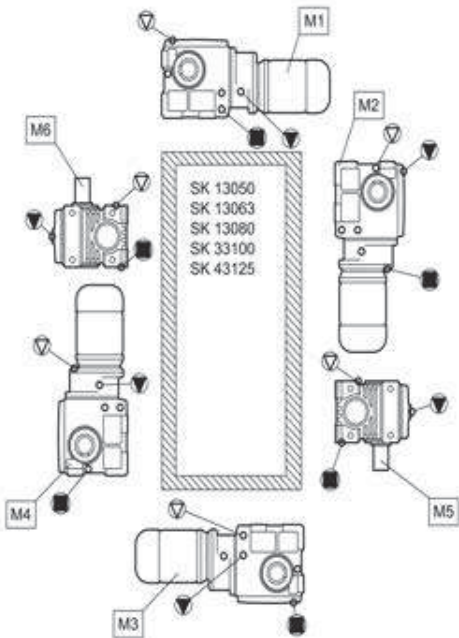
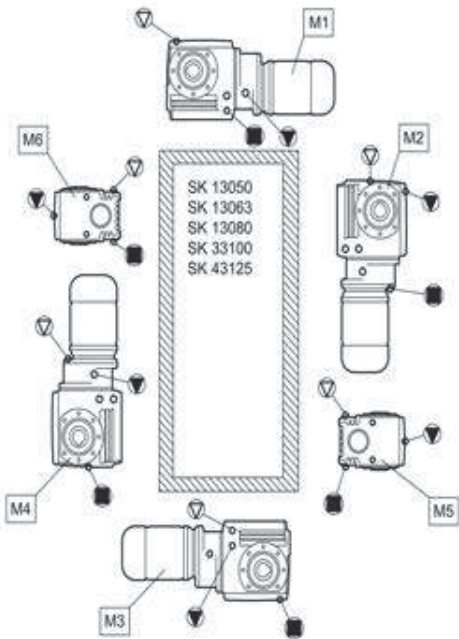




6.2 Lubricants

With the exception of type SK 11282, SK 11382, SK 12382 and SK 9096.1 gear units, all gear units are filled with lubricant ready for operation in the required installation position when delivered. This initial filling corresponds to a lubricant from the column for the ambient temperatures (normal version) in the lubricant table.

Roller bearing greases

This table shows comparable roller bearing greases from various manufacturers. The manufacturer can be changed for a given grease type. Getriebebau NORD must be contacted in case of change of grease type or ambient temperature range, as otherwise no warranty for the functionality of our gear units can be accepted.

Lubricant type	Ambient temperature					
Mineral oil-based grease	-30 ... 60 °C	Tribol GR 100-2 PD	Renolit GP 2 Renolit LZR 2 H	-	Mobilux EP 2	Gadus S2 V100 2
	-50 ... 40 °C	Optitemp LG 2	Renolit WTF 2	-	-	-
Synthetic grease	-25 ... 80 °C	Tribol GR 4747/220-2 HAT	Renolit HLT 2 Renolit LST 2	PETAMO GHY 133 N Klüberplex BEM 41-132	Mobiltemp SHC 32	
Biodegradable grease	-25 ... 40 °C	-	Plantogel 2 S	Klüberbio M 72-82	Mobil SHC Grease 102 EAL	Naturelle Grease EP2

Table 5: Roller bearing greases

Lubricant table

This table shows comparable lubricants from various manufacturers. The manufacturer can be changed within a particular viscosity or lubricant type. Getriebebau NORD must be contacted in case of change of viscosity or lubricant type, as otherwise no warranty for the functionality of our gearboxes can be accepted.

Lubricant type	Details on type plate	DIN (ISO) / Ambient temperature						
Mineral oil	CLP 680	ISO VG 680 0...40 °C	Alpha EP 680 Alpha SP 680 Optigear BM 680 Optigear Synthetic 1100/680	Renolin CLP 680 Renolin CLP 680 Plus	Klüberoil GEM 1-680 N	Mobilgear 600 XP 680	Omala S2 G 680	Carter EP 680 Carter XEP 680
	CLP 220	ISO VG 220 -10...40 °C	Alpha EP 220 Alpha SP 220 Optigear BM 220 Optigear Synthetic 1100/220	Renolin CLP 220 Renolin CLP 220 Plus Renolin Gear 220 VCI	Klüberoil GEM 1-220 N	Mobilgear 600 XP 220	Omala S2 G 220	Carter EP 220 Carter XEP 220
	CLP 100	ISO VG 100 -15...25 °C	Alpha EP 100 Alpha SP 100 Optigear BM 100 Optigear Synthetic 1100/100	Renolin CLP 100 Renolin CLP 100 Plus	Klüberoil GEM 1-100 N	Mobilgear 600 XP 100	Omala S2 G 100	Carter EP 100
Synthetic oil (Polyglycol)	CLP PG 680	ISO VG 680 -20...40 °C	Alphasyn GS 680 Optigear Synthetic 800/680	Renolin PG 680	Klübersynth GH 6-680	Mobil Glygoyle 680	Omala S4 WE 680	Carter SY 680 Carter SG 680
	CLP PG 220	ISO VG 220 -25...80 °C	Alphasyn GS 220 Alphasyn PG 220 Optigear Synthetic 800/220	Renolin PG 220	Klübersynth GH 6-220	Mobil Glygoyle 220	Omala S4 WE 220	-
Synthetic oil (hydrocarbon)	CLP HC 460	ISO VG 460 -30...80 °C	Alphasyn EP 460 Optigear Synthetic PD 460	Renolin Unisyn CLP 460	Klübersynth GEM 4-460 N	Mobil SHC 634	Omala S4 GX 460	Carter SH 460
	CLP HC 220	ISO VG 220 -40...80 °C	Alphasyn EP 220 Optigear Synthetic PD 220	Renolin Unisyn CLP 220 Renolin Unisyn Gear VCI	Klübersynth GEM 4-220 N	Mobil SHC 630	Omala S4 GX 220	Carter SH 220
Bio-degradable oil	CLP E 680	ISO VG 680 -5...40 °C	-	Plantogear 680 S	-	-	-	-
	CLP E 220	ISO VG 220 -5...40 °C	Performance Bio GE 220 ESS Performance Bio GE 220 ESU	Plantogear 220 S	Klübersynth GEM 2-220	-	Naturelle Gear Fluid EP 220	-

Lubricant type	Details on type plate	DIN (ISO) / Ambient temperature						
Food grade oil	CLP PG H1 680	ISO VG 680 -5...40 °C	Optileb GT 1800/680	Cassida Fluid WG 680	Klübersynth UH1 6-680	Mobil Glygoyle 680		-
	CLP PG H1 220	ISO VG 220 -25...40 °C	Optileb GT 1800/200	Cassida Fluid WG 220	Klübersynth UH1 6-220	Mobil Glygoyle 220		Nevastane SY 220
	CLP HC H1 680	ISO VG 680 -5...40 °C	Optileb GT 680	Cassida Fluid GL 680	Klüberoil 4 UH1-680 N	-		-
	CLP PG H1 220	ISO VG 220 -25...40 °C	Optileb GT 220	Cassida Fluid GL 220	Klüberoil 4 UH1-220 N	Mobil SHC Cibus 220		Nevastane XSH 220
Gear unit fluid grease		-25 ... 60 °C	Tribol GR 100-00 PD Tribol GR 3020/1000-00 PD Spheerol EPL 00	Renolit Duraplex EP 00 Renolit LST 00	MICROLUBE GB 00 Klübersynth GE 46-1200	Mobil Chassis Grease LBZ Mobil Glygoyle Grease 00	Alvania EP(LF)2 -	Multis EP 00 Marson SY 00

Table 6: Lubricant table

6.3 Lubricant quantities

Information

Lubricants

After changing the lubricant, and in particular after the initial filling, the oil level may change during the first few hours of operation, as the oil galleries and the hollow spaces only fill gradually during operation.

The oil level is still within the permissible tolerance.

If at the express request of the customer, an oil inspection glass is installed at an additional charge, we recommend that the customer corrects the oil level after an operating period of approx. 2 hours, so that when the gear unit is at a standstill and has cooled down, the oil level is visible in the inspection glass. Only then, is it possible to check the oil level by means of the inspection glass.

The filling quantities stated in the following tables are for guidance only. The precise quantities vary depending on the exact gear ratio. When filling, always observe the oil level screw hole as an indicator of the precise quantity of oil.

* Gear unit types SK 11282, SK 11382, SK 11382.1, SK 12382 and SK 9096.1 are normally supplied without oil.

6.4 Helical gear unit

 [L]							 [L]						
⇒ 6.1	M1	M2	M3	M4	M5	M6	⇒ 6.1	M1	M2	M3	M4	M5	M6
SK11E	0,25	0,50	0,65	0,50	0,40	0,40	SK11E F	0,30	0,50	0,50	0,45	0,40	0,40
SK21E	0,60	1,20	1,30	1,00	1,00	1,00	SK21E F	0,50	1,20	1,30	0,60	0,90	0,90
SK31E	1,10	2,00	2,20	1,70	1,50	1,50	SK31E F	0,90	1,80	1,65	1,30	1,25	1,25
SK41E	1,60	2,80	3,30	2,80	2,30	2,30	SK41E F	1,20	2,30	2,70	2,00	1,90	1,90
SK51E	1,80	3,50	4,10	4,00	3,80	3,80	SK51E F	1,80	3,50	4,10	3,00	3,80	3,80

 [L]							 [L]						
SK02	0,20	0,75	0,75	0,65	0,60	0,60	SK02 F	0,25	0,70	0,70	0,70	0,50	0,50
SK12	0,25	0,80	0,85	0,75	0,55	0,55	SK12 F	0,35	0,85	0,90	0,90	0,70	0,70
SK22	0,50	1,90	2,10	1,80	1,40	1,40	SK22 F	0,70	1,80	1,80	1,80	1,40	1,40
SK32	0,90	2,50	3,10	3,10	2,00	2,00	SK32 F	1,20	2,80	3,10	3,10	2,20	2,20
SK42	1,40	4,50	4,50	4,30	3,20	3,20	SK42 F	1,80	4,40	4,50	4,00	3,70	3,70
SK52	2,50	7,00	6,80	6,80	5,10	5,10	SK52 F	3,00	6,80	6,20	7,40	5,60	5,60

 [L]							 [L]						
SK62	6,50	15,00	13,00	16,00	15,00	15,00	SK62 F	7,00	15,00	14,00	18,50	16,00	16,00
SK72	10,00	23,00	18,00	26,00	23,00	23,00	SK72 F	10,00	23,00	18,50	28,00	23,00	23,00
SK82	14,00	35,00	27,00	44,00	32,00	32,00	SK82 F	15,00	37,00	29,00	45,00	34,50	34,50
SK92	25,00	73,00	47,00	76,00	52,00	52,00	SK92 F	26,00	73,00	47,00	78,00	52,00	52,00
SK102	36,00	79,00	66,00	102,00	71,00	71,00	SK102 F	40,00	81,00	66,00	104,00	72,00	72,00

 [L]							 [L]						
SK03	0,35	1,20	0,80	1,00	0,70	0,70	SK03 F	0,55	0,95	0,90	1,20	0,90	0,90
SK13	0,75	1,30	1,30	1,20	0,75	0,75	SK13 F	1,00	1,30	1,30	1,20	1,00	1,00
SK23	1,20	2,00	1,90	2,40	1,60	1,60	SK23 F	1,40	2,80	2,30	2,80	2,80	2,80
SK33N	1,75	3,00	3,40	4,00	2,30	2,30	SK33N F	2,20	3,00	3,40	4,20	2,30	2,30
SK43	3,00	5,60	5,20	6,60	3,60	3,60	SK43 F	3,50	5,70	5,00	6,10	4,10	4,10
SK53	4,50	8,70	7,70	8,70	6,00	6,00	SK53 F	5,20	8,40	7,00	8,90	6,70	6,70

 [L]							 [L]						
SK63	13,00	14,50	14,50	16,00	13,00	13,00	SK63 F	13,50	14,00	15,50	18,00	14,00	14,00
SK73	20,50	20,00	22,50	27,00	20,00	20,00	SK73 F	22,00	22,50	23,00	27,50	20,00	20,00
SK83	30,00	31,00	34,00	37,00	33,00	33,00	SK83 F	31,00	34,00	35,00	40,00	34,00	34,00
SK93	53,00	70,00	59,00	72,00	49,00	49,00	SK93 F	53,00	70,00	59,00	74,00	49,00	49,00
SK103	74,00	71,00	74,00	97,00	67,00	67,00	SK103 F	69,00	78,00	78,00	99,00	67,00	67,00

Table 7: Lubricant quantities for helical gear units

NORDBLOC

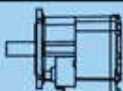
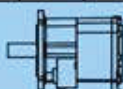
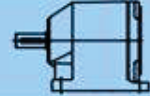
 [L]							 [L]						
	M1	M2	M3	M4	M5	M6		M1	M2	M3	M4	M5	M6
SK072.1	0,16	0,32	0,21	0,23	0,18	0,20	SK072.1 F	0,16	0,32	0,21	0,23	0,18	0,20
SK172.1	0,27	0,59	0,42	0,45	0,32	0,39	SK172.1 F	0,27	0,59	0,42	0,45	0,32	0,39
SK372.1	0,45	1,05	0,75	1,00	0,60	0,65	SK372.1 F	0,45	1,05	0,75	1,00	0,60	0,65
SK572.1	0,75	1,90	1,50	2,00	1,10	1,15	SK572.1 F	0,75	1,90	1,50	2,00	1,10	1,15
SK672.1	1,10	2,60	2,15	2,70	1,55	1,65	SK672.1 F	1,10	2,60	2,15	2,70	1,55	1,65
SK772.1	1,30	3,80	2,40	3,20	1,60	2,50	SK772.1 F	1,30	3,80	2,40	3,30	1,70	2,40
SK872.1	2,90	7,80	4,60	6,40	2,50	4,00	SK872.1 F	3,20	7,50	5,10	6,70	2,60	4,30
SK972.1	4,50	12,00	7,50	11,50	4,20	7,50	SK972.1 F	4,50	12,50	8,00	12,50	4,50	7,70
SK772.1VL	2,00	3,80	2,40	3,20	1,60	2,50	SK772.1VL F	2,00	3,80	2,40	3,30	1,70	2,40
SK872.1VL	5,00	7,80	4,60	6,40	2,50	4,00	SK872.1VL F	5,00	7,50	5,10	6,70	2,60	4,30
SK972.1VL	8,50	12,00	7,50	11,50	4,20	7,50	SK972.1VL F	8,50	12,50	8,00	12,50	4,50	7,70
 [L]							 [L]						
	M1	M2	M3	M4	M5	M6		M1	M2	M3	M4	M5	M6
SK373.1	0,45	1,05	0,75	1,00	0,60	0,65	SK373.1 F	0,45	1,05	0,75	1,00	0,60	0,65
SK573.1	0,75	1,90	1,50	2,00	1,10	1,15	SK573.1 F	0,75	1,90	1,50	2,00	1,10	1,15
SK673.1	1,10	2,60	2,15	2,70	1,55	1,65	SK673.1 F	1,10	2,60	2,15	2,70	1,55	1,65
SK773.1	2,30	3,80	3,30	3,20	2,40	3,10	SK773.1 F	2,00	3,50	3,20	2,90	2,30	3,00
SK873.1	4,20	7,80	5,90	6,40	4,10	5,90	SK873.1 F	4,10	7,60	6,90	6,60	5,00	6,60
SK973.1	7,50	12,00	10,50	11,50	7,50	10,50	SK973.1 F	7,40	12,20	11,10	11,60	8,00	10,90
SK773.1VL	2,30	3,80	3,30	3,20	2,40	3,10	SK773.1VL F	2,00	3,50	3,20	2,90	2,30	3,00
SK873.1VL	4,20	7,80	5,90	6,40	4,10	5,90	SK873.1VL F	4,10	7,60	6,90	6,60	5,00	6,60
SK973.1VL	7,50	12,00	10,50	11,50	7,50	10,50	SK973.1VL F	7,40	12,20	11,10	11,60	8,00	10,90
 [L]													
	M1	M2	M3	M4	M5	M6							
SK071.1/071.1F	0,18	0,40	0,38	0,40	0,30	0,30							
SK171.1/171.1F	0,22	0,40	0,36	0,40	0,33	0,33							
SK371.1/371.1F	0,35	0,58	0,55	0,58	0,49	0,49							
SK571.1/571.1F	0,48	0,86	0,80	0,92	0,68	0,68							
SK771.1/771.1F	0,90	1,50	1,20	1,70	1,16	1,16							

Table 8: Lubricant quantities for NORDBLOC

NORDBLOC helical gear units

 [L]							 [L]						
⇒  6.1	M1	M2	M3	M4	M5	M6	⇒  6.1	M1	M2	M3	M4	M5	M6
SK172	0,35	0,50	0,50	0,50	0,50	0,50	SK172 F	0,35	0,50	0,50	0,50	0,50	0,50
SK272	0,60	1,00	1,00	1,00	1,00	1,00	SK272 F	0,60	1,00	1,00	1,00	1,00	1,00
SK372	0,60	1,00	1,00	1,00	1,00	1,00	SK372 F	0,60	1,00	1,00	1,00	1,00	1,00
SK472	1,00	1,90	1,90	2,00	1,80	1,80	SK472 F	1,00	1,90	1,90	1,90	1,90	1,50
SK572	1,00	1,90	1,90	2,00	1,80	1,80	SK572 F	1,00	1,90	1,90	1,90	1,90	1,50
SK672	1,40	3,40	3,10	3,15	1,45	3,15	SK672 F	1,15	3,40	2,70	2,80	1,25	2,70
SK772	2,00	3,30	3,50	4,20	2,70	3,30	SK772 F	1,60	3,30	3,50	3,30	3,10	3,10
SK872	3,70	9,60	9,10	7,30	4,70	8,00	SK872 F	3,50	9,00	7,90	7,70	3,90	7,20
SK972	6,50	16,00	15,70	14,70	8,50	14,00	SK972 F	6,50	15,00	13,00	13,50	6,50	12,00

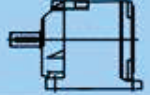
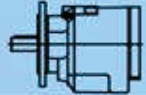
 [L]							 [L]						
SK273	0,62	1,10	1,10	1,10	1,10	1,10	SK273 F	0,62	1,10	1,10	1,10	1,10	1,10
SK373	0,55	1,10	1,10	1,10	1,10	1,10	SK373 F	0,55	1,10	1,10	1,10	1,10	1,10
SK473	1,30	2,50	2,10	2,40	2,10	2,10	SK473 F	1,25	2,40	2,10	2,50	2,10	2,10
SK573	1,30	2,50	2,10	2,40	2,10	2,10	SK573 F	1,25	2,40	2,10	2,50	2,10	2,10
SK673	1,80	3,80	3,20	3,40	2,90	3,00	SK673 F	1,70	3,80	3,00	3,20	3,00	3,00
SK773	2,50	4,50	3,70	4,60	3,30	3,30	SK773 F	2,30	5,00	3,60	4,50	3,90	3,90
SK873	6,20	8,40	7,50	9,10	7,50	7,50	SK873 F	5,00	8,80	7,60	8,00	8,00	8,00
SK973	11,00	15,80	13,00	16,00	13,30	13,00	SK973 F	10,30	16,50	13,00	16,00	14,00	14,00

Table 9: Lubricant quantities for NORDBLOC helical gear units

Standard helical gear units

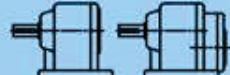
 [L]							 [L]						
⇒  6.1	M1	M2	M3	M4	M5	M6	⇒  6.1	M1	M2	M3	M4	M5	M6
SK20	0,55	1,00	0,55	1,00	0,55	0,55	SK20 F	0,35	0,60	0,35	0,60	0,35	0,35
SK0	0,13	0,22	0,13	0,22	0,13	0,13	SK0 F	0,13	0,22	0,13	0,22	0,13	0,13
SK01	0,22	0,38	0,22	0,38	0,22	0,22	SK01 F	0,22	0,38	0,22	0,38	0,22	0,22
SK25	0,50	1,00	0,50	1,00	0,50	0,50	SK25 F	0,50	1,00	0,50	1,00	0,50	0,50
SK33	1,00	1,60	1,00	1,60	1,00	1,00	SK33 F	1,00	1,50	1,00	1,50	1,00	1,00
SK30	0,90	1,30	0,90	1,30	0,90	0,90	SK30 F	0,70	1,10	0,70	1,10	0,70	0,70
SK300	1,20	2,00	1,20	2,00	1,20	1,20	SK300 F	1,25	1,50	1,20	1,80	1,30	0,95
SK330	1,80	2,80	1,80	2,80	1,80	1,80	SK330 F	1,60	2,50	1,60	2,90	1,90	1,40
SK200	0,80	1,30	0,80	1,30	0,80	0,80	SK200 F	0,65	0,95	0,70	1,10	0,80	0,50
SK010	0,38	0,60	0,38	0,60	0,38	0,38	SK010 F	0,35	0,65	0,40	0,74	0,50	0,30
SK250	1,20	1,50	1,20	1,50	1,20	1,20	SK250 F	0,90	1,40	1,00	1,60	1,30	0,80
SK000	0,24	0,40	0,24	0,41	0,24	0,24	SK000 F	0,24	0,41	0,24	0,41	0,24	0,24

Table 10: Lubricant quantities for standard helical gear units

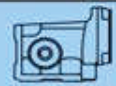
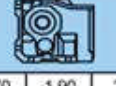
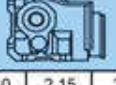
Parallel shaft gear units

 [L]							 [L]						
⇒  6.1	M1	M2	M3	M4	M5	M6	⇒  6.1	M1	M2	M3	M4	M5	M6
SK0182NB A	0,40	0,55	0,55	0,40	0,40	0,40							
SK0282NB A	0,70	1,10	0,80	1,10	0,90	0,90							
							SK1382NB A	1,40	2,30	2,20	2,20	2,00	2,00
 [L]							 [L]						
SK1282 A	0,95	1,30	0,90	1,30	1,00	1,00	SK2382 A	2,30	2,70	2,10	3,20	2,00	2,00
SK2282 A	1,70	2,30	1,70	2,20	1,90	1,90	SK3382 A	3,80	4,30	3,00	5,50	3,00	3,00
SK3282 A	2,80	4,00	3,30	3,80	3,00	3,00	SK4382 A	6,10	6,90	4,90	8,40	5,00	5,00
SK4282 A	4,20	5,40	4,40	5,00	4,20	4,20	SK5382 A	12,50	12,00	6,70	14,00	8,30	8,30
SK5282 A	7,50	8,80	7,50	8,80	7,20	7,20	SK1382 A	1,45	1,60	1,15	1,70	1,10	1,10
 [L]							 [L]						
SK6282 A	17,00	15,50	12,50	17,50	11,00	14,00	SK6382 A	16,00	13,00	10,00	18,00	14,00	12,50
SK7282 A	25,50	21,00	20,50	27,00	16,00	21,00	SK7382 A	22,00	21,00	16,00	25,00	23,00	22,00
SK8282 A	37,50	33,00	30,50	44,00	31,00	31,00	SK8382 A	34,50	32,50	25,00	38,00	35,00	30,00
SK9282 A	74,50	70,00	56,00	80,00	65,00	59,00	SK9382 A	73,50	70,00	43,00	74,50	65,00	60,00
 [L]							 [L]						
SK10282 A	90	90	40	90	60	82	SK10382 A	85	90	73	100	80	80
SK11282 A	165	160	145	195	100	140	SK11382 A	160	155	140	210	155	135
							SK12382 A	160	155	140	210	155	135
							SK10382.1 A	76,0	80,0	71,0	92,5	71,5	66,5
							SK11382.1 A	127	133	118	194	124	112

* For further information see page 58

Table 11: Lubricant quantities for parallel shaft gear units

Bevel gear units

 [L] 6.1							 [L] 6.1						
	M1	M2	M3	M4	M5	M6		M1	M2	M3	M4	M5	M6
SK92072	0,40	0,60	0,50	0,55	0,40	0,40	SK92072 A	0,40	0,60	0,55	0,55	0,40	0,40
SK92172	0,60	0,90	1,00	1,10	1,10	0,80	SK92172 A	0,50	1,00	0,90	1,05	0,90	0,60
SK92372	0,90	1,60	1,50	1,90	1,50	0,90	SK92372 A	1,20	1,60	1,50	1,90	1,30	1,30
SK92672	1,80	3,50	3,60	3,40	2,60	2,60	SK92672 A	1,60	2,80	2,50	3,30	2,40	2,40
SK92772	2,30	4,50	4,60	5,30	4,10	4,10	SK92772 A	2,80	4,40	4,50	5,50	3,50	3,50
 [L] 6.1							 [L] 6.1						
	M1	M2	M3	M4	M5	M6		M1	M2	M3	M4	M5	M6
SK92072.1	0,26	0,49	0,42	0,54	0,29	0,31	SK93072.1	0,39	0,93	0,79	1,02	0,49	0,62
SK92172.1	0,34	0,61	0,52	0,67	0,42	0,48	SK93172.1	0,60	1,17	0,94	1,22	0,65	0,85
SK92372.1	0,43	0,92	0,73	0,83	0,55	0,61	SK93372.1	1,00	1,97	1,65	2,14	1,12	1,34
SK92672.1	0,85	1,60	1,20	1,50	1,02	1,02	SK93672.1	1,80	3,23	2,71	3,80	2,02	2,45
SK92772.1	1,30	2,65	1,86	2,45	1,60	1,60	SK93772.1	2,72	4,63	3,70	5,40	2,93	3,25
SK920072.1	0,21	0,47	0,36	0,34	0,28	0,28	SK930072.1	0,28	0,65	0,56	0,54	0,39	0,39
 [L] 6.1							 [L] 6.1						
	M1	M2	M3	M4	M5	M6		M1	M2	M3	M4	M5	M6
SK9012.1	0,70	1,70	1,90	2,10	1,10	1,50	SK9012.1 A	1,00	1,90	1,90	2,20	1,20	1,70
SK9016.1	0,70	1,70	1,90	2,10	1,10	1,50	SK9016.1 A	1,00	1,90	1,90	2,20	1,20	1,70
SK9022.1	1,30	2,90	3,30	3,80	1,70	2,80	SK9022.1 A	1,60	3,50	3,50	4,20	2,30	2,80
SK9032.1	1,80	5,40	6,10	6,80	3,00	4,60	SK9032.1 A	2,10	4,80	6,40	7,10	3,30	5,10
SK9042.1	4,40	9,00	10,00	10,70	5,20	7,70	SK9042.1 A	4,50	10,00	10,00	11,50	6,50	8,20
SK9052.1	6,50	16,00	19,00	21,50	11,00	15,50	SK9052.1 A	7,50	16,50	20,00	23,50	11,50	18,00
SK9062.1	10,00	27,50	32,00	36,00	18,00	24,00	SK9062.1 A	12,00	27,50	33,00	38,50	19,00	26,00
SK9072.1	10,00	27,50	32,00	36,00	18,00	24,00	SK9072.1 A	12,00	27,50	33,00	38,50	19,00	26,00
SK9082.1	17,00	51,50	62,50	71,50	33,00	46,50	SK9082.1 A	21,00	54,00	66,00	80,00	38,00	52,00
SK9086.1	29,00	73,00	85,00	102,00	48,00	62,00	SK9086.1 A	36,00	78,00	91,00	107,00	53,00	76,00
SK9092.1	41,00	157,00	170,00	172,00	80,00	90,00	SK9092.1 A	40,00	130,00	154,00	175,00	82,00	91,00
SK9096.1	70,00	187,00	194,00	254,00	109,00	152,00	SK9096.1 A	80,00	187,00	193,00	257,00	113,00	156,00
 [L] 6.1							 [L] 6.1						
	M1	M2	M3	M4	M5	M6		M1	M2	M3	M4	M5	M6
SK9013.1	1,35	2,10	2,15	2,75	1,00	1,80	SK9013.1 A	1,45	2,30	2,10	2,80	1,05	1,80
SK9017.1	1,30	2,00	2,10	2,70	1,00	1,70	SK9017.1 A	1,45	2,30	2,10	2,80	1,05	1,80
SK9023.1	2,20	3,20	3,60	4,70	2,20	2,90	SK9023.1 A	2,30	3,50	3,80	5,30	2,20	3,40
SK9033.1	3,10	5,70	6,30	8,00	3,40	4,80	SK9033.1 A	3,70	5,70	6,70	8,60	3,60	5,30
SK9043.1	5,00	10,10	11,00	13,30	5,70	8,10	SK9043.1 A	6,50	10,50	11,90	14,70	6,70	9,30
SK9053.1	10,00	17,00	20,00	24,50	11,50	16,50	SK9053.1 A	13,00	18,00	21,50	26,50	13,00	17,00

* For further information see page 58

Table 12: Lubricant quantities for bevel gear units

Helical worm gear units

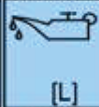
 [L]							 [L]							 [L]						
⇒ 6.1																				
	M1	M2	M3	M4	M5	M6		M1	M2	M3	M4	M5	M6		M1	M2	M3	M4	M5	M6
SK02040	0,40	0,80	0,75	0,65	0,50	0,50	SK02040 A	0,40	0,70	0,65	0,65	0,55	0,55	SK02040 A	0,45	1,40	1,15	1,10	0,75	0,75
SK02050	0,40	1,40	1,10	1,30	0,70	0,70	SK02050 A	0,45	1,40	1,15	1,10	0,75	0,75	SK02050 A	0,45	1,40	1,15	1,10	0,75	0,75
SK12063	0,60	1,80	1,20	1,60	1,00	1,00	SK12063 A	0,55	1,45	1,60	1,60	1,10	1,10	SK12063 A	0,55	1,45	1,60	1,60	1,10	1,10
SK12080	0,90	3,10	2,40	3,00	1,80	1,80	SK12080 A	0,80	3,10	3,20	2,80	1,80	1,80	SK12080 A	0,80	3,10	3,20	2,80	1,80	1,80
SK32100	1,50	6,30	5,60	5,50	3,60	3,60	SK32100 A	1,50	5,60	5,60	5,30	4,00	4,00	SK32100 A	1,50	5,60	5,60	5,30	4,00	4,00
SK42125	2,80	11,80	10,20	10,00	6,20	6,20	SK42125 A	3,00	12,50	10,80	10,80	6,50	6,50	SK42125 A	3,00	12,50	10,80	10,80	6,50	6,50
 [L]							 [L]							 [L]						
SK13050	0,75	1,75	1,30	1,75	0,75	0,75	SK13050 A	0,90	1,80	1,30	1,65	1,30	1,30	SK13050 A	0,90	1,80	1,30	1,65	1,30	1,30
SK13063	1,00	2,30	1,50	2,20	1,10	1,10	SK13063 A	1,05	2,10	1,80	2,10	1,40	1,40	SK13063 A	1,05	2,10	1,80	2,10	1,40	1,40
SK13080	1,70	3,50	3,50	3,50	2,00	2,00	SK13080 A	1,60	3,60	2,90	3,75	2,00	2,00	SK13080 A	1,60	3,60	2,90	3,75	2,00	2,00
SK33100	2,40	6,40	5,40	6,50	3,40	3,40	SK33100 A	2,60	6,00	5,80	6,00	3,50	3,50	SK33100 A	2,60	6,00	5,80	6,00	3,50	3,50
SK43125	4,25	13,00	10,50	13,50	7,20	7,20	SK43125 A	4,60	13,60	11,40	14,30	7,60	7,60	SK43125 A	4,60	13,60	11,40	14,30	7,60	7,60
 [L]							 [L]							 [L]						
SK02040 F	0,40	0,70	0,65	0,65	0,55	0,55	SK13050 F	0,75	1,80	1,50	1,70	1,05	0,90	SK13050 F	0,75	1,80	1,50	1,70	1,05	0,90
SK02050 F	0,40	1,50	1,25	1,20	0,90	0,75	SK13063 F	1,00	2,30	1,90	2,20	1,35	1,10	SK13063 F	1,00	2,30	1,90	2,20	1,35	1,10
SK12063 F	0,50	1,95	1,70	1,75	1,20	0,95	SK13080 F	1,60	3,80	3,50	3,90	2,70	2,50	SK13080 F	1,60	3,80	3,50	3,90	2,70	2,50
SK12080 F	0,90	3,70	3,20	3,40	2,50	2,30	SK33100 F	2,65	7,20	6,40	7,60	4,30	3,80	SK33100 F	2,65	7,20	6,40	7,60	4,30	3,80
SK32100 F	1,40	6,30	6,10	6,10	4,00	3,60	SK43125 F	4,70	15,00	13,00	16,00	9,00	7,70	SK43125 F	4,70	15,00	13,00	16,00	9,00	7,70
SK42125 F	3,00	11,50	11,50	11,00	8,40	7,30														

Table 13: Lubricant quantities for Helical worm gear units

6.5 Torque values

Dimensions	Bolt Torques [Nm]					
	Screw connections in the strength classes			Cover screws	Threaded pin on coupling	Screw connections on protective covers
	8.8	10.9	12.9			
M4	3.2	5	6	-	-	-
M5	6.4	9	11	-	2	-
M6	11	16	19	-	-	6.4
M8	27	39	46	11	10	11
M10	53	78	91	11	17	27
M12	92	135	155	27	40	53
M16	230	335	390	35	-	92
M20	460	660	770	-	-	230
M24	790	1150	1300	80	-	460
M30	1600	2250	2650	170	-	-
M36	2780	3910	4710	-	-	1600
M42	4470	6290	7540	-	-	-
M48	6140	8640	16610	-	-	-
M56	9840	13850	24130	-	-	-
G½	-	-	-	75	-	-
G¾	-	-	-	110	-	-
G1	-	-	-	190	-	-
G1¼	-	-	-	240	-	-
G1½	-	-	-	300	-	-

Table 14: Torque values

Assembling the hose fittings

Oil the thread of the union nut, the cutting ring and the screw neck. Tighten the union nut with the wrench until the point where the union nut can only be turned with considerably more force. Turn the union nut of the screw fitting approx. 30° to 60° further but not more than 90°. For this the screw neck must be held with a wrench. Remove excess oil from the screw fitting

6.6 Troubleshooting



WARNING

Injury to persons

There is a slipping hazard in case of leaks.

Clean the soiled floor and machine components before starting troubleshooting.



WARNING

Injury to persons

Risk of injury due to rapidly rotating and hot machine components.

Troubleshooting must only be performed when gear units are at a standstill and have cooled down. The drive must be isolated and secured to prevent accidental start-up.

NOTICE

Gear unit damage

Damage to the gear unit is possible in case of faults.

Shut down the drive unit immediately in case of any faults in the gear unit.

Gear unit malfunctions		
Fault	Possible cause	Remedy
Unusual running noises, vibrations	Oil too low or bearing damage or gear wheel damage	Consult NORD Service
Oil escaping from the gear unit or motor	Defective seal	Consult NORD Service
Oil escaping from pressure vent	Incorrect oil level or incorrect, contaminated oil or unfavourable operating conditions	Oil change, use oil expansion tank (Option OA)
Gear unit becomes too hot	Unfavourable installation conditions or gear unit damage	Consult NORD Service
Shock when switching on, vibrations	Defective motor coupling or loose gear unit mounting or defective rubber element	Replace elastomer gear rim, tighten motor and gear unit fastening bolts, replace rubber element
Output shaft does not rotate although motor is running	Fracture in gear unit or defective motor coupling or shrink disc slippage	Consult NORD Service

Table 15: Overview of malfunctions

6.7 Leaks and seals

Gear units are filled with oil or grease to lubricate the moving parts. Seals prevent the escape of lubricants. A complete seal is not technically possible, as a certain film of moisture, for example on the radial shaft sealing rings is normal and advantageous for a long-term seal. In the region of vents, moisture due to oil may be visible due to the escape of oil mist because of the function. In the case of grease-lubricated labyrinth seals, e.g. Taconite sealing systems, used grease emerges from the sealing gap due to the principle of operation. This apparent leak is not a fault.

According to the test conditions as per DIN 3761, the leak is determined by the medium which is to be sealed, which in test bench tests exceeds the function-related moisture in a defined test period and which results in dripping of the medium which is to be sealed. The measured quantity which is then collected is designated as leakage.

Definition of leakage according to DIN 3761 and its appropriate use					
Term	Explanation	Shaft sealing ring	Location of leak		
			in IEC adapter	Housing joint	Venting
Sealed	No moisture apparent	No reason for complaint	No reason for complaint	No reason for complaint	No reason for complaint
Damp	Moisture film locally restricted (not an area)	No reason for complaint	No reason for complaint	No reason for complaint	No reason for complaint
Wet	Moisture film beyond the extent of the component	No reason for complaint	No reason for complaint	Repair if necessary	No reason for complaint
Measurable leakage	Recognisable stream, dripping	Repair recommended	Repair recommended	Repair recommended	Repair recommended
Temporary leakage	Temporary malfunction of the sealing system or oil leak due to transport *)	No reason for complaint	No reason for complaint	Repair if necessary	No reason for complaint
Apparent leakage	Apparent leakage, e.g. due to soiling, sealing systems which can be re-lubricated	No reason for complaint	No reason for complaint	No reason for complaint	No reason for complaint

Table 16: Definition of leaks according to DIN 3761

*) Previous experience has shown that moist or wet radial shaft sealing rings stop leaking later. Therefore, under no circumstances can replacement be recommended at this stage. The reason for momentary moisture may be e.g. small particles under the sealing lip.

6.8 Repair information

For enquiries to our technical and mechanical service departments, please have the precise gear unit type (type plate) and if necessary the order number (type plate) to hand.

6.8.1 Repairs

The device must be sent to the following address if it needs repairing:

Getriebebau NORD GmbH & Co. KG
Service Department
 Getriebebau-Nord-Straße 1
 22941 Bargteheide

No guarantee can be given for any attachments, such as encoders or external fans, if a gear unit or geared motor is sent for repair.

Please remove all non-original parts from the gear unit or geared motor.



Information

Reason for return

If possible, the reason for returning the component or device should be stated. If necessary, at least one contact should be stated in case of queries.

This is important in order to keep repair times as short and efficient as possible.

6.8.2 Internet information

In addition, the country-specific operating and installation instructions in the available languages can be found on our Internet site: www.nord.com

6.9 Abbreviations

2D	Dust explosion protected gear units zone 21	FA	Axial force
2G	Explosion protected gear units with ignition protection class "c"	IE1	Motors with standard efficiency
3D	Dust explosion protected gear units zone 22	IE2	Motors with high efficiency
ATEX	AT mospheres EX plosibles	IEC	International Electrotechnical Commission
B5	Flange fastening with through holes	NEMA	National Electrical Manufacturers Association
B14	Flange fastening with threaded holes	IP55	International Protection
CW	Clockwise, right-hand direction of rotation	ISO	International Standardisation Organisation
CCW	Counter-clockwise, left-hand direction of rotation	pH	pH value
°dH	Water hardness in German hardness degrees: 1°dH = 0.1783 mmol/l	PPE	Personal Protective Equipment
DIN	German standards institute	RL	Directive
EC	European Community	VCI	Volatile Corrosion Inhibitor
EN	European standard	WN	Getriebebau NORD factory standard
FR	Radial transverse force		

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NORD DRIVESYSTEMS Group

Headquarters and Technology Center
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Member of the NORD DRIVESYSTEMS Group



E-1347

TNK-101/2 - Tank, Closed Top, Cylindrical, 2100 gal, Norwesco - no drain, PN 40241
TNK-901 - Tank, Closed Top, Cylindrical, 2100 gal, Norwesco - no drain, PN 40241



Liquid Storage Tanks

Think Tanks. Think Norwesco.

2004 Edition



NORWESCO tanks are manufactured to strict quality guidelines to ensure years of high-performance use. Rugged, impact-resistant, one-piece seamless polyethylene construction makes our tanks suitable for the storage and/or transport of most liquid fertilizers, herbicides, insecticides and fungicides as well as a wide range of industrial chemicals. NORWESCO tanks are manufactured using resins that meet FDA specifications to ensure safe storage of potable water.

Quality, price, product line and leading edge technology make NORWESCO North America's largest manufacturer of rotationally molded tanks. Standard NORWESCO tanks will be delivered to you with a fitting installed when applicable. NORWESCO tanks may be ordered without a fitting as well.

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Horizontal Leg Tanks	3	Cone Bottom Tanks	9
Drainable Leg Tanks	3	Polyethylene Cone Bottom Stands	10
Elliptical Leg Tanks	3	Heavy Duty Cone Bottom Stands	10
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Mini Bulk Tanks	5	Sphere	11
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Vertical Storage Tanks

Vertical storage tanks are most frequently used for bulk storage and mobile nursing applications. NORWESCO vertical tanks feature tie-down slots, built-in graduated gallon indicators, an offset fill-well and a self-vented, slosh-proof lid.

All NORWESCO vertical tanks are equipped with an outlet fitting and siphon tube.

Gallon Capacity	Diameter	Height	Fill Opening	Outlet/Drain Specification	Premium Weight Part No. White	Heavy Weight Part No. Blue
25 ∞	18"	29"	5"	3/4"	41867	—
50 ∞	18"	53"	5"	3/4"	41865	—
65 ∞	23"	42"	8"	1 1/4"	45192	—
75	23"	50"	8"	1 1/4"	41863	—
100	28"	43"	8"	1 1/4"	41861	—
105	23"	63"	8"	2"	40803	—
150	30"	56"	8"	1 1/4"	41859	—
165	31"	55"	16"	2"	40281	—
200	30"	72"	8"	2"	41856	—
210	31"	69"	16"	2"	47401	—
250	30"	89"	8"	2"	41854	—
300	36"	78"	16"	2"	40213	—
305	46"	49"	16"	2"	40302	—
500	48"	72"	16"	2"	40148	40150
550	67"	42"	16"	2"	40023	—
750	48"	102"	16"	2"	40606	—
1000	64"	79"	16"	2"	40152	40154
1100	87"	51"	16"	2"	40070	40081
1350	71"	87"	16"	2"	40861	—
1500	64"	115"	16"	2"	40144	40146
1550	87"	65"	16"	2"	40235	40236
1700	87"	72"	16"	2"	40010	40012
2100	87"	87"	16"	2"	40178	40241
2100	102"	69"	16"	2"	41399	—
2500	95"	89"	16"	2"	40051	40052
3000	95"	107"	16"	2"	40754	40755
4000	102"	125"	16"	3 1/2"	40312	—
4200	102"	131"	16"	2"	41403	—
5000	102"	152"	16"	3 1/2"	40164	40166
5800	141"	97"	16"	3 1/2"	40071	—
6000	102"	182"	16"	3 1/2"	40226	40233
6100	120"	139"	16"	3 1/2"	40659	40661
6500	120"	150"	16"	3 1/2"	40224	40232
7800	120"	176"	16"	3 1/2"	40663	40665
9000	141"	146"	16"	3 1/2"	40543	40231
10000	141"	160"	16"	3 1/2"	40545	40353
12000	141"	192"	16"	3" *	40539	40541
15000	141"	244"	16"	3" *	41334	41336

∞ Within UPS dimensional limits

*316 Stainless Steel Bolted Fitting

Horizontal Leg Tanks

With the broadest leg tank line available, NORWESCO manufactures a size that will fit your needs. Used primarily for transport and nursing applications, NORWESCO'S leg tanks feature molded-in legs that act as "baffles" to reduce sloshing. Please refer to page 4 for support bands.

Gallon Capacity	Diameter	Length	Fill Opening	Outlet/Drain Specification	No. of Bands	Premium Weight Part No. White	Heavy Weight Part No. Blue
35 ∞	20"	29"	5"	3/4"	2 optional	45223	—
55 ∞	23"	33"	5"	3/4"	2 optional	41873	—
65 ∞	23"	43"	5"	3/4"	2 optional	45191	—
125	32"	41"	8"	2"	2 optional	40298	—
225	38"	49"	8"	2"	2 optional	40299	—
325	38"	68"	16"	2"	2 optional	40217	—
525	49"	71"	16"	2"	2 optional	40181	40193
725 *	49"	101"	16"	2"	3 required	40180	40194
1025 *	49"	139"	16"	2"	4 required	40089	40131
1325 *	66"	99"	16"	2"	4 required	41875	41877
5025 *	92"	190"	16" **	3"/2"	4 required	41879	41881

∞ Within UPS dimensional limits *Require full length support and bands **16" hinged lid



325 Gallon Horizontal Leg



1025 Gallon Horizontal Leg



Sloped For Complete Drainage **▲ 1010 Gallon Drainable Leg**

Drainable Leg Tanks

When complete drainage is necessary, these are the tanks of choice. They are designed primarily for use on fertilizer and chemical nurse trailers. All NORWESCO drainable tanks require full length bottom support as well as support bands. Please refer to page 4 for support bands.

Gallon Capacity	Width	Height	Length	Fill Opening	Outlet/Drain Specification	No. of Bands	Premium Weight Part No. White	Heavy Weight Part No. Blue
710 (horizontal)	47"	47"	104"	16"	2"	3 required	40655	40657
1010 (horizontal)	47"	47"	140"	16"	2"	4 required	40393	40395
1310 (horizontal)	66"	76"	99"	16"	—	4 required	41871	41872
1610 (elliptical)	69"	63"	140"	16"	—	4 required	40806	40808
2610 (elliptical)	90"	70"	140"	16"*	—	4 required	41382	41383
3210 (elliptical)	92"	74"	178"	16"*	—	4 required	40822	40824

*16" hinged lid

Elliptical Leg Tanks

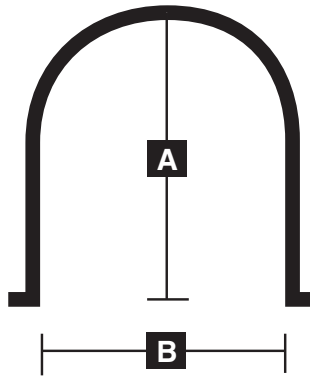
This elliptical tank style is designed to provide the greatest capacity with the lowest center of gravity, making it the best design available for transporting larger volumes. NORWESCO elliptical tanks feature molded-in legs and flow-through baffles which work together to reduce sloshing and provide increased stability during transport. All NORWESCO elliptical leg tanks require full length bottom support as well as support bands. Please refer to page 4 for support bands.

Gallon Capacity	Width	Height	Length	Fill Opening	Outlet/Drain Specification	Premium Weight Part No. White	Heavy Weight Part No. Blue
1035	79"	53"	89"	16"	2"	40191	—
1235	65"	52"	128"	16"	2"	40239	—
1635	71"	57"	142"	16"	2"	40387	40388
2035	84"	55"	142"	16"	2"	40618	40623
2635	90"	71"	140"	16"	3"/2"	40547	40283
3135	88"	76"	151"	16"	3"/2"	40686	40688
4035	92"	77"	192"	16" *	3"/2"	41267	41269

*16" hinged lid



2035 Gallon Elliptical Leg



Steel Supports and Accessories

NORWESCO bands are custom fabricated to support the NORWESCO tanks and are galvanized or powder coated for added corrosion protection. Whether using the tank in a stationary position or for transport, bands are necessary to ensure that the tank retains its shape and integrity.

Horizontal Leg Tank Bands

Tank Size (Gallon)	A	B	No. of Bands	Part No.
35 ∞	18½"	18½"	2 optional	60520
55 ∞	22"	22"	2 optional	61745
65 ∞	22"	22"	2 optional	61745
125 ∞	30¾"	30½"	2 optional	61744
225 ∞	36¾"	36½"	2 optional	60478
325 ∞	36¾"	36½"	2 optional	60478
525	47¾"	47½"	2 optional	60057
725	47¾"	47½"	3 required	60057
1025	47¾"	47½"	4 required	60057
1325	64"	64"	3 required	63282
5025	90"	89½"	4 required	63284

∞ Within UPS dimensional limits

Drainable Leg Tank Bands

Tank Size (Gallon)	A	B	No. of Bands	Part No.
710	46¼"	45"	3 required	60584 short
1010 *	46¼"	45"	2 required	60584 short
1010 *	48"	45"	2 required	60585 long
1310	64"	64"	3 required	63282
1610	49"	66"	4 required	62434
2610 *	58"	87½"	2 required	63044 short
2610 *	62"	87½"	2 required	63045 long
3210 *	56"	89½"	2 required	62347 short
3210 *	60"	89½"	2 required	62348 long

* 2 short and 2 long bands are required for 1 tank

Elliptical Leg Tank Bands

Tank Size (Gallon)	A	B	No. of Bands	Part No.
1035	47¼"	77"	3 required	60325
1235	47¾"	64¾"	4 required	60477
1635	51"	68"	4 required	60586
2035	51¼"	81½"	4 required	62079
2635	65¼"	87½"	4 required	60353
3135	75¼"	85½"	4 required	62097
4035	70¼"	89½"	4 required	62832

Skid

Description	Part No.
Skid for 2610	63217
Skid for 3210 drainable leg tank	62906
Bolt Kit for 3210 (optional)	63024

Ladders

Description	Tank Size (Gallon)	Part No.
Ladder (optional)	2635 & 3135	60354
Ladder (optional)	2610 & 3210	63047
Ladder (optional)	4035	63033
Adaptor kit for ladder Δ	3135	62301

Δ This kit is required when using the ladder on the 3135 gallon tank



Mini Bulk Tanks

NORWESCO mini bulk tanks are available in two sizes and are most frequently used for chemical dispensing. The tanks can be mounted on forklift accessible pads for ease of movement. A 2" polypropylene fitting is installed directly across from the manway.

Gallon Capacity	Diameter	Height	Fill Opening	Fitting	Premium Weight Part No. White
120	38"	29"	5"	2"	40318
220	42"	42"	5"	2"	40320

Pickup Truck Tanks

Designed to fit full-size, American-made pickups, the 325 and 425 sizes have low profiles for better rear vision. They feature fill openings offset to the side of the tank for safety and easy access. A tough circular design adds strength. The 210 gallon tank fits both "mini" pickups and full-size models.

Gallon Capacity	Top Width or Diameter	Bottom Width or Diameter	Overall Height	Fill Opening	Outlet/Drain Specification	Premium Weight Part No. White
210	60"/51"	48"/39"	28"	8"	2"	40300
325	62"	49"	32"	8"	2"	40160
425	65"	49"	37"	8"	2"	40102



PCO Tanks

A multi-purpose tank, the PCO is well suited for nursery, agricultural and lawn care applications. These tanks feature self-supporting legs and do not require any saddles or steel supports. Flat spots are molded into both ends to provide mounting areas for agitation equipment.



Gallon Capacity	Width	Height	Length	Fill Opening	Premium Weight Part No. White
30 ∞	19"	22"	25"	5"	41254
50 ∞	19"	20"	38"	8"	40664
100	30"	26"	38"	8"	40668
150	36"	26"	48"	8"	40669
200	36"	35"	48"	8"	41413
300	36"	37"	69"	16"	41381

∞ Within UPS dimensional limits

Elliptical Tanks

Designed for larger volume applicator needs, the NORWESCO elliptical tanks feature a low profile design and a low center of gravity for excellent visibility in the field and increased stability when towed. A deep sump permits complete drainage and the tanks feature an 8" or 16" fill-well. Please refer to information below for steel supports.



750 Gallon Elliptical

Gallon Capacity	Width	Height	Length	Fill Opening	Outlet/Drain Specification	Premium Weight Part No. White
200	40"	28"	66"	8"	1¼" & 1¼"	41252
300	48"	32"	70"	16"	1¼" & 1¼"	40327
500	57"	38"	82"	16"	1¼" & 1¼"	40328
750	69"	44"	88"	16"	2"	40329
1000	78"	51"	90"	16"	2"	40330
1600 *	78"	49"	138"	16"	2"	47111
2550 **	88"	69"	142"	16"	3"	47677

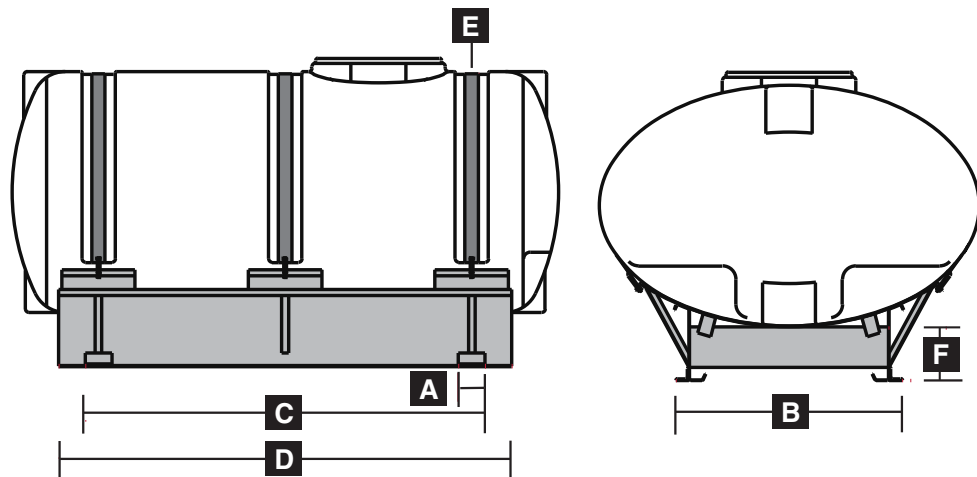
* Includes 1 stainless steel baffle ** The 2550 requires support bands

Elliptical Tank Skids (See dimensional drawings below.)

Tank Size (Gallon)	Tank Part No.	A	B	C	D	E	F	Part No.
200	41252	4"	24"	52"	57"	2" x 68"	8"	63015
300	40327	4"	34"	46¼"	54¼"	2" x 76"	8"	63016
500	40328	4"	34"	60"	68"	2" x 94"	8"	63018
750	40329	4"	38"	69½"	78"	2" x 112"	8"	60371
1000	40330	4"	46"	60"	72"	2" x 130"	8"	60372
1600	47111	10½"	40"	114½"	118¼"	3½" x 126"	6½"	67428
2550 *	47677	—	—	—	—	—	—	67456

* Band only, no skid. The 2550 requires 4 support bands, part #67456.

Replacement bands and hardware are available. Please contact NORWESCO Customer Service for details.



Applicator Tanks, Inductor Tanks and Spot Sprayers

Whether you're looking for a new or replacement tank, you'll find it in the NORWESCO line. All NORWESCO applicator tanks feature a lid which threads directly into the fill-well of the tank to prevent the sloshing or leaking of tank contents during transport or application. The inductor tanks are suitable for mixing chemicals when filling a tank and are available in three sizes. The spot sprayers feature threaded inserts on the bottom of the tank for mounting purposes, on one side for wand/gun placement and on the top for a 12 volt pump. Please refer to page 8 for steel supports.



12 Gallon Applicator



150 Gallon x 32" Applicator



200 Gallon x 32" Applicator



500 Gallon Applicator

Applicator Tanks

Gallon Capacity	Diameter	Height/Length	Fill Opening	Outlet/Drain Specification	Premium Weight Part No. White
12 ∞	14" wide	12"/18"	5"	3/4"	60521
20 ∞	15"	31"	5"	3/4"	61737
30 ∞	23"	21"	5"	3/4"	41799
55 ∞	23"	34"	5"	3/4"	45193
85	23"	52"	5"	3/4"	45105
110	30"	41"	8"	1 1/4" & 1 1/4"	45053
150	30"	58"	8"	1 1/4" & 1 1/4"	40648
150	32"	46"	8"	1 1/4" & 1 1/4"	45117

∞ Within UPS dimensional limits

Gallon Capacity	Diameter	Height/Length	Fill Opening	Outlet/Drain Specification	Premium Weight Part No. White
200	32"	62"	8"	1 1/4" & 1 1/4"	45059
200	38"	47"	8"	1 1/4" & 1 1/4"	45061
300	38"	68"	8"	1 1/4" & 1 1/4"	40135
400	42"	74"	8"	1 1/4" & 1 1/4"	40137
500	48"	75"	8"	1 1/4" & 1 1/4"	40274
150 Slim Line	28"	40"/50"	8"	1 1/4" & 1 1/4"	40777
200 Slim Line	24"	46"/61"	8"	1 1/4" & 1 1/4"	41305
200 Slim Line	31"	44"/48"	8"	1 1/4" & 1 1/4"	40780

Inductor Tanks

Gallon Capacity	Diameter	Height/Length	Fill Opening	Outlet/Drain Specification	Premium Weight Part No. White
15 ∞	19"	23"	8"	2"	60214
35 ∞	23"	27"	8"	2"	45098
60	31"	31"	16"	2"	62205

∞ Within UPS dimensional limits



35 Gallon Inductor

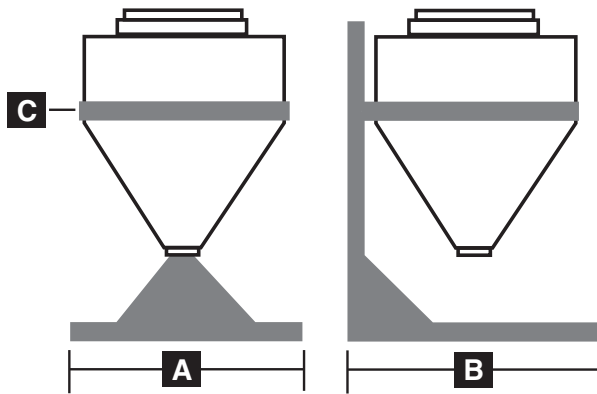
Spot Sprayers

Gallon Capacity	Width	Height/Length	Fill Opening	Outlet/Drain Specification	Premium Weight Part No. White
14 ∞	14"	11"/31"	5"	—	45115
25 ∞	18"	16"/36"	5"	—	62080

∞ Within UPS dimensional limits



14 and 25 Gallon Spot Sprayer



Applicator Saddle Assemblies and Inductor Stands

Designed to provide necessary support for the applicator/inductor tank during use. NORWESCO saddles include polyester straps, buckles and bolts to secure tanks, and inductor stands are supplied with all necessary hardware.

Inductor Tank Stands (See dimensional drawings above.)

Tank Size (Gallon)	Tank Part No.	A	B	C	Part No.
15 ∞	60214	26"	15"	2" x 56"	60313
35 ∞	45098	25"	18"	1½" x 35" (2)	65517
60 ∞	62205	33"	24"	1½" x 46" (2)	62204

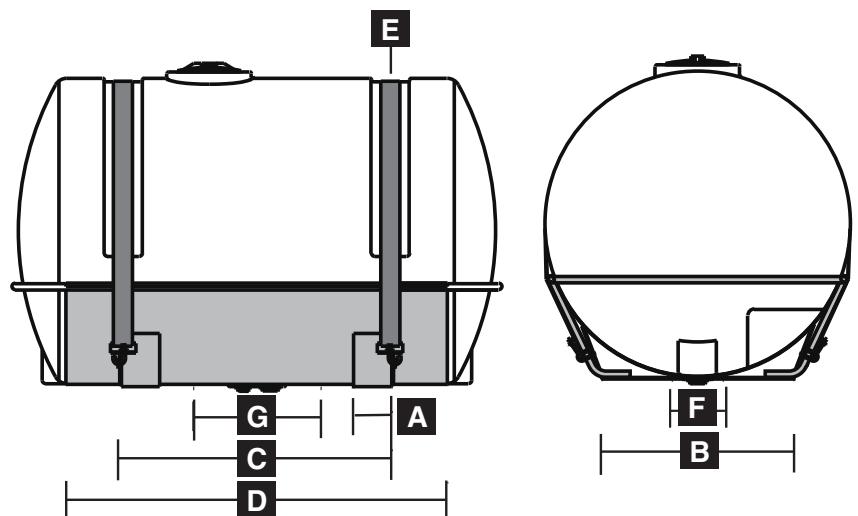
∞ Within UPS dimensional limits

Applicator Tank Saddle Assemblies (See dimensional drawings below.)

Tank Size (Gallon)	Tank Part No.	A	B	C	D	E	F	G	Part No.
30 ∞	41799	3"	19"	13½"	13½"	2" x 54"	8"	7¾"	60321
55 ∞	45193	6"	18⅞"	24"	24"	2" x 48"	—	12"	60303
110 ∞	45053	6"	23¾"	28¾"	34¾"	2" x 72"	—	10¾"	60315
150 - 32" ∞	45117	6"	23¾"	28¾"	34¾"	2" x 72"	—	10¾"	60315
200 - 32"	45059	6"	24⅞"	36"	60"	2" x 96"	8"	13¼"	63019
200 - 38"	45061	6"	24¾"	34"	42"	2" x 96"	—	13¼"	63020
300 - 38"	40135	6"	24¾"	34"	60"	3" x 96"	8"	12"	63021
400 - 42"	40137	6"	30⅞"	42½"	60"	3" x 96"	8"	12"	63022
500 - 48"	40274	6"	30⅞"	42½"	60"	3" x 132"	8"	12"	63023

∞ Within UPS dimensional limits

Replacement bands and hardware are available. Please contact NORWESCO Customer Service for details.



Cone Bottom Tanks

NORWESCO offers a full range of cone bottom tanks designed for a variety of applications. The conical bottoms enable quick and complete drainage. As with all NORWESCO tanks, the cone bottom tanks are molded of rugged, high density polyethylene and are both impact and chemical resistant. Please refer to page 10 for polyethylene or steel stands.

Gallon Capacity	Diameter	Height	Slope	Fill Opening	Outlet/Drain Specification	Premium Weight Part No. White	Heavy Weight Part No. Blue
175 w/stand*	42"	49"/10"†	30°	16"	2"	60113	—
300 w/stand*	48"	60"/9"†	30°	16"	2"	62343	—
310 w/stand*	42"	71"/10"†	30°	8"	2"	62441	—
500 w/stand*	48"	85"/9"†	30°	16"	2"	40289	—
750	72"	55"	20°	16"	2"	40811	—
750 w/stand*	72"	65"/10"†	20°	16"	2"	40809	—
1050	72"	74"	20°	16"	2"	40356	—
1050 w/stand*	72"	85"/11"†	20°	16"	2"	40359	—
1600	88"	83"	30°	16"	2"	40817	40819
1600 w/stand*	88"	94"/11"†	30°	16"	2"	40813	40815
2500	95"	104"	30°	16"	2"	40066	40129
2500 w/stand*	95"	114"/10"†	30°	16"	2"	40672	40674
3000	95"	121"	30°	16"	2"	40170	40172
3000 w/stand*	95"	131"/10"†	30°	16"	2"	40797	40799
3000 15° slope**	91"	119"	15°	16"	3"/2"	45141	—
5500	118"	146"	30°	16"	3"/2"	40549	40316
6000	102"	195"	15°	16"	3"/2"	40931	40933
7500	141"	149"	30°	16"	3"/2"	40551	40409

*Polyethylene stand **Stand not available for this tank †Distance from bottom of cone to ground



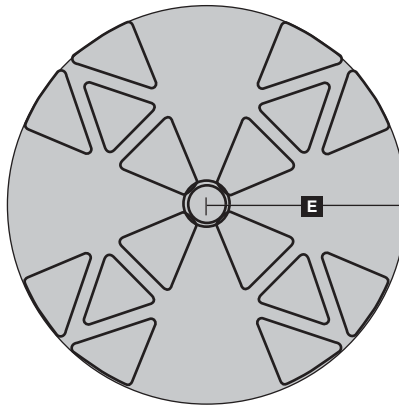
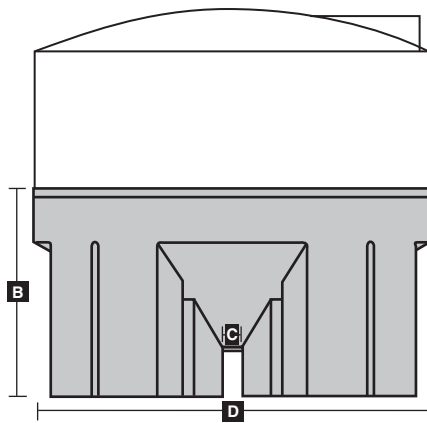
**500 Gallon
Cone Bottom
with Polyethylene
Stand**



**1600 Gallon Cone Bottom
with Polyethylene Stand**



**3000 Gallon Cone Bottom
with Heavy Duty Stand**



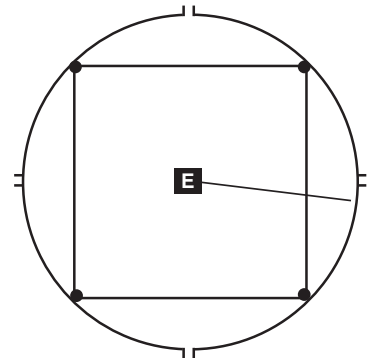
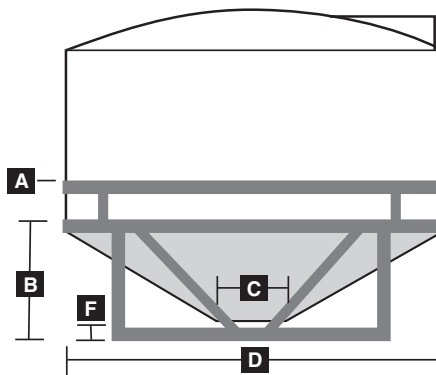
Polyethylene Cone Bottom Stands

Maintenance free, lightweight NORWESCO polyethylene stands offer unequalled corrosion resistance.

Tank Size (Gallon)	A	B	C	D	E
175	—	31½"	8"	42"	21"
300	—	32"	8"	48"	24⅝"
310	—	31½"	8"	42"	21"
500	—	32"	8"	48⅝"	24⅝"
750	—	34"	10"	72⅝"	36⅝"
1050	—	34"	10"	72⅝"	36⅝"
1600	—	46"	10"	88"	44"
2500/3000 (30°)	—	47"	10"	96⅝"	48⅝"

Heavy Duty Cone Bottom Stands

NORWESCO heavy duty cone bottom stands are manufactured from structural steel and offer a full dish for uniform support. An optional top band is available for the 2500/3000 steel stand when additional support is needed.



Tank Size (Gallon)	A	B	C	D	E	F	Part No.
2500/3000 (30°)	—	36"	11"	96"	48"	11"	60059
5500	—	45"	11"	119"	59½"	12½"	60358
6000	—	25"	13"	102"	51"	12⅝"	62473
7500	—	49"	11"	140"	70"	10¾"	61860
2500/3000 (30°)	Optional Top Band Assembly	—	—	—	—	—	60359

Specialty Tanks

Horizontal Box Tanks

The low profile design of this tank makes it ideal for use on trailers or in the back of a truck. The slosh reduction ribs provide excellent structural support. It can also be used as a stationary water storage tank.

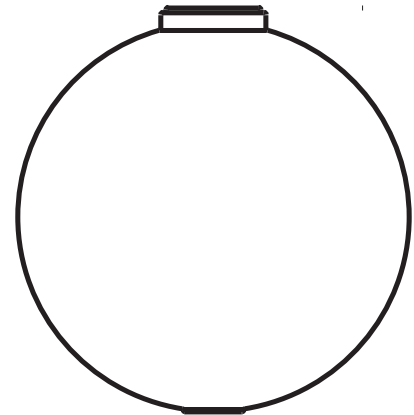


Gallon Capacity	Width	Height	Length	Fill Opening	Outlet/Drain Specification	Premium Weight Part No. White
2400	90"	50"	150"	16"	2"	40912

Sphere

The 1000 gallon sphere is one of our more specialized tanks that is used on trailers/nurse trailers. The advantage of using this type of tank and trailer combination is that it has a shorter wheel-base which means less sloshing and the design of the tank allows for easy mixing of product.

Gallon Capacity	Diameter	Height	Fill Opening	Outlet/Drain Specification	Premium Weight Part No.
1000	78"	82"	16"	—	41277



Specialty Water Tanks

These tanks have been specifically designed with residential and commercial applications in mind. The dimensions of the 375 or 400 gallon allow it to fit through a conventional doorway. The design of the 400 gallon tank allows it to be freestanding/self-supporting and eliminates the need for a steel support frame. The 375 comes standard with a steel support frame. The 1250 and 1500 gallon low profile tanks may be used for storage or transport. They are an excellent choice when height limitations are a factor and are the perfect height for putting under your cottage or cabin.

Gallon Capacity	Width	Height	Length	Fill Opening	Outlet/Drain Specification	Premium Weight Part No. White
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Free Standing Water Tank

300	29"	49"	62"	16"	1¼"	41869
400	29"	65"	62"	16"	1¼"	41247



375 Gallon Tank with Frame



300 and 400 Gallon Freestanding Tank

Water Tank With Frame

375	30"	60"	62"	16"	1¼"	40480
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Low Profile Water Tank

1250	80"	35"	132"	16"	2"	40756
1500	81"	41"	130"	16"	2"	41392



1250 and 1500 Gallon Low Profile Tank



A



B



C



D



E

High Density Polyethylene Lids

Description	Item Code	Part No.
16" Lid and ring with 4" center lid/air vent		60038
16" Lid with 4" center lid/air vent	A	60011
16" Ring only		60012
16" Lid, ventless with ring		60367
16" Lid, ventless	B	60365
Gasket for 16" non-hinged lid		62941
4" Lid (air vent assembly for 16" lid)		60019
8" Lid, ring and air vent		60032
8" Lid with air vent	C	60002
8" Ring only		60003
Air vent for 8" lid only (snap on)		61727
5" Lid with ball check air vent (for tanks manufactured after 2/1/00)	D	62801
5" Lid with ball check air vent (for tanks manufactured prior to 2/1/00)	D	60322
5" Lid (for tanks manufactured after 2/1/00)	E	62476
5" Lid with 2" FPT		63264
Gasket for 5" lid, 60322, 62801 and 63264		60366
2" MPT vent cap with poly screen		63266
18" lanyard for 8" lid and 16" non-hinged lid (tethers lid to tank)		62531
Stainless steel screws for 8" and 16" rings		60081

Hinged Lid

This lid is manufactured from a co-polymer material for strength, durability and excellent chemical resistance. Our unique locking tab allows you to easily slip a padlock through it and secure your lid from theft or spills. The lid is interchangeable with a standard 16" lid and ring assembly if you choose to replace your existing lid.

- Easy open/close – opens a full 180 degrees
- Comes complete with a baffle vent assembly, allowing for adequate venting when bottom filling your tank.
- Unique locking tab
- All parts of lid may be ordered as repair parts

Description	Part No.
Complete lid assembly	62532

Hinged Lid Repair Parts

16" hinged lid with vent assembly, without ring	62826
Vent assembly	62827
Ring assembly	62828
Hinge assembly	62829
EPDM O-ring for lid	62830
Neoprene O-ring for ring	62831



Polyethylene Tank Repair Kits

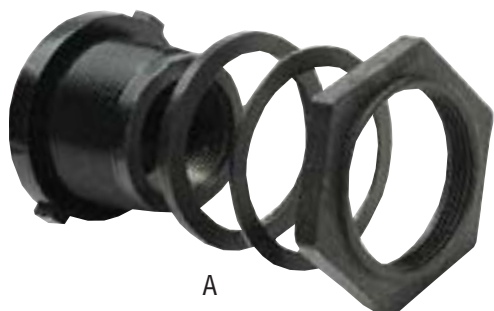
The tank repair kit (welding gun and rod) includes a specially formulated welding wire containing copolymers and adhesives. Wire may be used to effectively repair linear polyethylene. Easy to use and requires only 110 volt power. The poly patch kit is ideal for repairing pinholes, hairline cracks and holes up to 1/2" in diameter. For best results, surface to be repaired should be above 32° F. The kit consists of epoxy, a small brush to apply the epoxy, a small piece of sandpaper to "roughen" the area to be patched, a piece of mastic to temporarily fill the hole/crack and a piece of fiberglass.

	Part No.
Poly welding gun & rod	60221
Poly welding rod 30'	61879
Poly patch kit	67412

Polypropylene Bulkhead Fittings / EPDM Or Viton Gaskets

NORWESCO'S polypropylene fittings come standard with an EPDM gasket.

Viton gaskets are available as an option when EPDM may not be suitable for your application.



A



B

C

Description	Hole Size Required in Tank for Installation	Part No.	Item Code
1/2" Heavy duty double threaded polypropylene fitting	1 3/8"	62834	A
3/4" Double threaded polypropylene fitting	1 3/8"	60401	A
EPDM gasket for 1/2" and 3/4" (60401)		60402	
Viton gasket for 1/2" and 3/4" (60401)		60360	
3/4" Heavy duty double threaded polypropylene fitting	1 3/8"	62798	A
EPDM gasket 3/4" (62798)		62799	
Viton gasket for 3/4" (62798)		62800	
1" Double threaded polypropylene fitting	2 1/4"	60427	A
1 1/4" Double threaded polypropylene fitting	2 1/4"	60403	A
1 1/4" Anti-vortex polypropylene fitting		63065	
EPDM gasket for 1" and 1 1/4"		60404	
Viton gasket for 1" and 1 1/4"		60361	
Anti-vortex adapter for 1 1/4"		62398	
1 1/2" Double threaded polypropylene fitting	3"	60124	A
Siphon tube, 1 1/2" x 12" long		63279	
2" Double threaded polypropylene fitting	3"	60405	A
2" Double threaded 316 stainless steel fitting, less gasket	3"	61767	
EPDM gasket for 1 1/2" and 2" (60405 and 61767)		60406	
Type B Viton gasket for 1 1/2" and 2" (60405 and 61767)		60523	
2" Heavy duty double threaded polypropylene fitting with siphon tube	3 1/4"	60337	B
EPDM gasket for 2" (60337)		60336	
Type B Viton gasket for 2" (60337)		60008	
Siphon tube, 2" short		60335	
Siphon tube, 2" x 12" long		63262	
2" MPT vent cap, anti-vortex, with poly screen		63266	
2" MPT vent cap, anti-vortex, without screen		63316	
Anti-vortex adapter for 2" Bulkhead fitting		62399	
2" Polypropylene dust plug		60021	
3" Double threaded polypropylene fitting (hex nut as shown in photo C)	4 5/8" *	62299	
3" Double threaded polypropylene fitting with 2" reducer and siphon tube	4 5/8" *	60339	C
EPDM gasket for 3"		60331	
Type B Viton gasket for 3"		60351	
2" Polypropylene reducer for 3"		60330	
Siphon tube, 3" short		60327	
Siphon tube, 3" x 12" long		63263	
4" Double threaded polypropylene fitting (hex nut as shown in photo C)	5 3/4"	62171	
EPDM gasket for 4"		62785	
Viton gasket for 4"		62786	
Siphon tube for 4"		62714	

*When installing fitting, use 4 1/2" hole saw if tank is cold.

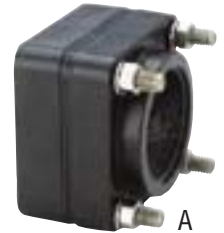
Bolted Fittings

Polypropylene Bolted Fittings / EPDM or Viton Gaskets (Require two gaskets.)

Bolted polypropylene fittings are equipped with 316 stainless steel bolts and come standard with EPDM gaskets.

Viton gaskets are available as an option for the fittings.

Description	Part No.	Item Code
¾" Polypropylene bolted fitting with ss bolts and EPDM gaskets	60502	A
1" Polypropylene bolted fitting with ss bolts and EPDM gaskets	60505	A
EPDM gasket for ¾" and 1"	60498	
Type B Viton gasket for ¾" and 1"	60355	
1½" Polypropylene bolted fitting with ss bolts and EPDM gaskets	60513	A
2" Polypropylene bolted fitting with ss bolts and EPDM gaskets	60516	A
EPDM gasket for 1½" and 2"	60497	
Type B Viton gasket for 1½" and 2"	60356	
3" Polypropylene bolted fitting with ss bolts and EPDM gaskets	62471	
EPDM gasket for 3"	62048	
Type B Viton gasket for 3"	60602	



Stainless Steel Double Threaded Bolted Fittings

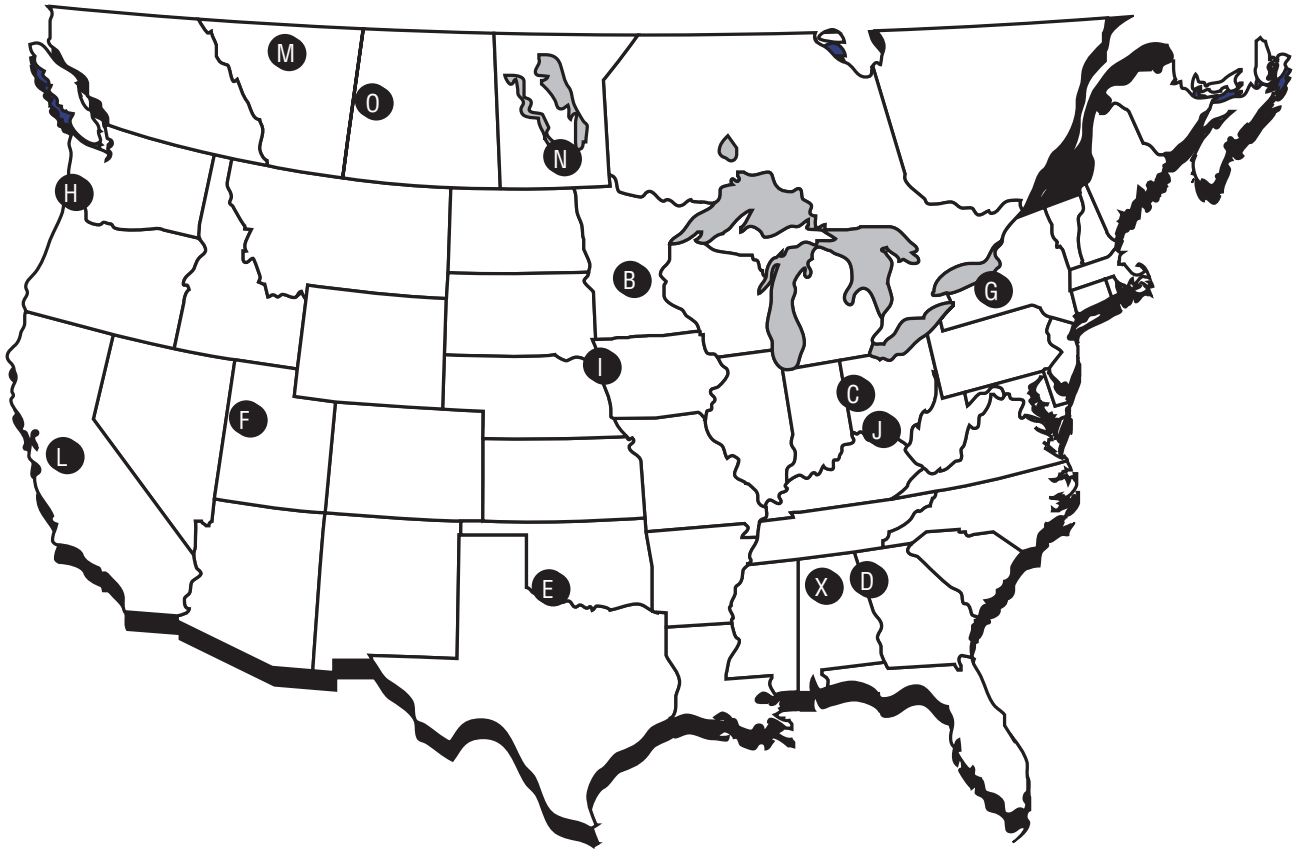
Bolts are threaded into the back plate of the fitting so there are no welds or bolt holes that can be potential points of leakage. These fittings come standard without a gasket (with the exception of the 4") and require a single gasket that is installed on the inside of the tank. Available gaskets are cross-linked polyethylene, EPDM or Viton (4" fitting comes standard with a cross-linked polyethylene gasket).

Description	Part No.	Item Code
½" 316 Stainless steel double threaded bolted fitting less gasket	63216	B
¾" 316 Stainless steel double threaded bolted fitting less gasket	63035	B
1" 316 Stainless steel double threaded bolted fitting less gasket	62948	B
EPDM gasket for ½", ¾" & 1" (1 required)	63205	
Type B Viton gasket for ½", ¾" & 1" (1 required)	63224	
Cross-linked polyethylene gasket for ½", ¾" & 1" (1 required)	62950	
1¼" 316 Stainless steel double threaded bolted fitting less gasket	63036	B
Cross-linked polyethylene gasket for 1¼" (1 required)	63041	
1½" 316 Stainless steel double threaded bolted fitting less gasket	63037	B
Cross-linked polyethylene gasket for 1½" (1 required)	63042	
2" 316 Stainless steel double threaded bolted fitting less gasket	63038	B
EPDM gasket for 1¼", 1½" and 2" (1 required)	63206	
Type B Viton gasket for 1¼", 1½" and 2" (1 required)	63225	
Cross-linked polyethylene gasket for 2" (1 required)	62848	
3" 316 Stainless steel double threaded bolted fitting less gasket	63039	C
EPDM gasket for 3" (1 required)	63223	
Type B Viton gasket for 3" (1 required)	63226	
Cross-linked polyethylene gasket for 3" (1 required)	63043	
4" 316 Stainless steel 8-bolt double threaded bolted fitting with gasket	63069	
Cross-linked polyethylene gasket for 4" (1 required)	63070	



Stainless Steel Single Threaded Bolted Fittings

Description	Part No.
2" 316 Stainless steel single threaded bolted fitting less gasket	62847
EPDM gasket for 1¼", 1½" and 2" (1 required)	63206
Type B Viton gasket for 1¼", 1½" and 2" (1 required)	63225
Cross-linked polyethylene gasket for 2" (1 required)	62848
3" 316 Stainless steel single threaded bolted fitting less gasket	63233
EPDM gasket for 3" (1 required)	63223
Type B Viton gasket for 3" (1 required)	63226
Cross-linked polyethylene gasket for 3" (1 required)	63043



Manufacturing and Distribution

B. St. Bonifacius, Minnesota	G. Owego, New York	M. Edmonton, Alberta-Canada
C. Lancaster, Ohio	H. Washougal, Washington	N. Winnipeg, Manitoba-Canada
D. Griffin, Georgia	I. Sheldon, Iowa	X. Albertville, Alabama
E. Shawnee, Oklahoma	L. Hanford, California	O. Saskatoon, Saskatchewan-Canada
F. Tooele, Utah		

Tank dimensions and capacities may vary slightly and are subject to change without notice.

Warranty

NORWESCO offers a three year warranty from date of manufacture on all premium weight tanks and a five year warranty on all heavy weight tanks. Should a defect appear within the warranty period NORWESCO will supply a new, equivalent tank in replacement thereof. NORWESCO'S liability is limited to the value of the tank itself and specifically excludes the cost of installation and/or removal or consequential damages. Please contact your chemical supplier or NORWESCO Customer Service for chemical resistance information.



Norwesco, INC.

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St. Bonifacius, MN 55375-0439
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Fax (800) 874-2371

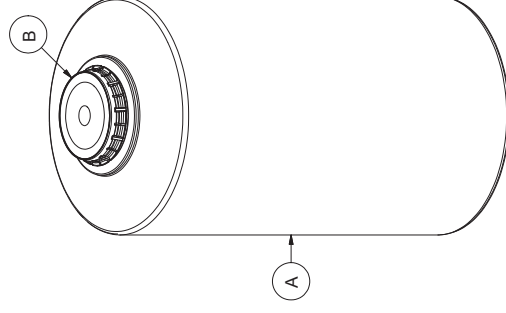
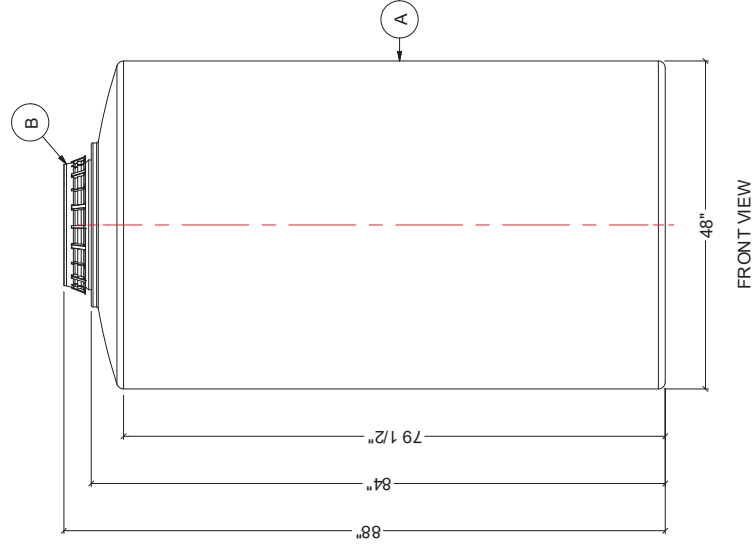
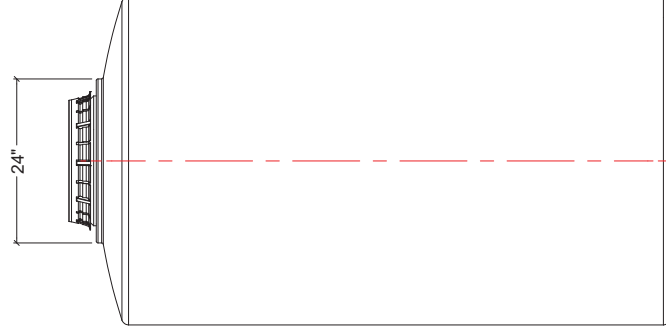
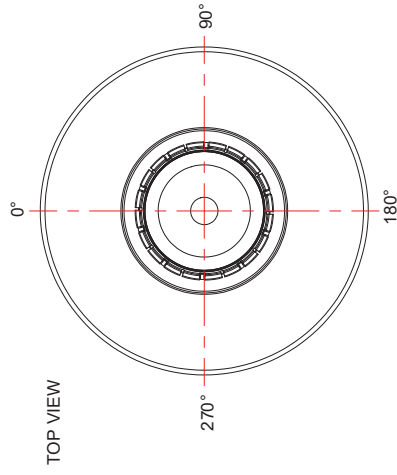
www.norwesco.com

MATERIALS LIST

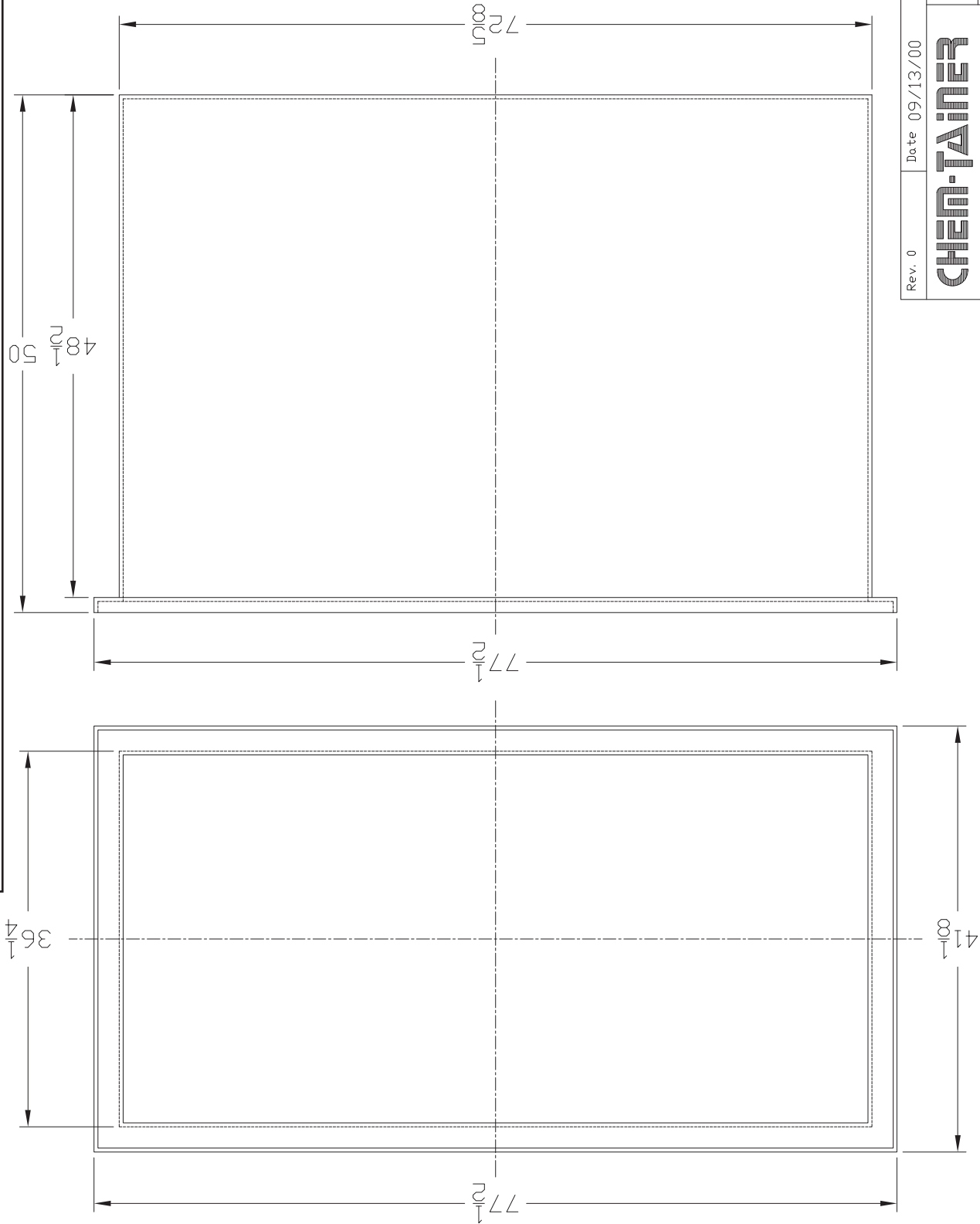
WATERWAY LOG		
ITEMS	DESCRIPTION	NOTES
A	CT-450-DT TANK	
B	16" LID WITH LOCKING STRAP	

NOTES:

1. TANK IS MANUFACTURED TO ASTM-D-1998 STANDARD.
2. ALL DIMENSIONS ARE APPROXIMATE.

[illegible]

TNK-201 - Tank, Open Top, Rectangular, 192 gal, 540 US Gal 72x36x48



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ALL DIMENSIONS SHOWN ARE OUTSIDE PART DIMENSIONS IN INCHES, AND VARY BY THE STANDARD ROTATIONAL MOLDING TOLERANCE OF +2/-3%.

ELMRIDGE® Liqui-Jet® Mixing Eductors

ME Series

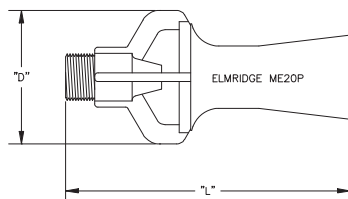
KEEPING SOLIDS IN SUSPENSION / DISPERSING CHEMICALS / MAINTAINING TANK CONCENTRATIONS / ELIMINATING THERMAL GRADIENTS

ELMRIDGE 'ME Series' Liqui-Jet Mixing Eductors vigorously and efficiently circulate the liquid contents of tanks without powered impellers or other insertion-type rotating mechanical devices. ELMRIDGE 'ME Series' Liqui-Jet Mixing Eductors operate on the same principle as our standard line of liquid-powered Jet-Apparatus. Liquid is pumped through the Eductor nozzle, emerging at a relatively high velocity, creating a localized zone of lower pressure. Tank contents are drawn to this lower pressure zone, where the momentum of the motive liquid is transferred to the tank liquid, causing the tank liquid to be 'pumped' and circulated. For every gallon of liquid pumped through the Eductor nozzle, up to five gallons of liquid is circulated. Note that Eductors can actually be 'aimed' at specific areas in the vessel. Operating characteristics (Water Motive / Water Suction), for standard models are shown below, and special units are also available to meet your specifications. Standard materials of construction are Glass Reinforced Polypropylene, PVDF, PVC, CPVC, Teflon®, Cast Iron, 316 Stainless Steel, Alloy 20, and Hastelloy C®. Other materials are available upon request. Threaded, flanged, or socket weld connections (except Cast Iron).



Table 1

Nozzle and Circulated Flow (usgpm) for ME Series Liqui-Jet Tank Mixing Eductors using 70 deg. F Water



Dimensions

Model Number	Pressure Connection	D (inches)	L (inches)
ME05P	1/4" Male*	1-1/2"	3-1/8"
ME10P	3/8" Male*	2-1/8"	4-1/2"
ME20P	3/4" Male*	3"	6-3/8"
ME30P	1" Male*	3-13/16"	8-1/16"
ME40P	1-1/2" Male*	4-5/8"	9-7/8"
ME10M	3/8" Male*	1-3/4"	4-1/2"
ME20M	3/4" Male*	2-3/8"	6-3/4"
ME30M	1" Male*	2-7/8"	7-5/8"
ME40M	1-1/2" Male*	4-5/8"	9-7/8"
ME40	1-1/2" Female*	3-3/4"	9-1/2"
ME50	2" **	5-5/8"	12-1/4"
ME60	3" **	8-1/2"	17-5/8"
ME70	4" **	12-1/2"	26-1/4"
ME80	6" ***	17-1/4"	36-1/2"
ME90	8" ***	22"	48-5/8"

* NPT or BSPT

** NPT or BSPT Female or 150# ANSI FF Flange

*** 150# ANSI FF Flange only

Model Number	Flow Type	Operating Water Pressure (psi)								
		10	15	20	25	30	35	40	50	60
ME05P	Nozzle Flow	3.2	3.9	4.5	5.0	5.5	5.9	6.3	7.1	7.8
	Circ. Flow	16	20	23	25	28	30	32	36	39
ME10P	Nozzle Flow	7.5	9.2	10.6	11.9	13.0	14.0	15	17	18
	Circ. Flow	38	46	53	59	65	70	75	84	92
ME20P	Nozzle Flow	13.5	17	19	21	23	25	27	30	33
	Circ. Flow	68	83	95	107	117	126	135	151	165
ME30P	Nozzle Flow	20	24	28	32	35	37	40	45	49
	Circ. Flow	100	122	141	158	173	187	200	224	245
ME40P	Nozzle Flow	33	40	47	52	57	62	66	74	81
	Circ. Flow	165	202	233	261	286	309	330	369	404
ME10	Nozzle Flow	8.2	10	12	13	14	15	16	18	20
	Circ. Flow	33	40	46	52	57	61	66	73	80
ME20	Nozzle Flow	12	15	17	19	21	22	24	27	29
	Circ. Flow	48	59	68	76	83	90	96	107	118
ME30	Nozzle Flow	21	26	30	33	36	39	42	47	51
	Circ. Flow	84	103	119	133	145	157	168	188	206
ME40	Nozzle Flow	35	43	49	55	61	65	70	78	86
	Circ. Flow	140	171	198	221	242	262	280	313	343
ME50	Nozzle Flow	55	67	78	87	95	103	110	123	135
	Circ. Flow	275	337	389	435	476	514	550	615	674
ME60	Nozzle Flow	126	154	178	199	218	236	252	282	309
	Circ. Flow	630	772	891	996	1091	1179	1260	1409	1543
ME70	Nozzle Flow	285	349	403	451	494	533	570	637	698
	Circ. Flow	1425	1745	2015	2253	2468	2666	2850	3186	3491
ME80	Nozzle Flow	590	723	834	933	1022	1104	1180	1319	1445
	Circ. Flow	2950	3613	4172	4664	5110	5519	5900	6596	7226
ME90	Nozzle Flow	1062	1301	1502	1679	1839	1987	2124	2375	2601
	Circ. Flow	5310	6503	7509	8396	9197	9934	10620	11874	13007

TANK MIXING

APPLICATION EXAMPLES

EXAMPLE 1:

The volume of a rectangular process tank is 5,000 US gallons (approximately 10'W x 15'L x 4.5'H). In order that the contents of the tank remain in homogenous solution, it is necessary that the tank volume be completely turned over (ie. completely recirculated), in a period of approx. 8 minutes. It has further been determined that eductor spacing not exceed 3' in order to utilize the eductor outlet plume to further agitate the bottom corners of the tank. There is an existing single header of sufficient capacity centered longitudinally along the bottom of the tank, and a pump that will supply sufficient volume at 30 psig.

1. Four eductors spaced on 3' centers on each side of the header pipe will meet the necessary spacing requirements.
2. The number of eductors required is:

$$4 \times 2 \text{ sides} = 8 \text{ eductors}$$

3. Total required recirculation flowrate is:

$$5000 / 8 \text{ min.} = 625 \text{ usgpm}$$

4. Required recirculation flowrate per eductor is:

$$625 / 8 \text{ eductors} = 78.1 \text{ usgpm}$$

5. An ME20 eductor has a circulated flowrate of 83 usgpm at 30 psig., therefore a quantity of (8) ME20 eductors could be used.

6. The nozzle flow of an ME20 eductor at 30 psig is 21 usgpm, therefore, the pump must be able to supply:

$$8 \times 21 = 168 \text{ usgpm at 30 psig}$$

EXAMPLE 2:

A steam-jacketed hot oil (S.G. = 1.21), preheat tank is 20' high and 10' in diameter (approx. 11750 usgal). It is desired that a single eductor using a portion of the total oil inflow turn over the contents of the tank in approx. 12 minutes in order to reduce temperature gradients within the tank. Pump pressure must also be approximated; assume inflow rate is sufficient.

1. The static discharge pressure that the pump must overcome is:

$$\begin{aligned} 20 \times 1.21 &= 24.2 \text{ feet of water} \\ &= 10.5 \text{ psig} \end{aligned}$$

2. Total required recirculation flowrate is:

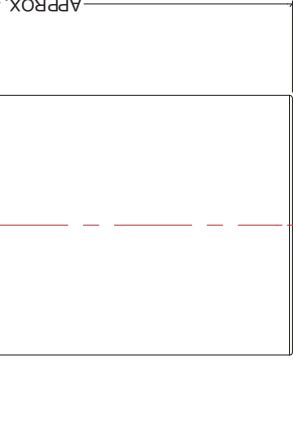
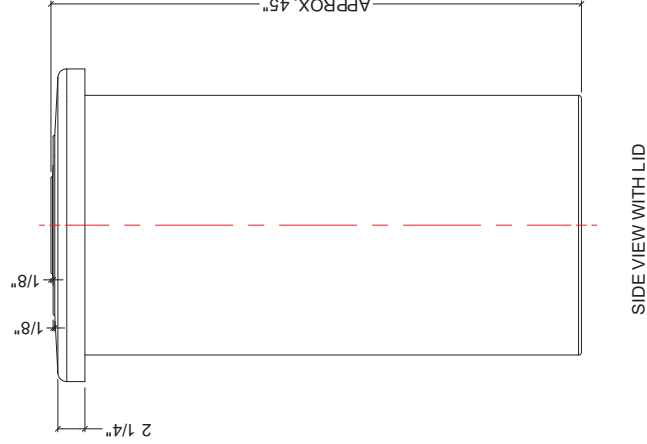
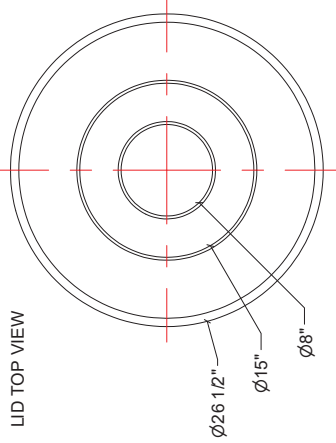
$$11750 / 12 = 979 \text{ usgpm}$$

4. An ME60 eductor has a circulated flowrate of 1091 usgpm at 30 psig, however, the pump must be sized to supply the ME60 nozzle flowrate of $218 \times \text{SQRT}(1/1.21) = 198 \text{ usgpm at}$:

$$30 + 10.5 = 40.5 \text{ psig}$$

NOTES:

1. TANK IS MANUFACTURED TO ASTM-D-1998 STANDARD.
2. ALL DIMENSIONS ARE APPROXIMATE.

[illegible]

A19 Series

Remote Bulb Control

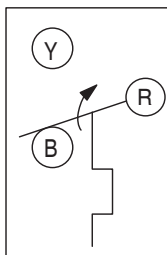
Description

The A19 Series are single-stage temperature controls that incorporate environmentally friendly liquid-filled sensing elements.

Features

- wide temperature ranges available
- constant differential throughout the entire range
- compact enclosure
- fixed or adjustable differential available
- variety of sensing element styles
- unaffected by cross-ambient conditions

A19 Series



Action on Increase of Temperature

a19.eps



A19ABC-24

Applications

The A19 is suitable for temperature control in heating, ventilating, air conditioning, and refrigeration.

A19 Series
Terminal Arrangement for SPDT

Selection Charts

A19 Series Remote Bulb Control¹

Code Number	Switch Action	Range °F (°C)	Diff °F (°C)	Bulb and Capillary	Bulb Well No. (order separately)	Range Adjuster	Max. Bulb Temp. °F (°C)
Adjustable Differential (Wide Range)							
A19ABA-40C ²	SPST Open Low	-30 to 100 (-34 to 38)	3 to 12 (1.7 to 6.7)	3/8 in. x 4 in., 6 ft. Cap.	WEL14A-602R	Screwdriver Slot	140 (60)
A19ABC-4C	SPDT	50 to 130 (10 to 55)	3 1/2 to 14 (1.9 to 8)	3/8 in. x 5 in., 8 ft. Cap.	WEL14A-603R	Knob	170 (77)
A19ABC-24C ³	SPDT	-30 to 100 (-34 to 38)	3 to 12 (1.7 to 6.7)	3/8 in. x 4 in., 8 ft. Cap.	WEL14A-602R	Convertible	140 (60)
A19ABC-36C	SPDT	-30 to 100 (-34 to 38)	3 to 12 (1.7 to 6.7)	3/8 in. x 4 in., 20 ft. Cap.	WEL14A-602R	Convertible	140 (60)
A19ABC-37C	SPDT	-30 to 100 (-34 to 38)	3 to 12 (1.7 to 6.7)	3/8 in. x 4 in., 10 ft. Cap.	WEL14A-602R	Screwdriver slot	140 (60)
A19ABC-74C	SPDT	-30 to 100 (-34 to 38)	3 to 12 (1.7 to 6.7)	3/8 in. x 4 in., 6 ft. Cap.	WEL14A-602R	Screwdriver slot	140 (60)
Fixed Differential							
A19AAF-12C	SPDT	25 to 225 (-4 to 107)	3 1/2 (1.9)	3/8 in. x 3 in., 10 ft. Cap.	WEL14A-602R	Screwdriver slot	275 (135)
Fixed Differential (Case Compensated)							
A19AAC-4C	SPDT	0 to 80 (-18 to 27)	5 (2.8)	3/8 in. x 4 in., 6 ft. Cap.	WEL14A-602R	Screwdriver slot	140 (60)
A19AAD-12C	SPST Open Low	-30 to 50 (-34 to 10)	2 1/2 (1.4)	3/8 in. x 4 in., 7 ft. Cap.	WEL14A-602R	Screwdriver slot	140 (60)
Fixed Differential (Close)							
A19AAD-5C ⁴	SPST Open Low	30 to 50 (-1 to 10) (Bulk Milk Cooler)	2 1/2 (1.4)	3/8 in. x 2 5/8 in., 6 ft. Cap.	WEL16A-601R	Screwdriver slot	190 (88)
A19AAF-20C	SPDT	-30 to 100 (-34 to 38)	2 1/2 (1.4)	3/8 in. x 4 in., 6 ft. Cap.	WEL14A-602R	Screwdriver slot	140 (60)
A19AAF-21C	SPDT	40 to 90 (4 to 32)	1 1/2 (0.8)	3/8 in. x 5 3/4 in., 6 ft. Cap.	WEL14A-603R	Screwdriver slot	140 (60)
Manual Reset							
A19ACA-14C	SPST Open Low	-30 to 100 (-34 to 38)	Manual Reset	3/8 in. x 4 in., 6 ft. Cap.	WEL14A-602R	Screwdriver slot	140 (60)
A19ACA-15C	SPST Open Low	-30 to 100 (-34 to 38)	Manual Reset	3/8 in. x 4 in., 10 ft. Cap.	WEL14A-602R	Screwdriver slot	140 (60)
A19ADB-1C	SPST Open High	100 to 240 (38 to 116)	Manual Reset	3/8 in. x 3 1/2 in., 6 ft. Cap.	WEL14A-602R	Knob	290 (143)
A19ADN-1C	SPST Open High	100 to 240 (38 to 116)	Manual Reset	3/8 in. x 4 in., 6 ft. Cap.	WEL14A-602R	Screwdriver slot	290 (143)

1. Specify the control model code number, packing nut code number (if required), and bulb well code number (if required).

2. Replaces White-Rodgers 1609-101

3. Replaces White-Rodgers 1609-12, -13; Ranco 010-1408, -1409, -1410, -1490, 060-110; Honeywell L6018C-1006, L6021A-1005, T675A-1011, -1508, -1516, -1821, T4301A-1008, T6031A-1011, T6031A-1029

4. Case-Compensated