

MAINTENANCE SCHEDULE, REPAIR PARTS LIST and USER RESPONSIBILITIES
for “Autoloc” Container Lift Spreaders and Container Lift Spreaders P/N SERIES
N3100A

CAUTION: Read the following manual completely before using the Container Lift Spreaders for the first time.

SCOPE: Covers the complete maintenance schedule for the “Autoloc” Container Lift Spreaders.

REVISION: F

DATE: October 9, 2025

WARNING: Failure to adhere to all of the following instructions could cause severe injury to personnel, damage to the Container Lift Spreaders, and / or the lifted unit. Tandemloc, Inc. cannot warrant the system against failure, nor be held liable for loss of any kind, if any of the instructions in this manual are ignored, omitted or circumvented. Always wear protective eyewear, headgear and steel toed shoes or boots when using the Container Lift Spreaders. Never place any part of your body under the lifted unit at any time, or the Container Lift Spreaders when not fully supported. Use of the Container Lift Spreaders hereby implies the user fully understands all of these and the following instructions and assumes all risks and / or liabilities if any instructions contained herein, are not correctly and completely followed.

MAINTENANCE SCHEDULE, REPAIR PARTS LIST and USER RESPONSIBILITIES for "N3100AA-00A" Container handling spreaders

CAUTION: Read the following manual completely before using the Container Lift Spreaders for the first time.

SCOPE: Covers the complete maintenance schedule for the "N3100AA-00A" Container Lift Spreaders.

REVISION: F

DATE: October 3, 2025

WARNING: Failure to adhere to all of the following instructions could cause severe injury to personnel, damage to the Container Lift Spreaders, and / or the lifted unit. Tandemloc, Inc. cannot warrant the system against failure, nor be held liable for loss of any kind, if any of the instructions in this manual are ignored, omitted or circumvented. Always wear protective eyewear, headgear, and steel toed shoes or boots when using the Container Lift Spreaders. Never place any part of your body under the lifted unit at any time, or the Container Lift Spreaders when not fully supported. Use of the Container Lift Spreaders hereby implies the user fully understands all of these and the following instructions and assumes all risks and / or liabilities if any instructions contained herein, are not correctly and completely followed.

The recommendations in this manual are not intended to replace or override any of the following requirements with regard to the safe operation of below-the-hook lifting equipment:

- *Any jobsite or plant safety rules and procedures of the employers and the owners of facilities where Tandemloc products are being used.*
- *Any OSHA regulations or recommendations pertaining to the safe use of such equipment.*
- *Any applicable local, state, or federal codes, ordinances, standards and requirements.*
- *Any industry standard safety practices and procedures as described by governing bodies such as ASME with regard to cranes, rigging, lifting, securing, mobilizing, or any other cargo handling practice.*

Safety Responsibility

Tandemloc designs and manufactures a broad range of below-the-hook lifting devices and other cargo handling devices. As with any equipment used in the lifting or securing of heavy cargo, the equipment owner and equipment operator have the ultimate responsibility for ensuring safe operation of this lifting device. It is imperative that owners and operators read and understand their responsibilities as described in the latest version of ASME B30.20. Special attention should be drawn to Section 20-1.3 which covers Inspection, Testing, and Maintenance for this type of lifting device and Section 20-1.4 which covers Operation of this type of lifting device as well as the responsibilities of owners and operators.

1.0 MAINTENANCE PROCEDURES AND USER RESPONSIBILITIES

The Container Lift Spreader requires routine maintenance to maintain optimum performance. This procedure should be followed on a regular basis. Recommended maintenance procedures are outlined below along with cycle times. These cycle times are for normal use and should be adjusted if the spreader is used more than a few times a day. The end user should adjust the cycle times for their individual needs and environment, as experience with the unit dictates.

CAUTION: Failure to adequately maintain your spreader as prescribed could cause property damage, injury or death.

1.1 Prior To Each Use:

1. Visually inspect the entire spreader assembly for signs of wear, damage or incorrect assembly. Correct any problems completely before using.
2. Inspect for proper lubrication at all points.
3. With the spreader chocked on blocks and the bayonets free to operate, manually operate the gearbox to be certain the linkage system is operating correctly. Be certain to return the bayonets to the unlocked position (see referenced drawing) prior to actual use.

1.2 Every Six Months:

1. Inspect the entire spreader assembly for signs of corrosion. Repair or replace any corroded parts as necessary.
3. Coat all mated moving parts with liberal amounts of Staplex premium red grease, p/n: SL3190.
4. Put Staplex grease in all grease fittings.

1.3 Every Twelve Months:

1. Disassemble the bayonets and stress collars (4 places) and inspect the load bearing threads for wear, corrosion or damage. Use a go- no go gauge for 1.5-6UNC-2A and -2B threads. If any wear, corrosion or damage is present, replace them prior to any lifting. After inspection: apply Loctite silver grade anti-seize to the threads of the bayonets and stress collars prior to reassembly. It is highly recommended that the mating Bayonet and Stress Collars be kept as matched sets when reassembling.
2. The entire spreader assembly should be load tested by a qualified testing facility to 1.25 times the WLL specified on the data plate of the spreader. Tandemloc, Inc. provides a load testing service (that includes the bayonet and stress collar inspection from above) as well as offering a complete refurbishing service for your spreader. Call the Tandemloc sales team for pricing and details.
3. After load testing: Inspect all load bearing components for signs of wear or damage. Repair or replace parts as necessary.

1.4 Wire Rope Sling Replacement Criteria:

1. Missing or illegible sling identification
2. Broken wires:
 - a) 10 randomly distributed broken wires in one rope lay, or 5 broken wires in one strand in one rope lay, for strand-laid and single-part slings. 20 broken wires per lay for cable-laid slings.
 - b) 20 broken wires per braid for six-part braided slings.
 - c) 40 broken wires per braid for eight-part braided slings.
3. Severe localized abrasion or scraping.
4. Kinking, crushing, birdcaging or any other damage resulting in damage to the rope structure.
5. Evidence of heat damage.
6. End fittings that are cracked, deformed or worn to the extent that the strength of the sling is substantially affected.
7. Severe corrosion of the rope end attachments or fittings.
8. For hooks, removal criteria as stated in ASME B 30.10.
9. Other conditions, including visible damage, that cause doubt as to the continued use of the sling.

Please don't hesitate to call Tandemloc, Inc. with any questions or concerns at 1-800-258-7324.

The items listed on the following pages are available replacement parts from TANDEMLOC, Inc.

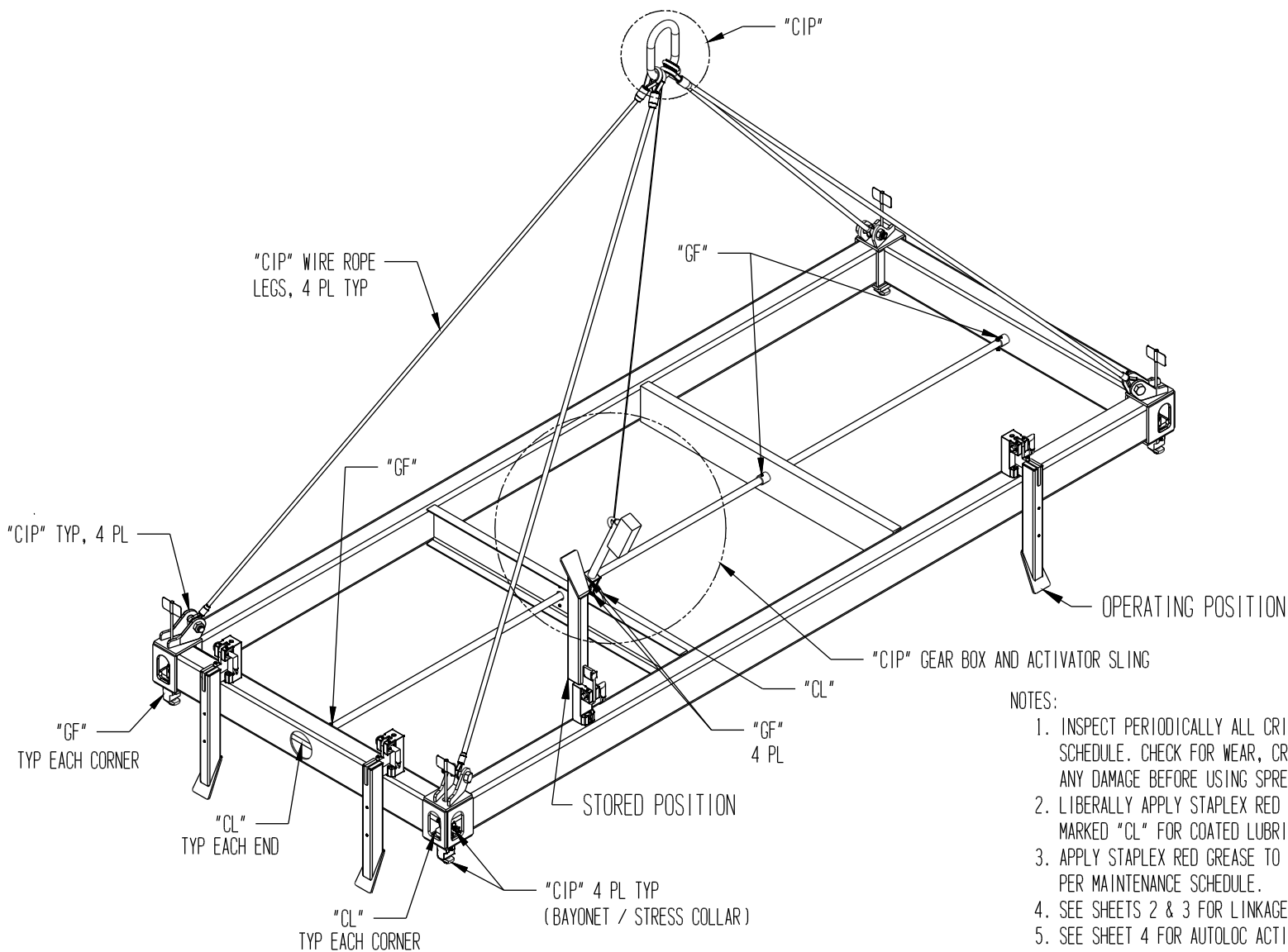
2.0 DRAWING XN31000A SHEET 3 BILL OF MATERIALS LIST

For a full set of replacement parts for a single corner, use **PN: AA01009A-1PA**. This kit will contain bayonet, stress collar, indicator flag, cam plate, and all hardware needed for a single corner. It does not contain components located outside the Autoloc corner (driveshaft, tie rod, etc.)

PC NO	Part Number	Description
8	N31022B	DRIVE SHAFT - SHORT; CONTACT ACCOUNT MGR
9	N31022B	DRIVE SHAFT - LONG; CONTACT ACCOUNT MGR
10	L0320AA-1PA	INDICATOR FLAG
13	UPS002520000031	1/4-20 LOCKNUT
14	UCP0009XXXX0125	3/32 X 1.25 COTTER PIN
15	VHB002520000150	BOLT, HEX HEAD, 1/4-20 X 1.5"
16	N3102AA-1PA	TIE ROD ASSEMBLY
17	AA01020A-1PA	CTR. CAM DRIVE
18	UHB005013000250	1/2-13X2.5 HEX BOLT
19	UPS005013000061	1/2-13 LOCKNUT
20	UCP0025XXXX0200	1/4 X 2 COTTER PIN
21	UWA008101470013	3/4 WASHER ANS TYPE A SER N ZP
22*	127514D-6PA	BAYONET, MACHINED (NOT SOLD W/O PC #'s 23, 24, 29, 30, 31 & 32. FOR SPARE PARTS ORDERS PLEASE USE PART #: N3150AA-1PA)
23*	N3107AA-7PA	STRESS COLLAR (NOT SOLD W/O PC #'s 22, 24, 29, 30, 31 & 32. FOR SPARE PARTS ORDERS PLEASE USE PART #: N3150AA-1PA)
24	N31037B-2PA	KEY PLATE
25	127A50A-F00	FIBER WASHER, SPECIAL
26	1275SAA-1ZN	WASHER, SPECIAL, ZINC PLATED
27	12756AA-100	RYERTEX BUSHING
28	7127-51-72P	BAYONET CAM PLATE
29	WHB003816000075	BOLT
30	N3143AA-700	CUSTOM THICK WASHER
31	USL003800550013	LOCKWASHER
32	\$LON242	LOCTITE
* When replacing bayonets and stress collars (PCs 22 & 23), some older model spreaders have a spacer washer (O.D. – 4.00", I.D. – 1.56", THK - .50") which is no longer used.		

3.0 DRAWING XN31000A SHEET 4 BILL OF MATERIALS LIST
AUTOLOC ACTIVATOR SLING ASSEMBLY

PC NO	Part Number	Description
1	N3105AA	AUTOLOC SLING ASSEMBLY
2	AA01010A-1PA	GEAR BOX ASSEMBLY
3	XWR0019IWRC6X19	3/16" WIRE ROPE
4	\$CRE1010033	3/16" WIRE ROPE SWAGES
5	\$LEE-E250X24SS	SPRING, SPECIAL 1.45 X 24" SS
6	\$GUNKL-13-8	1/2" ALLOY CHAIN

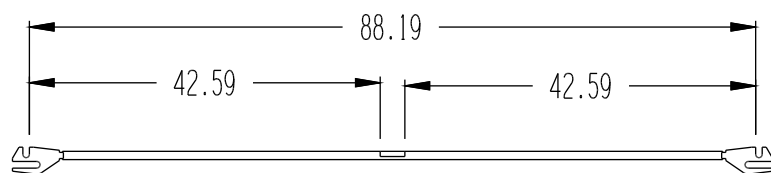


REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	SEE SHEET 4	12-09-09	DAH
	B	SEE SHEET 3	02-07-11	DAH
	C	ADDED FLIPPER GUIDES TO DRAWING	06-12-12	DAH
	D	ADDED NEW FLIPPERS TO DRAWING	04-28-16	DAH
	E	REMOVED SHEETS 5-8 WITH OBSOLETE PARTS	04-14-25	DAH

NOTES:

1. INSPECT PERIODICALLY ALL CRITICAL INSPECTION POINTS MARKED "CIP" PER MAINTENANCE SCHEDULE. CHECK FOR WEAR, CRACKS, CORROSION OR DEFORMATION. REPAIR OR REPLACE ANY DAMAGE BEFORE USING SPREADER.
2. LIBERALLY APPLY STAPLEX RED GREASE ON ALL MOVING MATED PARTS MARKED "CL" FOR COATED LUBRICATION PER MAINTENANCE SCHEDULE.
3. APPLY STAPLEX RED GREASE TO ALL GREASE FITTINGS MARKED "GF" PER MAINTENANCE SCHEDULE.
4. SEE SHEETS 2 & 3 FOR LINKAGE DETAILS AND STRESS COLLAR / BAYONET ASSEMBLY DETAILS
5. SEE SHEET 4 FOR AUTOLOC ACTIVATOR SLING DETAILS

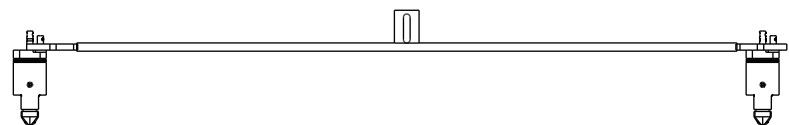
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS 1/16 .001 1/8 .002 1/4 .003 3/8 .004 1/2 .005 3/4 .006 1 .007 1 1/2 .008 2 .009 3 .010 4 .011 5 .012 6 .013 7 .014 8 .015 9 .016 10 .017 11 .018 12 .019 13 .020 14 .021 15 .022 16 .023 17 .024 18 .025 19 .026 20 .027 21 .028 22 .029 23 .030 24 .031 25 .032 26 .033 27 .034 28 .035 29 .036 30 .037 31 .038 32 .039 33 .040 34 .041 35 .042 36 .043 37 .044 38 .045 39 .046 40 .047 41 .048 42 .049 43 .050 44 .051 45 .052 46 .053 47 .054 48 .055 49 .056 50 .057 51 .058 52 .059 53 .060 54 .061 55 .062 56 .063 57 .064 58 .065 59 .066 60 .067 61 .068 62 .069 63 .070 64 .071 65 .072 66 .073 67 .074 68 .075 69 .076 70 .077 71 .078 72 .079 73 .080 74 .081 75 .082 76 .083 77 .084 78 .085 79 .086 80 .087 81 .088 82 .089 83 .090 84 .091 85 .092 86 .093 87 .094 88 .095 89 .096 90 .097 91 .098 92 .099 93 .100 94 .101 95 .102 96 .103 97 .104 98 .105 99 .106 100 .107 101 .108 102 .109 103 .110 104 .111 105 .112 106 .113 107 .114 108 .115 109 .116 110 .117 111 .118 112 .119 113 .120 114 .121 115 .122 116 .123 117 .124 118 .125 119 .126 120 .127 121 .128 122 .129 123 .130 124 .131 125 .132 126 .133 127 .134 128 .135 129 .136 130 .137 131 .138 132 .139 133 .140 134 .141 135 .142 136 .143 137 .144 138 .145 139 .146 140 .147 141 .148 142 .149 143 .150 144 .151 145 .152 146 .153 147 .154 148 .155 149 .156 150 .157 151 .158 152 .159 153 .160 154 .161 155 .162 156 .163 157 .164 158 .165 159 .166 160 .167 161 .168 162 .169 163 .170 164 .171 165 .172 166 .173 167 .174 168 .175 169 .176 170 .177 171 .178 172 .179 173 .180 174 .181 175 .182 176 .183 177 .184 178 .185 179 .186 180 .187 181 .188 182 .189 183 .190 184 .191 185 .192 186 .193 187 .194 188 .195 189 .196 190 .197 191 .198 192 .199 193 .200 194 .201 195 .202 196 .203 197 .204 198 .205 199 .206 200 .207 201 .208 202 .209 203 .210 204 .211 205 .212 206 .213 207 .214 208 .215 209 .216 210 .217 211 .218 212 .219 213 .220 214 .221 215 .222 216 .223 217 .224 218 .225 219 .226 220 .227 221 .228 222 .229 223 .230 224 .231 225 .232 226 .233 227 .234 228 .235 229 .236 230 .237 231 .238 232 .239 233 .240 234 .241 235 .242 236 .243 237 .244 238 .245 239 .246 240 .247 241 .248 242 .249 243 .250 244 .251 245 .252 246 .253 247 .254 248 .255 249 .256 250 .257 251 .258 252 .259 253 .260 254 .261 255 .262 256 .263 257 .264 258 .265 259 .266 260 .267 261 .268 262 .269 263 .270 264 .271 265 .272 266 .273 267 .274 268 .275 269 .276 270 .277 271 .278 272 .279 273 .280 274 .281 275 .282 276 .283 277 .284 278 .285 279 .286 280 .287 281 .288 282 .289 283 .290 284 .291 285 .292 286 .293 287 .294 288 .295 289 .296 290 .297 291 .298 292 .299 293 .300 294 .301 295 .302 296 .303 297 .304 298 .305 299 .306 300 .307 301 .308 302 .309 303 .310 304 .311 305 .312 306 .313 307 .314 308 .315 309 .316 310 .317 311 .318 312 .319 313 .320 314 .321 315 .322 316 .323 317 .324 318 .325 319 .326 320 .327 321 .328 322 .329 323 .330 324 .331 325 .332 326 .333 327 .334 328 .335 329 .336 330 .337 331 .338 332 .339 333 .340 334 .341 335 .342 336 .343 337 .344 338 .345 339 .346 340 .347 341 .348 342 .349 343 .350 344 .351 345 .352 346 .353 347 .354 348 .355 349 .356 350 .357 351 .358 352 .359 353 .360 354 .361 355 .362 356 .363 357 .364 358 .365 359 .366 360 .367 361 .368 362 .369 363 .370 364 .371 365 .372 366 .373 367 .374 368 .375 369 .376 370 .377 371 .378 372 .379 373 .380 374 .381 375 .382 376 .383 377 .384 378 .385 379 .386 380 .387 381 .388 382 .389 383 .390 384 .391 385 .392 386 .393 387 .394 388 .395 389 .396 390 .397 391 .398 392 .399 393 .400 394 .401 395 .402 396 .403 397 .404 398 .405 399 .406 400 .407 401 .408 402 .409 403 .410 404 .411 405 .412 406 .413 407 .414 408 .415 409 .416 410 .417 411 .418 412 .419 413 .420 414 .421 415 .422 416 .423 417 .424 418 .425 419 .426 420 .427 421 .428 422 .429 423 .430 424 .431 425 .432 426 .433 427 .434 428 .435 429 .436 430 .437 431 .438 432 .439 433 .440 434 .441 435 .442 436 .443 437 .444 438 .445 439 .446 440 .447 441 .448 442 .449 443 .450 444 .451 445 .452 446 .453 447 .454 448 .455 449 .456 450 .457 451 .458 452 .459 453 .460 454 .461 455 .462 456 .463 457 .464 458 .465 459 .466 460 .467 461 .468 462 .469 463 .470 464 .471 465 .472 466 .473 467 .474 468 .475 469 .476 470 .477 471 .478 472 .479 473 .480 474 .481 475 .482 476 .483 477 .484 478 .485 479 .486 480 .487 481 .488 482 .489 483 .490 484 .491 485 .492 486 .493 487 .494 488 .495 489 .496 490 .497 491 .498 492 .499 493 .500 494 .501 495 .502 496 .503 497 .504 498 .505 499 .506 500 .507 501 .508 502 .509 503 .510 504 .511 505 .512 506 .513 507 .514 508 .515 509 .516 510 .517 511 .518 512 .519 513 .520 514 .521 515 .522 516 .523 517 .524 518 .525 519 .526 520 .527 521 .528 522 .529 523 .530 524 .531 525 .532 526 .533 527 .534 528 .535 529 .536 530 .537 531 .538 532 .539 533 .540 534 .541 535 .542 536 .543 537 .544 538 .545 539 .546 540 .547 541 .548 542 .549 543 .550 544 .551 545 .552 546 .553 547 .554 548 .555 549 .556 550 .557 551 .558 552 .559 553 .560 554 .561 555 .562 556 .563 557 .564 558 .565 559 .566 560 .567 561 .568 562 .569 563 .570 564 .571 565 .572 566 .573 567 .574 568 .575 569 .576 570 .577 571 .578 572 .579 573 .580 574 .581 575 .582 576 .583 577 .584 578 .585 579 .586 580 .587 581 .588 582 .589 583 .590 584 .591 585 .592 586 .593 587 .594 588 .595 589 .596 590 .597 591 .598 592 .599 593 .600 594 .601 595 .602 596 .603 597 .604 598 .605 599 .606 600 .607 601 .608 602 .609 603 .610 604 .611 605 .612 606 .613 607 .614 608 .615 609 .616 610 .617 611 .618 612 .619 613 .620 614 .621 615 .622 616 .623 617 .624 618 .625 619 .626 620 .627 621 .628 622 .629 623 .630 624 .631 625 .632 626 .633 627 .634 628 .635 629 .636 630 .637 631 .638 632 .639 633 .640 634 .641 635 .642 636 .643 637 .644 638 .645 639 .646 640 .647 641 .648 642 .649 643 .650 644 .651 645 .652 646 .653 647 .654 648 .655 649 .656 650 .657 651 .658 652 .659 653 .660 654 .661 655 .662 656 .663 657 .664 658 .665 659 .666 660 .667 661 .668 662 .669 663 .670 664 .671 665 .672 666 .673 667 .674 668 .675 669 .676 670 .677 671 .678 672 .679 673 .680 674 .681 675 .682 676 .683 677 .684 678 .685 679 .686 680 .687 681 .688 682 .689 683 .690 684 .691 685 .692 686 .693 687 .694 688 .695 689 .696 690 .697 691 .698 692 .699 693 .700 694 .701 695 .702 696 .703 697 .704 698 .705 699 .706 700 .707 701 .708 702 .709 703 .710 704 .711 705 .712 706 .713 707 .714 708 .715 709 .716 710 .717 711 .718 712 .719 713 .720 714 .721 715 .722 716 .723 717 .724 718 .725 719 .726 720 .727 721 .728 722 .729 723 .730 724 .731 725 .732 726 .733 727 .734 728 .735 729 .736 730 .737 731 .738 732 .739 733 .740 734 .741 735 .742 736 .743 737 .744 738 .745 739 .746 740 .747 741 .748 742 .749 743 .750 744 .751 745 .752 746 .753 747 .754 748 .755 749 .756 750 .757 751 .758 752 .759 753 .760 754 .761 755 .762 756 .763 757 .764 758 .765 759 .766 760 .767 761 .768 762 .769 763 .770 764 .771 765 .772 766 .773 767 .774 768 .775 769 .776 770 .777 771 .778 772 .779 773 .780 774 .781 775 .782 776 .783 777 .784 778 .785 779 .786 780 .787 781 .788 782 .789 783 .790 784 .791 785 .792 786 .793 787 .794 788 .795 789 .796 790 .797 791 .798 792 .799 793 .800 794 .801 795 .802 796 .803 797 .804 798 .805 799 .806 800 .807 801 .808 802 .809 803 .810 804 .811 805 .812 806 .813 807 .814 808 .815 809 .816 810 .817 811 .818 812 .819 813 .820 814 .821 815 .822 816 .823 817 .824 818 .825 819 .826 820 .827 821 .828 822 .829 823 .830 824 .831 825 .832 826 .833 827 .834 828 .835 829 .836 830 .837 831 .838 832 .839 833 .840 834 .841 835 .842 836 .843 837 .844 838 .845 839 .846 840 .847 841 .848 842 .849 843 .850 844 .851 845 .852 846 .853 847 .854 848 .855 849 .856 850 .857 851 .858 852 .859 853 .860 854 .861 855 .862 856 .863 857 .864 858 .865 859 .866 860 .867 861 .868 862 .869 863 .870 864 .871 865 .872 866 .873 867 .874 868 .875 869 .876 870 .877 871 .878 872 .879 873 .880 874 .881 875 .882 876 .883 877 .884 878 .885 879 .886 880 .887 881 .888 882 .889 883 .890 884 .891 885 .892 886 .893 887 .894 888 .895 889 .896 890 .897 891 .898 892 .899 893 .900 894 .901 895 .902 896 .903 897 .904 898 .905 899 .906 900 .907 901 .908 902 .909 903 .910 904 .911 905 .912 906 .913 907 .914 908 .915 909 .916 910 .917 911 .918 912 .919 913 .920 914 .921 915 .922 916 .923 917 .924 918 .925 919 .926 920 .927 921 .928 922 .929 923 .930 924 .931 925 .932 926 .933 927 .934 928 .935 929 .936 930 .937 931 .938 932 .939 933 .940 934 .941 935 .942 936 .943 937 .944 938 .945 939 .946 940 .947 941 .948 942 .949 943 .950 944 .951 945 .952 946 .953 947 .954 948 .955 949 .956 950 .957 951 .958 952 .959 953 .960 954 .961 955 .962 956 .963 957 .964 958 .965 959 .966 960 .967 961 .968 962 .969 963 .970 964 .971 965 .972 966 .973 967 .974 968 .975 969 .976 970 .977 971 .978 972 .979 973 .980 974 .981 975 .982 976 .983 977 .984 978 .985 979 .986 980 .987 981 .988 982 .989 983 .990 984 .991 985 .992 986 .993 987 .994 988 .995 989 .996 990 .997 991 .998 992 .999 993 .1000 994 .1001 995 .1002 996 .1003 997 .1004 998 .1005 999 .1006 1000 .1007 1001 .1008 1002 .1009 1003 .1010 1004 .1011 1005 .1012 1006 .1013 1007 .1014 1008 .1015 1009 .1016 1010 .1017 1011 .1018 1012 .1019 1013 .1020 1014 .1021 1015 .1022 1016 .1023 1017 .1024 1018 .1025 1019 .1026 1020 .1027 1021 .1028 1022 .1029 1023 .1030 1024 .1031 1025 .1032 1026 .1033 1027 .1034 1028 .1035 1029 .1036 1030 .1037 1031 .1038 1032 .1039 1033 .1040 1034 .1041 1035 .1042 1036 .1043 1037 .1044 1038 .1045 1039 .1046 1040 .1047 1041 .1048 1042 .1049 1043 .1050 1044 .1051 1045 .1052 1046 .1053 1047 .1054 1048 .1055 1049 .1056 1050 .1057 1051 .1058 1052 .1059 1053 .1060 1054 .1061 1055 .1062 1056 .1063 1057 .1064 1058 .1065 1059 .1066 1060 .1067 1061 .1068 1062 .1069 1063 .1070 1064 .1071 1065 .1072 1066 .1073 1067 .1074 1068 .1075 1069 .1076 1070 .1077 1071 .1078 1072 .1079 1073 .1080 1074 .1081 1075 .1082 1076 .1083 1077 .1084 1078 .1085 1079 .1086 1080 .1087 1081 .1088 1082 .1089 1083 .1090 1084 .1091 1085 .1092 1086 .1093 1087 .1094 1088 .1095 1089 .1096 1090 .1097 1091 .1098 1092 .1099 1093 .1100 1094 .1101 1095 .1102 1096 .1103 1097 .1104 1098 .1105 1099 .1106 1100 .1107 1101 .1108 1102 .1109 1103 .1110 1104 .1111 1105 .1112 1106 .1113 1107 .1114 1108 .1115 1109 .1116 1110 .1117 1111 .1118 1112 .1119 1113 .1120 1114 .1121 1115 .1122 1116 .1123 1117 .1124 1118 .1125 1119 .1126 1120 .1127 1121 .1128 1122 .1129 1123 .1130 1124 .1131 1125 .1132 1126 .1133 1127 .1134 1128 .1135 1129 .1136 1130 .1137 1131 .1138 1132 .1139 1133 .1140 1134 .1141 1135 .1142 1136 .1143 1137 .1144 1138 .1145 1139 .1146 1140 .1147 1141 .1148 1142 .1149 1143 .1150 1144 .1151 1145 .1152 1146 .1153 1147 .1154 1148 .1155 1149 .1156 1150 .1157 1151 .1158 1152 .1159 1153 .1160 1154 .1161 1155 .1162 1156 .1163 1157 .1164 1158 .1165 1159 .1166 1160 .1167 1161 .1168 1162 .1169 1163 .1170 1164 .1171 1165 .1172 1166 .1173 1167 .1174 1168 .1175 1169 .1176 1170 .1177 1171 .1178 1172 .1179 1173 .1180 1174 .1181 1175 .1182 1176 .1183 1177 .1184 1178 .1185 1179 .1186 1180 .1187 1181 .1188 1182 .1189 1183 .1190 1184 .1191 1185 .1192 1186 .1193 1187 .1194 1188 .1195 1189 .1196 1190 .1197 1191 .1198 1192 .1199 1193 .1200 1194 .1201 1195 .1202 1196 .1203 1197 .1204 1198 .1205 1199 .1206 1200 .1207 1201 .1208 1202 .1209 1203 .1210 1204 .1211 1205 .1212 1206 .1213 1207 .1214 1208 .1215 1209 .1216 1210 .1217 1211 .1218 1212 .1219 1213 .1220 1214 .1221 1215 .1222 1216 .1223 1217 .1224 1218 .1225 1219 .1226 1220 .1227 1221 .1228 1222 .1229 1223 .1230 1224 .1231 1225 .1232 1226 .1233 1227 .1234 1228 .1235 1229 .1236 1230 .1237 1231 .1238 1232 .1239	
--	--	---	--



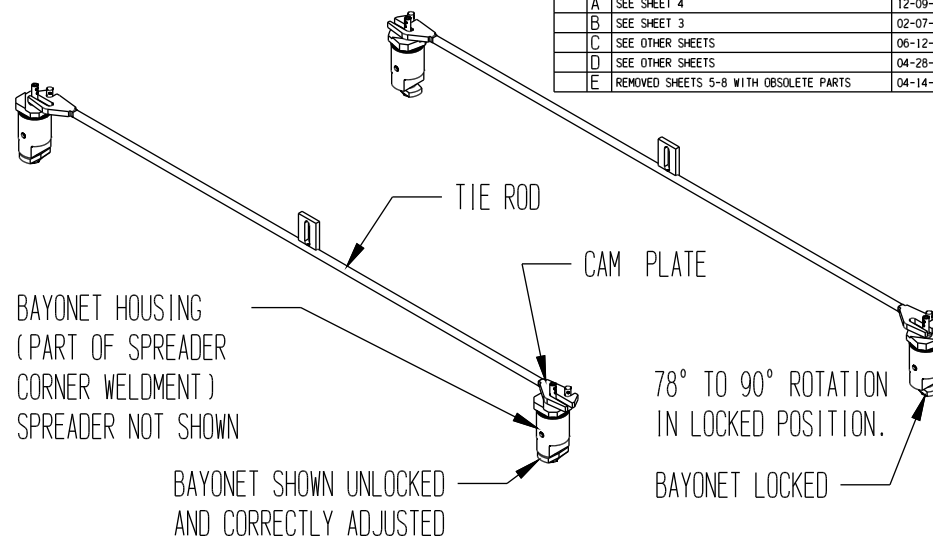
STEP A: PRESET TIE-ROD AND CAM PLATES TO DIMENSIONS SHOWN



STEP B: ASSEMBLE TIE-ROD/CAM PLATE ASSEMBLY (FROM STEP 1) INTO THE SPREADER, WITH BAYONETS IN UNLOCKED POSITION AS SHOWN. DO NOT PUT IN COTTER PINS. REFER TO SHEET 3 FOR ASSEMBLY DETAILS OF LINKAGE.



BAYONET NOT PROTRUDING FROM HOUSING

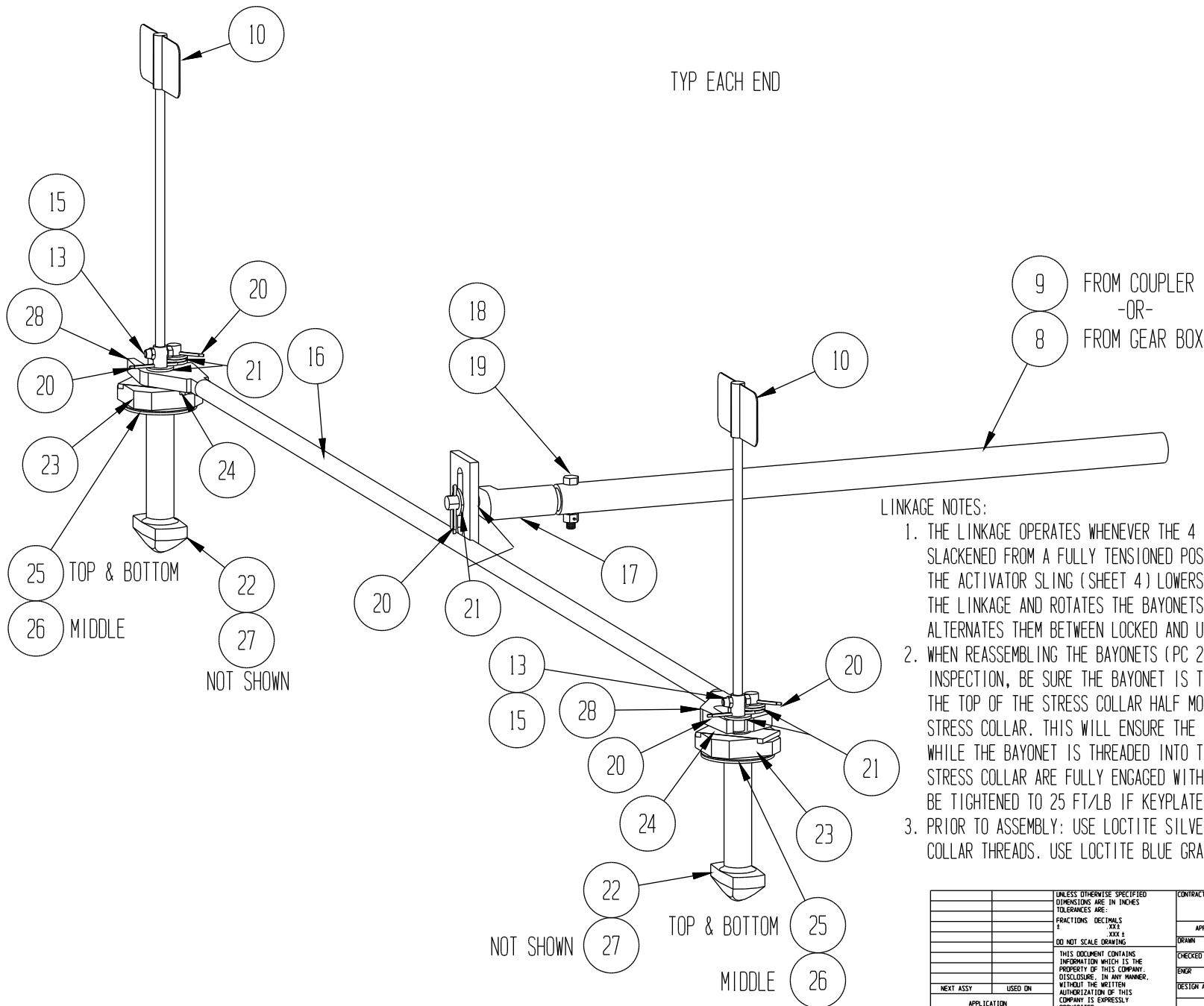


STEP C: ACTUATE THE GEARBOX ARM (BE SURE BAYONETS ARE FREE TO ROTATE) TWICE TO FIRST LOCK AND THEN UNLOCK THE BAYONETS. THE BAYONETS SHOULD NOT PROTRUDE FROM THE SIDES OF THE BAYONET HOUSING. ADJUST CAM PLATES IN OR OUT BY SCREWING THEM INTO OR OUT OF THE TIE-ROD UNTIL BAYONETS DO NOT PROTRUDE. CONTINUE TO ACTUATE THE GEAR BOX ARM TWICE AND ADJUST UNTIL THE BAYONETS CONSISTANTLY DO NOT PROTRUDE IN THE UNLOCKED POSITION. DO NOT ADJUST FOR 90° LOCKED POSITION. 78° LOCKED POSITION IS ALL THAT IS REQUIRED FOR FULL STRENGTH OF BAYONET.

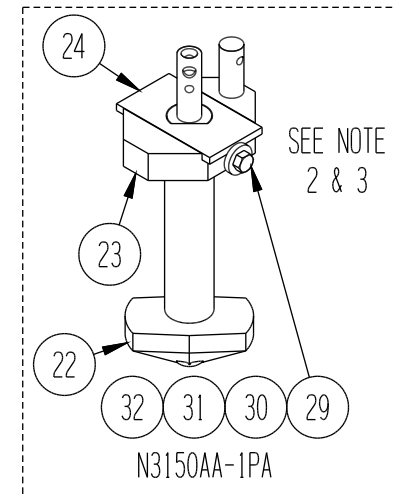
STEP D. AFTER FINAL ADJUSTMENT, REPLACE ALL HARDWARE, GREASE ALL MOVING PARTS, AND BEND COTTER PINS. REFER TO SHEET 3.

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	SEE SHEET 4	12-09-09	DAH
	B	SEE SHEET 3	02-07-11	DAH
	C	SEE OTHER SHEETS	06-12-12	DAH
	D	SEE OTHER SHEETS	04-28-16	DAH
	E	REMOVED SHEETS 5-8 WITH OBSOLETE PARTS	04-14-25	DAH

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS 1/16 .001 1/8 .002 1/4 .003 3/8 .004 1/2 .005 3/4 .006 1 .007 1 1/2 .008 2 .009 3 .010 4 .011 5 .012 6 .013 7 .014 8 .015 9 .016 10 .017 11 .018 12 .019 13 .020 14 .021 15 .022 16 .023 17 .024 18 .025 19 .026 20 .027 21 .028 22 .029 23 .030 24 .031 25 .032 26 .033 27 .034 28 .035 29 .036 30 .037 31 .038 32 .039 33 .040 34 .041 35 .042 36 .043 37 .044 38 .045 39 .046 40 .047 41 .048 42 .049 43 .050 44 .051 45 .052 46 .053 47 .054 48 .055 49 .056 50 .057 51 .058 52 .059 53 .060 54 .061 55 .062 56 .063 57 .064 58 .065 59 .066 60 .067 61 .068 62 .069 63 .070 64 .071 65 .072 66 .073 67 .074 68 .075 69 .076 70 .077 71 .078 72 .079 73 .080 74 .081 75 .082 76 .083 77 .084 78 .085 79 .086 80 .087 81 .088 82 .089 83 .090 84 .091 85 .092 86 .093 87 .094 88 .095 89 .096 90 .097 91 .098 92 .099 93 .100 94 .101 95 .102 96 .103 97 .104 98 .105 99 .106 100 .107 101 .108 102 .109 103 .110 104 .111 105 .112 106 .113 107 .114 108 .115 109 .116 110 .117 111 .118 112 .119 113 .120 114 .121 115 .122 116 .123 117 .124 118 .125 119 .126 120 .127 121 .128 122 .129 123 .130 124 .131 125 .132 126 .133 127 .134 128 .135 129 .136 130 .137 131 .138 132 .139 133 .140 134 .141 135 .142 136 .143 137 .144 138 .145 139 .146 140 .147 141 .148 142 .149 143 .150 144 .151 145 .152 146 .153 147 .154 148 .155 149 .156 150 .157 151 .158 152 .159 153 .160 154 .161 155 .162 156 .163 157 .164 158 .165 159 .166 160 .167 161 .168 162 .169 163 .170 164 .171 165 .172 166 .173 167 .174 168 .175 169 .176 170 .177 171 .178 172 .179 173 .180 174 .181 175 .182 176 .183 177 .184 178 .185 179 .186 180 .187 181 .188 182 .189 183 .190 184 .191 185 .192 186 .193 187 .194 188 .195 189 .196 190 .197 191 .198 192 .199 193 .200 194 .201 195 .202 196 .203 197 .204 198 .205 199 .206 200 .207 201 .208 202 .209 203 .210 204 .211 205 .212 206 .213 207 .214 208 .215 209 .216 210 .217 211 .218 212 .219 213 .220 214 .221 215 .222 216 .223 217 .224 218 .225 219 .226 220 .227 221 .228 222 .229 223 .230 224 .231 225 .232 226 .233 227 .234 228 .235 229 .236 230 .237 231 .238 232 .239 233 .240 234 .241 235 .242 236 .243 237 .244 238 .245 239 .246 240 .247 241 .248 242 .249 243 .250 244 .251 245 .252 246 .253 247 .254 248 .255 249 .256 250 .257 251 .258 252 .259 253 .260 254 .261 255 .262 256 .263 257 .264 258 .265 259 .266 260 .267 261 .268 262 .269 263 .270 264 .271 265 .272 266 .273 267 .274 268 .275 269 .276 270 .277 271 .278 272 .279 273 .280 274 .281 275 .282 276 .283 277 .284 278 .285 279 .286 280 .287 281 .288 282 .289 283 .290 284 .291 285 .292 286 .293 287 .294 288 .295 289 .296 290 .297 291 .298 292 .299 293 .300 294 .301 295 .302 296 .303 297 .304 298 .305 299 .306 300 .307 301 .308 302 .309 303 .310 304 .311 305 .312 306 .313 307 .314 308 .315 309 .316 310 .317 311 .318 312 .319 313 .320 314 .321 315 .322 316 .323 317 .324 318 .325 319 .326 320 .327 321 .328 322 .329 323 .330 324 .331 325 .332 326 .333 327 .334 328 .335 329 .336 330 .337 331 .338 332 .339 333 .340 334 .341 335 .342 336 .343 337 .344 338 .345 339 .346 340 .347 341 .348 342 .349 343 .350 344 .351 345 .352 346 .353 347 .354 348 .355 349 .356 350 .357 351 .358 352 .359 353 .360 354 .361 355 .362 356 .363 357 .364 358 .365 359 .366 360 .367 361 .368 362 .369 363 .370 364 .371 365 .372 366 .373 367 .374 368 .375 369 .376 370 .377 371 .378 372 .379 373 .380 374 .381 375 .382 376 .383 377 .384 378 .385 379 .386 380 .387 381 .388 382 .389 383 .390 384 .391 385 .392 386 .393 387 .394 388 .395 389 .396 390 .397 391 .398 392 .399 393 .400 394 .401 395 .402 396 .403 397 .404 398 .405 399 .406 400 .407 401 .408 402 .409 403 .410 404 .411 405 .412 406 .413 407 .414 408 .415 409 .416 410 .417 411 .418 412 .419 413 .420 414 .421 415 .422 416 .423 417 .424 418 .425 419 .426 420 .427 421 .428 422 .429 423 .430 424 .431 425 .432 426 .433 427 .434 428 .435 429 .436 430 .437 431 .438 432 .439 433 .440 434 .441 435 .442 436 .443 437 .444 438 .445 439 .446 440 .447 441 .448 442 .449 443 .450 444 .451 445 .452 446 .453 447 .454 448 .455 449 .456 450 .457 451 .458 452 .459 453 .460 454 .461 455 .462 456 .463 457 .464 458 .465 459 .466 460 .467 461 .468 462 .469 463 .470 464 .471 465 .472 466 .473 467 .474 468 .475 469 .476 470 .477 471 .478 472 .479 473 .480 474 .481 475 .482 476 .483 477 .484 478 .485 479 .486 480 .487 481 .488 482 .489 483 .490 484 .491 485 .492 486 .493 487 .494 488 .495 489 .496 490 .497 491 .498 492 .499 493 .500 494 .501 495 .502 496 .503 497 .504 498 .505 499 .506 500 .507 501 .508 502 .509 503 .510 504 .511 505 .512 506 .513 507 .514 508 .515 509 .516 510 .517 511 .518 512 .519 513 .520 514 .521 515 .522 516 .523 517 .524 518 .525 519 .526 520 .527 521 .528 522 .529 523 .530 524 .531 525 .532 526 .533 527 .534 528 .535 529 .536 530 .537 531 .538 532 .539 533 .540 534 .541 535 .542 536 .543 537 .544 538 .545 539 .546 540 .547 541 .548 542 .549 543 .550 544 .551 545 .552 546 .553 547 .554 548 .555 549 .556 550 .557 551 .558 552 .559 553 .560 554 .561 555 .562 556 .563 557 .564 558 .565 559 .566 560 .567 561 .568 562 .569 563 .570 564 .571 565 .572 566 .573 567 .574 568 .575 569 .576 570 .577 571 .578 572 .579 573 .580 574 .581 575 .582 576 .583 577 .584 578 .585 579 .586 580 .587 581 .588 582 .589 583 .590 584 .591 585 .592 586 .593 587 .594 588 .595 589 .596 590 .597 591 .598 592 .599 593 .600 594 .601 595 .602 596 .603 597 .604 598 .605 599 .606 600 .607 601 .608 602 .609 603 .610 604 .611 605 .612 606 .613 607 .614 608 .615 609 .616 610 .617 611 .618 612 .619 613 .620 614 .621 615 .622 616 .623 617 .624 618 .625 619 .626 620 .627 621 .628 622 .629 623 .630 624 .631 625 .632 626 .633 627 .634 628 .635 629 .636 630 .637 631 .638 632 .639 633 .640 634 .641 635 .642 636 .643 637 .644 638 .645 639 .646 640 .647 641 .648 642 .649 643 .650 644 .651 645 .652 646 .653 647 .654 648 .655 649 .656 650 .657 651 .658 652 .659 653 .660 654 .661 655 .662 656 .663 657 .664 658 .665 659 .666 660 .667 661 .668 662 .669 663 .670 664 .671 665 .672 666 .673 667 .674 668 .675 669 .676 670 .677 671 .678 672 .679 673 .680 674 .681 675 .682 676 .683 677 .684 678 .685 679 .686 680 .687 681 .688 682 .689 683 .690 684 .691 685 .692 686 .693 687 .694 688 .695 689 .696 690 .697 691 .698 692 .699 693 .700 694 .701 695 .702 696 .703 697 .704 698 .705 699 .706 700 .707 701 .708 702 .709 703 .710 704 .711 705 .712 706 .713 707 .714 708 .715 709 .716 710 .717 711 .718 712 .719 713 .720 714 .721 715 .722 716 .723 717 .724 718 .725 719 .726 720 .727 721 .728 722 .729 723 .730 724 .731 725 .732 726 .733 727 .734 728 .735 729 .736 730 .737 731 .738 732 .739 733 .740 734 .741 735 .742 736 .743 737 .744 738 .745 739 .746 740 .747 741 .748 742 .749 743 .750 744 .751 745 .752 746 .753 747 .754 748 .755 749 .756 750 .757 751 .758 752 .759 753 .760 754 .761 755 .762 756 .763 757 .764 758 .765 759 .766 760 .767 761 .768 762 .769 763 .770 764 .771 765 .772 766 .773 767 .774 768 .775 769 .776 770 .777 771 .778 772 .779 773 .780 774 .781 775 .782 776 .783 777 .784 778 .785 779 .786 780 .787 781 .788 782 .789 783 .790 784 .791 785 .792 786 .793 787 .794 788 .795 789 .796 790 .797 791 .798 792 .799 793 .800 794 .801 795 .802 796 .803 797 .804 798 .805 799 .806 800 .807 801 .808 802 .809 803 .810 804 .811 805 .812 806 .813 807 .814 808 .815 809 .816 810 .817 811 .818 812 .819 813 .820 814 .821 815 .822 816 .823 817 .824 818 .825 819 .826 820 .827 821 .828 822 .829 823 .830 824 .831 825 .832 826 .833 827 .834 828 .835 829 .836 830 .837 831 .838 832 .839 833 .840 834 .841 835 .842 836 .843 837 .844 838 .845 839 .846 840 .847 841 .848 842 .849 843 .850 844 .851 845 .852 846 .853 847 .854 848 .855 849 .856 850 .857 851 .858 852 .859 853 .860 854 .861 855 .862 856 .863 857 .864 858 .865 859 .866 860 .867 861 .868 862 .869 863 .870 864 .871 865 .872 866 .873 867 .874 868 .875 869 .876 870 .877 871 .878 872 .879 873 .880 874 .881 875 .882 876 .883 877 .884 878 .885 879 .886 880 .887 881 .888 882 .889 883 .890 884 .891 885 .892 886 .893 887 .894 888 .895 889 .896 890 .897 891 .898 892 .899 893 .900 894 .901 895 .902 896 .903 897 .904 898 .905 899 .906 900 .907 901 .908 902 .909 903 .910 904 .911 905 .912 906 .913 907 .914 908 .915 909 .916 910 .917 911 .918 912 .919 913 .920 914 .921 915 .922 916 .923 917 .924 918 .925 919 .926 920 .927 921 .928 922 .929 923 .930 924 .931 925 .932 926 .933 927 .934 928 .935 929 .936 930 .937 931 .938 932 .939 933 .940 934 .941 935 .942 936 .943 937 .944 938 .945 939 .946 940 .947 941 .948 942 .949 943 .950 944 .951 945 .952 946 .953 947 .954 948 .955 949 .956 950 .957 951 .958 952 .959 953 .960 954 .961 955 .962 956 .963 957 .964 958 .965 959 .966 960 .967 961 .968 962 .969 963 .970 964 .971 965 .972 966 .973 967 .974 968 .975 969 .976 970 .977 971 .978 972 .979 973 .980 974 .981 975 .982 976 .983 977 .984 978 .985 979 .986 980 .987 981 .988 982 .989 983 .990 984 .991 985 .992 986 .993 987 .994 988 .995 989 .996 990 .997 991 .998 992 .999 993 .1000 994 .1001 995 .1002 996 .1003 997 .1004 998 .1005 999 .1006 1000 .1007 1001 .1008 1002 .1009 1003 .1010 1004 .1011 1005 .1012 1006 .1013 1007 .1014 1008 .1015 1009 .1016 1010 .1017 1011 .1018 1012 .1019 1013 .1020 1014 .1021 1015 .1022 1016 .1023 1017 .1024 1018 .1025 1019 .1026 1020 .1027 1021 .1028 1022 .1029 1023 .1030 1024 .1031 1025 .1032 1026 .1033 1027 .1034 1028 .1035 1029 .1036 1030 .1037 1031 .1038 1032 .1039 1033 .1040 1034 .1041 1035 .1042 1036 .1043 1037 .1044 1038 .1045 1039 .1046 1040 .1047 1041 .1048 1042 .1049 1043 .1050 1044 .1051 1045 .1052 1046 .1053 1047 .1054 1048 .1055 1049 .1056 1050 .1057 1051 .1058 1052 .1059 1053 .1060 1054 .1061 1055 .1062 1056 .1063 1057 .1064 1058 .1065 1059 .1066 1060 .1067 1061 .1068 1062 .1069 1063 .1070 1064 .1071 1065 .1072 1066 .1073 1067 .1074 1068 .1075 1069 .1076 1070 .1077 1071 .1078 1072 .1079 1073 .1080 1074 .1081 1075 .1082 1076 .1083 1077 .1084 1078 .1085 1079 .1086 1080 .1087 1081 .1088 1082 .1089 1083 .1090 1084 .1091 1085 .1092 1086 .1093 1087 .1094 1088 .1095 1089 .1096 1090 .1097 1091 .1098 1092 .1099 1093 .1100 1094 .1101 1095 .1102 1096 .1103 1097 .1104 1098 .1105 1099 .1106 1100 .1107 1101 .1108 1102 .1109 1103 .1110 1104 .1111 1105 .1112 1106 .1113 1107 .1114 1108 .1115 1109 .1116 1110 .1117 1111 .1118 1112 .1119 1113 .1120 1114 .1121 1115 .1122 1116 .1123 1117 .1124 1118 .1125 1119 .1126 1120 .1127 1121 .1128 1122 .1129 1123 .1130 1124 .1131 1125 .1132 1126 .1133 1127 .1134 1128 .1135 1129 .1136 1130 .1137 1131 .1138 1132 .1139 1133 .1140 1134 .1141 1135 .1142 1136 .1143 1137 .1144 1138 .1145 1139 .1146 1140 .1147 1141 .1148 1142 .1149 1143 .1150 1144 .1151 1145 .1152 1146 .1153 1147 .1154 1148 .1155 1149 .1156 1150 .1157 1151 .1158 1152 .1159 1153 .1160 1154 .1161 1155 .1162 1156 .1163 1157 .1164 1158 .1165 1159 .1166 1160 .1167 1161 .1168 1162 .1169 1163 .1170 1164 .1171 1165 .1172 1166 .1173 1167 .1174 1168 .1175 1169 .1176 1170 .1177 1171 .1178 1172 .1179 1173 .1180 1174 .1181 1175 .1182 1176 .1183 1177 .1184 1178 .1185 1179 .1186 1180 .1187 1181 .1188 1182 .1189 1183 .1190 1184 .1191 1185 .1192 1186 .1193 1187 .1194 1188 .1195 1189 .1196 1190 .1197 1191 .1198 1192 .1199 1193 .1200 1194 .1201 1195 .1202 1196 .1203 119	
--	--	--	--



REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	SEE SHEET 4	12-09-09	DAH
	B	REMOVED EXTRA 11, 13 AND 15 BALLOONS	02-07-11	DAH
	C	ADDED BALLOONS 29-32 WITH ADJUSTMENT BOLT	06-12-12	DAH
	D	SEE OTHER SHEETS	04-28-16	DAH
	E	REMOVED SHEETS 5-8 WITH OBSOLETE PARTS	04-14-25	DAH



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS X.XX .XXX DO NOT SCALE DRAWING		CONTRACT NO.		TANDEMOC	
THIS DOCUMENT CONTAINS INFORMATION WHICH IS THE PROPERTY OF THIS COMPANY. DISCLOSURE, IN ANY MANNER, WITHOUT THE WRITTEN AUTHORIZATION OF THIS COMPANY IS EXPRESSLY PROHIBITED.		APPROVALS	DATE	TITLE	
NEXT ASSY		DRAWN	10-20-03	AUTOLOC SPREADER - LINKAGE	
USED ON		CHECKED		SIZE	
APPLICATION		ENG		D 65059	
		DESIGN ACTIVITY		DWG NO. XN31000A	
				SCALE	
				SHEET 3 OF 4	

LIFTING SLING

ACTIVATOR SLING

GEAR BOX ARM

66.00° MAX

USE 3/16" DIA. WIRE ROPE.
LOOP EACH END (HARDWIRE TO MASTER LINK
AND SPRING LINK (PC 6) AS SHOWN).
DETERMINE LENGTH AT ASSEMBLY AS
SHOWN. LENGTH OF ROPE, PULL TO PULL,
IS APPROXIMATELY 177" FOR A 40' SPREADER
AND 64" FOR A 20' SPREADER.

SPRING WILL NOT STRETCH UNDER NORMAL
OPERATING CONDITIONS. IT IS PROVIDED TO
PROTECT THE ACTIVATOR SLING FROM BREAKAGE
DUE TO VARIOUS OPERATIONAL ERRORS.

NOTE:
IF USING A SLING FOR DOUBLE HORN HOOK,
ATTACH CABLE TO RING CLOSEST TO GEAR BOX.

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	§DUNKL-13-8 WAS §CRE275552, 3/16" WAS 3/16" OR 1/4" - UPDATED GEAR BOX DRAWING, 177"/64" WAS 177"	12-09-09	DAH
	B	SEE SHEET 3	02-07-11	DAH
	C	REMOVED SHACKLES AROUND MASTER LINK	06-12-12	DAH
	D	SEE OTHER SHEETS	04-28-16	DAH
	E	REMOVED SHEETS 5-8 WITH OBSOLETE PARTS	04-14-25	DAH

WITH BOTH LIFTING SLING AND ACTIVATOR SLING TIGHT, THE GEAR BOX ARM SHOULD BE AT AN ANGLE OF APPROXIMATELY 66°. AN AUDIBLE "CLICK" SIGNALS THAT THE PAWL HAS ENGAGED THE NEXT TOOTH IN THE GEAR BOX. ADJUST THE ACTIVATOR SLING LENGTH TO ACHIEVE THIS "CLICK". AFTER ASSEMBLY: RAISE AND LOWER THE LIFTING SLING EIGHT (8) TIMES AND OBSERVE THAT THE FLAGS AT EACH CORNER OF THE SPREADER TURN EACH TIME THE ACTIVATOR SLING IS FULLY SLACKENED (AFTER FULLY TENSIONING THE LIFTING SLING).

6	1	§DUNKL-13-8 1/2" ALLOY CHAIN
5	1	§LEE-E250X24SS SPRING, SPECIAL 1.45 X 24" SS
4	4	§CRE1010033 3/16" WIRE ROPE SWADES
3	64"/177"	XMR00191WRCGX19 Ø3/16" WIRE ROPE
2	1	AA01010A-1PA, GEAR BOX ASSEMBLY
1	1	N3105AA, AUTOLOC SLING ASSEMBLY
PC. NO.		QUAN
		PART NO. AND DESCRIPTION

LIST OF MATERIALS

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS 1/16 .001 1/8 .002 1/4 .003 3/8 .004 1/2 .005 3/4 .006 1 .007 2 .008 3 .009 4 .010 5 .011 6 .012 7 .013 8 .014 9 .015 10 .016 11 .017 12 .018 13 .019 14 .020 15 .021 16 .022 17 .023 18 .024 19 .025 20 .026 21 .027 22 .028 23 .029 24 .030 25 .031 26 .032 27 .033 28 .034 29 .035 30 .036 31 .037 32 .038 33 .039 34 .040 35 .041 36 .042 37 .043 38 .044 39 .045 40 .046 41 .047 42 .048 43 .049 44 .050 45 .051 46 .052 47 .053 48 .054 49 .055 50 .056 51 .057 52 .058 53 .059 54 .060 55 .061 56 .062 57 .063 58 .064 59 .065 60 .066 61 .067 62 .068 63 .069 64 .070 65 .071 66 .072 67 .073 68 .074 69 .075 70 .076 71 .077 72 .078 73 .079 74 .080 75 .081 76 .082 77 .083 78 .084 79 .085 80 .086 81 .087 82 .088 83 .089 84 .090 85 .091 86 .092 87 .093 88 .094 89 .095 90 .096 91 .097 92 .098 93 .099 94 .100 95 .101 96 .102 97 .103 98 .104 99 .105 100 .106 101 .107 102 .108 103 .109 104 .110 105 .111 106 .112 107 .113 108 .114 109 .115 110 .116 111 .117 112 .118 113 .119 114 .120 115 .121 116 .122 117 .123 118 .124 119 .125 120 .126 121 .127 122 .128 123 .129 124 .130 125 .131 126 .132 127 .133 128 .134 129 .135 130 .136 131 .137 132 .138 133 .139 134 .140 135 .141 136 .142 137 .143 138 .144 139 .145 140 .146 141 .147 142 .148 143 .149 144 .150 145 .151 146 .152 147 .153 148 .154 149 .155 150 .156 151 .157 152 .158 153 .159 154 .160 155 .161 156 .162 157 .163 158 .164 159 .165 160 .166 161 .167 162 .168 163 .169 164 .170 165 .171 166 .172 167 .173 168 .174 169 .175 170 .176 171 .177 172 .178 173 .179 174 .180 175 .181 176 .182 177 .183 178 .184 179 .185 180 .186 181 .187 182 .188 183 .189 184 .190 185 .191 186 .192 187 .193 188 .194 189 .195 190 .196 191 .197 192 .198 193 .199 194 .200 195 .201 196 .202 197 .203 198 .204 199 .205 200 .206 201 .207 202 .208 203 .209 204 .210 205 .211 206 .212 207 .213 208 .214 209 .215 210 .216 211 .217 212 .218 213 .219 214 .220 215 .221 216 .222 217 .223 218 .224 219 .225 220 .226 221 .227 222 .228 223 .229 224 .230 225 .231 226 .232 227 .233 228 .234 229 .235 230 .236 231 .237 232 .238 233 .239 234 .240 235 .241 236 .242 237 .243 238 .244 239 .245 240 .246 241 .247 242 .248 243 .249 244 .250 245 .251 246 .252 247 .253 248 .254 249 .255 250 .256 251 .257 252 .258 253 .259 254 .260 255 .261 256 .262 257 .263 258 .264 259 .265 260 .266 261 .267 262 .268 263 .269 264 .270 265 .271 266 .272 267 .273 268 .274 269 .275 270 .276 271 .277 272 .278 273 .279 274 .280 275 .281 276 .282 277 .283 278 .284 279 .285 280 .286 281 .287 282 .288 283 .289 284 .290 285 .291 286 .292 287 .293 288 .294 289 .295 290 .296 291 .297 292 .298 293 .299 294 .300 295 .301 296 .302 297 .303 298 .304 299 .305 300 .306 301 .307 302 .308 303 .309 304 .310 305 .311 306 .312 307 .313 308 .314 309 .315 310 .316 311 .317 312 .318 313 .319 314 .320 315 .321 316 .322 317 .323 318 .324 319 .325 320 .326 321 .327 322 .328 323 .329 324 .330 325 .331 326 .332 327 .333 328 .334 329 .335 330 .336 331 .337 332 .338 333 .339 334 .340 335 .341 336 .342 337 .343 338 .344 339 .345 340 .346 341 .347 342 .348 343 .349 344 .350 345 .351 346 .352 347 .353 348 .354 349 .355 350 .356 351 .357 352 .358 353 .359 354 .360 355 .361 356 .362 357 .363 358 .364 359 .365 360 .366 361 .367 362 .368 363 .369 364 .370 365 .371 366 .372 367 .373 368 .374 369 .375 370 .376 371 .377 372 .378 373 .379 374 .380 375 .381 376 .382 377 .383 378 .384 379 .385 380 .386 381 .387 382 .388 383 .389 384 .390 385 .391 386 .392 387 .393 388 .394 389 .395 390 .396 391 .397 392 .398 393 .399 394 .400 395 .401 396 .402 397 .403 398 .404 399 .405 400 .406 401 .407 402 .408 403 .409 404 .410 405 .411 406 .412 407 .413 408 .414 409 .415 410 .416 411 .417 412 .418 413 .419 414 .420 415 .421 416 .422 417 .423 418 .424 419 .425 420 .426 421 .427 422 .428 423 .429 424 .430 425 .431 426 .432 427 .433 428 .434 429 .435 430 .436 431 .437 432 .438 433 .439 434 .440 435 .441 436 .442 437 .443 438 .444 439 .445 440 .446 441 .447 442 .448 443 .449 444 .450 445 .451 446 .452 447 .453 448 .454 449 .455 450 .456 451 .457 452 .458 453 .459 454 .460 455 .461 456 .462 457 .463 458 .464 459 .465 460 .466 461 .467 462 .468 463 .469 464 .470 465 .471 466 .472 467 .473 468 .474 469 .475 470 .476 471 .477 472 .478 473 .479 474 .480 475 .481 476 .482 477 .483 478 .484 479 .485 480 .486 481 .487 482 .488 483 .489 484 .490 485 .491 486 .492 487 .493 488 .494 489 .495 490 .496 491 .497 492 .498 493 .499 494 .500 495 .501 496 .502 497 .503 498 .504 499 .505 500 .506 501 .507 502 .508 503 .509 504 .510 505 .511 506 .512 507 .513 508 .514 509 .515 510 .516 511 .517 512 .518 513 .519 514 .520 515 .521 516 .522 517 .523 518 .524 519 .525 520 .526 521 .527 522 .528 523 .529 524 .530 525 .531 526 .532 527 .533 528 .534 529 .535 530 .536 531 .537 532 .538 533 .539 534 .540 535 .541 536 .542 537 .543 538 .544 539 .545 540 .546 541 .547 542 .548 543 .549 544 .550 545 .551 546 .552 547 .553 548 .554 549 .555 550 .556 551 .557 552 .558 553 .559 554 .560 555 .561 556 .562 557 .563 558 .564 559 .565 560 .566 561 .567 562 .568 563 .569 564 .570 565 .571 566 .572 567 .573 568 .574 569 .575 570 .576 571 .577 572 .578 573 .579 574 .580 575 .581 576 .582 577 .583 578 .584 579 .585 580 .586 581 .587 582 .588 583 .589 584 .590 585 .591 586 .592 587 .593 588 .594 589 .595 590 .596 591 .597 592 .598 593 .599 594 .600 595 .601 596 .602 597 .603 598 .604 599 .605 600 .606 601 .607 602 .608 603 .609 604 .610 605 .611 606 .612 607 .613 608 .614 609 .615 610 .616 611 .617 612 .618 613 .619 614 .620 615 .621 616 .622 617 .623 618 .624 619 .625 620 .626 621 .627 622 .628 623 .629 624 .630 625 .631 626 .632 627 .633 628 .634 629 .635 630 .636 631 .637 632 .638 633 .639 634 .640 635 .641 636 .642 637 .643 638 .644 639 .645 640 .646 641 .647 642 .648 643 .649 644 .650 645 .651 646 .652 647 .653 648 .654 649 .655 650 .656 651 .657 652 .658 653 .659 654 .660 655 .661 656 .662 657 .663 658 .664 659 .665 660 .666 661 .667 662 .668 663 .669 664 .670 665 .671 666 .672 667 .673 668 .674 669 .675 670 .676 671 .677 672 .678 673 .679 674 .680 675 .681 676 .682 677 .683 678 .684 679 .685 680 .686 681 .687 682 .688 683 .689 684 .690 685 .691 686 .692 687 .693 688 .694 689 .695 690 .696 691 .697 692 .698 693 .699 694 .700 695 .701 696 .702 697 .703 698 .704 699 .705 700 .706 701 .707 702 .708 703 .709 704 .710 705 .711 706 .712 707 .713 708 .714 709 .715 710 .716 711 .717 712 .718 713 .719 714 .720 715 .721 716 .722 717 .723 718 .724 719 .725 720 .726 721 .727 722 .728 723 .729 724 .730 725 .731 726 .732 727 .733 728 .734 729 .735 730 .736 731 .737 732 .738 733 .739 734 .740 735 .741 736 .742 737 .743 738 .744 739 .745 740 .746 741 .747 742 .748 743 .749 744 .750 745 .751 746 .752 747 .753 748 .754 749 .755 750 .756 751 .757 752 .758 753 .759 754 .760 755 .761 756 .762 757 .763 758 .764 759 .765 760 .766 761 .767 762 .768 763 .769 764 .770 765 .771 766 .772 767 .773 768 .774 769 .775 770 .776 771 .777 772 .778 773 .779 774 .780 775 .781 776 .782 777 .783 778 .784 779 .785 780 .786 781 .787 782 .788 783 .789 784 .790 785 .791 786 .792 787 .793 788 .794 789 .795 790 .796 791 .797 792 .798 793 .799 794 .800 795 .801 796 .802 797 .803 798 .804 799 .805 800 .806 801 .807 802 .808 803 .809 804 .810 805 .811 806 .812 807 .813 808 .814 809 .815 810 .816 811 .817 812 .818 813 .819 814 .820 815 .821 816 .822 817 .823 818 .824 819 .825 820 .826 821 .827 822 .828 823 .829 824 .830 825 .831 826 .832 827 .833 828 .834 829 .835 830 .836 831 .837 832 .838 833 .839 834 .840 835 .841 836 .842 837 .843 838 .844 839 .845 840 .846 841 .847 842 .848 843 .849 844 .850 845 .851 846 .852 847 .853 848 .854 849 .855 850 .856 851 .857 852 .858 853 .859 854 .860 855 .861 856 .862 857 .863 858 .864 859 .865 860 .866 861 .867 862 .868 863 .869 864 .870 865 .871 866 .872 867 .873 868 .874 869 .875 870 .876 871 .877 872 .878 873 .879 874 .880 875 .881 876 .882 877 .883 878 .884 879 .885 880 .886 881 .887 882 .888 883 .889 884 .890 885 .891 886 .892 887 .893 888 .894 889 .895 890 .896 891 .897 892 .898 893 .899 894 .900 895 .901 896 .902 897 .903 898 .904 899 .905 900 .906 901 .907 902 .908 903 .909 904 .910 905 .911 906 .912 907 .913 908 .914 909 .915 910 .916 911 .917 912 .918 913 .919 914 .920 915 .921 916 .922 917 .923 918 .924 919 .925 920 .926 921 .927 922 .928 923 .929 924 .930 925 .931 926 .932 927 .933 928 .934 929 .935 930 .936 931 .937 932 .938 933 .939 934 .940 935 .941 936 .942 937 .943 938 .944 939 .945 940 .946 941 .947 942 .948 943 .949 944 .950 945 .951 946 .952 947 .953 948 .954 949 .955 950 .956 951 .957 952 .958 953 .959 954 .960 955 .961 956 .962 957 .963 958 .964 959 .965 960 .966 961 .967 962 .968 963 .969 964 .970 965 .971 966 .972 967 .973 968 .974 969 .975 970 .976 971 .977 972 .978 973 .979 974 .980 975 .981 976 .982 977 .983 978 .984 979 .985 980 .986 981 .987 982 .988 983 .989 984 .990 985 .991 986 .992 987 .993 988 .994 989 .995 990 .996 991 .997 992 .998 993 .999 994 .1000 995 .1001 996 .1002 997 .1003 998 .1004 999 .1005 1000 .1006 1001 .1007 1002 .1008 1003 .1009 1004 .1010 1005 .1011 1006 .1012 1007 .1013 1008 .1014 1009 .1015 1010 .1016 1011 .1017 1012 .1018 1013 .1019 1014 .1020 1015 .1021 1016 .1022 1017 .1023 1018 .1024 1019 .1025 1020 .1026 1021 .1027 1022 .1028 1023 .1029 1024 .1030 1025 .1031 1026 .1032 1027 .1033 1028 .1034 1029 .1035 1030 .1036 1031 .1037 1032 .1038 1033 .1039 1034 .1040 1035 .1041 1036 .1042 1037 .1043 1038 .1044 1039 .1045 1040 .1046 1041 .1047 1042 .1048 1043 .1049 1044 .1050 1045 .1051 1046 .1052 1047 .1053 1048 .1054 1049 .1055 1050 .1056 1051 .1057 1052 .1058 1053 .1059 1054 .1060 1055 .1061 1056 .1062 1057 .1063 1058 .1064 1059 .1065 1060 .1066 1061 .1067 1062 .1068 1063 .1069 1064 .1070 1065 .1071 1066 .1072 1067 .1073 1068 .1074 1069 .1075 1070 .1076 1071 .1077 1072 .1078 1073 .1079 1074 .1080 1075 .1081 1076 .1082 1077 .1083 1078 .1084 1079 .1085 1080 .1086 1081 .1087 1082 .1088 1083 .1089 1084 .1090 1085 .1091 1086 .1092 1087 .1093 1088 .1094 1089 .1095 1090 .1096 1091 .1097 1092 .1098 1093 .1099 1094 .1100 1095 .1101 1096 .1102 1097 .1103 1098 .1104 1099 .1105 1100 .1106 1101 .1107 1102 .1108 1103 .1109 1104 .1110 1105 .1111 1106 .1112 1107 .1113 1108 .1114 1109 .1115 1110 .1116 1111 .1117 1112 .1118 1113 .1119 1114 .1120 1115 .1121 1116 .1122 1117 .1123 1118 .1124 1119 .1125 1120 .1126 1121 .1127 1122 .1128 1123 .1129 1124 .1130 1125 .1131 1126 .1132 1127 .1133 1128 .1134 1129 .1135 1130 .1136 1131 .1137 1132 .1138 1133 .1139 1134 .1140 1135 .1141 1136 .1142 1137 .1143 1138 .1144 1139 .1145 1140 .1146 1141 .1147 1142 .1148 1143 .1149 1144 .1150 1145 .1151 1146 .1152 1147 .1153 1148 .1154 1149 .1155 1150 .1156 1151 .1157 1152 .1158 1153 .1159 1154 .1160 1155 .1161 1156 .1162 1157 .1163 1158 .1164 1159 .1165 1160 .1166 1161 .1167 1162 .1168 1163 .1169 1164 .1170 1165 .1171 1166 .1172 1167 .1173 1168 .1174 1169 .1175 1170 .1176 1171 .1177 1172 .1178 1173 .1179 1174 .1180 1175 .1181 1176 .1182 1177 .1183 1178 .1184 1179 .1185 1180 .1186 1181 .1187 1182 .1188 1183 .1189 1184 .1190 1185 .1191 1186 .1192 1187 .1193 1188 .1194 1189 .1195 1190 .1196 1191 .1197 1192 .1198 1193 .1199 1194 .1200 1195 .1201 1196 .1202 1197 .1203 1198 .1204 1199 .1205 1200 .1206 1201 .1207 1202 .1208 1203 .1209 1204 .1210 1205 .1211 1206 .1212 1207 .1213 1208 .1214 1209 .1215 1210 .1216 1211 .1217 1212 .1218 1213 .1219 1214 .1220 1215 .1221 1216 .1222 1217 .1223 1218 .1224 1219 .1225 1220 .1226 1221 .1227 1222 .1228 1223 .1229 1224 .1230 1225 .1231 1226 .1232 1227 .1233 1228 .1234 1229 .1235 1230 .1236 1231 .1237 1232 .1238 1233 .1239 1234 .1240 1235 .1241 1236 .1242 1237 .1243 1238 .1244 1239 .1245 1240 .1246 1241 .1247 1242 .1248 1243 .1249 1244 .1250 1245 .1251 1246 .1252 1247 .1253 1248 .1254 1249 .1255 1250 .1256 1251 .1257 1252 .1258 1253 .1259 1254 .1260 1255 .1261 1256 .1262 1257 .1263 1258 .1264 1259 .1265 1260 .1266 1261 .1267 1262 .1268 1263 .1269 1264 .1270 1265 .1271 1266 .1272 1267 .1273 1268 .1274 1269 .1275 1270 .1276 1271 .1277 1272 .1278 1273 .1279 1274 .1280 1275 .1281 1276 .1282 1277 .1283 1278 .1284 1279 .1285 1280 .1286 1281 .1287 1282 .1288 1283 .1289 1284 .1290 1285 .1291 1286 .1292 1287 .1293 1288 .1294 1289 .1295 1290 .1296 1291 .1297 1292 .1298 1293 .1299 1294 .1300 1295 .1301 1296 .1302 1297 .1303 1298 .1304 1299 .1305 1300 .1306 1301 .1307 1302 .1308 1303 .1309 1304 .1310 1305 .1311 1306 .1312 1307 .1313 1308 .	
--	--	--	--