

**MOTOR SPEED PRODUCT LINE:
STAINLESS STEEL — MAG DRIVE PUMPS
SERIES 897**

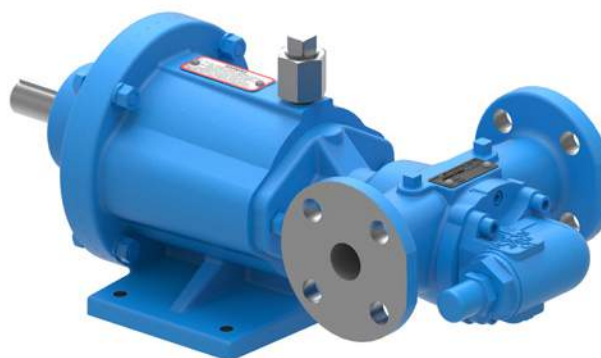
Section	1743
Page	1743.1
Issue	C

TABLE OF CONTENTS

Features & Benefits 2
 Standard Materials of Construction 2
 Model Number Key 3
 Cutaway View & Pump Features 3
 Specifications 4
 Dimensions – GG, HJ, HL Sizes (*Unmounted*) 4
 Dimensions – GG Sizes – MD-A4 & MD-A9 (*B Drive*) 5
 Dimensions – HJ, HL Sizes – MD-A4 & MD-A9 (*B Drive*) 6
 Dimensions – HJ, HL Sizes – MD-B15 & MD-B40 (*M Drive*) 6
 Dimensions – AS, AK, AL Sizes (*Unmounted*) 7
 Dimensions – AS, AK, AL Sizes – MD-B15 & MD-B40 (*B Drive*) .. 8
 Dimensions – AS, AK, AL Sizes – MD-C80 (*B Drive*) 9
 Dimensions – AS, AK Sizes – MD-B15 & B40 (*M Drive*) 10
 Dimensions – AL Sizes – MD-B15 & B40 (*M Drive*) 10
 NPSH Required 11
 Selecting the Correct Viking Mag Drive® Coupling 12
 Example 1 12
 Example 2 12

SERIES DESCRIPTION

897 Series pumps are designed to provide positive displacement pumping capability in those situations that require the highest assurance of liquid containment. These mag drive pumps provide for the safe, trouble-free transfer of hazardous, EPA-regulated fluids without electronic monitoring as required with mechanical face-type shaft seals. Hard-to-seal liquids are also easily handled with the Viking Mag Drive which eliminates the high cost of mechanical seal replacement and repair. A variety of coupling sizes are available for flow requirements to 75 GPM. The torque-carrying ability of high-strength magnets allows pumps to be coupled with gear reducers for slow-speed handling of viscous liquids. The self-priming positive-displacement pumping principle provides low-shear, non-pulsing flow. Internal gear pumps are available in stainless steel, steel, and cast iron construction.



GG897
MD-B40B, bearing carrier, footed bracket,
and mounted pump with flanged ports
(shown with optional temperature probe connection)

RELATED PRODUCTS

- Stainless Steel, 4197 Series: Catalog Section 1741
- Cast Iron, 895 Series Mag Drive: Catalog Section 1443
- Steel Externals, 893 Series Mag Drive: Catalog Section 1343

OPERATING RANGE

SERIES	NOMINAL FLOW		MAXIMUM PRESSURE		TEMPERATURE RANGE		VISCOSITY RANGE	
	GPM	m ³ h	PSI	Bar	°F	°C	SSU	cSt
897	7 - 75	1.6 - 17	125	8.5	-60 to +500	-50 to +260	28 to 250,000	1 to 55,000

Section	1743
Page	1743.2
Issue	C

MOTOR SPEED PRODUCT LINE: STAINLESS STEEL — MAG DRIVE PUMPS SERIES 897

FEATURES & BENEFITS

- Internal Gear
 - » With only two moving parts, Viking Mag Drive and Viking's gear-within-a-gear principle provides low-shear pumping.
- Magnetic Coupling
 - » Viking Mag Drive magnetically couples the pump to the driver. Magnetic force passing through a stainless steel canister is used to drive the inner coupling, eliminating the need for shaft seals.

STANDARD MATERIALS OF CONSTRUCTION

Component		Standard Material
Casing		Stainless Steel, ASTM A743, Grade CF8M
Head		Stainless Steel, ASTM A743, Grade CF8M Case Hardened
Idler	Standard	① PPS Composite
	Optional	Non-Galling Stainless
Rotor		Stainless Steel, ASTM A743, Grade CF8M Case Hardened
Rotor Shaft		Hard Coated Stainless Steel, ASTM A276, Type 316 Hard Coated
Idler Pin		Hard Coated Stainless Steel, ASTM A276, Type 316 Hard Coated
Idler & Casing Bushing	Standard	Carbon Graphite
	Optional	Silicon Carbide
Internal Pressure Relief Valve		Stainless Steel, ASTM A743, Grade CF8M
Canister		② 316L Stainless Steel
Coupling Magnets	Standard	Neodymium Iron Boron
	Optional	Samarium Cobalt
O-rings	Standard	PTFE (Derivative) Encapsulated
	Optional	FKM, FFKM

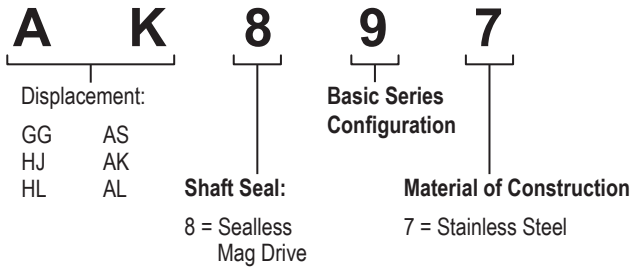
① Standard Material is Polyphenylene Sulfide composite material. Recommend using metal idler above 10,000 SSU.

② MD-A canisters are 316 stainless steel.

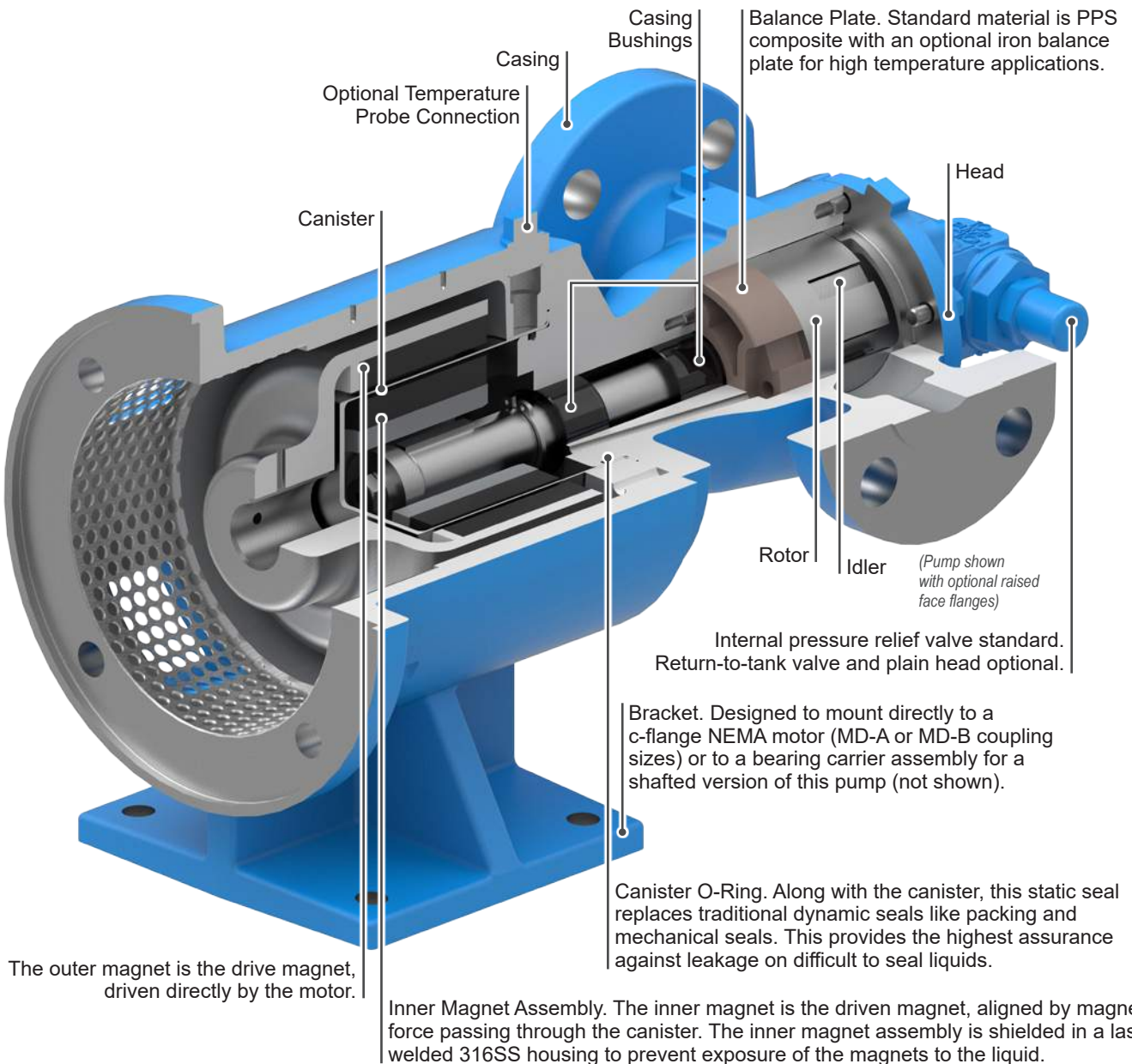
**MOTOR SPEED PRODUCT LINE:
STAINLESS STEEL — MAG DRIVE PUMPS**
SERIES 897

Section	1743
Page	1743.3
Issue	C

MODEL NUMBER KEY



CUTAWAY VIEW & PUMP FEATURES



Section	1743
Page	1743.4
Issue	C

MOTOR SPEED PRODUCT LINE: STAINLESS STEEL — MAG DRIVE PUMPS SERIES 897

SPECIFICATIONS

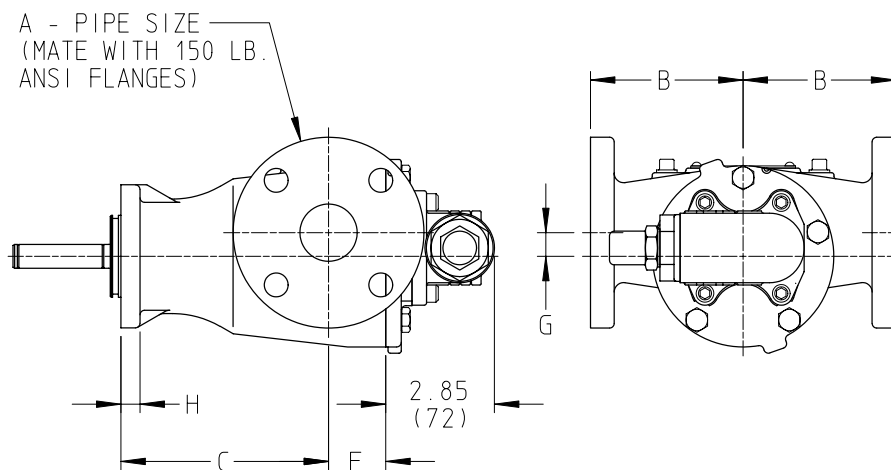
Model Number	Port Size Inches	Nominal Pump Rating (100 SSU & below)			① Magnetic Coupling Availability			② Maximum Temperature		Maximum Hydrostatic Pressure		Approximate Pump Shipping Weight with Valve (less power)		③ Approximate Coupling Only Shipping Weight (ready to accept but less power)	
					Series	Torque		°F	°C					Lbs.	Kg.
		GPM	m ³ /h	RPM		Ft-Lbs	Nm			PSIG	BAR				
GG897	1	10 7	2.3 1.6	1800 1200	MD-A	4 9	5.4 12.2	225	105	400	28	22	10	31	14
HJ897	1½	20 13	4.5 3	1800 1200	MD-A MD-B	4 40	5.4 54	225	105	400	28	30	14	31	14
HL897	1½	30 20	6.8 4.5	1800 1200	MD-A MD-B	4 40	5.4 54	225	105	400	28	30	14	71	32
AS897	3	35	8	1200	MD-B MD-C	40 80	54 108	225	105	400	28	78	35	71	32
AK897	3	50	11	1200	MD-B MD-C	40 80	54 108	225	105	400	28	78	35	71	32
AL897	3	75	17	1200	MD-B MD-C	40 80	54 108	225	105	400	28	78	35	95	43

① See Performance Curves, which can be electronically generated with the Viking Pump Curve Generator, located on www.vikingpump.com, for specific coupling recommendation on other pressures and viscosities.
See page 12 for "Selecting the correct Mag Drive coupling."

② Higher temperatures can be handled with Samarium Cobalt magnets. See page 12 for torque and temperature limits.

③ For bearing carrier weights add 8 Lbs (2 Kg) for "MD-A" size, add 17 Lbs (4 Kg) for "MD-B" size.

DIMENSIONS – GG, HJ, HL SIZES (UNMOUNTED)



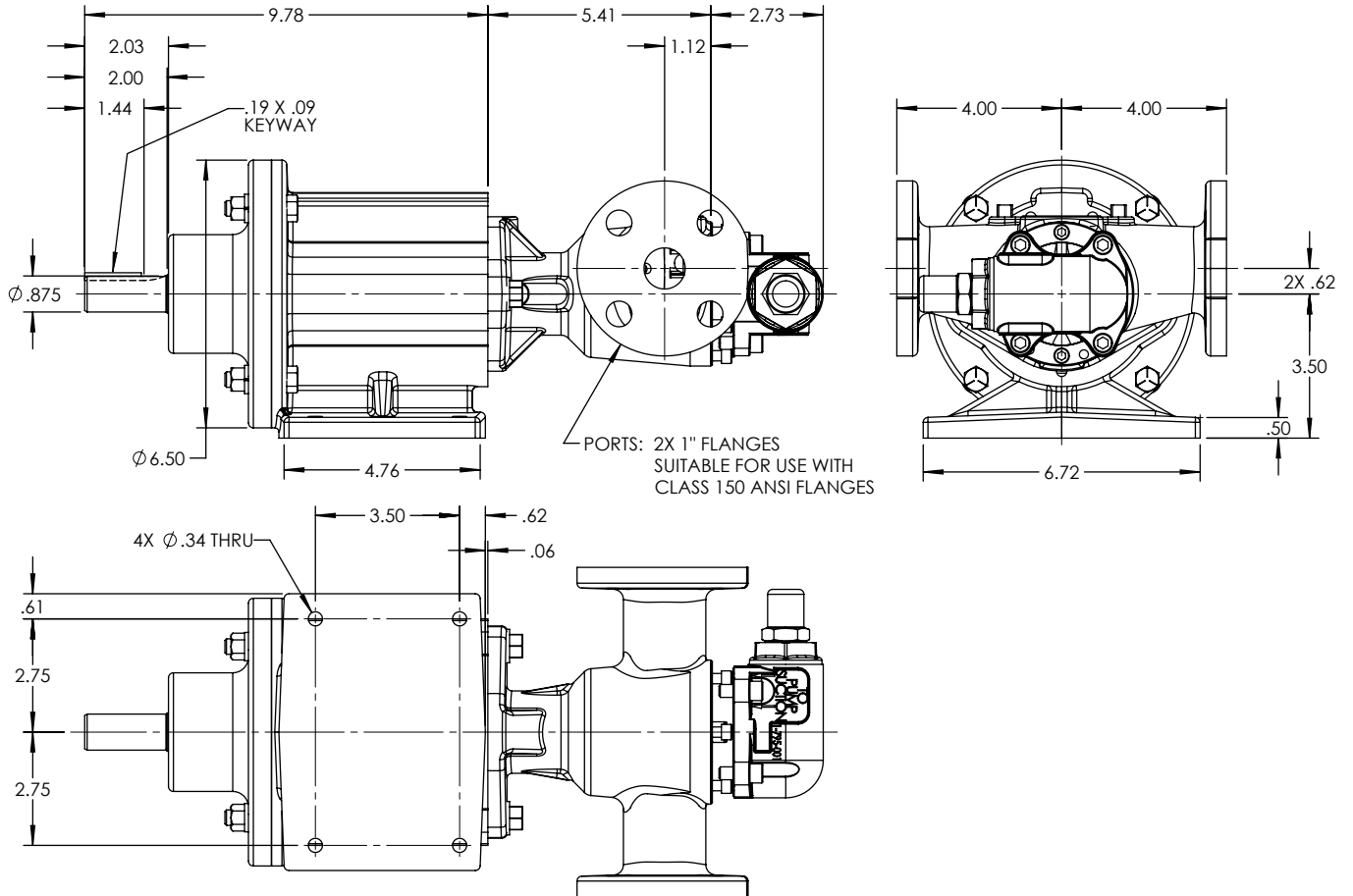
Model Number	A (in)		B	C	E	G	H
GG-897	1	in	4.00	4.29	1.12	0.62	0.50
		mm	102	108	29	16	13
HJ-897 HL-897	1½	in	4.00	5.44	1.50	0.62	0.50
		mm	102	138	38	16	13

These dimensions are average and not for construction purposes. Certified prints on request.

**MOTOR SPEED PRODUCT LINE:
STAINLESS STEEL — MAG DRIVE PUMPS
SERIES 897**

Section	1743
Page	1743.5
Issue	C

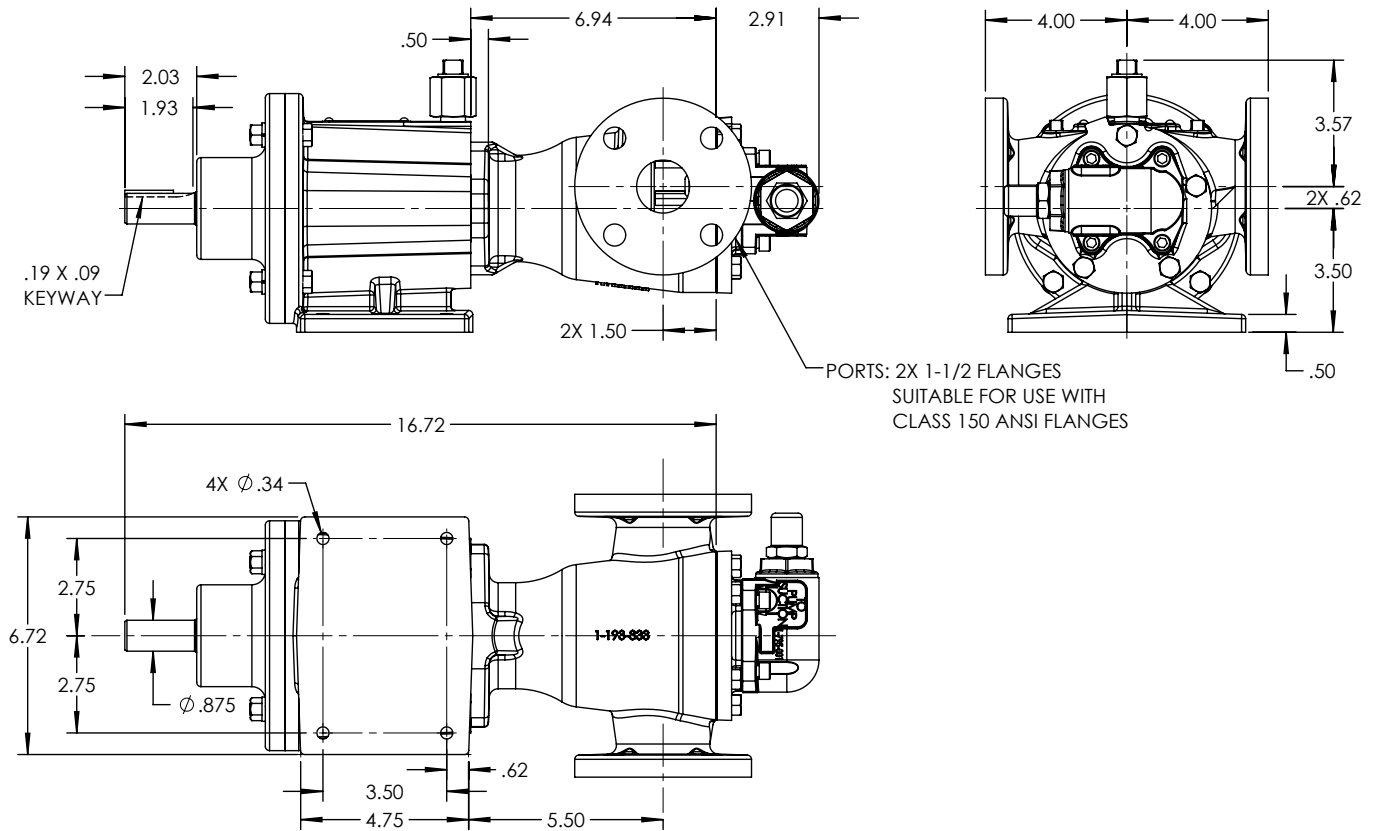
DIMENSIONS – GG SIZES – MD-A4 & MD-A9 (B DRIVE)



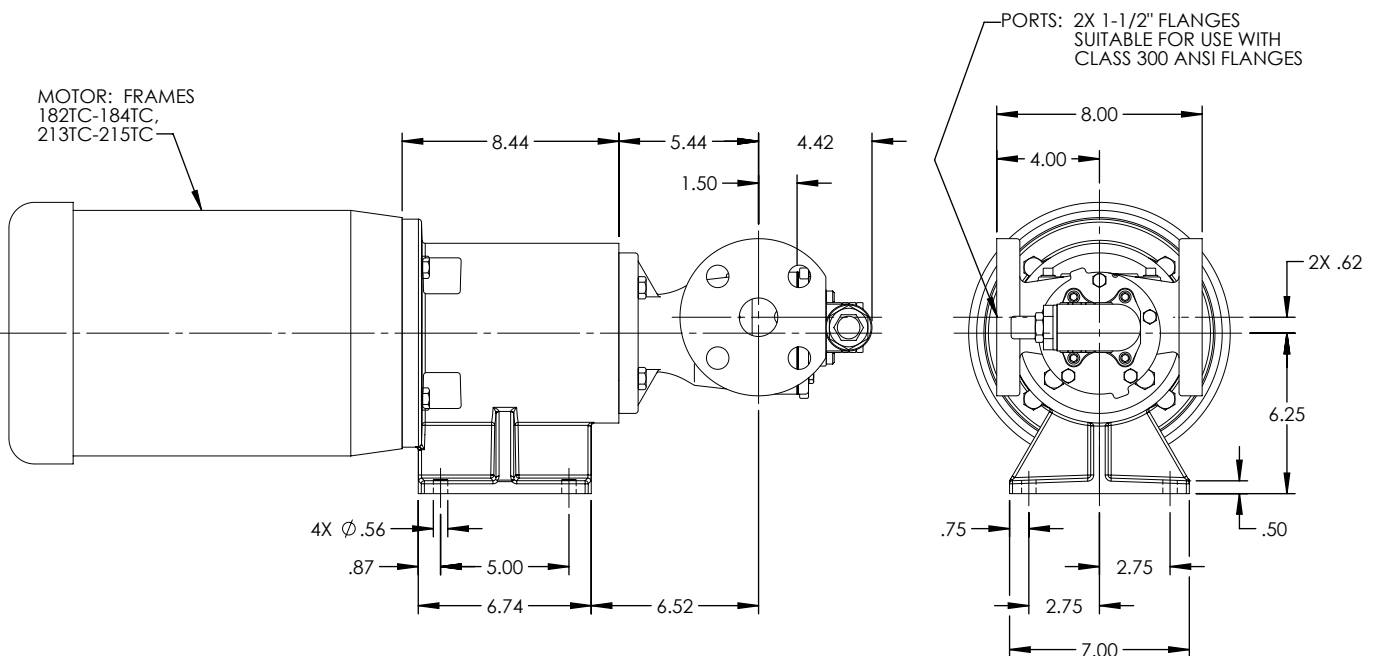
Section	1743
Page	1743.6
Issue	C

**MOTOR SPEED PRODUCT LINE:
STAINLESS STEEL — MAG DRIVE PUMPS
SERIES 897**

DIMENSIONS – HJ, HL SIZES – MD-A4 & MD-A9 (B DRIVE)



DIMENSIONS – HJ, HL SIZES – MD-B15 & MD-B40 (M DRIVE)

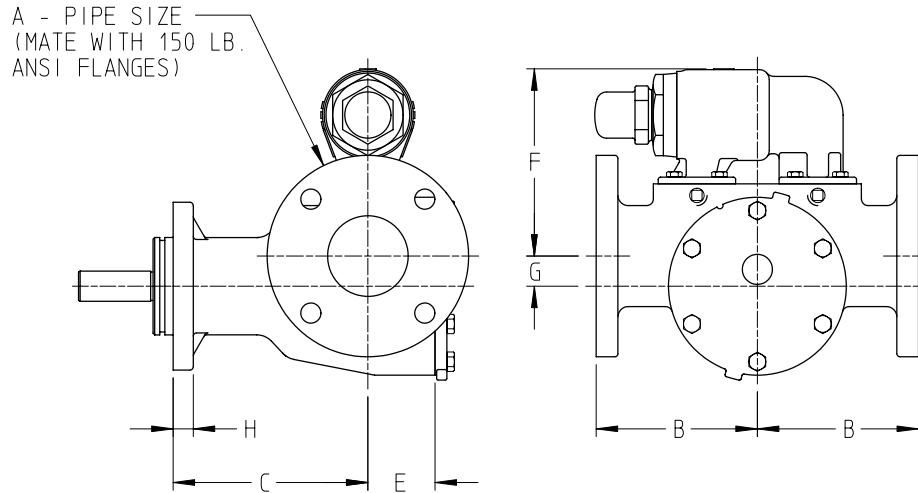


These dimensions are average and not for construction purposes. Certified prints on request.

**MOTOR SPEED PRODUCT LINE:
STAINLESS STEEL — MAG DRIVE PUMPS
SERIES 897**

Section	1743
Page	1743.7
Issue	C

DIMENSIONS – AS, AK, AL SIZES (UNMOUNTED)



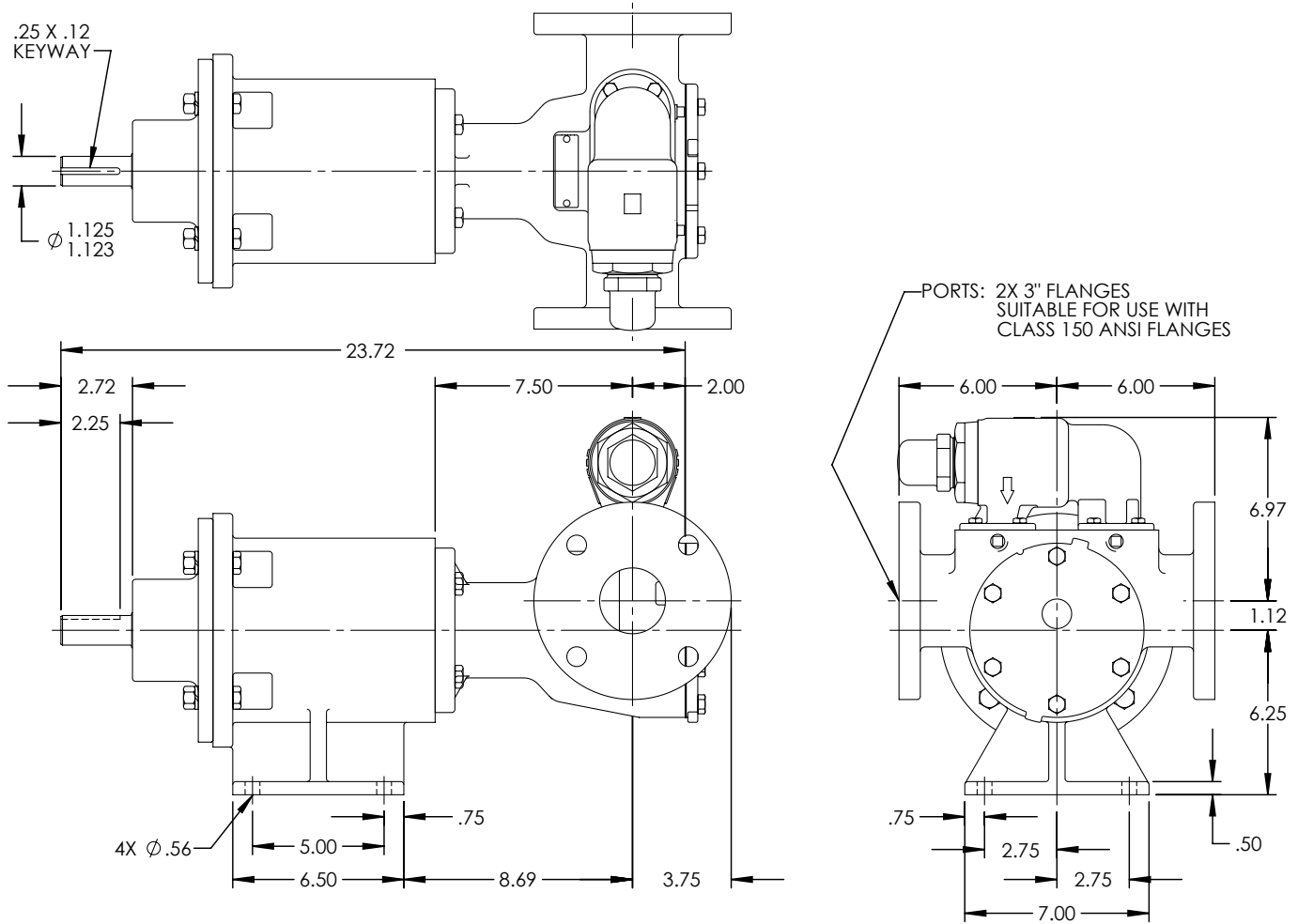
Model Number	A (in)		B	C	E	F	G	H
AS-897 AK-897	3	in	6.00	7.50	2.00	7.00	1.12	0.75
		mm	152	190	51	178	29	19
AL-897	3	in	6.00	7.25	2.50	7.00	1.12	0.75
		mm	152	184	63	178	29	19

These dimensions are average and not for construction purposes. Certified prints on request.

Section	1743
Page	1743.8
Issue	C

**MOTOR SPEED PRODUCT LINE:
STAINLESS STEEL — MAG DRIVE PUMPS
SERIES 897**

DIMENSIONS – AS, AK, AL SIZES – MD-B15 & MD-B40 (B DRIVE)

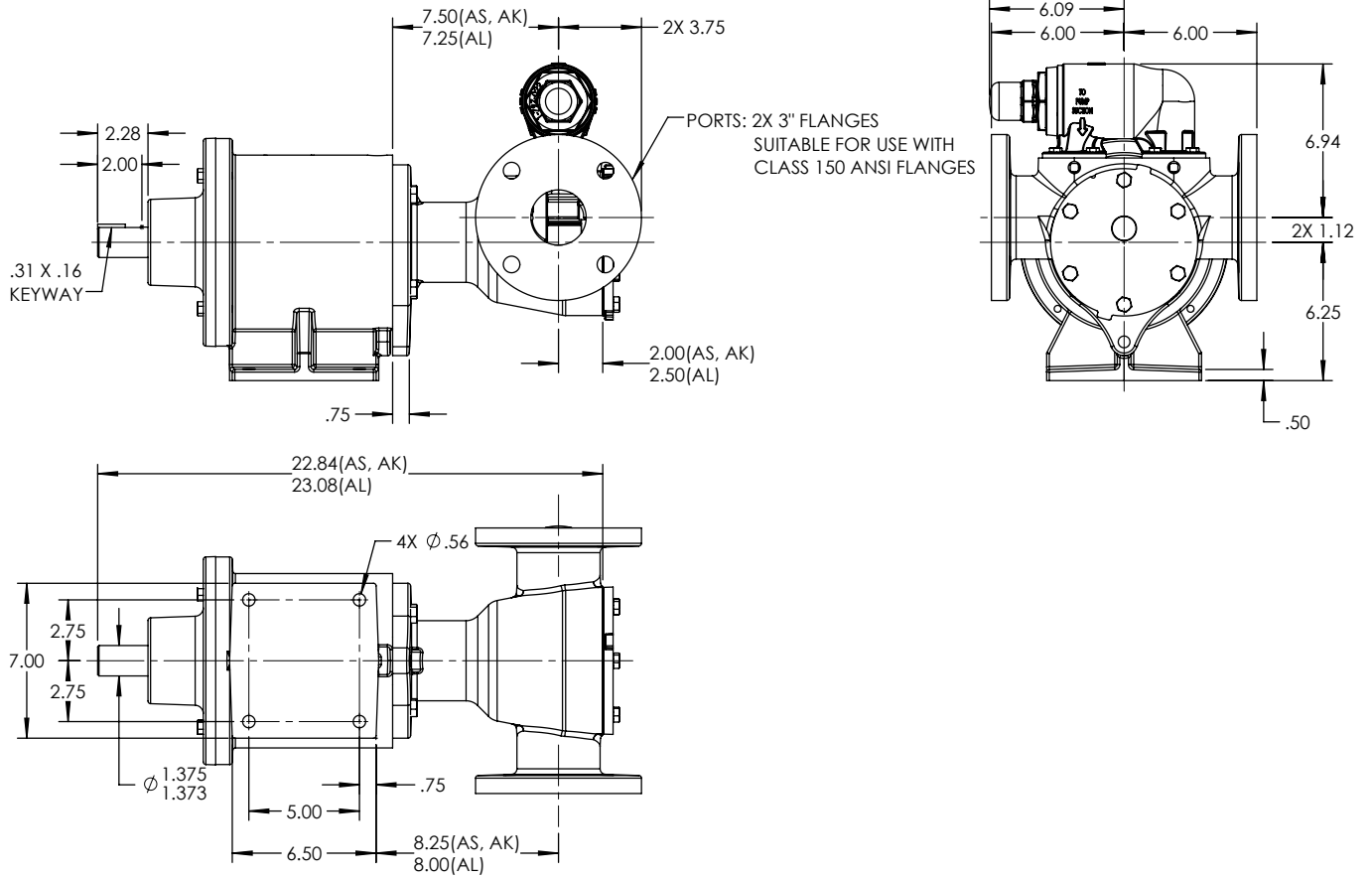


These dimensions are average and not for construction purposes. Certified prints on request.

**MOTOR SPEED PRODUCT LINE:
STAINLESS STEEL — MAG DRIVE PUMPS
SERIES 897**

Section	1743
Page	1743.9
Issue	C

DIMENSIONS – AS, AK, AL SIZES – MD-C80 (B DRIVE)

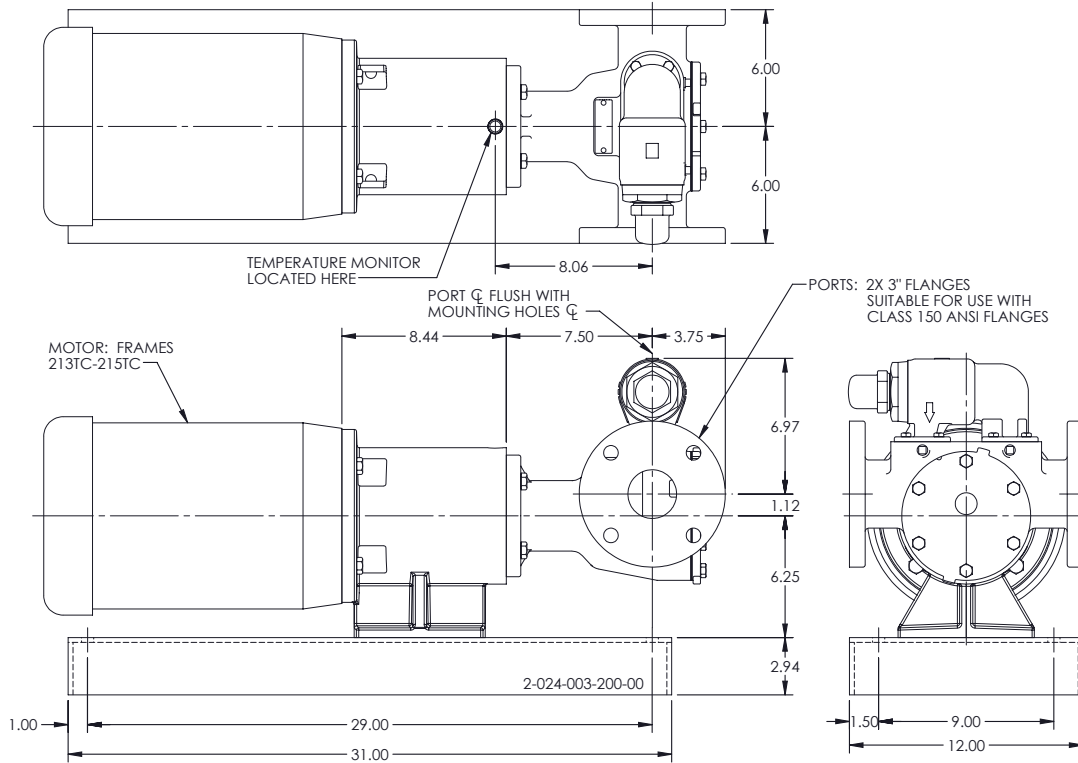


These dimensions are average and not for construction purposes. Certified prints on request.

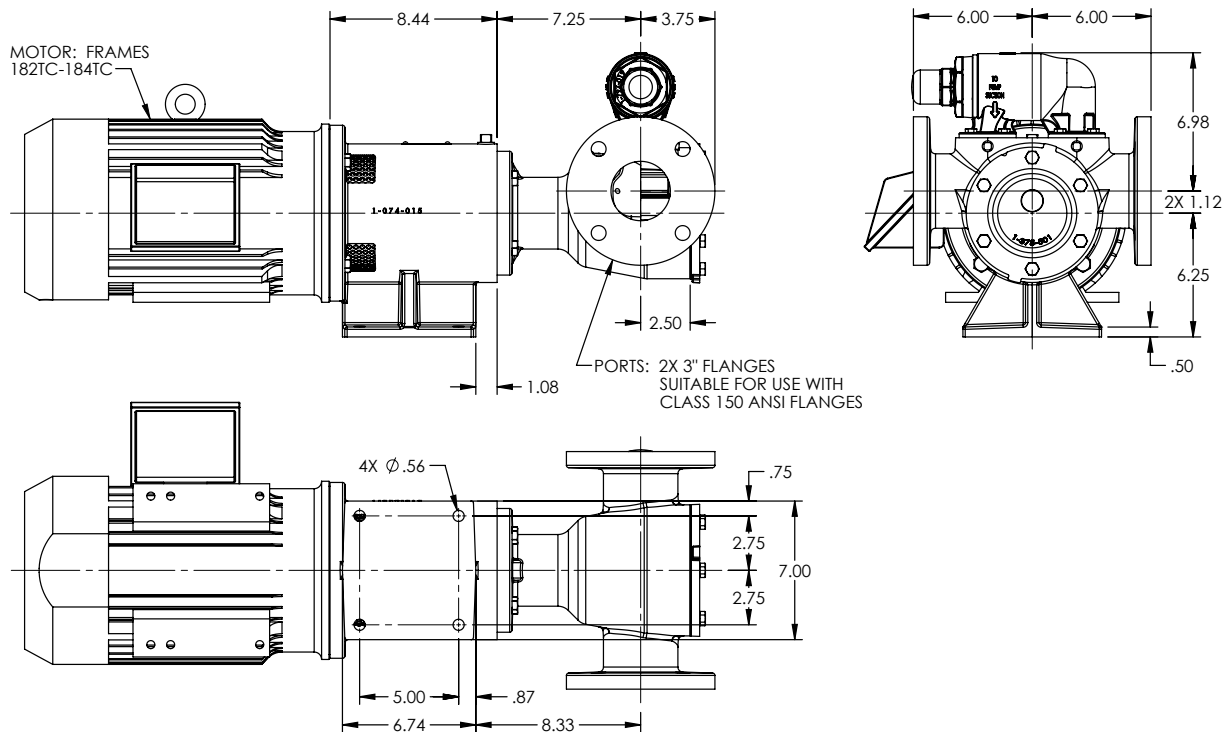
Section	1743
Page	1743.10
Issue	C

**MOTOR SPEED PRODUCT LINE:
STAINLESS STEEL — MAG DRIVE PUMPS
SERIES 897**

DIMENSIONS – AS, AK SIZES – MD-B15 & B40 (M DRIVE)



DIMENSIONS – AL SIZES – MD-B15 & B40 (M DRIVE)



These dimensions are average and not for construction purposes. Certified prints on request.

**MOTOR SPEED PRODUCT LINE:
STAINLESS STEEL — MAG DRIVE PUMPS
SERIES 897**

Section	1743
Page	1743.11
Issue	C

NPSH REQUIRED

Printed performance curves are not available.

Performance curves can be electronically generated with the Viking Pump Curve Generator on vikingpump.com.

NPSH_R data is not available on the Curve Generator.

NPSH (Net Positive Suction Head): The NPSH_R (Net Positive Suction Head Required by the pump) is given in the table below and applies for viscosities through 750 SSU. NPSH_A (Net Positive Suction Head – Available in the system) must be greater than the NPSH_R. For a complete explanation of NPSH, see Application Data Sheet AD-19.

FOR VISCOSITIES UP TO 750 SSU – See NPSH_R table below.

NPSH_R for high viscosities can be estimated using the following method:

1. Calculate line loss for a 1 foot long pipe of a diameter matching the pump inlet port size. Use your flow rate and max viscosity.
2. Convert this value into Feet of Liquid (S.G. 1.0)
3. Add this value to the NPSH_R value in the chart below.

NPSH_R – FEET OF LIQUID (Specific Gravity 1.0), Viscosities up to 750 SSU

PUMP SIZE	PUMPS SPEED, RPM					
	840	780	950	1150	1450	1750
GG	2.2	2.6	3.1	3.9	5.6	7.6
HJ, HL	2.8	3.4	4.5	6.2	9.5	13.5
AS, AK, AL	3.9	5.5	7.7	11.2	—	—

Section	1743
Page	1743.12
Issue	C

MOTOR SPEED PRODUCT LINE: STAINLESS STEEL — MAG DRIVE PUMPS SERIES 897

SELECTING THE CORRECT VIKING MAG DRIVE® COUPLING

1. Find pump HP and speed from the performance curves, which can be electronically generated with the Viking Pump Selector Program, located on www.vikingpump.com.

2. Calculate the application torque (T), using this formula:

$$T \text{ (FT-LB)} = \frac{\text{HP}}{\text{SPEED}} \times 5252$$

3. Select the temperature correction factor (TCF) from Table 1 or Table 2.

STANDARD NEODYMIUM MAGNETS (For Application Temperatures Below 225°F.)							
Application Temp. (°F)	AMB	100	125	150	175	200	225
TCF	1.0	.94	.88	.82	.76	.70	.64

Table 1: Temperature Correction Factors

OPTIONAL SAMARIUM COBALT MAGNETS (For Application Temperatures Above 225°F.)					
Application Temp. (°F)	175	200	300	400	500
TCF	.74	.73	.69	.63	.59

Table 2: Temperature Correction Factors

4. Divide calculated application torque by TCF to get adjusted application torque.

5. Select coupling with rating equal to or greater than “adjusted application torque” from Table 3.

MAGNETIC COUPLING TORQUE RATING TABLE	
Coupling Size	Torque (FT-LBS)
MD-A4	4
MD-A9	9
MD-B40	40
MD-C80	80

Table 3

EXAMPLE 1

1. A GG897 is required to pump 100 SSU liquid at 1750 RPM, 50 PSI differential pressure.

Temperature is 100°F.

From the pump selector, required HP is 0.85.

2. Calculate torque (T).

$$\begin{aligned} \text{TORQUE (T)} &= \frac{0.85}{1750} \times 5252 \\ &= 2.6 \text{ FT-LB} \end{aligned}$$

3. From the temperature correction factor table, the correction factor (TCF) = 0.94.

4. Calculate adjusted application torque.

$$\begin{aligned} \text{ADJUSTED APPLICATION TORQUE} &= \frac{2.6}{0.94} \\ &= 2.8 \text{ FT-LB} \end{aligned}$$

5. Select coupling.

A STANDARD NEODYMIUM MD-A4 COUPLING IS THE PROPER SELECTION

EXAMPLE 2

1. AN AL897 is required to pump 38 SSU liquid at 1150 RPM, 50 PSI differential pressure.

Temperature is 300°F.

From the pump selector, required HP is 3.7.

2. Calculate torque (T).

$$\begin{aligned} \text{TORQUE (T)} &= \frac{3.7}{1150} \times 5252 \\ &= 16.9 \text{ FT-LB} \end{aligned}$$

3. From the temperature correction factor table, the correction factor (TCF) = 0.69.

4. Calculate adjusted application torque.

$$\begin{aligned} \text{ADJUSTED APPLICATION TORQUE} &= \frac{16.9}{0.69} \\ &= 24.5 \text{ FT-LB} \end{aligned}$$

5. Select coupling.

AN MD-B40 WITH OPTIONAL SAMARIUM COBALT MAGNETS IS THE PROPER SELECTION