

General Trouble Shooting

P-233
819-0451

Installation Instructions

⚠ WARNING Failure to follow these instructions may result in product damage, equipment damage, and serious or fatal injury to personnel.

Contents

Electrical Troubleshooting	2
Clutch and Brake	2
Controls	3
Mechanical Troubleshooting	
Autogap Installation	4
Safety Wiring	4
Taper Bushings	5
Brushholder Mounting	5
Alignment	5
Armature Flatness	5
Environmental Problems	
Oil, Grease, Dirt, Chips, Abrasive Grit	6
Wear Pattern	
Burnishing	6
Wear Life	
Heat Dissipation	6
Warranty	back cover

General Troubleshooting For All Units

The Service Manuals listed below are available without charge. When ordering, specify form number of desired publication.

Form Number	Description
P-200	Service Manual: SF-120, 170; SFC-120, 170; PB-120, 170; SF-250, 400; SFC-250, 400.
P-201	Service Manual: PB-250, 400.
P-202	Service Manual: SF-500, 650; SFC-500, 650; SPBC-500, 650.
P-203	Service Manual: PC-500; PCC-500, PCBC-500.
P-204	Service Manual: PB-500, 650.

P-205	Service Manual: PCB-825, 1000, 1225; PCBC-825, 1000, 1225.
P-206	Service Manual: PC-825, 1000, 1225, 1525; PCC-825, 1000, 1225, 1525.
P-207	Service Manual: SFC-825, 1000, 1225, 1525; SFC-1525, Hi-Torque
P-208	Service Manual: PB-825, 1000, 1225, 1525; MB-825, 1000, 1225.
P-209	Service Manual: PB-825, 1000, 1225, 1525.
P-210	Service Manual: EC-375, 475, 650, 825, 1000, 1225.
P-211	Service Manual: EB-375, 475, 650, 825, 1000, 1225.
P-212	Service Manual: EP-170, 250, 400, 500, 825, 1000, 1525.
P-213	Service Manual: EM-50-10, 180-10, 210-10; EM-50-20, 180-20, 210-20; EM-50-30, 180-30, 210-30; EM-50-40, 180-40, 210-40.
P-214	Service Manual: PCBC-1225/1000, 1525/1225; PCB-1225/1000, 1525/1225.
P-215	Service Manual: SF-825, 1000, 1225, 1525; SF-1525 Hi-Torque
P-220	Service Manual: Controls
P-231	Service Manual: Electro-Disc
P-235	Tension Control System
P-237	Service Manual: Electrically Released FB-375, 475, 650.
P-238	Installation Manual: Motion Control
P-239	Installation Manual: Power-Supplies
P-248	Technical Manual: W-Line
P-250	Service Manual: ER-825 & 1225 Pin Drive
P-251	Service Manual: ER-825 & 1225 Spline Drive
P-252	Service Manual: MCS-129, 129-1
P-256	Service Manual: Modular Tension Brake

Ruud Trouble Shooting Manual

Tobias Bleicker



Ruud Trouble Shooting Manual:

Delve into the emotional tapestry woven by in Experience **Ruud Trouble Shooting Manual** . This ebook, available for download in a PDF format (PDF Size: *), is more than just words on a page; itis a journey of connection and profound emotion. Immerse yourself in narratives that tug at your heartstrings. Download now to experience the pulse of each page and let your emotions run wild.

https://crm.avenza.com/About/uploaded-files/default.aspx/polaris_sportsman_400_ho_2012_service_repair_workshop_manual.pdf

Table of Contents Ruud Trouble Shooting Manual

1. Understanding the eBook Ruud Trouble Shooting Manual
 - The Rise of Digital Reading Ruud Trouble Shooting Manual
 - Advantages of eBooks Over Traditional Books
2. Identifying Ruud Trouble Shooting Manual
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Ruud Trouble Shooting Manual
 - User-Friendly Interface
4. Exploring eBook Recommendations from Ruud Trouble Shooting Manual
 - Personalized Recommendations
 - Ruud Trouble Shooting Manual User Reviews and Ratings
 - Ruud Trouble Shooting Manual and Bestseller Lists
5. Accessing Ruud Trouble Shooting Manual Free and Paid eBooks
 - Ruud Trouble Shooting Manual Public Domain eBooks
 - Ruud Trouble Shooting Manual eBook Subscription Services

- Ruud Trouble Shooting Manual Budget-Friendly Options
- 6. Navigating Ruud Trouble Shooting Manual eBook Formats
 - ePub, PDF, MOBI, and More
 - Ruud Trouble Shooting Manual Compatibility with Devices
 - Ruud Trouble Shooting Manual Enhanced eBook Features
- 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Ruud Trouble Shooting Manual
 - Highlighting and Note-Taking Ruud Trouble Shooting Manual
 - Interactive Elements Ruud Trouble Shooting Manual
- 8. Staying Engaged with Ruud Trouble Shooting Manual
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Ruud Trouble Shooting Manual
- 9. Balancing eBooks and Physical Books Ruud Trouble Shooting Manual
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Ruud Trouble Shooting Manual
- 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
- 11. Cultivating a Reading Routine Ruud Trouble Shooting Manual
 - Setting Reading Goals Ruud Trouble Shooting Manual
 - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Ruud Trouble Shooting Manual
 - Fact-Checking eBook Content of Ruud Trouble Shooting Manual
 - Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
- 14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

Ruud Trouble Shooting Manual Introduction

Ruud Trouble Shooting Manual Offers over 60,000 free eBooks, including many classics that are in the public domain. Open Library: Provides access to over 1 million free eBooks, including classic literature and contemporary works. Ruud Trouble Shooting Manual Offers a vast collection of books, some of which are available for free as PDF downloads, particularly older books in the public domain. Ruud Trouble Shooting Manual : This website hosts a vast collection of scientific articles, books, and textbooks. While it operates in a legal gray area due to copyright issues, its a popular resource for finding various publications. Internet Archive for Ruud Trouble Shooting Manual : Has an extensive collection of digital content, including books, articles, videos, and more. It has a massive library of free downloadable books. Free-eBooks Ruud Trouble Shooting Manual Offers a diverse range of free eBooks across various genres. Ruud Trouble Shooting Manual Focuses mainly on educational books, textbooks, and business books. It offers free PDF downloads for educational purposes. Ruud Trouble Shooting Manual Provides a large selection of free eBooks in different genres, which are available for download in various formats, including PDF. Finding specific Ruud Trouble Shooting Manual, especially related to Ruud Trouble Shooting Manual, might be challenging as theyre often artistic creations rather than practical blueprints. However, you can explore the following steps to search for or create your own Online Searches: Look for websites, forums, or blogs dedicated to Ruud Trouble Shooting Manual, Sometimes enthusiasts share their designs or concepts in PDF format. Books and Magazines Some Ruud Trouble Shooting Manual books or magazines might include. Look for these in online stores or libraries. Remember that while Ruud Trouble Shooting Manual, sharing copyrighted material without permission is not legal. Always ensure youre either creating your own or obtaining them from legitimate sources that allow sharing and downloading. Library Check if your local library offers eBook lending services. Many libraries have digital catalogs where you can borrow Ruud Trouble Shooting Manual eBooks for free, including popular titles. Online Retailers: Websites like Amazon, Google Books, or Apple Books often sell eBooks. Sometimes, authors or publishers offer promotions or free periods for certain books. Authors Website Occasionally, authors provide excerpts or short stories for free on their websites. While this might not be the Ruud Trouble Shooting Manual full book , it can give you a taste of the authors writing style. Subscription Services Platforms like Kindle Unlimited or Scribd offer subscription-based access to a wide range of Ruud Trouble Shooting Manual eBooks, including some popular titles.

FAQs About Ruud Trouble Shooting Manual Books

How do I know which eBook platform is the best for me? Finding the best eBook platform depends on your reading preferences and device compatibility. Research different platforms, read user reviews, and explore their features before making a choice. Are free eBooks of good quality? Yes, many reputable platforms offer high-quality free eBooks, including classics and public domain works. However, make sure to verify the source to ensure the eBook credibility. Can I read eBooks without an eReader? Absolutely! Most eBook platforms offer webbased readers or mobile apps that allow you to read eBooks on your computer, tablet, or smartphone. How do I avoid digital eye strain while reading eBooks? To prevent digital eye strain, take regular breaks, adjust the font size and background color, and ensure proper lighting while reading eBooks. What the advantage of interactive eBooks? Interactive eBooks incorporate multimedia elements, quizzes, and activities, enhancing the reader engagement and providing a more immersive learning experience. Ruud Trouble Shooting Manual is one of the best book in our library for free trial. We provide copy of Ruud Trouble Shooting Manual in digital format, so the resources that you find are reliable. There are also many Ebooks of related with Ruud Trouble Shooting Manual. Where to download Ruud Trouble Shooting Manual online for free? Are you looking for Ruud Trouble Shooting Manual PDF? This is definitely going to save you time and cash in something you should think about. If you trying to find then search around for online. Without a doubt there are numerous these available and many of them have the freedom. However without doubt you receive whatever you purchase. An alternate way to get ideas is always to check another Ruud Trouble Shooting Manual. This method for see exactly what may be included and adopt these ideas to your book. This site will almost certainly help you save time and effort, money and stress. If you are looking for free books then you really should consider finding to assist you try this. Several of Ruud Trouble Shooting Manual are for sale to free while some are payable. If you arent sure if the books you would like to download works with for usage along with your computer, it is possible to download free trials. The free guides make it easy for someone to free access online library for download books to your device. You can get free download on free trial for lots of books categories. Our library is the biggest of these that have literally hundreds of thousands of different products categories represented. You will also see that there are specific sites catered to different product types or categories, brands or niches related with Ruud Trouble Shooting Manual. So depending on what exactly you are searching, you will be able to choose e books to suit your own need. Need to access completely for Campbell Biology Seventh Edition book? Access Ebook without any digging. And by having access to our ebook online or by storing it on your computer, you have convenient answers with Ruud Trouble Shooting Manual To get started finding Ruud Trouble Shooting Manual, you are right to find our website which has a comprehensive collection of books online. Our library is the biggest of these that have literally hundreds of thousands of different products represented. You will also see that there are specific sites catered to different categories or niches related with Ruud Trouble Shooting Manual So depending on what exactly you are searching,

you will be able to choose ebook to suit your own need. Thank you for reading Ruud Trouble Shooting Manual. Maybe you have knowledge that, people have search numerous times for their favorite readings like this Ruud Trouble Shooting Manual, but end up in harmful downloads. Rather than reading a good book with a cup of coffee in the afternoon, instead they juggled with some harmful bugs inside their laptop. Ruud Trouble Shooting Manual is available in our book collection an online access to it is set as public so you can download it instantly. Our digital library spans in multiple locations, allowing you to get the most less latency time to download any of our books like this one. Merely said, Ruud Trouble Shooting Manual is universally compatible with any devices to read.

Find Ruud Trouble Shooting Manual :

~~polaris sportsman 400 ho 2012 service repair workshop manual~~

polaris sportsman 600 700 atv workshop manual 2002 2003

polaris ranger 2011 800 xp manual

polaris sportsman 46x6 service manual

polaris pool cleaner instruction manual

police cadet sex games english edition

polaris xpedition 42 manual

polaris clutch spring chart

~~polaris fs fst 2006 2008 workshop service repair manual~~

~~polaris magnum 325 fuel wiring diagram~~

polaris snowmobile repair manual

polaris ranger 2x4 manual

~~polaris hd 3500 winch user manual~~

polaris custom ii 2 1972 service repair workshop manual

polaris trail boss 250 2x4 repair manual

Ruud Trouble Shooting Manual :

madeline miller the song of achilles - Mar 09 2023

web the song of achilles winner of the 2012 orange prize for fiction the song of achilles excerpt find out more buy about the book greece in the age of heroes patroclus an awkward young prince has been exiled to the kingdom of phthia here he is

nobody just another unwanted boy living in the shadow of king peleus and his golden son achilles

the song of achilles study guide literature guide litcharts - Jun 12 2023

web the song of achilles follows the events of the trojan war a fictional but significant conflict in greek mythology the war began when paris a trojan prince stole the spartan princess helen who was known to be the most beautiful woman in greece

the song of achilles by madeline miller the new york times - Apr 10 2023

web apr 27 2012 by daniel mendelsohn april 27 2012 to the long catalog of odd hybrids that inhabit greek myth the half human half equine centaurs the birdlike harpies with their human faces the man eating

the song of achilles plot overview sparknotes - Aug 14 2023

web plot overview the song of achilles is told from the perspective of achilles lover patroclus patroclus who is a young greek prince grows up with a father disappointed by patroclus mediocrity when patroclus is nine years old his father takes him to sparta where patroclus presents himself as a suitor for helen

the song of achilles wikipedia - Oct 16 2023

web the song of achilles is a 2011 novel by american writer madeline miller set during the greek heroic age it is a retelling of the trojan war as told from the perspective of patroclus

the song of achilles chapter summaries sparknotes - Feb 08 2023

web after begging peleus about achilles whereabouts patroclus learns that achilles is on the island of scyros peleus advises patroclus to get money from phoinix to travel to scyros when patroclus arrives and asks to see the king of scyros king lycomedes he is led instead to the princess deidameia

the song of achilles a novel by miller madeline amazon com - Jul 13 2023

web aug 28 2012 a thrilling profoundly moving and utterly unique retelling of the legend of achilles and the trojan war from the bestselling author of circe a tale of gods kings immortal fame and the human heart the song of achilles is a dazzling literary feat that brilliantly reimagines homer s enduring masterwork the iliad

the song of achilles by madeline miller review - May 11 2023

web sep 29 2011 13 if you were looking to retell the story of one of the great lovers in greek myth you could choose paris whose love or lust for helen launched a thousand ships against his city of troy and

madeline miller wikipedia - Jan 07 2023

web the song of achilles miller s debut novel was released in september 2011 the book took her ten years to write set in greece the novel tells the story from patroclus point of view and the bond that grew between him and achilles the novel won the 17th annual orange prize for fiction circe

the song of achilles by madeline miller goodreads - Sep 15 2023

web sep 20 2011 the song of achilles is a retelling of classic greek mythology involving patroclus and achilles specifically covering the battle of troy earlier this week i read some original greek mythology a play called medea by euripides and yes medea and her husband jason are referenced in the song of achilles

blank running record sheets marie clay pdf blueskywildlife - Feb 09 2023

web aug 5 2023 blank running record sheets marie clay pdf but end up in infectious downloads rather than reading a good book with a cup of tea in the afternoon instead they juggled with some harmful virus inside their laptop blank running record sheets marie clay pdf is available in our digital library an online access

[running record sheets by marie m clay goodreads](#) - Jun 13 2023

web aug 27 1999 running record sheets by marie m clay 0 00 rating details 0 ratings 0 reviews the convenient rip pads of running record sheets enable teachers to easily chart young readers progress available in sets of five padseach containing one hundred sheets more get a copy amazon stores libraries paperback 500 pages

running records running records how and why free file - May 12 2023

web there is a set of universal conventions developed by clay 1993 the allow teachers to accurately record what adenine child articulates as they read a script either section of a text 25 printable running record sheet forms and templates fillable

14 printable running record template marie clay forms fillable - Dec 27 2021

web developed by marie clay running records usage standard take both using a blankly piece in paper or a running record form eliminating fill now picture tutorial methods to fill out running record template marie clay

[14 printable running record template marie clay forms fillable](#) - Oct 05 2022

web fillable running record template marie clay collection of most popular mailing in a presented sphere fill indication and send ever anywhere from anywhere unit with pdffiller

blank running record sheets marie clay linda mele johnson - Jul 02 2022

web blank running record sheets marie clay is available in our book collection an online access to it is set as public so you can download it instantly our book servers saves in multiple locations allowing you to get the most less latency time to download any of our books like this one

running records engaging in and exploring running records - Dec 07 2022

web development by marie earth running records use standard recording and using a blank piece of white or ampere running record create eradicate key elements concepts of print sound and display letter phonically relationships words or places breaking terms into parts scale diagrams merges prefixes suffixes base lyric punctuation

14 printable running record template marie clay forms fillable - Jan 08 2023

web fillable running record template marie clay collection of most popular print in ampere given sphere fill sign and send

anytime anywhere from whatsoever device because pdffiller

25 printable running record sheet forms and templates - Feb 26 2022

web fillable going record sheet collection of majority popular types in a given sphere replenish sign and send anytime anywhere from any device are pdffiller

running record template marie clay cocodoc - Jan 28 2022

web cocodoc collected lots of free running record template marie clay for our users you can edit these pdf forms online and download them on your computer for free 14 day free trial features templates pricing login 14 day free trial cocodoc c edit pdf help log out features templates pricing login home catalog life log template

25 printable running record sheet forms and templates - Jul 14 2023

web running record template early childhood management record template word running record print example editable running record form blank running disc form fountas also pinnell blank running record form word document running record template marie clay

25 printable running record sheet forms and templates - Sep 04 2022

web fillable running record sheet collection of most popularity types in a given sphere permeate sign furthermore send anytime anywhere from any device with pdffiller home required business enterprise organizations operating record sheet running record template running list template

25 printable running record sheet forms and templates - Mar 10 2023

web fillable running record sheet collections of most popularity forms in a preset sphere fill sign and send anytime anywhere from any device with pdffiller

blank running records teaching resources tpt - Nov 06 2022

web 4 9 16 0 95 word document file this amazing organizer can house all of your running records for each student in your class simply print place in a binder and pull out during guided reading simple check marks self corrections errors etc in the blank box are all you need for a running record

14 printable running record template marie clay forms fillable - Aug 03 2022

web fillable running record stencil marie clay collection of most popular forms in a given shield fill sign both send anytime anyplace from anyone device the pdffiller

14 printable running record template marie clay forms fillable - Jun 01 2022

web fillable running record sample marie clay collection of most public forms at a given sphere fill sign and send ever anywhere away some device at pdffiller

running record sheets k 5 literacy connections - Aug 15 2023

web marie m clay copymasters for the revised second edition of an observation survey of early literacy achievement 2006 and literacy lessons 2005 3 page title

14 printable running record template marie clay forms fillable - Apr 11 2023

web fillable running record template marie dirt collection of most popular forms in adenine given sphere fill augury and send anytime anywhere from any device with pdffiller

14 printable running record template marie clay forms fillable - Apr 30 2022

web fillable running recording template marie clay gather of most popular contact in one given spherics permeate sign and send anytime anytime from any product at pdffiller

blank editable running records template tpt - Mar 30 2022

web i have created using microsoft publisher 2003 an editable running records form you ll see that you can type the story in the blank and at first there will be significant spacing but that is part of the settings once the full sentence is typed it will appear normal i am sorry that this has been listed as a word document

5600sxt softener system vt 11 01 vt 17 01 vt 23 01 operation manual - May 05 2023

web this installation manual is designed to guide the installer through the process of installing and starting the 5600 sxt softener this manual is a reference and will not include every system installation situation the person installing this equipment should have knowledge in the water softener installation basic plumbing skills

5600se valve squarespace - Mar 03 2023

web water softener operation manual read all instructions carefully before operation 51402 rev 7 06 performance and specifications caution these water conditioners are not intended to be used for treating water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system

welcome to softenerparts com repair parts and how to guides - Nov 30 2022

web welcome to softenerparts com repair parts and how to guides home 5600se 5600se your search for 5600se returned the following results products 30 5600 rebuild kit pistons and seals softener 79 00 add to cart 5600se sxt rebuild kit downflow 89 45 add to cart brine cam gear 5600 se sxt 18722 14 00 add to cart

elite 5600se water softener - May 25 2022

web 2 elite 5600se water softener 2022 09 05 ethnographies that stress the importance of treating the internet as both a site and product of cultural production accounts in media studies that highlight the continuities between old and new media and a range of works that have made critical interventions in the field of iranian

elite 5600se water softener manual 2023 portal nivbook co - Jun 25 2022

web 2 2 elite 5600se water softener manual 2022 05 21 electronic structure of materials cambridge university press this

book is evolved from the experience of the author who taught all lab courses in his three decades of teaching in various universities in india

elite 5600se water softener manual - Mar 23 2022

web elite 5600se water softener manual manuals in pdf pdf solutions manuals pdf repair manuals ic manuals manuals manuals manuals plus inc toshiba tv manuals 44 814 manuals and information flyers for a variety of sony brand monitors primarily professional grade garthus1 archivist filters 2 965 131

elite 5600se water softener esource svb com - Aug 28 2022

web elite 5600se water softener 3 3 electromechanical systems and devices springer science business media although we live in an era in which we are surrounded by an ever deepening fog of data few of us truly understand how the data are created where data are stored or how to retrieve or destroy data if that is indeed possible

fleck 5600se service manual pdf download manualslib - Jul 07 2023

web view and download fleck 5600se service manual online upflow brining 5600se water filtration systems pdf manual download

model 5600se downflow v2 discount water softeners - Apr 04 2023

web model 5600se downflow v2 0 master programming mode cont d 2 regeneration type 7 cont d meter delayed the control will determine that a regeneration is required when the available volume of softened water drops to or below zero regeneration is to begin immediately at the set regeneration time

model 5600se aqua systems - Aug 08 2023

web installed ahead of the water softener location of softener and drain the softener should be located close to a clean working drain and connected according to local plumbing codes by pass valves always provide for the installation of a by pass valve if unit is not equipped with one

elite 5600se water softener manual dna viz tpq - Feb 19 2022

web elite 5600se water softener manual 1 omb no 2810835902346 elite 5600se water softener manual electronic devices architectures for the nano cmos era electromechanical systems and devices electronic system level hw sw co design of heterogeneous multi processor embedded systems electromagnetic field computation

fleck 5600se service manual pdf download manualslib - Oct 10 2023

web view and download fleck 5600se service manual online downflow brining 5600se control unit pdf manual download

model 5600se downflow aqua systems - Jun 06 2023

web valve installation and start up procedures place the softener tank where you want to install the unit note be sure the tank is level and on a firm base during cold weather it is recommended that the installer warm the valve to room temperature

before operating perform all plumbing according to local plumbing codes

elite 5600se water softener manual - Apr 23 2022

web elite 5600se water softener manual 70 934 items education 02 may nick b 05 jun 129 645 130k mar 23 2022 03 22 david c 26 jul contributed manuals awaiting sorting and integration priority service your manual is processed by our team in priority order for a fee of 50 we will expedite the delivery of your instruction manual

elite 5600se water softener esource svb com - Jul 27 2022

web elite 5600se water softener downloaded from esource svb com by guest ayers hooper electronic tap changer for distribution transformers prentice hall modern electronic systems consist of a fairly heterogeneous set of components today a single system can be constituted by a hardware platform frequently composed of a mix of

elite 5600se water softener manual pdf download pdf manual - Oct 30 2022

web oct 2 2016 make your skin feel softer with this 420 elite series water softener the water softener prevents water hardness manual recommended setting the softener 5600se digital backwashing timer water fleck is the industry leader in control valves that power water softeners 5600se digital backwashing timer download service manual

pentair 5600se service manual pdf download manualslib - Sep 09 2023

web view and download pentair 5600se service manual online 5600se water dispenser pdf manual download

fleck 5600sxt downflow manual pentair - Jan 01 2023

web caution water pressure is not to exceed 125 psi 8 6 bar water temperature is not to exceed 110 f 43 c and the unit cannot be subjected to freezing conditions warning the system must be depressurized before removing any connections for servicing installation instructions 1 place the softener tank where you want to install the unit

elite 5600se water softener manual medair - Sep 28 2022

web elite 5600se water softener manual available in slate blue or natural silver the elite dragonfly g3 has a sleek chassis crafted from partly recycled magnesium and aluminum with what hp calls rounded pillow corners they make it

5600se downflow v2 - Feb 02 2023

web proper softener operation requires the calculation of a brine tank refill time pounds of salt used per regeneration cycle 3 blfc size refill time in minutes example 10 lbs salt 3 0 25 gpm 13 3 minute refill consult valve service manual for actual step location use the set up and set down buttons to adjust this value 7