

CYCLONE 600 UPCUT CUT OFF SAW



WARNING

The operator must thoroughly read and understand this manual before operating the cut off saw or starting any servicing. All safety and warning instructions should be followed. This manual must be available to all operators.

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General Safety Rules for Woodworking Machinery



WARNING

The operator must thoroughly read and understand this manual before operating the cut off saw or starting any servicing. All safety and warning instructions should be followed. This manual must be available to all operators.

1. For your own safety, read the operation manual carefully. Know your machine. Learn its applications and limitations, and any hazards specific to this machine. All personnel should be trained in the operational procedures and received safety instruction before operating this equipment. If you have not received proper training in the use of this machine, **DO NOT OPERATE THIS MACHINE**, damage to the equipment or injury to the operator is possible.
2. This machine should not be operated without all of the guards in place and safety devices in operation. Removal of any guards or disabling any of the safety devices may result in damage to the equipment or injury to the operator. If any of the guards or safety devices are missing, damaged or not working properly, **DO NOT OPERATE THIS MACHINE**, notify your supervisor immediately.
3. If the operator has any safety concerns or questions regarding the operation of this equipment, **DO NOT OPERATE THIS MACHINE**, the machine should be locked out and your supervisor notified immediately.
4. All Lock Out/Tag Out procedures must be followed before servicing or adjusting this equipment. If you have not received proper training in the Lock Out/Tag Out procedures for this machine, **DO NOT OPERATE THIS MACHINE**, damage to the equipment or injury to the operator is possible.
5. In case of any equipment malfunction or jam the machine should be powered off and locked out before clearing any materials from the operational areas of this machine. Once cleared the reset procedures need to be followed when powering up the equipment. At no time should any of the machine control systems including electrical, hydraulic or pneumatic circuits be manually overridden.
6. Check machine for damaged parts. Before continued machine use any damaged guard or part must be carefully checked for proper operation of its intended function. Check all moving parts for proper alignment, check for binding of moving parts, breakage of parts, proper secure mounting, and any other condition that may affect machine operation. Guards or other parts that are damaged must be properly repaired or replaced.
7. Machine must be properly grounded.
8. Maintain and clean machine at recommend intervals. Intervals may need to be adjusted due to work load or material type to keep machine in top condition. Follow instructions for lubrication, setup, and changing accessories.

9. Disconnect machine from power source before, changing accessories, or any servicing activity.
10. Avoid accidental starting. Make sure switch is in the off position before connecting to power.
11. Remove any tools or loose objects from work surface of machine. Make sure any tools used for adjustment or maintenance are removed from machine before machine is restarted. Make a habit of scanning for tools and scraps every time the machine is started.
12. Keep work area clean. Cluttered work areas and workbenches increase the likelihood of an accident.
13. Do not use in dangerous environments. Do not use machine in damp or wet locations, or expose them to rain. Keep work area well illuminated.
14. Keep children away. All visitors should be kept at a safe distance from work area.
15. Make workshop childproof, with padlocks, master switches, or by removing starter keys.
16. Do not force the machine. It will function better and safer at its designed rate.
17. Use the right tools. Do not force the machine or attachments to do a job for which they were not designed. Contact the manufacturer or distributor if there is any question about the machines suitability for a particular job.
18. Use only recommended accessories. Consult the operation manual for recommended accessories.
19. Wear proper apparel. Avoid loose clothing, gloves, neckties, rings bracelets, or jewelry which could be tangled in moving parts. Keep long hair contained to prevent entanglement. Non-slip footwear is recommended.
20. Always wear safety glasses.
21. Secure the work piece.
22. Keep proper footing and balance at all times.
23. Do not use machine while under the influence of drugs, alcohol, or any medication.
24. Always wear a face mask or dust mask if operation creates excessive dust or chips. Always operate machine in a well ventilated area and provide proper dust removal.
25. Never leave machine running unattended. Turn power off. Do not leave machine until it comes to a complete stop.

Safety Rules for Cut-Off Saw



WARNING

The operator must thoroughly read and understand this manual before operating the cut off saw or starting any servicing. All safety and warning instructions should be followed. This manual must be available to all operators.

1. Read and understand the operation manual before operation.
2. Keep hands away from the cutting area.
3. Before making any adjustments disconnect all power sources including electrical and pneumatic.
4. Minimum air pressure is 50 psi, DO NOT operate saw if minimum air pressure is not available. Normal working pressure is 80psi.
5. At the start of each work session turn on saw and trigger the two hand trip with no work piece present, cycle the saw and check for normal operation of top clamp and blade advance cylinders. Turn off saw and as the motor slows and comes to a stop check for correct rotation direction compared to arrow indicator.
6. Do not cut warped wood; work piece should lay flat on table without rocking.
7. Use infeed and outfeed supports when cutting long work pieces.
8. Set top clamp stop pin to limit opening height to only what is required to process the work piece.
9. Never place hands under top clamp; remove cut piece by pulling it out from under open top clamp. Short trim scraps should only be removed by pushing them out with a scrap piece.
10. Always use push roller handles to position and guide work piece against fence. Do not use hands to support work piece.

When Your Saw Arrives...



WARNING

The operator must thoroughly read and understand this manual before operating the cut off saw or starting any servicing. All safety and warning instructions should be followed. This manual must be available to all operators.

The saw ships complete on one pallet, if ordered with stop the stop will be in separate crate.

Unpack the saw ensuring that all parts are present and free from damage. If any parts are missing or damaged contact your local distributor immediately. Do not assembly or attempt to operate saw without all components present and in undamaged condition.

Installation



WARNING

The operator must remove from and lock out all power to saw before servicing or connecting power.

Install saw with enough free space to conveniently allow workpiece to be brought into saw. If infeed and or outfeed is required allow room for such. The floor should be a flat non-slip surface. The saw will be more stable if bolted to floor. After locating the saw use leveling feet to adjust level of saw table. Place level on saw table and adjust feet to bring table into level position.

Connect Power



WARNING

The operator must remove from and lock out all power to saw before servicing or connecting power.

The saw has been factory wired to the requested voltage before shipment. Check that your supply lines match the labeled voltage on the saw before connection. Connect wires inside the electrical enclosure. After wires are connected cycle the start button and stop button quickly to pulse the motor on and then off, look through the fan guard of the motor to check direction of rotation. Rotation must match direction indicated on side of enclosure. If rotation needs to be reversed swap the connection of two of the three power wires and recheck rotation.

Saw Operation



WARNING

The operator must thoroughly read and understand this manual before operating the cut off saw or starting any servicing. All safety and warning instructions should be followed. This manual must be available to all operators.

Before operating saw read all general and safety rules.

If operator is uncomfortable with any operation or condition of saw get help from supervisor.

The Cyclone upcut saw is operated by the triggering of two hand anti tie down triggers located on the work piece clamping handles at either side of the top clamp blade cover. The operator's hands must never be placed under the top clamp. Maintain pressure on triggers until the top clamp opens completing the saw cycle.

Setting the Top Clamp Height



WARNING

Set the top clamp opening height before sawing material.

Adjust top clamp opening height by swinging the flip stops as shown in the photo below.



Swing the flip stops over as shown to limit the open height of the top clamp. Turn off power before adjusting.

Installing and Changing Saw Blade

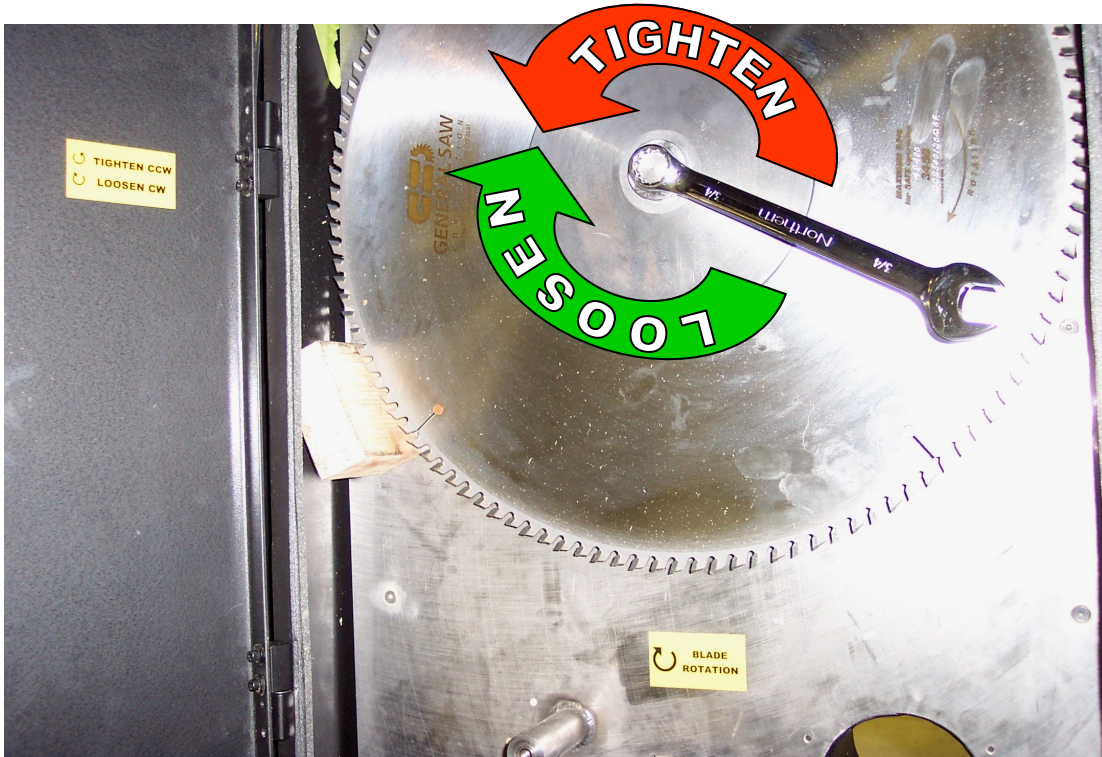


DANGER

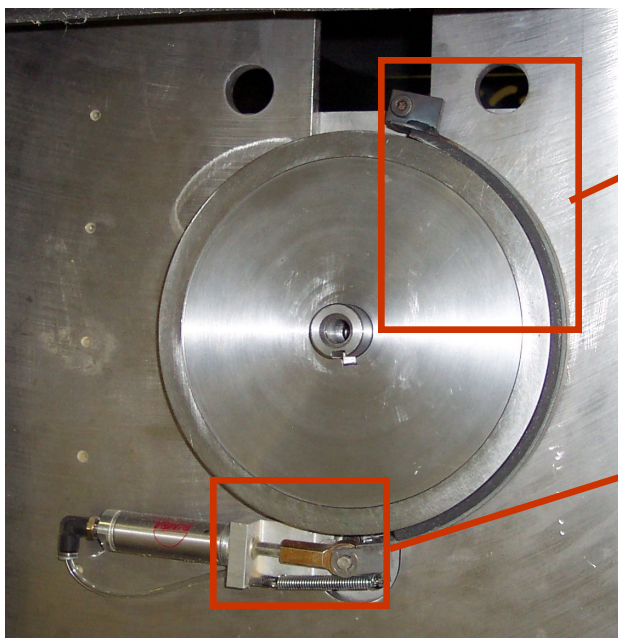
The operator must remove from and lock out all power to saw before servicing.

To access blade area remove the door hold down screw, the screw is purposely long to allow the blade and motor to stop before the door will open. Do not use a powered means to remove hold down screw. Do not shorten screw the length is required to make the door interlocks work properly.





When installing or changing blade observe the proper rotation and be sure blade matches the rotation arrow. Use scrap wood to block blade while tightening or loosening blade retaining screw. Blade retaining screw has left hand threads the direction for tightening and loosening is opposite from normal screws and bolts. To loosen blade screw turn wrench in same direction as rotation of blade, clockwise when looking at the blade. Remove retaining screw and blade arbor plate to free saw blade from motor shaft. Do not remove rear arbor plate, check blade brake for dust buildup, clean if necessary.



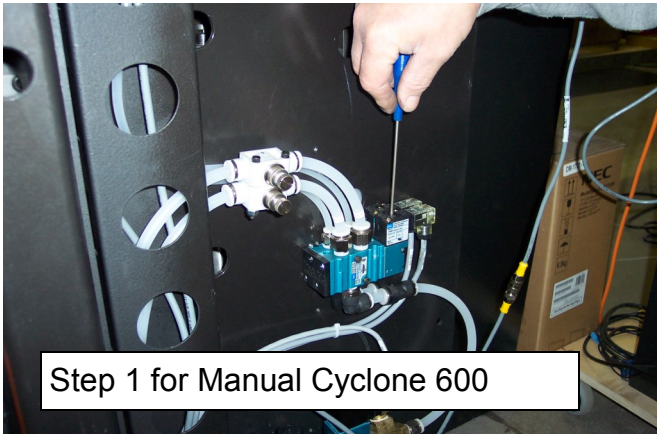
Squaring the Saw Blade



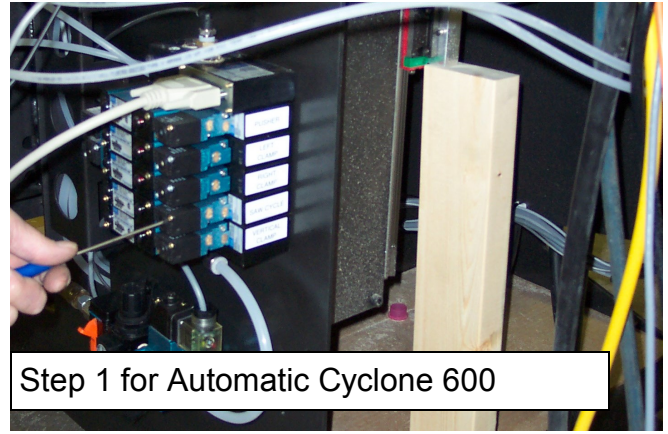
DANGER

The operator must ensure that no person will be in harms way before performing any of the following steps.

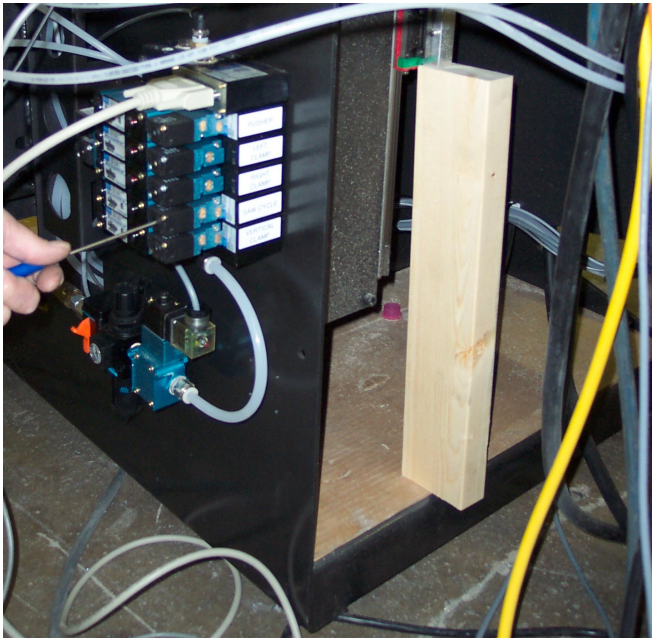
Make sure no person or other obstruction will interfere with the blade as it rises before performing this operation. Use a probe to manually actuate the saw lift valve to raise the saw blade.



Step 1 for Manual Cyclone 600



Step 1 for Automatic Cyclone 600



Step 2 for All Cyclone 600 Saws: While holding the valve button, use a board to prop up the saw motor. Release the valve and remove and lock out power and air to the saw.



DANGER

The operator must remove from and lock out all power to saw before continuing.

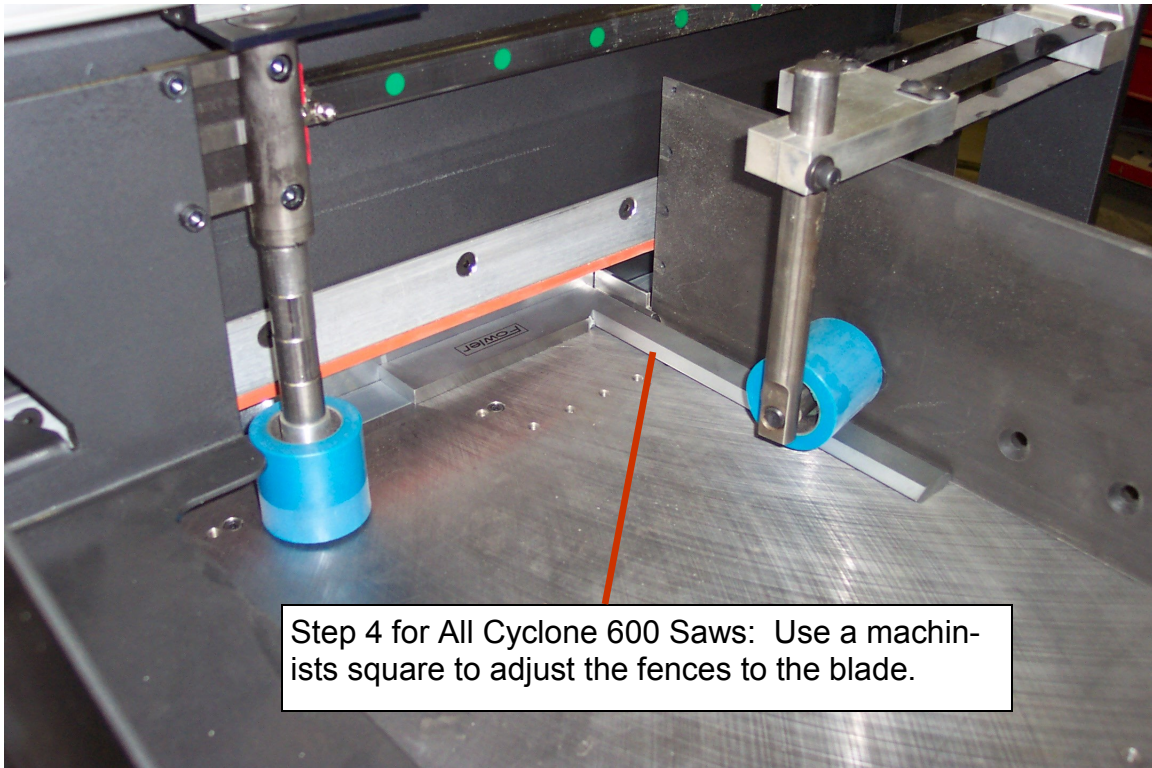


Step 3 for All Cyclone 600 Saws: Manually raise the top clamp and place a spacer under it to hold it up off the table.



DANGER

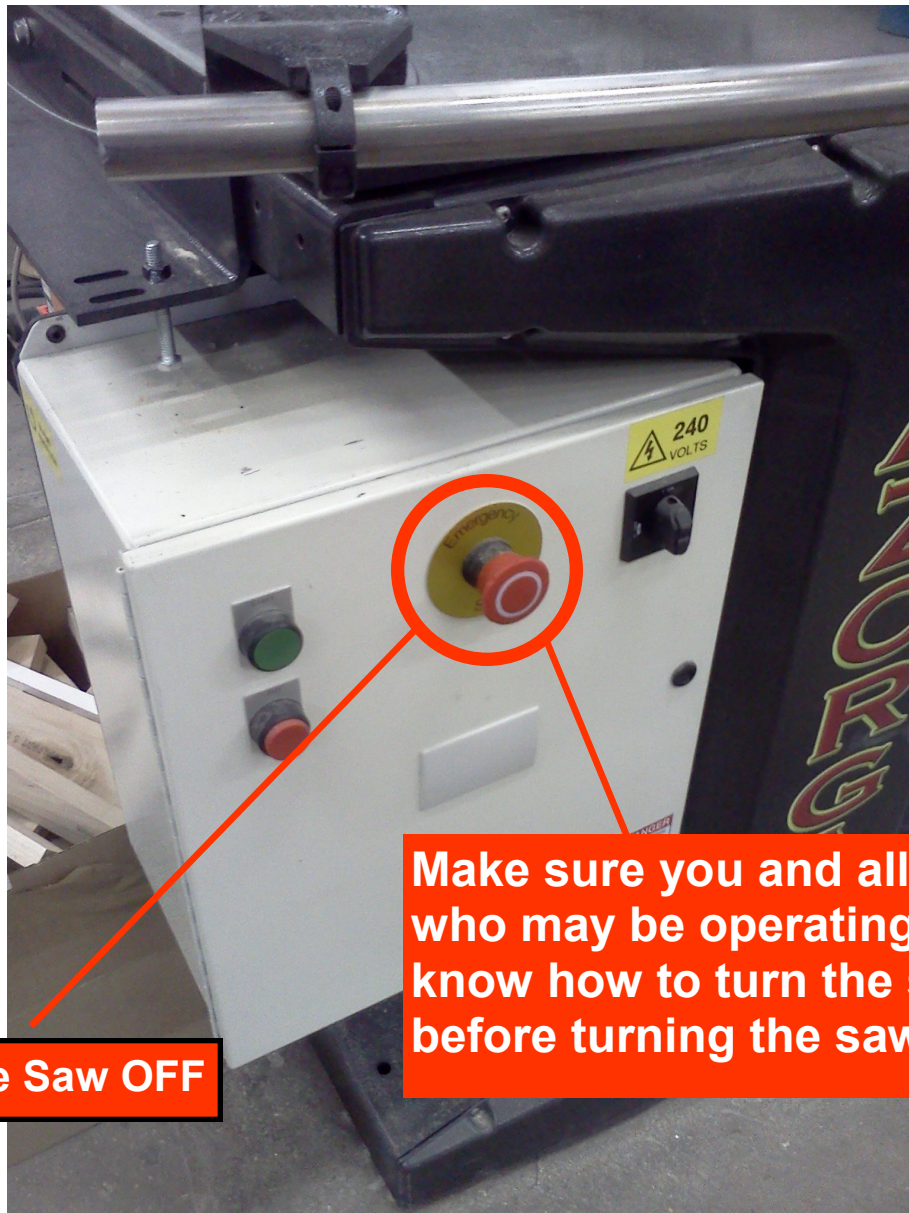
The operator must remove from and lock out all power to saw before continuing.



Step 4 for All Cyclone 600 Saws: Use a machinists square to adjust the fences to the blade.

Turning the Saw On

Make sure all guards are in place and that no person will be at risk in any way when the motor is energized and the saw blade begins to turn before making the decision to turn on the saw. Make sure you and all persons who may be operating the saw know how to turn the saw OFF before turning the saw ON. Pull the Emergency Stop button OUT. Press the green START button. The motor will begin ramping up to operating speed.



Make sure you and all persons who may be operating the saw know how to turn the saw OFF before turning the saw ON.

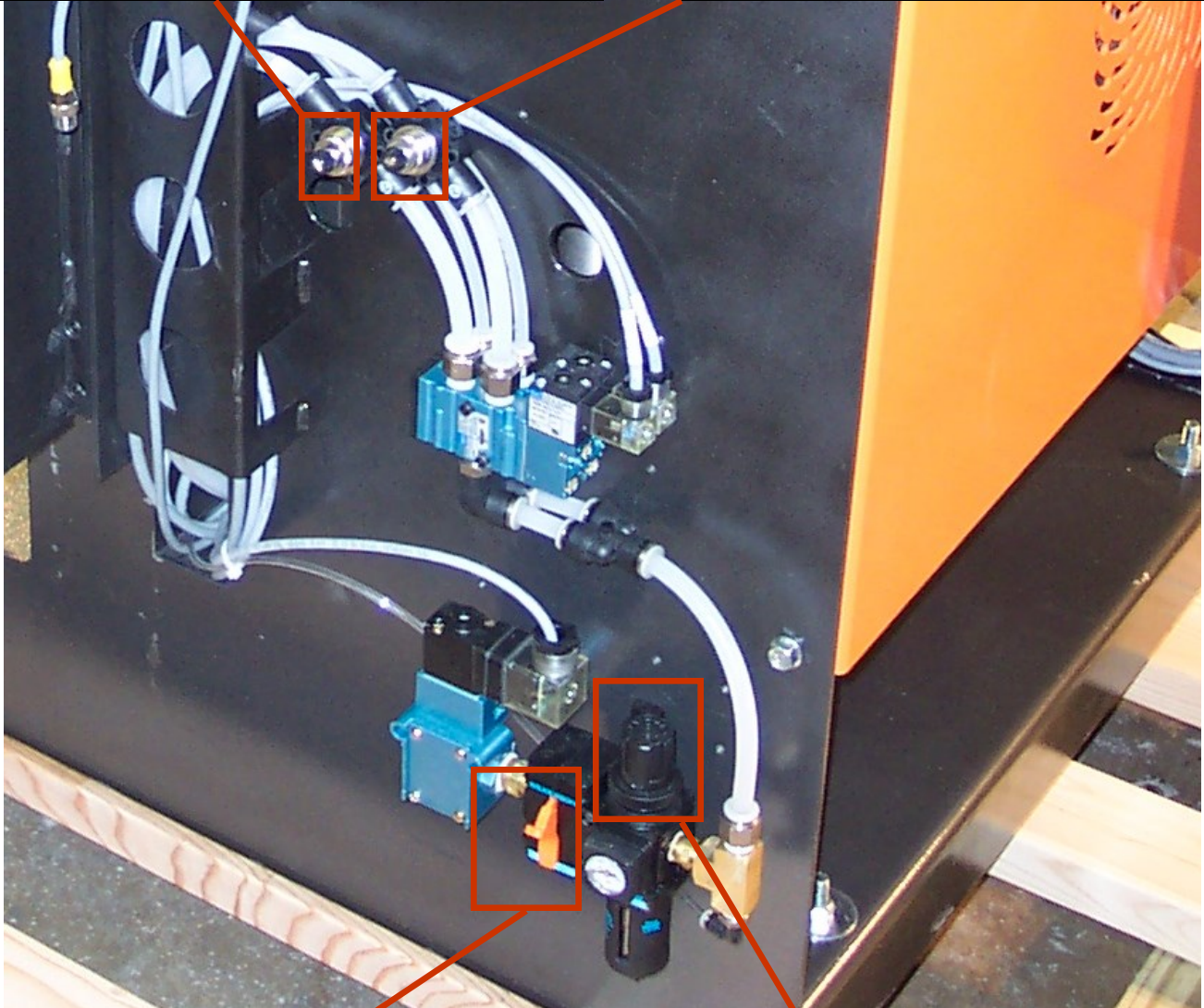
Turning the Saw OFF

Press the RED EMERGENCY STOP BUTTON. If your saw is equipped with a RED STOP BUTTON, it may also be used to stop the saw motor.

Adjusting the Sawing Speed & Main Pressure

This device controls the speed of the blade as it travels down through the material. Loosen the locking thumb nut before adjusting. Turn the knob clockwise to decrease speed, counter clockwise to increase speed. Re-tighten the locking nut.

This device controls the speed of the blade as it travels up through the material. Loosen the locking thumb nut before adjusting. Turn the knob clockwise to decrease speed, counter clockwise to increase speed. Re-tighten the locking nut.



This device is a manual means of dumping all air pressure in the saw and locking it out with your approved lockout device.

This device controls the saw's main incoming air supply pressure. Set it to 80 psi as per the pressure gage below the adjustment knob. Turn the knob clockwise to increase pressure, counter clockwise to decrease pressure.

Using the LCD Display (Manual Saws Only)

Saw Motor Status says "On" when saw motor is running.

Saw Enable Input Status - This input comes on when contacts on a related machine close to indicate that it is OK for the saw to cycle.

2-Hand Cycle Input Status Turns "On" when both handlebar buttons are pressed simultaneously.

BMI + Status
Off = Auto Mode Disabled
On = Auto Mode Enabled

When a saw cycle completes this output changes to "On"

CYCLONE 600
 MOTOR Off BMI+ Off
 ENABL Off DONE Off
 START Off 0

0 1 2 3 4 5 6 7 8 9

Hold the OK button for 3 seconds to bring up the maintenance screen

Input Screen shows the current state of the controller's inputs.

CYCLONE 600
 IN 0 Off IN 3 Off
 IN 1 Off IN 4 Off
 IN 2 Off IN 5 Off

0 1 2 3 4 5 6 7 8 9

Output Screen shows the current state of the controller's outputs.

CYCLONE 600
 OUT0 Off OUT3 Off
 OUT1 Off
 OUT2 Off

0 1 2 3 4 5 6 7 8 9

Maintenance Screen

SELECTSCREEN
 0.MAIN 3.CLAMP TMR
 1.INPUT 4.BLADE CTR
 2.OUTPUT 5.PM CTR

0 1 2 3 4 5 6 7 8 9

The Vertical Clamp Timer is a timer used in the saw cycle. When the two-hand buttons are pressed simultaneously the controller energizes the air valve that lowers the top clamp. The controller then allows the Vertical Clamp Timer to time out before energizing the valve that brings the saw up. This timer can be set here.

VERTICAL CLAMP TIMER
 CURRENT- 0.000s
 ENTER NEW VALUE
 _____ seconds

0 1 2 3 4 5 6 7 8 9

The Blade Change Counter counts the number of cycles since the last blade change. The operator can set this counter to a value that works for your operating conditions. The actions on the screen are accomplished by pressing the arrow buttons that correspond to the arrow preceding the action label. To change the value press the left arrow as is indicated by the left facing arrow preceding the label "SET". The screen below will appear. Use the number keys to enter a new value and press OK.

BLADE CHANGE COUNTER
 0 cycles
 ◀SET # OF CYCLES
 ▶RESET ▲MAIN SCREEN

0 1 2 3 4 5 6 7 8 9

PM CYCLE COUNT
 0
 ▲MAIN SCREEN

0 1 2 3 4 5 6 7 8 9

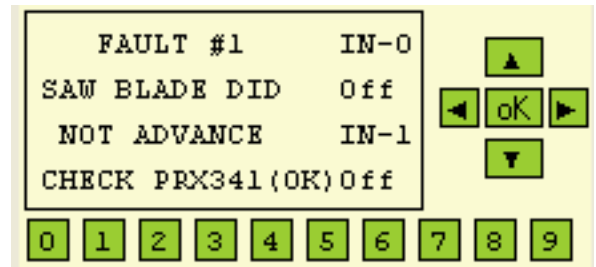
The PM Cycle Count shows how many cycles have elapsed since the last time the bearings were greased.

BLADE CHANGE COUNTER
 CURRENT- 0
 ENTER NEW VALUE
 _____ cycles

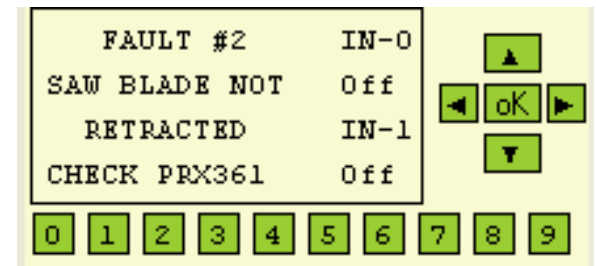
0 1 2 3 4 5 6 7 8 9

LCD Display Fault Messages

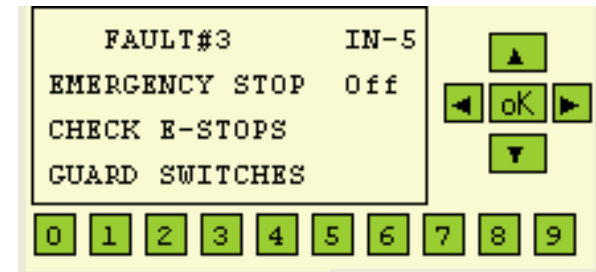
FAULT #1 - This fault indicates that the controller is waiting for the "SAW UP" sensor to be made.



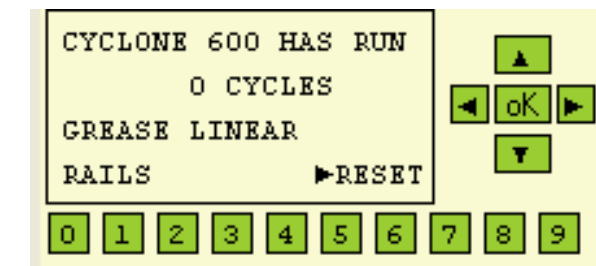
FAULT #2 - This fault indicates that the controller is waiting for the "SAW DOWN" sensor to be made.



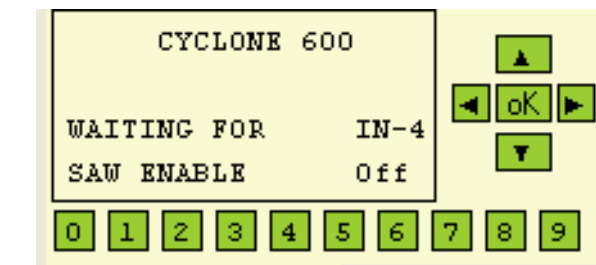
FAULT #3 - This fault indicates that the Emergency Stop Circuit is not closed. This is the case if the E Stop is not pulled out or if the screw that holds the saw blade guard is not driven in to its maximum depth or if there is low air pressure.



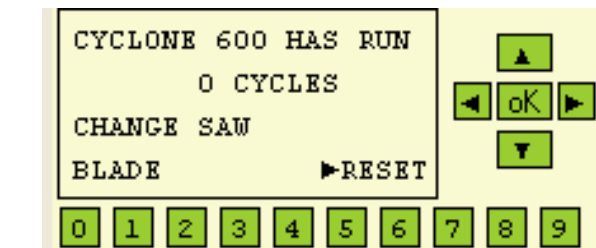
This message indicates that it the PM (Preventative Maintenance) Counter has recorded the number of saw cycles necessary for lubrication of the linear bearings on the saw slide and the top clamp. After greasing all 6 linear bearing blocks press the right arrow button to reset the counter.



This message indicates that the controller is waiting for the SAW ENABLE output from the RazorGage. This may mean that the RazorGage is turned off or that the cable between the RazorGage and the Cyclone saw is not plugged in.



This message shows that the Saw Blade Counter has recorded the number of cycles after which the blade should be changed. After changing the blade press the right arrow button to reset the counter.

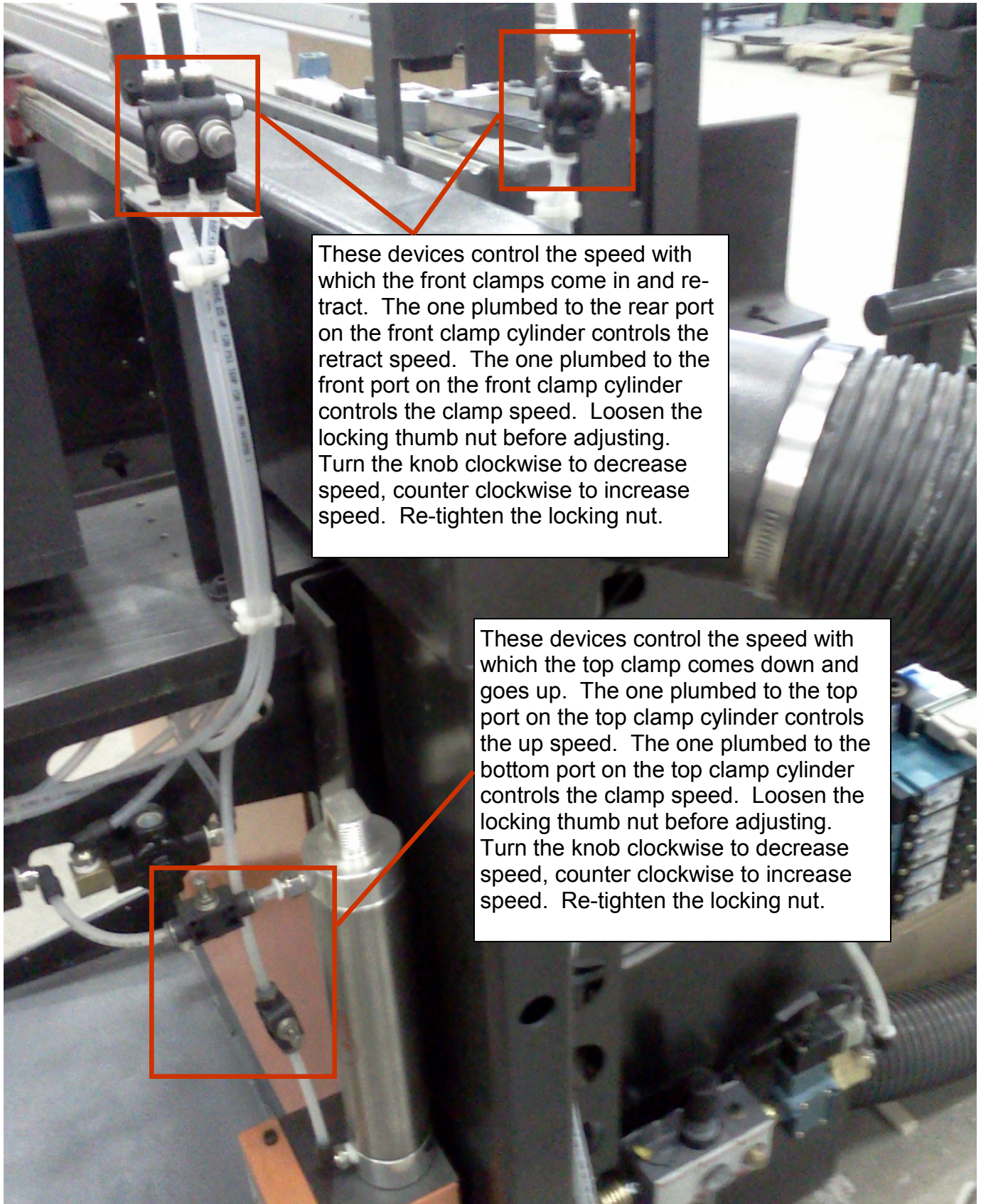


Adjusting the Clamping Pressure

In addition to the main air supply pressure, there are also pressure adjustments for the top clamp and (optionally) the front clamps located beneath the right table to the rear. Turn clockwise to increase pressure, counter clockwise to decrease pressure. For the Vertical clamp start low and gradually increase. Stop when the cut is acceptable. The front clamps can generally be opened up to the max.



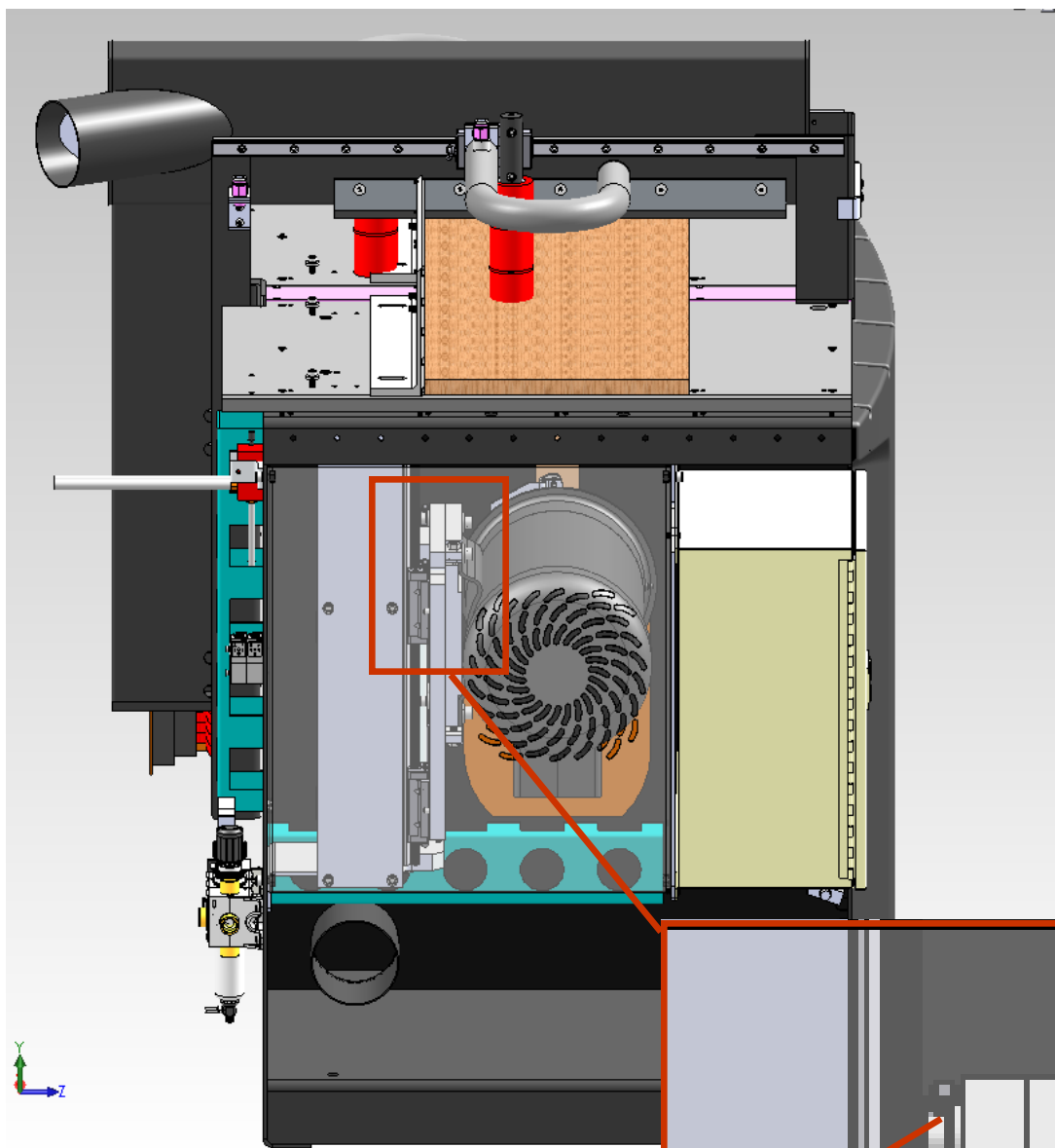
Adjusting the Clamping Speed



These devices control the speed with which the front clamps come in and retract. The one plumbed to the rear port on the front clamp cylinder controls the retract speed. The one plumbed to the front port on the front clamp cylinder controls the clamp speed. Loosen the locking thumb nut before adjusting. Turn the knob clockwise to decrease speed, counter clockwise to increase speed. Re-tighten the locking nut.

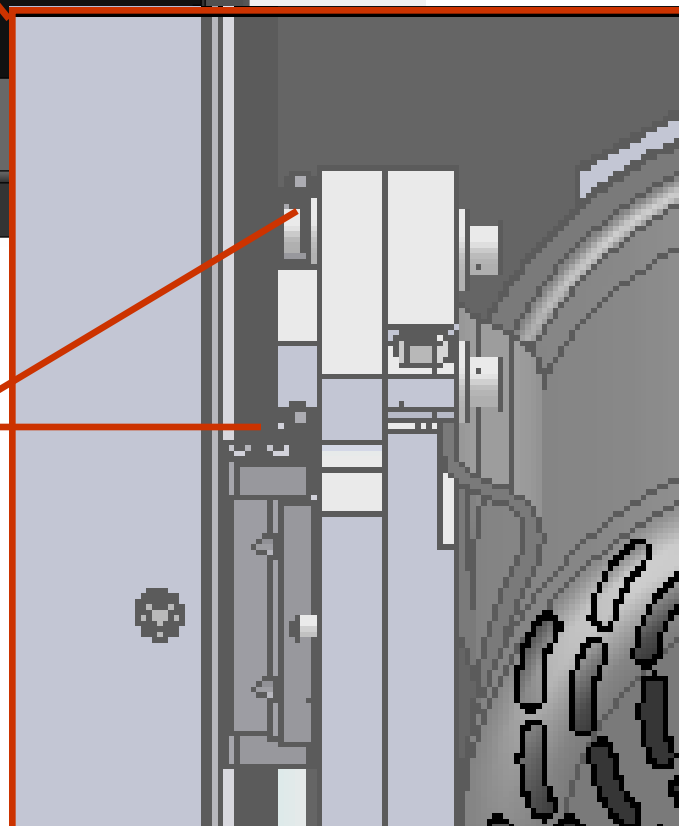
These devices control the speed with which the top clamp comes down and goes up. The one plumbed to the top port on the top clamp cylinder controls the up speed. The one plumbed to the bottom port on the top clamp cylinder controls the clamp speed. Loosen the locking thumb nut before adjusting. Turn the knob clockwise to decrease speed, counter clockwise to increase speed. Re-tighten the locking nut.

Greasing the motor slide bearings on the Cyclone 600



The grease zerks for the upper bearing blocks on the saw motor slide are located here

Use a lithium soap based grease for lubrication. Lubricate top clamp bearing blocks and saw slide blocks every 5000 cycles.

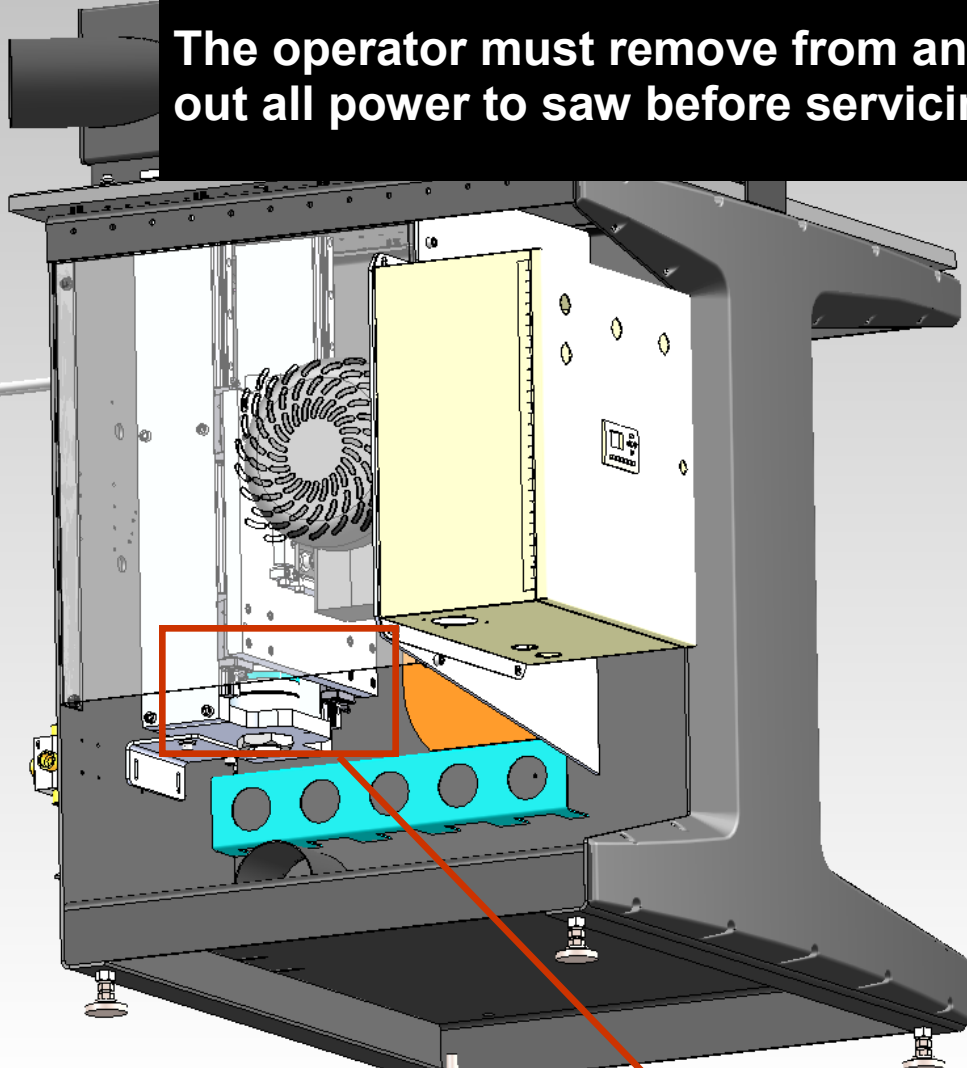


Greasing the motor slide bearings on the Cyclone 600



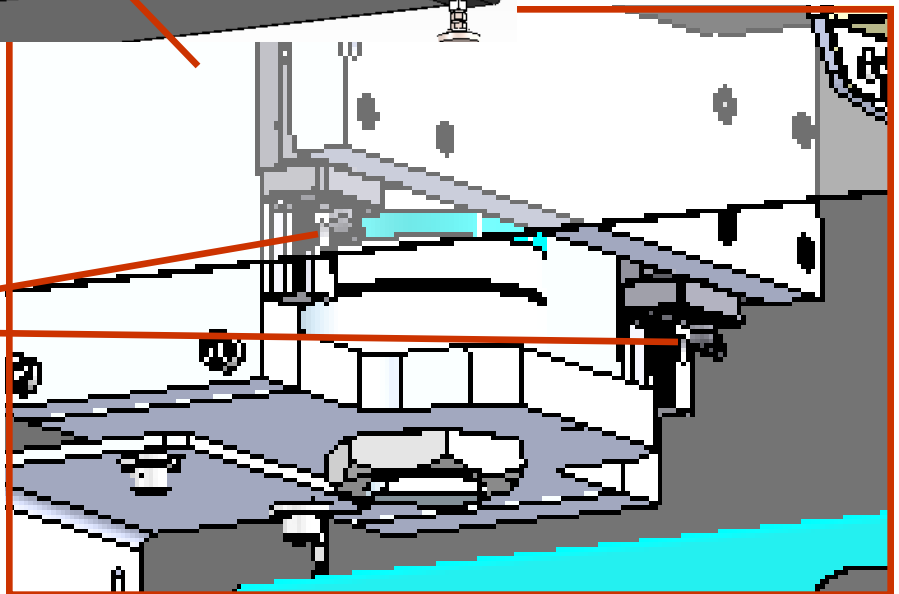
DANGER

The operator must remove from and lock out all power to saw before servicing.



The grease zerks for the lower bearing blocks on the saw motor slide are located here

Use a lithium soap based grease for lubrication. Lubricate top clamp bearing blocks and saw slide blocks every 5000 cycles.



Greasing the top clamp slide bearings on the Cyclone 600



DANGER

The operator must remove from and lock out all power to saw before servicing.

To access the grease zerks for the top clamp slide bearing blocks insert the neck of the grease gun through these holes.



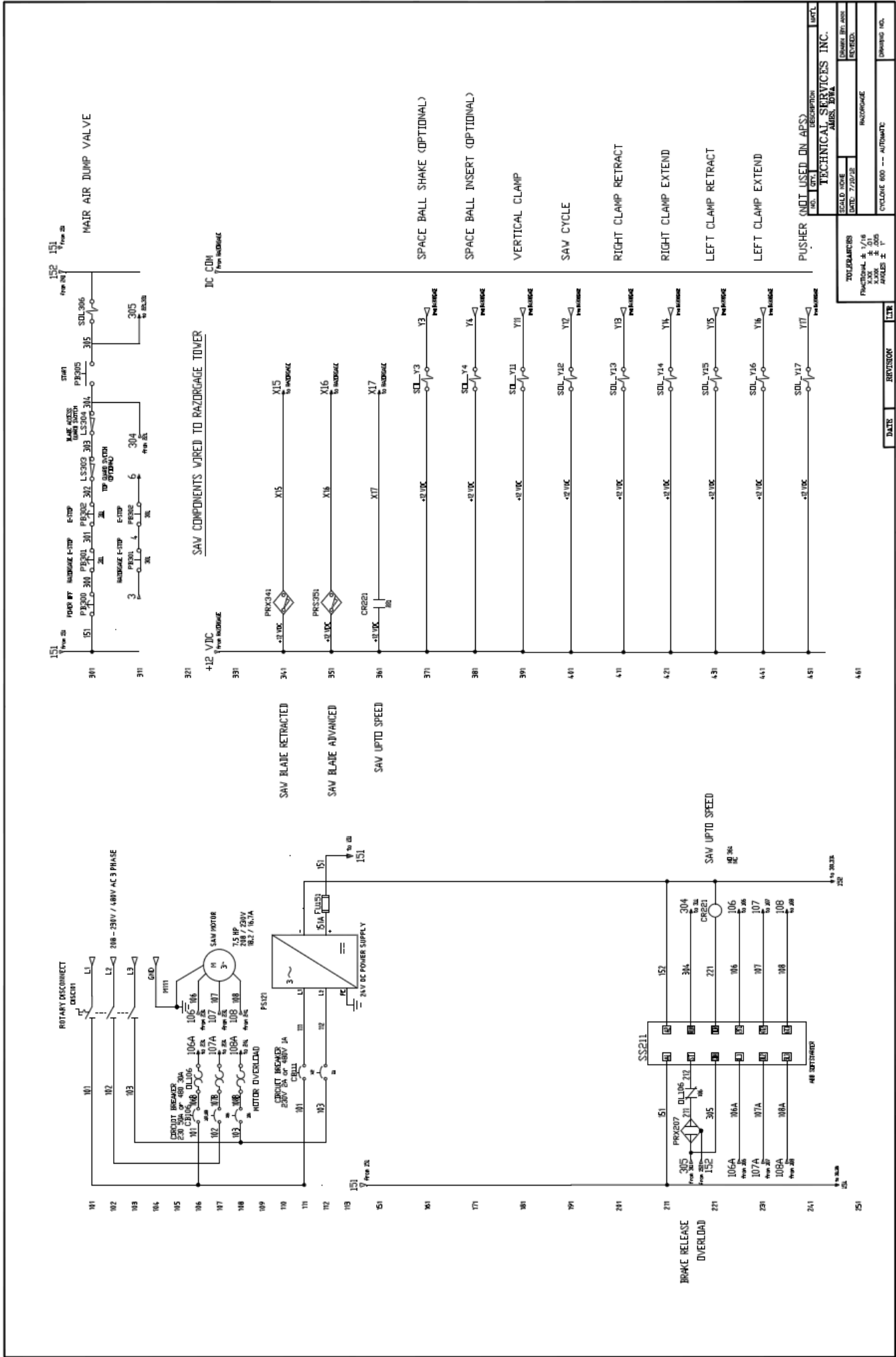
Use a lithium soap based grease for lubrication. Lubricate top clamp bearing blocks and saw slide blocks every 5000 cycles.

Cyclone 600 Sawing Capacity Chart & General Specifications

Material Thickness	Cyclone 600 Width Capacity for Common Blade Diameters					
	14" Blade	16" Blade	18" Blade	500mm Blade	22" Blade	24" Blade
0.5	6.97	10.38	13.23	15.42	18.27	20.62
0.75	6.04	9.77	12.76	15.02	17.93	20.32
1	4.89	9.10	12.25	14.59	17.57	20.00
1.25	3.32	8.35	11.70	14.13	17.19	19.67
1.5		7.49	11.10	13.64	16.79	19.32
1.75		6.49	10.44	13.11	16.36	18.95
2		5.25	9.72	12.54	15.90	18.55
2.25		3.56	8.91	11.92	15.42	18.14
2.5			7.98	11.24	14.90	17.70
2.75			6.90	10.50	14.35	17.24
3			5.58	9.68	13.75	16.74
3.25			3.78	8.75	13.11	16.22
3.5				7.68	12.42	15.67
3.75				6.40	11.67	15.08
4				4.75	10.84	14.45
4.25				1.99	9.92	13.77
4.5					8.88	13.03
4.75					7.68	12.24
5					6.20	11.37
5.25					4.20	10.40
5.5						9.30
5.75						8.03
6						6.49

The vertical stroke of the upcut saw blade requires that the workpiece be centered over the center line of the blade to maximize thickness capacity. The fence is adjustable to accommodate the potential material sizes as shown in the chart above. For best cut quality on thin stock the work piece should be toward the rear of the saw. Adjust the position of the fence toward the rear of saw to optimize cut quality. See adjustment section for directions on adjustment of fence and squaring fence to blade after adjustment.

CYCLONE 600 AUTOMATIC SCHEMATIC



CYCLONE 600 --- AUTOMATIC	
DATE: 7/20/02	REVISION: 1
DRAWN BY: JMS	
CHECKED BY: JMS	
APPROVED BY: JMS	
SCALE: 1/16"	
TOLERANCES: FRACTIONAL ± 1/16"	
DECIMAL ± .01"	
ANGLES ± 1°	
PUSHER (NOT USED IN APS)	
TECHNICAL SERVICES INC.	
151	

151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000

NO.	QTY.	DESCRIPTION	MAT'L
TECHNICAL SERVICES INC. AMES, IOWA			
SCALED NONE DATE: 7/10/12			DRAWN BY: AHS REVISION:
		RACORGADE	
CYCLONE 600 — MANUAL			DRAWING NO.

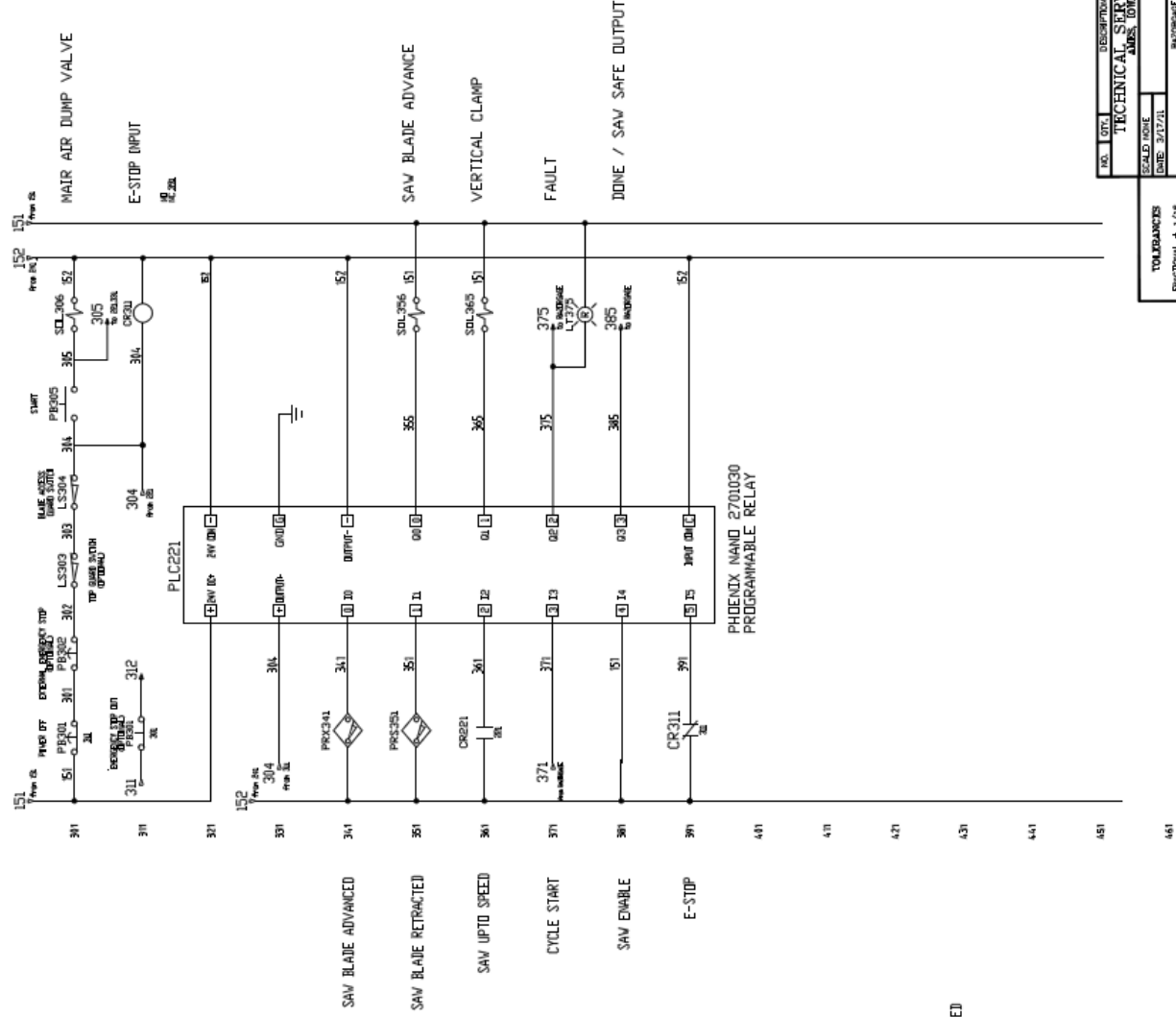
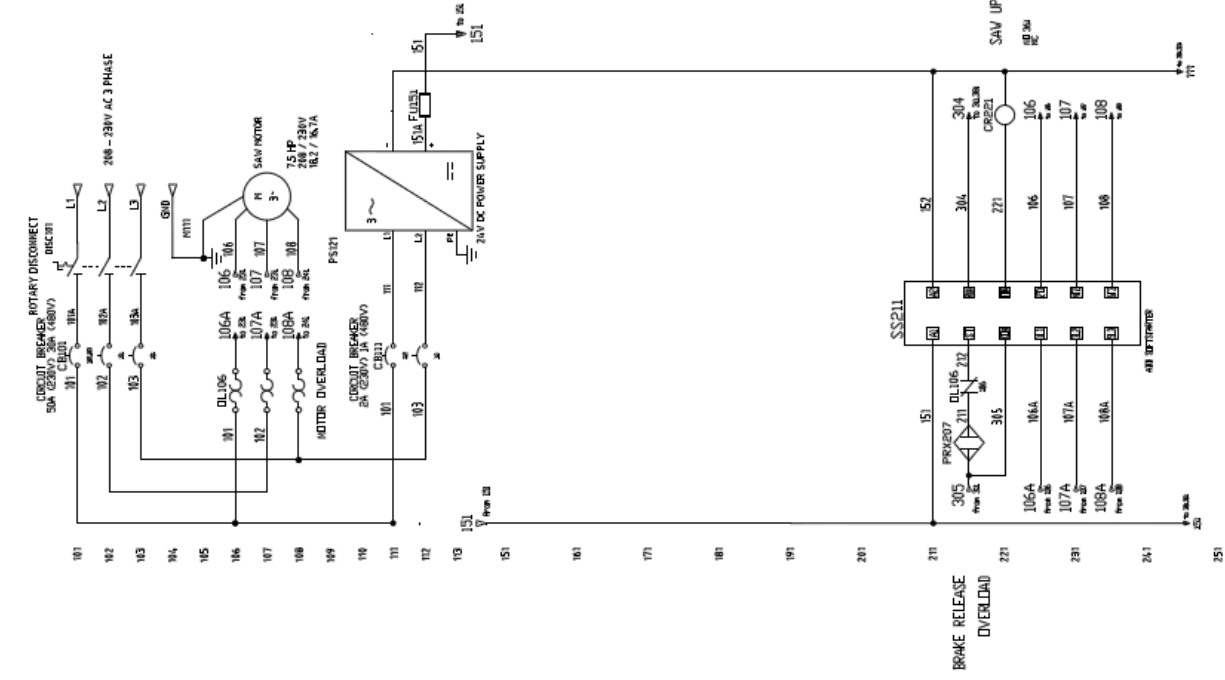
TOLERANCES

FRACTIONAL	± 1/16
X,XX	± .01
X,XXX	± .005
ANGLES	± 1°

DATE	REVISION	LT
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1

CYCLONE 600 BMI+ SCHEMATIC



NO.	QTY.	DESCRIPTION	UNIT
TECHNICAL SERVICES INC.			
AMES, IOWA			
SCALED INVOICE		UNPAID BY AMT.	
DATE: 3/17/11		REVIEWED:	
BACKORDERS			
CITYLINE 600 — BML			ORDERING NO.

<p> TOULFRANCES FRACTIONAL ± 1/16 X.XX ± .01 X.XXX ± .005 AUG. 1955 </p>	<p> TOULFRANCES FRACTIONAL ± 1/16 X.XX ± .01 X.XXX ± .005 AUG. 1955 </p>
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DATE	REVISION	1.0
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