SELECTING & PRICING AN MROY PUMP

The mRoy product line is structured in a features and options format. Each model starts with and end item (such as: MRA) and then various options can be selected for each pump feature. For example, motor code A1 could be selected for the motor option. Each option selected may have a corresponding price associated with it.

To select a pump:

1. From the capacity/pressure selection table on the next page, select the appropriate series (MRA or MRB) along with the plunger diameter and gear ratio code that corresponds with the required capacity and pressure. Be sure to select based on the power available at the installation (50 vs. 60 Hz).

Selection Hint: Remember that you can double the capacity values in the selection table for duplex pumps. Duplex can be used either to control the chemical pump independently, or combined to yield greater total capacity.

2. If an actuator will be required, or a double diaphragm / rupture detection system will be selected, derate the pump capacity according to the chart found on the page after the capacity/pressure selection table.

3. On the pricing page for the series selected, choose the features and options you need to complete the product code for the application.

Selection Hint: The vast majority of pumps selected will not need selections from the extended portion of the code from the last page of the code selection. At the end of the second page there is an final code position that allows you to indicate if more options are required or if the code is complete up to that point. If selection is complete, select a "Y" and the code is then complete.

4. As each option is selected, add any price that may apply to the total.

5. Multiply the total by any discount that may apply. **NOTE:** In the extended options there are selections for testing that are not subject to discount.

Example code selection and pricing:

Note: Prices for example only.

	Code	Description	Price subject to discount	Prices not subject to Discount
Basic pump code selection	MRA	mRoy A end item	$ -	$ -
	1	Simplex	$ -	$ -
	1	316 SS liquid end (base price)	$ 3,531.00	$ -
	D	7/16" Plunger Diameter	$ -	$ -
	24	24:1 Gear Ratio	$ -	$ -
	A2	1/4 hp TEFC 1 Ph Motor 56 C Face	$ 275.00	$ -
	A	API Motor Mount	$ 297.00	$ -
	P	Standard NPT 1/2" Suction Connection	$ -	$ -
	P	Standard NPT 1/4" Discharge Connection	$ -	$ -
	V	Standard Viton O Rings	$ -	$ -
	A	Electric Actuator NEMA 4 115V	$ 4,392.00	$ -
	N	No Diaphragm Rupture Detection	$ -	$ -
	N	No Base	$ -	$ -
	N	Indicator the code is not complete	$ -	$ -
Extended Code Selection	V	High Viscosity Option	$ 381.00	$ -
	N	No Temperature Options Selected	$ -	$ -
	N	No Drive Options Selected	$ -	$ -
	N	No Extended Motor Options Selected	$ -	$ -
	N	No Lubrication Options Selected	$ -	$ -
	N	No Non-standard Coating Options Selected	$ -	$ -
	3	Hydrotest selected in Component Tests	$ -	$ 177.00
	B	5 Point Curve Selected in Run Tests	$ -	$ 440.00
		List Subtotal	$ 8,876.00	$ 617.00
		Discount %	20%	-
		Discounted Subtotal	$ 7,100.80	$ 617.00

Grand Total **$ 7,718**

Full model code: MRA11-D24A3APPVANNN-VNNNNN3B

mRoy Series Capacity/Pressure Selection - Metallic Liquid Ends

- Capacities shown are for simplex. Double capacity for duplex
- Actuators, rupture detection, and high viscosity options require capacity derating per the table on the next page

mRoy Series	Plunger		Gear Ratio Code	Strokes/Minute		Capacity / Pressure @ 60 hz 1725 RPM						Capacity / Pressure @ 50 hz 1425 RPM					
				60 hz 1725 RPM	50 hz 1425 RPM	Ratings at 100 psi/7 bar		Capacity at Max pressure				Ratings at 100 psi/7 bar		Capacity at Max pressure			
								Capacity		Max Pressure				Capacity		Max Pressure	
	Diameter	Code				GPH	L/hr	GPH	L/hr	PSI	Bar	GPH	L/hr	GPH	L/hr	PSI	Bar
A	3/8" 9.5 mm	H	77	23	19	0.35	1.3	0.19	0.7	3000	206.9	0.29	1.1	0.16	0.6	3000	206.9
			48	37	30	0.69	2.6	0.39	1.5	3000	206.9	0.58	2.2	0.33	1.2	3000	206.9
			24	73	60	1.39	5.3	0.65	2.5	3000	206.9	1.16	4.4	0.54	2	3000	206.9
			15	117	96	2.25	8.5	1.04	3.9	3000	206.9	1.88	7.1	0.87	3.3	3000	206.9
			10	185	152	3.53	13.4	1.63	6.2	3000	206.9	2.94	11.1	1.36	5.1	3000	206.9
	3/8" 9.5 mm	C	77	23	19	0.36	1.4	0.20	0.8	2000	137.9	0.30	1.1	0.17	0.6	2000	137.9
			48	37	30	0.73	2.8	0.34	1.3	2000	137.9	0.61	2.3	0.28	1.1	2000	137.9
			24	73	60	1.44	5.5	0.68	2.6	2000	137.9	1.20	4.5	0.57	2.2	2000	137.9
			15	117	96	2.32	8.8	1.09	4.1	2000	137.9	1.93	7.3	0.91	3.4	2000	137.9
			10	185	152	3.64	13.8	1.72	6.5	2000	137.9	3.03	11.5	1.43	5.4	2000	137.9
			08	-	178	-	-	-	-	-	-	3.55	13.4	1.67	6.3	2000	137.9
	7/16" 11.1 mm	D	77	23	19	0.57	2.2	0.4	1.5	1800	124.1	0.48	1.8	0.33	1.2	1800	124.1
			48	37	30	0.8	3	0.6	2.3	1800	124.1	0.67	2.5	0.50	1.9	1800	124.1
			24	73	60	1.7	6.4	1.2	4.5	1800	124.1	1.42	5.4	1.00	3.80	1800	124.1
			15	117	96	2.8	10.6	2	7.6	1800	124.1	2.33	8.8	1.67	6.30	1800	124.1
			10	185	152	4.4	16.7	3.1	11.7	1800	124.1	3.67	13.9	2.58	9.80	1800	124.1
			08	-	178	-	-	-	-	-	-	4.30	16.3	3.02	11.40	1800	124.1
	5/8" 15.9 mm	E	48	37	30	1.8	6.8	1.4	5.3	925	63.8	1.50	5.7	1.2	4.4	925	63.8
			24	73	60	3.8	14.4	3.1	11.7	925	63.8	3.17	12	2.6	9.8	925	63.8
			15	117	96	6.2	23.5	5.1	19.3	925	63.8	5.17	19.6	4.3	16.1	925	63.8
			10	185	152	9.4	35.6	7.7	29.1	925	63.8	7.83	29.6	6.4	24.3	925	63.8
			08	-	178	-	-	-	-	-	-	9.17	34.7	7.5	28.5	925	63.8
	1 - 1/16" 27 mm	F	48	37	30	6.1	23.1	5.5	20.8	350	24.1	5.08	19.2	4.6	17.3	350	24.1
			24	73	60	12.3	46.6	11.2	42.4	350	24.1	10.25	38.8	9.3	35.3	350	24.1
			15	117	96	19.4	73.4	18.1	68.5	350	24.1	16.17	61.2	15.1	57.1	350	24.1
			10	185	152	30.0	113.6	29.0	109.8	200	13.8	25.00	94.6	24.2	91.5	200	13.8
			08	-	178	-	-	-	-	-	-	29.28	110.8	28.3	107.1	200	13.8
B	19/32" 15.1 mm	K	38	48	40	4.7	17.8	3.3	12.5	1500	103.4	3.92	14.8	2.8	10.4	1500	103.4
			25	72	60	7.0	26.5	5.6	21.2	1500	103.4	5.83	22.1	4.7	17.7	1500	103.4
			19	96	80	9.5	36	7.1	26.9	1500	103.4	7.92	30	5.9	22.4	1500	103.4
			12	144	120	13.3	50.3	11.4	43.1	1500	103.4	11.08	41.9	9.5	36.0	1500	103.4
			10	-	148					1500	103.4	13.67	51.7	11.72	44.3	1500	103.4
	7/8" 22.2 mm	L	38	48	40	10.0	37.9	4.7	17.8	1000	69	8.33	31.5	3.9	14.8	1000	69
			25	72	60	16.0	60.6	11.0	41.6	1000	69	13.33	50.5	9.2	34.7	1000	69
			19	96	80	21.0	79.5	16.0	60.6	1000	69	17.50	66.2	13.3	50.5	1000	69
			12	144	120	30.4	115.1	25.6	96.9	1000	69	25.33	95.9	21.3	80.7	1000	69
			10	-	148					1000	69	31.24	118.2	26.31	99.6	1000	69
	1- 7/16" 36.5 mm	R	38	48	40	27.0	102.2	21.0	79.5	400 ‡	27.6 ‡	22.50	85.2	17.5	66.2	400 ‡	27.6 ‡
			25	72	60	42.0	159	36.0	136.3	400 ‡	27.6 ‡	35.00	132.5	30.0	113.6	400 ‡	27.6 ‡
			19	96	80	57.0	215.7	51.0	193	400 †	27.6 †	47.50	179.8	42.5	160.9	400 †	27.6 †
			12	144	120	85.0	321.7	79.0	299	400 †	27.6 †	70.83	268.1	65.8	249.2	400 †	27.6 †
			10	-	148	-	-	-	-	400 †	27.6 †	87.36	330.6	81.19	307.3	400 †	27.6 †

NOTES: † Duplex MRB pumps with plunger code "R" with gear codes 10, 12, or 19 are limited to 250 psi (17 bar)
‡ Duplex MRB pumps with plunger code "R" with gear codes 25 and 38 are limited to 350 psi (20.7 bar)
Duplex MRA pumps with 2 different size plunger can achieve max 350 psi (24.1 bar) only
MRA pumps plunger code "H" available in Simplex configuration only

mRoy Series Capacity/Pressure Selection - Plastic Liquid Ends

- **Includes PVC, PVDF liquid ends, and liquid ends for Fluoride applications**
- Capacities shown are for simplex. Double capacity for duplex
- Actuators, rupture detection, and high viscosity options require capacity derating per the table on the next page
- Please note that plastic liquid ends are not available for plunger code "K" - mRoy B frame with 19/32" (15.1 mm) plunger.

mRoy Series	Plunger		Gear Ratio Code	Strokes/Minute		Capacity / Pressure @ 60 hz 1725 RPM						Capacity / Pressure @ 50 hz 1425 RPM					
				60 hz 1725 RPM	50 hz 1425 RPM	Ratings at 100 psi/7 bar		Capacity at Max pressure				Ratings at 100 psi/7 bar		Capacity at Max pressure			
								Capacity		Max Pressure				Capacity		Max Pressure	
	Diameter	Code				GPH	L/hr	GPH	L/hr	PSI	Bar	GPH	L/hr	GPH	L/hr	PSI	Bar
A	3/8" 9.5 mm	C	**77**	23	19	0.32	1.2	0.28	1.1	150	10.3	0.27	1	0.23	0.9	150	10.3
			48	37	30	0.68	2.6	0.62	2.3	150	10.3	0.57	2.2	0.52	2	150	10.3
			24	73	60	1.35	5.1	1.30	4.9	150	10.3	1.13	4.3	1.08	4.1	150	10.3
			15	117	96	2.20	8.3	2.10	7.9	150	10.3	1.83	6.9	1.75	6.6	150	10.3
	7/16" 11.1 mm	D	**77**	23	19	0.5	1.9	0.45	1.7	150	10.3	0.42	1.6	0.38	1.4	150	10.3
			48	37	30	0.7	2.6	0.65	2.5	150	10.3	0.58	2.2	0.54	2	150	10.3
			24	73	60	1.5	5.7	1.4	5.3	150	10.3	1.25	4.7	1.17	4.40	150	10.3
			15	117	96	2.5	9.5	2.4	9.1	150	10.3	2.08	7.9	2.00	7.60	150	10.3
	5/8" 15.9 mm	E	**48**	37	30	1.6	6.1	1.5	5.7	150	10.3	1.33	5	1.3	4.7	150	10.3
			24	73	60	3.5	13.2	3.4	12.9	150	10.3	2.92	11.1	2.8	10.7	150	10.3
			15	117	96	5.6	21.2	5.5	20.8	150	10.3	4.67	17.7	4.6	17.3	150	10.3
	1- 1/16" 27 mm	F	**48**	37	30	5.7	21.6	5.6	21.2	150	10.3	4.75	18	4.7	17.7	150	10.3
			24	73	60	11.3	42.8	11.2	42.4	150	10.3	9.42	35.7	9.3	35.3	150	10.3
			15	117	96	18.1	68.5	18.0	68.1	150	10.3	15.08	57.1	15.0	56.8	150	10.3
B	7/8" 22.2 mm	L	**38**	48	40	10.0	37.9	9.7	36.7	150	10.3	8.33	31.5	8.1	30.6	150	10.3
			25	72	60	16.0	60.6	15.7	59.4	150	10.3	13.33	50.5	13.1	49.5	150	10.3
			19	96	80	21.0	79.5	20.7	78.3	150	10.3	17.50	66.2	17.3	65.3	150	10.3
			12	144	120	30.4	115.1	30.1	113.9	150	10.3	25.33	95.9	25.1	94.9	150	10.3
			10	-	148					150	10.3	31.24	118.2	30.93	117.1	150	10.3
	1 - 7/16" 36.5 mm	R	**38**	48	40	27.0	102.2	26.0	98.4	150	10.3	22.50	85.2	21.7	82.0	150	10.3
			25	72	60	42.0	159	41.0	155.2	150	10.3	35.00	132.5	34.2	129.3	150	10.3
			19	96	80	57.0	215.7	56.0	212	150	10.3	47.50	179.8	46.7	176.6	150	10.3
			12	144	120	85.0	321.7	84.0	317.9	150	10.3	70.83	268.1	70.0	265.0	150	10.3
			10	-	148	-	-	-	-	150	10.3	87.36	330.6	86.33	326.8	150	10.3

Horsepower / kW Requirements

The following are minimum values required. The use of variable speed drives may require higher power motors to operate at low RPM.

Frame		A		B					
Plunger Code		H	C, D, E, F	K		L		R	
				< 1000 psi/69 bar	> 1000 psi/69 bar	< 400 psi/26.7 bar	> 400 psi/26.7 bar	< 100 psi/7 bar	> 100 psi/7 bar
1 Ph	Simplex	1/3 HP(0.25 kW)	1/4 HP(0.18 kW)	3/4 HP (0.55 kW)	1 HP (0.75 kW)	3/4 HP (0.55 kW)	1 HP (0.75 kW)	3/4 HP (0.55 kW)	1 HP (0.75 kW)
	Duplex	-	1/3 HP(0.25 kW)	1 HP (0.75 kW)	1 HP (0.75 kW)	1 HP (0.75 kW)	1 HP (0.75 kW)	1 HP (0.75 kW)	1 HP (0.75 kW)
3 Ph	Simplex	1/3 HP(0.25 kW)	1/4 HP(0.18 kW)	1/2 HP (0.37 kW)	3/4 HP (0.55 kW)	1/2 HP (0.37 kW)	3/4 HP (0.55 kW)	1/2 HP (0.37 kW)	3/4 HP (0.55 kW)
	Duplex	-	1/3 HP(0.25 kW)	3/4 HP (0.55 kW)	1 HP (0.75 kW)	3/4 HP (0.55 kW)	1 HP (0.75 kW)	3/4 HP (0.55 kW)	1 HP (0.75 kW)

Note: All motor manufacturers note that general duty totally enclosed motors are equivalent to IP54 or below, and thus not suitable for outdoor or washdown areas without protection. For outdoor and washdown applications, use washdown duty IP55 or above rated motors. This is especially true for vertically mounted applications, which includes the mRoy series.

Motor manufacturers also note that Explosion Proof Fan Cooled motors are not recommended for outdoor or washdown areas without protection. Non ventilated explosion proof are recommended for outdoor use.

mRoy Series Capacity/Pressure Adjustments and Viscosity Ratings

Capacity Adjustment Factors

mRoy pump capacity must be derated when any of the options listed below are selected:

Multiply rating from the tables on the previous pages by these factors to determine actual pump capacity rating.
When two or more of the options above are purchased on the same pump, derate the pump by each factors.

mRoy Frame	A				B		
Plunger Diameter	3/8" 9.5 mm	7/16" 11.1 mm	5/8" 15.9 mm	1-1/16" 27 mm	19/32" 15.1 mm	7/8" 22 mm	1 - 7/16" 37 mm
Plunger Code	H / C	D	E	F	K	L	R
Electronic or Pneumatic Capacity Control	0.95	0.95	0.95	0.95	1.00	0.90	0.90
Diaphragm Rupture Detection System	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Double Diaphragm	-	-	0.95	0.95	-	-	-
High Viscosity Option	-	0.90	0.90	0.90	-	-	-

Viscosity Ratings in Centipoise - Standard units and pumps with High Viscosity Option

Plunger Size	Plunger Code	Gear Ratio Code	Strokes Per Minute		With High Viscosity Option - Max Fluid Viscosity at Typical Conditions (Centipoise)	Standard pump without high viscosity option - Viscosity at Typical Conditions (Centipoise)
			60 hz	50 hz		
3/8" 9.5 mm	H / C	77	23	19	N/A	2,400
		48	37	30	N/A	1,460
		24	73	60	N/A	460
		15	117	96	N/A	250
		10	185	152	N/A	100
		08	-	178	N/A	100
7/16" 11.1 mm	D	77	23	19	12,200	2,400
		48	37	30	7,500	1,460
		24	73	60	4,000	460
		15	117	96	2,000	250
		10	185	152	350	100
		08	-	178	350	100
5/8" 16 mm	E	48	37	30	5,000	550
		24	73	60	2,500	220
		15	117	96	1,250	120
		10	185	152	350	80
		08	-	178	350	80
1 - 1/16" 27 mm	F	48	37	30	1,000	130
		24	73	60	500	60
		15	117	96	300	30
		10	185	152	120	25
		08	-	178	120	25
19/32" 15.1 mm	K	38	48	40	-	130
		25	72	60	-	84
		19	96	80	-	59
		12	144	120	-	39
		10	-	148	-	39
7/8" 22.2 mm	L	38	48	40	-	325
		25	72	60	-	186
		19	96	80	-	143
		12	144	120	-	94
		10	-	148	-	94
1-7/16" 36.5 mm	R	38	48	40	-	107
		25	72	60	-	65
		19	96	80	-	46
		12	144	120	-	28
		10	-	148	-	28

Ratings are based on assumed conditions. To verify pump compatibility an NPIP (NPSH) calculation should be performed. Contact the factory for assistance.

NOTE: Hi Viscosity limits all head sizes in MRA to 350 PSI.
High Viscosity option is not available on the MRB series

mRoy® MRA Series Simplex - Full Feature/Option Price and Selection Table

MRA1		mRoy® MRA Series Simplex											Price
	Liquid End Material				Head/Valve	Diaphragm	Ball Checks	Contour Plate		Plunger H			
	1	316L SS			316L	PTFE	316L	316L		$ 3,966			$ 3,531
	2	PVC			PVC	PTFE	Ceramic	PVC					$ 3,531
	5	Alloy 20			Alloy 20	PTFE	Alloy 20	Alloy 20					$ 4,098
	6	Hastelloy C22			Hastelloy C	PTFE	Hastelloy C	Hastelloy C					$ 10,557
	7	PVDF			PVDF	PTFE	Ceramic	PVDF					$ 4,419
	8	Fluoride Applications			PVC	PTFE	PTFE	PVC					$ 3,555
	3	Titanium			Titanium	PTFE	Hastelloy C	Titanium					Consult Factory
		Plunger Diameter			Capacity @ 1725 RPM		Metallic Heads		Plastic Heads				
			Inches	Millimeters	Max GPH	Max l/hr	Max PSI	Max bar	Max PSI	Max bar			
		H	3/8"	9.5	3.53	13.4	3000	206.9	-	-			$ -
		C	3/8"	9.5	3.64	13.8	2000	137.9	150	10			$ -
		D	7/16"	11.1	4.4	16.7	1800	124.1	150	10			$ -
		E	5/8"	15.9	9.4	35.6	925	63.8	150	10			$ -
		F	1 - 1/16"	27	30	113.6	350	24.1	150	10			$ -
			Gear Ratio						**SPM @ RPM**				
									1725 RPM	**1425 RPM**			
			77	77:1 Gear Ratio					23	19			$ -
			48	48:1 Gear Ratio					37	30			$ -
			24	24:1 Gear Ratio					73	60			$ -
			15	15:1 Gear Ratio					117	96			$ -
			10	9.5:1 Gear Ratio	Not available on plastic liquid end pumps				185	152			$ -
			08	8:1 Gear Ratio - ONLY AVAILABLE ON PUMPS WITH MOTOR RPM 1425 or LESS					N/A	178			$ -
				Standard Motors and Mount Face Size for Non-standard Motors									
					Motor Mounts Only with special motor ordered from Milton Roy as a separate line item								
				S5	NEMA 56C								$ -
				S1	NEMA 143TC/145TC								$ -
				S7	IEC Frame 71, B5 Flange								$ -
				S8	IEC Frame 80, B5 Flange								$ 663
					Motor Mounts Only - Motor not supplied by Milton Roy								
				5X	NEMA 56C								$ 177
				1X	NEMA 143TC/145TC								$ 177
				7X	IEC Frame 71, B5 Flange								$ 177
				8X	IEC Frame 80, B5 Flange								$ 841
					Standard NEMA Motors with Mounts and Couplings - for other motors pick mount only and enter motor as separate line								
					HP (kw)	Enclosure	Phase	Hz	RPM	Motor Mount		Included Motor Part #	
				A1	1/4 (.18)	TEFC	1	60	1725	56C		4112000010	$ 287
				A2	1/4 (.18)	TEFC	3	60	1725	56C		4112000310	$ 275
				A4	1/3 (.25)	TENV	3	60	1725	56C	RECOMMENDED	4112002320	$ 353
				X1	1/3 (.25)	XPFC	1	60	1725	56C		4112002030	$ 671
				X2	1/3 (.25)	XPNV	3	60	1725	56C		4112002340	$ 885
				B1	1/2 (.37)	TEFC	3	60	1725	56C		4112004310	$ 335
				B2	1/2 (.37)	TENV	3	60	1725	56C		4112004320	$ 610
				X3	1/2 (.37)	XPFC	3	60	1725	56C		4112004330	$ 1,011
					Motor Mount Type								
					C	Close coupled motor mount - Only available for NEMA 56C and IEC71 Faced motors							$ -
					A	API flange mount with flexible coupling							$ 297
MRA1	**1**	**D**	**48**	**A2**	**C**	**Continue building code and adding option prices from the following pages**							

mRoy® MRA Series Simplex - Code Selection - Continued

Pipe Connections - Same codes apply to Suction and Discharge - Prices are per connection.									Price	
Suct	Disc	Metallic Liquid Ends - Contact factory for materials not shown							Alloy 20	316 L
P	P	NPT Metallic Liquid ends horizontal 1/2" Female Suction, 1/4" Female Discharge							$ -	$ -
A	A	1/2" 150# RF Thd Flange							$ 589	$ 353
B	B	1/2" 300# RF Thd Flange							$ 1,101	$ 429
C	C	1/2" 600# RF Thd Flange							$ 1,260	$ 477
D	D	1/2" 150# RF Socket Weld Flange							$ 721	$ 504
E	E	1/2" 300# RF Socket Weld Flange							$ 1,272	$ 550
F	F	1/2" 600# RF Socket Weld Flange							$ 1,582	$ 744
		Plastic Liquid Ends							PVDF	PVC
P	P	NPT Plastic Liquid ends Vertical 1/2" NPT Male Suction and Discharge							$ -	$ -
1	1	1/2" Plastic Thd Flange							$ 782	$ 81
		"O" Ring Material - Wetted								
		Metallic Liquid Ends								
		V	Viton Standard Offering							$ -
		E	EPDM							$ 41
		T	Teflex							$ 66
		K	Kalrez							$ 746
		Plastic Liquid Ends								
		T	Teflex Standard Offering (NOT recommended for Sodium hypochlorite application)							$ -
		V	Viton (Recommended for Sodium hypochlorite application)							$ 66
		E	EPDM							$ 41
		Capacity Control								
		N	Standard Aluminum Manual Micrometer							$ -
		S	Stainless Steel Manual Micrometer with SS Plug							$ 270
		L	Stainless Steel Locking Manual Micrometer (API 675) with SS Plug							$ 401
		W	Milton Roy Actuator Capacity Controller (ACC) IP68 / NEMA 4 ; 4-20mA Input/Output analog control ; 24VDC ; 85V to 260V ; 1-phase ; 50/60 Hz # 0280088010N-CW							$ 3,107
		E	Actuator Capacity Controller (ACC) Ex-proof ; 4-20mA Input/Output analog control; 24VDC ; 85V to 260V ; 1-phase ; 50/60Hz IP68 Ex d II BT4 # 0280087010N-CW						Derate pump capacity	$ 3,402
		J	Actuator Capacity Controller (ACC HART) IP68; Fieldbus HART Protocol 7.0 version or 4-20 mA I/O analog signal; 24VDC; 85V to 260V 1 phase 50/60Hz, -40°C/°F							$ 3,987
		H	Actuator Capacity Controller (ACC HART) Ex-proof; Fieldbus HART Protocol 7.0 version or 4-20 mA I/O analog signal; 24VDC; 85V to 260V 1 phase 50/60Hz, -40°C/°F							$ 4,282
		P	Pneumatic Actuator							$ 7,119
			Diaphragm Rupture Detection Systems							
			N	None (Standard)						$ -
			2	Direct Attach- Head Mounted Pressure type w/gauge only (***Plungers C, D & H- liquid end 316L***)	N/A on pumps with Hi Temp Option					$ 1,743
			3	Standard Design- Bracket Mounted Pressure type w/ external tubing and gauge only (***Plungers C & D- All liquid ends except 316L. Plungers E & F***)	N/A on pumps with Hi Temp Option					$ 2,543
			4	Pressure type w/gauge & NEMA 4 Switch	N/A on plunger code H or w/Hi Temp Opt.					$ 3,238
			5	Pressure type w/gauge & Ex Prf Switch	N/A on plunger code H or w/Hi Temp Opt.					$ 3,848
			6	Double Dia with intermediate fluid no probe	N/A on plunger codes C, D & H or w/Hi Temp Opt.					$ 922
			7	Double Dia w/intermediate fluid & probe	N/A on plunger codes C, D & H or w/Hi Temp Opt.					$ 2,875
				Base Options						
				N	No base					$ -
				Y	Base - Req'd for: Plunger H, PVC, PVDF, Hast C LE's, Suction flanges, pressure type rupture detection					$ 144
				V	VSD Drive - Base and mounting, wiring for Std VSD - Motor and VSD priced separately					$ 1,061
					Code Complete Identifier					
					Y Yes	*For pumps that can be completely configured with the code up to this point do not require the extended portion of the model code, therefore chose Y - code complete. If you require extended options from next page enter N = Not complete.*				
					N No					
P	P	V	N	N	N	N	Code complete for standard selections. For extended options continue to next page.			

As noted, if you have selected all options you need within the code to this point in the selection process, the code is now complete. The full code with this example combines the selections from the previous page and this age and would look like this:

MRA11-D48A2CPPVNNNN

mRoy® MRA Series Simplex - Code Selection Continued - Extended Options

Liquid End Extended Options								**Price**
N	None - Standard							$ -
V	High viscosity - Equivalent to former "P" series mRoy - NOTE: Max Rating 350 psi - Always uses large head - N/A plgr code "C" or plastic heads							$ 381
S	Slurry - Hardened 440 C Balls and 440 Seats (316 L SS liquid ends only, Single-ball suction check valve)							$ 630
D	Degas - PVC and PVDF only							PVC $ 1,525 / PVDF $ 2,689
G	G7 wetted parts - Metallic liquid ends only							$ 3,019
U	UHMW Polyethylene Diaphragm and Check valve back up rings							Consult Factory
	Temperature Related Extended Options							
	N	Standard: Ambient 20° F to 120° F (-6° C to 49° C) - Liquid -20° F to 200° F (-29°C to 93° C)						$ -
	1	Low ambient: Ambient -40°F to 120° F(-40° C to 49° C): Liquid -45°F to 200° F (-43° C to 93° C): Must select lube option 5						Consult Factory
	2	High includes PEEK Diaphragm: Ambient 20° F to 120° F (-6° C to 49° C) - Liquid 50° F to 300° F (10° C to 149° C)						$ 844
		Drive Extended Options						
		N	Standard					$ -
		H	High Suction Pressure Option					Consult Factory
		S	Sand Protection Option - Modified oil cap with filter - modified capacity control knob N/A for actuator					
		M	Marine and off-shore option - Xylan coated head bolts and washers					
			Motor Extended Options					
			N	Standard				$ -
			Y V C	These options are in the process of being designed and configured				Consult Factory
				Lubrication Options				
				N	Standard - Gear oil			$ -
				3	Low temp non synthetic (15° F to 50° F) - Gear oil			$ -
				4	Food Grade Oil - Nevastane			$ 50
				5	High performance synthetic - Hydraulic oil			$ 41
				9	Pump shipped without oil			$ -
					Coating System Options- See Note below for ACC paint option			
					N	Standard RAL 1018		$ -
					B	Food Grade Paint - RAL 9010		See Paint and Prep page
					C	250 µ Offshore Paint RAL 1018		
					D	350 µ Offshore Paint RAL 1018		
						Component Test Options		
						N	None	$ -
						3	Hydro test - head and connections	$ 329
						4	Hydro test - head and connections with witnessed inspection	$ 659
							Run Test Options	
							N	Standard production test - always included in tests below	$ -
							A	Customer witnessed standard test	$ 659
							B	API linearity test - 5 point curve	$ 440
							C	Customer witnessed API linearity test - 5 point curve	$ 880
							D	API repeatability test - 10 point curve - 5 ascending, 5 descending	$ 585
							E	Witnessed API repeatability test	$ 1,171
							F	API package - 10 point curve with hydro component test (select component test N)	$ 824
							G	Witnessed API test package	$ 1,648
V	**N**	**N**	**N**	**9**	**N**	**N**	**N**		

Complete sample code with extended options: **MRA11-D48A2CPPVNNNN-VNNN9NNN**

mRoy® A Simplex Routine Preventative Maintenance (RPM) Kits

Standard RPM kits for all MRA series

Plunger Dia	Plunger Code	Liquid End Material	Liquid End Type	O Ring Material	Kit Number	Price
All MRA Plungers	H	316 L SS	Standard	Std (Viton)	RPM1102	$ 916
				EPDM	RPM1103	$ 1,098
				Teflex	RPM1104	$ 977
				Kalrez	RPM1102K	$ 1,797
	All (C, D, E, F)	316 L SS	Standard	Std (Viton)	RPM1001	$ 768
				EPDM	RPM1010	$ 927
				Teflex	RPM1011	$ 841
				Kalrez	RPM1001K	$ 1,717
			Slurry	Std (Viton)	RPM1007	$ 4,060
			High Viscosity	Std (Viton)	RPM1008	$ 816
		Alloy 20	Standard	Std (Viton)	RPM1003	$ 1,519
				EPDM	RPM1012	$ 2,078
				Teflex	RPM1013	$ 1,998
				Kalrez	RPM1003K	$ 3,452
			High Viscosity	Std (Viton)	RPM1009	$ 1,519
		Hast C22	Standard	Std (Viton)	RPM1004	$ 5,115
				Kalrez	RPM1004K	$ 6,646
	C, D	PVC	Standard	EPDM	RPM1105	$ 761
				Viton	RPM1002	$ 657
				Std (Teflex)	RPM1036	$ 740
	E, F			EPDM	RPM1106	$ 948
				Viton	RPM1037	$ 927
				Std (Teflex)	RPM1038	$ 927
	C, D	PVDF	Standard	EPDM	RPM1107	$ 1,540
				Viton	RPM1005	$ 1,365
				Std (Teflex)	RPM1039	$ 1,519
	E, F			EPDM	RPM1108	$ 1,939
				Viton	RPM1040	$ 1,482
				Std (Teflex)	RPM1041	$ 1,918
	C, D	Fluoride Apps	PVC - PTFE balls	EPDM	RPM1109	$ 790
				Viton	RPM1006	$ 715
				Std (Teflex)	RPM1042	$ 769
	E, F			EPDM	RPM1110	$ 979
				Viton	RPM1043	$ 731
				Std (Teflex)	RPM1044	$ 769

Double diaphragm/ Ruputure detection RPM kits for all MRA series

Plunger Dia	Plunger Code	Liquid End Material	Liquid End Type	O Ring Material	Kit Number	Price
All MRA Plungers	H	316 L SS	Standard	Std (Viton)	RPM1102-LD	$ 1,009
				EPDM	RPM1103-LD	$ 1,209
				Teflex	RPM1104-LD	$ 1,076
				Kalrez	RPM1102K-LD	$ 1,976
	All (C, D, E, F)	316 L SS	Standard	Std (Viton)	RPM1001-LD	$ 845
				EPDM	RPM1010-LD	$ 1,022
				Teflex	RPM1011-LD	$ 927
				Kalrez	RPM1001K-LD	$ 1,861
			Slurry	Std (Viton)	RPM1007-LD	$ 4,467
			High Viscosity	Std (Viton)	RPM1008-LD	$ 899
		Alloy 20	Standard	Std (Viton)	RPM1003-LD	$ 1,671
				EPDM	RPM1012-LD	$ 2,286
				Teflex	RPM1013-LD	$ 2,200
				Kalrez	RPM1003K-LD	$ 3,596
			High Viscosity	Std (Viton)	RPM1009-LD	$ 1,671
		Hast C22	Standard	Std (Viton)	RPM1004-LD	$ 5,628
				Kalrez	RPM1004K-LD	$ 7,266
	C, D	PVC	Standard	EPDM	RPM1105-LD	$ 836
				Viton	RPM1002-LD	$ 723
				Std (Teflex)	RPM1036-LD	$ 815
	E, F			EPDM	RPM1106-LD	$ 1,042
				Viton	RPM1037-LD	$ 1,022
				Std (Teflex)	RPM1038-LD	$ 1,022
	C, D	PVDF	Standard	EPDM	RPM1107-LD	$ 1,703
				Viton	RPM1005-LD	$ 1,503
				Std (Teflex)	RPM1039-LD	$ 1,671
	E, F			EPDM	RPM1108-LD	$ 2,131
				Viton	RPM1040-LD	$ 1,630
				Std (Teflex)	RPM1041-LD	$ 2,110
	C, D	Fluoride Apps	PVC - PTFE balls	EPDM	RPM1109-LD	$ 876
				Viton	RPM1006-LD	$ 787
				Std (Teflex)	RPM1042-LD	$ 846
	E, F			EPDM	RPM1110-LD	$ 916
				Viton	RPM1043-LD	$ 805
				Std (Teflex)	RPM1044-LD	$ 846

Notes:

2. The above kits includes two diaphragms. Contact the factory for other materials.