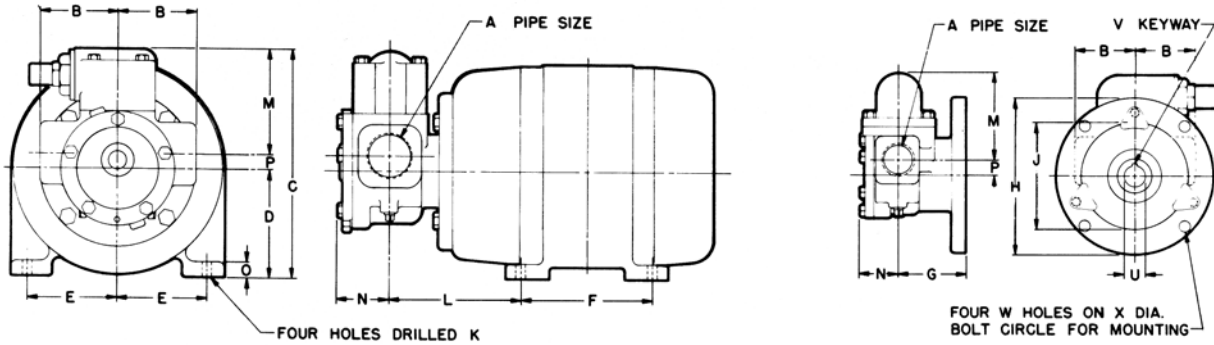
⑤ Includes 145TC Frame Motor.

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# VIKING GENERAL PURPOSE SPECIAL MOUNTED INTERNAL GEAR PUMPS

SERIES 75 & 475

## Dimensions G - GG - H - HJ - HL 75 & 475 (M Drive Units & Unmounted Pumps)



NOTE:  
ORDER MOTORS WITH  $4\frac{1}{2}$ " DIA. RABBET  
(FLANGE PILOT - REF. "J" DIMENSION)

MODEL NUMBERS				MOTOR FRAME SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	U	V	W	X
MOTOR MOUNTED		UNMOUNTED																					
MECH. SEAL	LIP SEAL	MECH. SEAL	LIP SEAL																				
G475M OR GG475M	G75M OR GG75M	G475 OR GG475	G75 OR GG75	56C	1	2.5	7.69	3.5	2.44	3	2.81	6.5	4.5	.34 SLOT	5.38	3.56	1.56	.13	.63	.18	.47	5.88	
				143TC			7.69	3.5	2.75	4				.34	5.69			.44	.63	.88			.18
				145TC			7.69	3.5	2.75	5				.34	5.69			.44	.88	.18			
H475M HJ475M HL475M	H75M HJ75M HL75M	H475 HJ475 HL475	H75 HJ75 HL75	56C	1½	3.25	8.56	3.5	2.44	3	2.75	6.5	4.5	.34 SLOT	5.31	4.44	2.18	.13	.63	.18	.47	5.88	
				143TC			8.56	3.5	2.75	4				.34	5.63			.44	.63	.88			.18
				145TC			8.56	3.5	2.75	5				.34	5.63			.44	.88	.18			
H475M HJ475M HL475M	H75M HJ75M HL75M	H475 HJ475 HL475	H75 HJ75 HL75	182C	1½	3.25	9.56	4.5	3.75	4.5	2.75	6.5	4.5	.41	5.63	4.44	2.18	.63	.63	.88	.18	.47	5.88
				184C						5.5					5.63								

# VIKING GENERAL PURPOSE SPECIAL MOUNTED INTERNAL GEAR PUMPS

SERIES 456, 75 & 475

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## Performance Curve Notes

Printed performance curves are not available.

Performance curves can be electronically generated with the Viking Pump Selector Program. This program can be located on [www.vikingpump.com](http://www.vikingpump.com).

NPSHR data is not available on the pump selector.

## NPSH<sub>R</sub> - FEED OF LIQUID (SP. GR. 1.0), Viscosities to 750 SSU

PUMP SIZE	PUMP SPEED, RPM										
	230	280	350	420	520	640	780	950	1150	1450	1750
G, GG	- - -	- - -	- - -	1.8	2.0	2.2	2.6	3.1	3.9	5.6	7.6
H, HJ, HL	1.7	1.8	1.9	2.1	2.4	2.8	3.4	4.5	6.2	9.5	13.5

NPSH<sub>A</sub> (Net Positive Suction Head Available) must be greater than the NPSH<sub>R</sub> (Net Positive Suction Head Required) given in the above table.

VISCOSITY - Above chart applies to viscosities up thru 750 SSU. Consult factory or Viking representative for viscosities above 750 SSU.

For liquids other than water, divide by specific gravity.

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