Guide to LubriSystem Design and Component Selection

For single line, parallel injector lubrication systems

Step One: All bearing data should be recorded on a copy of the System Design Chart A.

- Note bearing name or location in column 1.
- List bearing size in column 2A and bearing type in column 2B. Use a separate line for each bearing.
- List the tap size in column 3 (to aid in fitting selection).
- List the lube taps per bearing in column 4.

Step Two: Calculate hourly bearing lube replacement requirements.

- Using formulas given in Design Chart B, calculate and enter in column 5. This figure is the lube volume/hr.
- Divide the figure in column 5 by the number of taps (column 4) and enter this figure in column 6. This is the calculated lube volume - cubic inches per hour per tap.

Step Three: Select injector size using Design Chart C.

- Locate the output that most closely matches the lube volume per tap (column 6).
- Enter all injector sizes in column 7 on Design Chart A (See Bulletin L12100 for more detail).
- Enter the quantity of injectors required in column 8.

Step Four: Determine manifold configuration.

- Group bearings for ease of installation, troubleshooting and repair.
- Select manifolds from Design Chart D. The manifold size must equal or exceed the number of injectors needed to supply the bearings in the bearing group (See Bulletin L12100 for more detail).

Step Five: Select pump using Design Chart E.

- Consider the following factors to determine the pump required (See Bulletin L12100 for more detail).
  - Oil or grease system
  - Environmental conditions to determine reservoir material
  - Maintenance practice to determine reservoir size and low level warning

Note: Use NLGI Grade #1, #0, #00, or #000 only. (NLGI #1 should not be used if ambient temperature is below 40^0F.)

Step Six: Select accessories.

- Order Solid State Timer, Part No. 562872 (163-400-000) (See Bulletin L14521).
- Order 115 VAC Solenoid Valve, Part No. 563315 (521-001-020) (See Bulletin L12100).
- Specify appropriate pressure switch, if one is required, using Bulletin No. L15521. Part No. – (507-509-000) is usually used.
- Specify Part No. – (560-001-780) for a pressure gauge kit if required (0-3000 psi).
- Select fittings, accessories and mounting hardware using Bulletin No. L12100.

Note: System Capacity:
LubriSystem design capacity should not exceed .75 cu.in. system requirement per pump stroke. This figure has a safety factor taking into account lube needed to recock injector, lube compressibility and line accumulation. The volume required per injector to move the valving piston (independent of injector volume output) is .004 cu.in.

Trabon® and Manzel® LubriSystem®

20102-A

SYSTEM DESIGN CHART A

CUSTOMER ABC MOLDING CO
DISTRIBUTOR
MACHINE OR EQUIPMENT INJECTION MOLDING

DATE XX/XX/XX
PAGE 1 OF
REF. DWG.
LUBE USED: OIL ☐ GREASE ☒
TYPE 00 VISCOSITY

REF. NO.	LOCATION OR NAME OF BEARING	2 BEARING 2A SIZE (A)	2B TYPE (B)	3 TAP SIZE	4 TAPS PER BRG. (c)	5 LUBE VOLUME CU. IN./HR. (V)	6 LUBE VOLUME PER TAP	7 INJECTOR SIZE	8 NO. OF INJECTORS
1	MOVEABLE PLATTEN (4 GUIDE RODS-1 BEARING EA)	6" DIA X 10"	PLAIN	1/8"	2	.047	.024	8	2
2	〃 〃 〃 〃	〃	〃	〃	2	.047	.024	8	2
3	〃 〃 〃 〃	〃	〃	〃	2	.047	.024	8	2
4	〃 〃 〃 〃	〃	〃	〃	2	.047	.024	8	2
5	EJECTION CROSS BEARINGS	3" DIA X 4"	PLAIN	1/8"	1	.009	.009	3	1
6	〃 〃 〃	〃	〃	〃	1	.009	.009	3	1
7	〃 〃 〃	〃	〃	〃	1	.009	.009	3	1
8	〃 〃 〃	〃	〃	〃	1	.009	.009	3	1
9	〃 〃 〃	〃	〃	〃	1	.009	.009	3	1
10	〃 〃 〃	〃	〃	〃	1	.009	.009	3	1
11	〃 〃 〃	〃	〃	〃	1	.009	.009	3	1
12	〃 〃 〃	〃	〃	〃	1	.009	.009	3	1
13	CARRIAGE FRONT BEARING (2)	4¼" DIA x 7¼"	PLAIN	1/8"	1	.024	.024	8	1
14	〃 〃 〃 〃	〃	〃	〃	1	.024	.024	8	1
15	CARRIAGE MIDDLE BEARING (2)	4¼" DIA x 7¼"	PLAIN	1/8"	1	.024	.024	8	1
16	〃 〃 〃 〃	〃	〃	〃	1	.024	.024	8	1
17	CARRIAGE REAR BEARING (2)	4¼" DIA x 7¼"	PLAIN	1/8"	1	.024	.024	8	1
18	〃 〃 〃 〃	〃	〃	〃	1	.024	.024	8	1
19									
20									

(A) GIVE LENGTH & WIDTH OF CYL. BEARINGS OR LENGTH & WIDTH OF SIDES OR I.D. OF ANTI-FRICTION BEARINGS & NUMBER OF ROWS.
(B) GIVE TYPE OF BEARING SURFACES OR SLIDING, PLAIN OR TYPE OF ANTI-FRICTION BEARING.
(C) INDICATE NUMBER OF INLETS TO EACH BEARING & TAP CONDITION OR FIXED (F), MOVABLE (M), FLEX OR ROTATING (R) OR SWIVEL CONNECTION. BY:

Description	Size	Qty	Circle Aluminum Alloy		Circle 316 Stainless Steel		Notes
			Part No.	Old Part No.	Part No.	Old Part No.	
Injectors	0	–	563628	550-100-001	–	550-100-110	Determine the total number of each size injector by adding the numbers in Column B of Design Chart A for each injector size
	1	–	563630	550-100-011	–	550-100-120	
	2	–	563632	550-100-021	–	550-100-130	
	3	8	563634	550-100-031	–	550-100-140	
	4	–	563636	550-100-041	563639	550-100-150	
	8	14	563638	550-100-081	–	–	
Manifolds	1	–	561117	550-401-771	563764	550-401-101	Determine the total number of each size manifold. See Bulletin 12100 for more details
	2	–	561118	550-401-772	563765	550-401-102	
	3	–	561119	550-401-773	563766	550-401-103	
	4	2	561120	550-401-774	563767	550-401-104	
	6	–	–	550-401-776	–	–	
	8	1	561122	550-401-783	–	–	
	10	–	561123	550-401-784	–	–	
	12	1	561124	550-401-785	–	–	
Manifold Plug		1 each	15M038	550-350-040	561115	550-401-120	
Pump		1	563571	550-000-050			Use Design Chart E
Solid State Timer		1	562872	163-400-000			Use Bulletin L14521
Solenoid Valve		1	563315	521-001-020			Use Bulletin L12100
Pressure Switch (if required)		–					See Bulletin L15521 (P/N – (507-509-000) usually used)
Pressure Gauge Kit (if required)		1	–	506-001-780			Contains 0-3000 psi gauge and mounting hardware
Fittings & Mounting Hardware							See Bulletin L12100

DESIGN CHART A

Trabon® and Manzel®

LubriSystem®

20102-A

SYSTEM DESIGN CHART A

DATE _____

CUSTOMER _____ PAGE _____ OF _____

DISTRIBUTOR _____ REF. DWG. _____

MACHINE OR EQUIPMENT _____ LUBE USED: OIL ☐ GREASE ☐

TYPE _____ VISCOSITY _____

REF. NO.	LOCATION OR NAME OF BEARING	2 BEARING 2A SIZE (A)	2B TYPE (B)	3 TAP SIZE	4 TAPS PER BRG. (c)	5 LUBE VOLUME CU. IN./HR. (V)	6 LUBE VOLUME PER TAP	7 INJECTOR SIZE	8 NO. OF INJECTORS
1									
2									
3									
4									
5									
6									
19									
20									

(A) GIVE LENGTH & WIDTH OF CYL. BEARINGSDLENGTH & WIDTH OF SIDESDI.D. OF ANTI-FRICTION BEARINGS & NUMBER OF ROWS.
(B) GIVE TYPE OF BEARING SURFACEDSLIDING, PLAIN OR TYPE OF ANTI-FRICTION BEARING.
(C) INDICATE NUMBER OF INLETS TO EACH BEARING & TAP CONDITIONDFIXED (F), MOVABLE (M), FLEX OR ROTATING (R) OR SWIVEL CONNECTION. BY: _____

Suggested Lube Replenishment Guidelines

VOLUME REQUIRED
V = A x T
A = Equivalent Area
T = Film Thickness

EQUIVALENT AREA (A)
Anti-Friction Bearings–
$A = D^2 R$
D = Shaft Diameter
R = Number of Rows

Plain Bearings–
$A = \pi DL$
$\pi = 3.14$
D = Shaft Diameter
L = Length of Bearing

Slides, Gibs, and/or Ways–
A = Area of contact
Area = Area of largest contact surface

Gears Calculate each gear in train–
$A = \pi$ P.D. x W
$\pi = 3.14$ P
P.D. = Pitch Diameter of Gear
W = Width of Gear

Large Bull Gears–
A = 2
$\pi = 3.14$
P.D. = Pitch Diameter of Pinion
W = Width of Pinion Gear

Worm Gears–
$A = \pi (P.D._1 + P.D._2) W$
$\pi = 3.14$
P.D. = Pitch Diameter of Worm
$P.D._2$ = Pitch Diameter of Worm Gear
W = Width of Worm Gear

Labyrinth Seal–
$A = \pi$ D L x 30
$\pi = 3.14$
D = Shaft Diameter
L = Add Lenght of each Contacting Surface of Seal

FILM THICKNESS, REPLACEMENT (T)
Oil – .001 Film Thickness every 1 hour period.
Grease – .00025 Film Thickness every 1 hour period
Note: All units are in inches.

DESIGN CHART C

Injector Selection		Aluminum Alloy		
Size #	Output	Adjustment Spacers	Part No.	Old Part No.
0	0.002	—	563628	550-100-001
1	0.005	1	563630	550-100-011
2	0.009	2	563632	550-100-021
3	0.012	3	563634	550-100-031
4	0.015	4	563636	550-100-041
8	0.025	4	563638	550-100-081
Injector Selection		**Stainless Steel**		
Size #	**Output**	**Adjustment Spacers**	**Part No.**	**Old Part No.**
0	0.002	—	–	550-100-110
1	0.005	1	–	550-100-120
2	0.009	2	–	550-100-130
3	0.012	3	–	550-100-140
4	0.015	4	563639	550-100-150

DESIGN CHART D

For Selection Manifolds			
Manifold Size	Description	Part No.	Old Part No.
1 Port	Aluminum Alloy	561117	550-401-771
2 Port	Aluminum Alloy	561118	550-401-772
3 Port	Aluminum Alloy	561119	550-401-773
4 Port	Aluminum Alloy	561120	550-401-774
6 Port	Aluminum Alloy	–	550-401-776
8 Port	Aluminum Alloy	561122	550-401-783
10 Port	Aluminum Alloy	561123	550-401-784
12 Port	Aluminum Alloy	561124	550-401-785
1 Port	316 Stainless Steel	563764	550-401-101
2 Port	316 Stainless Steel	563765	550-401-102
3 Port	316 Stainless Steel	563766	550-401-103
4 Port	316 Stainless Steel	563767	550-401-104

DESIGN CHART E

Pump Selection		
Oil Pumps Description	Part No.	Old Part No.
6 Pint Oil Plastic	563574	550-000-170
12 Pint Oil Plastic	563575	550-000-180
20 Pint Oil Plastic	563576	550-000-190
6 Pint Oil Plastic – 10 Watt L.L.	563577	550-000-230
12 Pint Oil Plastic – 10 Watt L.L.	563578	550-000-240
20 Pint Oil Plastic – 10 Watt L.L.	–	550-000-250
Grease Pumps Description		**Order Part No.**
8 Lb. Flexible PVC	–	550-000-290
6 Lb. Grease Plastic	563571	550-000-050
12 Lb. Grease Plastic	–	550-000-060
20 Lb. Grease Plastic	–	550-000-070
6 Lb Grease Plastic W/L.L.	563572	550-000-080
12 Lb. Grease Plastic W/L.L.	563573	550-000-090
20 Lb. Grease Plastic W/L.L.	–	550-000-100
6 Lb.Grease Metal	–	550-000-110
12 Lb. Grease Metal	–	550-000-120
20 Lb, Grease Metal	–	550-000-130
6 Lb. Grease Metal W/L.L.	–	550-000-140
12 Lb. Grease Metal W/L.L.	–	550-000-150
20 Lb. Grease Metal W/L.L.	–	550-000-160

COMPONENT ORDER FORM

Description	Size	Qty	Circle Which Aluminum Alloy		Circle Which 316 Stainless Steel		Notes
			Part No.	Old Part No.	Part No.	Old Part No.	
Injectors	0		563628	550-100-001	–	550-100-110	Determine the total number of each size injector by adding the numbers in Column B of Design Chart A for each injector size
	1		563630	550-100-011	–	550-100-120	
	2		563632	550-100-021	–	550-100-130	
	3		563634	550-100-031	–	550-100-140	
	4		563636	550-100-041	563639	550-100-150	
	8		563638	550-100-081	–	–	
Manifolds	1		561117	550-401-771	563764	550-401-101	Determine the total number of each size manifold. See Bulletin 12100 for more details
	2		561118	550-401-772	563765	550-401-102	
	3		561119	550-401-773	563766	550-401-103	
	4		561120	550-401-774	563767	550-401-104	
	6		–	550-401-776	–	–	
	8		561122	550-401-783	–	–	
	10		561123	550-401-784	–	–	
	12		561124	550-401-785	–	–	
Manifold Plug			15M038	550-350-040	561115	550-401-120	
Pump			563571	550-000-050			Use Design Chart E
Solid State Timer			562872	163-400-000			Use Bulletin L14521
Solenoid Valve			563315	521-001-020			Use Bulletin L12100
Pressure Switch (if required)							See Bulletin 15521 (P/N – (507-509-00) usually used)
Pressure Gauge Kit (if required)			–	506-001-780			Contains 0-3000 psi gauge and mounting hardware
Fittings & Mounting Hardware							See Bulletin L12100

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