



ISSUED BY  
RPP-WTP PDC



# CENTRIFUGAL BLOWER

## Data Sheet:

### 24590-HLW-MAD-HOP-P0018

MR No. **24590-QL-MRA-MACS-00002**

Plant Item No. (See Note 11)  
**24590-HLW-HOP-FAN-00001A/B/C**  
**24590-HLW-HOP-FAN-00009A/B/C**

Rev No.  
**2**

1	Project:	RPP-WTP	Bldg /Room #	HLW / H-B001C	Manufacturer:	The Spencer Turbine Co.	
2	Project No:	24590	Supporting	DELETED	Manufacturer *		
3	Site:	DOE Hanford	Calculation		Model No:		
4	Safety Class	SDS	Supporting	24590-HLW-M6-HOP-P0003	Quantity Required	6	
5	Seismic Category	SC-III	Drawings	24590-HLW-M6-HOP-P20003	Quality Level	QL2	
6	System No.	HOP	System Desc	24590-HLW-3YD-HOP-00001			
7			Process Data Sheets	Deleted			

8 Description: **Booster Extraction Fan**

### 9 DESIGN TEMPERATURES

10	Zone Design Temperature	Summer °F	95				
11	Indoor Design Temperature	Minimum °F	59	Maximum °F	95	Relative Humidity	10% (min.)
12							
13	Contamination Classification Area	DELETED	Elevation	661	Ft above MSL		

### 14 DESIGN CONDITIONS

15	Design Fan Capacity	1600	ACFM	Inlet Air Temperature at max flow (Design)	162	°F
16	Design External Static Pres. (Note 12)	84	inches WC	Suction Air Density at max flow (Design)	0.046	lbs/ft <sup>3</sup>
17	Normal Fan Capacity	847	ACFM	Inlet Air Temperature at normal flow	143	°F
18	External Static Pressure at normal flow	62	inches WC	Suction Air Density at normal flow	0.054	lbs/ft <sup>3</sup>
19	Minimum Operating Fan Capacity	627	ACFM	Inlet Air Temperature at minimum operating flow	127	°F
20	External Static Pressure at min op flow	37	inches WC	Suction Air Density at minimum operating flow	0.058	lbs/ft <sup>3</sup>
21	Total Static Pressure (Max)	*	inches WC	Fan Inlet Pressure range	11.0 to 12.7	psia
22	Minimum Fan Efficiency	*	%	Fan Discharge Pressure range	13.9 to 14.0	psia
23	Fan Operating Speed	*	RPM	Fan Motor Operating Weight	*	pounds
24	Power at Operating Conditions	*	BHP	Power at Inlet Temperature	*	BHP
25	Assembly Weight (Mtr + Fan + Base)	*	pounds	Max. Temp. & Rate of Rise for Mech. Design	350 / 30	°F / °F/sec

### 26 CONSTRUCTION

27	Design Fan Manufacturer	*	Design Fan Model Number	*
28	AMCA Drive Arrangement	8	AMCA Inlet Box Position	*
29	AMCA Motor Position	Direct Drive	AMCA Discharge	Upblast
30	AMCA Rotation	CW (See Note 9)	Fan Scroll Type	*

### 31 FAN WHEEL

32	Fan Wheel Type	*(See Note 4)	Fan Shaft Diameter	*	
33	Design Wheel Diameter	*	Actual Wheel Diameter	*	
34	Design Wheel Width	*	Actual Wheel Width	*	
35	Design Fan RPM	*	Actual Fan RPM @ design	*	
36	Design Brake Horsepower	*	Actual Brake Horsepower	*	
37	Fan Bearing Type	*	Fan Bearing Designator	*	
38	First Critical Speed Range	*	rpm	Second Critical Speed Range	rpm

### 39 FAN MATERIALS

40	Housing	316L SS	Fan Wheel	316L SS
41	Evase	N/A	Mounting Frame	316L SS
42	Shaft	316L SS	Inlet Box / Transition Piece	316L SS / 316L SS
43	Inlet Vane	N/A	Discharge Damper	N/A
44	Inlet Screen	N/A	Bearing Special Features	N/A
45	Mechanical Coupling	Falk Flex-Type (or equal)	Safety Guards Types	OSHA Compatible

### 46 FAN ACCESSORIES

47	Flanged Inlet	Yes	Flanged Inlet Dimensions, in.	*
48	Flanged Discharge	Yes	Flanged Discharge Dimensions, in.	*(See Note 6)
49	Flanged Discharge Evase	No	Flanged Discharge Evase Dimensions, in	N/A
50	Split Housing	Yes	Split Housing Type	*
51	Inlet Box	Yes	Inlet Box Type	*
52	Inlet Damper	No	Inlet Damper Type	N/A
53	Inlet Transition Piece	Yes	Inlet Transition Piece Inlet Flange Dimen, in.	*(See Note 6)
54	Inspection Door	Yes	Inspection Door Size, in.	* 1 in. dia., half-coupling w/ plug (See Note 10)
55	Drain Connection	Yes	Drain Connection Size, in.	* See Spec.
56	Shaft Seals	Yes	Seal Type	* Gas Tight



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**24590-HLW-HOP-FAN-00001A/B/C**

Rev No

**2****24590-HLW-HOP-FAN-00009A/B/C**

1	Project	RPP-WTP	Bldg./Room #	HLW / H-B001C	Manufacturer:	The Spencer Turbine Co.	
2	Project No	24590	Supporting	DELETED	Manufacturer	*	
3	Site	DOE Hanford	Calculation		Model No:		
4	Safety Class	SDS	Supporting	24590-HLW-M6-HOP-P0003	Quantity Required	6	
5	Seismic Category	SC-III	Drawings	24590-HLW-M6-HOP-P20003	Quality Level	QL2	
6	System No.	HOP	System Desc	24590-HLW-3YD-HOP-00001	Process Data Sheets	Deleted	
7							
8	Description: <b>Booster Extraction Fan</b>						

### 9 FAN ACCESSORIES (continued)

10	Isolation Base	No	Isolation Base Type	N/A		
11			Isolation Base Manufacturer	N/A		
12	Isolation Springs	Yes	Isolation Springs Mfr and Model No	*		
13			Isolation Springs Minimum Diameter	*		
14			Isolation Springs Deflection	*		
15			Isolation Springs Restraint Features	*		
16	Flexible Inlet Connection	Yes	Flexible Inlet Connection Dimensions	* (See Note 6)		
17	Flexible Inlet Connection Type	*				
18	Flexible Inlet Connection Material	* 316L SS				
19	Flexible Inlet Connection Manufacturer and Model No		*			
20	Flexible Outlet Connection	Yes	Flexible Outlet Connection Dimensions	* (See Note 6)		
21	Flexible Outlet Connection Type	*				
22	Flexible Outlet Connection Material	* 316L SS				
23	Flexible Outlet Connection Manufacturer and Model No		*			
24	Inlet Screen	No				
25	Inlet Screen Features	N/A				
26	Fan Pedestal	Yes				
27	Fan Pedestal Description	Common mounting base for fan, motor, and bearings				
28	Insulation Studs	No	Insulation thickness	N/A		
29	Silencer	No				

### 30 MOTOR AND DRIVE REQUIREMENTS

31	Deleted				
32	Adjustable Speed Drive	Yes			
33	Special Drive Features	Provide ASD programming for motor RPM to pass through first critical speed dead band to avoid excessive vibration.			

### 34 NOTES

35	1)	* Denotes data to be provided / verified by Vendor
36	2)	N/A denotes "Not Applicable".
37	3)	TBD denotes "To Be Determined" at a later date.
38	4)	The impeller shall be anti-surge design developing continuously rising SP from free delivery thru shutoff.
39	5)	Bounding dimensions not to exceed 45" w x 60" h x 105" l (Blower, Motor, Baseplate and Inlet Box).
40	6)	Connections shall match Buyer's supply pipe: 10 inch diameter, 316L SS, Sched 40S, w/ 150 lb, RF Flange.
41	7)	See Specification 24590-WTP-3PS-MACS-TP004 for additional requirements.
42	8)	Motor horsepower to be provided by Vendor. Assume "cold-gas" conditions (59 °F) at startup.
43	9)	Rotation is listed as viewed from drive side.
44	10)	Provide a plugged inspection port for each stage of the multi-stage blower.
45	11)	Driven Equipment / Motor / Adjustable Speed Drive (ASD) equipment tag relationship is as follows:
46		<b>Fan Tag Number</b> <b>Motor Tag Number</b> <b>ASD Tag Number</b>
47		HOP-FAN-00001A / HOP-MTR-00005A / HOP-ASD-00001A
48		HOP-FAN-00001B / HOP-MTR-00005B / HOP-ASD-00001B
49		HOP-FAN-00001C / HOP-MTR-00005C / HOP-ASD-00001C
50		HOP-FAN-00009A / HOP-MTR-00006A / HOP-ASD-00003A
51		HOP-FAN-00009B / HOP-MTR-00006B / HOP-ASD-00003B
52		HOP-FAN-00009C / HOP-MTR-00006C / HOP-ASD-00003C
53	12)	The External Static Pressure at design, normal, and minimum operating flows includes 2 inches WC maximum drop through the inlet box
54	13)	Contents of this document are Dangerous Waste Permit affecting.



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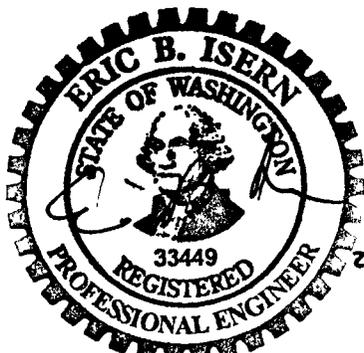
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8 Description: **Booster Extraction Fan**

Please note that source, special nuclear and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA), are regulated at the U.S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts, that pursuant to the AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.



EXPIRES: 07/28/05

34 This bound document contains a total of 3 sheets.

2	2/15/05	Re-Issued for Permitting Use	R. Tomatiga	Jason Medina / SC	N/A	Eric Isern
1	9/15/04	Updated design conditions and Re-issued for Permitting Use. Superseded 24590-HLW-MAD-HOP-P0019, P0020, P0035, P0036 & P0037.	K. Kirschenheiter	Jason Medina / SC	N/A	Eric Isern
0	3/19/04	Issued for Permitting Use	Dale E Green	M. Ordone / DMY	N/A	M. Hoffmann
Rev	Date	Description	Originator	Checker	Reviewer	Approver