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## INSTALLATION INSTRUCTIONS

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Original Issue Date: 3/98

Model: 15-2800 kW

Market: Industrial

Subject: Air Cleaner Restriction Indicator Kits

### Introduction

The air restriction gauge monitors the air flow through the generator set engine air cleaner(s). Increased restriction indicates a clogged air cleaner element.

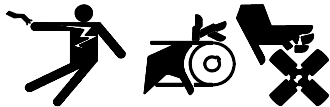
The gauge displays restriction readings indicated as vacuum. As maximum allowable restriction is reached, the gauge window turns red indicating a need for air cleaner element replacement. Reset the gauge by pushing down the top of the gauge. Observe the following safety precautions while installing the kit.

### Safety Precautions

Observe the following safety precautions while installing the kit.

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#### WARNING



**Accidental starting.  
Can cause severe injury or death.**

Disconnect the battery cables before working on the generator set. Remove the negative (-) lead first when disconnecting the battery. Reconnect the negative (-) lead last when reconnecting the battery.

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**Disabling the generator set. Accidental starting can cause severe injury or death.** Before working on the generator set or connected equipment, disable the generator set as follows: (1) Move the generator set master switch to the OFF position. (2) Disconnect the power to the battery charger. (3) Remove the battery cables, negative (-) lead first. Reconnect the negative (-) lead last when reconnecting the battery. Follow these precautions to prevent starting of the generator set by an automatic transfer switch, remote start/stop switch, or engine start command from a remote computer.

### Installation Procedure

#### 1. Remove the generator set from service.

- 1.1 Place the generator set master switch in the OFF/ RESET position.
- 1.2 Disconnect the power to the battery charger, if equipped.
- 1.3 Disconnect the generator set engine starting battery(ies), negative (-) lead first.
- 1.4 Remove the controller cover and hardware.

## 2. Install the kit components.

- 2.1 Find the air cleaner restriction indicator kit number in Figure 1 to determine the next installation step.

**Note:** Use pipe sealant on all threaded connections to prevent leakage.

Kit No.	Installation Step No.	View
PA-274608, PA-274608-SD	2.2	A or B
PA-274609, PA-274609-SD	2.3	G or L
PA-279828, PA-279828-SD	2.3	G
PA-279830, PA-279830-SD	2.3	G
PA-326208, PA-326208-SD	2.4	F
PA-326237, PA-326237-SD	2.5	D or Q
PA-326237	2.10	Z
PA-328005, PA-328005-SD	2.6	C
PA-328693, PA-328693-SD	2.7	I
PA-343512, PA-343512-SD	2.8	O
PA-343513, PA-343513-SD	2.9	J
PA-354465, PA-354465-SD	2.10	J
PA-354485, PA-354485-SD	2.10	J
PA-361589, PA-361589-SD	2.3	H
PA-365250, PA-365250-SD	2.9	M
PA-365530, PA-365530-SD	2.11	N
GM10684-KA1	2.12	K
GM10756-KA1	2.13	P
GM17220-KA1	2.10	R
GM23011-KA1	2.8	S
GM24198-KA1	2.10	U
GM26340-KA1	2.14	E
GM27305-KA1	2.15	W or AB
GM28464-KA1	2.9	T
GM31577-KA1	2.16	X
GM32965-KA1	2.10	V
GM32983-KA1	2.17	Y or AA
GM41774-KA1	2.18	AC

**Figure 1** Air Cleaner Restriction Indicator Kits

- 2.2 Perform the following steps to install the air cleaner restriction indicator kit.

- 2.2.1 Remove the cap from the air cleaner base or air intake tubing for the restriction gauge installation.
- 2.2.2 Apply pipe sealant to the threads of the street elbow (267428) and install on the air intake tube.

- 2.2.3 Apply pipe sealant to threads of the street elbow or air cleaner base fitting and install pipe coupling (X-216-24).

- 2.2.4 Apply pipe sealant to threads of the restriction gauge (273113 or GM11489) and thread the restriction gauge into the pipe coupling.

- 2.2.5 Go to step 3.

- 2.3 Perform the following steps to install the air cleaner restriction indicator kit.

- 2.3.1 Remove the cap from the air intake tube for the restriction gauge installation.

- 2.3.2 Apply pipe sealant to threads of the intake tube pipe fitting.

- 2.3.3 If using view H, install the 90° pipe elbow (X-215-19). If using view N, pipe elbow (X-215-19) is not used.

- 2.3.4 Apply pipe sealant to the threads of the restriction gauge (273377 or 354660) and thread the restriction gauge into the pipe elbow.

- 2.3.5 Repeat the procedure for the remaining air cleaners.

- 2.3.6 Go to step 3.

- 2.4 Perform the following steps to install air cleaner restriction indicator kit.

- 2.4.1 Remove the plug from carburetor for the restriction gauge installation.

- 2.4.2 Apply pipe sealant to male threads of the 45° street elbow (267428) and install the elbow on the carburetor fitting.

- 2.4.3 Apply pipe sealant to the male threads of the restriction gauge (273113) and thread the restriction gauge into street elbow.

- 2.4.4 Go to step 3.

- 2.5 Perform the following steps to install air cleaner restriction indicator kit.

- 2.5.1 Remove the plug from the carburetor.

- 2.5.2 Apply pipe sealant to the male threads of the restriction gauge (273113) and thread the restriction gauge into the carburetor.

- 2.5.3 Go to step 3.

- 2.6 Perform the following steps to install the air cleaner restriction indicator kit.
  - 2.6.1 Remove the plug from the air intake.
  - 2.6.2 Apply pipe sealant to the male threads of the reducer bushing (D-228) and thread the reducer bushing into the air intake.
  - 2.6.3 Apply pipe sealant to the male threads of the restriction gauge (273113) and thread the restriction gauge into reducer bushing.
  - 2.6.4 Go to step 3.
- 2.7 Perform the following steps to install the air cleaner restriction indicator kit.
  - 2.7.1 Remove the air cleaner and hump hose from the generator set.
  - 2.7.2 Punch a 16 mm ( 0.63 in.) hole in the hump hose.
  - 2.7.3 Install the restriction gauge adapter (328691) in the hump hose.
  - 2.7.4 Thread and secure the clamp nut (328692) onto the restriction gauge adapter.
  - 2.7.5 Apply pipe sealant to the male threads of the restriction gauge (273377) and thread the restriction gauge into the restriction gauge adapter.
  - 2.7.6 Clean all rubber filings removed from the hose and air intake.
  - 2.7.7 Reinstall the air cleaner and hump hose.
  - 2.7.8 Repeat the procedure for the remaining three air cleaners and hoses.
  - 2.7.9 Go to step 3.
- 2.8 Perform the following steps to install the air cleaner restriction indicator kit.
  - 2.8.1 Remove the cap from the air intake fitting.
  - 2.8.2 Apply pipe sealant to the threads of air intake fitting.
  - 2.8.3 Thread the pipe coupling (X-216-24) onto the air intake fitting.
  - 2.8.4 Apply pipe sealant to the male threads of the restriction gauge (273377) and thread the restriction gauge into the pipe coupling.
  - 2.8.5 Repeat procedure as needed for each additional air cleaner.
  - 2.8.6 Go to step 3.
- 2.9 Perform the following steps to install the air cleaner restriction indicator kit.
  - 2.9.1 Remove the fitting from the air intake tube or hose for the restriction gauge installation.
  - 2.9.2 Apply pipe sealant to the male threads of restriction gauge (273377, 354660, or GM11489) and thread the restriction gauge into air intake tube fitting.
  - 2.9.3 Go to step 3.
- 2.10 Perform the following steps to install the air cleaner restriction indicator kit.
  - 2.10.1 Remove the fitting from the air intake hose for the restriction gauge installation.
  - 2.10.2 Apply pipe sealant to the male threads of the restriction gauge (273113 or 273377) and thread the restriction gauge into the air intake tube fitting.
  - 2.10.3 Repeat procedure as needed for each additional air cleaner.
  - 2.10.4 Go to step 3.
- 2.11 Perform the following steps to install the air cleaner restriction indicator kit.
  - 2.11.1 Remove the air cleaner and hump hose from the generator set.
  - 2.11.2 Punch a 16 mm (0.63 in.) hole in the hump hose.
  - 2.11.3 Install the restriction gauge adapter (328691) in the hump hose.
  - 2.11.4 Thread and secure the clamp nut (328692) onto the restriction gauge adapter.
  - 2.11.5 Apply pipe sealant to the male threads of the restriction gauges (273377) and thread the restriction gauge into the restriction gauge adapter.
  - 2.11.6 Clean all rubber filings removed from the hose and air intake.
  - 2.11.7 Reinstall the air cleaner and hump hose.
  - 2.11.8 Go to step 3.

2.12 Perform the following steps to install the air cleaner restriction indicator kit.

2.12.1 Remove the plug from the air intake.

2.12.2 Apply pipe sealant to the threads of the air intake pipe fitting.

2.12.3 Install the 90° pipe elbow (X-215-19).

2.12.4 Apply pipe sealant to the threads of the restriction gauge (354660) and thread the restriction gauge into the pipe elbow.

2.12.5 Go to step 3.

2.13 Perform the following steps to install the air cleaner restriction indicator kit.

2.13.1 Remove the plug from the air intake.

2.13.2 Apply pipe sealant to the male threads of the adapter bushing (360975) and thread the adapter bushing and nylon washer (276552) into the air intake.

2.13.3 Apply pipe sealant to the male threads of the restriction gauge and thread the restriction gauge into the reducer bushing.

2.13.4 Go to step 3.

2.14 Perform the following steps to install the air cleaner restriction indicator kit.

2.14.1 Remove and discard the existing air cleaner top cover.

2.14.2 Install air cleaner top cover GM34917.

2.14.3 Apply pipe sealant to the male threads of the restriction gauge 273113 and thread the restriction gauge into the air cleaner top cover.

2.14.4 Go to step 3.

2.15 Perform the following steps to install the air cleaner restriction indicator kit.

2.15.1 Remove the air cleaner and hump hose from the generator set.

2.15.2 Punch a 16 mm (0.63 in.) hole in the hump hose.

2.15.3 Install the restriction gauge adapter (328691) in the hump hose.

2.15.4 Thread and secure the clamp nut (328692) onto the restriction gauge adapter.

2.15.5 Apply pipe sealant to the male threads of the restriction gauge (273113) and thread the restriction gauge into the restriction gauge adapter.

2.15.6 Clean all rubber filings from the hose and air intake.

2.15.7 Reinstall the air cleaner and hump hose.

2.15.8 Go to step 3.

2.16 Perform the following steps to install the air cleaner restriction indicator kit.

2.16.1 Remove the cap from the air intake fitting.

2.16.2 Apply pipe sealant to the threads of the adapter bushing (GM30702) and install in the air intake fitting.

2.16.3 Apply pipe sealant to the male threads of the restriction gauge (354660) and thread the restriction gauge into the adapter bushing.

2.16.4 Repeat procedure as needed for each additional air cleaner.

2.16.5 Go to step 3.

2.17 Perform the following steps to install the air cleaner restriction indicator kit.

2.17.1 Remove existing hose clamp from air cleaner fitting.

2.17.2 Remove existing hose from existing elbow.

2.17.3 Remove existing elbow and fitting from air cleaner base.

2.17.4 Apply pipe sealant to male threads of existing air cleaner fitting and install pipe tee (X-203-16).

2.17.5 Apply pipe sealant to male threads of restriction gauge (273113) and install in center port of pipe tee.

2.17.6 Apply pipe sealant to male threads of one end of pipe nipple (X-203-16) and install in bottom port of pipe tee.

2.17.7 Apply pipe sealant to male threads of remaining end of pipe nipple and attach existing elbow and fitting.

2.17.8 Install existing hose and hose clamp to fitting.

2.17.9 Go to step 3.

2.18 Perform the following steps:

2.18.1 Remove the plug from the air cleaner base.

2.18.2 Install O-ring (365499) on restriction gauge adapter (361916) male threads.

2.18.3 Install restriction gauge adapter into air cleaner base.

2.18.4 Apply pipe sealant to male threads of restriction gauge (354660) and install in restriction gauge adapter.

2.18.5 Repeat procedure as needed for each additional air cleaner.

2.18.6 Go to step 3.

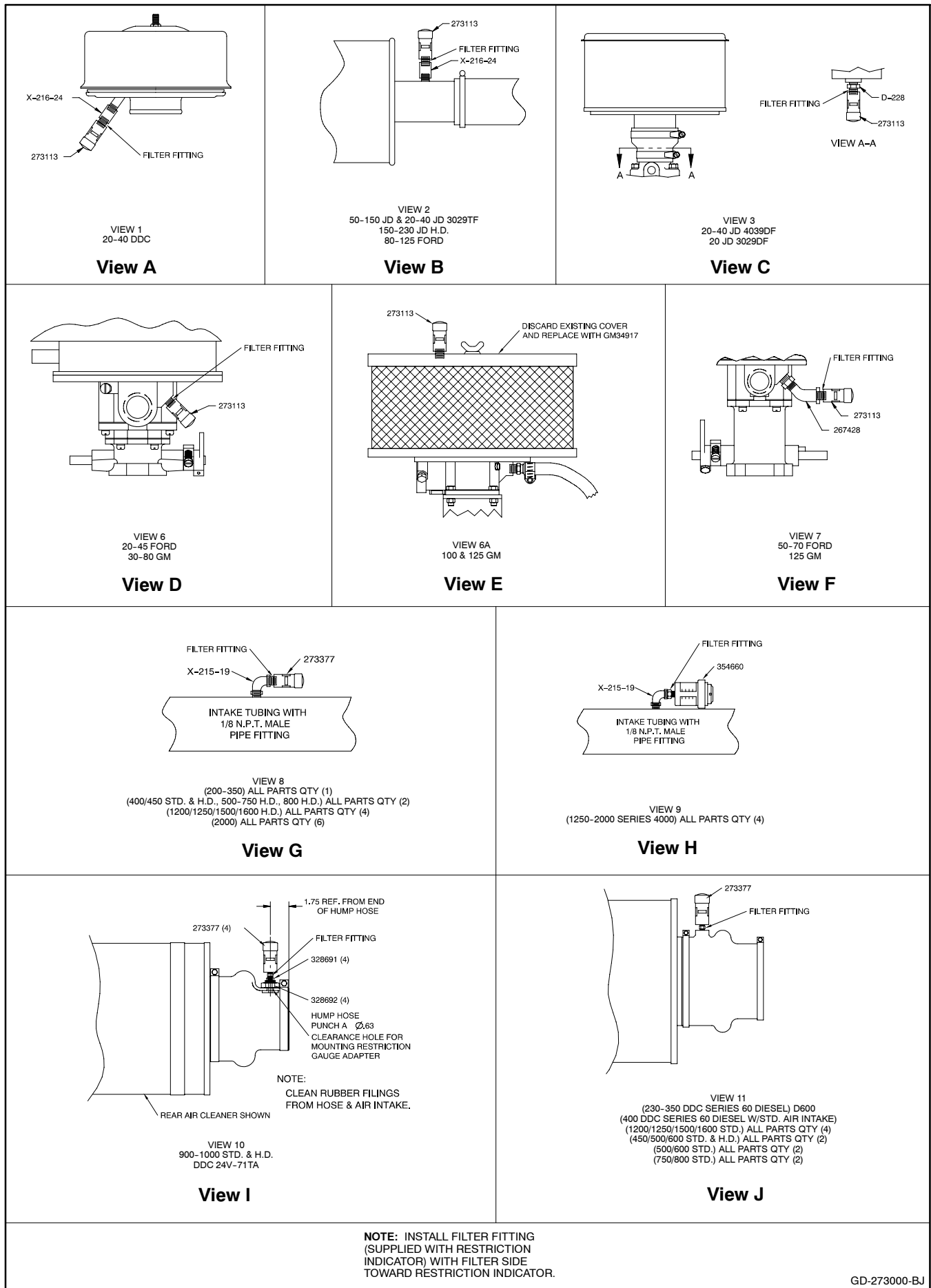
### **3. Restore the generator set to service.**

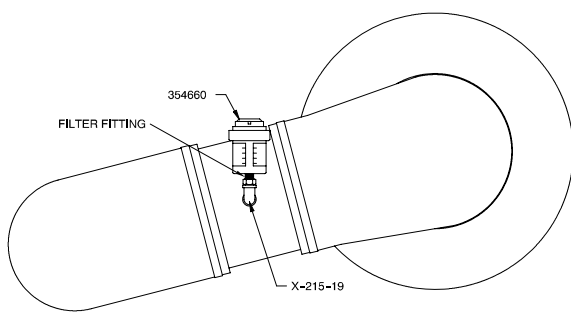
3.1 Check that the generator set master switch is in the OFF position.

3.2 Reconnect the generator set engine starting battery, negative (-) lead last.

3.3 Reconnect power to the battery charger, if equipped.

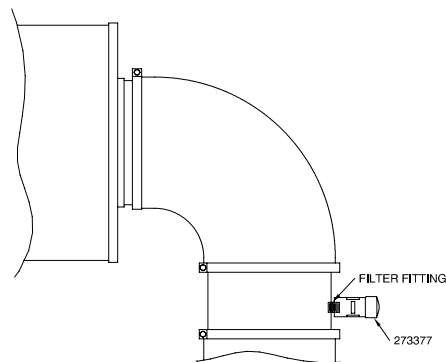
3.4 Move the generator set master switch to the AUTO position for startup by a remote transfer switch or remote start/stop switch.





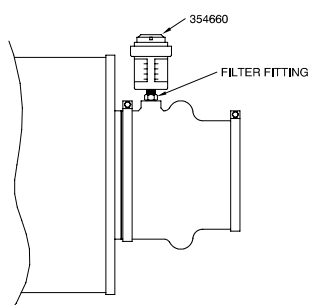
VIEW 12  
ALL PARTS QTY (2)  
900/1000 D1000 50/60 HZ H.D.

**View K**



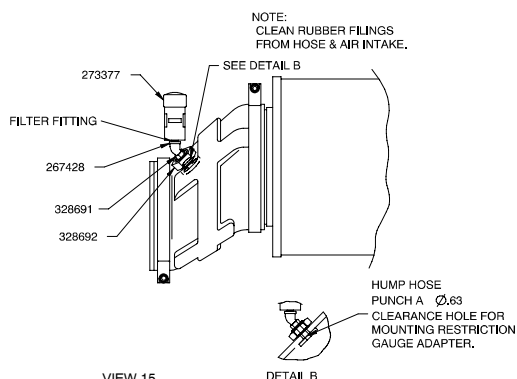
VIEW 13  
135-275 DDC SERIES 60 GAS  
(\*) 400 DDC SERIES 60 DIESEL W/HEAVY DUTY AIR INTAKE  
D300/D350/D400 275-400 STD. & H.D.  
(\*) TURN GAUGE HORIZONTAL ON THIS MODEL

**View L**



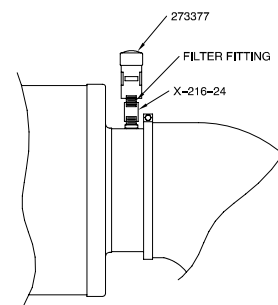
VIEW 14  
ALL PARTS QTY (2)  
(800 50/60 HZ, 750 50 HZ, 900 50 HZ SERIES 2000)

**View M**



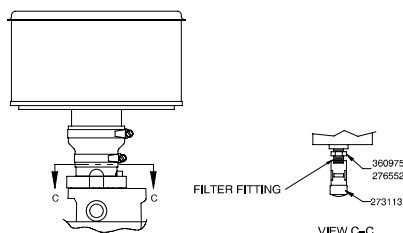
VIEW 15  
(500 50 HZ, 600 50/50 HZ, 750 60 HZ  
900 60 HZ, 1000 60 HZ SERIES 2000)

**View N**



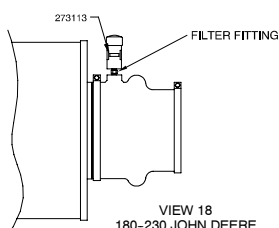
VIEW 16  
135-180 DDC SERIES 50 GAS

**View O**



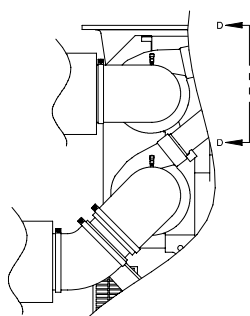
VIEW 17  
20-40 JOHN DEERE  
4045 ENGINE

**View P**



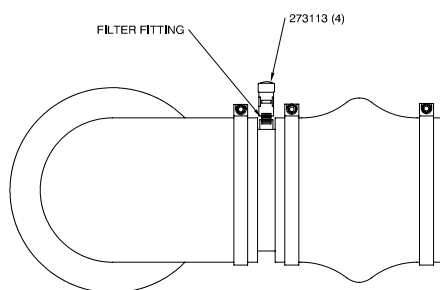
VIEW 18  
180-230 JOHN DEERE  
STANDARD

**View Q**

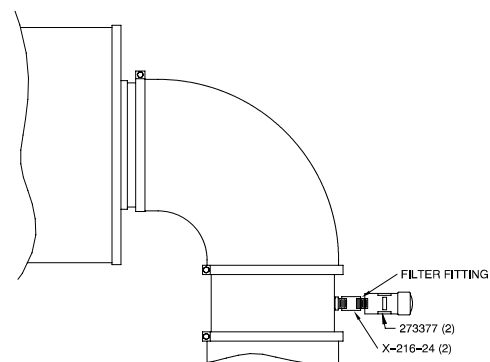


VIEW 19  
2000 kW D2000  
(STD. AND H.D. AIR INTAKE)

**View R**



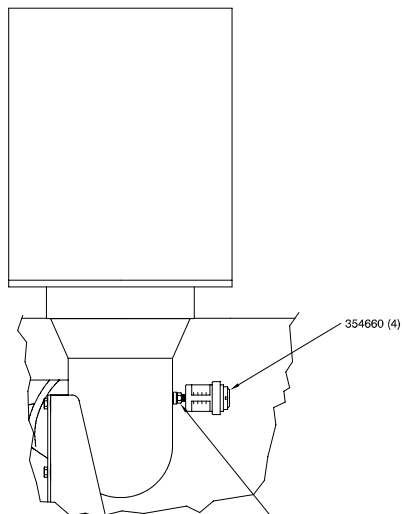
VIEW D-D



VIEW 20  
500 50 HZ, 600 50 HZ & 60 HZ, 750 60 HZ  
(WITH HEAVY DUTY AIR INTAKE)

**View S**

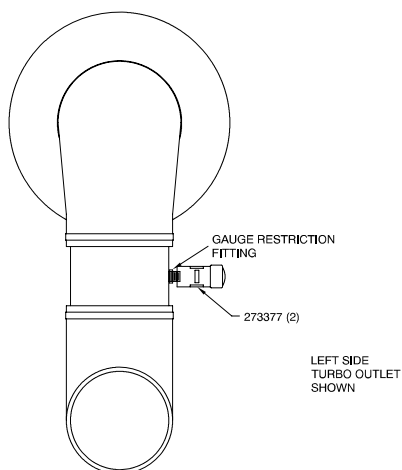
GD-273000-BJ



GAUGE RESTRICTION FITTING  
(USE PIPE SEALANT)

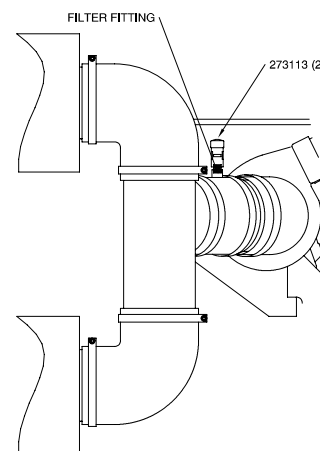
VIEW 22  
1350-2000 kW DDC SERIES 4000  
WORLD ENGINE

**View T**



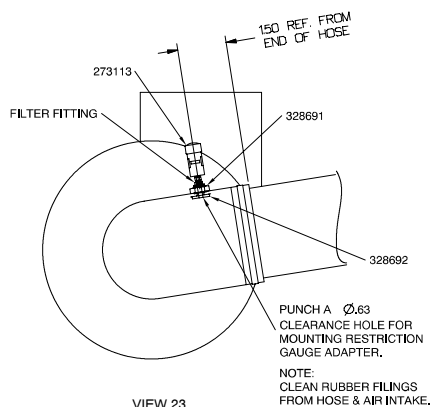
VIEW 21  
900-1000 kW DDC  
16V2000, 60 HZ

**View U**



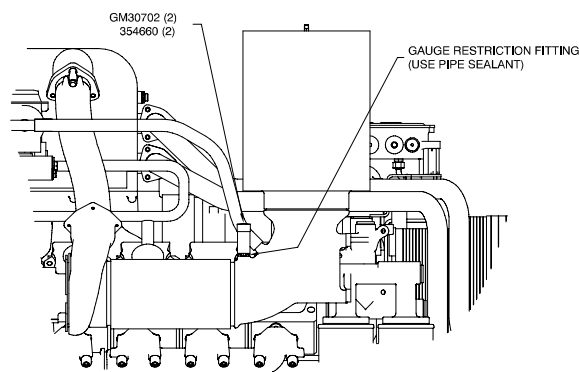
VIEW 25  
1250 kW D1250  
(STD. AND HEAVY DUTY AIR INTAKE)  
(ONE EACH SIDE)

**View V**



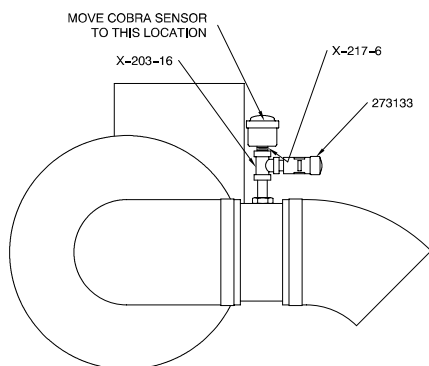
VIEW 23  
D500

**View W**



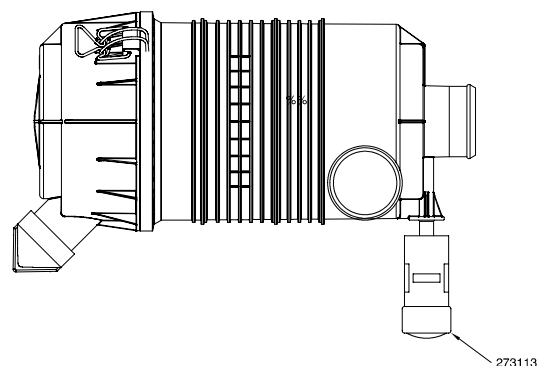
VIEW 24  
12V & 16V SERIES 2000  
WORLD ENGINE

**View X**



VIEW 27  
D450/D500 (REPOWER)  
H.D. AIR CLEANER

**View Y**

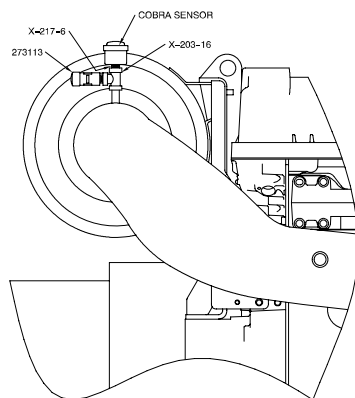


VIEW 29  
15-30 GM 1.6L

**View Z**

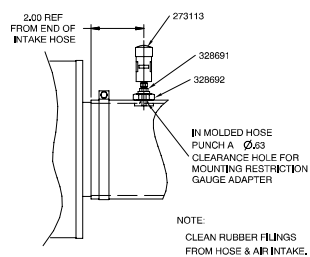
GD-273000-BJ





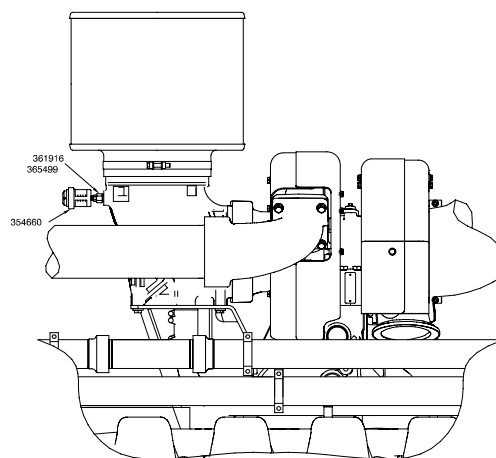
VIEW 28  
D450/D500 (REPOWER)  
STD. AIR CLEANER

**View AA**



VIEW 30  
200 JD6081  
STD. AIR CLEANER

**View AB**



VIEW 31  
ALL PARTS QTY (2)  
(2500/2800 50/60 HZ SERIES 4000)

**View AC**

# Parts List

## Air Cleaner Restriction Indicator Kit

Qty.	Description	Kits:				
		PA-274608 PA-274608-SD	PA-274609 PA-274609-SD	PA-279828 PA-279828-SD	PA-279830 PA-279830-SD	PA-362208 PA-362208-SD
1	Coupling, pipe	X-216-24				
1	Elbow, 45° street	267428				267428
	Elbow, 90° street		(1) X-215-19	(2) X-215-19	(4) X-215-19	
	Gauge, restriction	(1) 273113	(1) 273377	(2) 273377	(4) 273377	(1) 273113
Qty.	Description	Kits:				
		PA-326237 PA-326237-SD	PA-328005 PA-328005-SD	PA-328693 PA-328693-SD	PA-343512 PA-343512-SD	PA-343513 PA-343513-SD
1	Bushing, reducer		D-228			
1	Coupling, pipe				X-216-24	
	Gauge, restriction	(1) 273113	(1) 273113	(4) 273377	(1) 273377	(1) 273377
4	Adapter, restriction gauge			328691		
4	Nut, clamp			328692		
Qty.	Description	Kits:				
		PA-354465 PA-354465-SD	PA-354485 PA-354485-SD	PA-361589 PA-361589-SD	PA-365250 PA-365250-SD	PA-365530 PA-365530-SD
2	Adapter, restriction gauge					328691
4	Elbow, 90° street			X-215-19		
	Gauge, restriction	(4) 273377	(2) 273377	(4) 354660	(2) 354660	(2) 273377
2	Nut, clamp					328692
Qty.	Description	Kits:				
			GM10684-KA1	GM10756-KA1	GM11490-KA1	GM11491-KA1
1	Bushing, reducer			360975		
1	Coupling, pipe				X-216-24	
1	Elbow, 45° street				267428	
1	Elbow, 90° street		(2) X-215-19			
	Gauge, restriction		(2) 354660	(1) 273113	(1) GM11489	(1) GM11489
1	Washer, nylon			276552		
Qty.	Description	Kits:				
		GM17220-KA1	GM23011-KA1	GM24198-KA1	GM26340-KA1	GM27305-KA1
1	Adapter, restriction gauge					328691
1	Cover, air cleaner				GM34917	
2	Coupling, pipe		X-216-24			
	Gauge, restriction	(4) 273113	(2) 273377	(2) 273377	(1) 273113	(1) 273113
1	Nut, clamp					328692
Qty.	Description	Kits:				
		GM28464-KA1	GM31577-KA1	GM32965-KA1	GM32983-KA1	GM41774-KA1
2	Adapter, restriction gauge		GM30702			(2) 361916
	Gauge, restriction	(4) 354660	(2) 354660	(2) 273113	(1) 273113	(2) 354660
1	Pipe nipple				X-203-16	
1	Tee, pipe				X-217-6	
2	O-ring, 11.3 mm ID					(2) 365499