

Documentation

Order : ...FD215246

**Customer: Hargreaves Ductwork Ltd
 Lord Street
 BURY
 BL9**

Purchase order date: 04/08/2015

**Purchase order no: A147844
Project: Culham**

Your reference: Jordan Young

Our reference: Martin Downs

Date: 04/08/2015

CUSTOMER:
Hargreaves Ductwork Ltd
Lord Street
BURY
BL9

ORDER: from 04/08/2015
A147844

PROJECT: Culham

Y/DESC.: K001/A

Item:
1

ORDER NO.:
...FD215246

Units:
1

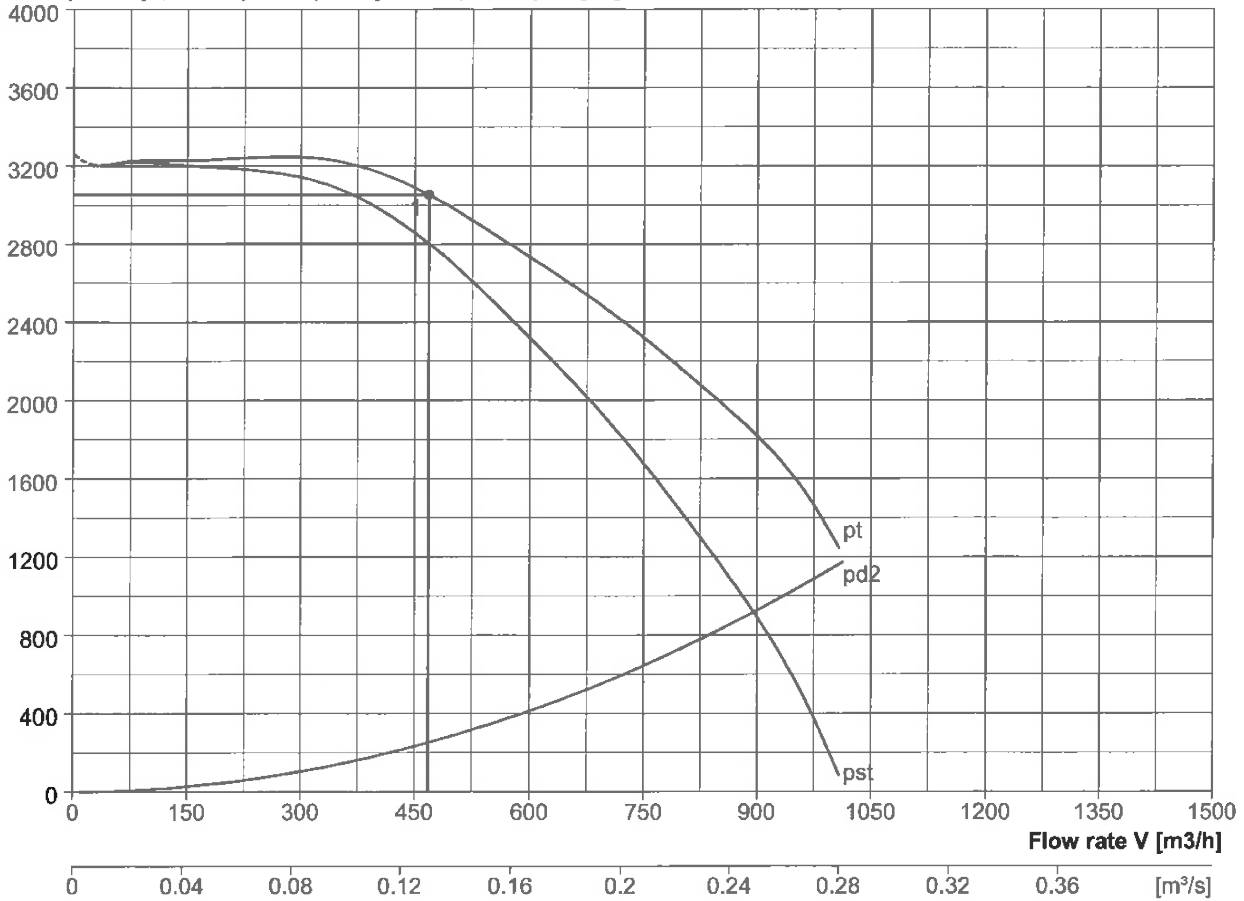
Handled by: S.M.Downs
(+44) (0) 7771 615014

03/11/2015 12:06:45 / linda.ratcliffe

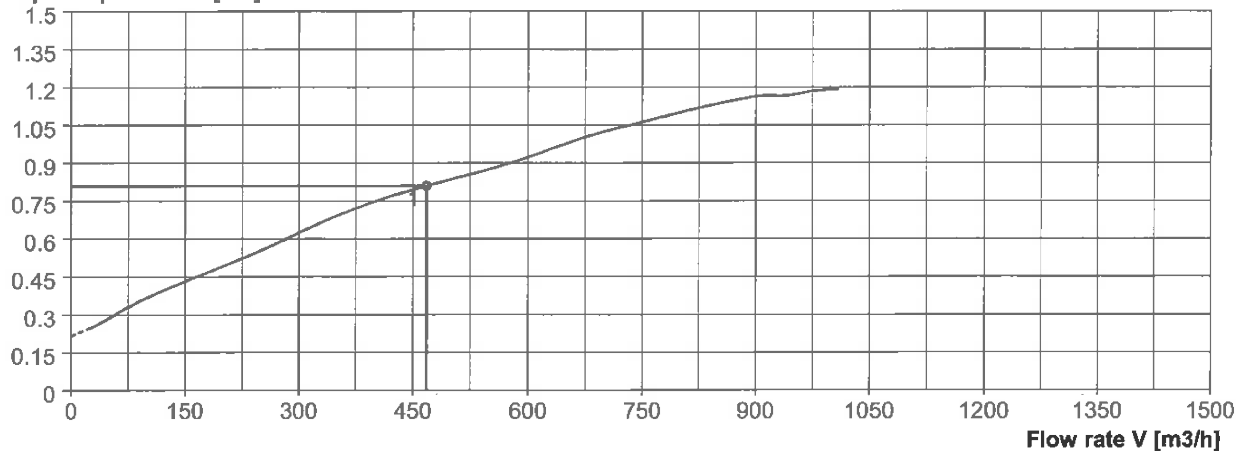
50-Centrifugal Witt

Fan type : P-SRZ12D/90/475/5

Total press. pt, static press. pst, dynamic press. pd2 [Pa]



Impeller power Pw [kW]



		1				
Flow rate	V [m³/h]	468				
Inlet density	Rho [kg/m³]	1.200				
Fan speed	n [1/min]	2,880				

The fan data is for naked fan and NOT taking into account the effects from additional parts/accessories unless explicitly stated. Dotted lines above indicate stall zone: NOT allowed for the operation of the fan.

FAN CURVE FOR CENTRIFUGAL FAN

FAN SYSTEMS
WITT

Date: 04/08/2015

CUSTOMER:
Hargreaves Ductwork Ltd
Lord Street
BURY
BL9ORDER: from 04/08/2015
A147844

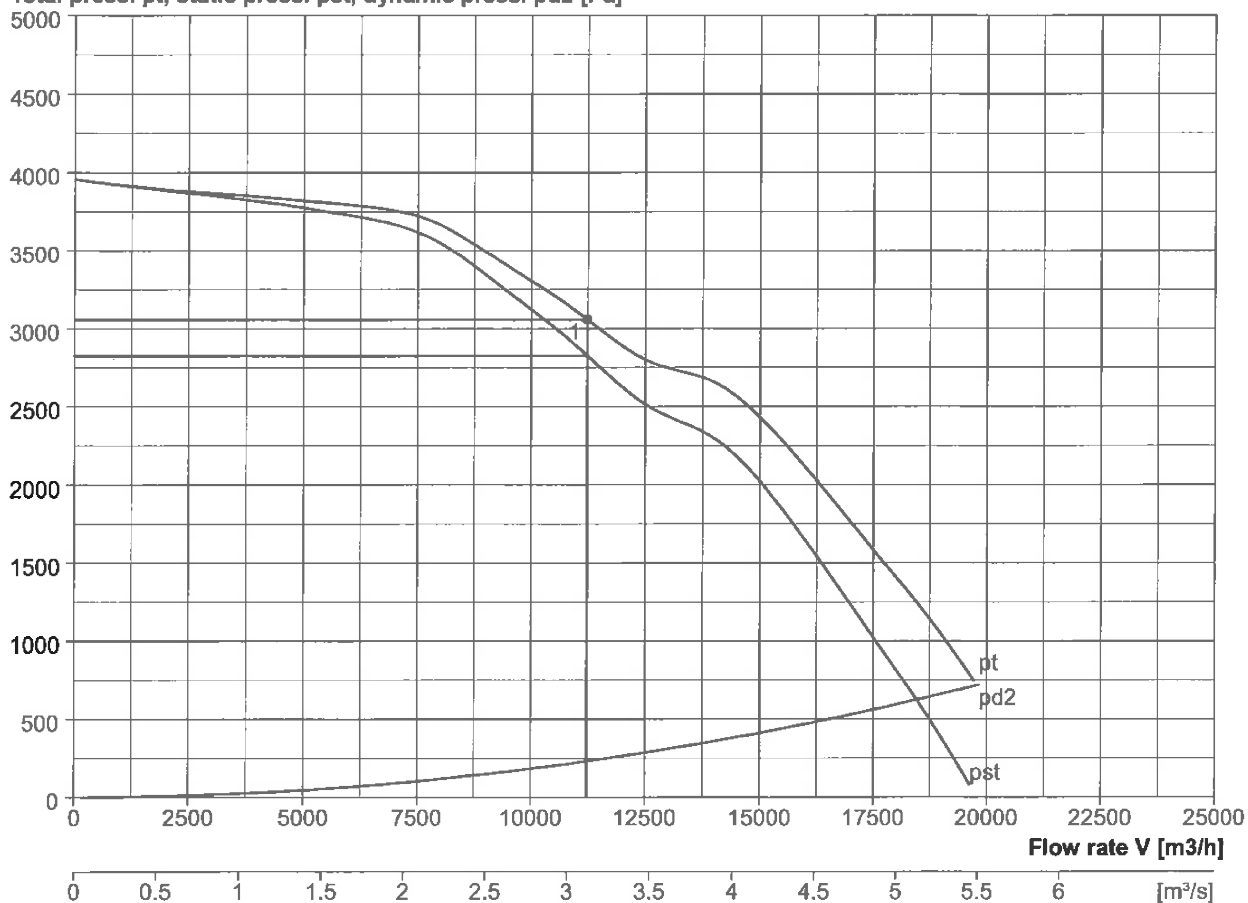
PROJECT: Culham

Y/DESC.: K002/A

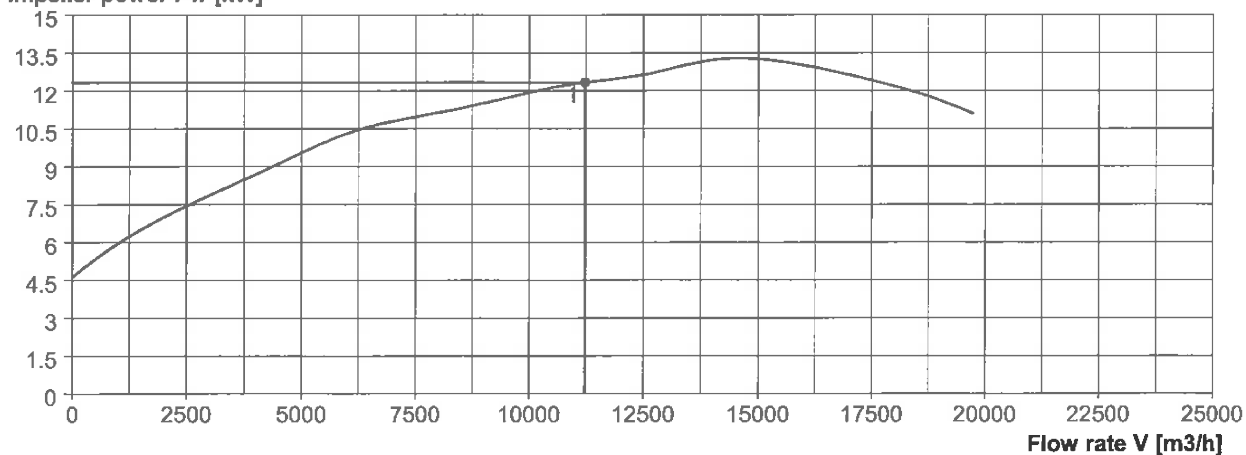
Item:
2ORDER NO.:
...FD215246Units:
1Handled by: S.M.Downs
(+44) (0) 7771 61501403/11/2015 12:06:45 / linda.ratcliffe
50-Centrifugal Witt

Fan type : S-RNN8B/450/560/1

Total press. pt, static press. pst, dynamic press. pd2 [Pa]

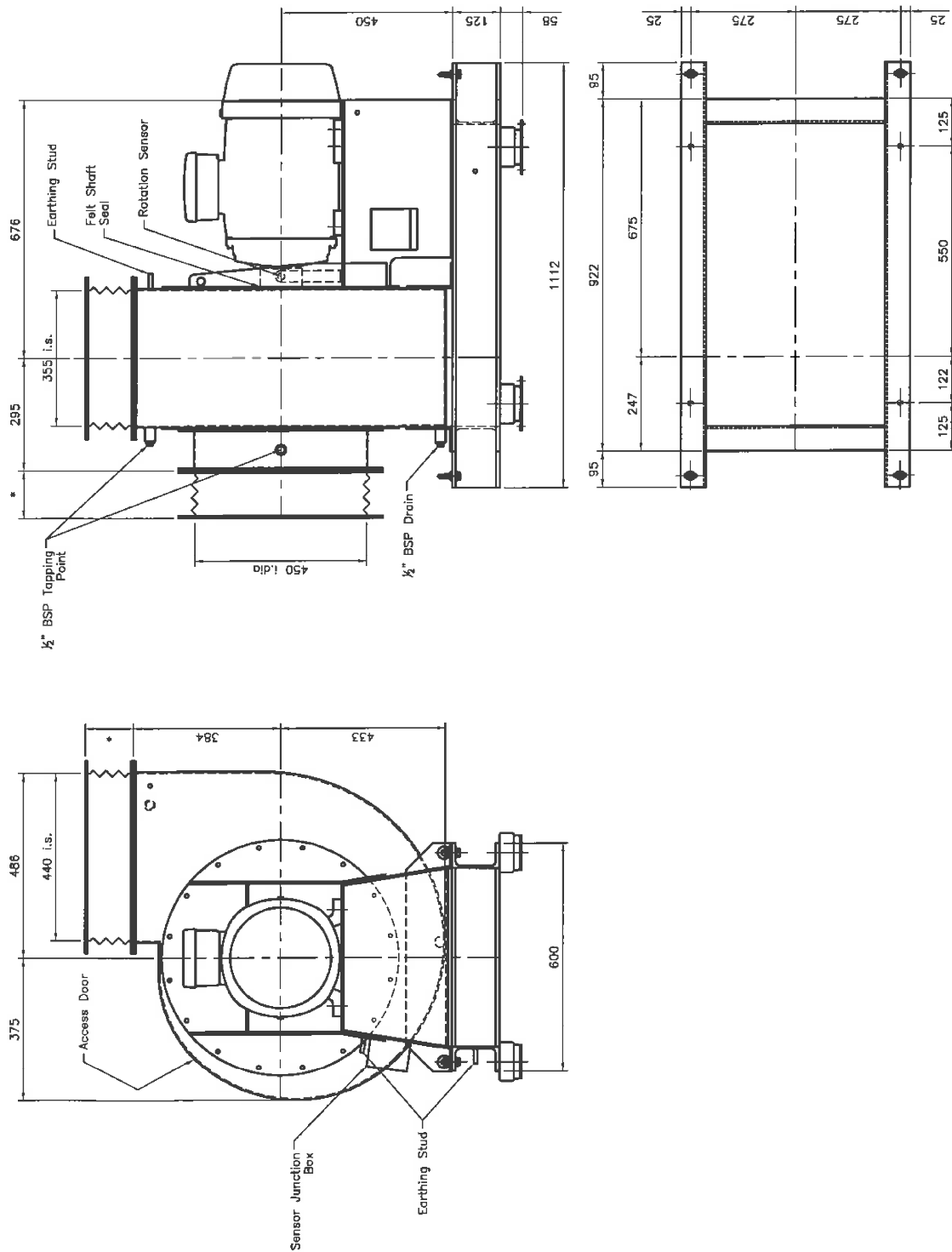


Impeller power Pw [kW]

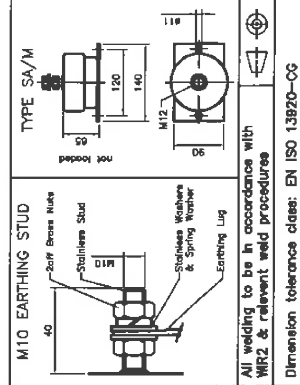


Flow rate	V [m3/h]	1				
Inlet density	Rho [kg/m3]	11,232				
Fan speed	n [1/min]	1.200				
		2,927				

The fan data is for naked fan and NOT taking into account the effects from additional parts/accessories unless explicitly stated. Dotted lines above indicate stall zone: NOT allowed for the operation of the fan.



FOUNDATION PLAN



* flex.connections (inlet/outlet), inst.length 125 mm

REV	DESCRIPTION	DATE	NAME	OUTLET POSITION : LCO	FAN TYPE : RNNBB/450/560/1	DATE	NAME	GENERAL ARRANGEMENT
A	HANDING CHANGED TO LCO	10.08.15	AM					
				MOTOR POSITION : DIRECT	MOTOR TYPE : 15kw, 2 POLE, 400/3/50	5/8/15	T.POPE	CERTIFIED CENTRIFUGAL FAN DESIGN
				CLIENT : Hargreaves	SCALE : DO NOT SCALE	CHECK		

FAN SYSTEMS

THIS INFORMATION REMAINS THE PROPERTY OF FAN SYSTEMS

DWG No: FD215246--02--GA REV A

HX3 7BJ Halifax, West Yorkshire, Tel.: +44 (0) 1274 694999 Fax:

CUSTOMER: Hargreaves Ductwork Ltd Lord Street BURY BL9 YOUR REF.: Jordon Young	ORDER: vom 04/08/2015 A147844	ITEM: 1	ORDER NO.: ...FD215246
	PROJECT: Culham	UNITS: 1	Handled by: S.M.Downs
Y/DESC.: K001/A			

Fan type: P-SRZ12D/90/475/5 Machine-No.: ...FD215246-1.1-1.1 MP: 3731

Please tick the box to confirm compliance to drawings/specification

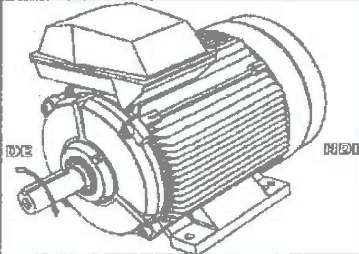
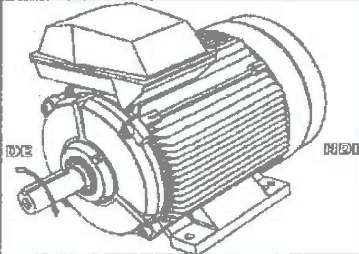
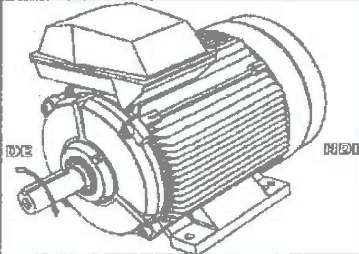
Operation	Component	Material	Dimension	Workmanship	OPERATIVE'S NAME																										
Fabrication	Plasma/Laser	✓	✓	✓	M Marsden																										
	Impeller	✓	✓	✓	J. Shaw																										
	Casing	✓	✓	✓	G. Shiel																										
	Stool	✓	✓	✓	G. Shiel																										
	Base frame	✓	✓	✓	G Tracey																										
	Welding	✓	✓	✓	J Shaw																										
Final Fabrication Inspection		Name (Block Capital) Signature: G. Shiel		Date																											
Hub	Machined	✓	✓	✓	OPERATIVE'S NAME P. HARRISON																										
	Initial	✓	✓	✓	OPERATIVE'S NAME A. TOWNSON																										
Balancing Impeller	Final	✓	✓	✓	OPERATIVE'S NAME A. TOWNSON																										
	Primer	✓	✓	✓	OPERATIVE'S NAME A. TOWNSON																										
Painting	Top Coat	✓	✓	✓	MIK																										
	D.F.T																														
Fitting	Motor	Serial No 1026849216			OPERATIVE'S NAME R. MANSON																										
	Motor	kW: 2.2 Volt: 400 IP: 55																													
ATEX		Anti Spark ☐ Earthing Studs ☒		Nameplate ☒																											
Final Component Inspection		Name (Block Capital) Signature:																													
Fan Test Status:		Fully open / Partially blanked off / Fully blanked off																													
FINAL RUN TEST:-		<table border="1"> <tr> <td rowspan="2">30 Minutes</td> <td colspan="2">Overall Balance</td> </tr> <tr> <td>DE</td> <td>NDE</td> </tr> <tr> <td>Vertical</td> <td>2.192</td> <td>2.249</td> </tr> <tr> <td>Horizontal</td> <td>2.656</td> <td>2.362</td> </tr> <tr> <td>Axial</td> <td></td> <td></td> </tr> <tr> <td>Temperature °C</td> <td></td> <td></td> </tr> <tr> <td>Amps</td> <td>3.6</td> <td></td> </tr> <tr> <td>Voltage</td> <td>415</td> <td>50Hz</td> </tr> <tr> <td>R.P.M</td> <td>2881</td> <td></td> </tr> </table>				30 Minutes	Overall Balance		DE	NDE	Vertical	2.192	2.249	Horizontal	2.656	2.362	Axial			Temperature °C			Amps	3.6		Voltage	415	50Hz	R.P.M	2881	
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Temperature °C																															
Amps	3.6																														
Voltage	415	50Hz																													
R.P.M	2881																														
Fan Weight (Kg) 200		REMARKS:																													
Mechanical Run Test		Name (Block Capital): J. FRANCIS Signature: J. Francis Date: 3-11-15																													
Ancillaries Checked		AV's: ☒ Flex: ☒ C/Flanges: ☒ Gaskets: ☒																													
Final Inspection		Name (Block Capital): A. LEACH Signature: A. Leach Date: 6-11-15																													
Wrapped + Despatched + Photo		Name (Block Capital): A. LEACH Signature: A. Leach Date: 6-11-15																													

HX3 7BJ Halifax, West Yorkshire, Tel.: +44 (0) 1274 894999 Fax:

CUSTOMER: Hargreaves Ductwork Ltd Lord Street BURY BL9 YOUR REF.: Jordon Young	ORDER: vom 04/08/2015 A147844 PROJECT: Culham Y/DESC.: K002/A	ITEM: 2 UNITS: 1	ORDER NO.: ...FD215246 Handled by: S.M.Downs
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Fan type: S-RNN8B/450/560/1 Machine-No.: ...FD215246-2.1-2.1 MP: 3731

Please tick the box to confirm compliance to drawings/specification

Operation	Component	Material	Dimension	Workmanship	OPERATIVE'S NAME																																			
Fabrication	Plasma/Laser	/	/	/	NICKY MAST																																			
	Impeller	/	/	/	J Shaw																																			
	Casing	/	/	/	ANDY																																			
	Stool	/	/	/	ANDY																																			
	Base frame	/	/	/	GLYN																																			
	Welding	/	/	/	ANDY GLYN																																			
Final Fabrication Inspection		Name (Block Capital) DODONOVIC Signature <i>[Signature]</i>			Date 14-10-15																																			
Hub					OPERATIVE'S NAME																																			
	Machined	/	/	/	P Hargreaves																																			
Balancing Impeller	Initial	/	/	/	OPERATIVE'S NAME																																			
	Final	/	/	/	A TOWNSON																																			
Painting	Primer	/			OPERATIVE'S NAME																																			
	Top Coat	/	<i>[Signature]</i>		MAK																																			
	D.F.T																																							
Fitting	Motor	Serial No. 1029137568 kW: 18.5/13 HP: 400 IP: 55			OPERATIVE'S NAME																																			
	Motor				JOHN + DAN																																			
ATEX		Anti Spark ☒ Earthing Studs ☒		Nameplate ☒																																				
Final Component Inspection		Name (Block Capital) J. FRANCIS Signature: <i>[Signature]</i> : 16/10/15																																						
Fan Test Status:		Fully open / Partially blanked off / Fully blanked off																																						
FINAL RUN TEST:-		<table border="1"> <tr> <td rowspan="2"></td> <td>30 Minutes</td> <td colspan="2">Overall Balance</td> </tr> <tr> <td></td> <td>DE</td> <td>NDE</td> </tr> <tr> <td></td> <td>Vertical</td> <td>0.066</td> <td>0.387</td> </tr> <tr> <td></td> <td>Horizontal</td> <td>1.722</td> <td>1.607</td> </tr> <tr> <td></td> <td>Axial</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Temperature °C</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Amps</td> <td>25.6</td> <td></td> </tr> <tr> <td></td> <td>Voltage</td> <td>415</td> <td>50HZ</td> </tr> <tr> <td></td> <td>R.P.M</td> <td>2977</td> <td></td> </tr> </table>					30 Minutes	Overall Balance			DE	NDE		Vertical	0.066	0.387		Horizontal	1.722	1.607		Axial				Temperature °C				Amps	25.6			Voltage	415	50HZ		R.P.M	2977	
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	R.P.M	2977																																						
Fan Weight (Kg) 330		REMARKS:																																						
Mechanical Run Test		Name (Block Capital): J. FRANCIS Signature: <i>[Signature]</i> Date: 16/10/15																																						
Ancillaries Checked		AV's: ☒ Flex: ☒ C/Flanges: ☒ Guards: ☒																																						
Final Inspection		Name (Block Capital): A. LEACH Signature: <i>[Signature]</i> Date: 2-11-15																																						
Wrapped + Despatched + Photo		Name (Block Capital): A. LEACH Signature: <i>[Signature]</i> Date: 2-11-15																																						

CUSTOMER: Hargreaves Ductwork Ltd Lord Street BURY BL9 YOUR REF.: Jordon Young	ORDER: vom 04/08/2015 A147844	ITEM: 1	ORDER NO.: ...FD215246
	PROJECT: Culham Y/DESC.: K001/A	UNITS: 1	Handled by: S.M.Downs

Designation of machinery **50-Centrifugal Witt**
 Machinery type **P-SRZ12D/90/475/5**
 Machinery No. **...FD215246 - 1**

Year

Technical Data

		kg/m ³	kg/m ³						
Density		1.2							
Volume flow rate	q _v	m ³ /h	468						
Static pressure	Δp _{st}	Pa	2803	/	Operating temperature	t	°C	20	/
Total pressure	Δp _t	Pa	3054	/	Max. allowed temp.	t _{max}	°C	100	/
Rated speed	n	min ⁻¹	2880		Shaft power	P _r	kW	.81	/
Ex-protection	inside /outside		-						

Material

Impeller **X6CrNiMoTi17-12-2 = 1.4404 (316)/**
 Motor support **S235JR+N=RS137-2**
 Casing **X6CrNiMoTi17-12-2 = 1.4404 (316)/**

Surface Treatment

Impeller **A13-welds pickled and passivated**
 Motor support **A6-SA2.5+ Zinc.pri.+PA-coat.,~160µm**
 Casing outside **A14-bead blasted**
 Casing inside **A13-welds pickled and passivated**

Motor

Maker	Standard IEC Motor				
Size	90L	Rated voltage / Frequency	U / f	V / Hz	3x400 / 50
Poles	2	Rated Power	P _M	kW	2.2
Design / Protection class	B3 / IP55	Classification			IEC 60034
Insulation class	F/B	Ex-protection			

Manufacturer's declaration for installation as defined by the EC Council Directive on Machinery 2006/42/EC, Annex II B

We hereby declare that the machinery/machinery component named below is an incomplete machine due to its design and construction. This incomplete machinery/machinery component is intended to be assembled with other machinery/machinery components to constitute machinery.

It shall not be put into service until the assembled machinery has been declared in conformity with the provisions of the EC Council Directive on Machinery 2006/42/EC and the implementation into national legislation.

For the machinery/machinery component supplied by us we have done the necessary risk assessment according EN 12100:2011-03 - if required it can be reviewed at our factory.

EC declaration of conformity as defined by the EC Council Directives listed below


Relevant EC Council Directives
 in the version of the valid
 signature date: 2006/95/EC Low-Voltage Directive (not-Ex-Engine!),
 2004/108/EC EMC Directive (as component)

Applied harmonised standards in
 the version of the valid signature
 date: EN 12100:2011-03, EN ISO 13857, EN 60204-1,
 EN ISO 13857 (if protection guard is part of delivery)

Date / Signature of manufacturer:

 Halifax, 09.11.2015
 West
 Yorkshire,

Position of Signatory:



Manager Quality Assurance



CUSTOMER: Hargreaves Ductwork Ltd Lord Street BURY BL9 YOUR REF.: Jordon Young	ORDER: vom 04/08/2015 A147844	ITEM: 2	ORDER NO.: ...FD215246
	PROJECT: Culham Y/DESC.: K002/A	UNITS: 1	Handled by: S.M.Downs

Designation of machinery **50-Centrifugal Witt**
 Machinery type **S-RNN8B/450/560/1**
 Machinery No. **...FD215246 - 2**

Year

Technical Data

			kg/m ³	kg/m ³					
Density			1.2						
Volume flow rate	q _v	m ³ /h	11232						
Static pressure	Δp _{sf}	Pa	2826	/	Operating temperature	t	°C	20	/
Total pressure	Δp _t	Pa	3058	/	Max. allowed temp.	t _{max}	°C	80	/
Rated speed	n	min ⁻¹	2927		Shaft power	P _r	kW	12.33	/
Ex-protection	inside /outside		-						

Material

Impeller **S235JR+N=RS137-2**
 Motor support **S235JR+N=RS137-2**
 Casing **S235JR+N=RS137-2**

Surface Treatment

Impeller **A6-SA2.5+ Zinc.pri.+PA-coat.,ral9010**
 Motor support **A6-SA2.5+ Zinc.pri.+PA-coat.,ral9010**
 Casing outside **A6-SA2.5+ Zinc.pri.+PA-coat.,ral9010**
 Casing inside **A6-SA2.5+ Zinc.pri.+PA-coat.,ral9010**

Motor

Maker	Standard IEC Motor	Rated voltage / Frequency	U / f	V / Hz	3x400 / 50
Size	160MX	Rated Power	P _M	kW	15
Poles	2	Classification			IEC 60034
Design / Protection class	B3 / IP55	Ex-protection			
Insulation class	F/B				

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Applied harmonised standards in the version of the valid signature date:	EN 12100:2011-03, EN ISO 13857, EN 60204-1, EN ISO 13857 (if protection guard is part of delivery)

Date / Signature of manufacturer:

 Halifax,
 West
 Yorkshire,

09.11.2015

Position of Signatory:

Manager Quality Assurance