HANDBOOK & ADVANCE STUDY GUIDE

Revised October, 2006

CALIFORNIA RANGERS, INC.

First Regiment Cavalry

While World War II was still in progress, the California State Militia, which was an arm of the Ninth Army Service Command, formed a Junior Mounted Militia to aid the Southern Sector in local patrol and civil defense duties. The group was composed of high school aged boys and was commanded by Militia Officers.

The combination of military science techniques and horse Cavalry proved to be a great benefit to the young members as they developed a high degree of initiative and character. As a consequence, a Charter was issued by the State of California on February 25, 1944 designating this program to be continued under the name of the California Rangers and that it be directed by a non-profit corporation.

In the early years all Troops rode English style or flat saddle, but soon the growing popularity of the Western saddle introduced itself to the ranks. More recently, CA Rangers, Inc. has introduced authentic (over one hundred years old) McClellan Cavalry Saddles for use by the organization's membership. Both English and Western styles of riding are currently taught and membership is open to boys and girls between the ages of nine and nineteen.

The California Rangers is best suited to young people who both like to ride horses and be in the outdoors. However, the program does not merely teach horseback riding. Each member must strive to better himself/herself by promoting through the ranks as he/she is learning riding techniques, animal husbandry, military science and precision drill maneuvers. This competitive environment within the Military structure results in the development of leadership ability, self respect and both mental and physical discipline. Each member develops respect for his/her officers and fellow riders, as well as responsibility and discipline.

These personality traits and characteristics are the true product of the California Rangers program. Members excelling in these areas become Cadet Commanders (or leaders) of their Troop (or Platoon).

All this is made possible ...

"THROUGH THE MAGIC OF THE KID AND THE HORSE"

CALIFORNIA RANGERS, INC. PLEDGE

I PROMISE...

To love my God and Country,

To lead a clean and honest life,

To respect and defend the Constitution of the United States, The Bill of Rights and the Laws of the great State of California,

To make the Golden Rule my rule of life,

To stand for right against wrong wherever I may be,

To strive by my conduct to be an example of good citizenship,

To do my work honestly and cheerfully no matter how menial it may be,

To walk before God humbly and before my associates with a high heart,

To be always and at all times a good American,

So help me God.

DUTIES AND PRIVILEGES OF CADET CALIFORNIA RANGERS

Duty: Duty is the most important word in the cadet's vocabulary. By Duty, we mean that both Officers and cadets strive constantly to demonstrate their best abilities whenever riding or performing official California Rangers' functions.

Morale: "I will tell you what morale is," said Major General James A. Ulio, U.S.A., "it is when a Trooper thinks his Regiment is the best in the world, his Troop is the best in the Regiment, his Squad is the best in the Troop, and that he himself is the best Trooper in the outfit."

Loyalty: This attribute is among the most important of all qualities essential to the makeup of an Officer or a cadet. By definition, loyalty is a true, willing and unfailing devotion to a cause (and to the Regiment).

Obligations: All ranks in the California Rangers have the following obligations and responsibilities:

1. Report every week at the designated time and place. If you will be absent, it is your duty to notify your Troop Commander, Troop Adjutant or Cadet Commander (depending on that particular Troop's protocol or policy).

2. Pay for the rental of your horse on any occasion involving mounted activity.

3. Pay the quarterly dues established by the Organization. Normally, this means paying dues before the first ride night of every quarter.

4. Purchase and wear the regulation California Rangers uniform to all official activities. This (among others obligations) is required before becoming a Trooper.

5. Participate in the regular Troop activities and attend special Troop and Regimental activities as arranged.

6. Follow military procedure and comply with all regulations of your Troop, Post, and Regiment.

7. Learn and perform the duties of your rank as outlined herein.

CALIFORNIA RANGERS COMMAND STRUCTURE

Ranks – Highest to Lowest

Senior Officers

- Colonel
- Lieutenant Colonel
- Major
- Captain
- 1st Lieutenant
- 2nd Lieutenant

Junior Grade Officer

- Major
- Captain
- 1st Lieutenant
- 2nd Lieutenant
- Junior Grade Member (this classification has no official rank)

Cadet Core

Cadet Officers

- Captain
- 1st Lieutenant
- 2nd Lieutenant

Cadet Non-Commissioned Officers (NCO)

- First Sergeant
- Platoon Sergeant
- Stable Sergeant
- Corporal

Cadets

- Lance Corporal
- Trooper First Class
- Trooper
- Remount

All ranks will progress and be promoted by authorization from the Regimental Commanding Officer in accordance with the standards of California Rangers: Attitude, Ability (Academic and Horsemanship), and Attendance.

POSITIONS & DUTIES

Regimental Commanding Officer - The Regimental Commanding Officer is the highest ranking senior officer in the Regiment. He/She normally holds the rank of Colonel and is charged with leading the Regiment. There is only one Regimental Commanding Officer.

Regimental Executive Officer – The Regimental Executive Officer is the second highest ranking senior officer in the Regiment. He/She normally holds the rank of Lieutenant Colonel and is charged with assisting the Regimental Commanding Officer with the leadership of the Regiment. There is only one Regimental Executive Officer in the Regiment.

Post Commander – The Post Commander is a senior officer who normally holds the rank of Major and is charged with the operation of his/her Post. He/She reports directly to the Regimental Executive Officer. There is only one Post Commander per Post.

Regimental Adjutant – The Regimental Adjutant is a senior officer who normally holds the rank of Major and is charged with the administrative duties of the Regiment. He/She reports directly to the Regimental Executive Officer. There is only one Regimental Adjutant in the Regiment.

Regimental Drill Master – The Regimental Drill Master is a senior officer who normally holds the rank of Major and is charged with the drill training within the Regiment. He/She reports directly to the Regimental Executive Officer. There is only one Regimental Drill Master in the Regiment.

Regimental Equitation Officer – The Regimental Equitation Officer is a senior officer who normally holds the rank of Major and is charged with the equitation training within the Regiment. He/She reports directly to the Regimental Executive Officer. There is only one Regimental Equitation Officer in the Regiment.

Regimental Military Science Officer – The Regimental Military Science Officer is a senior officer who normally holds the rank of Major and is charged with the education of military and equine science within the Regiment. He/She reports directly to the Regimental Executive Officer. There is only one Regimental Military Science Officer in the Regiment.

Regimental Quartermaster – The Regimental Quartermaster is a senior officer who normally holds the rank of Major and is charged with the physical assets of the Regiment. He/She reports directly to the Regimental Executive Officer. There is only one Regimental Quartermaster in the Regiment.

Post Executive Officer – The Post Executive Officer is a senior officer who is charged with assisting his/her Post Commander with the operation of his/her Post. He/She reports directly to the Post Commander. There is only one Post Executive Officer per Post.

Post Adjutant – The Post Adjutant is a senior officer who is charged with the administrative duties of the post. He/She reports directly to the Post Executive Officer. There is only one Post Adjutant per post.

Troop Commanding Officer – The Troop Commander is a senior officer who normally holds the rank of Captain and is charged with the day to day operation of his/her troop. He/She reports directly to the Post Commanding Officer. There is only one Troop Commander per troop.

Troop Executive Officer – The Troop Executive Officer is a senior officer who is charged with assisting his/her Troop Commanding Officer with the operation of his/her troop. He/She reports directly to the Troop Commander. There is only one Troop Executive Officer per troop.

Troop Adjutant – The Troop Adjutant is a senior officer who is charged with the administrative duties of the troop. He/She reports directly to the Troop Executive Officer. There is only one Troop Adjutant per troop.

Officer in Training (OIT) – An OIT is an adult probationary member who is in training to become an officer of the Regiment. He/She holds no rank and shall be addressed by personnel as Mr., Mrs., or Ms. There are an unlimited number of OITs in the Regiment.

Junior Grade Officer – A Junior Grade Officer is a member of California Rangers who has reached their 18th birthday prior to December 1st and has successfully graduated from the cadet core (by approval of the Regimental Commanding Officer) generally as a First Sergeant or above. The appointment to Junior Grade Officer will be effective at the close of the Regimental Competition. A Junior Grade Officer is normally assigned to a troop and charged with assisting Troop Staff with the day to day activities of the troop. Since a Junior Grade Officer is not a senior officer, then he/she may not field a troop. There are an unlimited number of JGO's in the Regiment.

Junior Grade Member – A Junior Grade Member is a member of California Rangers who has reached their 18th birthday prior to December 1st and has successfully graduated from the cadet core (by approval of the Regimental Commanding Officer) generally as a Platoon Sergeant or below. The appointment to Junior Grade Member will be effective at the close of the Regimental Competition. A Junior Grade Member has no rank and is normally assigned to a troop and charged with assisting the Troop Staff with the day to day activities of the troop. Since a Junior Grade Member is not a senior officer, then he/she may not field a troop. There is an unlimited number of JGM's in the Regiment.

Troop Cadet Commander – The Troop Cadet Commander is normally the highest ranking cadet in the troop and is charged with the leadership of the troop. He/She is responsible to the Troop's Senior Commander for the execution of all activities pertaining to the unit. He or she must be in touch with his/her Troop and know their individual characteristics and capacities, their degree of training, their morale and their discipline. There is only one Cadet Commander per troop.

Platoon Leader - The Platoon Leader is normally the second highest ranking cadet in a Troop and generally rides the position of Guide-On. With a full compliment of cadets, he/she will hold the rank of Lieutenant. He/She is charged with assisting the Troop Cadet Commander with the training of the unit and it is essential that the Platoon Leader demonstrate his/her ability to exercise command of the Troop in the absence of the Troop Cadet Commander. The platoon

leader assists the Cadet Commander in motivating the Troop through example to perform their obligations and responsibilities to their best level. There is one Platoon Leader per platoon.

First Sergeant - The First Sergeant directs the formation of the Troop at all assemblies. Above all others, he/she is involved in all aspects of the Troop's activities and informs the Troop Cadet Commander of matters which affect the morale and efficiency of the organization or its members. There is only one First Sergeant per troop.

Platoon Sergeant - The Platoon Sergeant is primarily concerned with the Platoon. He/she directs the formation of the Platoon and is responsible for providing for the welfare of the Platoon under all conditions. The Platoon Sergeant has supervision over the squads comprising the platoon and deals with these squads by chain of authority through the squads' Corporals. There is a Platoon Sergeant for each platoon within a troop.

Stable Sergeant - The Stable Sergeant has the responsibility of making sure all tack and equipment is in good working condition and properly adjusted on the horses prior to mounting. The Stable Sergeant holds the Officers' horses while the rest of the Troop is mounting. He/she may ride to the rear of the Troop during drill always checking for tack failure or other conditions which might make it unsafe for the Troop or a Trooper to continue the ride. Should such a condition arise, the Stable Sergeant halts the Troop at once and takes the necessary steps to correct the situation. There is only one Stable Sergeant per troop.

Horse Holder - When it is necessary for the Stable Sergeant to hold more than four horses, a designated Horse Holder (another assigned position) will assist and will stand to the left of the Stable Sergeant.

Corporal - The Corporal is the squad leader. He/she exercises personal control over the seven Troopers, TFCs or Lance Corporals who comprise the squad. In this capacity, the Corporal must deal with different personalities constantly. The Corporal receives all suggestions and/or complaints, passing on to the Platoon Sergeant only those which he/she cannot personally resolve. There is only one Corporal allowed per squad.

Lance Corporal ("LC") - The LC is in training to become a Corporal. The LC rides in the rightmost position (Number One) in the squad and has the responsibility for the three Troopers to his/her left. There are two LC's allowed per squad.

Trooper First Class ("TFC") - The TFC is a Trooper who has shown more than average ability in horsemanship and military science and is in training to become a Lance Corporal. The TFC rides the position assigned by the Cadet Commander. There are an unlimited number of TFCs per troop.

Trooper - A Trooper is a Cadet who has passed the required written and mounted tests, has obtained a complete uniform and wears it to all Troop meetings. Upon becoming a Trooper the Cadet earns the right to wear the shoulder patch of the California Rangers. There is and unlimited number of Troopers per troop.

Remount - The Remount is the "beginner" in Rangers. He/she receives basic training in horsemanship and Cavalry drill. He/She is expected to study assigned readings from both the

Revised California Rangers Handbook and Horse Industry Handbook, and to learn military courtesy. There is an unlimited number of Remounts per troop.

MILITARY COURTESY AND DISCIPLINE

Salute - The salute is the military method of respect by which Officers and Cadets greet each other and is performed by the Cadet when an officer is present. A uniformed Officer is always issued a salute by a Cadet or Junior Officer as outlined below:

When to salute an Officer - The salute is rendered by Cadets to Commissioned Officers (Lieutenants and up) and from one Officer to another:

A. OUTDOORS

1. When Dismounted -

When a Cadet meets or passes a Commissioned Officer, or one Officer meets or passes another of higher rank, or when an Officer is acknowledging the salutes of others. NOTE: Barns, stables, arenas etc., are usually considered outdoors. When preparing to salute an officer or a superior officer, the lower ranking individual must come to a complete stop before saluting. Hold the salute until the person has passed or the salute is returned. When passing in review and at ceremonies, execute and hold the salute until you are six paces beyond the person saluted. Look the person being saluted squarely in the eyes at the first motion of the salute and thereafter hold the head and eye of EYES RIGHT until the salute is completed.

When a ranking Officer arrives on the Post, the first person to see him/her calls all Cadets to attention. If they are in formation, the Officer, Noncommissioned Officer or Cadet leading the unit salutes; if they are not in formation, they all salute on command of "Present Arms" by the Senior rank present.

> NOTE: If an Officer arriving is of lower rank than another one already present, protocol dictates no salute is required unless that Officer addresses you. If the Officer remains at the Post, it is not necessary to salute again, unless he or she is addressed, or until the Officers leave the premises.

2. When Mounted -

The salute is rendered only at the walk or the halt. Cadets and Junior Officers salute their Senior Officers when the highest rank is mounted, exactly as on foot. If a mounted Cadet or Officer wishes to talk to a superior Officer who is not mounted, he/she will dismount before addressing/answering the Officer, unless ordered to do otherwise.

B. INDOORS

The salute is rendered indoors only when a Cadet, Noncommissioned Officer or Junior Officer reports to a Commissioned Officer. When a lower rank reports or speaks to an Officer, he/she salutes before delivering the message and again when departing.

C. IN GENERAL

1. In reporting to an Officer for orders, the Cadet or Junior in rank marches directly to the Officer, halts, comes to attention and salutes. When he/she leaves, he/she salutes, performs an about face and departs.

2. Remember that the salute is rendered by a lower rank to a higher and that the higher rank returns the salute. The higher rank should not salute first; he/she should wait for the lower rank to salute. The lower rank must stand still, at attention when saluting, and look directly into the eyes of the higher rank and hold the salute until it is returned. The lower rank holds the salute until the superior rank discontinues the salute. The exception is when a lower rank is merely passing a higher rank and is not going to speak to the higher rank. Here the salute is given when the lower rank is within six paces of the higher rank, and is held until it is returned or the lower rank is six paces beyond the one being saluted.

3. Do not salute an Officer: when in formation, when indoors (unless addressing or being addressed by an Officer), when working, when training/practicing, when playing games or when leading or holding a horse.

4. In asking a question, a Junior rank always prefaces the question with the word "Sir/Ma'am." Example: "Sir/Ma'am, do you want me to call roll?" In answering a question, the “Sir/Ma’am” comes at the end of the sentence. Example: In response to the question, "Where is Trooper Brown?", the answer would be "She is getting her horse, Sir/Ma'am."

5. When the American Flag is carried by a mounted unit, it is known as the NATIONAL STANDARD. When displayed, it is saluted by all Officers and members in uniform. If in formation, the Senior Officer (or Officer of the Day) will bring the unit to attention and command, "Present Arms," as the National Standard passes. When the National Standard has passed, the Officer will order the release of the salute by stating, "Order Arms". All mounted personnel are to remain mounted and proceed as outlined above.

6. The Star Spangled Banner has been designated the National Anthem. It should never be played other than as it is written and never as part of a medley. When played, everyone in uniform should stand at attention and salute. If in formation, the uniformed unit will be faced toward the flag; if not in formation, individual members in uniform will face the flag and render a salute. Civilians (i.e., not in

uniform) should remove hats and place their right hands over their hearts. Rangers in uniform will stand at attention and salute. Mounted Rangers will remain mounted while performing a salute, if halted or at a walk.

7. If a Cadet, who is in ranks but who is not at attention, is addressed by an Officer, he/she should immediately come to attention and respond to the question. The Cadet is not expected to salute

8. When reporting your name at Inspections (or at other appropriate times), the following is the correct and proper response:

(1) Rank

(2) Last name

(3) Troop

(4) Post

(5) First Regiment of Cavalry

(6) California Rangers

(7) Acting position (if applicable)

(8) Sir or Ma'am

EXAMPLE: "Trooper Smith, Troop A, Post I, First Regiment of Cavalry, California Rangers, Ma'am/sir."

9. If a Cadet or a CA Rangers junior in rank is walking or standing with an Officer Senior in rank, the junior rank should always walk or stand to the left of the Senior rank.

UNIFORM

CADETS
(Remounts, Troopers, TFC's, LC's, Corporals, Sergeants. and Cadet Officers)

Headgear:

When not riding a horse, the CA Rangers will wear a black western hat complete with a gold hat cord, with the acorns ending one inch from the edge of the brim. In addition, a crossed sabers insignia will be centered on the crown of the hat.

All CA Rangers shall wear a properly fitted riding helmet when mounted or riding a horse. The riding helmet shall be SEI (Safety Equipment Institute) and ANSI (American National Standards Institute) certified per the American Society of Testing and Materials ("ASTM"). The helmet shall meet the following CA Ranger uniform guidelines: the helmet visor shall not exceed two inches, the helmet should fit the head properly and shall be secured with black straps (the straps shall not exceed one inch from the buckle), the helmet shall be covered with a black lycra or nylon cover, and a crossed saber insignia will be centered on the crown of the helmet cover.

Shirt and Necktie:

English - Gold Western shirt and black Western tie. The tie should be tucked in between second and third buttons of shirt.

Western - Gold Western shirt and black western tie. Tie remains outside of shirt. The two loose ends of the tie will be equal (within one inch) in length.

Belt:

Black web with brass service buckle. Brass tip should extend no more than one inch beyond buckle.

Trousers:

English - Black polyester or poly-blend breeches with gold braid between ½ - ¾ inch wide (standard issue) down both outside seams.

Western - Black polyester or poly-blend western pants with gold braid between ½ - ¾ inch wide (standard issue) down both outside seams. The bottom of the Western pants shall include a black elastic strap securing the pants (to the bottom of the boot).

Footgear:

English - Black, knee-high English riding boots.

Western - Black western boots.

Jacket: (Optional)

Black nylon, full zipper front, button cuffs, standard collar. Jackets worn at official CA Rangers' functions will be zipped one-quarter closed.

Distinctive Insignia:

Triangular Shoulder Patch – The standard issue California Rangers patch shall be worn one inch below the shoulder seam in the center of the left sleeve by all ranks above Remount.

Service Stripes (Hash Marks) - One for each year of honorable service. To be worn one inch above the center of the cuff of the left sleeve (slanted upward from back to front). A star represents five years of honorable service and is to be worn in the same fashion (i.e., one inch above the left sleeve, centered) with additional service stripes being located one inch above the star.

Grade Insignias - (Trooper's, TFC's, LC's, Corporal's, Sergeants) - Appropriate California Ranger chevrons to be worn one inch beneath the Trooper Patch on the left sleeve and the equivalent on the right sleeve.

Crossed sabers:

NCO's and Cadets: one Crossed Saber Disk in front center of hat/helmet and one centered on each point of the shirt collar.

Cadet Officers: one Crossed Sabers (no disk) on front center of hat/helmet and left collar point. Appropriate insignia of rank on right collar point.

Name Identification Tag: The name tag shall be 3” by 1” with the name written in Arial font. Last name and Troop insignia on a black background (with gold print) shall be worn above the right pocket.

JUNIOR AND SENIOR OFFICERS

Uniform items are the same as cadets, with the exception of the following:

Senior Officers: Black shirt, gold tie, metallic hat cord, gold citation cord and yellow name tag with black riding (absent troop designation).

Junior Grade Officers: None.

Junior Grade Members: JGMs wear crossed sabers on collar (as compared to rank insignia worn by JGOs on right collar lapel.)

SPECIAL DRESS

On Special dress occasions (shows, parades, etc.) the following shall be added to the above required dress uniform:

Citation Cord -

Senior Officers: Plain Gold Regimental Cord

All Others: Black and Gold Regimental Cord

Gloves -

With the exception of the Regimental Staff, all uniformed personnel shall wear black, unlined leather gloves during dismounted assemblies and mounted activities. Regimental Staff shall wear white poly/cotton gloves during inspection and the aforementioned black gloves while riding.

RANK INSIGNIAS

RANK INSIGNIA PLACEMENT

Rank Insignia Patches: The Trooper patch shall be worn on the left shirt sleeve one inch below the shoulder seam and centered on the Ranger's shoulder (not necessarily the shirt seam). All other rank insignias patches shall be worn on both the left and right shirt sleeves. The patch on the left shirt sleeve shall be positioned one inch below the bottom of the Trooper patch and centered on the upper arm. The second rank insignia patch shall be worn on the right sleeve at a level equivalent to the left patch and centered on the upper arm.

Collar Rank Insignia: All collar rank insignia shall be placed on the right collar, equal distance from both sides of the tip of the collar and parallel with the edge of the collar which lies nearest the tie. Crossed sabers shall be placed on the left collar, equal distance from both sides of the tip of the collar and positioned so that the sabers appear to be cutting the neck.

REMOUNT

- **No rank insignia**

TROOPER

- **Standard issue Trooper patch**

TROOPER FIRST CLASS

- **One chevron on top**

LANCE CORPORAL

- **One chevron on top/one cradle on bottom**

CORPORAL

- **Two chevron's on top**

STABLE SERGEANT

- **Three chevron's on top**

PLATOON SERGEANT

- **Three chevron's on top/one cradle on bottom**

FIRST SERGEANT

- **Three chevron's on top/three cradle's on bottom**

2ND LIEUTENANT

- **Single gold bar**

1ST LIEUTENANT

- **Single silver bar**

CAPTAIN

- **Two large silver bars**

MAJOR

- **Gold, seven-pointed oak leaf**

LIEUTENANT COLONEL

- **Silver, seven-pointed oak leaf**

COLONEL

- **Silver Eagle**

The Silver Eagle is also the symbol of the Eagle Troop & Regimental Staff

- **Eagle Troop wears one large eagle on hat/helmet & one small eagle below competitive ribbons (above if retired member)**
- **Regimental Staff wears one large eagle on hat/helmet**

All Officers, 2nd Lieutenant and above

- **Wears full uniform with one gold crossed saber on left collar and one gold crossed saber on hat (with the exception of the Regimental Staff who wear a Silver Eagle)**

Officer In Training (OIT)

- **Wears full uniform with gold colored crossed sabers, one on each collar**
- **Shall be addressed as Mr., Mrs. or Ms.**

Junior Grade Officer (JGO) or Junior Grade Member (JGM)

- **Wears full cadet uniform of respective rank**

UNIFORM RIBBONS

RIGHT POCKET – COMMANDER'S AWARDS

Mr. & Ms. California Ranger
blue with gold stripe and gold border

Troop of the Year
blue with gold border

Rank of the Year
blue with gold border and torch

Eagle of the Year (Mason Award)
blue with vertical gold stripes and gold border

Maryland Rangers, Second Regiment Cavalry Training
gold with blue, white and red stripes with gold border

Presidential Inaugural Parade Participant
blue, white and red with gold border

LEFT POCKET – COMPETITIVE AWARD RIBBONS

First Place Drill
solid red

High Point Equitation (Conrad Award)
purple and white

First Place Inspection
blue in center, red and white

First Place California State Junior Drill Team Champions
blue with red and white stripes

Most Improved Troop
blue and gold

First Place Equitation
solid green

First Place Equitation in Two's or Four's
red and green vertical stripes

First Place in the Academic Decathlon, Individual (Deken Award)
green with red and gold stripes

First Place in the Academic Decathlon, Troop
green with gold stripes

First Place Senior Drill Team Competition
green and gold diagonal

Outside Competition Helpers
black and white stripes

First Place Outside Competition
thin blue, white and red stripes

First Place California State Junior Color Guard Competition
blue, white, red and gold stripes

First Place Reno Rodeo State Junior Drill Team Competition
blue, gold in center, red

First Place WSEDTA[1] Jr. Drill Team Competition
navy blue with two orange stripes

Grand Champion Outside Competition
blue, yellow band and white

Overall High Point
blue middle with white and grey stripes on each end

First Place Cow Palace Junior Drill Team Competition
white middle with red, yellow and blue

Commander's Special Award (Stigers Award)
green with white stripes

Academic Excellence Award
To be determined

All ribbons should be placed on the shirt such that those containing a blue border (e.g., Most Improved Troop, 1st Place Reno Rodeo Junior Drill Competition) should be oriented (pointed) to

[1] Western States Equestrian Drill Team Association

the wearer's right (toward the heart). This will ensure uniformity of presentation and that no one is wearing an authorized ribbon in an unauthorized manner (e.g., upside down).

UNIFORM ILLUSTRATION

1. Commander's Awards.
2. Name plate – wear on outside right pocket of a jacket if wearing one.
3. Competitive ribbon awards.
4. Eagle Troop insignia (worn below ribbons if active; worn above ribbons if inactive)
5. Tie – English riders wear tie tucked in between 2nd and 3rd buttons. (See page 10 for Western).
6. Cross Saber Discs – centered on crown of hat/helmet and each disc on shirt collar. Sabers should appear to "cut" the neck of the wearer.
7. Citation button - button worn equidistant between collar and point of shoulder and in line with point of the Trooper's Parch; Eagle's feet forward.
8. Trooper's Patch – located 1" below the seam of the shoulder and centered on sleeve
9. Grade (Rank) insignias for TFCs-First Sergeant – located 1" below the bottom or the Trooper patch on the left sleeve and positioned equidistant on the right sleeve.
10. Belt buckle – tip faces to wearer's left and extends 1" from buckle.
11. Hash marks – slanted 1" above cuff in a "10 o'clock to 4 o'clock position.
12. 5 year star and hash marks – star 1" above cuff and any hash marks 1" above star.
13. Hat cord – acorns should be positioned 1" away from the brim of the hat.

1. Commander's Awards (all ribbons with gold border) - ribbon bars over name plate should be no longer than two ribbons wide.

- Rank of the Year - One torch represents one win, two torches represents two wins, etc.
- All other ribbons - One silver star in addition to the ribbon represents two wins, two silver stars in addition to the ribbon represents three wins. Gold star in addition to the ribbon represents 6 wins.

2. Name Plate - Cadets – yellow print on black background.

Officers – black print on yellow background.

3. Competitive Awards - ribbon bars should be no longer than three ribbons wide and worn on left side.

4. Eagle Troop insignia:

Current/Active Member - Eagle is placed below competitive awards.

Retired/Past Member (by authorization of the Regimental Commanding Officer) - Eagle is placed above competitive awards.

5. Tie - English tie tucked in between 2nd and 3rd buttons. English and Western tie styles should have both ends with matching/equal distances from knot. Ties worn by Regimental Staff and Eagles shall be tucked between the collar and first button hole. the tie shall be flat ironed before wearing.

6. Crossed Sabers Disks - centered on front of hat (sabers pointing up) and each collar point perpendicular to neck line, "cutting" neck and equally spaced in center of collar points.

- How to Polish - unscrew back from disc and remove sabers. Polish disc alone and sabers alone. Clean off excess polish from sabers (use toothpick for crevices), don't forget to clean polish off the back of sabers. Screw the sabers back on to the discs (use a rag or something soft to avoid fingerprints from adhering to the clean disc). WARNING – THE NEWLY ISSUED BRASS IS NOT TO BE CLEANED WITH ABRASIVES SUCH AS BRASSO. THE MANUFACTURER RECOMMENDS CLEANING WITH A WET (WATER) RAG. *Also see "Helpful Uniform Hints" in the "Inspection" section of this website.*

7. Citation Cord:

Button – positioned ½ distance between collar and shoulder seam, eagle's head towards back & eagle's feet towards chest, "flying" off shoulder - pin button from underneath shirt, do not sew on button.

Cord - "Flower" in front with single cord including brass-piece from back through middle loop of "flower" lying on front chest. Large loop from back braid is placed over button first with small loop (behind "flower") placed over button and large loop. The braid is placed underneath arm and the two loose cords are placed over arm. The two loose cords should be brought over the top of the braid and sewn or pinned to the left side of the braid on the backside of the shoulder. The braid it self should be pinned to the shirt at approximately the yolk seam. The pin should not visible on the outside of the shirt. Polish the brass tip.

8. Trooper Patch - centered one inch below the left shoulder seam centered on upper arm of sleeve. Sew patch on from the inside of the edges (do not sew from patch to shirt where threads can be seen). Use black thread for black parts and gold thread for gold parts.

9. Grade Insignia (chevrons) - located 1" below the Trooper Patch and centered on the left sleeve; and located equidistant on the right sleeve. Sew patch on from the inside edges (do not sew from patch to shirt where treads can be seen).

10. Belt & Buckle - brass tip should extend one inch beyond buckle (including brass and black belt). Polish tip, buckle and top and bottom sides of buckle, remove all excess polish prior to wearing. WARNING – NEWLY ISSUED BELT BUCKLES ARE NOT TO BE CLEANED WITH ABRASIVES SUCH AS BRASSO. THE MANUFACTURER RECOMMENDS CLEANING WITH A WET RAG. Also, see "Helpful Uniform Hints" in the "Inspection" section of our website.

11. Hash Marks - Placed one inch above the cuff and placed at a 45 degree angle with the upper portion pointed towards the chest. Sew hash marks on from the inside edges (do not sew from patch to shirt where treads can be seen).

12. 5 Year Star and Hash Marks - One inch above cuff and oriented so that one of the points faces up the sleeve. The black portion surrounding the star shall be trimmed to be no more than ¼. Additional stars should be have ½ inch between points and oriented at the same angle. Any hash marks should be placed so that the yellow portion is ½ inch from the point of the nearest star. Sew star on from the inside edges (do not sew from patch to shirt where treads can be seen).

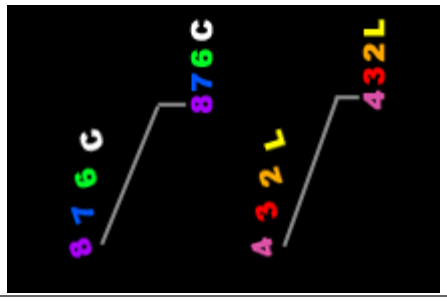
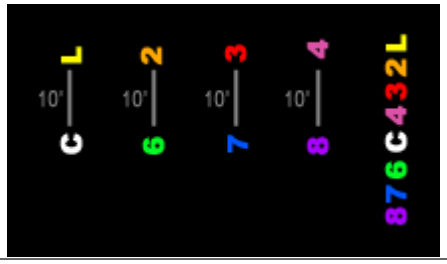
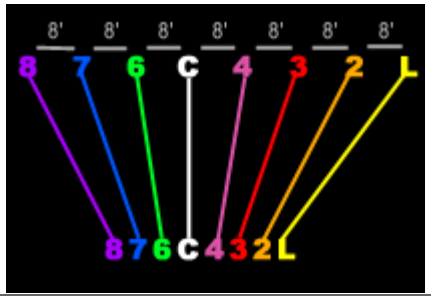
13. Hat Cord - acorns should be positioned 1 inch from brim of the hat.

14. Military Creases (not shown) – NOTE: Iron shirt completely flat prior to placing creases, there are a total of seven creases on the military shirt:

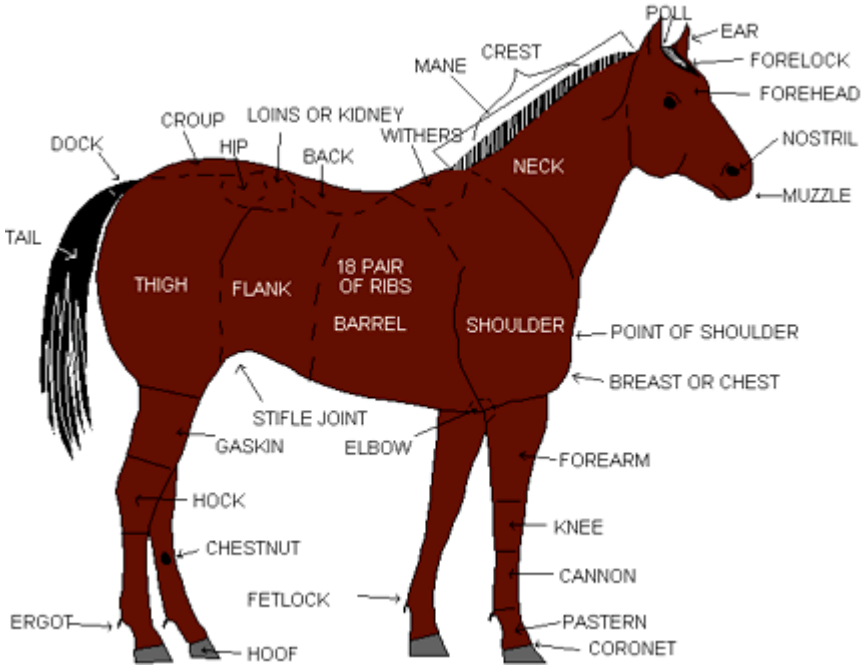
- Sleeves (both) - lay sleeve flat from under-seam to center line, iron full sleeve placing crease down full center line (directly opposite under-seam). Creases should run through center line of patches. However patches should not be creased.
- Front (both sides) - creases should be placed through the center of the pockets (through full pocket including flap) and run down full shirt and up to the "yoke". Do not crease above "yoke". Creases do not need to meet "yoke" point.
- Back - total of three creases on back:
    - Middle - take both side seams and place them together to create a center line down the middle of the back. Crease down this center line (which should also meet the center yoke point), no creases above the "yoke" point.
    - 2 Quarter-marks - take the new center line crease and place it together with one of the side seams and place a crease down this new quarter-mark. Repeat for opposite side. The back of your shirt should now be divided into four equal parts separated by three creases, none extended above the "yoke" of the shirt.
- AVOID double creases - Older shirts may have previous incorrect crease marks already established, prior to inserting new creases use spray starch to iron the shirt flat and remove as much of these old crease lines as possible. When inserting new creases make sure there are no folds and the crease is completely flat, any mistakes which cause a small crease mark next to the primary crease will be counted off. Be extra careful near the wrist pleats to not allow double creases.

DRILL COMMANDS

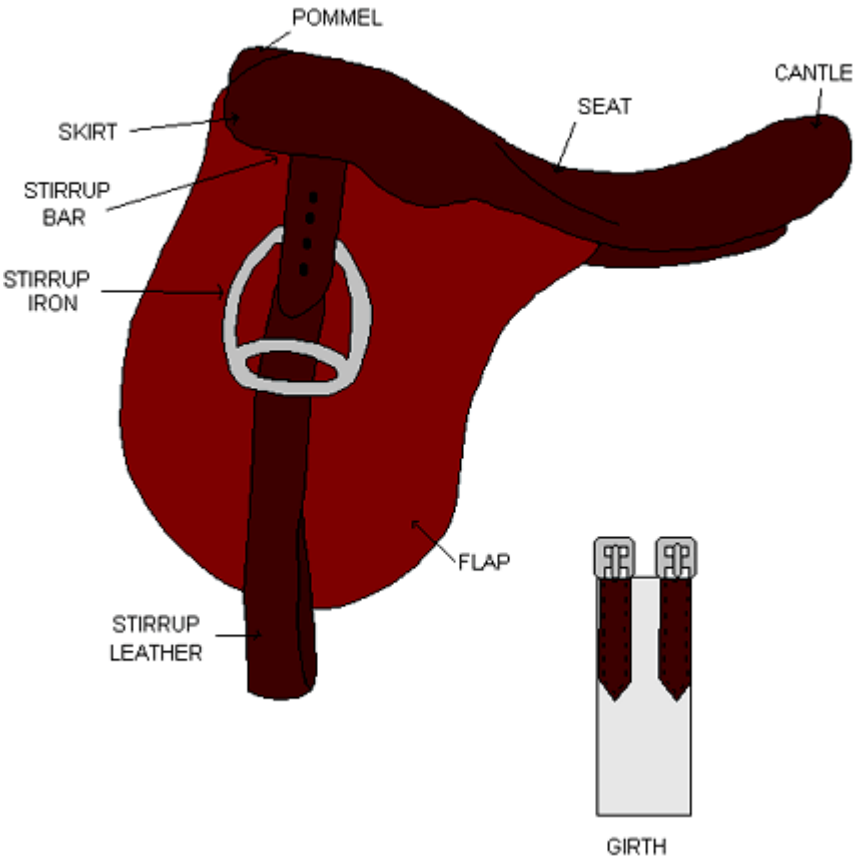
FORMATION	COMMAND(S)	COMPOSITION/EXECUTION
Columns of Squads	Squad Line or Column of Squads, Ho	Rider shall from a single line abreast (max eight riders) with the corporal 4th from the left.
Column of Fours	Column of Fours, Ho	Riders form into sets four abreast with the Corporal in the #1 position and Lance Corporal in the #1 position of the second set.
Column of Twos	Column of Two's, Ho	Riders form into sets two abreast with the Corporal in the #1 position and Lance Corporal in the #1 position of the third set. Riders #3 & #7 will be in the #1 position of the second and fourth set, respectively.
Column of Troopers Go To The "How To" Animation	Column of Troopers, Ho	Riders form a single file line in the following order: C-6-7-8-L/C-2-3-4
		
Line	Line, Ho	Second squad rides abreast and to the left of the first squad. Third squad rides abreast and to the right of the first Squad. Result - company front. 
Directional Change by Column	(i.e.) Column Left (or Right), Ho	Lead rider(s) execute as directed by command with each succeeding rider continuing forward to spot where lead rider(s) made the transition (follow the leader). 
Left/Right Turn by Unit	(i.e.) 'unit' Left (or Right), Ho	Each unit simultaneously executes a 90 degree turn in the direction commanded. 

Left / Right Oblique Go To The "How To" Animation	(i.e.) 'unit' Left (or Right) Oblique, Ho Recovery Command: Forward, Ho	Each rider must execute an approximate 45 degree turn regardless of the existing formation placing his/her horse's head at the shoulder of the horse to the left (i.e. if the executed move is a right directional oblique, the rider should place his horse's head at the shoulder of the horse to the right). 
Line of Half Squad Columns Go To The "How To" Animation	Line of Half Squad Columns, Ho Recovery Command: Assemble, Ho	Corporal leads out Troop in single file. Troopers to left follow. Simultaneously Lance Corporal leads out and is followed by riders to his/her left (in single file). Lance Corporal rides abreast and 10 feet to the right of the Corporal. 
As Forgers Go To The "How To" Animation	Twos (or Fours, or Squad) As Forgers, Ho Recovery Command: Assemble, Ho	Riders to the left of the #1 rider in the set fan out to the left in a forward motion riding parallel to the #1 rider until all riders to the left are at a distance of 8 feet from each other. If in a squad line, riders to the right of the Corporal fan out to the right in a forward motion riding parallel to the Corporal until all riders to the right are at a distance of 8 feet from each other. The Corporal should never move from his/her straight direction to execute the As Forgers maneuver. 

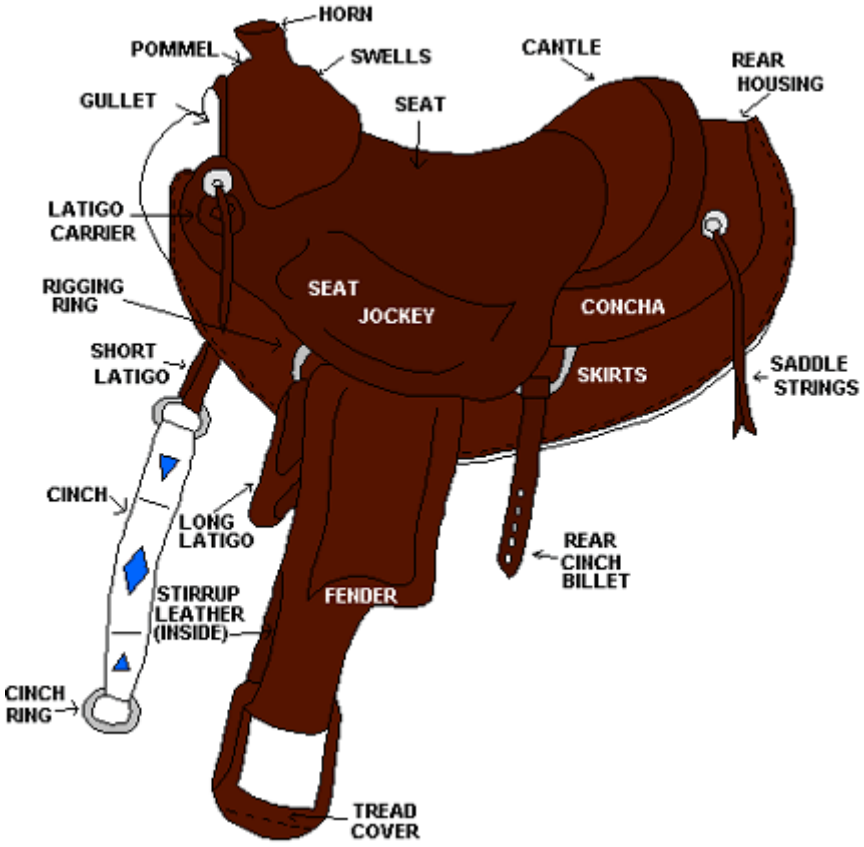
SELECTED ANATOMICAL PARTS OF THE HORSE



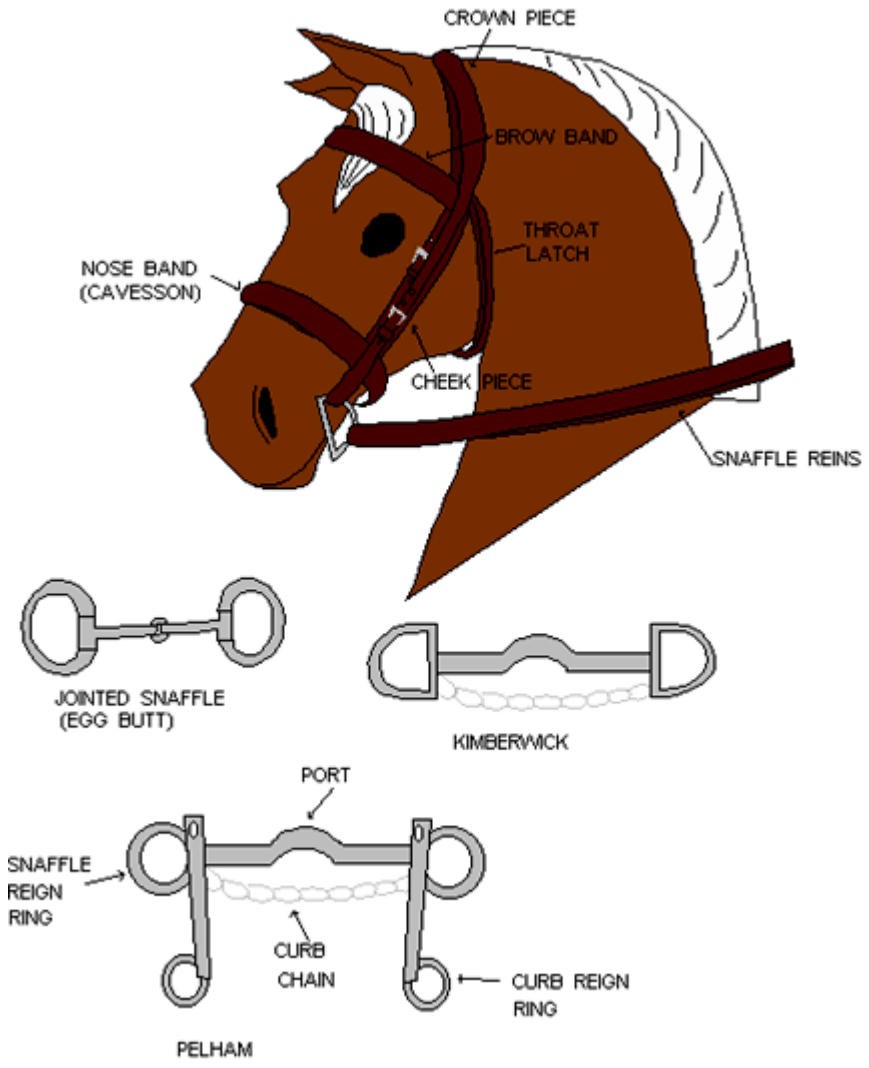
ENGLISH SADDLE



WESTERN SADDLE

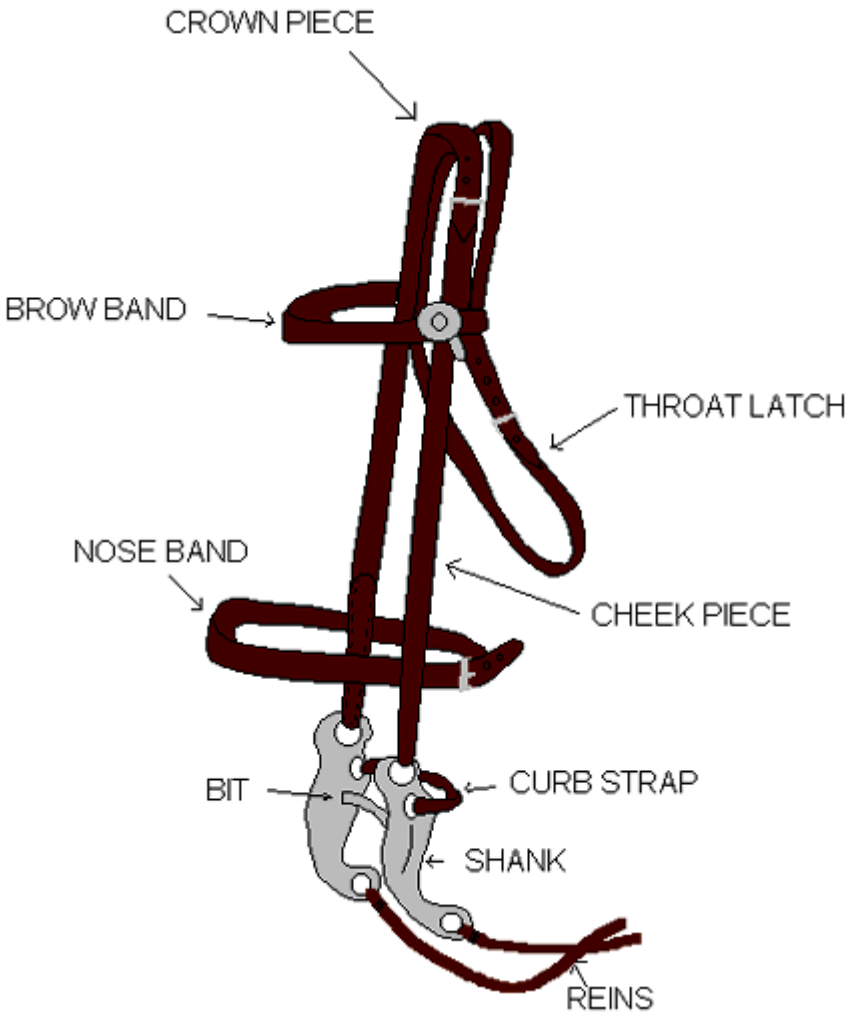


SELECT ENGLISH BRIDLES

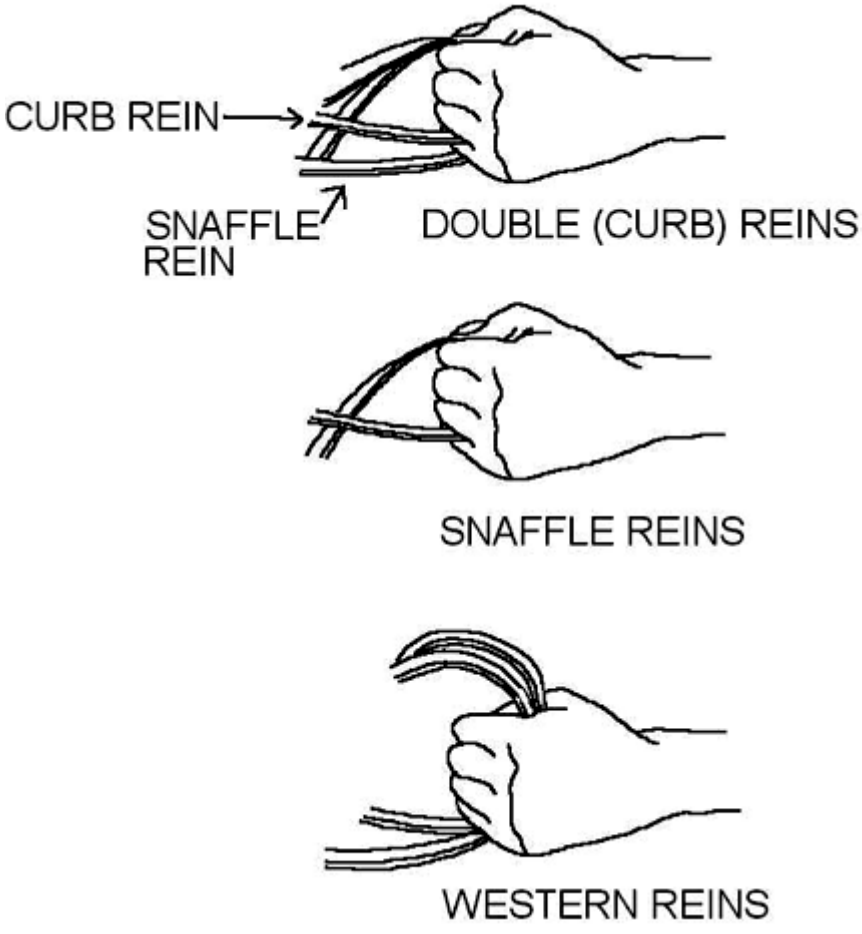


WESTERN BRIDLE

The basic parts of the bridle are: the reins, the bit, and the headstall.



REINS – (there are others, but not listed)



THE DRILL

There are the 14 required commands and executed moves for a proper and correct drill. In addition to these commands, all participating/competing CA Rangers must walk, trot and lope/canter their horses.

- Column(s) of Troopers
- Column(s) of Twos
- Column(s) of Fours
- Column of Squads/Squad Line
- Line of Half Squad Columns
- Assemble (Recovery Command for Line of Half Squad Columns)
- As Forgers
- Assemble (Recovery Command for As Forgers)
- Directional Change by Column(s)
- Right or Left Turn by Unit(s)
- Right or Left About by Unit(s)
- Right or Left Circle by Unit(s)
- Right or Left Oblique
- Forward (Recovery Command for Right or Left Oblique)

DRILL PENALTIES

A. Time Limit: There is a maximum time limited allowed of eight (8) minutes for a drill. A one minute warning is given by the announcer at the end of seven minutes of performing a drill. Five points will be deducted for each 30 seconds a drill team exceeds the maximum allowable time limit. There is no penalty deduction for fractions of 30 second intervals. Time outs may be approved by the judge should a hazardous situation or condition occur.

B. Formations & Maneuvers: Each Troop is responsible for knowing the required drill commands/executions as set forth in the previous page. 15 points will be deducted for each required drill formation and/or maneuver not executed. 10 points will be deducted for each formation or maneuver not properly executed.

C. Commands: 10 points will be deducted for each command improperly issued.

D. Gaits: With the exception of Remounts, all drill members are expected to demonstrate his/her ability to ride a horse at the walk, trot and canter/lope. 50 points shall be deducted for each gait not executed during the drill. A total of 25 points will be deducted from a drill team's score for failure to execute a canter/lope for the entire circumference of the arena.

E. Uniforms: Each trooper shall be responsible to ensure that his/her equipment/uniform is properly and securely fitted. 5 points shall be deducted for any equipment or uniform failure occurring (e.g. loose helmet, long chin straps, un-tucked shirt) during execution of the drill.

F. Flag Carriage: 5 points shall be deducted for the improper carriage of the Troop flag by the Guide-on. The flag shaft shall be perpendicular to the ground unless required to be moved in case of obstruction. The right forearm should be parallel to the ground and elbow kept to the side.

G. Shortage of Riders: 50 points shall be deducted for each unfilled position in drill including the Guide-on and Stable Sergeant positions. 40 points shall be deducted for each rider riding in a position below his/her rank. 25 points shall be deducted for each borrowed rider (borrowed riders must ride the position of their rank or 40 points will be deducted).

THE DRILL SQUAD

The Drill Squad consists of eight (8) riders and normally includes a Corporal, a Lance Corporal, and six other riders (only two Lance Corporals are allowed). The highest ranking Cadet in the Troop, the Cadet Commander, is responsible for writing and commanding (calling) the drill. The second highest ranking individual in the drill is the Guide-on. A Stable Sergeant shall ride behind the Squad to watch for tack failures and/or hazardous situations during the performance of the drill. The Corporal or the Squad Leader is responsible for ensuring that the Squad is in correct formation and that its members are attentive to the Cadet Commander. The Lance Corporal assists the Corporal by taking charge of the three riders to his/her left (commonly called the Lance Corporal's set). Both the Corporal and Lance Corporal are responsible for ensuring that their respective sets are properly aligned during the performance of the drill.

HORSE BREEDS OF THE WORLD

There are a large number of different breeds of horses in the world. Because the California Rangers is associated with the horse industry, it is important that each Ranger have a working understanding of the different kinds of horses which exist. The following summarizes some of the known breeds, their country of origin, and their specific classification (what the horse breed is primarily used for): Note: See website under Academic and Inspection – Supplemental Equine Info.

BREED OF HORSE	COUNTRY OF ORIGIN	CLASSIFICATION
Cleveland Bay	Great Britain	Hunter, Show-Jumper, Carriage
Clydesdale	Great Britain	Draft
Cob	Great Britain	Show
Shire	Great Britain	Draft
Thoroughbred	Great Britain	Race, Polo
Percheron	France	Draft
Italian Heavy Draught	Italy	Draft
Finnish	Finland	Draft
Morgan	United States	Saddle, Harness, Pleasure
Quarter Horse	United States	Racing, Pleasure, Cutting
Tennessee Walking Horse	United States	Pleasure, Show
Arabian	Arabia	Pleasure, Endurance, Show
Canadian Cutting Horse	Canada	Cutting
Russian Heavy Draught	Russia	Draft

The Arabian Horse -

The Arabian Horse is a compact horse ranging in size from 14.1 to 15.1 hands in height. Its head is short and fine with a great breadth between its eyes. This, combined with the fact that the muzzle is smaller and more refined, gives the Arab's face a triangular appearance. Large expressive eyes are set low on the head and the tips of the horse's slender ears curve inward. The Arab, compared to other horses, has a short back partially because the breed has one less vertebrae and one less set of ribs (17 versus 18 in other horse breeds). Compared to other horse breeds, the Arab has a flatter and longer croup. Its tail is set higher than other breeds. The set of the horse's head plus the typical longer neck gives the Arab its characteristic arched look. The withers should be fairly high and well muscled. The shoulders should be longer, deeply set and powerful (heavily muscled). Athletically, the Arab is a very versatile animal and is used throughout the world as a competitive endurance, parade, show, harness, and/or trail horse (examples of classifications). In some situations, the Arab has been used as a cutting horse and for other stock work.

The Quarter Horse -

The Quarter Horse was originally bred in the United States as a compact, heavily-muscled horse to run the quarter mile faster than any other breed of horse. The body of today's Quarter Horse has been modified and made more streamlined for cow work and general versatility. Its head is short and broad with small, active ears, large eyes which are set wide apart. The jaw is well defined and distinctive. Compared to the Arab, the neck is shorter, more muscled which blends into a powerful, sloping shoulder. The chest is broad and deep with heavy muscling and the forelegs are wide spread. The Quarter Horse is stereotypically short-backed and close coupled (short loin). Its hind quarters are also heavily muscled from the hip to the hock.

PONY BREEDS

In addition to the horse breeds, there are animals which are smaller in stature but look just like horses. These animals represent the pony breeds. Ponies, by definition, are no taller than 14.2 hands (pronounced 14 2 hands - not 14 point 2 hands). Despite their smaller size, ponies are surprisingly strong and resilient.

Horses are measured by a unit called hands. The height of a horse is measured by taking the distance from the ground (by the front foot) to the top of the horse's withers. Because one hand equals approximately 4 inches, measurement of a horse's height is never given in fractional increments greater than .3 of a hand. In other words, one does not say a horse's height is 14.4 hands. The correct translation of the measured height of this horse would be 15.0 hands. The following are some examples of ponies existing in the world:

BREED OF HORSE	COUNTRY OF ORIGIN	CLASSIFICATION
Connemara	Great Britain	Recreational
Dartmoor	Great Britain	Jumper, Pleasure
Dale	Great Britain	Harness
Shetland	Great Britain	Jumper, Pleasure
Welsh	Great Britain	Pleasure
Exmoor	Great Britain	Pleasure

COLOR BREEDS OF HORSES

Base breeds are horses which are bred for bloodlines, athletic ability and conformation. Color breed horses are bred for a specific color type (or pattern).

American Paint Horse

In order to be registered with the American Paint Horse Association, a paint horse must be born with a predominate hair coat color and at least one contrasting area of solid white hair with some underlying pink (non-pigmented) skin. The areas of white must be located in specific locations on the body. Other color markings attributed to the paint breed include: white leg markings extending above the knees/hocks; glass, blue or watch eyes; apron or bald face, two color mane (one color being white); dark spots or freckles in white hair on face or legs; or contrasting area of another color in prescribed areas of the horse's body.

A secondary characteristic used in describing the paint horse involves the color patterns of dark to light hairs. Although there are a number of words used to describe the color patterns of a paint horse (piebald, skewbald, medicine hat, etc.), only three terms are used by the Paint Association: tobiano, overo or tovero.

Tobiano:

Dark color patterns cover one or both flanks. Generally, all four legs are white at least below the hocks/knees. Spots of color are regular and distinct as ovals or round patterns which extend down over the neck and chest (looks like a shield). Head markings are similar to those of a solidly colored horse (i.e., solid or with blaze, strip, star or snip).

Overo:

White patterns will not cross the back of the horse between the withers and tail. At least one, but usually, more legs will be colored. The white patterns are usually scattered or splashy (called calico). Head markings are normally very distinctive (bald-faced, apron-faced or bonnet-faced). The horse is usually either predominately white or dark. The tail is usually one color (solid).

Tovero:

The type is more difficult to define because the color patterns are actually a combination of the Tobiano and Overo.

Appaloosa

The Appaloosa has four distinguishing characteristics: 1) spotted coat patterns of which the leopard (white with spots over the entire body) and blanket (white blanket over hips) are the most distinctive, 2) mottled skin around the muzzle and genital areas, 3) white sclera (skin around the eyes), and 4) vertically striped hooves. Other color patterns include: snowflake (light spotting on dark background), marble and frost.

Palomino

The Palomino is said to be a golden yellow colored horse. Others describe the color as looking like a newly minted gold coin. The mane and tail are normally white and the eyes are colored (not blue). Palominos do not have a dorsal stripe.

Buckskin Horse

The buckskin is normally a yellowish or golden color with darker mane and tail. The lower legs are usually black. The Buckskin Horse usually does not have a dorsal stripe.

Albino Horse

Strictly speaking, the albino horse is **not** a color breed because it is not selectively bred for a color type. It is a genetic abnormality in that the horse's genetic makeup (genotype) is homozygous recessive for the expression of color. Genetically, the albino would possess two recessive genes for color. The outward expression of the genetic code, called the phenotype, for the albino is that it the horse has no pigmentation in its skin. Typically, the horse's hair are milky colored and lack any color. The color of the albino horse's eyes are said to be pale or translucent (not blue or pink). However, the skin around the eye (called the sclera) is pink because it lacks pigmentation.

An albino horse differs from a white colored horse in several important ways. A white horse has colored eyes and pigmented (colored) sclera and the hairs on its body may contain some colored hairs intermixed with the predominately white hairs. A white horse is born white colored and remains that color throughout its life. But, the white horse may also have colored leg hairs, mane and tail - the albino horse will never have pigmented skin or colored hairs.

Because it lacks skin pigmentation, the albino horse is extremely sensitive to the sun's rays and care should be taken to protect it from extended periods of exposure to sunlight.

COLORS OF HORSES

BAY Generally, the body color can range from tan through red through reddish brown. The mane, tail and lower legs are black. The tips of the ears may have a black highlight.

BLACK The color of a true black horse is black (coat looks blue in direct sun). Mane and tail are black.

BROWN Body color is brown to brown-black with light colored areas around the muzzle, eyes, flank and inner upper legs. The mane, tail (and usually lower legs) are black.

SORREL Usually only used/defined by the American Quarter Horse Association. A type of chestnut characterized by red or copper-red body. The mane and tail is usually the same color as the body (but may also be flaxen colored).

CHESTNUT Body color varies from orange to deep red-brown. Color of the mane and tail varies from flaxen to any other color but black.

DUN The body is yellow or gold colored. Mane and tail can be black, brown, red, yellow, white or mixed. Duns usually have a dorsal stripe and zebra markings on the legs.

BUCKSKIN A type of Dun, the body is golden or yellowish colored but the mane, tail and lower legs are usually black.

RED DUN Another type of Dun Horse. The body is yellow or gold colored but the mane, tail and dorsal stripe are red.

GRULLO (Pronounced grew_ ya). The body is usually mousy or smoky colored and the mane, tail and lower legs are black.

RED ROAN A reddish colored horse due to a mixture of evenly dispersed red and white hairs.

BLUE ROAN A blue-black colored horse due to a mixture of evenly dispersed black and white hairs. Some red hairs may be present.

HORSE MARKINGS

Facial Markings

SNIP	Any white marking, usually vertical, between the nostrils.
STAR	A small, oval white marking on the forehead.
STRIP	A long, relatively thin white vertical marking running from approximately the eyes down the nose.
BLAZE	A broader, more pronounced strip running from approximately the eyes down the nose.
BALD	A very broad blaze which can extend from around the eyes down to the upper lip and nostrils.

Leg Markings

CORONET	Any narrow white marking located around the coronet, above the hoof.
HALF PASTERN	A white marking which includes only one half of the pastern joint located above the coronet.
PASTERN	Any white marking which incorporates the entire pastern joint.
SOCK	A white marking which extends upwardly from coronet band to approximately halfway up the cannon bone.
STOCKING	An expanded sock which extends nearly to the knee or hock.
BLACK POINTS	Black colored mane, tail and leg markings.
DORSAL STRIPE	A dark or black line which runs from the withers to the croup on the midline of the back in some breeds of horses.

GROOMING EQUIPMENT

Generally speaking, grooming massages the underlying body muscles, improves muscle fitness/tone, cleans the hair and stimulates the hair follicles to produce the natural oils that bring a shine to the coat. Grooming allows a person to carefully inspect the horse's entire body for parasites, cuts, wounds, mange or skin disorders. When cleaning/inspecting the lower extremities of the horse, bend over - don't kneel - in case the horse spooks. There are countless grooming devices sold in the United States. The following is a list of some of the more commonly used ones:

CURRY COMB	Used to brush and massage the horse. Use small, circular strokes when currying the horse to loosen dirt and tangled, matted hair on the body and face.
BODY BRUSH	A finer bristled brush, the body brush smoothes and removes dirt from the horse's coat, face and lower legs. Use the body brush after the curry comb.
ROOT BRUSH	Used to brush the mane and tail.
MANE AND TAIL BRUSH	Used to brush the mane and tail.
SPONGE	Used to softly clean the coat, the face, lower legs, sheath and dock.
HOOF PICK	A prying device which allows a person to remove dirt, stones, foreign objects and manure from the foot. The pick is especially useful in cleaning the crevices adjacent to the frog of the foot - a clean, manure-free frog prevents/inhibits the development of thrush (see non-infectious diseases).
GROOMING CLOTH	A soft, clean cloth is the best way to finish grooming a horse. It helps remove dust which may become irritating to the horse.

HORSE TYING TECHNIQUES

To be safe, a horse should always be tied to a solid object by way of a halter and rope. Never tie a horse by the reins of a bridle. Specialized knots which release quickly (such as the clove hitch knot) should be used at all times. This knot allows for the easy pull release should a horse pull back suddenly against the rope restraint. A broken neck or strained back can result if the horse is not immediately calmed and/or released. If in an emergency and you do not have a halter, a rope secured comfortably about the horse's neck by a bowline knot can be used. A bowline knot will not tighten and strangle the horse if it tries to pull away. When untying the horse, always untie the rope secured to the solid object before removing the horse's halter

NUTRITION

The amount and type of feed a horse requires varies according to its weight, what it is being used for and how it is managed. A successful feeding regimen provides the basic requirements for body maintenance, growth and reproduction.

Of most importance is the requirement for body maintenance. Younger animals need more protein than older animals because they are growing. (Remember that proteins are the body's building blocks.) Mature animals require less energy (food) unless pregnancy, lactation (milk production), or added exercise increases their nutritional demands/requirements.

Nutrients are described as being the chemical components needed by a horse to live. Some nutrients are needed in larger doses than others on a daily basis. There are **five main types of nutrients** needed for horses on a daily basis and in differing amounts depending on their individual requirements: 1) energy (carbohydrates/fats), 2) proteins, 3) vitamins, 4) minerals, and (5) water.

- **Energy** nutrients are the body's fuel. After the nutrients are digested, the chemical components in a supplied nutrient are taken by the blood to all the cells of the body where they are used to fuel operations at the cell level. The end result of using these chemicals is carbon dioxide (CO_2) and heat. In herbivores (plant eaters), the main energy nutrient is carbohydrates. Carbohydrates are easy to digest and have a high "feeding value" because most of the chemical components in carbohydrates are digested, absorbed and used. Grains are examples of carbohydrates which are consumed by horses that have a high feeding value. Cellulose is a more complex carbohydrate (grass has a lot of cellulose) and is hard to digest (and therefore rarely used) by horses. Cellulose has a low feeding value. Another group of energy nutrients is fats/oils. Fats and oils are the same thing except that fats are solid at normal body temperature and oils are liquid. Fats are very concentrated energy nutrients - there is 2¼ times more energy in fats than in carbohydrates.
- While fats and carbohydrates supply the body with energy nutrients, **proteins** supply the body's building materials. Proteins are made up of nitrogen-containing compounds called amino acids. During the digestion of proteins, the amino acids are broken down into their respective units and absorbed in the gut where they are used to build new body components (e.g., muscle, internal organs, bone, blood, skin, hair, hooves). If too much protein is consumed, the nitrogen part of the compound is separated and excreted by the kidneys and the other protein parts are converted into energy.
- **Vitamins** are required just as much as protein or energy nutrients but in much smaller amounts. Horses must be supplemented with the following vitamins: A, C, D, E, K, and assorted B vitamins. All but Vitamins A & D are manufactured by the horse. Vitamin A is needed for the health of the eye, nasal passage tissues and the digestion system. Green pasture (grass) and quality hay are the best source of vitamin A. Vitamin D is required for strength and development of bone and for mineral balance. In most mammals, Vitamin D is synthesized in the skin by the action of the sun's rays. Sun cured hays also contain sufficient quantities of Vitamin D.
- Like vitamins, **minerals** are very important for normal physiologic function but are required in relatively small quantities. Most good-quality feeds include sufficient mineral content so that supplementation is not required. The mineral content of horse feed should

be determined to ensure proper intake. The two minerals calcium and phosphorous are required (in a 2:1 ratio) for normal development of teeth and bone. Calcium should include about 1% by weight of the horse's daily ration. Alfalfa is a good source of calcium. Salt is necessary for the normal functioning of a horse. A pound of sweat contains approximately two grams of salt. The horse should be given free access to salt or the diet should be supplemented with between 0.5-1% salt by weight. Other required minerals in horse diets should include: iron, iodine, potassium, magnesium, copper, zinc, selenium and manganese.

- A horse can live longer without food than without **water**. A horse's body is comprised of 50-75% water (foal-adult). Water comprises the majority of the volume in blood. It is used as an intermediate in most, if not all, chemical reactions in the horse's body. It acts as a coolant (sweat) and as a lubricant (in joints). A constant supply of fresh, clean water is an absolute must for good horse management. An average horse will drink approximately 15-20 gallons of water daily.

Horse feeds can be categorized into two broad types: roughage and concentrates. Examples of roughage include pasture forages, hays, and high percentage fiber byproduct feeds. Hays are classified as being either legumes (alfalfa, red/white clovers) or grass (oat, barley, timothy). In general, the quality of hay and/or grass is related to the quantity of soft leaf and the lack of coarse stems (cellulose). Use alfalfa or grass hays that are harvested before complete maturity because the energy nutrients and vitamins/minerals are higher. If a hay is harvested after maturity, the leafiness value decreases as nutritious carbohydrates in the leaves are converted into cellulose. The color of hay is an indication of the roughage's quality and nutrient content. All overly mature alfalfa hay is pale colored. Vitamin A and carbohydrates are leached from the hay during prolonged drying or exposure to the sun. Hay that is baled before the content is properly dried can lose nutrition through fermentation or "heating". Hays that are baled wet promote the growth of molds that is an unacceptable source of feed for horses. The odor of hay should be aromatic and pleasant. A stale/musty smell indicates the hay was baled wet and has become moldy. Dust is not desirable in hay as it reduces palatability and can initiate heaves (or other respiratory disorders). Dustiness can be reduced by sprinkling the hay with water or adding molasses prior to feeding. Alfalfa hay is an excellent roughage and is high in protein, carbohydrates, calcium, phosphorous and vitamin A. Oat hay, on the other hand, is not high in protein, calcium or vitamin A. Care must be taken, therefore, to supplement a horse's diet depending on the type of hay fed.

Allowing horses to graze freely on pasture forage (1) reduces feed costs and (2) provides a natural source of vitamins and good quality proteins. A third benefit is that the horse can exercise while grazing. Grasses developing in early spring have a laxative effect on horses so care should be taken in managing your horse during this period.

Examples of concentrates include energy-rich grains (with or without molasses), protein/energy rich supplements, vitamin supplements and mineral supplements. Barley and oats are the most commonly fed concentrates - both are high in energy nutrients and protein. Both should be rolled (seed coat physically cracked) to maximize absorption during digestion. Oats are usually the most expensive feed grain (cost per unit of nutrient) but are the safest, most abundant and easiest to feed. Barley is slightly higher in terms of nutrient value and, when fed with alfalfa hay, is a well-balanced diet. Corn is similar to the other grains in nutritional content. However, it contains the highest total digestible nutrient content but the lowest protein, fiber, calcium and

phosphorus concentrations. Wheat/rice bran's are highly palatable and can be used for their laxative effects, as well. They are a good source of vitamins, energy and protein and are a good supplement to grass, hay and grains. Bran is relatively inexpensive but large quantities cause a dangerous imbalance in the calcium-phosphorous ratio.

If prepared properly, commercially available concentrates are nutritionally balanced. A benefit is that the same brands are usually available throughout the United States (or at least regionally). Purchase commercially prepared concentrates from reputable firms. Many feeds are available in pellet form which provides a total nutrition for your horse. Hay, grain, trace minerals are all usually formulated into the prepared pellets.

Feeding requirements are to be conducted on an individual basis and are influenced by a number of factors such as reproductive status (pregnant, lactating mare, stallions in breeding season), size, exercise scheduling. The daily requirement for a 1,000 pound, idle horse, generally speaking, is 6.8 pounds of total digestible nutrients (TDN) which is approximately equal to 14 pounds of good quality hay per day. Generally speaking, one pound of grain per day can replace ~ 1.5 pounds of good quality hay.

A growing foal can gain up to one-half of his adult weight in one-fourth of the time (12 months) it takes to attain maturity. Therefore, it is important that quality feed be supplied to a growing foal to ensure proper nutrition. Begin feeding a foal concentrates after he is approximately 3-4 weeks old. Gradually increase the concentrate by one-half to three-quarters of a pound per 100 pounds of body weight. Concentrate feeds can be fed to a foal by using a creep feeder. A creep feeder is a restraint which allows a smaller stature animal access to grain while keeping larger horses out. After weaning, the foal’s ration of concentrates should be increased to 2.5-3 pounds per 100 pounds of body weight. The concentrate should be palatable, high in digestibility, protein and minerals and low in fiber. A rule of thumb for rationing is to feed a foal one pound for each month of age up to 8 months. From then until approximately 2 years of age, feed 8 pounds per day. A 2:1 calcium-phosphorous ratio should be employed during this growth period.

Feed horses twice a day to increase the animal’s utilization of supplied food stuffs. Feed at regularly scheduled times in the day. Do not feed on the ground - provide pails or feeding boxes for grain and mangers for hay. Allows provide clean water and feeding conditions. Adjust changes in feeding habits or feed types slowly over a week’s time. Never feed grain or water to a recently exercised or overly tired horse. Access to hay will not harm the tired horse. Never feed moldy or spoiled feed. Check the condition of the horse’s teeth annually to ensure good general dental health and proper digestion of food.

COMMON NON-COMMUNICABLE DISEASE IN HORSES

(1) COLIC

Colic is a general term used to describe abdominal pain in horses. All causes of colic should be considered serious. There are three main types of colic – spasmodic, flatulent and impaction. Spasmodic colic is usually associated with increased abdominal activity characterized by loud "gut" sounds. Flatulent colic usually is associated with reduced abdominal activity. Impaction colic occurs when the normal passage of nutrients and fecal material become obstructed. Colic disorders are generally caused by: parasites (which can cause mucosa irritation, block normal passage of fecal material, or block blood flow to the intestine), defective feeds (feeds containing excessive dirt, sand, mold, or foreign objects), incorrect feeding methods (sudden change in feeding schedules/practices), overfeeding of grains, feeding overly tired horses, and/or feeding on sandy surfaces). Faulty teeth (improper dentition) can prohibit proper grinding of feeds which can cause impaction in the intestine. Colic symptoms in the horse include uneasiness, pawing, constant looking at flanks, kicking at abdomen, sweating, lying down/standing up, rolling, and/or resting in abnormal or unusual positions. Veterinary assistance is required if the horse doesn't pass manure, if there are no "gut" sounds (with or without bloat signs) or if the horse is obviously in serious discomfort. If the horse has "gut sounds" or if it is passing manure, then the afflicted horse is suffering from spasmodic colic versus an obstruction colic. Keep the affected animal quiet and try to prevent it from harming itself. Attempt to walk the horse 10-15 minutes per hour. This may not only help move the intestinal obstruction along but also distract the horse from feeling the pain associated with the colic.

(2) LAMINITIS

Laminitis is an inflammation of the sensitive laminae (white line) of the horse hoof wall. Laminitis and a condition called Founder that can be associated with laminitis usually affect the front feet but a horse can suffer from the affliction in all four feet. The condition is caused from vascular congestion in the rigid hoof wall which is unable to swell to accommodate the swelling. This causes pressure on the nerves in the foot and severe pain. Causes of laminitis include trimming feet too short, overfeeding of grain (at least 25 pounds of grain), ingestion of cold water by an overheated horse, excessive pounding from work on hard ground or road surfaces, hard work by an unconditioned horse, toxemia (blood poisoning) from post-foaling placenta retention or uterine inflammation, overfeeding of green grass to hypothyroid horses, reaction to some debilitating diseases, and/or abuse of corticosteroid (a hormone) treatment. A affected horse exhibits great tenderness on the affected feet which are usually abnormally hot and will often stand in "funny" positions in an attempt to relieve the pain in its feet. A noticeably strong digital pulse is usually present in the feet of a horse suffering from laminitis. Veterinary treatment is required to prevent an acute case of founder from becoming a chronic case which can last for months. Cooling the affected feet (soaking feet in a cool stream or ice/mud bath) helps relieve much of the symptoms of inflammation.

(3) FOUNDER

If laminitis is left untreated, the condition can worsen. If the condition persists, the laminae from the inner hoof attachments can separate from the third phalanx (coffin bone). Without this support, the horse's weight can cause the coffin bone to rotate and sink toward the sole of the hoof. Bar shoes with pads often give relief to the chronically foundered horse.

(4) THRUSH

Thrush is a degenerative condition of the frog which is usually caused by fungus (and possibly bacteria). If left untreated, the condition can worsen and lead to lameness. It is caused by the horse standing in unsanitary conditions (wet, dirty, unsanitary stall/pastures), failure to clean the feet regularly and/or lack of correct frog pressure on the ground. Thrush is characterized by the presence of a black, foul-smelling discharge which appears to originate in the deep crevices of the frog and bars. Treatment includes cleaning the feet properly, draining areas of standing water, and regularly applying anti-fungal/anti-bacterial agents such as dilute concentrations of chlorine bleach or a commercial product called Kopertox.

(5) HEAT EXHAUSTION

Exhaustion occurs when an animal is overexerted and clinical signs include a loss of appetite, excessive thirst, cold sweating, and weakness. The horse may want to lie down frequently. Under-conditioned horses asked to do strenuous work easily become victims of exhaustion. The body is usually clammy to the touch and sweating is patchy. Body temperature can be normal or slightly elevated. Treatment includes supporting the horse's body temperature (i.e., placement of a blanket on the horse to prevent chilling) and generally keeping it comfortable. Allow frequent limited access to water - never feed exhausted horse grains or other high energy foods. Free access to hay is best.

(6) HEATSTROKE

Heatstroke (also called sunstroke) is a more serious disorder resulting from a disturbance of the physiological heat-regulating mechanisms (ability to sweat or otherwise lose body temperature). An afflicted horse initially demonstrates rapid breathing, sweating, weakness, stumbling, and a refusal to work. In all cases, sweating stops abruptly and the skin becomes dry. This is an early indicator that the animal is suffering from heatstroke. Elevated temperatures of 106-110°F is diagnostic. Delirium and convulsions usually accompany the elevated temperatures. Death can occur within hours if the animal's core temperature is not cooled and the animal medically supported. To lower the core temperature, spray the horse with cold water. Ice packs should be applied to the head if the animal appears to be uncoordinated/disoriented.

(7) TETANUS

Tetanus (lock jaw) is an infectious disease caused by a bacterium called *Clostridium tetani*. Release of a substance by this bacterium (called a toxin) causes the voluntary muscles to contract uncontrollably in affected animals and can result in death. The bacterium is located in soil and can go into an inactive state and survive for years. Outbreaks of tetanus most commonly occur during the wet spring and fall months. Incubation is 5-10 days. The slightest noise or activity can throw an afflicted horse in sudden and violent general spasms. Because muscles in the jaw are affected, the horse can not usually open its mouth to even drink water. The ears are erect and the tail is stiff and extended. The third eyelid often prolapses. The infected horse will often have a rocking horse stance and have elevated vital signs. Vaccinating and good animal husbandry practices (picking up nails, tin cans, manure) are the best way to prevent tetanus. Long-acting immunity is possible with continued tetanus toxoid shots - if in doubt, give a horse a faster acting "antitoxin shot" if you think a wounded horse has not been vaccinated recently for tetanus. Tetanus antitoxin protection usually lasts only two weeks. Treatment of the infected horse includes placing the animal in a quiet, darkened stall and placing feed/water in elevated containers so the horse doesn't have to lower his head. The average mortality rate (percentage of infected horses that die) is 80%.

(8) CHRONIC ABSCESSES

Chronic abscesses are caused by a bacterial disease characterized by the appearance of large abscesses on the horse's chest, lower abdominal wall, the sheath and/or mammary area. Although transmission of the disease is unknown, it is believed flies are the principal source of the disease. Outbreaks are most prevalent in the late summer and fall corresponding to the peak fly season. An infected animal can be affected for 4-6 weeks. Fly repellents may be helpful in controlling introduction or spreading of the disease. Generally speaking, the faster the abscess comes to a head and drains, the shorter will be the recovery period. Hot water (120 ° F) applied to the affected area(s) helps to accelerate the eruption phase. The resulting wound can be flushed with disinfectants thereafter. The edge of the wound should be treated with a fly repellent.

(9) NAVAL ILL

Naval ill is a disease caused by bacterial infection through contamination of the umbilical cord. It may also occur during gestation as a result of a chronic uterine infection. A number of bacterial agents have been isolated and blamed for naval ill. Infection occurs as a result of introduction of an agent into the blood stream through the umbilical cord where the agent proliferates throughout the body. Mortality is high especially because the foal is born with a lowered immune response. (Foals must receive antibodies produced in the mother's milk with 24-36 hours of birth in order to start their own immune system. The first stream of antibody-containing milk is called colostrum.) An affected foal will initially appear depressed/listless and weak. It usually will not nurse. (Always check the mare's udder to see if she is producing milk. A dripping udder usually indicates the foal is not nursing.) In some instances, the foal may thrive for several weeks before succumbing to the "joint ill" form of the disease which is manifested by stiffness, enlarged joints and the inability to walk or stand. Medical treatment is usually ineffective and so prevention is important in preventing naval/joint ill. Sound breeding management practices are essential. Try to keep foaling stalls as clean as possible by removing manure/urine frequently. Be sure to disinfect the umbilical cord with an iodine preparation (betadine solution) immediately after birth.

COMMON COMMUNICABLE DISEASE IN HORSES

Respiratory diseases are a common infectious problem in horses. The degree of severity of symptoms varies from a mild nasal discharge to major pulmonary/respiratory complications and even abortion. Respiratory diseases are caused by both bacterial and viral agents. All respiratory diseases are potentially contagious and transmission of the diseases is usually through direct (nasal touching) or indirect (airborne secretions, contaminated water, contaminated feed equipment) methods.

Care for the affected animal should include: isolation, warm shelter, good nutrition, complete rest, and maintaining as close a normal body temperature as possible. Treatment should be administered by a qualified doctor (veterinarian) who often will prescribe antibiotics and/or cough suppressants.

(1) EQUINE VIRAL RHINOPNEUMONITIS

Equine Viral Rhinopneumonitis is a highly contagious viral disease which causes a mild upper respiratory infection (like the common cold). An entire barn can become infected with the disease if affected animals are not separated immediately. The infected horse will usually develop a mild, watery nasal discharge and have a mildly elevated body temperature (102-105°F). The horse will normally recover in 2-7 days if complications do not occur. Manifestation of a heavier nasal discharge, a deep cough, or a lack of appetite are signs of complications associated with the disease which requires professional attention. The disease is especially dangerous because it can cause an infected pregnant mare to abort her pregnancy. In many instances, the disease can cause an entire barn of pregnant mares to abort simultaneously ("abortion storm"). A commercial vaccine is available.

(2) EQUINE INFLUENZA

Equine Influenza is an acute and highly contagious respiratory disease that is characterized by a dry, hacking cough. Most infections occur in the winter or spring months. In addition to the cough, the infected horse will develop a temperature of 103-106°F for 2-5 days. A nasal discharge will often begin after the cough stops. The incidence of infection is very high as the disease is so contagious. Symptoms occur within 4 days of exposure. Forced rest for 2-3 weeks is indicated to discourage relapse. The disease can be prevented by vaccination and is recommended for any horse exposed to strange horses (i.e., race horses, show horses).

(3) STRANGLES

Strangles is an acutely contagious respiratory disease which is characterized by a thick nasal discharge and involvement of the lymph nodes around the head/jaw/throat area. The disease is caused by a bacterium called *Streptococcus equi* which can be found in both the nasal discharge and in the pus formed in the involved lymph area. Younger animals are most susceptible because older horses have been exposed to it and have developed some immunity. Contaminated water troughs are a common source of the infection. Most infected animals initially develop a watery discharge which later becomes thicker after the lymph nodes become enlarged and involved. Temperatures of 104-106 ° F are common.

(4) VIRAL ENCEPHALITIS

Viral encephalitis (Sleeping Sickness) is an acute viral disease characterized by central nervous system disturbance. There are at least four known strains (Western, Eastern, Venezuelan, and West Nile) which are transmitted by biting insects, primarily mosquitoes. Affected animals develop a 103-107 ° F temperature and have a reduced appetite associated with difficulty in chewing/swallowing. Frequent yawning, grinding of teeth, circling and stumbling are symptoms. Central Nervous System (CNS) symptoms include impaired vision, depression and loss of normal coordination. Annual inoculations are recommended to prevent outbreaks and proper disease management practices (i.e., mosquito abatement) is helpful.

INTERNAL PARASITES IN HORSES

There are five major groups of internal parasites: large strongyles, small strongyles, ascarids, bots and pinworms.

Because of the various stages of the life cycle, it is obvious that no one deworming program will be completely effective. Effective control programs require continuous, long-term commitments using both management and medical considerations. Veterinarians should be consulted for the appropriate de-worming agents.

Management considerations to be practiced for effective worm control include: the provision of sanitary feeding and watering facilities, regular manure removal schedules, regular de-worming procedures, avoidance of overcrowding in pastures to decrease the exposure of larvae present in a field, separating horses by age (younger horses may harbor or be more susceptible to certain internal parasites), and rigorous insect control. Worming considerations include: de-worming all horses simultaneously, isolating transient or visiting horses, conducting routine microscopic examination of feces (inspecting for worm eggs), rotating known effective antithelmetics (de-worming medications) to increase each agent's effectiveness, and de-worming horses at specific ages for specific worms. Horses should be regularly wormed every 8 weeks (or 6 times a year). Anti-bot fly preparations should be administered at least once a year in the late fall or early winter months.

(1) STRONGYLES

Strongyles (also called blood worms) are the most common internal parasite found in horses worldwide. Generally speaking, strongyles are tissue feeders and some consume blood. Some species are extremely destructive and may cause fatal bouts of colic due to interference with the blood vascularity of the intestines. Common signs of strongyle infestation include: emaciation, anemia, soft foul-smelling feces, decreased appetite, exhaustion, rough coat, stocked up legs, colic, diarrhea and intermittent lameness.

Small strongyles generally don't migrate through tissue but remain and thrive in the intestinal tract. The large strongyles are more destructive because they travel through body tissues during portions of their development within the host horse. The female large strongyle is very prolific and produces a large number of eggs. Those eggs passed in the horse's stool become infective larvae which are free living organisms that cling to grass blades and are ultimately ingested by a

grazing horse. These larvae survive best in cool, moist conditions and are unable to resist dry, hot environments for long. After they are ingested, the larvae stay in the intestine for about two weeks and thereafter penetrate the intestinal wall. Some are carried to distant organs (liver, lungs, pancreas) via the blood system. Some larvae remain in the larger blood vessels in the legs and G.I. (gastrointestinal) tract. After the larva mature and become the adult worm, they can occlude these vessels and, in many cases, cause death. Some time later, the larva return to the colon and cecum to complete the life cycle by producing eggs. The developmental process can take from 3-12 months. Control of strongyles is through good sanitation management and sound de-worming practices.

(2) ASCARIDS

Ascarids (also called large roundworms) are the one parasite to which horses can develop an immunity - that's why one rarely sees roundworm infestation problems in horses older than 1 or 2. Because of their large size, ascarids can obstruct the intestine and/or bile ducts which can easily lead to death of the host horse. Eggs are passed along with the horse's feces and become infective in about a month. Like the strongyles, ascarids can survive in cool, moist environments but not in hot, dry ones. Grazing horses eat the infective larva and themselves become infected. Developing small larva penetrate the gut wall and migrate to target organs such as the liver and the lungs. Roundworm larva growing in the lungs are often coughed up and swallowed again to become adult worms in the intestine. The life cycle of the roundworm (leaving and returning to the intestinal area) may take 3-4 weeks. Regular de-worming younger horses (beginning at 8 weeks of age) is strongly recommended.

(3) PIN WORM

Pin worms are smaller, white worms which develop in the large intestine. The adult female migrates to the horse's rectum where she emerges and lays clusters of eggs on the skin underneath the tail area. This is irritating and causes the infected horse to rub its perineal area (anus and genital areas) in an attempt to seek relief. Eggs eventually drop to the ground and are ingested by the host. Adults feed off intestinal contents while the larva attach themselves directly to the gut wall.

(4) STOMACH WORM

Stomach worms require the house fly as an intermediate host to complete its life cycle. Adult stomach worms live in the horse's stomach where they mate and lay eggs. Eggs passed with the feces are ingested by house fly maggots. When the maggot develops into an adult, it carries the infective stomach larva. Horses become infected when they ingest dead house flies or when the house fly deposits the stomach worm larva near the horse's mouth during feeding. The stomach worm is more of a nuisance if a larva comes in contact with an open wound on a horse. The larvae migrate through the tissue thereby considerably diminishing the healing process. The slowing-healing lesion is called a "summer sore" which can be controlled with systemic treatment.

(5) BOT FLIES

Bot flies do the most damage in the larval stage. After the eggs are ingested by the grazing horse, the larvae attach to the horse's stomach and remain there for 9-12 months. Because of their large numbers, the larva interfere with normal digestion and cause stomach irritation. After detaching itself, the bot larva pass through the intestine and is released to the environment with feces. In about 3-5 weeks, the larva have matured to become an adult fly and will live for only 5 days. During this short week, its one function is to reproduce. Eggs, which hatch in 6-10 days, are attached to the hairs of horses' legs, neck and lips. Bots can be controlled by applying warm water solutions containing an insecticide on the affected areas containing eggs on the hairs. The warm water stimulates hatching and the residue insecticide kills the hatchling. Worming is also recommended about a month after the first frost that kills lingering adult bot flies.

Because of the various stages of the life cycle of the internal parasites, no one de-worming programs will be completely effective. Effective control programs require continuous, long-term commitments using both management and medical considerations. Veterinarians should be consulted for the use and timing of appropriate de-worming agents.

Management considerations include: the provision of sanitary feeding and water equipment, the regular removal of manure from pastures and other areas frequented by horses, regular de-worming practices, avoidance of overcrowding in pastures to decrease the exposure of larva that may be present in the fields, separating horses by age (younger horses may harbor or be more susceptible to certain internal parasites), and rigorous insect control practices. Worming considerations include: de-worming all horses simultaneously, isolating transient or visiting horses, conducting routine microscopic examinations of feces (inspecting individual manure piles for the presence of internal parasite eggs), rotating known effective antithelmetics (de-worming medications) to increase each agent's effectiveness, and de-worming horses at specific ages for specific internal worms.

Generally speaking, horses should be de-wormed every 8 weeks (or 6 times a year). Anti-bot fly preparations should be administered at least once a year, usually in the late fall or early winter months.

EXTERNAL PARASITES

ACARINES -

Ticks are not host specific - they infest most mammals given the opportunity. Most ticks habituate low hilly, brushy areas. Ticks, in large numbers, can cause severe anemia and death. They are vectors (carriers) of a number of debilitating diseases: sleeping sickness, piroplasmosis, and equine infectious anemia (swamp fever). Their bites can result in painful and unsightly skin bumps (caused by a local allergic reaction). Adult females lay their eggs on the ground and the larva climb onto the adjacent grass, shrubs or brush. The tick larva attaches itself when a host approaches. Adults feed on blood and mate on the host. When fertilized, the female drops to the ground and lays her eggs. Control of tick populations is difficult. Shrub and brush removal is not practical. The use of insecticide baths or sprays is effective in controlling ticks once they have infested a host. It indirectly controls tick populations by decreasing the

population of egg-laying females. Infrequently, a condition called tick paralysis occurs in some horses after they've become bitten by a tick.

Larva of the ear tick feed off the blood of livestock and horses by crawling into the ear and remaining there for 3-4 months before dropping on the ground and crawling to fences, barns feed bunks and trees to mature into adult and lay eggs. Adults do not have mouth parts and so do not infest livestock. While in the host's ear, larva cause great discomfort which tends to make the animal head shy and difficult to bridle/halter. Insecticide salves, dusts or liquids are effective in controlling the larval ear tick.

Mites are an uncommon external parasite of horses but they will infest any hairless areas of the neck, base of the tail or legs. Infestation by the mange mite should be countered aggressively as this parasite is extremely contagious.

INSECTS -

Lice cause intense irritation, restlessness, loss of hair, rough hair coat, itching and anemia (decreased population of red blood cells). Most lice infestations occur around the base of the tail, inside the thighs and along the neck/shoulder area. Some lice feed off of host blood while others scavenge organic matter off of the host's body. Lice spend their entire life cycle on the host's body. Eggs (nits) are attached to hairs near the skin. Approximately two weeks after hatching (it takes two weeks to hatch), young females begin laying eggs and soon thereafter die. Transmission of lice is by direct contact and by indirect contact (touching contaminated tack (e.g., bridle, saddle blanket, cooling pad, etc.)). Lice are host specific. Control is accomplished by herd treatment with insecticides. The initial treatment should be followed up about 3 weeks later to destroy hatching lice not affected by the first treatment.

Flies are extremely persistent when attempting to feed off of a host. As a result, many animals, especially younger ones, will hurt themselves unintentionally when attempting to escape from them. Some bloodsucking species are suspect vectors for diseases such as anthrax, tularemia, equine infectious anemia (swamp fever) and sleeping sickness. Infestation by a large number of blood-feeding flies can cause severe cases of anemia.

Mosquitoes cause annoyance, blood loss, and local skin irritations. They are known vectors of sleeping sickness. Control is the same as for flies but drainage of stagnant/standing water is strongly recommended (a portion of the mosquito's life cycle includes an aquatic phase).

Horse Fly, Deer Fly, Stable Fly, Horn Fly are blood-feeding insects. Because of variations in the feeding and life cycles, horseflies and deer flies belong to a different group of flies than do the stable and horn flies. Horse flies and deer flies have a prolonged life cycle which can last 1-2 years. Larval stages are aquatic so water is mandatory for survival/maturity. This group doesn't "suck" blood but rather lacerates skin tissues and ingests the resulting blood. Control of the horse fly/deer fly is difficult because they have: a prolonged life cycle, an intermittent feeding habit, an ability to travel great distances to feed and can infest individually rather than in a group. Stable flies/horn flies have a shorter life cycle (few days-few weeks). They penetrate the host's skin with their proboscis and lap up the resulting pooling blood.

Stable flies are controlled by eliminating breeding areas (soggy bedding, leftover feed, compost piles) and spraying resting places (outside barns, fence posts, wooden fences and tree trunks). The horn fly spends most of its time on the host - the female leaves only long enough to lay its eggs in freshly dropped manure. It is usually a cattle parasite but will also infest a horse host in large numbers. While it looks like a stable fly, it is approximately half the size. This one species is responsible for more losses in livestock production than any other blood-feeding fly. Control in horses involves proper manure management and local applications of fly repellents on horses.

Face Flies are becoming more of a problem with equines due to the expanding distribution of cattle and dairy industries. Face flies feed on mucous secretions around the heads of cattle and horses. Control requires regular applications of fly repellents/insecticides. Face masks are effective in preventing access to the head area.

Screw Worm and **Blow Flies** in the maggot phase can infest wounds. Adult females lay eggs in wounds where the invasive larva of the screw worm fly destroy flesh; blow fly larva ingest the decaying tissue of the wound.

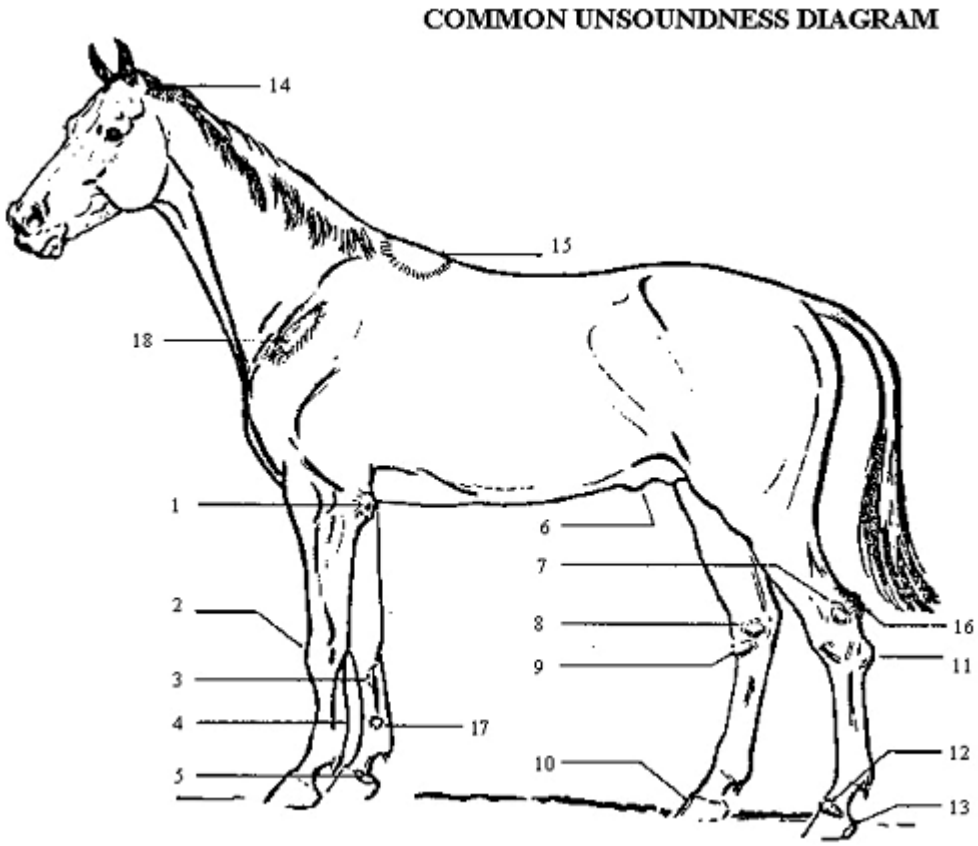
UNSOUNDNESS, BLEMISHES AND VICES IN HORSES

An **unsoundness** is an abnormal condition that interferes with the intended use of a horse. Examples of unsoundness are: fistulous withers, bowed tendon, laminitis, navicular disease, quittor, ring bone, sidebone, bone spavin, stifled, stringhalt, heaves, hernia (see diagram of horse with common unsoundness illustrated on the next page).

Fistulous withers is an infection of the bursa over the withers which usually is impossible to cure. Bowed tendons are enlarged tendons located behind the cannon bones usually in one or both of the front legs but the condition can occur in the rear legs, as well. The tendons become enlarged as a result of stretching or tearing the associated ligaments. Treatment involves supporting the injured leg(s) with wraps and resting the horse. Laminitis is an inflammation of the sensitive laminae of the hoof. Founder occurs when laminitis is untreated and the coffin bone rotates and sinks into the sole of the hoof. Navicular disease is an inflammation of the navicular bone located in the hoof or foot area. Quittor is a rare infection of the lateral cartilages. Ring bone is a bony growth encircling the pastern bones of (usually) the horse's front feet. Short pasterns and working a horse on hard surfaces predisposes it to this unsoundness. Side bone is also caused by working a horse on hard surfaces which causes the calcification of the lateral cartilages. This disorder is not considered to be a serious unsoundness. Bone spavins are bony growths low on the inside of the hock and can cause lameness. Stifled is the condition where the knee cap catches underneath the medial ligament resulting in a dragging motion of the rear leg(s). Stringhalt is a jerking motion seen in the rear legs of some horses at the walk or trot. The cause is unknown. Heaves (also called Chronic Obstructive Pulmonary Disease ("COPD") is a respiratory disorder characterized by wheezing and a chronic cough. A hernia is a protrusion of tissue through an abdominal opening.

A **blemish** is a physical defect which affects the appearance of the horse but not its usefulness. Common blemishes include: bog spavins (soft swelling of the hock joint capsule), capped elbow (soft tissue enlargement over the elbow, capped hock (soft tissue enlargement of the point of the hock), curb (enlargement below the hock due to inflammation of the plantar ligament), grease heel or scratches (skin condition involving the pasterns and fetlocks), scars, seedy toe (separation of the hoof wall near the toe), splints (bony growths in the groove formed by the cannon and small splint bones - rarely considered a serious disorder), and wind puffs (soft enlargements just above the fetlocks of the front/rear feet).

UNSOUNDNESS DIAGRAM



1. Shoe Boil
2. Over in the knee
3. Splint
4. Bowed tendon
5. Sidebone
6. Hernia
7. Thoroughpin
8. Bog spavin
9. Bone spavin
10. Toe crack
11. Curb
12. Ringbone
13. Quarter crack
14. Poll evil
15. Fistulous withers
16. Capped hock
17. Wind puff
18. Sweeney

CONFORMATION

Conformation is defined as the way an animal's anatomy is put together (i.e., how the skeletal and muscular systems are established in a particular horse). It is not to be confused with the type of conformation which is associated with certain breeds. (For example, the Arabian Horse is known for its dished face appearance.)

The well conformed head should be relatively small as a larger heads places undue stress on the horse's neck and shoulders causing it to be "heavy on the forehand". The ears should be relatively small, pointed, set well apart and carried evenly erect. The forehead should be broad and flat, not narrow or bulging. The eye is a most important factor in judging a horse's conformation. It is said that a horse's disposition can be characterized by the appearance of the eyes. They should be large, bright, with clear cornea and a "kind expression". They should be bilaterally symmetrical. (Small eyes are called pig-eyed in horses.) The face should be moderately long, lean and finely chiseled. A horse with a convex nose is said to be Roman-nosed - the opposite is dish faced - both are generally considered to be undesirable qualities in a horse. The horse's nostrils should be thin, mobile and large for adequate air intake (breathing). The lips should be thin, firm and well apposed to one another. A floppy lower lip is undesirable. The jaw should be broad, flat and well-muscled. There should be adequate space between the angles of the jaw to allow for the passage of the larynx, trachea (windpipe) and pharynx (nasal passage).

The horse's neck should be relatively long with proportionate thickness. It should be clean and refined without excess muscling (crestiness). Because the length, shape and carriage of the neck is so important for a horse's way of moving, it should be studied carefully when buying a horse. Horses which have necks that are concaved on top are said to be ewe-necked ("upside down"). The condition is said to cause high-headed horses or stargazers. The opposite condition or heavy muscling on the top of the neck is called being heavy-crested or bull-necked.

The withers are the highest point of the body and is the highest point for measuring a horse's height. The withers should be moderately high and refined with no coarseness or meatiness. Low, fat, meaty withers are called mutton withers and do have allow a saddle to seat properly. The shoulder should be as long and as sloping as possible as it lends to correct mechanical action and marriage of skeleton and muscle. A long, sloped shoulder allows for a springy, comfortable ride. Frequently, a short, up-right shoulder (also associated with short, up-right pasterns) causes a short, choppy ride and predisposes the horse to sidebone and ringbone.

The arm should be short and muscular and inclined more toward a vertical attitude than a horizontal one. The elbow joint is formed by the junction of the arm and the forearm and should be large and clean. The forearm should be long, broad and well-muscled. The direction should be vertical when viewed from any plane. The knee should be straight, broad, deep and angular. The front cannon is that area between the knee and the fetlock and should be short and strong. It should emerge from the knee at the exact center. A knock-kneed horse is one whose knees are set too close together; a bowlegged horse is one whose knees are set too far apart from each other. The fetlock joint should be clean with no sign or suggestion of puffiness/softness. A small horny vestige called the ergot is located at the back of the fetlock. It is a vestige of a toe/finger. The pastern should be of moderate length and maintain an angle of approximately 50-55°. Ideally, the angle of the pastern should parallel the slope of the shoulder.

A toed-out (or splay-footed) horse tends to wing-in when moving. A toed-in (or pigeon-toed) horse tends to wing-out or paddle. A base narrow horse has feet placed too close together (as compared to how the legs emerge from the chest) and a base wide horse has feet placed too far apart.

The back of a horse should be straight and not overly elongated. Proportionate length of the back needs to be judged by the length and carriage of the neck, conformation of the withers and the length/inclination of the croup. The back should be well-muscled for strength and for the cushioning effect of the muscles between the saddle and the skeleton. If the top line of the back and loin is arched, the horse is said to have a roachback or hogback.

The chest should possess moderate breadth but never be too deep in the vertical plane. The ribs should have a good curvature and great length. Overly strong curvature results in a barrel-chested horse which predisposes the horse to the inability to expand the lungs properly. The wider the chest of a horse the greater the tendency for the horse to have a wobbly/rolling gait. A horse that lacks curvature of the ribs is said to be slab-sided.

The croup should be good length and moderate in width. The slope of the croup varies with the breed type. When the croup is overly sloped, the horse is said to be goose-rumped.

The thigh (femur bone) should be relatively short, strong and directed forward, downward and outward so that the stifle joint is free of the flank and belly. The leg (tibia, bone of the leg) should be proportionately long, extending down and back to enter the stifle joint area at a angle of 65-70°. The lower part of the thigh is called the gaskin. The hock joint should be large, strong and clean. The point of the hock should be long and prominent. The back line of the hock (in profile) should present a straight line to the fetlock. A horse is said to be cow-hocked if the hocks are too close together. If the cannon bone enters the hock area too far forward, the horse is said to be sickle-hocked.

Common conformation faults include: Roman Nose, Loose Lip, Coon Footed (overly long, overly sloping pastern), Sickle Hocked, Low set Tail, Goose Rump, Roach Back, Body Too Heavy for Legs, and Sway Backed.

GAITS & RIDING AIDS

GAITS

The gait of a horse is defined as its manner of locomotion. The three natural gaits (gaits which a horse normally use in the wild) in the horse are the walk (4 beats), the trot (2 beats) and the gallop (3 beats). Examples of artificial gaits (gaits a horse must be trained to perform) include, among others: rack, running walk, fox trot, stepping pace.

RIDING AIDS

Riding aids are anything used to assist a rider to motivate or control a horse to move or perform a maneuver. Aids are classified according to natural and artificial means. Natural aids include the rider's hands, legs, weight and voice. Artificial aids are things such as spurs, whips (crops) and martingales.

AGING THE HORSE

The horse has two complete sets of teeth during its life. The first set of teeth are called milk (or temporary) teeth which are replaced by the second set, the permanent teeth. The temporary teeth are characteristically smaller and are pearl colored. The permanent teeth are larger, stronger and darker in color. There are 12 incisor teeth (six in the upper and six in the lower jaw). Growing away from the midline are sets of teeth called the centrals, laterals and corners. Between the incisors and the molars can be found a pointed tooth called the canine or tush. The four canines appear only as permanent teeth and are fully developed only in the male. There are 24 molar teeth (six upper and six lower). Galvayne's groove is a groove which appears at the gum margin of the upper corner incisor at about 10 years of age, extends halfway down the tooth at 15 years of age and reaches the gum line at 20 years. The eruptions and loss of teeth, the disappearance of cups, the changes in shape in of table surfaces, and the length of crowns are all signs used in aging a horse. The following is a guide for aging horses.

- **From birth to 2½ years –**
  - From 2-4 days, the temporary central incisors erupt. At six weeks, the temporary lateral incisors have appeared. At 10 months, the temporary corner incisors are present and worn by 16-18 months of age.
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- **From 2½ to 5 years –**

  - At approximately 2½ years, the temporary centrals are loose and the permanent centrals begin to erupt. At 3½-4 years, the permanent laterals erupt. From 4½-5 years, the permanent corners and the canines erupt. By year 5, the corners have short crowns and don't come in contact on their back corners. The teeth are large and contain deep cups which are becoming shallow. A horse is said to have a full month (a complete set of adult teeth) by age 5.

- **From 6 to 9 years of age –**

  - Age is now determined by the changes in size and shape of the cups of the lower incisors and by the cups disappearing at quite regular intervals beginning with the centrals.

    - At 6 years, the table surface of the corners becomes eroded and the cups in the centrals disappear.
    - At 7 years, the cups in the laterals are shallow or have disappeared. The 7-year notch appears in the upper corner incisor in most horses.
    - At 8 years, the corner cup is shallow and rounded but, in many horses, some corners will remain as shallow cups until about age 11. The central is triangular in shape. The dental star usually begins in front of the enamel ring as a long, faint, yellow transverse line.
    - At 9 years, the enamel ring is triangular. Galvayne's groove may appear in the upper corners. The dental star may emerge in the laterals.

- **The aged Horse –**
    - After age 9, it becomes more difficult to age a horse because the dental changes become less dramatic.
        - At 10-12 years, Galvayne's groove is distinct and the teeth are becoming more triangular. The enamel rings are becoming smaller as the tooth is worn away. The dental star begins to occupy a more central position.
        - From 13-17 years, the enamel rings disappear successively from the centrals, laterals and corners. Galvayne's groove is moving down the upper corner incisor.
        - From 17-20 years, the enamel rings have disappeared and the dental stars have become large, distinct and occupies the central portion of the table surface. The teeth are becoming more rectangular in size and the angle of incidence is more and more pronounced (i.e., the teeth are becoming more and more flatter in the mouth).
        -
- **Dental variations and abnormalities:**
    - Because of a longer upper jaw, the upper incisors overhang the lower incisors resulting in a condition called parrot mouth. An undershot jaw is the opposite condition where the lower incisors extend further out of a horse's mouth.

TREATMENT OF WOUNDS AND FIRST AID IN HORSES

If a neck or body wound is bleeding profusely, use compress bandages to staunch blood flow. If flaps of tissue are present, attempt to replace the tissue to its original location to reduce the chance of scarring. Try to keep the animal quiet and comfortable while waiting for the veterinarian. Flaps of tissue in facial or head wounds should be replaced until the attending veterinarian can suture the wound closed. Restraints such as collars or cradles are often used to discourage a horse from rubbing facial or head wounds.

The most common and most serious of wounds is the leg wound, especially those occurring below the knee/hock area. In these areas, the scar-forming tissue, called granulation tissue (or "proud flesh") tends to be overly produced. The result is an unsightly mass of granulated tissue that heals slowly, can restrict movement, and attracts flies. Wrap a leg wound tightly to control bleeding. Contact your veterinarian immediately. Unless you know exactly when a horse received tetanus toxoid, he should be given a tetanus anti-toxin injection. In addition, the injured animal should receive some kind of antibiotic therapy. Finally, the veterinarian will be able to recommend ways to keep proud flesh formation to a minimum.

Punctures of the horse’s hoof or sole (by a nail, for example) should be considered serious as a tetanus infection or laminitis can ensue. A germicidal agent such as iodine or alcohol should be poured on the wound before removing the nail. Horses suffering foot punctures should be given a tetanus anti-toxin injection.

Stone bruises and/or cracked walls are painful and may cause the horse to become lame. The veterinarian may administer injections of steroids and/or anti-inflammatory drugs to prevent damage to the sensitive parts of the foot.

Fractures of the lower extremities (i.e., legs, bones in the foot), once thought to be untreatable, can now be repaired and supported so that a horse can recover. Recuperation includes keeping the horse as immobile, quiet and comfortable as possible.

Minor wounds and abrasions should be cleansed with disinfectants and kept free of flies by applying sprays/repellants.

Useful items to include in a first aid kit include: a bottle of general disinfectant (Phisohex, hexachlorophene), a surgical scrub soap, gauze sponges, compress bandages, gauze bandages, adhesive tape, wound powder, a tube of ophthalmic ointment, fly repellent bomb, curved scissors, roll of cotton, and a foot wound disinfectant (7% iodine solution).

THE HEALTHY HORSE

A generally healthy horse should be alert, have clear eyes and erect ears. It should not be listless or "hang head". It should stand with feet squarely placed beneath it and normally should almost always accept food. The hair coat should be sleek, shiny and short during the summer months and heavier/longer during the winter months.

The walls of the horse's hooves should be smooth and pliable - rounded, not dished, mis-shaped or split. The frog of each foot should be well shaped and should be in contact with the ground during normal standing postures. The hooves of a horse should be shod every 6-8 weeks and an unshod horse should have the feet trimmed every 8-10 weeks. The frog area should be free of foul odors or greasy discharges (thrush). One should be able to just perceptively feel the digital pulse beneath the fetlock area in the groove between the tendons and the pastern bone. A rapid, strong digital pulse in this digital groove is usually indicative of inflammation of the hoof (laminitis).

A healthy horse will normally defecate several times a day. The feces (manure) should be well-formed and not overly hard or covered with mucous. The color will vary according to diet but will normally range from tan/yellow to a darker green. Horses will urinate a quart or more of urine several times a day. Normal urine is thick and yellow colored. Frequent urination of small quantities is not a normal horse function and may suggest a kidney ailment.

Normal vital signs in the horse are: temperature (99-101°F), heart rate (28-52 beats per minute), respiratory rate (8-16 breaths per minute).

Remember that a horse is an animal of nature. A horse's instinctive response when frightened is to run away or, if cornered, to kick, bite or strike.

REPRODUCTIVE CYCLE OF THE MARE

The mare is said to be a seasonally polyestrous animal which means that, normally, she will become receptive to a stallion only during certain months of the year. A mare's reproductive cycle is called the estrous cycle. Estrus is the term (note the difference in spelling) used to describe that phase of the estrous cycle when the mare is receptive to the stallion and can become pregnant. The cycle involves the process of maturing an egg which ultimately is ovulated (released from the ovary) into the uterus. Eggs are produced and grow on the ovary in a structure called a follicle. After ovulation, the egg normally travels to the uterus (the site where the pregnancy occurs) via a structure called the oviduct (Fallopian Tube) where it may or may not become a fetus (immature baby horse). If the mare does not become pregnant, she will complete an estrous cycle approximately every 21 days.

If the mare becomes pregnant, she will carry and nurture the developing fetus in her uterus for about 11 months (gestation period). The uterus functions to support and protect the pregnancy, to nurture the fetus (produce and secret specific hormones required for critical development) and finally to expel the fetus at the time of birth (parturition). The newly born horse is called a foal until it becomes one year old. Until their fourth birthday, a male horse is called a colt and a female horse is called a filly. Thereafter, they are called a stallion (gelding) and mare, respectively.

REVIEW QUESTIONS

DRILL AND BREEDS

1. What are the recovery commands for as foragers? left (or right) oblique? and line of half squad columns?
2. How many troopers are there in a Squad?
3. What is meant by a horse's classification?
4. Name three breeds of horse and their classification?
5. Where was the Morgan breed originated?
6. What is the unit used to measure the height of a horse? Where is the height of a horse measured?
7. What is the maximum height of a pony?
8. Name five classifications for horses and/or ponies.
9. What are some major differences between the Arabian and Quarter Horse?
10. What is meant by the versatility of a horse?
11. What is the difference between a base breed and a color breed?
12. Name four color patterns in the Appaloosa?
13. Name the four characteristics of an Appaloosa Horse.
14. How does an Albino Horse differ from a White Horse?
15. Name three color breeds and describe their characteristics.

COLORS, GROOMING, NUTRITION, DISEASES, AND PARASITES

1. Describe the following body colors: Bay, Dun, Roan, Buckskin.
2. Name three color breeds and describe them.
3. Describe the following markings: star, snip, strip, blaze, sock.
4. What is a dorsal stripe?
5. What are black points?
6. Name five grooming aids and their uses.
7. What the two major categories of horse feed?
8. Name the five nutritional classifications required by horses daily?
9. What is a herbivore?
10. Name three categories of activity which require a change in feeding schedule.
11. Name three roughage's. Name three supplements.
12. What are legumes?
13. What is colic? What are its causes?
14. How can faulty teeth cause colic?
15. What disorder can occur as a result of a horse standing in water/unsanitary conditions?
16. What is laminitis? What are its causes?
17. What is the white line?
18. Describe the differences between heatstroke and exhaustion?
19. Describe the treatment of colic.
20. Describe the treatment of heatstroke.
21. Describe three infectious diseases which can be prevented with vaccinations.
22. What are the two types of vaccines for tetanus and how do they differ?

23. Why is an outbreak of Rhino pneumonitis serious around pregnant mares?
24. Describe the life cycle of two external parasites.
25. Describe the life cycle of two internal parasites.
26. Why is fly control a good management tool for horse owners?
27. How do you control worm infestation?

UNSOUNDNESS, CONFORMATION, AGING, FIRST AID, HEALTHY, AND REPRODUCTIVE CYCLE

1. Describe the difference between an unsoundness and a blemish.
2. What is a bowed tendon and how is it treated?
3. Name and describe three unsoundnesses.
4. Are scars, splints, fistulous withers, capped hocks, ringbone considered a blemish or an unsoundness?
5. Define a vice and give three examples.
6. What is a cribber?
7. What is conformation?
8. Name four conformation faults and describe them.
9. What are the four instinctive reactions of a horse if frightened?
10. Name three natural gaits of the horse.
11. Name artificial gaits.
12. Which is considered the natural gait – the jog and/or lope?
13. Name three natural aids used by a rider.
14. Name two artificial aids used while riding a horse.
15. When often should a horse be shod? Trimmed?
16. What is the function of the mare's uterus in pregnancy?
17. What is the approximate gestation period of the horse?
18. When does a foal become a filly or a colt? When does a colt/filly become a stallion (gelding)/mare?
19. What is estrus in the mare?
20. What is the term used to describe the release of the egg from the ovary?